Climate-change risk-management institutions in major banks –
Understanding institutional diffusion

Von der Carl von Ossietzky Universität Oldenburg – Fakultät II (Informatik, Wirtschafts- und Rechtswissenschaften: Department für Wirtschafts- und Rechtswissenschaften) – zur Erlangung des Grades eines

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PREFACE

The legitimacy of banks has suffered since the Global Financial Crisis (GFC) of 2007/2008. The GFC happened largely as a result of banks' mismanagement of risk. The bailouts that followed worsened their reputations.

Climate change presents a unique opportunity to banks: it could help them improve their reputations. This is because the financial industry plays a critical role in speeding up the world's efforts to mitigate climate change. Major banks provide finance—through their lending to large, corporate clients—to industries that cause the environmental destruction that international organisations, such as the United Nations and Greenpeace, work to prevent and reverse. On a more promising note, not only can banks help mitigate climate change by providing finance to climate-mitigating endeavours, but they can also deny finance to large-scale greenhouse-gas (GHG) emitting companies that do not pro-actively reduce and mitigate GHG emissions.

This thesis examines the diffusion of climate-change risk-management institutions by major banks. It asks which institutions must be diffused so banks can mitigate risks in investments where climate-change plays a significant role. The research sample involves ten major financial organisations from two G8 countries, Germany and Canada. The two countries are opposites in terms of their performance in adapting to, and mitigating climate-change.

Although this thesis makes no attempt to rank or grade the banks in terms of their diffusion of climate-change institutions, it does bring industry-wide themes to the surface and challenges them. Examples of these themes are sustainability trends, as well as evolving concepts such as materiality, "scopes," due-diligence, and disclosure.

Background research for this thesis began in 2007, and following the presentation (and subsequent publication) of two research papers, the study officially began in December of 2009 and was concluded and submitted in November 2014 for defence.

I thank Prof. Dr. Ralf Antes for his support, feedback, and advice.

I am grateful to the bankers and experts at Deutsche Bank, DZ Bank (and the Sustainable Investment Research division), Allianz, Commerzbank, UniCredit, KfW, First Climate, CIBC, Bank of Nova Scotia (Scotiabank), Royal Bank of Canada, Toronto-Dominion Bank, the Bank of Montreal, Stratos Inc., Clifford Chance, the European Energy Exchange, the European Investment Fund, Transferstelle Internationaler Emissionshandel Hessen, and KPMG AG Wirtschaftsprüfungsgesellschaft.

Brian Robertson

Oldenburg, May 2015

SUMMARY

Climate-change risk-management institutions in major banks – Understanding institutional diffusion

This thesis addresses the approaches to climate-change risks by financial institutions and their different ways of diffusing internal solutions. This study asks to which extent banks in Germany and Canada consider these types of risks and include them in their standardised risk-management institutional frameworks, as well as how to conceptualise the spread of new risk-management solutions in the banks. The main hypothesis stems from neoinstitutionalism: the banks' institutional developments in order to mitigate climate-change risks primarily help the banks gain legitimacy and protect their reputations. The research methodology combines the results of a systematic documentation analysis with 24 qualitative interviews. As a practical recommendation for action, the thesis calls for more widespread use of integrated reporting with a focus on making climate-change risks more transparent.

KURZZUSAMMENFASSUNG

Institutionen des Managements von Klimawandelrisiken in Großbanken – Ein Beitrag zur Erklärung institutioneller Diffusion

Diese Dissertation untersucht finanzinstitutionelle Ansätze zum Umgang mit Risiken des Klimawandels und deren bankinterne Diffusionspfade. Die Studie fragt, inwiefern Großbanken in Deutschland und Kanada diese Risiken wahrnehmen, in ihr Risikomanagement aufnehmen und wie die Verbreitung von Risikomanagement-Lösungen in Banken erklärt werden kann. Die untersuchungsleitende Hypothese ist aus Erkenntnissen der neo-institutionalistischen Forschung hergeleitet: Banken führen institutionelle Veränderungen vor allem durch, um ihre Reputation zu schützen und Legitimität zu gewinnen. Das Forschungsvorgehen verbindet die Ergebnisse einer systematischen und umfassenden Dokumentenanalyse mit der Auswertung 24 qualitativer Interviews. Als praktische Handlungsempfehlung wird die Forderung nach integrierten Berichterstattungssystemen zu Risiken im Klimawandel abgeleitet.

CURRICULUM VITAE

Brian Robertson earned a BA hon. in political science and Ibero-American studies at the University of Toronto in Canada. This was followed by master's degree studies in social sciences at IUPERJ in Rio de Janeiro in Brazil. From 2009 to 2015 Brian pursued a doctoral degree at the Carl von Ossietzky Universität Oldenburg's Faculty II: School of Computing Science, Business Administration, Economics, and Law.

LEBENSLAUF

Brian Robertson studierte Politikwissenschaft und Iberoamerikanische Studien an der University of Toronto (Kanada). Im Anschluss machte er einen Master-Abschluss im Fach Sozialwissenschaft am Forschungszentrum IUPERJ in Rio de Janeiro (Brasilien). An der Carl von Ossietzky Universität Oldenburg promovierte er von 2009 bis 2015 (Fakultät II - Informatik, Wirtschafts- und Rechtswissenschaften: Department für Wirtschafts- und Rechtswissenschaften).

ABSTRACT

Financial organisations can have an unequivocal impact on speeding up the world's mitigation of climate change. While governments continually delay the passing of legislation to mandate greenhouse-gas reductions, banks must diffuse risk-management institutions that help mitigate climate-change risks in their investments. This study compares two samples of banks from two G8 countries (Germany and Canada) in terms of their diffusion of climate-change risk-management institutions. Neoinstitutional theory provides the analytical framework for exploring how and why the banks diffuse these institutions. Integrated reporting can increase the disclosure and transparency of banks' financing of climate-destructive endeavours. Such a threat to the legitimacy of banks could be a significant driver to speed up their development of standardised risk-management institutions, especially ones that enable the mitigation of climate-change risks in a broader range of investments than that which is currently available.

KEYWORDS

Banks, Basel Accords, Canada, carbon, corporate social responsibility, credit risk, diffusion, disclosure, finance, Germany, greenhouse-gas, emissions-trading, enterprise-wide risk management, institutions, insurance, investment, isomorphism, Kyoto Protocol, legitimacy, materiality, neoinstitutional economics, reputation, reputation risk, risk management, scope, sustainability, three pillars of institutions, transparency

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ABBREVIATIONS

AAUs (Assigned Amount Units) 64
ARE (Allianz Real Estate Sustainability Program) 209
B.A.U.M. e.V. (German Environmental Management Association) 154
BaFin (Federal Financial Supervisory Authority) 74
BAML (Bank of America Merrill Lynch) 29
BayernLB (Bayerische Landesbank) 87
BCBS (Basel Committee on Banking Supervision) 47
BCPs (business-continuity plans) 165
BMBF (German Ministry of Education and Research) 154
BMO (Bank of Montreal) 84
BMU (German Ministry of the Environment) 29
BNV (Bank of Nova Scotia) 84
BP (British Petroleum) 69
CCWG (Climate Change Working Group) 153
CDM (Clean Development Mechanism) 22
CDP (Carbon Disclosure Project) 37
CEO (Chief Executive Officer) 64
CERs (Certified Emissions Reductions) 34
CFI (Forum for Climate Change, Financial Markets and Innovation) 154
CIBC (Canadian Imperial Bank of Commerce) 84
COP (Conference of the Parties) 68
CPF (corporate-purpose financing) 296
CRO (chief risk officer) 169
CSR (corporate social responsibility) 37
DJSIs (Dow Jones Sustainability Indices) 155
DPR e.V. (German Financial Reporting Enforcement Panel) 151
DZ Bank (Deutsche Zentral-Genossenschaftsbank) 88
EEG (Renewable Energy Sources Act) 147
EEX (European Energy Exchange) 94
EIB (European Investment Bank) 352
EKPIs (environmental key-performance indicators) 339
EMAS (Eco-Management and Audit Scheme) 122
EMPA (Swiss Federal Laboratories for Materials Science and Technology) 229
ERM (enterprise-wide risk-management) 47
ESG (environment, social and corporate governance) 106
ESMA (European Securities and Markets Authority) 116
ESP (environmental-sustainability program) 289
ET (emissions-trading) 22
ETS (emissions-trading scheme) 37
EU (European Union) 39
EUA (EU-emission allowance) 94
EU-ETS (European Union Emissions Trading Scheme) 30
FTSE (Financial Times Stock Exchange) 155

GAAP (Generally Accepted Accounting Principles) 151
GDP (gross domestic product) 122
GFC (global financial crisis) 64
GGDP (global gross domestic product) 23
GHG (greenhouse-gas) 21
GHG Protocol (Greenhouse Gas Protocol) 78
GICS (Global Industry Classification Standard) 82, 367
GRI (Global Reporting Initiative) 76
ICB (Industrial Classification Benchmark) 82
IEA (International Energy Agency) 24
IFC (International Finance Corporation) 200
IFRS (International Financial Reporting Standards) 166
IP (intellectual property) 60
IPCC (Intergovernmental Panel on Climate Change) 20
IRM (integrated risk management) 169
ISO (International Organization for Standardization) 78
JI (Joint Implementation) 71
KfW (Kreditanstalt für Wiederaufbau) 87
KPIs (key-performance indicators) 207
KWG (German Banking Act) 74
KYC (know-your-customer) 50
LOD (lines of defence) 174
LSEs (large-scale emitting industries/companies) 27
MaK (Minimum Requirements for the Credit Business of Credit Institutions) 151
MDGs (Millennium Development Goals) 111
MSCI (Morgan Stanley Capital International) 82, 367
NASDAQ (National Association of Securities Dealers Automated Quotations) 156
NB (National Bank) 84
NFPs (not-for-profits) 68
NGO (non-governmental organisation) 28
OECD (Organisation for Economic Cooperation and Development) 28
OSFI (Office of the Superintendent of Financial Institutions) 74
PoA (Program of Activities/Programmatic CDM) 114
R&D (research and development) 38
RBC (Royal Bank of Canada) 84
REC (renewable-energy certificate) 22
REDD &/ REDD+ (Reducing Emissions from Deforestation and forest Degradation) 114
RGGI (Regional Greenhouse Gas Initiative) 139
ROI (return-on-investment) 27
RSM (Reputation and Sustainability Management) 210
SMEs (small and medium-sized enterprises) 128
SRI (socially-responsible investment) 37
TBL (triple-bottom line) 76
TD (Toronto-Dominion Bank) 84
UN (United Nations) 19
UNCED (United Nations Conference on Environment and Development) 107

UNEP (United Nations Environment Programme)..... 20
UNEP FI (United Nations Environment Programme Finance Initiative)..... 32
UNFCCC (United Nations Framework Convention on Climate Change)..... 23
UN-PRI (Principles for Responsible Investment)..... 153
VfU e.V. (Association for Environmental Management and Sustainability in Financial Institutions) 154
VoIP (Voice over Internet Protocol)..... 94
WBCSD (World Business Council for Sustainable Development)..... 78
WGZ Bank (Westdeutsche Genossenschafts-Zentralbank)..... 88
WMO (World Meteorological Organization) 20
WRI (World Resources Institute) 28
WWF (World Wide Fund for Nature) 154

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CHAPTER 1: INTRODUCTION

1.1 THE ANTHROPOCENE

The "anthropocene" is a name scientists increasingly assign our current era: they view it as a new period in the earth's history. What distinguishes this era from previous ones is the dominant influence humans have on the planet. Humans can no longer avoid impacting their environments; rather, the question is how to manage their impact (Morton, 2011).

The impacts by humans on the environment bring along new and unpredictable risks. One major category of these risks comes from climate change. Climate change is the result of global warming, which is currently the most heavily documented impact that humans have on the planet.

This thesis is an empirical study of the diffusion of climate-change institutions by the UN (United Nations). These institutions have the purpose of summoning and coordinating a global response to climate change. The research herein tracks these institutions' interpretation, in terms of how they influence risk-management practices, by two samples of the world's most influential banks. The bank samples are distinguished from each other by the degree that their governments—both opposites in their approaches to climate change—implement the international climate-change institutions. In short: it is a study of the financial sector's treatment of climate-change risks using institutional theory, particularly the neoinstitutional paradigm.

This chapter suggests a strong link between the financial sector and climate change. It also aims to introduce this thesis' body of research into how institutional changes in the global financial sector can have a powerful impact that is unparalleled in speeding up the world's mitigation of climate change.

1.2 CLIMATE CHANGE, MITIGATION, AND THE FINANCIAL SECTOR

Since industrialisation began in the nineteenth century, significant trans-regional and global changes in the substance balance of the atmosphere have occurred; namely:

1. a 35% increase in concentrations of carbon dioxide;
2. a 145% increase in concentrations of methane;
3. an 18% increase of nitrous oxide; and
4. the presence and spread of new gases that almost never occur in nature:
    (4a) chlorofluorocarbons;
    (4b) halons and perfluorocarbons;
    (4c) hydrofluorocarbons; and
    (4d) sulphur hexafluoride (Umweltbundesamt, 2011, p.54).

Science shows that the current trend of global warming is changing the composition of the atmosphere above and beyond what is known to be "natural" climate variability. The global warming phenomenon is deemed responsible for increases in:

1. average temperatures of global near-ground air, by 0,76°C;
2. average temperatures of the world's oceans, by 0,10°C;
3. the global melting of ice and snow; and
4. average global sea levels (Umweltbundesamt, 2011, p.60-61).

Not only are these trends intensifying, but also the rate of global warming analysed from 1996 to 2005 is already double that of the past century (IPCC, 2007, p.237). The dangers of climate change are manifesting worldwide with "natural" events occurring ever more frequently at record-breaking levels: droughts, wildfires, floods, extreme high and low-temperatures, Arctic and Antarctic sea-ice melting, heat-related illness and disease, extreme storms, rising sea levels, and wildlife extinction.

For the most dangerous impacts to be avoided, i.e.: the prevention of significant threats to both human life and ecological systems on a global scale, most scientific studies indicate that the world can heat up by no more than 2°C compared to pre-industrial levels. As of 2010, the human race had already used 0,7°C of the 2°C buffer (Umweltbundesamt, 2011, p.61).

The world's leading international body for assessing climate change is the IPCC (Intergovernmental Panel on Climate Change). In 1988 the IPCC was established by the UNEP (United Nations Environment Programme) and the WMO (World Meteorological Organization) to provide a scientific perspective on the state of climate change.

Time is running out: the IPCC (2007) reports that, by roughly 2020, GHG (greenhouse-gas)[1] emissions must peak and the trend must reverse. Moreover, for global temperatures to increase only between 2 and 2,4°C, global emissions must be halved compared to year 2000 levels.

There is still considerable (although diminishing) popular resistance to the idea that humans cause climate change. The question whether humans are responsible for climate change is of paramount importance: if humans caused it, then there is a greater likelihood that humans can reverse their influence on the climate, i.e. lessen the effects of climate change.

Two ideological camps have formed around the available science: the "adapters" and the "mitigators." Adapters see climate change as an inevitable, global event that the world experiences over long periods of time, such as the ice age. Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (IPCC, 2003, p.365). An example of adaptation is to fortify dikes against rising sea levels. Mitigators see climate change as a human-induced event that can be mitigated. Mitigation to climate change is human intervention to reduce the sources or enhance the sinks of GHGs (IPCC, 2003, p.379). An example is building a solar-panel park to generate renewable energy. While adaptation can be both reactive (to climate change) and proactive, mitigation can only be proactive in order to minimise the effects of climate change (IPCC, 2007, Section 2.5.2).

The IPCC's Fourth Assessment Report used widely-acknowledged scientific facts to show that climatic changes in the atmosphere are a result of human activities (IPCC, 2007). Moreover and as anticipated, the Physical Science Basis (WG I) of the IPCC's Fifth Assessment Report, released in September 2013, changed the likelihood status of human activities causing climate change from "likely" (which carries a 66-100% probability in the report's format) to "very likely" (90-100% probability) (Mastrandrea et al., 2010; IPCC, 2013, p.13, Sections 10.3, 10.4, 10.6).

---

[1] GHG designates the six Kyoto Protocol gases not controlled by the Montreal Protocol on Substances that Deplete the Ozone Layer (ratified in 1989): four GHGs (carbon dioxide, methane, nitrous oxide, sulphur hexafluoride) and two groups of gases (hydrofluorocarbons and perfluorocarbons). The three most significant gases in terms of contribution to climate change are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).

Regardless of the debate concerning humans' responsibility for causing climate change, the UN has taken a firm stance that both adaptation and mitigation of climate change must occur, i.e. climate change is indeed caused by humans and that humans must both solve the problem now (adaptation), and prevent its worsening (mitigation).

The UN's stance is significant. Not only is the UN the world's most dominant institution-setting agency, but also by 2011 most of the world's countries (191 out of 196) had signed the UN Kyoto Protocol, the UN members' binding agreement on climate change. The worldwide commitment to establish international laws (with intended penalties, such as sanctions) around climate change rendered human responsibility for climate change status quo.

Other dominant institution-setting agencies, such as the World Bank, mirror this stance. In mid-2013 the organisation's president stated that "*The world should stop arguing about whether humans are causing climate change and start taking action to stop dangerous temperature rises*" (Point Carbon, 2013a).

A global industry has evolved to service humans' mitigation of climate change: the ET (emissions-trading) industry. The ET industry comprises several financial-based markets based on legal (mandated) and normative (morally-obliging) climate-change institutions. Despite their starts and stops, the markets are slowly expanding and include:

1. ET, or derivatives trading of GHG emissions-reductions offset credits (often called "carbon credits" by the media; throughout the thesis they are referred to as "ET credits");
2. REC (renewable-energy certificate) trading (a.k.a. "RECs");
3. carbon foot-printing (a form of emissions-inventory accounting, whereby organisations attempt to measure their GHG impact and reduce it and/or complement it with GHG-reducing activities);
4. offsetting, or GHG mitigation and reduction projects, such as CDM (Clean Development Mechanism) projects; and
5. additional services (sustainability indices, funds, and strategic advisory based to some degree on climate change, as well as insurance products such as weather derivatives).

Although these markets are all driven by the need to address climate change, they do not address all of its problems and opportunities. Climate change results from global warming and is therefore a much broader issue than any single industry can resolve. The renewable-energy sector is another major growing industry that also serves humans' mitigation of climate change.

1.3 THE PROBLEM OF MITIGATION: SPEED

The British government commissioned a study of climate change to examine which form and shape a global "posture" should take. The study was published in 2006 under the title The Stern Review. The report asserts that the minimum cost for change and damages caused by GHG emissions will range between 5 and 20% of annual GGDP (global gross domestic product) (Stern, 2006a, p.10). Tackling climate change can cause risks of major socio-economic disruption, comparable to those created by the Great Depression and even World Wars (Sanger, 2007). Newer research increasingly shows that the Kyoto (and post-Kyoto) targets are not only far too low to mitigate the worst effects of climate change, but that the costs of adaptation to these effects are ominously underestimated.[2]

On a hopeful note, The Stern Review shows that the costs of reducing GHG emissions can be limited to around 1% of annual GGDP (Stern, 2006a, p.13). The variable that dictates the degree of economic disruption, or "market shock," that is, from the worrisome 5-20% range to the manageable 1%, is the speed at which the worst impacts are targeted (Stern, 2006b, pp.1, 2).

The UN's treaty and body for targeting the impacts of climate change is the UNFCCC (United Nations Framework Convention on Climate Change). The UNFCCC is updated by an annual international meeting which also addresses the issues of the

[2] An example of this research, specifically related to The Stern Review, used a newer version of the 2006 Stern Review's economic model to assess the impact of higher methane emissions (Clark, 2013). The likelihood of higher methane emissions comes from recent record declines in rapidly-melting Arctic sea ice. Researchers called the situation an "economic time bomb" that could cost the world at least $60 US trillion, depending on how much methane was emitted (Clark, 2013). 80% of the damage would occur in developing countries that are unable to curb the damages caused by increased flooding, droughts, and storms (Clark, 2013).

Kyoto Protocol from 1997. In 2012, shortly after the 18th annual meeting in Doha, the UNFCCC's Executive Secretary, Ms. Christiana Figueres, stated:

> "*Now, there is much work to do. Doha is another step in the right direction, but we still have a long road ahead.* ***The door to stay below two degrees remains barely open***. *The science shows it, the data proves it. […] The world has the money and technology to stay below two degrees.*" (Own bold) (UNFCCC, 2012a).

Other organisations, however, are less optimistic. An annual report from the IEA (International Energy Agency) claimed that the global development of renewable and low-carbon energy is progressing "alarmingly slow" to limit global warming (IEA, 2013, pp.7, 24, 35). The report suggested that industry and consumers will provide most of the investment and actions needed, but they can only do so "*with adequate opportunities and the right market conditions*" (IEA, 2013, p.7).

In other words, it is industries—energy, manufacturing, mining, etc.—that have to transform themselves for a low-carbon economy, but they can only do so on a massive scale when economic institutions promote this type of change.

1.4 INSTITUTIONS AND THE FINANCIAL INDUSTRY: AN EXPONENTIAL "MULTIPLIER"

The critical issue of speed in the global effort to mitigate climate change is what makes the financial sector so significant. New institutions, created by the UNFCCC, must be diffused as broadly and pervasively as possible to create widespread industrial change that promotes climate-change mitigation. The financial sector plays a major role in spreading these institutions, and institutional theory attempts to conceptualise and explain how institutional diffusion works.

Institutional theory deals with the processes by which rules, norms, and structures become formal guidelines or principles that govern the behaviour in a given activity (Scott, 2008). Scott summarises the most distinctive features of institutional theory the following way:

1. institutionalists eschew a totalistic or monolithic view of organisations and societal structures and processes;
2. institutionalists insist on the importance of non-local (as well as local) forces that shape organisations;
3. institutionalists have rediscovered the important role played by ideas, specifically, and symbolic elements, generally, in the functioning of organisations;
4. institutionalists accord more attention to the types of effects occurring over longer time periods;
5. institutionalists accord more attention to the examination of social mechanisms;
6. institutionalists embrace research designs that support the examination of the interdependence of factors operating at multiple levels that in turn affect the outcomes of interest (Scott, 2008, p.211-214).

Throughout this thesis, "institutions" refer to structures, i.e. rules, norms, guidelines, and practices—formal or informal—that are based upon concepts (e.g. ideas, notions, doctrines, interests), that employ regulative and constitutive rules to govern activities, and that are always strengthening or weakening. In chapter 3 this definition is expanded to include one additional level of detail, namely Scott's three-pillar model of the regulative, normative, and cultural-cognitive elements of institutions.

This definition combines elements from early institutionalists, new institutionalists, and neoinstitutionalists. William Graham Summer pointed out, in 1906, that an institution consists of a concept (idea, notion, doctrine, interest) and a structure (p.53). The structure is the means by which the concept is implemented. Later authors Steinmo and Thelen recognised that institutions had not only structures, but also "*informal rules and procedures that structure conduct*" (1992, p.2). This recognition allows for a wide range of possible rules and influences and therefore combines well with Saerle's view that institutions collectively employ regulative and constitutive rules. Regulative rules are those that "*regulate antecedently existing activities*," while constitutive rules allow activities to exist in the first place (Saerle, 1995, p.27). Scott points out the following division among how scholars view these types of rules: scholars embracing the regulative view of institutions focus primarily on regulative rules—they assume the existence of actors with a given set of interests and then ask how various rule

systems affect the behaviour of these actors as they pursue their interests; cultural-cognitive scholars stress the importance of constitutive rules—they ask what types of actors are present, how their interests are shaped by these rules, and what types of actions they are allowed to take (Scott, 2008, p.64). Lastly, and most importantly for this thesis' examination of institutional diffusion, is the view that institutions contain both a property-based characteristic, deriving from a given state of a social order, and a process-based characteristic, deriving from institutions' strengthening (institutionalisation) or weakening (de-institutionalisation) (Tolbert and Zucker, 1996, DiMaggio and Powell, 1983).

How pervasively international climate-change institutions spread in a given country's industrial landscape depends to a large degree on that country's government and its diffusion of the institutions. Governments (and, for example, the regulatory agencies to which governments allocate authority) have the highest level of influence on industry: it is governments' legal institutions that permit industries to operate in the first place. But governments do not face the challenges of mitigation to climate change alone.

Regardless of whether governments stand by their commitments to enact UN regulations, industries within their jurisdictions are affected by climate change in several ways, e.g. the rising costs of energy, risk exposure to new government legislation, reputational damage for underperforming concerning GHG mitigation or transparency (and thereby opposing the status quo), and so on. Antes (2006) relates the new dimensions for corporate GHG management given the onset of ET regimes. The changes create greater flexibility for environmental management and foster a revaluation of related administrative and coordinating functions. The main changes concern: 1) investment and financing ("*environmental management will have to cover a range of previously irrelevant areas*"); 2) information needs ("*additional demands on information management that can scarcely be met by the expertise of conventional environmental protection officers and departments*"); and 3) coordination of GHG-related activities ("*how can this externally standardized task be transposed to internal environmental management?*") (Antes, 2006, pp.212-213).

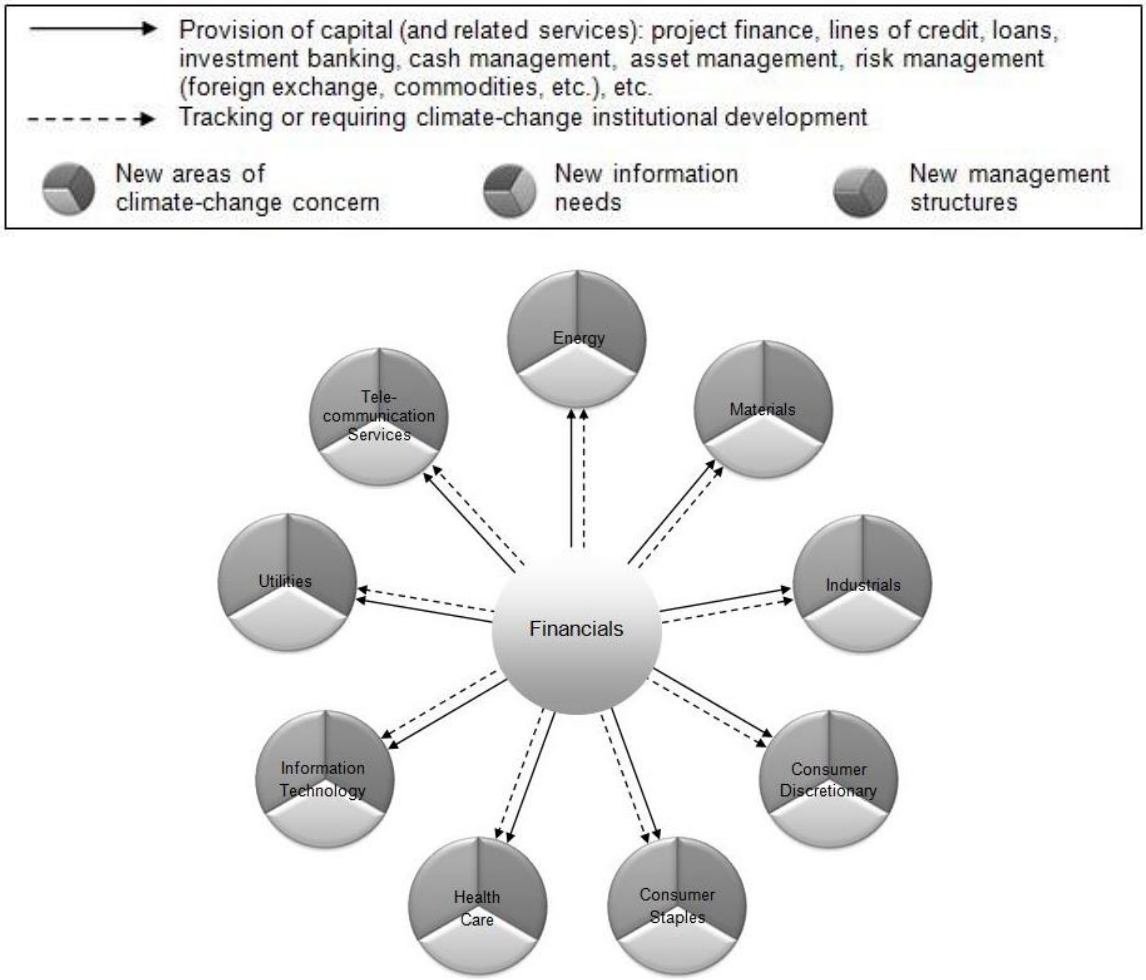
Besides their subjugation to governments and market forces, businesses are also subject to another type of organisation with major leverage over them: banks and

financial organisations. As the main supplier of financing to businesses, these organisations play a critical role in determining the speed of the global economic reaction to target the worst impacts of climate change. The relationship between financial organisations and LSEs (large-scale emitting industries/companies) is one of mutual dependency: banks' investments in LSEs form a significant portion of their annual ROI (return-on-investment) and therefore capital-lending organisations must also track—to varying degrees—the climate-change institutional developments in these industries. Even if the major polluting industries wish to pioneer technological and organisational change to mitigate and reduce GHG impacts, the companies in these industries often need the support from financial companies to supply lines of credit and loans in order to finance the proposed innovations. What the financial organisations require, in order to make capital available, is mitigated risk.

After the level of government and regulatory bodies, the financial sector is arguably the next level with the most influence over other industries. The sector is unlike other industries because of both its size, in terms of assets and capital, and its role as an "incubator" industry. The sector is a "hub" industry that combines human interests, synergises them (in the form of funds, financing packages, and so on), and then channels them to specific endeavours in the form of investments.

The industry's paramount importance to all other industries is, however, a double-edged sword: the financial industry does play an "incubator" role for new and emerging innovation; it also continues to permit, through its continual lending of funds, the continuation of destructive (i.e. unsustainable, polluting) activities. With few exceptions, such as activities involving child labour or gambling, banks will finance most industrial activities as long as they earn a profit. Moreover, both kinds of activities—destructive or environmentally-sound—are done on a global scale. Climate change requires a massive shift of capital from GHG-emitting activities to GHG-mitigating activities.

Figure 1: The financial sector's "hub" function



(Source: based on Antes, 2006, pp.212-213; Global Industry Classification Standard [MSCI, 2013])

Using data from both the OECD (Organisation for Economic Cooperation and Development) on budgetary support for fossil fuel expenditures, and data from the WRI (World Resources Institute) on Fast-Start Climate Finance Pledges, the Washington-based NGO (non-governmental organisation) Oil Change International concluded in 2012 that Annex-2 nations spend, on average, five times more on fossil fuel subsidies than on aid to help developing nations cut their GHG emissions (Oil Change International, 2012, p.2).[3]

[3] Annex-2 nations spent, in 2011, $58,7 US billion in subsidies to the oil, coal, and gas industries and $11,2 US billion total, over 2011 and 2012, towards climate-related aid (Oil Change International, 2012, p.2).

A study by Dierks et al., Klimaschutz durch Kapitalanlagen, for the BMU (German Ministry of the Environment)[4] in 2010, examined how sustainable and climate-friendly investments contribute to the shift of economic resources towards GHG-mitigating activities. Dierks et al. point out that if the world's climate-protection goals are to be met, colossal sums of money must be redirected. The IEA (2008) stipulates that for the energy sector alone, the required sum—annually—is €770 EUR billion (Dierks et al., 2010, p.10). For Germany to achieve its climate-change targets (a 40% reduction of GHG emissions by 2020), the country requires an additional annual investment (based on 2010 levels) of €30 EUR billion (BMU, 2008 in Dierks et al., 2010, p.10). Noteworthy for the purpose of this thesis is that the majority of these investments will have to come through private financial markets (stock exchanges, bond markets, etc.), because 86% of the world's capital flows through these markets (UNFCCC, 2007 in Dierks et al., 2010, p.10).

The UN has been made aware of the financial sector's role in climate-change mitigation since the organisation's first major response to climate change during the 1992 Earth Summit in Rio de Janeiro. The covering letter of the Rio Resolution, submitted to the Rio Earth Summit in 1992 from the International Social Investment Community, stated:

> "*Financiers are the pump primers of the global economy—they can withdraw funds or give their full support to any enterprise. They can therefore uniquely and powerfully influence the course of industrial development so that it is compatible with the sustainable development agenda.*" (UNEP's Finance Industry Initiatives, 2002, p.13)

The UN appears to recognise the need for the financial sector's cooperation in order to achieve global GHG emissions-reductions targets. In July of 2013, the global head of carbon markets for the investment bank BAML (Bank of America Merrill Lynch) was appointed by the UN to advise and represent businesses in developed countries (Point Carbon, 2013b). The banker from BAML will advise the UN board for the Green Climate Fund, a UN fund that intends to raise $100 US billion in climate finance, per year, by 2020 (Twidale, 2013).

[4] Original: *Bundesumweltministerium*

1.5 RISK AND MATERIALITY

The term "climate-change risks" will be used throughout the thesis to denote all risks related to climate-change. This includes risks that are:

1. known, such as a European energy company's obligations under the EU-ETS (European Union Emissions Trading Scheme);
2. estimated, such as those based on policy drafts for legislating carbon taxes;
3. hedged against, such as assets that are insured (such as coastline hotel resorts) or mitigated through traditional hedging (such as is done with many offshore oil platforms threatened by extreme weather events); and
4. unknown, such as new risks not yet under consideration.

These risks take on greater significance for the financial sector, specifically because of its role as a multiplier industry. Because of its interdependent relationship with all industries, the financial sector has to not only manage its own risks, but also to some degree the risks of all the industries it has interests in.

Research into the role of the financial sector concerning climate change began emerging more regularly after 2005, the year the Kyoto Protocol became international law. The IEA's publication Issues behind Competitiveness and Carbon Leakage: Focus on Heavy Industry (2008), along with Labatt and White's Carbon Finance (2007), and Freeman and Kolstad's Moving to Markets in Environmental Regulation (2007) point to three challenges for the financial sector. The first challenge for each financial organisation is to manage its own emissions-reductions responsibility and comply with reporting and regulatory disclosure requirements which, in the financial sector, are straightforward (although they can be costly) and can be done through a more efficient use of energy and other administrative changes and undertakings. The second challenge for the sector is to provide products and services that will help both adaptation and mitigation to the economic risks of a GHG-constrained society. The third challenge is to manage climate-change risks in investments. Given the need to manage their own emissions affairs, to keep abreast of those of their clients, and still to develop financial

products to compete in new ET markets, companies in the financial sector experience a burden with climate change unlike that of any other sector.

The risks are new, often unquantifiable, and include multiple layers of variables. Moreover, although they present risks with significant potential losses, they are still considered "immaterial" by banks. The concept of materiality is analysed in this thesis from chapter 3 onwards; however, because the concept is used throughout, an early definition is warranted: a risk, quantifiable or not, is deemed "material" when its occurrence can have a major direct or indirect impact on a company's (e.g. a bank's) capability to take risks. "Major" is defined by pre-determined quantifiable thresholds for all major risk categories except reputation risk. Reputation risk is analysed by banks—at best—as an acknowledgeable, but unquantifiable grey zone. Because of this, banks vary widely in their attempts to mitigate it.

Challenges abound regarding climate-change risks, such as those driven by changes in GHG regulations. In the spring of 2013 this scenario was seen in Australia where billions of Australian coal dollars—spent to develop new coal resources—were put at risk of being "stranded" (Point Carbon, 2013c). A national regulatory change caused Australia's main export markets to begin cutting coal use in order to meet the nation's climate targets (Point Carbon, 2013c). Banks regularly survey regulatory landscapes and can shift their capital out of such investments, but not necessarily fast enough, and not without some degree of loss.

Not only on a national scale do such risks play out, but also on an international scale. The viability of the world's five biggest multinationals (i.e. Chevron, Exxon Mobil, Petrobras, Petrochina, and Royal Dutch Shell) depends on the world's economies' stances on GHG emissions, and how much firms will have to pay to emit GHGs (Kemper and Martin, 2013).

1.6 RESEARCH FOCUS

Two main points made so far are worth recapping:

1. climate-change risks are ubiquitous and threaten change—to some degree or another—to all industries and nearly all economic activities;

2. the overwhelming majority (86%) of the world's capital flows through stock exchanges and other financial (i.e. including commodities) markets.

Deducible from these two facts is that these risks would most often threaten the capital in financial markets, such as investments in Australian coal or Exxon Mobil shares, and would do so (very roughly stated) 86% of the time.

Financial organisations have robust risk-management systems that categorise risks according to a host of varying criteria. Risks that threaten overall market conditions show up on risk radars of financial organisations as "market" risks. A market risk is one that threatens losses to an investment due to variables that that affect the overall performance of financial markets, such as movements in the prices of commodities, recessions, political or interest-rate changes, and so on (Basel Committee on Banking Supervision, 2006, p.171; Investopedia, 2013). Because market risk cannot be eliminated through diversification, it is also called "systematic risk" because it is "in" the system (Investopedia, 2013).

Financial organisations have yet to find standard approaches to market risks stemming from climate-change. Such market risks will gain significance (or "materiality") to investors when ET schemes are mandated and regulated by governments, and/or when GHG emissions reductions are legislated and carry penalties (such as sanctions, fines, or taxes) for non-compliance. So far, few theoretical approaches that examine the integration of climate-change risks into credit ratings have been attempted (Onischka, 2009 in Dierks et al., 2010, p.8). A 2013 investor briefing from the UNEP FI (United Nations Environment Programme Finance Initiative), Portfolio Carbon, quotes the Chief Financial Officer of Allianz Climate Solutions:

> "*Carbon accounting for investments and loans is in its infancy in the financial services sector. As it may become more important in future, it is essential to look diligently at this complex issue, and to start exploring corresponding approaches and methods today*." (Karsten Löffler, Chief Financial Officer, Allianz Climate Solutions, in Coello and Fischer, 2013, p.31).

Although most global capital flows (86%) occur through financial markets, the other 14% occur through other means, such as private equity and debt financing in companies that are not publicly traded. The sums of capital flows are smaller, but still

significant. An example from 2008: worldwide private equity investments into renewable-energy companies totalled $13,5 US billion (UNEP FI, 2009 in Dierks et al., 2010, p.10).

Financial organisations are, however, taking actions to prepare for climate-change risks as they slowly gain material significance. These advances include the development of GHG-based risk-management institutions such as policies, programs, rules, methods, and investment criteria. These approaches do not address market risks directly; instead they address non-market risks. Some major non-market risks are:

1. credit risk: the risk of loss if a borrower or counterparty fails to pay in transactions from direct lending, investment, hedging, and trading activities;
2. operational risk: the risk of loss resulting from failed or inadequate internal processes, people, and systems, or also from external events;
3. legal risk: the risk of litigation or criminal/regulatory proceedings against a bank, as well as exposure to fines, penalties, or punitive damages resulting from supervisory actions, as well as private settlements;
4. reputation risk: the risk of stakeholders' perceptions of a bank's reputation deteriorating, especially due to business ethics and moral judgments;
5. business risk: the risk of a company—to which the bank has a capital or debt interest—suffering a reduction in profits and finding itself unable to further cut costs as a result of poor planning, failed strategies, and/or changes in the business environment (Basel Committee on Banking Supervision, 2006, p.97, 144; BNV-Annual Report, 2010, p.69).

To mitigate these risks, new climate-change risk-management institutions are being developed by banks worldwide, regardless of regional or national ET schemes underway or other forms of government support for climate-change market development and institutionalisation.

The financial organisations' institutional developments (many initiatives had begun decades before the Kyoto Protocol's ratification) form the seeds from which the financial companies' subsequent approaches to climate-change risks are growing.[5] This

[5] Peter Höppe, Head of Geo Risks Research/Corporate Climate Centre of the insurance multinational Munich Re, relates that Munich Re had begun such developments as early as 1973 (Höppe, 2013).

thesis studies the institutional diffusion of climate-change risk-management institutions—particularly those addressing non-market risks—in major banks. The sooner major financial organisations understand climate-change risks and learn to mitigate them in their investments, the faster one can expect to see more capital flows towards endeavours that embrace the new status quo, i.e. climate-friendly investments.

1.7 RESEARCH SAMPLES

These innovative forms of risk-management institutions are based on variables drawn from climate-change risks that are often:

1. broad and vague, such as the varying degrees of implementation of global rules, such as those from the Kyoto Protocol;
2. immeasurable, such as increased hurricane risks to oil platforms;
3. unquantifiable, such as: how should the financial materiality of reputation risk appear on a spreadsheet?;
4. unpredictable, such as the prices of ET credits, such as CERs (Certified Emissions Reductions); and
5. based on the interactions of multiple parties, such as those present in a "scope 3" carbon supply-chain or product life-cycle inventory.

These differences result in more layers of complexity when studying the institutions. Emphasis must be placed on the inter-relatedness of each bank's stakeholders. The institutions vary from one organisation to another and are therefore best studied in combination on a company (case-by-case) basis. Using groups of case studies as representative samples of a given country's banking industry allows hypotheses to be made about the institutional effects on (1) the company itself, (2) the stakeholders in question, and (3) on the financial environment as a whole.

The research methodology, discussed in the next chapter, required the identification of appropriate cases (companies). Choosing cases required compromise in order to re-solve a paradox inherent in the research demands: on the one hand, studying the new institutions required a significant level of detail, which meant that the number of cases had to be small; on the other hand, the samples of cases had to be maximally-

representative of the world's most influential financial companies. An inclusive solution to this challenge was to study outlier cases.

As mentioned earlier, new institutions are being developed by banks, worldwide, regardless whether their governments implement and enforce Kyoto-based institutions. The Kyoto Protocol splits the countries of the world into categories called Annex-1, Non-Annex-1, and Annex-2 countries. It categorises countries according to their contribution to global warming and their potential to pay for its remedy. For this reason, the cases to be studied were chosen from Annex-2 nations. These nations have a unique institutional framework that separates them—and hence, their bank's potential involvement in ET markets—from Annex-1 and Non-Annex-1 countries. Annex-2 nations have the Annex-1 category's mandated GHG reductions, plus the expectation to pay for the costs of climate-change mitigation and reduction in developing (non-Annex-1) countries. Of the world's banks, those of Annex-2 nations have the biggest influence on climate change and driving investments into climate-change mitigation endeavours. The 24 nations that make up the Annex-2 category are the world's most prosperous countries with tens of thousands of banks and financial organisations within their jurisdictions.[6]

Fortunately, ongoing studies by NGOs and research organisations rank the performance of governments based on their adherence to—or neglect of—their commitments to implement climate-change institutions. The Climate Change Performance Index, a study running annually since 2006, ranks the world's 60 heaviest GHG-emitting nations along a continuum. It is from this continuum that the outliers, or "extreme" cases of adherence and negligence were chosen for further research. Research samples of banks were chosen from two sample countries—one on either end of the performance continuum—then compared as dichotomous types of the same phenomena.

The two sample countries, from which the companies were chosen, are Germany and Canada. Canada was ranked the second-worst performing country both in 2009 and 2010, and in 2012 it moved up to the eighth-worst spot, sharing the bottom ranks with countries such as Saudi Arabia, Iran, China, and Kazakhstan (Germanwatch, 2009; 2010;

[6] The 24 nations (and 1 international economic community) constituting the Kyoto Protocol's Annex-2 category are: Australia, Austria, Belgium, Canada, Denmark, the European Economic Community, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom of Great Britain and Northern Ireland, and the United States of America (UNFCCC, 2000).

2011; 2012). Canada was outperformed every year since 2009 by the hitherto most resistant country to the Kyoto Protocol, the United States (Germanwatch, 2009; 2010; 2011; 2012). Germany, on the other hand, is at the forefront of climate-change mitigation and has been among the top five performers every year of the study (Germanwatch, 2006; 2007; 2008; 2009; 2010; 2011; 2012). Germany made an ambitious commitment to reduce its emissions by 21% and thereby take on a considerable role in fulfilling the EU's GHG emissions-reduction commitment (Umweltbundesamt, 2011, p.54). By 2009, Germany had already surpassed its goal with a 25,3% reduction (Umweltbundesamt, 2011, p.55).

1.8 RESEARCH QUESTION AND HYPOTHESIS

This thesis makes two theoretical contributions and proposes one recommendation to be carried out by bank shareholders and members of civil society. All are based on the thesis' driving theme of both increasing and speeding up the financial sector's prioritisation of climate-change. Moreover, they are derived from the empirical data used to compare both samples of banks.

The differences between Germany's and Canada's national approaches to climate change are reflected, to some degree, in their financial industries. Each sample of major banks represents a somewhat different way of approaching climate-change risk management.

In Germany, where legislation mandates nation-wide (albeit industry-specific) GHG restrictions, banks tend to operate under a framework for climate change that is more regulative than constitutive. Companies with GHG restrictions must adapt their business-as-usual operations to the new rules. Although banks have no climate-change rules placed upon them directly, they do have a fiduciary duty to mitigate material risks as much as possible, even if those risks are unquantifiable, such as the reputation risks of investing in heavily-polluting industries. Some climate-change risks (for example, ET risks concerning financial transactions with companies targeted by the EU-ETS) are systematically abated through the use of protocols or criteria-based checklists which evaluate the firms' (i.e. those receiving money from the investing party) standings

concerning their (legally-mandated) ETS (emissions-trading scheme) allowances. In the essence of a free and competitive market, the German financial organisations vary in their use of such institutions and methods; they also experiment and innovate in order to adapt to an emerging, regulated market.

In Canada, where no nation-wide legislation regulates GHG emissions, banks operate under a constitutive framework for climate change: banks decide how to approach climate-change risks according to the perceived best-practices of other banks, recommendations by influential third-party organisations such as the CDP (Carbon Disclosure Project), and the bank officers' interpretations of the international institutions (i.e. the Kyoto Protocol and its market mechanisms). Canadian banks manage climate-change risks primarily through the internal implementation of organisational programs, such as CSR (corporate social responsibility) programs, and through organisational adherence to standardised criteria, such as SRI (socially-responsible investment) protocols. There are initiatives, specifically in the realm of credit-risk management, that are very similar to those undergoing development in Germany. But the majority of the institutional development in Canadian banks is voluntary—even from a fiduciary standpoint—and not based on any direct (i.e. the banks' own GHG emissions, which are nominal) or indirect (i.e. the GHG emissions of the companies banks invest in) legal framework. Canadian banks employ, with little variation, a very similar "mix" of institutional initiatives to those in Germany that constitute an informal best-practice benchmark for the world's major banks.

Both the Canadian constitutive and the German regulative-based risk-management institutional developments are based on the Kyoto Protocol's compliance mechanisms. Neoinstitutional theory, along with the enterprise-wide risk-management model and concepts from the Basel Accords (primarily I and II, but also III) are used to show how and why the institutions have been diffused differently (and in many regards, so similarly) in each sample.

This thesis contributes to the advancement of neoinstitutional theory by building upon Scott's "encompassing framework" of institutional theory as it relates to

organisations (Scott, 2008, p.vii).[7] This thesis' first theoretical contribution confirms the utility of Scott's triple significance of analyses of institutional diffusion in explaining, from three angles, the new climate-change risk-management practices in German and Canadian banks. The triple significance in analysing institutional diffusion suggests that diffusion: 1) is characterised by the strength/reach of institutional structures; 2) follows different principles and has different institutional effects because of the changing strength/reach of the institutions; and 3) changes institutions convergently, i.e. existing patterns reinforce or challenge the spread of new institutions (Scott, 2008, pp.132-3). For simplicity's sake, this thesis uses the terms 1) institutional "strength", 2) institutional "effects", and 3) institutional "roots" to refer to these three viewpoints, respectively. These three viewpoints form the theoretical framework for understanding how and proposing why the institutions in the bank samples are diffused the way they are.

The theoretical framework sets the grounds to approach the thesis' driving theme: what can propel the financial sector to begin investing more heavily into climate-change mitigation endeavours and less into environmentally-destructive activities? Given the differences between the bank samples, a logical step in answering this question would be to compare the utility of both approaches. Therefore the driving theme (concerning speed) reformulated into a question would be: which mix of institutional diffusion addresses—more thoroughly—climate-change risks for financial organisations? In other words, does the institutional diffusion in constitutive institutional environments, such as the efforts by Canadian banks to implement corporate programs and adhere to general, global, standardised criteria, sufficiently address climate-change risks? Or do such schemes simply measure a degree of alignment with status quo industry norms? On the other hand, does the institutional diffusion in environments that are more regulative, such as the German banks' ongoing R&D (research and development) of screens and questionnaires which, for example, verify firms' mandated adherence to GHG emissions allowances, sufficiently cover climate-change risks?

At the outset of this thesis' research, it was assumed that reliance on institutional initiatives developed in constitutive institutional environments, which is the current

[7] Scott (2008, p.vii) calls the existing literature on institutions and institutionalisation processes a "*jungle of conflicting conceptions, divergent underlying assumptions, and discordant voices*." His framework gives clarity to the literature traditions by showing their underlying commonalities.

practice of the Canadian banking industry, created a greater risk exposure to climate-change risks than the type of institutional diffusion occurring in German financial organisations in their more regulative institutional environment.

The research data suggested that this original hypothesis had some, but limited explanatory value. Climate-change risks are real and do threaten banks in many ways; however, because regulatory (legal) developments in both countries are still too weak to meet the technical requirements of standardised financial instruments, most climate-change risks have still not attained the status of "materiality" to the banks. The financial industry requires stable rules that can be quantified and incorporated into financial projections, models, and so on.

This discovery raised a fundamental, unexpected question while analysing the data and speculating for theoretical explanations: why was the institutional diffusion within both samples of banks—despite their governments' opposite institutional approaches to climate-change—so similar? Why would the Canadian banks, whose government began pulling away from its climate-change commitments in 2006 (for several reasons, among them, to bolster oil-sand development), make any effort to develop climate-change risk-management institutions? Equally valid is the question directed at the German banking sample: why would German banks, whose government and region, the EU (European Union) community, are both constantly implementing new laws and regulations, have so few risk-based institutional developments concerning the trillions of Euros invested in endeavours that induce climate change?

It appears that a lack of legal regulations leaves most banks without the means, economic necessity, or possibly even the motivation to develop climate-change risk-management institutions for market risks, asset management, and portfolio exposure in general. Instead, most banks focus on a less tangible, but more easily-obtainable feature of taking a stance that supports climate-change mitigation: reputation.

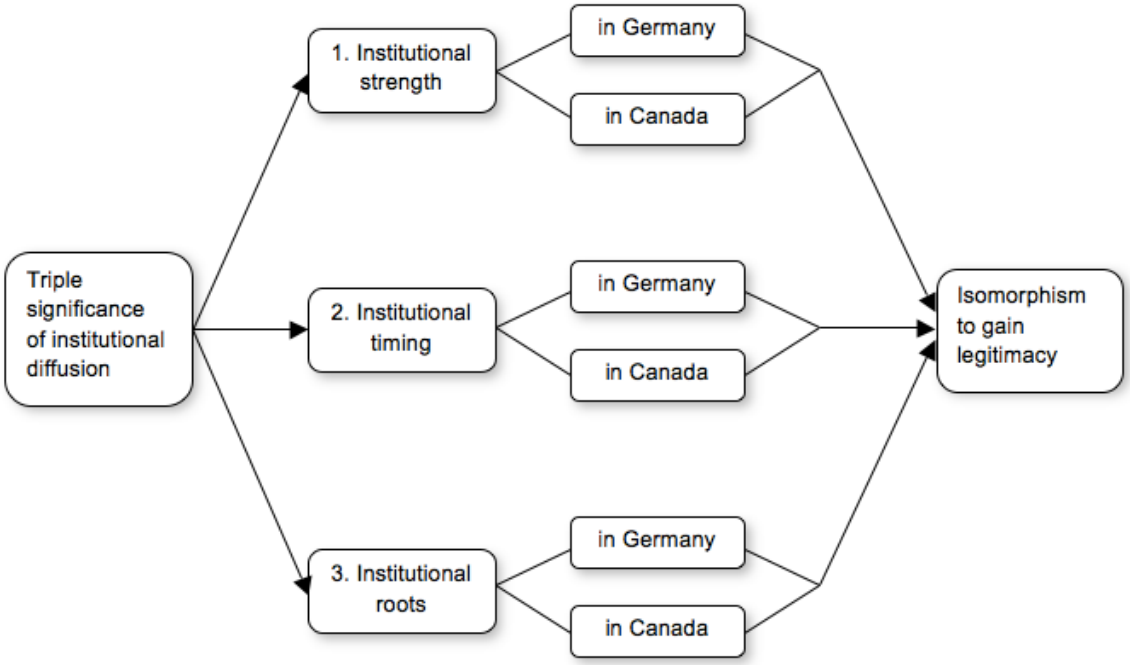
The hypothesis of this thesis is that the banks' institutional developments in order to mitigate climate-change risks help the banks gain legitimacy and protect their reputations. Whether reputation and legitimacy are the main reasons why the banks go to the trouble of diffusing climate-change risk-management institutions throughout their numerous departments and business units—given that the risks are

immaterial in the first place—is a matter of speculation. Regardless, these efforts bolster the banks' reputations.

Growing out of this discovery is a second theoretical contribution—made within the explanatory framework of Scott's triple-significance structure—which reinforces Meyer and Rowan's claim that:

> "*Independent of their productive efficiency, organisations which exist in highly-elaborated institutional environments and succeed in becoming isomorphic with these environments gain the legitimacy and resources needed to survive*" (Meyer and Rowan, 1977, p.352).

Figure 2: Theoretical framework and contributions



Lastly, in light the thesis' original driving question about how to increase and quicken the financial sector's prioritisation of climate-change, the following recommendation is suggested in the thesis' conclusion: even though governments are delaying to pass firm climate-change laws (i.e. legally-mandated GHG reductions), there is another way to speed up the banks' development of climate-change risk-management institutions to a level of effectiveness and efficiency on par with the banks' standardised,

Basel-based risk-management institutions: integrated reporting that requires increases in disclosure and transparency for banks' portfolios and activities where climate-change plays a role—whether "material" or not. Even if banks continue to invest heavily in GHG-intensive industries—because an absence of effective climate-change legislation allows it— if their contributions to climate-destructive activities were exposed to the public, banks would take swift, decisive actions in order to protect their reputations and legitimacy.

1.9 PROJECT STRUCTURE

This thesis has three core tasks: to describe the research, explain it conceptually, and contribute to the growth of institutional theory. All three tasks are performed throughout the thesis.

Describing the research entails presenting the hypothesis through the results of the empirical data collection, i.e.: 1) a study of current literature, both scholarly and industrial (including news media), and 2) the data collected through a combination of document analysis and interviews with both executives and industry experts in German and Canadian financial organisations. The research focused on drawing comparable data from each sample of cases (banks or financial organisations) in order to describe the diffusion of climate-change institutions through the banks' risk-management systems. A major part of this task is presenting the banks' stakeholders and institutions that comprise the institutional environments of each bank sample.

The project's second core task, conceptual explanation, clarifies the hypothesis by discussing the empirical findings through institutional and neoinstitutional theory. Concepts from enterprise-wide risk management are also used to clarify how the institutions work synergistically within the myriad of complex, linking institutions that exist extra, inter, and intra-departmentally within financial organisations.

The third core task, making a theoretical contribution, is done by empirically evaluating specific arguments of institutional theory, exploring the benefits and limitations of their definitions and conceptual formulations, and suggesting areas where they might need to grow. Moreover, the thesis confirms and elaborates,

1. firstly, on the utility of the triple-significance approach to analysing institutional diffusion (Scott, 2008, pp.132-3); and
2. secondly, on Meyer and Rowan's (1977) assertion organisations gain legitimacy by becoming isomorphic with their institutional environments.

The presentation of the thesis' strategy for acquiring empirical data (**Chapter 2: Research Methodology**) is presented along with highlights of its strengths and weaknesses. The research methodology is described in considerable detail because both its design and execution in the research field had to accommodate the idiosyncrasies of the banking industry (such as privacy concerns, etc.). This determined which types of data were available, and what could be published in this thesis.

Chapter 3: Institutions and **Chapter 4: Risk** show a contradiction between both the vague nature of climate-change risks and the international institutional developments that address them, and the high degree of technical, quantifiable requirements implicit in the highly-elaborated institutional environments of the financial industry. Chapter 3 exposes the banks' key stakeholders and institutions regarding climate change through Scott's three-pillar model of institutions. Chapter 4 shows how banks engage climate-change risks, i.e. using their standardised, enterprise-wide risk-management frameworks based on the Basel Accords. The chapter concludes with an overview of Scott's triple-significance framework for analysing institutional diffusion, the final piece in the foundation for the theoretical analysis of the next three chapters.

Chapter 5: Institutional Strength discusses how a lack of institutional strength (vagueness, and a lack of enforcement) in the external regulatory institutional environment severely limits the possibilities of top-down diffusion. Therefore, the banks gain legitimacy by "institutionalising" far beyond the scopes of the limiting regulatory requirements.

Chapter 6: Institutional Effects shows the consequences of the banks' institutionalisation beyond the top-down (regulatory-based) mode of institutional diffusion. The banks study their institutional environments and diffuse institutions in a bottom-up manner, i.e. with purposeful isomorphism and thereby gaining legitimacy within their environments. Most initiatives in the institutional environments are not

based on regulatory requirements; they are predominantly based on the normative and cultural-cognitive pillars of institutions.

Chapter 7: Institutional Roots explores the reasons why the banks diffuse certain institutions, and ignore other possibilities, such as the need for climate-change risk-management practices for asset management and market risks. The concept of institutional agency—a power-play that is "fought out" between pre-existing and emerging institutions—explains the logic behind horizontal diffusion and how the banks favour legitimacy and protecting their reputations over the need innovate means to address more complicated issues, such as climate-change risk materiality.

These chapters show the synergy between Scott's (2008) triple significance of institutional analysis and Meyer and Rowan's (1977) claim concerning the achievement of legitimacy through institutional isomorphism. Each of the chapters 5, 6, and 7 highlight the benefits (such as innovation and learning) and dangers (such as avoiding the main problem of supporting climate-destructive activities) of giving priority to reputational gains in top-down, bottom-up, and horizontal institutional diffusion.

Chapter 8: Conclusion proposes that integrated reporting and the increased disclosure and transparency of banks' portfolios and activities, i.e. those in which climate-change plays a role, would expose the banks' interests in climate-destructive activities, and would threaten the banks' reputations. Given the priority the banks place on protecting their reputations and legitimacy, it appears evident that banks would speedily take action to protect them. This would make a strong case for the development of robust risk-management institutions necessary for the significant shift of capital resources towards climate-friendly endeavours, as opposed to diffusing institutions that circumvent the problem. If governments wish to continue to delay legislating firm rules, then shareholders and civil society can take a pro-active role in engendering this change.

CHAPTER 2: RESEARCH METHODOLOGY

2.1 INTRODUCTION

This thesis grew out of two pilot studies:

1. "CSR Programs and Investments for Risk Management in Canadian Banks" (Robertson, 2011a);
2. "Post-Kyoto GHG-Offset Project Eligibility Criteria" (Robertson, 2011b).

Pilot studies can refine procedures, determine the feasibility of a larger study, and give insights into how a larger, subsequent study should be constructed (Krathwohl, 1988; Maunch and Park, 2003). These two pilot studies were presented in 2007 and 2008, respectively, at the "Emissions Trading and Business Workshops" in Lutherstadt Wittenberg, Germany. The research results, combined with feedback from the workshops' researchers and the methodologies of their studies, influenced this thesis' development of a research methodology.

Research for the first paper took a top-down view of climate change as seen from the leadership of some of the world's largest banks. The paper examined Canadian banks and the types of policies and programs used to approach climate change and mitigate reputational risks. The results suggested a conundrum. The banks all maintained a similar mix of policies, programs, and institutional alignments (e.g. memberships in environmental industry groups) that did little to directly address emerging climate-change risks. During that time, the Canadian government was expected at any moment to legislate nation-wide GHG restrictions. However, even if those regulatory mandates had been fully executed throughout the country and observed by the banks, they still would not have addressed all the types of climate-change risks that threaten banks. This risk exposure was overlooked by most of the banks because their use of institutions was a *de facto* best-practice benchmark against reputational risks stemming from climate change.

Research for the second paper, Post-Kyoto GHG-Offset Project Eligibility Criteria, took a bottom-up view of climate change from the project or "ground" level. The paper examined bottlenecks and problems faced by GHG-offset project developers who combined both the Kyoto Protocol's flexible mechanisms (such as the CDM) and

investment capital (from banks or elsewhere) to create wind-farms, biogas plants, etc. Two insights emerged from this analysis. Firstly, the institutions themselves, such as the requirement for a project to pass mandatory audits, i.e. a "validation" or "verification," and then achieve UN approval (e.g. that of the CDM Executive Board) were neither consistent in execution nor reliable in terms of producing the intended results. Secondly, the institutions were slowly improving, undergoing revisions, and gradually moving towards more technically-based institutional processes.

One major difference stood out between the papers: although in both cases the topic was global climate-change institutions, the Canadian banks researched in the first paper had minimal market experience with the Kyoto Protocol's flexible mechanisms. On the other hand, the second paper's research subjects—the project developers, auditors, institutional agents, and investors who were driving the ET industry—were predominantly European, or European branches of American or Australian companies. A preliminary review of the corporate communications and press releases of several Canadian and European banks showed that they addressed climate-change risks and opportunities to varying degrees. This finding suggested that the banks' executive management committees in both continents were keenly aware of pending GHG legislative developments in their countries: developments that would eventually mandate GHG restrictions on entire industries in which the banks had significant interests. Nonetheless, the European and Canadian companies approached climate-change risk-management institutions differently.

This chapter examines how a research methodology was designed to create two samples of financial organisations in order to compare their diffusion of climate-change risk-management institutions. This chapter's aim is to make transparent the methodological elements upon which the thesis is based, to expose the methodology's strengths and weaknesses, and to describe the methodology's evolution and modification in the course of actual research. The selection of two macro (i.e. country) samples, from which the banks were chosen, is discussed in Appendix 1: Sample Selection, alongside a presentation of the economic and climate-change institutions that determined which countries would be sample candidates.

This chapter has nine parts. Following this introduction, the chapter's second part has two sections that outline the methodology's theoretical base. The chapter's third part has three sections that explain the methodology's epistemological approach, goals, and methods. The chapter's fourth part has four sections that draw attention to the need for a flexible, qualitative research model that would fit the specific requirements of the hypothesis, research field, and available data.

The fifth part has five sections that present the methodology's two main data categories. The chapter's sixth part has three sections that highlight the main points in executing the first half of the methodology, the documentation analysis. This chapter's seventh part has nine sections that reveal the criteria used to select the two research samples of financial organisations.

The chapter's eighth part has eight sections that cover the second half of the methodology's execution, the interviews. These sections emphasise how the interviews were tailored to explore missing links and expose extra layers of information among those uncovered in the documentation analysis.

The ninth and final part concludes the chapter by showing the quality-assurance check applied to the research data prior to its systematic review for conceptual development and theoretical speculation.

2.2 THE METHODOLOGY'S THEORETICAL BASE

This chapter's second part has two sections (not including this introductory section) that outline the methodology's theoretical base.

2.2.1 PARADIGM

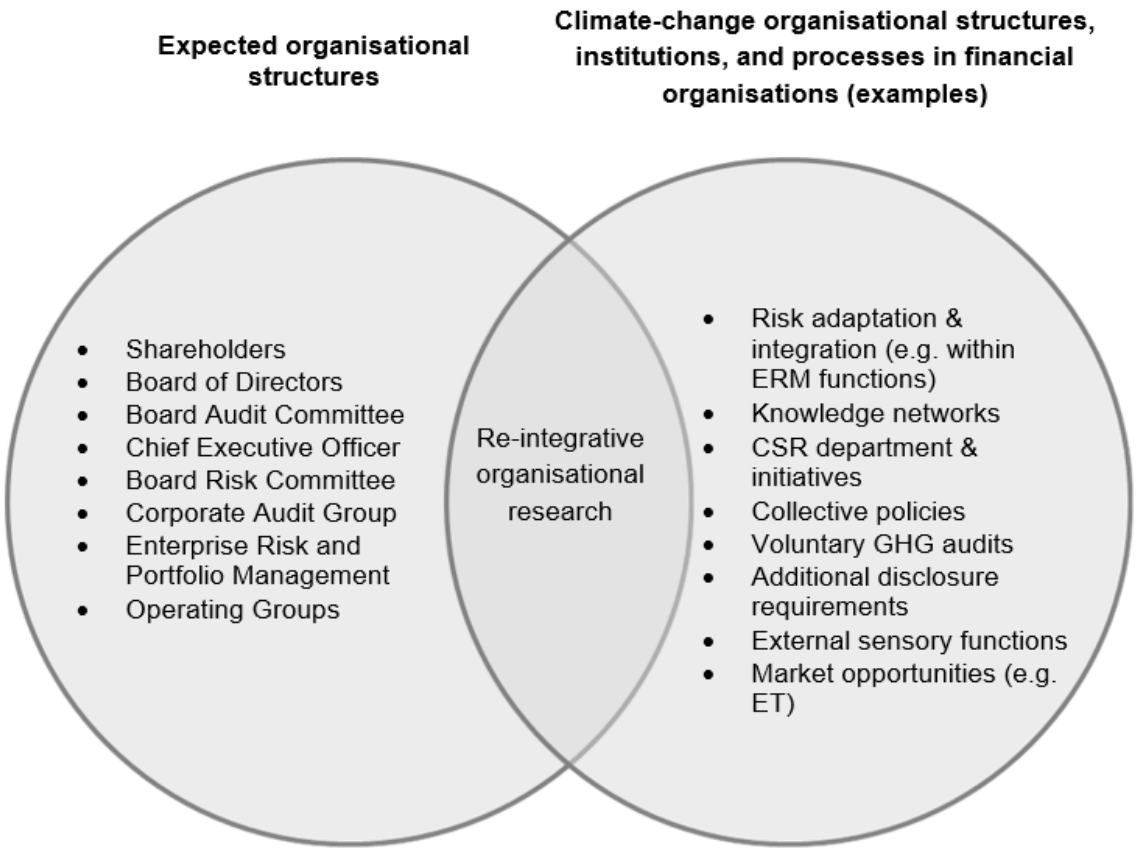
The research methodology was designed to investigate the diffusion of climate-change risk-management institutions in organisations. In Vogd's book Rekonstruktive Organisationsforschung, two viewpoints are proposed to explain how one can approach the study of organisations and institutions. The first viewpoint sees organisations as objects formed according to purpose-driven hierarchies (Vogd, 2009, p.7). In this

paradigm, hypotheses typically test the organisation's effectiveness and efficiency in attaining its "purposes," such as an increase in market share, etc. The second viewpoint is research that rejects or avoids the "objectification" of the organisation, and instead sees organisations as phenomena comprised of dynamic, ever-changing processes, rules, and objectives (Vogd, 2009, p.7).

This thesis' methodology integrates both approaches, and thus can be called an attempt at "re-integrative" organisational research. The climate-change risk-management institutions are studied according to their implementation within expected organisational structures, and thus the research embraces the first viewpoint: the "objectification" of the organisation. In this case, the expected organisational model is the banks' ERM (enterprise-wide risk-management) structure which is based on guidance from the Basel Accords. The Basel Accords (I, II, and III), issued by the BCBS (Basel Committee on Banking Supervision) in Basel, Switzerland, are international supervisory treaties on how banks should be regulated.

This thesis' methodology also embraces Vogd's second viewpoint which sees organisations as phenomena comprised of evolving institutions. Although the banks are studied according to the ERM organisational model, the institutions themselves are approached in an explorative, open, qualitative manner—i.e. without a fixed, expected form—because these institutions are still undergoing development. In summary, the institutions' diffusion is examined as a processual, dynamic phenomenon within the context of an organisational purpose: risk-mitigation for the banks' activities. Thus the two approaches are fused or "re-integrated" and theoretical insights are drawn from the degree to which the new institutions are integrated into the greater ERM system.

Figure 3: Re-integrative organisational research



Writing in the tradition of Durkheim, Foucault, and Merton about interpretive paradigms and the sociology of knowledge, Schlücker affirms that a theory should, as simply and elegantly as possible, encompass the concepts and testable hypotheses of clearly-defined relationships between phenomena (Schlücker, 2008, p.268). In other words, a theory should plainly fit the relationships among the phenomena that it proposes to explain. Scott (2008) cites the works of Knudsen (1993) and Langlois (1986) and brings together three themes that underlie the development of neoinstitutional theory. These three themes lend themselves to this methodology's focus in the following ways:

1. in neoinstitutional theory "*a broader conception of the economic agent is embraced, replacing the assumption of maximizing within a set of known alternatives*" (Scott, 2008, pp.26-27).
    - ET, renewable-energy investments, and other climate-change institutional developments provide miniscule profits to banks compared to conventional financial products and services. Therefore, banks are not simply maximising their benefits by participating in

these markets. In many cases, the opportunity costs of participating in these markets are higher than the returns. There are other reasons to participate.

2. Neoinstitutional theory focuses on "*the study of economic processes rather than on the purely logical study of equilibrium states and a recognition that economic systems evolve over time, reflecting, in part, learning by the agents*" (Scott, 2008, pp.26-27).
    - Climate-change risk-management institutions and their usage are evolving from year to year. They are also designed to evolve and eventually adapt, in the near future, to different GHG-regulatory scenarios.
3. Neoinstitutional theory views "*the coordination of economic activity not simply as a matter of market-mediated transactions, but as many other types of institutional structures that are important topics of study*" (Scott, 2008, pp.26-27).
    - In many (if not most) large banks, the climate-change risk-management institutions are equally (or even more) focussed on stakeholder management, reputation building, and knowledge transfer than on market transactions.

Neoinstitutional theory encompasses the viewpoints shared by Vogd, namely that organisations have purpose-driven structures with processes, rules, and objectives that are always evolving. As stated in the last chapter, "institutions" in this thesis refer to structures, i.e. rules, norms, guidelines, and practices—formal or informal—that are based upon concepts (e.g. ideas, notions, doctrines, interests), that employ regulative and constitutive rules to govern activities, and that are always strengthening or weakening. The last part of this definition, the strengthening or weakening of institutions, is borrowed from Tolbert and Zucker who delineate institutions not only according to their states of existing social orders, but also as processes that include institutionalisation and de-institutionalisation (1996). This specificity was central to the methodology's use of field-research methods that were executed over a defined period of time (from 2009 to 2012), as opposed to a snapshot approach. The latter would have yielded little concerning the processual change of institutions.

Alongside neoinstitutional theory, the organisational model and concepts from ERM (as defined by the Basel Accords I, II, and III) were also necessary pillars for the methodology. These served to map out which of the banks' countless (and often overlapping, mutually-dependent, and even contradicting) institutions were relevant to the study. These concepts also served to explain what certain financial risk-management institutions do: e.g. some enable the organisations' sustainable competitiveness, such as credit-spread risk measures, while others—such as KYC (know-your-customer)—protect the organisation from profit loss, reputation damage, lawsuits, regulatory sanctions, etc. The following table outlines the thesis' foundational theoretical elements, i.e. the paradigms from which the phenomena are observed, the two main theories used to explain the data, and the hypothesis to be examined.

Table 1: Foundational theoretical elements

Term	Meaning	Use in methodology
Paradigms ⇩	Frameworks for looking at reality	Neoinsitutional paradigm: "*Organisational environments consist of institutionalised structures of expectation that continually leave their mark on the design of organisations*" (Own translation) (Walgenbach and Meyer, 2008, p.11).[8] -and- ERM paradigm: A corporation manages all of its risks within a coordinated and strategic framework, as opposed to managing one risk at a time, on a largely compartmentalised and decentralised basis (Nocco, B. and Stulz, R., 2006, p.8).
Theories ⇩	Ideas deriving from paradigms used to explain phenomena	Institutional diffusion has a triple significance for institutional analysis: (1) institutional strength/reach, (2) the effects of institutional adoption, (3) institutional (convergent) change (Scott, 2008, pp.132-3). -and-

[8] Original: „*Die Umwelt von Organisationen besteht aus institutionalisierten Erwartungsstrukturen, die die Ausgestaltung von Organisationen nachhaltig pragen*."

Term	Meaning	Use in methodology
		"*Independent of their productive efficiency, organizations which exist in highly elaborated institutional environments and succeed in becoming isomorphic with these environments gain the legitimacy and resources needed to survive*" (Meyer and Rowan, 1977, p.352).
Hypothesis ⇩	Testable proposition	The banks' institutional developments in order to mitigate climate-change risks are largely made in order to protect the banks' reputations and to gain legitimacy.

(Source: table format based on Silverman, 2000 p. 77; 2010, p.103)

2.2.2 RESEARCH STRATEGY

The research methodology is based on a comparative analysis of different cases. This comparative analysis had three goals:

1. to collect specific institutional data from two samples of organisations;
2. to compare the details of both data samples and derive theoretical speculations;
3. to assure a high degree of accuracy.

The third and final goal of accuracy (quality assurance) is discussed in this chapter's conclusion.

Once the data had been categorised according to a theoretical scheme (presented in the next chapter), their interlinkages were then considered and further theoretical reflections ensued.

The comparative analysis took the research from an initial stage of discovery (i.e. choosing samples of cases, then discerning each case's organisational structure and institutional activity), to more detailed description and explanation, and into theoretical speculation (i.e. concerning institutional diffusion in both samples).

A "rupture" with what is familiar is among the principle rules of using comparative methods in research (Durkheim in Jones, 1986, pp.31-34 in Vigour, 2005, p.97). Comparative analysis of different cases can also lead the researcher into unconsidered and unexpected territory, even within an area that the researcher is already familiar with. Analysing an event, situation, or case by itself is different from analysing

it in the context of other, similar cases. The latter approach of analysing cases (financial organisations) alongside other cases highlights specific factors of the cases' environment (i.e. the greater, extra-organisational institutional environment) that have the most influence on all the cases. Moreover, this approach brings those factors to the forefront of analysis, and makes the overall environment as relevant to the inquiry as the cases themselves.

Comparative analysis reveals similarities and differences among the cases as well, concerning issues such as bank-wide goals, departmental goals, role definition, stakeholder involvement, risk appetite, and so on. In short, the comparative analysis revealed how the climate-change risk-management institutions were diffused differently among individual cases, as well as between each country's samples of cases.[9]

Comparing both samples of financial organisations' institutions revealed, for example:

1. institutions that originate outside the financial organisations and have little to no direct influence on the organisations' developments of internal institutions, such as the Kyoto Protocol;
2. institutions that originate outside the financial organisations and yet highly influence the organisations' developments of internal institutions, such as the Basel Accords;
3. institutions that originate from within the banks themselves, such as environmental risk-screening methods.

2.3 THE METHODOLOGY'S APPROACH

This chapter's third part has three sections (not including this introductory section) that explain the fundamental pillars of the methodology's approach: its qualitative basis, its reliance on "top-down-up" induction, and its research methods.

[9] The research methods, discussed in the next section, approached each financial organisation as a case study, i.e. with the objective of exhaustively describing, exploring, and revealing specific information about each company's diffusion of climate-change risk-management institutions.

2.3.1 QUALITATIVE BASIS

The descriptive institutional data did not readily conform to quantification or statistical procedures that emphasise variance or probability. A qualitative approach suited the research requirements for several reasons.

Firstly, the institutions (and the data about them) had considerable overlap and interlinkages with other institutions, and therefore neither readily conformed to isolation nor quantification. Large financial companies are among the most institutionally saturated, complex, bureaucratic, regulated, and audited organisations. On an annual and often on a quarterly basis as well they must meet the demands of government agencies, third-party auditors, shareholders, news media, and so on. Studying the banks' myriad institutional approaches to a new, broad, global challenge such as climate change required a flexible research methodology that would accommodate multiple forms of data which could not all be known at the outset of research.

Secondly, institutions are always changing, either strengthening or weakening, and tend to undergo more changes when they are initially diffused as opposed to when they are later standardised and gain a more technical character. This push towards technicality is emphasised by Walgenbach and Meyer (citing Scott and Meyer [1983]) who explain that "*those who formulate institutional rules strive to make them appear technical in nature*" (2008, p.124). When institutions evolve to higher degrees of standardisation and technicality, their institutional characteristics can often be isolated for quantitative study. However, concerning the banks' diffusion of climate-change risk-management institutions, even the earliest cases of institutional diffusion (e.g. by early-movers such as Deutsche Bank or Allianz) had not yet evolved to a point of technicality that warranted attempts to isolate institutional variables. Even the most technically-evolved cases of the banks' climate-change risk-management institutions—such as DZ Bank's credit-risk mitigation tool "Sustainability Check"—were still new and undergoing changes during the study period.

Lastly, a small number of specific "core" cases was analysed in considerable detail, as well as some peripheral or "secondary" cases. Detailed institutional data from a small number of cases would render most quantitative methods far less fruitful because

such methods are designed to study correlations among large numbers of cases. Moreover, by focussing on a smaller number of cases, the qualitative approach increased the likelihood that the research would lead into unexamined and unanticipated directions, such as those pertaining to the banks' extra-organisational institutional environment.

Given the institutional data's overlap, interlinkage, types of available details, and small number of cases, the data itself was collected in two ways: in printed and observable form. Printed data included published information about the institutions: this data showed the institutions' foundations and their "public" character. The second category was observed data, the actual implementation of the institutions: this data suggested whether the institutions actually influenced the banks' openness to embracing climate-change risks in investments, or instead were mere formalities that could be overlooked.

2.3.2 "TOP-DOWN-UP" INDUCTION

The methodology's qualitative approach employed a combination of "top-down" and "bottom-up" forms of induction, a modular approach which can be called "top-down-up" induction. This top-down-up approach blended elements from top-down designs (based on the traditional scientific method) and bottom-up designs (based on analytic induction and grounded theory), and therefore used both deductive and inductive forms of reasoning. Research designs based exclusively on either top-down or bottom-up forms of reasoning neither accommodated the type of data required for analysis, nor integrated both the overarching research topic and the specific, empirically-driven hypothesis.

This thesis' two pilot studies positioned the thesis question with enough data and knowledge about the financial industry's challenges with climate change so as to warrant a top-down "frame" for the study. Maunch and Park show how top-down approaches begin with broad questions and attempt to narrow them by discovering and showing their underlying assumptions (2003, p.19). This thesis' overarching topic, raised in the last chapter and stemming from The Stern Review (2006), is how quickly the countries of the world can target the worst impacts of climate change and thereby achieve a manageable degree of economic disruption of 1% of GGDP (i.e. global "market shock"). The

dominant assumption underpinning this topic is that the speed with which the world's countries can target the worst impacts of climate change is largely a function of how quickly Annex-2 countries' financial organisations can mitigate the new risks by diffusing reliable, robust climate-change risk-management institutions. This diffusion should allow the financial organisations to drive significant sums of capital into GHG-mitigation and reduction endeavours (and implicitly, away from LSEs, such as the fossil-fuel industry). This deductive reasoning follows the logic of top-down approaches: they lead to conclusions by reasoning or inferring from general principles to particulars (Maunch and Park, 2003, p.19).

Nonetheless, a pure top-down approach would have assumed too much was already known about how and why financial organisations diffuse climate-change risk-management institutions. The foundations of banks' climate-change risk-management methods lie in global institutional frameworks, and knowledge of these institutions is required to investigate how they are subsequently diffused on national (country) levels, state-levels, and business levels. Just as the institutions are diffused into more narrow settings, so does this methodology and theoretical framework (based on Scott's triple significance of institutional diffusion) tighten in order to test a workable hypothesis using qualitative samples of financial organisations. How exactly climate-change risk-management institutions are diffused in banks, which would only be learned in the course of research and data analysis, would then serve as the empirical basis for theoretical explanations.

This inductive, bottom-up form of reasoning more accurately aligns with research methodologies based on analytic induction than grounded theory. Grounded theory begins research with both a much looser choice of methods and research boundaries, and with less theoretical premise. As stated above, the pilot studies established the research needs and the theoretical fit of neoinstitutional theory to interpret the empirical data. Cassell and Symon write that analytic induction involves "*the intensive examination of a strategically selected number of cases so as to empirically establish the causes of a specific phenomenon*" (1998, p.28). On the same hand, analytic approaches are unlike deductive ones that begin with sound theoretical structures and test those structures by meeting, in the research field, the reality of the chosen empirical domain (Wallace, 1971,

pp.16-25). Instead, the methodology here focussed on collecting data and categorising it under certain umbrella concepts such as "knowledge transfer," "stakeholder engagement," "risk identification," "reputation management," etc. These categories were too broad to merit the distinction of "codes" (as grounded theory would assign them), but instead served to classify the data and compare it among the cases.

The combination of bottom-up induction with a top-down "macro" theoretical structure also allowed neoinstitutional theory more explanatory reach than would have been permissible had the thesis followed a rigid top-down design. Writing about analytic induction, Manning shares that the modification of definitions, concepts, and hypothesis is essential to this research approach (1982, p.283). As stated in the last chapter, while the analysis of the empirical data did, as expected, confirm the utility of Scott's triple significance of institutional diffusion in explaining the new climate-change practices by the banks, it also raised a fundamental, unexpected question. This question allowed for a readjustment of the second part of the original hypothesis, i.e. that reliance on institutional initiatives developed in constitutive institutional environments created greater risk exposure. It was discovered, during the empirical data analysis that followed the field research, that more explanatory value was achieved by adjusting the theoretical focus to the **similarities** between the samples (as opposed to their differences), which yielded the conclusion that the climate-change risk-management initiatives of both samples were largely made to protect the banks' reputations and to gain legitimacy.

2.3.3 RESEARCH METHODS

This section outlines the methodology's research methods, why they were chosen, and how they were used to enable data collection from financial organisations. The chosen methods had to allow an effective attainment of the research methodology's goals: to find detailed institutional information that could be made transparent and published (a challenge because privacy is of paramount importance in the financial industry).

The research methods had to accommodate several forms of media. Scott writes that:

> "*Not only do institutions ride on various conveyances, but they also appear in multiple media forms which, as institutional carriers themselves, vary in the processes employed to transmit their messages. Moreover, institutions operate at multiple levels—from the world system to interpersonal interaction*" (Scott, 2008, p.50).

One study that embraced multiple media forms in order to review climate-change institutions was Lorenz's 2008 research titled Prudence, profit and the perfect storm: climate change risk and fiduciary duty of directors. Lorenz combined three methods to evaluate Australian directors' fiduciary duties concerning climate-change: (1) a review of relevant industry, legal, and scientific literature; (2) semi-structured interviews with specific market stakeholders; and (3) a comparative analysis of findings from these two methods (2008, p.273). The stakeholder interviews were conducted with experts identified in the study's literature review and included people from a broad range of sectors, such as the financial sector, NGOs, government departments, industry associations, etc. (Lorenz, 2008, p.274).

At the outset of research for this thesis, it was already known from the two pilot-studies that institutional practices were not sufficiently described in the banks' publically-available reports, and that interviews would be necessary to build a more reliable empirical foundation upon which theoretical analysis could be performed.[10]

Aside from the amount of time committed to research, the most significant cost of conducting interviews—such as Lorenz's choice of semi-structured interviews with specific stakeholders—is travel. This thesis' core stakeholders to be interviewed were located across Germany (Frankfurt, Berlin, Munich) and Canada (Toronto, Calgary, and Montreal), as well as in Paris (France), London (UK), and New York City (USA). Secondary stakeholders to be interviewed, i.e. to confirm and expound background information concerning industry and government, were in those same cities as well as in Ottawa (Canada) and Luxembourg City.

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[10] Günther, Nowack, and Weber (2011), who also presented their research in 2007 and 2008 at the "Emissions Trading and Business Workshops" in Lutherstadt Wittenberg, Germany, also used publically available reports (from a multinational energy company, Vattenfall) as the basis for evaluating the company's initiatives to address its climate-change risks. They concluded that the company needed to continue its development of external assessment in order to integrate risk-assessment procedures into "standardised" (i.e. already-existing in the company's organisational model) operational routines.

While face-to-face interviews have several benefits, such as allowing the observation of body language, the potential to establish trust more quickly, and possibly the chance of gaining more exclusive time with the interviewee (i.e. the interviewee's undivided attention), these same benefits played little role in this thesis' methodology. Firstly, information about financial risk-management institutions has little to do with the observational psychology. Secondly, bank executives usually disclose little (if anything) beyond publically-available information, regardless whether they are being interviewed by phone or in person. Thirdly, both the group of banking executives interviewed for the thesis' pilot studies and the executives who participated in the pilot (or "test") interviews for this thesis preferred telephone interviews specifically because they allowed for interruptions, after which the interview could resume.

Telephone interviews have the advantage that more interviews can be conducted within a given time frame (Rieker and Seipel, 2003, p.148). Seipel and Rieker also relate that telephone interviews can foster a more anonymous and less personal atmosphere to the research, and in this case these two qualities were preferred. Telephone interviews encouraged bankers and financiers to participate because this method replaced obtrusive, conspicuous visits to bank premises. Moreover, although the bankers' were encouraged to share their opinions of the new institutions, the aim of the interviews was to elaborate and expand on information (about the evolution and diffusion of climate-change institutions) already hinted at in publically-available literature.

This thesis combined two main research methods, documentation analysis and interviews. They served to locate and extract comparable data from the two categories of information, printed and observed, respectively.

Documentation analysis entailed selecting appropriate, reliable sources of printed information. This method was used to extract information from banks' annual financial reports, CSR reports, environmental reports, press releases, government reports from environmental ministries, industry white papers, etc. Relevant information on key issues had to be gleaned from these reports and then verified, put into context, and elaborated on during telephone interviews with key executives and stakeholders.

The following table outlines the methodological elements upon which the field research is based:

Table 2: Field-research methodological elements

Term	Meaning	Design
Methodology ⇩	Approach to studying research topics	Qualitative; top-down-up inductive reasoning
Methods ⇩	Research techniques tailored to serve the specific methodological goals	(1) Documentation analysis combining multiple forms of media; (2) Telephone interviews to verify, explain, and expound the data from the documentation analysis
Findings ⇧	Measured against hypothesis	The banks' institutional developments in order to mitigate climate-change risks are largely made in order to protect the banks' reputations and gain legitimacy.

(Source: table format and contents under headings "term," and "meaning" based on Silverman, 2000 p. 77; 2010, p.103)

The execution of the two research methods is discussed throughout the remainder of this chapter. Silverman writes that "*methods are techniques which take on a specific meaning according to the methodology in which they are used*" (2000, p.89).

These two methods work synergistically among four specific concerns unique to the research environment of the types of financial organisations under review, i.e. financial intermediaries that receive deposits and direct those funds into lending activities.[11] The four areas of concern (privacy/disclosure, transparency, mismatch, and time frames) were discovered during the thesis' two pilot studies and highly influenced both the choice of research methods and their execution. Respecting these four critical aspects of financial organisations made the execution of the research methodology possible.

2.4 THE METHODOLOGY'S BOUNDARIES

[11] This definition includes the investment arms of insurance companies.

The chapter's fourth part has four sections (not including this introductory section) that present the methodology's boundaries (privacy/disclosure, transparency, mismatch, and time frames) concerning the execution of the research methods.

2.4.1 PRIVACY/DISCLOSURE

As financial intermediaries, banks and insurance companies can be classified as knowledge-based enterprises, as opposed to enterprises which depend heavily on the availability of natural resources, such as mines or most energy-utilities. IP (intellectual property) concerns, such as trade secrets and reputation, are among a bank's most critical resources. A bank's IP is embedded in its institutions (its connections with stakeholders, as well as its policies and practices) and in its key, knowledgeable employees (its human capital) who develop and implement those institutions.

Banks have formal rules about what information employees can share with non-employees (the public, competitors, etc.). All rules about disclosure, written in employee handbooks, work contracts, non-disclosure agreements, etc. share one guiding principle: confidentiality. Bank employees are generally forbidden from communicating on business matters with competitors, journalists, researchers, members of NGOs, graduate students, and so on. On the other hand, a bank's ability to compete is directly related to the quality and timeliness of marketplace information. It is only with reliable, timely information that a given bank's institutions and human capital can leverage new opportunities to the bank's advantage.

The dichotomy is that information exchanges or "leaks" are necessary for any financial organisation to remain competitive. Financial organisations must use all available information in order to mitigate risks. Exchanging information does not only occur between banks themselves (e.g. during co-financing negotiations for a large renewable-energy project), but also with industry experts such as consultants, accountants, lawyers, politicians, and so on. These information exchanges are often neither official, nor transparent.

This thesis' research methodology was executed by leveraging this practice of informal information exchange. Relevant executives in the financial organisations

(ranging in roles from Sustainability Manager to Chief Environmental Officer) were contacted directly and asked to participate in an interview during which an "information exchange" could also take place, i.e. the executive could also ask questions of the interviewer. Most bank executives who agreed to participate wanted anonymity in the thesis' publication; some wanted a copy of the thesis; others agreed to interviews using personal/private phone numbers and outside of working hours.

The experience gained from this thesis' two pilot studies, along with the first attempts to conduct pilot interviews for this thesis, both suggested that attempts to set up interviews according to the banks' policies were doomed. The banks required graduate students to write formal interview requests to departments such as compliance, corporate media, etc. All such attempts during both the pilot studies and the pilot interviews for this thesis were rejected, and in some cases this was only known after months of following up with the banks.[12]

2.4.2 TRANSPARENCY

Maunch and Park argue that qualitative research depends on thoroughness and depth of reporting to demonstrate significance (2003, p.19). A method to assemble data from several different types of documents was required to form a clear picture of the banks' climate-change risk-management institutions.

The ten "core" cases, i.e. the nine banks and one insurance company, were publically-traded financial organisations, and therefore were required by law to publish numerous annual financial and corporate reports. These reports follow similar formats for the banks of each country and allowed their comparison. Although the reports' content was extensive (many reports were hundreds of pages in length), their discussions of climate change or environmental issues were usually brief, ranging from one short paragraph to roughly twenty pages. In cases where the discussions of climate change and environmental risk were minimal, the interviews became more relevant to counter-balance the lack of disclosure and transparency.

[12] The banks gave multiple reasons why their executives could not participate in interviews, among them: lack of available expertise, an overwhelming number of graduate students already interviewing the banks' executives, time constraints, general bank policy, communication policy, disclosure policy, and so on.

Interviews with key executives verified and elaborated on the data from the printed category. Moreover, the interviews helped to fill in inevitable knowledge gaps implicit in banks' mandatory reporting requirements, namely:

1. Mandatory reports contain no numbers concerning how much of a banks' capital is invested in ET or offsetting endeavours (such as investments in the CDM).[13] Although most banks in the samples claim to have expertise in these areas (or even an ET department), none disclose numbers.
2. Attempts to speculate on a bank's involvement with ET or investments bearing climate-change risks by using "indirect numbers" (such as total credit-risk portfolio numbers, total risk-weighted assets, or a bank's percentage of funds invested in renewable-energy development) are too implausible. Furthermore, climate-change risks span several risk categories (credit risk, insurance risk), many of which are not quantifiable, such as reputation risk, environmental risk, etc. More importantly, any such numbers reveal little (or nothing) about the diffusion of the banks' climate-change risk-management institutions.
3. The reports' content has a promotional tone which undermines the quality of its information. Because these reports are required of major banks, the banks use what is in their control—the language and presentation of the report—to their advantage (Robertson, 2011a).

2.4.3 MISMATCH

The banks' climate-change risk-management institutions had to be studied at a high level of detail, and despite the banks' use of similar reporting formats, their actual involvement with ET and related investments varied greatly. Specific details (i.e. categories of information, such as "knowledge-management endeavours") were used to compare the banks' institutions. By its nature, qualitative research seeks full descriptions of phenomena in all their complexity, as opposed to quantitative approaches which seek to reveal cause-and-effect relationships in occurrences (Maunch and Park, 2003, p.19).

[13] Although banks' annual reports include portfolio categories such as energy, forestry products, mining and metals, transportation and environment, etc., there is no way of learning what percentages of the investments in these categories bear ET risks.

Cause-and-effect relationships are the basis for most risk-management methods in banks. For transactions on exchanges, banks use heavily-tested ranges of numbers concerning certain products and measure those ranges against market performance in order to make buy/hold/sell decisions. New markets, such as ET markets, are less straightforward and have not yet evolved to the point where they can be as reliably quantified and categorised as is possible on other standardised exchange platforms. Moreover, while material climate-change risks do come from ET markets, most climate-change risks such as threats to assets or investments, remain outside the scope of ET. Mitigating these risks requires qualitative approaches that are more suited to consultancies and boutique investment firms than to large banks.

By their nature, large banks are conservative, established organisations that predominantly compete in investment-banking (and asset-management) activities, as opposed to private-equity activities. Investment banking is performed on the "sell-side" of the financial industry (this means that banks *sell* shares and products to investors). They also advise companies and help them execute mergers and acquisitions, initial public offerings, debt and equity issuances, and so on. Private equity, on the other hand, takes place on the "buy-side." This means that they raise money from investors and use it to *buy* (i.e. invest in) shares from companies expected to rise in value.

The private-equity market tends to comprise smaller, private firms that can perform the type of prospecting and detailed qualitative analyses for new and emerging growth opportunities. Investment banking, on the other hand, is chiefly based upon the use of standardised models and valuation methods to examine opportunities in more established, predictable markets.

This presents a mismatch of methods: the investment banking methods from the sell-side, which large financial organisations regularly perform as part of their daily business practices, are not ideal for the emerging climate-change markets. These markets (with the exception of the EU-ETS) are more suited to less structured forms of finance, such as private-equity investing, venture capital, and project finance, i.e. the investment methods from the buy-side. Nonetheless, the anticipated future opportunities in climate-change markets are too big for the large banks to ignore.

The printed data category helped define how banks interpret these new risks and, in some cases, show their institutional boundaries within a given bank's ERM system. Semi-structured interviews were necessary to coherently assemble and analyse specific issues in the data from the abundant numbers of documents.

2.4.4 TIME FRAMES

Studies of institutional diffusion deal with institutional evolution, which can occur as a single event or gradually over centuries. Vigour reminds her readers that "*the time available for research is, without a doubt, the first criteria for delineating the extent of the comparison and the scope of the investigations*" (Own translation) (Vigour, 2005, p.136).[14] Implicit here is that the subjects of study, i.e. the banks' institutions and stakeholders, are both evolving all the time. The research methods had to be executed in a way that embraced these changes.

A common feature of emerging industries is a wide range of competitors and fast rates of market change. The climate-change industry has undergone continual evolution since the signing of the Kyoto Protocol in 1997, and particularly since the EU-ETS's inauguration in 2005. Moreover, the rate of change increased in 2007/2008 with the GFC (global financial crisis). Following 2008, ET and markets related to climate change experienced new ranges of price fluctuations, such as unprecedented highs and lows of CERs and AAUs (Assigned Amount Units), unexpected mergers and acquisitions (such as AES Corporation's acquisition of AgCert in 2008, JP Morgan's acquisition of Ecosecurities in 2009, and RiskMetrics's acquisition of Innovest in 2009) and a general lack of predictability concerning how and even whether the UNFCCC institutions would evolve after their expiration in 2012.[15] In the words of Matthew Kiernan, former Innovest CEO (Chief Executive Officer) and the senior advisor to the Secretary General

[14] Original: *"Le temps dont on dispose est sans aucun doute le premier critère pour délimiter le champ de la comparaison et l'étendue des investigations."*

[15] Governments distribute emissions certificates called AAUs to companies within targeted sectors of the EU-ETS. The amount of certificates a given company receives (its emissions quota) determines how many tonnes of GHGs the company can emit during a given period. Companies can freely trade surplus credits; companies lacking credits must buy them on the EU-ETS market. CERs are ET credits stemming from Kyoto-based projects using the CDM's institutions.

of the UN Earth Summit in Rio de Janeiro: "*It is a very, very subtle set of relationships, one that's changing all the time*" (Kiernan, 2007).

In qualitative studies, the researcher's engagement with the people and environments studied is an integral part of the process (Maunch and Park, 2003, p.19). Because of the markets' constant evolution, it was useful to set a time frame to begin and end the research. Using a time frame to set a research boundary can help delimit choices about choosing cases and how to go about researching them (Vigour, 2005, p.137).

For this reason, relevant documents printed between 2006 (the first publication year of Germanwatch's annual Climate Change Performance Index) and 2012 were reviewed, with exceptions made for practical purposes.[16] Moreover, most of the empirical data presented in this thesis is based on combining the banks' reporting data from the years 2009 to 2011, the content of which not only varied from bank to bank, but also from one reporting format to another.[17]

Core interviews (with personnel of the sample case organisations, and not those of government agencies or consultancies) were conducted within an eight-month period at the end of the research phase, from September 2011 to April 2012. This was done in order to maximise the effectiveness of the interviews in elaborating and expanding on information collected prior to them. Interviewees from the core banking samples were asked not only to comment on their banks' climate-change initiatives from the past, but also on current states and anticipated future forms.[18] Interviewing all the executives within the same time-frame positioned them all with a common point of reference: they were all asked about the "same" past (prior to September 2011), present, and future (post-April 2012).

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[16] Exceptions include documents that cover this time span, but that were published before it (e.g. the Rio Declaration on Environment and Development [1992]), or after it (e.g. annual financial reports from banks covering 2011, but printed in early 2012). The documentation and literature review was concluded during the write-up phase of the doctoral study, in September 2013, with the much-anticipated UNFCCC publication of the scientific findings of IPCC 5 (the Fifth IPCC Assessment Report).

[17] For example, some banks publish GHG data from 2007-2009 at the end of 2010; others publish financial data from 2010 at the beginning of 2011, etc. This lack of uniformity presented only minor challenges because the goal was not to rank the robustness and effectiveness of the banks' climate-change institutional initiatives, but rather to understand their diffusion.

[18] An attempt to conduct the core interviews over the same time period as the documentation review (2006-2012) would have likely failed. The industry, its institutions, its key personnel, and the market niches are in constant evolution. Interviewing a bank executive in 2009 would yield little comparative data with the results of interviewing a competing bank's executive in 2012.

2.5 RESEARCH EXECUTION

This chapter's fifth part has five sections (including this one) that focus on the research methodology's execution among two main data categories. This includes the primary and secondary data sources used to study the samples' institutions. Detailed descriptions of events and processes, including the context and tone of these descriptions, are considered to be primary data in qualitative research (Maunch and Park, 2003, p.19). The execution of the research methods had to produce empirical data that was:

1. publishable as a thesis (minding the banks' privacy concerns);
2. useful in maximising the organisations' transparency requirements (both regulated requirements [annual financial reports] and expected norms of behaviour [such as responses to the annually-revised CDP Questionnaire]);
3. detailed and with multiple layers of data (relevant to institutional diffusion); and
4. collected during a specific time frame (so as to benefit from a comparative analysis using neoinstitutional theory).

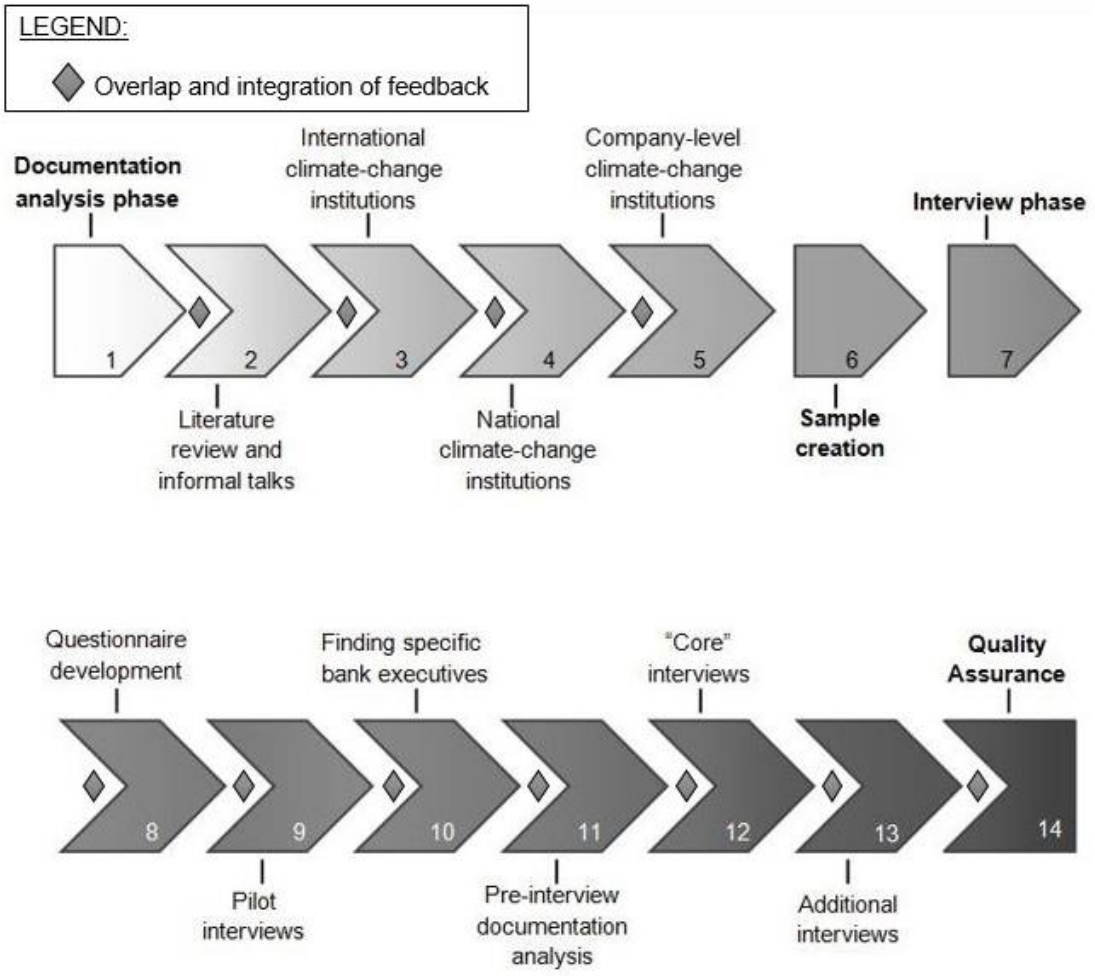
2.5.1 PHASES

The research methodology was executed in two research phases: documentation analysis and interviews. The former preceded the latter, but with overlap: informal interviews[19] and formal, pilot-interviews were executed during the later stages of documentation analysis. In both phases, research began with inquiries about high-level (e.g. UN-based), broad (e.g. global, national), climate-change institutions. Inquiries then progressed towards more specific data about banks' climate-change risk-management frameworks. This allowed samples to be developed whereby specific banks' documents could be more systematically reviewed, and interviews with specific executives could be carried out.

[19] Informal interviews included informal, spontaneous discussions about the research as well as arranged meetings (face-to-face or by telephone) to consider specific issues. Many of the opportunities for informal interviews arose out of the doctoral candidate's full-time employment, prior to and throughout doctoral enrolment, as an ET consultant in Canada and Germany.

Each research phase is discussed throughout the remainder of this chapter. The following diagram shows the two research phases broken down into 14 steps.

Figure 4: Research phases



2.5.2 EARLY AND ONGOING DATA-ANALYSIS

Because of the multiple layers of institutions involved in the banks' climate-change risk-management endeavours (i.e. pertaining to international, national, and industry-specific stakeholders and institutions), a primary and ongoing requirement in the research was to limit and filter the incoming data.

Limiting the printed body of data began with early and ongoing analysis of several data types. Early data analysis, as opposed to collecting all the data in clean swoops, allows the researcher to continually reconsider the direction of the research and to progressively refine a hypothesis by systematically pursuing knowledge about the topic wherever the data might lead (Silverman, 2010, pp.7, 10).

Narrowing down the number of documents to use began with an extensive review of three types of data: industry data, news media, and literature. Industry data comprised market and sector reports by governments, NGOs, NFPs (not-for-profits), and industry journals. Examples are the World Bank's annual report, State and Trends of the Carbon Market, as well as regularly updated institutional reports from the UNFCCC's COP (Conference of the Parties) meetings. News media included news articles and reports from industry-specific media (such as Point Carbon, Thomson Reuters Commodities/Energy, and Environmental Finance) and general newspapers (German newspapers such as Frankfurter Allgemeine and Süddeutsche Zeitung, as well as The Wall Street Journal [USA], Financial Times [UK], and The Globe and Mail [Canada]). The literature review used sources that met some—but not all—of the principles of scholarly standards according to Maunch and Park (2003, pp.53-55). This meant choosing sources that were:

1. officially published, preferably in a refereed journal or in book form;
2. based on expert knowledge of the research field; and
3. less biased and ideological.

Because of the topic's novelty and evolution, two of Maunch and Park's scholarly standards were often overlooked: firstly, that the literature sources be cited by other researchers, and that the sources be available for a sufficient period of time to be subjected to criticism by other scholars in the same field. A preference was given to literature sources for industry-specific research published during or after 2005—the year the Kyoto Protocol became international law.

At the outset of research there was little value in establishing pre-defined methods or templates to extract data from the documents. Although the institutional phenomena would need to be defined and categorised in order to eventually form an interview questionnaire, the research began without any rigid structure. Miles and Huberman

(1984) argue that an advantage of qualitative research is its lack of required "prior instrumentation," defined as pre-determined research and measurement methods (p.42). This leaves the fieldwork open to unsuspected phenomena that could be otherwise concealed by a methodology's prior instrumentation (Miles and Huberman, 1984, p.42).

The potential to use quantitative methods (such as conducting surveys alongside the interviews) was not yet excluded at the outset, although they were expected to be less fruitful than qualitative methods. Despite the execution of the top-down-up research approach within a defined theoretical structure, the research methodology allowed, to a large extent, the incoming data to determine how the research methods would be carried out and, if necessary, modified.

2.5.3 DOCUMENTS

Research began with a literature review and documentation analysis. The first milestone was to map out the different institutional levels and stakeholders (e.g. supra-national organisations, industry regulators, banks, etc.) involved in climate-change risk management for banks of Annex-2 countries.

Mapping out the stakeholders showed, for example, how certain institutions were diffused differently among the affected departments of each bank. A similar research case was that of Langrock (2006). The study The Role of Stakeholder Driven Corporate Governance –The Example of BP's Climate Change Strategy, places particular emphasis on the interactions between BP (British Petroleum) and its stakeholders in order to understand why BP adopted its GHG commitment (Langrock, 2006, pp.241-242). By focusing on BP's stakeholders, Langrock draws attention to the outcomes and mobilisation of resources resulting from the policy measures implemented by BP (2006, p.242).

The literature review began with research papers dealing with broad subjects such as international climate-change policy and national attempts at developing climate-change institutions. During the spring and summer of 2010 the literature review was narrowed down to three main areas:

1. neoinstitutionalism (for institutional analysis within organisations);

2. ERM (for financial institutions); and
3. qualitative research methods (for methodological matters and the questionnaire's development).

2.5.4 INTERVIEWS

In The Social Construction of Reality, Berger and Luckmann distinguish "dead" from living institutions (1967, p.75). If an institution exists only in physical objects and verbal designations, i.e. without any subjective component, it is deemed "dead" (1967, p.75). It is the real, continual enactment of institutions by their influence on human behaviour and activity that keeps institutions alive (1967, p.75).

Ignoring this idea would have been naïve: it would have meant taking the documents (such as COP updates, banks' annual reports, etc.) at face value and assuming that the institutions described therein were implemented. Moreover, because achieving legitimacy is a key survival mechanism of organisations, their documentation and literature tends to promote the success of everything mentioned. In other words, the reader of the reports is encouraged to accept all the information in good faith.

Research that relies heavily upon companies' GHG disclosure in publically-available reports (such as annual reports, corporate websites, CSR/sustainability reports, and responses to the CDP) has to overcome this "gap" of naïveté. The research methodologies of several studies since 2006 all reported that the information contained in such reports was insufficient to enable an understanding of how climate-change risks and opportunities were handled by those companies (Sullivan and Kozak, 2006; Okereke, 2007; Pinkse and Kolk, 2007; and Günther, Nowack, and Weber, 2011).

In order to embrace the multi-dimensional nature of ET and how those dimensions interact with the behaviour of firms, Michael Nye used semi-structured interviews for his study Understanding Business Participation in UK Emissions Trading: Dimensions of Choice and Influences on Market Development (2008, p.235). His interviews were with key corporate participants in the UK ETS and carried out over a two-year period.

This thesis' research methodology also combined documentation analysis with interviews in order to make sure that the institutions were in fact being diffused and not dying or "dead" institutions, e.g. buried somewhere among company reports and in executives' role descriptions.

The strategy for conducting interviews was loosely based on the "snowball" or chain-sampling approach. Przyborski and Wohlrab-Sahr point out that the snowball approach has advantages (e.g. interviewees recommend contacts of theirs—other interviewees—for additional information) and disadvantages (e.g. the researcher navigates the research field within the boundaries of a given social network) (2008, p.108). Fortunately, the latter danger played little role in this research methodology. In any given bank there were few executives (usually one to five) with specific knowledge of how climate-change risk-management institutions were both diffused and subsequently implemented. In several cases additional contacts for interviews within the same bank were given—this helped build a more detailed understanding of the bank in question. Nonetheless, few contacts outside a given bank (i.e. contacts within a competing bank) were shared by any of the interviewees.

2.6 DOCUMENTATION ANALYSIS

This chapter's sixth part has three sections (not including this introductory section) that present the methodology's approach for documentation analysis among three categories of information (i.e. concerning international, national, and company-level climate-change institutions).

2.6.1 INTERNATIONAL CLIMATE-CHANGE INSTITUTIONS

The first documents to be reviewed were those concerning international climate-change institutions. The following table presents the core documents reviewed.[20]

[20] Supplementary documents, such as those appearing as references in the documents listed above, were also reviewed. Examples are: Amendments to the Kyoto Protocol pursuant to its articles, guidance relating to the CDM and JI (Joint Implementation), review of the financial mechanism, work programme on long-

Table 3: Core documents concerning international climate-change institutions

Document	Relevance
The Montreal Protocol on Substances that Deplete the Ozone Layer	Ratified in 1989, a precursory international treaty (to protect the ozone layer) to the UN's Kyoto Protocol
The Rio Declaration on Environment and Development	Resulting from the 1992 UN conference known as the "Rio Summit" (or "Earth Summit"), a document with 27 statements about environmental sustainability, approved and adopted by over 178 governments
Kyoto Protocol	The UN's global climate-change constitution
The Stern Review	The British government's independent study (a 700-page report) of the economics of climate change
The World Bank's State and Trends of the Carbon Market Report (annual reports from 2006 to 2012)	The World Bank's annual review of the global ET industry

Of the documents above, the Kyoto Protocol was the most significant for understanding the foundational principles behind the UNFCCC's market-based ET institutions (i.e. the "flexible mechanisms"). Alongside these reports were the annual updates of the UNFCCC's institutions (including those directly related to the Kyoto Protocol) documented on the UNFCCC website following each year's COP meeting. Although these documents were reviewed from 2005 onwards, primarily the 2011 and 2012 documents (shown below) were referenced in this thesis.[21]

2.6.2 NATIONAL CLIMATE-CHANGE INSTITUTIONS

The second set of documents reviewed were those dealing with Germany's and Canada's implementation of the Kyoto Protocol's clauses in their national policies. The following table shows the main documents reviewed for each country.

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term finance, report of the Green Climate Fund, report of the Standing Committee on Finance, capacity-building under the Convention for countries with economies in transition, etc.

[21] This boundary, based on the year of publication, was set to use the most up-to-date information in coordination with the eight-month timeframe for conducting the interviews, during 2011 and 2012.

Table 4: Core documents concerning national climate-change institutions

Document	Relevance
UNFCCC National Reports (National Communications)	Kyoto signatories' (Annex-2) mandated national communications and supplementary information[22]
National Inventory Reports[23]	Kyoto signatories' (Annex-2) mandated annual inventory reports
Climate Change Performance Index (annual reports from 2006 to 2012)	Rankings, by European NGOs (Germanwatch and the Climate Action Network-International) of countries' climate-protection performance according to GHG-emissions trends, levels, and policy assessments

The differences in the ways both countries implement the Kyoto institutions influenced the third, longest, and final step of the documentation analysis: uncovering the policies, methods, and practices used by each country's banks to assure both institutional conformity and risk management related to climate change.

2.6.3 COMPANY-LEVEL CLIMATE-CHANGE INSTITUTIONS

The final step of the documentation analysis required different documents from each banking sample in order to assure their comparative examination. The tables in this section present the most fundamental documents reviewed in order to understand the company-level (banking) climate-change institutions of German and Canadian banks.

The documents that outline the foundational institutions at the banking level are the Basel Accords. As mentioned, the Basel Accords are international banking standards set by the committee of the Bank of International Settlements, the BCBS. The Committee's members come from all the G-20 economies and other significant international banking hubs, such as Singapore.[24]

[22] As of early 2013, Annex-2 countries had submitted their fifth annual reports, for year 2010.
[23] These inventory reports contained detailed information regarding each country's Kyoto-based National Action Plans (for GHG mitigation/reduction) along with relevant insights into each country's governmental structures (ministry linkages) and environmental regulations/laws around climate change.
[24] As of October 2012 the Committee comprised a chairman (the governor of Sveriges Riksbank [Sweden's central bank]) and members from: Argentina, Australia, Belgium, Brazil, Canada, China, France, Germany, Hong Kong (Special Administrative Region), India, Indonesia, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Turkey, the UK, and the USA (Basel Committee [About], 2012).

Table 5: Foundational documents concerning company-level climate-change institutions

Document	Relevance
Basel Accords (Basel I, II, III)	International banking standards for market, credit, and operational risk set by the BCBS to ensure that banks maintain enough capital against losses

The Basel Accords set requirements for banks' ERM frameworks and thereby significantly determine how the banks diffuse new risk-management institutions. These international standards are benchmarked and enforced by both the German and Canadian government regulators on all major banks within their jurisdictions. Germany's and Canada's banking regulators receive their regulatory responsibilities from their countries' respective banking acts.

Table 6: Banking acts

Document	Relevance
Kreditwesengesetz (KWG)	German Banking Act
Bank Act	Canadian Banking Act

The German regulation governing banking activities is the KWG (German Banking Act) which delegates federal authority for financial regulation to the BaFin (Federal Financial Supervisory Authority).[25] The Canadian legal foundation governing banks' activities is the Bank Act. The Canadian Banking Act points to the Office of the Superintendent of Financial Institutions Act which delegates regulation and supervision to the OSFI (Office of the Superintendent of Financial Institutions).

Governments also influence banks through the regulation of stock exchanges. Most major banks in Annex-2 nations are listed on public exchanges and, like most giant companies with tradable shares in open markets, have considerable influence on a country's overall economy. Governments have been the primary force in the promotion of financial reporting standards (such as the requirement of annual reports) through security exchange commissions (Tschopp, Wells, and Barney, 2012a, p.2).

[25] Original: *Bundesanstalt für Finanzdienstleistungsaufsicht*

Annual reports are the first of three core sets of documents reviewed for each bank's environmental policies, practices, and market initiatives concerning climate-change. Because the reports range from ~120 to 240 pages in length, the type of information to choose for further analysis had to pertain to specific categories. Busch's (2006) study Emissions Trading and Effects on Financial Markets, helped form a conceptual basis for prioritising and defining certain categories of information. His study of the potential of "proactive involvement" towards climate-change risks and opportunities by financial companies used categories (such as "management, products, and services" and "internal conditions, external conditions, and engagement activities") with functional subdivisions (e.g.: "knowledge management, market transparency, advisory boards") to describe the climate-change initiatives of financial organisations. Some of Busch's categories were used in this thesis' research, while others were created for specific banks in the samples (such as "Internal Risk-Management Guidelines," an information category created to categorise one aspect of Deutsche Bank's climate-change risk-management institutions). Busch's and this thesis' unique categories shared the common aim of gleaning specific information from lengthy reports prior to narrowing it down (and exploring it further) using institutional criteria and concepts.

Table 7: First core document: annual report

Document	Relevance
Annual reports	Banks' mandatory annual disclosures (compiled for shareholders, but available to the public) of their risk-management frameworks, capital reserves, profit and loss statements, and management structures

Other organisations influence banks to disclose information about their relationship to the environment, i.e. more information than in the annual report. As referred to earlier, Günther, Nowack, and Weber's (2011) study How Does Emissions Trading Influence Corporate Risk Management? used publically-available risk reports, stemming from Vattenfall's annual report, to examine the relationship between ET and

regulatory climate-change risks (p.127).[26] Additional reports exist largely due to additional disclosure pressure from supra-national organisations, NGOs, shareholders, investors, lobbyists, as well as other individual companies (Tschopp, D., 2005, p.56; Tschopp, Wells, and Barney, 2012a, p.2). The pressure from these groups confluences into what is known as CSR, or TBL (triple-bottom line), or simply "sustainability" reporting. Throughout the thesis the term CSR will be used. CSR reporting is voluntary and picks up in terms of disclosure and transparency where mandated reporting leaves off.[27]

Most banks disclose CSR information among several documents and on their corporate websites. For example, in 2011 the Bank of Montreal—one of Canada's "big five" banks—disclosed CSR matters among its Corporate Responsibility Report, Annual Report, Proxy Statements, Sustainability Report and Public Accountability Statement, Employment Equity Narrative Report, and numerous webpages on its corporate website.[28] Which disclosure documents a bank uses, and what they contain, range considerably from bank to bank; the documentation analysis for this thesis reviewed whichever documents were required to assemble each financial organisation's full CSR disclosure. Nonetheless, most financial organisations—and nearly all of those chosen for the samples—used the GRI (Global Reporting Initiative) guidelines to compile their CSR reports, and this facilitated comparison in terms of content, quality, boundaries, disclosure principles, performance indicators, and sector supplements. CSR-disclosure documents formed the second set of core documents used to uncover each bank's institutions related to the environment and climate change. The documents reviewed are shown in the following table.

[26] The reports came from Vattenfall, a Swedish-based company whose subsidiary, Vattenfall GmbH is among Germany's five largest energy producers.

[27] Several countries have adopted mandatory CSR reporting to various degrees: (since 1995) the Netherlands, Belgium, South Africa, Indonesia, Denmark; (since 1998) Norway; (since 1999) Sweden; (since 2003) France (Tschopp, Wells, and Barney, 2012a, p.5).

[28] Proxy statements were linked to several banks' CSR reports; however, these statements proved, in the course of research, to have no relevant information on banks' disclosure concerning issues related to the environment. The only relevant sub-section of the corporate governance section was the risk report summary, which summarised the full risk report found in the banks' annual reports.

Table 8: Second (set of) core document(s): CSR reporting

Documents	Relevance
CSR report, Proxy Statements, Sustainability Report/Public Accountability Statement, Employment Equity Narrative, Environmental Report, webpages on corporate website, etc.	Banks' voluntary CSR and public-accountability reports on environmental, social and governance issues

The final document used to piece together a given bank's environmental policies, practices, and climate-change initiatives was its annual response submitted to the CDP, an independent, global NGO based in the UK. Pinkse's (2008) research, The Implementation of Emissions Trading, was based on 218 of 288 corporate responses to the second CDP Questionnaire (p.198). Pinkse studied how the political conditions of different countries affected the embedding of ET and/or offset projects in large companies.

Although the CDP has several disclosure initiatives (such as water disclosure, supply chain, etc.), its main endeavour is to ask large corporations (on behalf of 655 institutional investor signatories with a combined $78 US trillion in assets) to disclose their plans for tackling climate change (Investor CDP, 2012). The CDP attempts to fill the disclosure gap concerning major industries and their relationships to climate change. Responses are made publicly available; companies that don't respond are "*named and shamed*" (Labatt and White, 2007, p.3). Fortunately, most major banks respond to the Annual Questionnaire, and the survey's format is the same for all banks; unfortunately, the banks' answers—the format, reasoning, and quality of the information—varies considerably.

Table 9: Third (set of) core document(s): CDP reporting

Documents	Relevance
Annual response to the CDP	Banks' voluntary, publically-available responses to the CDP's Annual Questionnaire on: 1. carbon risks and opportunities; 2. regulatory matters;

	3. strategy for emission-reduction activities; 4. emissions boundary; and 5. emissions scopes 1, 2, and 3[29]

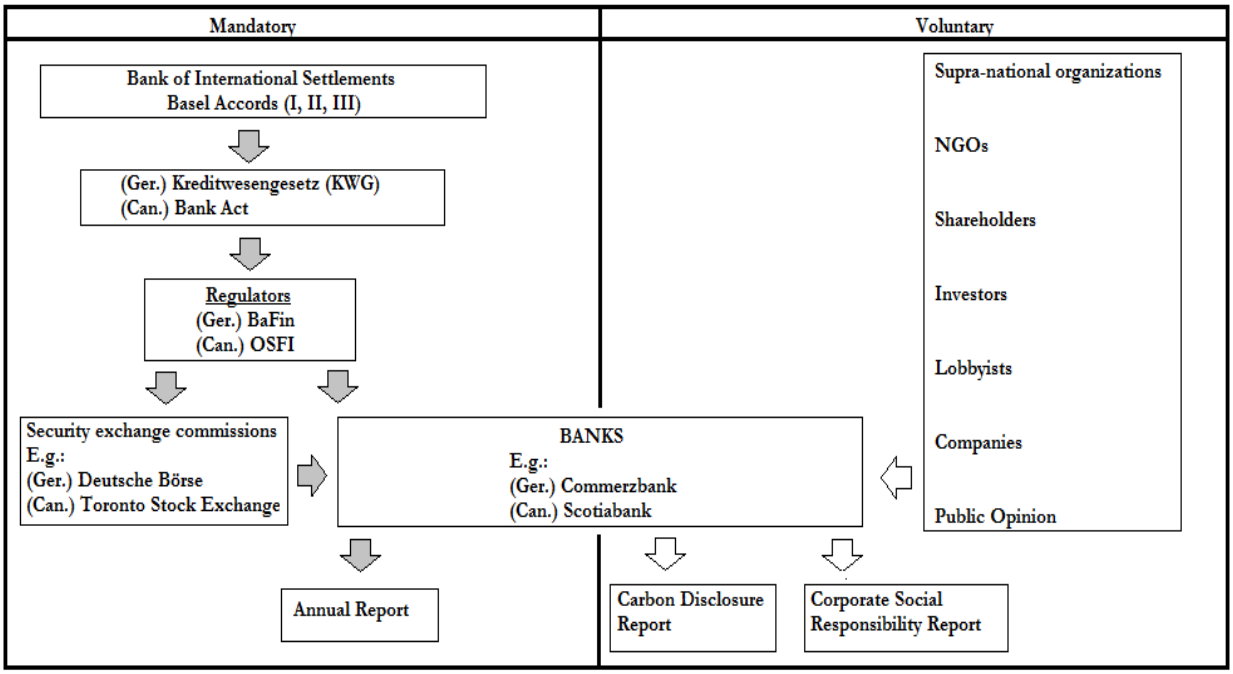
The three core sets of reporting methods—annual reports, CSR, and the CDP—are the baseline documents from which comparable data was gleaned.[30] No one single document contained enough information to analyse a given bank's institutional diffusion of climate-change risk-management initiatives. Quoted in this thesis' introduction, the senior advisor to the Secretary General of the UN Earth Summit in Rio de Janeiro, Matthew Kiernan states concerning the CDP that "*as a risk-assessment exercise, disclosure means positive little*" (Kiernan, 2007).[31] Furthermore, some banks in the samples (especially among the German sample, which had less uniformity than the Canadian sample) lacked one of these core sets of documents. In these cases, the interviews were tailored to fill the information gap. The following figure shows how the baseline documents stem from the disclosure requirements of various stakeholders and institutions.

Figure 5: Mandatory vs. voluntary stakeholder-driven disclosure

[29] The GHG Protocol (Greenhouse Gas Protocol) categorises emissions into three scopes: scope 1 (all direct GHG emissions), scope 2 (indirect GHG emissions from consumption of purchased electricity, heat or steam), and scope 3 (other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities not covered in scope 2, outsourced activities, waste disposal, etc.) (GHG Protocol, 2012a). The GHG Protocol is a partnership (since 2002) between the WRI and the WBCSD (World Business Council for Sustainable Development), and serves as the foundation for almost every GHG standard and program in the world, including the ISO (International Organization for Standardization) 14064/5 Series and The Climate Registry (GHG Protocol, 2012b).

[30] Three examples of exceptions are national differences (e.g. German and Canadian banks' annual reports, although very similar, have different formats and vernacular), cases where banks use standards other than the GRI's G3 guidelines for their CSR reporting, and the banks' varying degrees of voluntary disclosure in their responses to the CDP Annual Questionnaire: some banks' responses are extensive (Deutsche Bank's 2011 response: ~38 pages) and others shorter (Deutsche Postbank's 2011 response: ~15 pages).

[31] Kiernan's firm, Innovest Strategic Value Advisors, conducted the global research for the CDP from the time of the survey's inception in 2002 up to 2008.



Before these documents could be gathered and systematically reviewed for each bank, the two bank samples had to be created.

2.7 SAMPLE CREATION

This chapter's seventh part has nine sections (including this one) that reveal the criteria used to select the two research samples of financial organisations. For empirical social research, sampling involves choosing a subgroup of cases (people, groups, events) that represent a specific population, issue, or collective (Przyborski and Wohlrab-Sahr, 2008, p.174). The type of sampling used in this methodology more closely fits a combined definition of probalistic-selective sampling than that of theoretical sampling.

Probabilistic sampling aims to generalise, from the researched number of cases, facts or ideas about the greater population. Selective sampling adds a "laboratory" dimension. This means that the cases must be selected according to criteria, e.g. a time-frame, location, people with certain roles, and other events/situations within the same context (Schatzman and Strauss, 1973, p.38)

The aim in this thesis was to investigate five cases from both extremes of the international climate-change performance index, and then speculate about the

institutional challenges faced by most banks in Annex-2 countries. Theoretical sampling, on the other hand, is used to uncover layers of facts about specific cases and then propose theoretical assumptions about those very cases. Moreover, theoretical sampling tends to research cases that compare, or can be contrasted with cases already studied. Lastly, research using theoretical sampling is usually based in grounded theory, which brings new cases into the sample during the very course of research, and not beforehand (Przyborski and Wohlrab-Sahr, 2008, p.177; Rieker and Seipel, 2003, p.112).

2.7.1 CASE CHARACTERISTICS: INVOLVEMENT WITH EMISSIONS-TRADING

To enable the comparison of their institutions, the banks to be potentially included in the samples required similar characteristics. These characteristics were ranked according to priority.

The most important characteristic was that the financial organisations be involved—the more the better—with ET and climate-change initiatives. This characteristic assured that the major financial "market players" in each country's ET industry would be sample candidates. From late 2009 to early 2011, a list of these potential companies in Germany and Canada was compiled. Sample candidates were added to the list based on references from (one or more of) three sources: (1) from the documentation, literature, and news media; (2) from previously-conducted interviews with industry experts in the course of field research for this thesis' two pilot studies; and (3) from discussions with industry experts and contacts stemming from the doctoral candidate's employment as an ET consultant in Canada and Germany.[32]

The major finding from this evaluation was that the German "green" banks and funds (*Ökobanken/ethische Banken/Ökofonds*) played a minor role in terms of ET.[33]

[32] Examples of these experts are executives from Algorithmics, National Bank Financial, Transferstelle Internationaler Emissionshandel Hessen, Environment Canada, McQuarrie, Natsource, Clifford Chance, AgCert International, Canadian Standards Association, Greenhouse Gas Services (GE/AES Venture), AES, Ecosecurities, EPCOR, TransAlta, Climate Change Capital, South Pole Carbon Asset Management Ltd., etc.

[33] The major green banks in Germany (2013) were Triodos Bank N.V., GLS Gemeinschaftsbank (which bought the previous market-leader Ökobank eG in 2003), EthikBank, and UmweltBank AG (the latter three are all German; Triodos is Dutch, but with a major presence in Germany).

Instead, these banks focus on the wider sustainability markets through their emphasis on social, environmental, and ethical aspects in their investments.[34] Although GHG reduction and mitigation is supported by nearly all environmental NGOs, ET is not, and it is often criticised for creating financial market opportunities by supporting polluting companies (and their investors) at the expense of low GHG-reduction targets. It is plausible this is one reason why green banks refrain from penetrating ET markets. Greenpeace, for instance, is continually lobbying for greater GHG reduction commitments in ET schemes. Recent examples are its campaigning for stronger commitments in the EU-ETS and New Zealand's ETS (Greenpeace 2011; Greenpeace 2012).[35]

2.7.2 CASE CHARACTERISTICS: POPULATION REPRESENTATION

Another major difference between green banks and regular banks is size. The German green banks operate in a small, niche market within the greater German banking industry. Based on annual reports available from their websites, Germany's three main green banks each had, in 2011, between roughly 90.000 and 125.000 clients, and loan commitments between €1,1 and €8,6 EUR billion. In 2011, major "conventional" banks such as Deutsche Bank reported total assets of €2,2 EUR trillion (Deutsche Bank, 2012).

The second criterion for choosing sample candidates was that the financial organisations were representative of their nations' overall financial industries. This characteristic had a dual significance. Firstly, it assured that the samples' breadth would represent each country's different types of banks which, regardless of their size or market niches, had considerable leverage (or potential leverage) in making investments that could help mitigate climate change. Because of this requirement, insurance companies and "boutique" investment firms with significant relevance in ET/climate-change

[34] Green banks tend to distinguish themselves from conventional banks by what they abstain from doing: they avoid deals with companies involved in either unsustainable or morally-questionable industries, such as defence contracting (weapons) and genetically-modified foods.

[35] Greenpeace New Zealand's Senior Climate Campaigner, Simon Boxer, spoke out against reforms to New Zealand's ET scheme in September, 2012: "This is just another example of the Government writing laws to suit the country's biggest polluters, to the enormous cost of ordinary New Zealanders" (Greenpeace 2012).

markets, such as First Climate AG in Germany, were considered for the samples. Secondly, this criterion required that the financial organisation be an investor of significant amounts of capital.[36] This supports the assumption that such companies can have a bigger impact—by their ability to shift substantial amounts of capital resources—on the overall (yet slow) market shift towards low GHG-emitting endeavours and industries.

The combination of these two criteria significantly narrowed down the list of sample candidates, even excluding firms that were repeatedly referred to by the three sources mentioned above.[37]

2.7.3 CASE CHARACTERISTICS: AVAILABLE INFORMATION

Available information (in terms of type, quality, and amount) was the final and lowest-priority characteristic evaluated among the sample candidates. This information requirement refers to the availability of the baseline documents mentioned above. The more a given financial organisation had this information, the higher its chances of inclusion in the sample.

2.7.4 CASE CHARACTERISTICS: INDUSTRY CLASSIFICATION

The three sample characteristics are general and broad, and therefore further criteria and classification were required to assure that the companies chosen would have comparable institutional frameworks. The GICS (Global Industry Classification Standard) of Standard and Poor's and MSCI (Morgan Stanley Capital International) was used to define and categorise the types of candidate financial organisations.[38] All sample candidates

[36] Among other funds, First Climate AG manages the Post-2012 Carbon Credit Fund which was established by Caisse des Dépôts, the European Investment Bank, Instituto de Crédito Oficial, KfW Bankengruppe, and the Nordic Investment Bank (First Climate, 2012).

[37] For example, Barclays (headquartered in the UK), Macquarie (Australia), and JP Morgan (USA) were major market participants up to 2011/12; however, they were not based in the chosen country samples of Annex-2, G8 nations, and were therefore excluded.

[38] Although most stock exchanges, including Deutsche Börse and the Toronto Stock Exchange, use the Dow Jones and FTSE-based industrial classification system called the ICB (Industrial Classification Benchmark), the CDP uses the GICS. These two systems are more similar than they are different: each is based upon a four-layer hierarchical structure with very similar subcategories (Hawkins, 2009). The main

belonged to GICS's "macro" industry sector, "financials," and to one or more of the following "micro" industry groups: banks, diversified financials, and insurance companies.

Several sub-categories within these micro industry groups represented types of financial organisations that were not relevant to this thesis' research, and were therefore excluded. Examples include the categories: thrifts, mortgage finance, and consumer finance. These organisations have different regulatory and operational requirements than those of the other categories.

The three tables below show the relevant sub-categories of the micro industry groups (banks, diversified financials, and insurance companies) under the macro label "financials" from which sample candidates were chosen:

Table 10: GICS industry classification of the financial industry: Category 1

Category 1	Specification (code/type)
Sector	(40) Financials
Industry Group	(4010) **Banks**
Industry	(401010) Commercial Banks
Sub-Industries	(40101010) Diversified Banks (40101015) Regional Banks

Table 11: GICS industry classification of the financial industry: Category 2

Category 2	Specification (code/type)

difference is that GICS categorises companies according to their main source of revenue, while ICB labels them according to the nature of their business (Hawkins, 2009). The only potentially relevant difference for this thesis could have surfaced concerning the sample candidates from the insurance industry. If those companies, such as Allianz, earned more revenue from their asset-management businesses (which in Allianz's case is among the biggest in the world, easily comparable to that of any of the world's biggest banks), then according to GICS those insurance companies would be categorised as diversified financials (industry group 4020) and not as insurance providers (industry group 4030). The difference is precision: according to GICS those insurance companies would require—being classified as banks—the implementation of Basel I, II, and III, the set of risk-management institutions appropriate to those lines of business. ICB, on the other hand, would continue to label the insurance companies as insurance providers (despite their dominant earnings from their banking businesses) and would, technically, lead investors to expect those companies to implement the risk-management institutions of Solvency I and II, the international risk-management guidelines for insurance companies. GICS categorises companies according to their current, dominant activities (from which most risks stem), and is more precise from a risk-management point of view than the method of classifying companies (as ICB does) according to their business strategies.

Sector	(40) Financials
Industry Group	(4020) **Diversified Financials**
Industry 1	(402010) Diversified Financial Services
Sub-Industries	(40201020) Other Diversified Financial Services (40201030) Multi-Sector Holdings (40201040) Specialized Finance
Industry 2	(402030) Capital Markets
Sub-Industries	(40203010) Asset Management & Custody Banks (40203020) Investment Banking & Brokerage (40203030) Diversified Capital Markets

Table 12: GICS industry classification of the financial industry: Category 3

Category 3	Specification (code/type)
Sector	(40) Financials
Industry Group	(4030) **Insurance**
Industry	(403010) Insurance
Sub-Industries	(40301010) Insurance Brokers

(Source: GICS, 2010)

2.7.5 BOUNDARIES: CANADIAN FINANCIAL ORGANISATIONS

As alluded to above, the regulator of all federally-regulated deposit-taking institutions in Canada is the OSFI. The OSFI divides its responsibilities over the 439 companies and 850 pension plans that constitute the Canadian financial system into: (1) Deposit-Taking Institutions (total: 149), (2) Insurance Companies (total: 268), and (3) foreign bank representative offices (total: 22) (OSFI, 2012). Banks fall under the first category, and of the 76 banks in Canada, 25 are domestic and the rest (51) are foreign (OSFI, 2012).

Despite its diversity of firms, the Canadian banking industry is an oligopoly. The core of the banking system is the "Big Six" Canadian banks (also known as the "Big Five," which is discussed below) which control approximately 90% of all bank assets (DoF, 2011). The banks are: BMO (Bank of Montreal), BNV (Bank of Nova Scotia, also known as BNV), CIBC (Canadian Imperial Bank of Commerce), RBC (Royal Bank of Canada), TD (Toronto-Dominion Bank), and NB (National Bank). Besides a small number of independent GHG-offset project developers and ET trading desks, the major Canadian banks were, by and large following the GFC of 2007/2008, the largest market

players in Canada's climate-change industry (which includes renewable-energy finance, ET, etc.). In addition to the six banks, Manulife Financial and Desjardins Group were also sample candidates. Manulife Financial is a major Canadian insurance company with approximately $499,7 CAD billion under management (Manulife, 2011). Desjardins Group is an association of credit unions.[39]

2.7.6 BOUNDARIES: CANADIAN SAMPLE

The Desjardins Group was excluded from the sample for its lack of ET/climate-change initiatives and its predominant focus (despite its expansion across Canada) on the Quebec provincial market. Manulife Financial was also excluded from the sample due to a lack of ET/climate-change initiatives.[40]

NB, the smallest of the "Big Six" banks (ranked 119th globally according to its assets), was excluded for four reasons:

1. NB had almost no publically-documented information about ET initiatives or its internal climate-change capacity development;
2. NB was significantly smaller than the other major 5 Canadian banks, with ~$159 CAD billion in assets (Canadian Bankers Association, 2012a);
3. attempts to locate specific executives (for interviews concerning climate-change initiatives) were unsuccessful; and
4. in the course of interviewing the executives from the other five major Canadian banks, two things concerning NB were learned from those executives: firstly, NB was considered an outlier by the "Big Five" banks, much due to its heavy focus on the retail banking market of Canada's main francophone province, Quebec; secondly, nothing was known by them at the time (even in rumour) about any ET or climate-change initiatives by NB.

Noteworthy is that the Canadian core sample of financial organisations—the Canadian "Big Five" banks—was, at the same time, the actual "population" it intended to

[39] Credit unions are member-owned financial cooperatives that function as deposit-taking organisations. Their primary function is to provide members with credit at competitive rates.
[40] A sample candidate was deemed to have such initiatives if they were exposed in the company's annual report, CSR documentation, or CDP response.

represent. This is because of reasons mentioned above, namely that these banks control approximately 90% of the country's bank assets (DoF, 2011). The big five are listed here:

1. BMO;
2. TD;
3. BNV;
4. CIBC;
5. RBC.

2.7.7 BOUNDARIES: GERMAN FINANCIAL ORGANISATIONS

The German sample was considerably more complicated to assemble, not only because its banking industry is far larger, but also because it comprises thousands of banks.

The same criteria (and order of importance) used in choosing the Canadian financial organisations was used in assembling the German sample. These criteria prioritised: (1) involvement with ET/climate-change initiatives, (2) representativeness of the country's overall banking sector, and (3) the availability of information. Moreover, in order to ensure the comparability of the banks' institutions, the same specifications, according to MSCI's GICS, were used to specify and categorise candidate financial organisations.

The KWG divides the banking sector among 3 pillars and 7 types of banks. In Germany a bank is, by definition, a credit institute, and not an insurance company, the latter being an organisation that transfers risks from losses in exchange for standardised, premium amounts. The 7 types of banks are: (1) credit banks, (2) public/savings banks, (3) cooperative banks, (4) mortgage banks, (5) special purpose banks, (6) construction banks, and (7) central securities depository institutes (KWG, 2013).

The 3 pillars are: first, commercial banks (large banks, including branches of foreign banks); second, public sector banks (savings banks); and third, cooperative banks (such as credit unions) (KWG, 2013). As of 2012, Germany had 2095 banks (not including insurance companies) and 65 representative offices of foreign banks (Deutsche

Bundesbank, 2012a, pp.3-5). The preliminary list of candidate financial organisations had banks from each of these pillars and most of these types.[41]

The commercial banks considered for the sample were the four major German retail banks: Deutsche Bank, UniCredit Bank AG, Postbank, and Commerzbank.[42] Postbank had no references from the sources consulted prior to compiling the sample candidate list; however, it was included as a candidate due its well-known status as an established financial organisation in Germany.

A former commercial bank, Dresdner Bank, had noteworthy involvement with ET, exemplified through its equally shared, Luxembourg-based joint venture with Russia's Gazprombank. The venture, Carbon Trade & Finance SICAR S.A., received EU Commission approval on December 19, 2006 (Allianz News, 2007). Dresdner Bank merged with Commerzbank in the fall of 2008 (Der Spiegel, 2008). All of Dresdner Bank's employees, assets, rights and obligations were transferred to Commerzbank—along with the Carbon Trade & Finance venture with Gazprombank—by way of universal succession (Commerzbank, 2009a).

The second pillar of German banks, public-sector banks (also called "savings banks"), had the broadest range of bank types. Under this pillar were DekaBank Deutsche Girozentrale (the central asset manager of the public savings banks), 9 state banks, 417 public sector banks, and 6 non-affiliated savings banks (Deutsche Bundesbank, 2012a, pp.88-116). The sample candidates from this category were BayernLB (Bayerische Landesbank)[43], the second largest of the 9 giant state banks, and the German reconstruction credit institute, KfW (Kreditanstalt für Wiederaufbau).[44]

Neither of the two major banks under the third pillar "cooperative banks" had references to them. Nonetheless, the two banks were reviewed as sample candidates in order to adhere to the methodology's goal to represent, as much as possible, the

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[41] There was considerable overlap among the divisions. Examples were: special purpose banks (category 5) that were private (first pillar) or public (second pillar); savings banks (category 2) that were private, public, or cooperative-based (third pillar); and so on. Categories 4, 6, and 7 (mortgage banks, construction banks, and central securities depository institutes) were irrelevant to the study because they belonged to GICS categories (thrifts, mortgage finance, and consumer finance) that were excluded from the research.

[42] As of 2012, there were 163 commercial banks (regional banks and other credit institutes), 91 foreign banks from EU countries, and 19 from non-EU countries (Deutsche Bundesbank, 2012a, pp.61-85).

[43] BayernLB was ranked the 58th largest bank, globally, according to its 2011 assets (approximately $406 CAD billion) (Canadian Bankers Association, 2012).

[44] KfW is also a category 4, "special purpose" bank.

"population" of banks in each country. The two banks under this pillar were DZ Bank (Deutsche Zentral-Genossenschaftsbank) and WGZ Bank (Westdeutsche Genossenschafts-Zentralbank).

An additional sample candidate was Allianz SE, a German multinational financial services company primarily known as an insurance provider. The firm had numerous references for its ET/climate-change endeavours. From 2002 to 2008, Allianz fully owned Dresdner Bank, which had considerable ET involvement during that time. Moreover, it was Allianz that sold Dresdner Bank to Commerzbank in 2008 and, resulting from the transaction, Allianz gained a 14% controlling stake in the newly-formed Commerzbank Group (also a sample candidate) (Thomson Reuters, 2008). Allianz also had detailed publically-available reports and willing executives who were open to discussing the company's publically-disclosed climate-change initiatives.

Lastly, the private investment firm First Climate AG was included as a sample candidate. First Climate was subject to none of the banking rules and transparency regulations required of the other sample candidates.[45] However, alongside KfW, First Climate had the most references for best-practice ET expertise and pioneering activities.

2.7.8 BOUNDARIES: GERMAN SAMPLE

Of the four major German commercial banks (first pillar, category 1), Postbank was excluded because it lacked ET/climate-change activity compared to the other three.[46] Moreover, no progress was achieved to locate executives at Postbank who would consider discussing the bank's climate-change initiatives.[47]

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[45] The KWG distinguishes banks (credit institutes) from financial services companies (those providing investment advice and portfolio management, trading, and placement [investment] services) (Deutsche Bundesbank, 2012b). Banks fall under section § 1, paragraph 2, clauses 1 to 12, while financial services companies are defined by section § 1, paragraph 1a: 2, clauses 1 to 4, and 5 to 11 (Deutsche Bundesbank, 2012c; KWG, 2013).

[46] Postbank did not lack documentation: it had annual reports, extensive CSR reports for the years 2009-2011, and had filed responses every year (2006-2012) to the CDP Annual Questionnaire. The bank's 2011 response to the CDP mentioned the firm's intentions to expand its offering of ecological products and services, such as energy-efficiency campaigns and a climate fund; however, no other details were given. The bank's CDP responses were also shorter (half the length or more) than those of the other major German commercial banks.

[47] As with the banks in the Canadian sample, it was assumed that if identifying and finding specific executives (i.e. those driving the company's climate-change initiatives) proved to be impracticable—

From the second pillar of German banks, public-sector/savings banks, BayernLB was rejected for five reasons. The first was due to a lack of public information about ET/climate-change activity.[48] The other reasons are based on the research methodology's requirements. The Canadian banking sample had five core research cases (the Big Five banks) and the German sample already had the country's three largest commercial banks (of the first banking pillar). Therefore only one subject was sought from the second banking pillar, and KfW, the contending organisation, had both more numerous and stronger references concerning its ET/climate-change initiatives. In addition, KfW's overlap in multiple banking categories within the second banking pillar made it more representative of the German banking industry.[49] Lastly, according to GICS, BayernLB is a cooperative bank (under the third pillar of the German banking system), the same categorisation as DZ Bank and WGZ Bank. These two banks, both cooperative banks of the third pillar in the German system, matched the research methodology's conceptual definitions more clearly than BayernLB did, and one of the two (DZ Bank and WGZ Bank) was therefore chosen to fulfil the sample's breadth requirement (MSCI, 2010a; 2010b).[50]

Unfortunately, KfW had—because of its specific regulatory requirements—little publically-available information concerning its ET/climate-change initiatives that was directly comparable with that of the other banks. Nonetheless, KfW had the strongest references concerning its ET/climate-change initiatives (alongside First Climate) and its

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because of repeated failed attempts to do so—then that firm had little ET/climate-change activity to begin with. This decision was continually reinforced by comparing the same process of finding specific executives (described later in this chapter) among the other sample candidates. Finding specific executives at most of the financial organisations was a lengthy, but straightforward process once a strategy had been developed. In fact, it was the banks where the executives were easiest to identify and locate—such as the executives in Deutsche Bank—that had the highest degree of involvement with climate-change initiatives.

[48] BayernLB did have annual reports and extensive CSR reports from at least 2005 onwards (CSR reports prior to 2005 were not searched for). Nonetheless, although BayernLB was a CDP Signatory Investor (an institutional member of the CDP), the bank had no Annual Questionnaire responses on either its website or in the CDP online database.

[49] KfW is both a public-sector bank (albeit, formed with a private legal framework), therefore pertaining to the German banking category 2, and at the same time functioned as a special-purpose bank (category 5) (Deutsche Bundesbank, 2012a, pp.180-181)

[50] Under the second banking pillar, DekaBank Deutsche Girozentrale and KfW have the most distinct, outlying banking functions; however, KfW is institutionally categorised by the KWG alongside BayernLB and other state investment banks (such as Investitionsbank Berlin, Investitionsbank des Landes Brandenburg, and so on) (Deutsche Bundesbank, 2012b).

relevant executives were open to discussing the bank's initiatives. Therefore, as with First Climate, KfW was included as a secondary "core" sample candidate.

Of the two cooperative banks under the third pillar, WGZ Bank was rejected because DZ Bank was over four times its size in terms of assets, and therefore represented a larger portion of the German financial industry.[51] DZ Bank is Germany's fourth largest bank and acts as a central bank for approximately 900 cooperative banks (DZ Bank, 2013a).

The German core sample of financial organisations is:

1. Deutsche Bank AG;
2. Commerzbank AG;
3. UniCredit Bank AG;
4. DZ Bank AG;
5. Allianz SE.

The following two firms were secondary "core" sample financial organisations:

1. First Climate AG;
2. KfW.

The secondary core sample financial organisations served to expand, explain, and elaborate on the data collected from the German core sample of financial organisations.

2.8 INTERVIEWS

This chapter's eighth part has eight sections (including this one) that cover the second half of the methodology's execution, the interviews. The following sections highlight the methodology's evolution during the field-research phase. The methodology's execution required adjustments, in the course of research, to uncover additional and unexpected themes and issues that arose. The second and third sections below explain how the interview questionnaire was developed. The fourth and fifth sections show how pilot interviews were conducted in order to test the questionnaire's efficacy (to obtain specific, relevant data) and efficiency (to do so within the tight schedules and short time frames

[51] In terms of asset volume, DZ Bank was ranked #47 globally in 2011 with $534 CAD billion under management, while WGZ Bank was ranked #135 with $123 CAD billion in assets (Canadian Bankers Association, 2012a).

available from the interviewees). The final three sections explain the field-research process, from finding the banking executives to interviewing them.

The field-research stage marked the methodology's transition from documentation analysis to the observation-based (interview) data category. The interviews were structured to expose the actual implementation of the companies' climate-change risk-management institutions, e.g. whether they influenced investment decisions and other risk-based assessment procedures within the organisations' ERM systems.

2.8.1 QUESTIONNAIRE DEVELOPMENT: GOALS

Once the samples were chosen, the extensive process of systematically reviewing and collecting data from printed information sources continued, focussing on specific banks.

The questionnaire was the main research tool used to acquire empirical data during the interviews with executives from the financial organisations. It had to accomplish two functions: firstly, it had to verify the information found in each bank's relevant documentation. Secondly, it had to add layers of detail in three ways: (1) to allow the interviewee to expand on the available printed information, (2) to fill in information gaps in the documentation, and lastly (3) to allow unexpected phenomena, perspectives, and information not yet considered in the printed documentation to arise.

2.8.2 QUESTIONNAIRE DEVELOPMENT: QUESTIONS

Developing the questionnaire was a balancing act: the questions had to respect the banks' concerns, such as discussing bank policies with non-bank employees, while at the same time, generate specific empirical data that could be published in the form of a thesis and/or research papers.

Therefore, these methodological boundaries had to be reflected in the questionnaire. The questions had to be applicable to the samples of both countries, and summon elaborations on multiple themes such as the changing institutional environment (of international, national and bank-level institutions), stakeholders, and each bank's internal sustainability and environmental-based risk-management institutions.

One advantage gained by reviewing the banks' risk-management reports was their depictions of near-identical risk-management frameworks.[52] The ERM framework, based on the Basel Accords, was used in all core cases of both banking samples and provided an expected institutional structure. This rendered most questions about risk-management frameworks redundant and allowed more interview time to be spent discussing specific climate-change initiatives within the ERM frameworks.

The first drafts of the questionnaire were designed to be used during a 30 to 60-minute time frame. Diekmann writes that telephone interviews tend to last between 10 and 30 minutes, but can last as long as 90 minutes (2002). Therefore, although the questionnaire began with broad questions, followed by increasingly specific ones, the order in which the questions were asked was tailored to fit each interview. In many cases the interviews, scheduled for 45 minutes, had to be conducted in three (or more) 15-minute sessions. In other cases, a call scheduled for ten minutes lasted an hour. Moreover, certain questions were answered more thoroughly by different executives in the same bank, depending on each executive's role or background.

The questions themselves were created alongside four criteria recommended for semi-structured interviews: (1) within an appropriate scope, but without hinting at a type of answer; (2) specific, seeking concrete examples; (3) deep, seeking multiple aspects; and (4) asked in a personal context, from the individual perspective of the interviewee (Merton, Fiske and Kendall, 1956; Hopf, 2000 in Rieker and Seipel, 2003, p.52).

The most important of these four criteria proved to be the first: keeping the discussion within scope, while not prompting the interviewee to give an expected answer. Schröer (1997) adds that the researcher should not frame the questions according to certain concepts and vocabulary so as to leave an opportunity for discovery and revisiting established convictions (pp.118, 120, 124, 126 in Schlücker, 2008, p.57).

Although the questions were kept broad and open in order to encourage the interviewee to speak and reveal potentially unconsidered information, an attempt was nonetheless made in the questionnaire's first draft to include a pre-interview survey with closed, multiple-choice questions. It had been assumed that the interviewees could fill in a page of questions concerning specific types of climate-change risks faced by their

[52] This did not apply to the two secondary core sample candidates, First Climate and KfW.

banks. It was hoped that the survey would yield data that could be easily categorised and compared among the banks in both samples. Bubnienė (2008) used an intense month of expert enquiry to bring quantitative and qualitative data (on subjects such as readiness and motivation) into her study of the responses of Lithuanian companies to ET (p.257). That questionnaire consisted of seven closed, multiple-choice questions about the position and perspectives of the companies in the EU-ETS (pp.257-258). Unlike her interviewees, the bank executives interviewed for this thesis had little time and several constraints (such as privacy and disclosure norms) that rendered this attempt fruitless. In addition, the closed questions (e.g. concerning the bank's funds related to climate-change) ended up having less relevance than had been anticipated once the documentation analysis was complete. Instead, these closed questions were alluded to, where possible and relevant, during the interview by the doctoral candidate.

The questionnaire ended with a simple, casual question about the availability of additional reports or individual stakeholders that could be interviewed. The questionnaire can be found in Appendix 2: Interview questionnaire.

2.8.3 PILOT INTERVIEWS: EXECUTION

One open-ended discussion and two pilot interviews were conducted in the summer and fall of 2010. The aim was to receive feedback from the interviewees on the relevance of the questions to the subject matter, the sample's utility, and to test the questionnaire's format and its reception. The open-ended discussion served to validate the overall direction and the utility of the draft-questionnaire's key questions, while the subsequent pilot interviews tested the questionnaire in different sequences.

The informal, open-ended discussion of the questionnaire was with two lawyers (specialists in environmental and ET law): a Sr. Associate and a Partner, both from Clifford Chance's Frankfurt am Main office.[53] The specialists discussed banks'

[53] Clifford Chance, a multinational law firm, was the first to form its own Environmental and Climatic Trading Group (Clifford Chance, 2013a). The group's 70 lawyers cover 17 jurisdictions across Europe, North and South America, Asia, and the Middle East (Clifford Chance, 2013a). The firm also issues publications on ET which were shared with the doctoral candidate.

institutions and stakeholders concerning ET, and commented on the methodology's proposed interview method.

The two pilot interviews, conducted in the fall of 2010, were conducted by phone—more specifically, by Skype, the VoIP (Voice over Internet Protocol) platform—with expert executives who were knowledgeable of both ET markets and their relevance to more traditional financial markets (trading, private equity, corporate-purpose financing, etc.).[54]

The first pilot interview was conducted with an executive (Head of Emissions Trading) from First Climate, a secondary core sample candidate. The second pilot interview was done with the EEX (European Energy Exchange) in Leipzig (a sr. executive in risk management[55]), the market platform for European trading of energy products and derivatives, such as ET credits.[56] The EEX is a major hub in the ET industry, connecting and provided a trading platform for 223 member firms, including major German banks (Deutsche Bank, KfW, UniCredit), multinational oil/energy companies (Shell, Vattenfall), and numerous other types of firms and brokerages (even RBC Europe Ltd.) (EEX, 2013b).

2.8.4 PILOT INTERVIEWS: RESULTS

The pilot interviews yielded several insights. Concerning the questionnaire, the most striking insight was the lack of utility of the survey section. The survey section was removed from the questionnaire and can be found in the first section of Appendix 2: Interview questionnaire. The survey had two categories, (1) risks and (2) new

[54] These executives were chosen from outside the core sample of organisations. Because the Canadian sample had no secondary core cases, none were chosen for formal pilot interviews, although such interviews with executives from each country sample would have been ideal.

[55] Most of the interviewees agreed to be interviewed on the condition that they remain anonymous, not only by name, but in some cases also by their official role titles (which could, in conjunction with this thesis' dates of field research, be used to identify them). For this reason, exact roles such as "Head of Emissions Trading" are provided in the few permissible cases. Otherwise, throughout the thesis the roles are described more vaguely, such as "sr. risk manager," which can mean "Head of Risk Compliance", "Chief Risk Officer," "Sr. Director of Environmental Risk," etc.

[56] The EEX performs: EUA (EU-emission allowance) spot trading, EUA primary auction spot market, EUA futures, CER futures, EUA options, EUA primary auction derivatives market, and corresponding products (EEX, 2013a).

markets/opportunities, each with 25 and 15 yes/no-type questions, respectively. There was also a section for notes, i.e. for the possible response "maybe" or "both yes and no."

As mentioned previously, the survey was overly time-consuming. Because of the novelty of climate-change markets, the answers to the survey were predominantly: "maybe," and "both yes and no" such as "no, not directly [i.e. the risks are immaterial]; but also yes—indirectly [i.e. the risks must be addressed because of institutional pressures]." In unison the survey questions could, ideally, be used to form a picture of the challenges and opportunities of climate-change risks for banks; however, individually the questions lead to digressions that took (limited) interview time away from the key questions. These digressions diluted the focus of the interview, which was institutional diffusion, and not, for example, a pervasive categorisation of how banks interpret non-material risks. Lastly, the CDP responses from each bank of the core samples were thoroughly reviewed. These responses already contained overview sections and categorisations of risks and opportunities where the banks could share information on a voluntary basis.

Concerning their influence on the research direction itself, the pilot interviews showed that climate-change risks and ET played little (if any) role to banks' asset-management businesses. Banks tended to include, to varying degrees, considerations of climate-change risks in investment banking and concerning new investments (or re-investments, such as extensions to lines of credit, etc.), but did so very infrequently concerning existing assets or equity. The result for the research methodology meant a narrowing of the number of potential interview candidates within each bank. Executives from the banks' asset-management arms would not be interviewed unless there was clear evidence in the documentation or references that the bank in question had a significant initiative to diffuse climate-change risk-management institutions in its asset-management business. This notwithstanding, one asset-management executive, with extensive knowledge of climate-change institutions, was interviewed in order to double-check this methodological adjustment.[57]

[57] An additional interview with an asset manager of Deutsche Bank was conducted for this purpose. Deutsche Bank was the world's largest bank, in terms of asset size, in 2011 (Canadian Bankers Association, 2012a).

Lastly, the pilot interviews also provided an opportunity to review the quality of the questions (along with the way the questions were asked) against the types of answers provided by the interviewees. Quality factors are a critical part of qualitative research and should be established prior to, and carried out throughout the research phase (Rieker and Seipel, 2003, p.125). The most important criterion of each question was its scope, and how the scopes of the questions, in combination, served to form an empirical sketch of each bank's climate-change institutional framework.

2.8.5 FINDING SPECIFIC EXECUTIVES

The interviews served to bring each case—each financial organisation being studied—to a point of what Glaser and Strauss call "*theoretical saturation*" (1967, p.61). This is the point where additional data fails to add any novelty to the information already gained (from the documentation review). It was assumed that one to three semi-structured interviews within each financial organisation would to be necessary to reach the desired level of empirical detail, i.e. enough information to map out and categorise the institutional phenomena and the stakeholders in question.

Reaching theoretical saturation could only be determined after merging the insights gained in each interview with the empirical data gained from the documentation analysis of each bank's reports. In many cases, the interviewee shared additional public documents (bank studies, industry reports, white papers, etc.) with the doctoral candidate following the interview: these were also reviewed and, in several cases, assimilated into the body of data.

As referred to above, the interviewee was asked to consider introducing the doctoral candidate to colleagues or other experts in the bank for additional information. The dangers of the "snowball strategy" (e.g. conducting research within someone's [potentially-limited] network) were mitigated as far as possible by tailoring the questionnaire, where applicable, to highlight specific issues in each bank (Przyborski and Wohlrab-Sahr, 2008, p.180). Such specific issues (e.g. launching a climate-change fund and then cancelling it two years later) were known from the documentation analysis.

In some cases, the names of specific bank executives were already known from direct referrals to them, or references about them made in bank documents, media, industry reports, or conference attendee/speaker lists, such as those from the annual Carbon Expo.[58] To find the executives for all the other banks, attempts were made by making phone calls and writing e-mails to a given bank's public relations, CSR, legal, or human resources department. These attempts all failed.[59]

A third attempt involved a combination of making phone calls to the banks using the candidate interviewees' names found on online professional-network websites (which are very popular in the financial industry). The two websites used were www.xing.com (for the German sample) and www.linkedin.com (for both the German and the Canadian samples). Both websites use search-engine principles that find results based on network connections and membership in "industry groups."

Therefore, the doctoral candidate created profiles on both sites and made applications for admission to several specific industry groups.

Table 13: Industry groups of professional network websites

Xing.com (Germany)	LinkedIn.com (Germany and Canada)
Emissionshandel	2020 group for Carbon Markets
Erneuerbare Energien	CARBON - CDM/JI, EU-ETS Traders, Analysts ,Origination
Innovative Finanzanlagen made in Bayern	Energy Trading - Power, Gas, Carbon, Oil and everything else
International Renewable Energy Agency	Emissions Trading Network
Energie der Zukunft	Equator Principles and IFC Performance Standards
Clean Tech Investments	GRI
Carbon Footprint	Green Banking and Finance

While admissions to groups were being gained, searches were performed to find executives with roles involving the following words (in order of priority):

[58] An initiative of the World Bank and the International Emissions Trading Association.
[59] In all contact (phone and e-mail) with the financial organisations, it was emphasised that the aim was to gain a better understanding of initiatives that were already publically disclosed by the banks. Despite this, most banks either did not reply, or replied that interviews with non-bank employees were forbidden, and that all bank information was confidential.

"environmental," "risk management," "sustainability," "CSR," "compliance," "commodity[60]"; and the following titles: "chief," "VP," "director," "manager," "analyst."[61]

Once the names of executives in specific offices (or cities) were achieved, the banks in those cities were called and requests were made to speak to the executives directly. In roughly half the cases the executives passed on the doctoral candidate to other executives in the same bank with more specific duties related to the research subject. In almost all cases the executives and doctoral candidate either spoke several times and/or exchanged several e-mails prior to the interview. In these communications several matters were clarified: the interview content and research topic, short bios of the doctoral candidate and the interviewee, the right to record or take notes during the interview, the anonymity of the interviewee, the interview deadline, etc.

2.8.6 "CORE" INTERVIEWS

Executives from the following departments were interviewed from the financial organisations in the German sample:

Table 14: Core Interviews: German sample

Financial organisation	Department/Area	Interview time (total)
Deutsche Bank AG	Commodities	46 minutes
Deutsche Bank AG	Investment Analysis	26 minutes
Deutsche Bank AG	Regulatory Affairs/Compliance	62 minutes
Commerzbank AG	Commodities	32 minutes
UniCredit Bank AG	Climate/Carbon/ET Solutions	67 minutes
DZ BANK AG	Corporate Development	57 minutes
DZ BANK AG	Sustainability	33 minutes
DZ BANK AG	Sustainability Investing	20 minutes
Allianz SE	Climate/Carbon/ET Solutions	46 minutes

[60] Noteworthy is a difference between searches for executives in the German and Canadian banks using the word "commodity." In 2011 this word yielded workable results for executives in the German networking website, and poor results for finding executives in Canadian banks. In the German banks, ET credits were often considered tradable commodities (like copper, wheat, oil, etc.), and "carbon traders" could be located. In the Canadian banks these new derivatives had still not reached that level of instrumentalisation.

[61] Where applicable, these words were used in both English and German, e.g. environment/*Umwelt*, etc.

Executives from the following departments were interviewed from the financial organisations in the Canadian sample:

Table 15: Core Interviews: Canadian sample

Financial organisation	Department/Area	Interview time (total)
RBC	Regulatory Affairs/Compliance	42 minutes
RBC	Environmental Affairs	25 minutes
RBC	Climate/Carbon/ET Solutions	46 minutes
TD	Environmental Affairs	20 minutes
TD	Environmental Affairs	36 minutes
BNV	Environmental Affairs	45 minutes
BMO	Sustainability	25 minutes
CIBC	Risk Management	70 minutes

One assumption at the outset of field research that proved misleading was that the more senior the executive's role, the more relevant information this executive could share. What proved more accurate was that middle-tier executives (for example, a director of environmental affairs) had insights into the overall bank climate-change approaches as well as experience with the institutions on the front lines.

2.8.7 ADDITIONAL INTERVIEWS

Alongside the core interviews listed above, additional interviews were conducted, primarily with German organisations as they had more market involvement. As mentioned previously, the Canadian sample of banks was, in many respects, the country's actual banking population.

Table 16: Secondary core interviews (Germany)

Financial organisation	Department/Area	Interview time (total)
First Climate AG	ET[62]	55 minutes
KfW	JI/PoA Projects	33 minutes
	CDM Projects	36 minutes

[62] Originally intended as a pilot interview, the fruitful results were as useful as those of the core interviews.

Table 17: Additional interviews and open discussions

Financial organisation	Department/Area	Interview time (total)
European Investment Fund	Risk Management	48 minutes
KPMG AG Wirtschaftsprüfungsgesellschaft	Sustainability	42 minutes
Transferstelle Internationaler Emissionshandel Hessen	Project Management	20 minutes
NB (Canada)	Sustainability	44 minutes
Stratos Inc.[63]	Chair/Executive Management	26 minutes

2.9 QUALITY ASSURANCE AND CONCLUSION

This chapter's ninth and final part concludes the chapter by showing the quality-assurance check applied to the research data. The synergy achieved between the documentation analysis and the semi-structured interviews allowed the creation of empirically-based institutional overviews of each financial organisation's publically-disclosed climate-change risk-management initiatives.

The overviews were verified in 2013, usually with the main executive from each financial organisation, i.e. the executive with the role and insights most closely related to this study.[64] Of the ten core financial organisations in the two samples, nine verified the accuracy of the data (up to 2011) and offered minor corrections and helpful small adjustments.[65]

This quality-assurance task served two purposes. Firstly, it raised the quality of the research by assuring its accuracy and incorporating the banks' own feedback into it. Secondly, it served to protect the doctoral candidate against two types of potential claims: (1) claims by the financial organisation of publishing private, confidential data, and (2)

[63] Stratos is a Canadian sustainability consulting firm whose publications were used in research for this thesis' first pilot paper. The firm serves clients such as the Canadian Federal Government, the Canadian Provincial Government of Ontario, and multinational companies such as Unilever, Statoil, etc.
[64] In cases executives had changed roles, or were not available for further comments, other executives either reviewed the overviews or circulated them within their departments for comments or feedback.
[65] In the one (German) financial organisation that did not verify the data, neither the executive interviewed in 2011 nor a replacement could be found to do so.

claims of adulterating the data to present it in a more convenient, but less accurate (less empirically-based) way.[66]

With the data verified, the next research phase of comparing the data of both samples and deriving theoretical speculations could ensue. These speculations, discussed throughout the remainder of the thesis, are rooted in the re-integrative paradigm upon which the research methodology was based. This research paradigm was used to design the study so as to investigate specific institutional activity within an over-arching, intra-organisational ERM structure based on the Basel Accords.

Using "top-down-up" reasoning, the empirical data from both samples of banks was categorised according to the models, concepts, and theories of neoinstitutional theory and ERM (presented in chapter 4). This categorisation allowed their interlinkages to be further considered, upon which arguments concerning the institutions' diffusion could be built (presented throughout chapters 5 to the thesis' conclusion).

[66] Two executives (from the Canadian banking sample) related cases of graduate students and researchers that had previously falsified bank data for this purpose.

CHAPTER 3: INSTITUTIONS

3.1 INTRODUCTION

This chapter's first goal is to extend the thesis' theoretical foundation to include Scott's view of institutional diffusion and its triple significance for institutional analysis. The **three viewpoints** for analysing institutional diffusion is supported by another of Scott's models, namely: the **three pillars** of institutions. These three pillars suggest that institutional elements (i.e. regulatory, normative, and cultural-cognitive elements) are transferred—and sometimes also, transformed—during institutional diffusion.

This chapter's second aim is to begin both the presentation of empirical data and a foundational theoretical discussion which serve as the base upon which the study's major findings rest. The research data in this chapter consists of the major institutions driving climate-change in the financial industry, along with the most relevant stakeholders: the banks, their regulators, rating agencies, and so on.

The empirical findings show a similarity between the institutional concepts upon which the climate-change institutions are based, and the institutional structures whereby they proliferate themselves into the organisational field, the banking industry.

Writing about qualitative research, Silverman points out that identifying the main elements in data, and to do so according to a theoretical scheme, should only be the first stage of data analysis (Silverman, 2010, p.65). This "first stage" of data analysis is accomplished both in this chapter and in the following one: together they address the ways banks interpret climate-change risks. Silverman points out that the next—and higher—priority is then to examine how the elements are linked together (Silverman, 2010, p.65). This more exhaustive analysis, which shows how the institutional elements are related to the paradigms of institutional diffusion, is done throughout the thesis' final three chapters (5, 6, and 7).

Seven parts constitute this chapter. Following this introduction, the chapter's second part is a re-affirmation of the need to interpret the empirical data through a neoinstitutional paradigm as opposed to that of new institutional economics.

The third part has seven sections which take a deeper look into the chosen definition of institutions, particularly at the "concept" level. These sections present the chapter's central argument, **that both the concepts and structures of the institutions with which the banks try to align and diffuse their own climate-change risk-management initiatives, are vague and offer a range of possible interpretations**. In some cases the institutions' demands and requirements even contradict one another.

The chapter's fourth part has three sections that focus on the "structural" level of institutions and how they manifest in an organisational field made up of stakeholders and institutions. In order to explain the gap between the "concept" and "structural" levels of institutions, the thesis' definition of institutions is expanded to incorporate another layer of detail, namely, Scott's three pillars of institutions.

The fifth part has five sections that categorise the relevant climate-change stakeholders and institutions in the banking industry. These are broken down according to their predominant pillars (according to Scott's three-pillar model) and their primary geographical realm of influence (international, national, and industry-specific [relevant to financial organisations]). Of the dozens of stakeholders and institutions related to the banks' climate-change initiatives, only those which are kept "alive" are presented (see reference to Berger and Luckmann [1967, p.75] in the last chapter).

The sixth part has three sections that present a deeper look into Scott's view of institutional diffusion and its triple significance. These sections explain this foundational theoretical paradigm upon which the thesis' remaining chapters are based.

The seventh and final part concludes the chapter by highlighting its main points.

3.2 NEOINSTITUTIONALISM IN ORGANISATIONAL RESEARCH

As stated in the first chapter, this thesis defines institutions as structures, i.e. rules, norms, guidelines, and practices—formal or informal—that are based upon concepts (e.g. ideas, notions, doctrines, interests), that employ regulative and constitutive rules to govern activities, and that are always strengthening or weakening.

This definition, as well as the thesis' research methodology, both approach and interpret institutions from the neoinstitutional paradigm, as opposed to that of new

institutional economics. Major theorists of new institutional economics such as Coase, North, and Williamson devoted significant attention to transaction-cost economics, which is primarily concerned with "*the rule and governance systems that develop to regulate or manage economic exchanges*" (Scott, 2008, p.27). Scott refers to the arguments of authors such as Parsons and Selznick as pertaining to the "systems approach" because of their "structural-functional" logic and dominant concern with "stability, order, and system maintenance" (Scott, 2008, p.42). As mentioned in the thesis' introduction, it is precisely due to the **absence** of stability, order, and the possibility of system maintenance—focal points of new institutional economics—that the banks go to such lengths to diffuse climate-change risk-management institutions that are not based on mitigating market (or "systematic") risks. Instead, the banks' diffusion of climate-change risk-management institutions focuses heavily on mitigating non-market risks that are less (or non-) quantifiable, vague, and constantly changing due to, for example, a constantly changing regulatory environment.

Regarding the climate-change risk-management institutions of financial organisations, the phenomenon of institutional change is more appropriately analysed using a neoinstitutional approach. New institutional economic theory narrows possible descriptions and explanations of institutional phenomena to either the reduction of transaction costs, or to the ways that institutions implicitly increase/lower the resistance of opportunistic behaviour. A neoinstitutional viewpoint, on the other hand, offers a broader range of interpretations for institutional change. Moreover, this broader range of possible interpretations also incorporates explanations based on classical economic theory.

Throughout this thesis, the empirical data shows that the evolving international and national policies, markets, and banking niches concerning climate change are far from achieving an equilibrium state. This is not only the case for climate-change issues in organisations, but also for the broader umbrella concept of environmental issues—because of their high and consistent rates of change. Research into corporate environmental strategies has shown that both internal factors (e.g. firm-specific attributes) and external factors must be taken into consideration when examining the driving forces behind market responses to environmental issues (Aragon-Correa and

Sharma, 2003; Bubnienė, 2008). Therefore, the discussion here begins with an examination of the changing external factors, i.e. those forces that influence the banks' internal responses to diffuse climate-change risk-management practices.

3.3 INSTITUTIONAL CONCEPTS

This chapter's third part has seven sections (including this one) that define three core concepts used throughout the remainder of the thesis. The first of these, sustainability, is interpreted differently by several major stakeholders (such as the UN, the World Bank, and the IPCC) that are related to banks' climate-change risk-management institutions. The other two concepts, materiality and scope, are then discussed as they relate to sustainability.

The term "concept" should be distinguished from what the early institutionalist William Graham Summer referred to as the conceptual level of institutions. Summer proposed that institutions evolved along two levels: a conceptual level (based on ideas, notions, doctrines, interests) and a structural level (Summer, 1906, p.53). The concept level defines the institution's goals and its intangible boundaries, while the structural level gives the means to implement the institution's purpose.

Concerning organisations, Parsons defines the concept level as "*a wider social system which is the source of the 'meaning,' legitimation, or higher-level support which makes the implementation of the organisation's goals possible*" (1960, pp.63-64). For climate-change risk-management institutions, the concept level—the source of "meaning and legitimation"—involves the interplay between three main concepts: sustainability, materiality, and scope. Each is explained in detail below.

3.3.1 DEFINING SUSTAINABILITY

Sustainability is the umbrella concept upon which major climate-change institutions are based. Unlike the concepts of materiality and scope, sustainability is vaguer and, concerning climate-change specifically, the concept is connected to several global

institutions and organisations. Therefore, its clarification in the context of this thesis requires considerably more background discussion than the other two concepts.

In the research literature for institutional economics and climate-change issues, the most common starting point for discussions of sustainability stem from the 1987 Brundtland Report. The report's definition of sustainable development is "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (UN-WCED, 1987, p.37).

Several things stand out in this definition. Müller-Pelzer points out that the definition leaves the concept of "needs," i.e. for current and future generations, open to interpretation (2008, p.163). Molisa and Wittneben point out that there must be a priority concerning "which" people in current and future generations will be able to get their needs met (2008, p.176). These views support the notion of resource scarcity and a foundational pillar of economics: resource allocation.

DZ Bank's division Sustainable Investment Research bases its work on two definitions of sustainability which have also influenced the political and economic sustainability debate in Germany. These two definitions are the Brundtland definition (defined above) and the one found in the final report of the Bundestag Enquete Commission called Protection of Man and the Environment—Objectives and General Conditions of Sustainable Future Development, from 1998 (Pratsch and Wermann, 2011, p.3). The latter definition defines sustainability as a "*concept of ongoing future-oriented development of the economic, environmental and social dimension of human existence*" (Pratsch and Wermann, 2011, p.3). This is what later became known as the three pillars of sustainability: TBL, or ESG (environment, social and corporate governance) (Pratsch and Wermann, 2011, p.7).

These concepts that define sustainability are not simply based on official reports, but on an ongoing development of institutions at the international level, the most significant institutions coming from the UN. In 1970, international debate around the development of a UN stance on environmental issues was already polarised, even before the first landmark international conference took place, the 1972 UN Conference on the Human Environment, also known as the Stockholm Conference. The polarisation stemmed from varying ideas around the conference's agenda. Brazil, unofficially

representing the underdeveloped world, stood against the "Brussels group," an earlier version of the G8 which attempted to undermine international pollution controls (Morton, 2011). Brazil argued that environmental protection must "*be planned as a means to promote development and not as an obstacle* […] *to the rising expectations of the underdeveloped world*" (Own modification) (Morton, 2011).[67]

3.3.1.1 THE VIEWPOINT IMPLICIT IN UN INSTITUTIONS

In 1987 the Montreal Protocol provided a major advancement for global institutions concerning environmental protection. The Protocol on Substances that Deplete the Ozone Layer controlled the consumption and production of chemicals that destroy stratospheric ozone (Environment Canada, 2011).

Five years later came the Rio "Earth Summit."[68] The Rio Summit, also known as the UNCED (United Nations Conference on Environment and Development), took place in June 1992. Over 178 governments adopted the statements of principles found in the conference's resulting three documents: Agenda 21, Rio Declaration on Environment and Development, and the Statement of Principles for the Sustainable Management of Forests. It was the Rio Declaration that sought to clarify sustainability by, for example, putting forward the principles of precaution and "polluter-pays" (Müller-Pelzer, 2008, p.163). The Rio Declaration comprises 27 statements that serve as the roots, or guiding principles, for all UN-based environmental institutions that ensued following the Rio Summit. The first three principles are foundational for the development of subsequent institutions, such as the Kyoto Protocol.

Table 18: Core principles and concepts of the Rio Declaration

Principle	Text	Core concept
1	"Human beings are at the centre of concerns for sustainable development. They are entitled to a	Basic human rights ⇩

[67] The Brussels group, on the other hand, wanted assurance that their trade interests would remain unaffected, i.e. so that no agency could be established that could hinder their economic interests (e.g. no interference in Britain's and France's supersonic airline industries) (Morton, 2011).
[68] The Rio Declaration was established in 1992, and entered into force in 1994.

Principle	Text	Core concept
	healthy and productive life in harmony with nature."	
2	"States have [...] the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies [...]."	State sovereignty ⇩
3	"The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations."	Each state must guarantee these rights for future generations

(Source: Own modifications, Rio Declaration, 1992)

In order to encourage action on these principles, three major conventions—each geared towards contributing to the sustainable-development goals of Agenda 21—were also adopted at the Rio Summit; they are: Biodiversity, Climate Change, and Desertification (Siebenhüner, 2009).

The other significant international institutional development from the Earth Summit is the previously mentioned treaty and administrative body, the UNFCCC. Its goal is the prevention of "dangerous" human interference with the climate system (UNFCCC, 2012b). The treaty's objective is to "*stabilize GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system*" (UNFCCC, 2012c). By 1993, one hundred and sixty-six countries had joined the convention to cooperate and limit average global temperature increases.

Although the relevance of the UNFCCC concerning sustainability is less obvious than is the case with the Rio Declaration or the Montreal Protocol, it is noteworthy that the UNFCCC spreads the same idea as the other institutions: an ecosystem approach is essential to human survival (Rolfe, 2008, p.82). Writing about UNFCCC leadership and the ecosystem approach, Rolfe states that:

> "*The ecosystem approach integrates all atmospheric, terrestrial and oceanic physical and biotic systems. It highlights systems integrity—that the whole is more than the sum of the parts—and that system characteristics continually play out in terms of information flow, feedback loops, hierarchy, thresholds and equilibrium*" (2008, p.82).

Unlike the Convention on Biological Diversity, which Siebenhüner relates to be considered "*significantly more successful in generating normative influence*," the climate-change convention and its provisions to reduce GHG emissions were considered too weak (2009, p.265). In 1995 it was argued that market-driven institutions—those based upon economic mechanisms—were the most effective and efficient way to quickly reduce GHG emissions. It is through the framework of the UNFCCC that the most well-known, legally-binding, international environmental treaty came into existence: the Kyoto Protocol.

In 1997 the Kyoto Protocol obliged industrialised countries to set emission reduction targets (with the intention to reduce global average GHG emissions, by 2012, by 5,2% from 1990 levels) for six dominant GHGs. The first commitment period was from 2008-2012. On February 16, 2005 the Protocol entered into force. Twenty-eight articles and two appendices constitute the Kyoto Protocol: these include three flexible mechanisms (ET, CDM, and JI) for countries to implement in order to achieve GHG targets. Below are the Protocol's sections that are relevant to sustainability and the core regulatory institutions to promote it:

Table 19: Fundamental articles from the Kyoto Protocol

Article(s)	Title
2	Annex I countries shall implement specific policies
3	*[Annex I countries shall each have a…]* Reduction commitment
5	*[Annex I countries shall each have a…]* National inventory system
7	*[Annex I countries shall each…]* Submit annual inventories
10/13	*[Annex I countries shall promote…]* Knowledge development and transfer
11	*[Annex II countries shall…]* Pay developing countries' costs

(Source: Own modifications, Kyoto Protocol, 1997)

As mentioned in the thesis' introduction, the Kyoto Protocol splits the countries of the world into categories called Annex-1, Non-Annex-1, and Annex-2 countries. Annex-1 countries are developed countries and countries with economies in transition, such as Ukraine. The rest of the world's countries—those still undergoing industrialisation, such as China, Brazil, Egypt—are non-Annex-1. Annex-2 countries are a subdivision of the Annex-1 category: they are all Annex-1 countries except those with

economies in transition. Annex-2 countries, such as Germany and Japan, can pay for the costs of climate-change mitigation (that results in verifiable GHG-emissions reductions) in developing (non-Annex-1) countries. Annex-2 countries can then use these reductions (ET credits) towards achieving their own national reductions targets. The rationale behind this rule is that developed countries can leverage currency and cost advantages in carrying out GHG-mitigation activities in non-Annex-1 countries, while the developing countries receive not only investments from Annex-2 countries, but also innovative, best-practice technologies and knowledge-transfer. This is the intention.

Within Annex-1 countries themselves, the responsibility of reducing GHG emissions is delegated by their governments to businesses and industries within their jurisdictions. Governments must implement policies to ensure that the culprits of climate change contribute sufficiently to national GHG-reduction plans. These industries, LSEs, include power generation, mining, pulp and paper, chemical, iron and steel, smelting and refining, cement and lime, glass and glass container, and oil and gas sectors. The complete list of targeted economic sectors from the Kyoto Protocol is listed later in this chapter.

As of 2012, 192 countries had signed the Kyoto Protocol (which account for ~64% of the world's GHG emissions) while 195 remain as signatories to the UNFCCC (UNFCCC, 2012b). Countries that sign the Protocol are not simply agreeing to its reduction commitments, but also to supporting the use of its free-market economic mechanisms. Like the Kyoto Protocol, The Stern Review recommends the global expansion of technology transfer and ET schemes as

> "*a powerful way to promote cost-effective reductions in emissions and to bring forward action in developing countries: strong targets in rich countries could drive flows amounting to tens of billions of dollars each year to support the transition to low-carbon development paths*" (Stern, 2006b, p.4).

The Kyoto Protocol's promotion of free-market economic mechanisms is understood to provide a way of achieving cost savings (i.e. by the LSEs) without the need for the regulator (i.e. the government) to collect information about abatement costs; instead, the government has to supervise and monitor the market, and in cases of non-compliance, apply sanctions (Hammar and Sterner, 2005, pp.18-23; Hansjürgens, 2005,

pp.2-6). ET leverages economic market drivers (supply and demand) which are assumed to be more efficient than government intervention, such as taxation and/or the creation of (potentially lofty) new government departments, annual budgets, and so on.

The evolution of the Kyoto Protocol is supported by structures under the UNFCCC institutional umbrella, which includes the COP. COPs are annual meetings to establish and further elaborate legally-binding commitments to control climate change (UN-Bodies, 2012). The meetings bring together key representatives from all Kyoto-signatory nations together to revise, adjust, and negotiate ongoing institutional changes (as well as administrative procedures) to the Protocol (UN-Bodies, 2012).

Although the COPs bring together governments to work toward a universal climate-change agreement that should cover all countries from 2020 onwards (this agreement is to be adopted by 2015), the talks continue to yield few decisions and at best, vague, non-binding commitments.

The next global institution to promote sustainability is a set of goals, proposed in 2000, known as the United Nations MDGs (Millennium Development Goals). The MDGs are eight goals, agreed to by all UN member states (and by many international development organisations, such as the World Bank), with a target date of 2015 (United Nations Millennium Goals, 2013). The goals range from cutting extreme poverty rates in half to making primary education universal. Of the eight goals, one addresses—indirectly—environmental issues: Goal 7, Ensuring Environmental Sustainability. There are no explicit climate-change targets. Goal 7 serves to buffer other UN goals (of other UN institutions and conventions) concerning biodiversity loss, the degradation of water, drylands and forests, as well as climate-change risks (UN Secretary-General, 2013, p.2). Goal 7 has four sub-goals, called "targets":

1. Target 7.A: integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources;
2. Target 7.B: reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss;
3. Target 7.C: halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation;

4. Target 7.D: achieve, by 2020, a significant improvement in the lives of at least 100 million slum dwellers.

The sub-goal 7.A, integrating sustainable development principles into policies and programs and reversing environmental resource loss, has the highest potential synergy with the Kyoto Protocol's institutions to proliferate ET.

In support of these goals, world leaders at Rio+20 (the UN Earth Summit of 2012) approved an agreement titled "The Future We Want" and pledged over $513 US billion towards sustainable-development initiatives (United Nations Millennium Goals, 2013). Like the money pledges, the MDGs lack any enforcement mechanism to ensure their execution and delivery by the agreed-to timeline, ending in 2015. They are also unspecific and therefore, immeasurable. Countries, organisations, and agencies that publically support these goals gain legitimacy by simply stating their endorsement of them.

3.3.1.2 THE VIEWPOINT OF THE WORLD BANK

The last organisation under review with significant institutional influence on climate-change risk management for major banks is the World Bank. Not only does the World Bank finance and run ET studies and projects of its own, but it also publishes numerous reports each year.[69] The World Bank's stance on climate change is influential in spreading climate-change institutions; however, unlike the Basel Accords, which determine requirements for banks' risk-management systems, the World Bank's standards are not mandatory. One of the World Bank's standards, concerning credit-risk analysis, is presented in the next chapter.

The World Bank is a partnership between two organisations (the International Bank for Reconstruction and Development and the International Development Association), both which are managed by 188 member countries. The partnerships exist with a mission to reduce poverty and support development. Relevant here is the bank's focus on achieving the MDGs concerning the elimination of poverty and sustainable

[69] Reports can be found here: World Bank: Publications on Climate Change. [website] Available at: < https://openknowledge.worldbank.org/browse?value=Climate+Change&type=topic> [Accessed 03 September 2014].

development, both which directly support the bank's mission (World Bank, 2013a).[70] Of the bank's many initiatives towards achieving these goals, the Clean Air Initiative seeks to diffuse institutions and innovations to improve air quality in cities around the world. The initiative serves as a hub to share knowledge and experiences on climate change in order to improve policy and regulatory frameworks at regional levels (Clean Air Initiative, 2013).

A Reuters Point Carbon news article from mid-2013 reported that the World Bank's board had agreed to a new energy strategy that would limit the financing of coal-fired power plants to "rare circumstances" (Point Carbon, 2013e, p.1). This amendment of the bank's lending policies would restrict financial support to countries with "no feasible alternatives" to coal (Point Carbon, 2013e, p.1). Although financing fewer coal-fired plants will have a positive effect on reducing global GHG emissions, the real benefit is the influence that such a policy could have on banks and financiers worldwide. The policy is neither vague (it targets a specific industry and activity, financing coal-fired plants), nor overly lax (it seeks to cut financing altogether and gives a definition for "rare circumstances"). Unlike other global institutions, such as the MDGs, the World Bank's stance and execution of its sustainable development agenda might push other organisations to mimic the development of institutions in this same direction, i.e. away from investments with high ET risks. The news agency writes: "*Some analysts hope the new strategy could send a signal that coal is a risky investment and prompt countries to turn to alternative energy sources*" (Point Carbon, 2013e, p.3).

The World Bank sees "green" growth as the only way of reconciling rapid economic development with the imperative of a better-managed environment (World Bank, 2013b, p. 31). A climate-change report from the bank in late 2012 stated that "*All nations will suffer the effects of a warmer world, but it is the world's poorest countries that will be hit hardest by food shortages, rising sea levels, cyclones and drought*" (Point Carbon, 2013f).

[70] The bank's mission focuses on two goals: (1) to push extreme poverty to no more than 3% by 2030, and (2) to promote shared prosperity and greater equity in the developing world (Chandra, 2013).

The following conclusions can be drawn from this overview of the global organisations and institutions that promote sustainability (and that are relevant to major financial organisations):

1. there is considerable (and increasing) overlap of the institutions;
2. the synergy of these institutions appears to be growing far slower than the number of institutions themselves: for reducing GHGs on a global scale, the scopes of the previous agreements (e.g. the Kyoto Protocol) and their synergy have barely grown since 2005, despite the annual COPs and both the rise and/or evolution of newer global institutions since then. Examples are the MDGs, nationally appropriate mitigation actions (also known as NAMAs), PoA (Program of Activities/Programmatic CDM), and REDD &/ REDD+ (Reducing Emissions from Deforestation and forest Degradation).[71]

One reason for the slow progress of these institutions is that their conceptual base, rooted in science, is still challenged.

3.3.1.3 THE VIEWPOINT OF THE IPCC

The body of scientific data that serves as the basis for the development of climate-change institutions is rarely challenged from a scientific viewpoint, but rather from an epistemological one. In other words, scientific counter-arguments are less often used to oppose the body of climate-change science endorsed by the UN, the World Bank, etc. Instead, counter-arguments tend to challenge the nature of science itself, i.e. that science is subjective; that data is manipulated to support desired conclusions, and so on.

The IPCC released its fifth assessment report (The Physical Science Basis) in September, 2013. Several clauses were intensified, signaling more scientific certainty concerning the cause-and-effect relationship between human activity and climate-change. As stated in this thesis' introduction, many significant clauses were changed to reflect a confidence level from "likely" to "very likely," signaling an increase from 66-100% probability to 90-100% (Mastrandrea et al., 2010; IPCC, 2013, p. 13, Sections 10.3, 10.4,

[71] REDD+ strategies include conservation activities, enhancements of forest carbon stocks, and sustainable forestry management.

10.6). These changes contained no surprises for those familiar with statements from the previous four reports. Examples of the changes are:

1. "*It is very likely that anthropogenic influence, particularly GHGs and stratospheric ozone depletion, has led to a detectable observed pattern of tropospheric warming and a corresponding cooling in the lower stratosphere since 1961*" (Sections: 2.4, 9.4, 10.3);
2. "*It is likely that anthropogenic influences have affected the global water cycle since 1960* […] *to global-scale changes in precipitation* […] *and to changes in surface and subsurface ocean salinity*" (Sections: 2.5, 2.6, 3.3, 7.6, 10.3, 10.4);
3. "*It is now very likely that human influence has contributed to observed global scale changes in the frequency and intensity of daily temperature extremes since the mid-20th century, and likely that human influence has more than doubled the probability of occurrence of heat waves in some locations*" (Section 10.6);
4. "*It is very likely that anthropogenic forces have made a substantial contribution to increases in global upper ocean heat content* […] *observed since the 1970s*" (Sections: 3.2, 10.4) (Own modification) (IPCC, 2013).[72]

Despite the abundance of publically-available scientific data, scepticism has a formidable history in climate-change, especially in the United States. The dominant, market-based institution of climate change, ET, has already been the subject of intense debate in the United States due to the attempts to introduce several programs there in the late 1980s and 1990s (Ellerman et al., 2000; Ellerman et al., 2003; Hansjürgens, 2005 in Hansjürgens, 2008, p.4). The debate whether global warming is tied to human activities continues most strongly in North America where, according to the annual Climate Change Performance Index, Canada and United States remain among the world's ten worst-performing countries (Germanwatch, 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013).

[72] For a broad overview of climatic science and its relevance for industries and economic policy development see Chapter 1: The climate crisis in the making (pp.9-11) and 2: The challenge of climate stabilization (pp.12-34) of *RECIPE: The Economics of Decarbonization*, a joint study by The Potsdam Institute for Climate Impact Research (PIK), Centro Euro-Mediterraneo per i Cambiamenti Climatici (CMCC), Centre International de Recherche sur l'Environnement et le Développement (CIRED), and The Electricity Policy Research Group (EPRG) of the University of Cambridge (see reference under Edenhofer et al., 2009).

What can be concluded from this discussion of sustainability—in the context of climate-change and financial institutions—is that the major institutional initiatives (the UNFCCC [and the Kyoto Protocol], the MDGs, and the World Bank) lack regulatory enforcement among financial organisations and at best, carry an air of suggestion. This means that alignment with these institutions, or attempts to create rules or practices that support these institutions, will more likely have considerable variance. For a global issue that requires a tight synergy of efforts, these institutions offer too much "playing room" to financial organisations that attempt to diffuse them into both corporate and risk-management policies and practices.

3.3.2 DEFINING MATERIALITY

After sustainability, the second pillar forming the concept level of climate-change risk-management institutions is materiality. As stated in this thesis' introduction, climate-change risks are considered "immaterial" by banks. This means that climate-change risks currently pose no "major" direct or indirect impact on a bank's capability to take risks. "Major" implies that the risks—all risk categories except reputation risk—are defined by pre-determined quantifiable thresholds. For new risks to be considered material, they must either be deemed material by an authority, such as the Basel Accords' deeming reputation risk (which is not quantifiable) as a material risk, or be quantifiable and fit within narrow, pre-determined ranges of values. Climate-change risks are, according to the definition of materiality, outside this threshold. The Basel Accords state (article 817) that:

> "*A bank should decide which disclosures are relevant for it based on the materiality concept. Information would be regarded as material if its omission or misstatement could change or influence the assessment or decision of a user relying on that information for the purpose of making economic decisions*" (Bank for International Settlements, 2009, p.227).

The ESMA (European Securities and Markets Authority) relays the burden of defining materiality to any given country's mandatory reporting framework. Principle 16 of Standard Number 1 (Enforcement of standards on financial information in Europe,

[CESR/03-0731]) states that "*materiality should be assessed according to the relevant reporting framework*" (ESMA, 2011, p.5).

When financial organisations establish risk-management and reporting practices around these definitions, they inadvertently neglect the concept of sustainability that requires a drastic change to existing business practices. The Stern Review points this out, stating that "*the scientific evidence points to increasing risks of serious, irreversible impacts from climate change associated with business-as-usual paths for emissions*," (Stern, 2006a, p.3).

In the next chapter, numerous examples of climate-change risks, ranging from small to catastrophic, are presented. The concept of materiality essentially allows financial organisations—from a legal, regulatory perspective—the ability to downplay these risks. For banks with considerable business interests in energy development and investments in LSEs, ignoring climate-change is highly unlikely because of implicit reputation risks. In other words, the public perception of the bank would suffer. However, for major banks that are heavily focussed on the retail market (i.e. those that predominantly provide loans for small businesses, as well as mortgages, credit cards, and asset management for the general public), there are no pressing reputation risks when it comes to climate change, and therefore little need to acknowledge it.

Even though definitions of materiality lag far behind the requirements of ever-evolving, global sustainability institutions, laws outside the financial industry continue to evolve. Pratsch and Wermann of DZ Bank (of the German banking sample) point out that the environmental impact of a company's business operations is coming under increasing scrutiny, and cite Germany's Environmental Damage Act[73] (Pratsch and Wermann, 2011, p.7). Introduced in 2007 just prior to the GFC, the Act makes companies liable for environmental damages (for example, to flora or fauna), whereas in the past liability was limited to environmental accidents that resulted in personal injury or financial loss (Pratsch and Wermann, 2011, p.7). Developments such as these challenge both materiality standards and sustainable business practices. Moreover, they bring a third concept into focus: scope.

[73] Original: *Umweltschadensgesetz*

3.3.3 DEFINING SCOPE

After sustainability and materiality, the third pillar forming the concept level of climate-change risk-management institutions is scope. While the concept of materiality supports those who downplay, doubt, ignore, or even deny climate-change risks, the concept of scope—interpreted in an equally narrow manner—can be used to justify inactivity concerning climate-change. Scope determines who is responsible for which GHG emissions, regardless of business risks and business-model dependencies related to those emissions. Definitions for scope come from multiple stakeholders, and these definitions are generally less vague than those used to clarify the terms sustainability and materiality. Nonetheless, applying any definition of scope to actual business operations can be very complex.

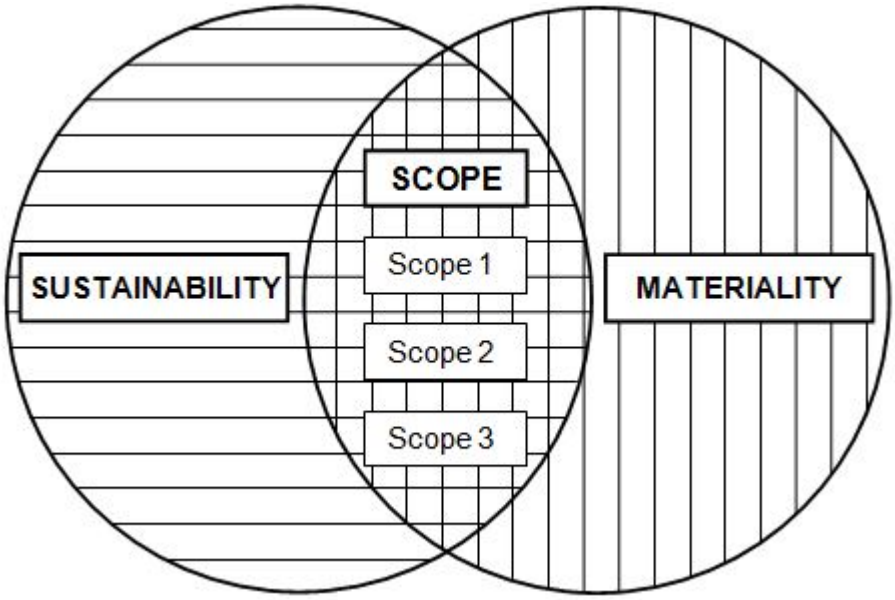
Alongside regulations in France, Denmark, and South Africa, the UK now also requires GHG emissions to be reported by publically-listed companies. In the spring of 2013 the UK's standard for reporting GHG emissions, the Environmental Reporting Guidelines of the government's Department for Environment, Food & Rural Affairs (also known as "DEFRA"), became an official procedure. In terms of defining who is responsible for which GHG emissions, the UK guidelines focus on "ownership" and acknowledge that determining what a company is responsible for can be a complicated task:

> "*The more complex the structure of the organisation, the more difficult it is to identify who has responsibility for the emissions produced by different operations. If you own less than 100% of the operations in which you have some business involvement, you will need to identify the operations or share of operations for which GHG emissions need to be calculated*," (DEFRA, 2013a, pp.6-7).

Large financial organisations are not only complex, but also their institutions are highly technical and require, in most cases, turn-key approaches to decision-making. This complicates matters when the subject is "ownership" or "responsibility" for GHG emissions, regardless whether those emissions might "belong" to the bank, its clients, investments, and so on.

In exploring the fiduciary obligation of company directors regarding climate-change risks, Lorenz concludes that directors do in fact have a fiduciary duty to (1) assess the impacts of climate change on their businesses and, if sufficiently material, to (2) disclose the exposure to the market and respond to mitigate the risk (2008, p.271). Disclosing climate-change exposure to the market is conventionally done by reporting GHG emissions according to scopes, i.e. according to the degree of responsibility that the reporting company takes for the emissions. While the institution of fiduciary duty (i.e. the responsibilities of a trustee) requires taking responsibility for sustainability issues and climate-change risks, it is—at the same time—limited to taking responsibility within the narrow definition of materiality. Because of this, the concept of reporting GHG emissions according to their scopes is very often employed opportunistically as an "open-to-interpretation" nexus of the (vague) concept of sustainability and the (overtly limited) definition of materiality. This is evident in the next chapter when the varying extents of climate-change risk disclosure among the banks are reviewed.

Figure 6: Reporting scopes as the action threshold of sustainability and materiality



Within the concept of scopes are three dimensions of responsibility, in order of "ownership": scope 1, 2, and 3 (scope 3 having the least amount of clarity concerning

ownership of the GHG emissions). The CDP bases its definitions on those of the GHG Protocol, the most widely used international GHG accounting tool for governments and businesses.[74] The GHG Protocol has strengths, such as providing consistent rules for companies that operate in multiple countries and jurisdictions with different laws and climate-change regulatory regimes. A weakness, for example, is that many types of companies—such as financial organisations—fulfil the standard's reporting requirements by disclosing information on nominal GHG issues, such as the effects of reducing paper usage and minimising energy losses at office locations. Because banks do not "own" scope 3 emissions (e.g. those that result from their lending to unsustainable business practices, such as oil-sand development or the financing of new coal-fired plants), they can ignore them in their environmental disclosures.

Most financial organisations confront the concept of scopes when compiling their corporate responses to the Annual Questionnaire of the CDP. The CDP offers banks the following scope categories:

Table 20: CDP/GHG Protocol Scopes

Emissions scope	Label	Definition / Example
Scope 1	Direct emissions	**Definition:** Direct emissions from GHG sources owned or controlled by the reporting organisation. **Example:** Natural gas used for heating offices and retail locations.
Scope 2	Indirect emissions	**Definition:** Emissions that do not physically occur from within the organisation's reporting boundary: "indirect" emissions. Emissions caused by the organisation's consumption of electricity, heat, cooling or steam brought into its reporting boundary. This category is often called "purchased electricity" because it represents the most common source of scope 2 emissions.

[74] The GHG Protocol is a partnership between the WRI and the WBCSD which works with industry, governments, and environmental groups to create programs for addressing climate change. The protocol forms the basis for most GHG standards and programs, globally. The GHG Protocol is also the basis for the ISO 14064 standard: in 2006 ISO adopted the GHG Protocol's Corporate Standard as the basis for its ISO 14064-I standard, "Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals" (GHG Protocol, 2012c).

Emissions scope	Label	Definition / Example
		Example: Electricity used for cooling (air-conditioning) and lighting in offices and the retail locations.
Scope 3	Other indirect emissions	**Definition:** An organisation's indirect emissions other than those covered in scope 2. They are from sources that are neither owned nor controlled by an organisation, but which occur as a result of its activities. **Example:** Ground and air employee travel; also, scope 1 and 2 emissions for a bank's leasehold facilities. Emissions from investments.

(Source: CDP, 2011, p.26)

The definition of scope 3 allows companies considerable playing room in terms of what to disclose, i.e. to decide which emissions are "*from sources that are not owned or controlled by an organisation, but which occur as a result of its activities*" (CDP, 2011, p.26). Questions concerning responsibility for a company's actions, e.g. a heavily-polluting company in a "pollution haven" such as China or Cote d'Ivoire, are too open to interpretation to penetrate the conceptual realm of materiality. Materiality is not based on cause-and-effect relationships between banks and the activities of companies in their asset portfolios. Moreover, disclosure of a company's scopes by means of the CDP is voluntary. Even when disclosure is mandatory (e.g. for publically-listed companies in the UK), it is usually required only for scopes 1 and 2. Furthermore, the lax definitions of the scopes themselves make their usage impractical.

The GHG Protocol has 15 categories for scope 3 emissions; Category 15 shows ways to calculate emissions associated with a company's investments. The Protocol states: "*a reporting company's scope 3 emissions from investments are the scope 1 and scope 2 emissions of investees*" (GHG Protocol, 2013). The Protocol's definition of "investments" includes:

- Equity investments (e.g. in subsidiaries, associate companies, joint ventures);
- Debt investments with known use of proceeds (e.g. corporate debt holdings: bonds, convertible bonds [prior to conversion]);
- Debt investments without known use of proceeds (e.g. general corporate purposes debt holdings, such as bonds or loans);

- Project finance (e.g. long-term financing of projects: infrastructure and industrial projects);
- Managed investments and client services (e.g. equity or fixed income funds managed on behalf of clients, using clients' capital);
- Other investments or financial services (e.g. pension funds, retirement accounts, securitised products, insurance contracts, credit guarantees, financial guarantees, export credit insurance, credit default swaps, etc.) (GHG Protocol, 2013).

The Protocol's definition of investments is extensive and clear, but because investments fall under scope 3, they can be left out of GHG-reporting requirements (and implicitly, also left out of efforts to measure, monitor, and mitigate GHG emissions).

A similar case appears with the EU's scheme EMAS (Eco-Management and Audit Scheme). Like the GHG Protocol, EMAS includes the reporting of direct (i.e. relating to activities or services over which an organisation has complete operational control) and indirect environmental aspects (relating to activities or services from third parties). However, because the EU (regulation number 761/2001) includes EMAS as a voluntary management and reporting system, not only can companies choose whether they use it, but also how they use it.

The vague conceptual base for climate-change risk-management institutions comes primarily from the (1) lack of direct applicability and (2) vagueness of the concepts of sustainability and materiality. While the concept of scopes encourages their implementation through disclosure and reporting, it serves at the same time to allow companies to avoid taking responsibility for GHG emissions based on opportunistic interpretations of scope definitions and boundaries. According to Summer's definition of institutions (1906, p.53), i.e. that they have both a conceptual basis and a structure, it is evident that the institutional structures based on these vague concepts will, to one degree or another, be implicitly frail. Enforcement of their execution and defence against their criticism will be inherently weak.

This raises questions about institutional quality. Garside (2007) cites research that suggests that institutional quality—through its influence upon levels of investment and the regulatory, economic, and financial environment in which firms operate—affects not only both the level and growth of GDP (gross domestic product) per capita, but also

the volatility of growth itself (Hall and Jones, 1999; Easterly and Levine, 2003; Rodrik et al., 2004). Climate-change risk-management institutions require clarity and synergy at both the conceptual and structural levels if they are to permeate the financial industry quickly, effectively, and efficiently.

3.4 INSTITUTIONAL STRUCTURES

This chapter's fourth part has three sections (not including this introductory section) that introduce the concepts of organisational fields and the stakeholder approach in order to extend this thesis' definition of institutions to include Scott's model of the three pillars of institutions (1995; 2001; 2008).

3.4.1 ORGANISATIONAL FIELDS

Definitions for the three concepts that underpin banks' climate-change risk-management institutions not only come from different authorities and agencies (i.e. the UN, global bank standards [Basel Accords], local accounting standards, and global GHG-reporting standards [GHG Protocol, ISO 14064]) but also, these same groups often have weak (or non-existent) linkages to one another.

Summer wrote that an institution's structure is the means to implement an institution's purpose (Summer, 1906, p.53). Steinmo and Thelen extend this definition by writing that institutions include "*both formal structures and informal rules and procedures that structure conduct*" (1992, p.2).

As seen in this chapter's previous sections, the institutions' sources of meaning and purpose are international in nature, and must be because climate change is a global matter. As stated in The Stern Review,

> "*Climate change requires an international response based on a shared vision of long-term goals and agreement on frameworks that build on mutually-reinforcing approaches at national, regional and international level*" (Stern Review, 2006b, p.l).

This is not to suggest that climate-change institutions are neither locally conceived nor locally developed and diffused. Leimbach and Scheffran emphasise the need for coordination at all levels of society:

> "*While at global levels only a few actors are involved* […], *at local levels the number of actors increases to millions, if not billions. It is not possible to organise a negotiation process to find accordance with so many actors*" (Own modification) (2006, p.354).

Scott clarifies that an institution's structure comprises the instrumentalities that put the *meaning*, or *purpose* (using Summer's words) into action (Scott, 2008; Summer, 1906, p.53). For example, a climate-change risk-management institution of a bank consists of two fundamental halves: the concept that gives it meaning and purpose (e.g. sustainability, materiality, and scope), and the structure through which it is implemented (e.g. a due-diligence checklist, with climate-change criteria, that is used to mitigate credit risk in a pending transaction, such as a loan). However, because international climate-change institutions are based on concepts that embrace climate-change on a global scale (e.g. global standards to manage scope and materiality), the structures of these global institutions—at a macro, international level—is the collective of organisations from which they come. Therefore, this institutional structure can be termed an organisational field. DiMaggio and Powell explain an organisational field to be

> "*those organisations that, in the aggregate, constitute a recognised area of institutional life: key suppliers, resources and product consumers, regulatory agencies, and other organisations that produce similar services or products*" (DiMaggio and Powell, 1983, p.148).

In later research, DiMaggio writes that the concept of organisational fields "*emerged as a critical unit bridging the organisational and the societal levels in the study of social and community change*" (1991, p.337). The concept of a "bridge" is used to explain the levels of organisations. Organisations exist at both the "ground" (or structural level, as in the example above of the due-diligence checklist), and at the "top" level, as embracers of the higher, conceptual levels of institutions. The concept of an organisational field helps merge the conceptual level of institutions with their structures, i.e. their "real-life," practical existence.

Writing about organisational fields, DiMaggio and Powell emphasise "*the totality of relevant actors*" (1983, p.148), while Meyer and Scott highlight how organisational fields bound the environments within which institutional processes operate (1983). In the same year, these two pairs of researchers highlighted different—but not opposing—aspects of the organisational field. DiMaggio and Powell emphasise the actors, or the "players" which constitute an organisational population, similar to Hannan and Freeman's definition: the totality of organisations that are "*relatively homogeneous in terms of environmental vulnerability*" (Hannan and Freeman, 1977, p.166).[75] One side of this environmental dependency, or vulnerability, is the viewpoint that "*the major factors that organisations must take into account are other organisations*" (Aldrich, 1979, p.265).

Meyer and Scott, on the other hand, emphasise organisational sub-systems, in this case, a given bank's ERM framework, and the specific set of climate-change risk-management institutions built into that framework. Walgenbach and Meyer also emphasise the institutional side of organisational environments: "*Organisational environments consist of institutionalised structures of expectation that continually leave their mark on the design of organisations*" (Own translation) (Walgenbach and Meyer, 2008, p.11).[76]

Again, this does not contradict the view of DiMaggio and Powell, but instead of stressing the other organisations in the organisational field, these other authors emphasise that organisations "*respond to an environment that consists of other organisations responding to their environment, which consists of organisations responding to an environment of organisations' responses*" (Schelling, 1978, p.14).

A relevant insight from these viewpoints is that both institutions and organisations in an organisational field have interdependent institutional linkages. The organisational field is a "shared" space. Changes will rarely affect one actor alone; changes will have wave-like, ripple effects on the other actors.

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[75] Hannan and Freeman are referring to vulnerability of the larger organisational environmental, not (specifically) the ecological environment.

[76] Original: „*Die Umwelt von Organisationen besteht aus institutionalisierten Erwartungsstrukturen, die die Ausgestaltung von Organisationen nachhaltig pragen*."

3.4.2 STAKEHOLDER APPROACH

The stakeholder approach embraces both the roles of actors (such as organisations) and, at the same time, stresses the institutions that those actors create, diffuse, drive, as well as respond to, side-line, avoid, and even undermine. Simply put, stakeholders are actors that either affect, or are affected by, specific institutions. These actors are not only organisations, but also governments, social movements, and individuals.[77]

The stakeholder approach is a reliable basis for understanding the transmission of concepts from which the structures of international climate-change institutions evolve. For example, a central institution, the Kyoto Protocol, allocates responsibility to constituent nations, other actors. Likewise, the Basel Accords and the GHG Protocol create, respectively, international banking and GHG-reporting standards, but the responsibility rests with governments and corporations to implement them.

Applying the stakeholder approach to policy, Langrock uses the same definition as the Working Group on Eco-efficiency and Sustainable Enterprises of the Wuppertal Institute: "*a stakeholder-oriented policy approach* [that allocates] *responsibilities to societal actors, who will drive corporate accountability*" (Own modification) (Kuhndt et al., 2004, p.15 in Langrock, 2006, p.242).

The term "stakeholder" is an umbrella concept that comprises several types of actors (also referred to in research literature as agents, or players), for example:

1. nation-states;
2. governments;
3. associations;
4. NGOs/NPOs;
5. public/private enterprises; and
6. collective social movements (Scott, 2008, pp.97-102).

Stakeholders have roles concerning institutions, even if those roles are passive: some stakeholders ignore institutions while others implement them; some modify them, others shirk them. Notable in the literature is the role of institutional entrepreneurship,

[77] Antes brings together the works of several researchers who recognise that even stakeholders' sanctionable expectations can be regarded as institutions (Picot, Dietl, Franck, 1999, p.11 in North, 1990, p.4; Richter and Furubotn, 1996, p.7, both in Antes, 2006, p.205).

which means participation—whether intentional or not—in the creation of new routines, supply chains and markets, organisations, and legitimacy (Aldrich and Ruef, 2006; DiMaggio, 1988, 1991; Scott, 2008). While the term institutional entrepreneur applies to most of the stakeholders relevant to this thesis' bank samples (i.e. GRI is as much an institutional entrepreneur as DZ Bank in Germany), an additional way of distinguishing stakeholder roles in institutional diffusion is Brown's division of demand and supply-side accounts of diffusion (1981). While demand-side accounts focus on those who adopt and implement new institutions, supply-side explanations focus on those who deliberately attempt to spread new institutions (Brown, 1981). Organisations can, of course, fulfil both roles simultaneously. An example is a company that passively adapts to institutions and by doing so spreads those same institutions and increases their legitimacy and prevalence in society.

Regardless of their roles, stakeholders are determined according to their relationship to a central institution. A simple analogy for the central institution is the hub of a wheel to which all the spokes (the stakeholders) connect. This thesis' central institutions are the climate-change risk-management institutions of Annex-2 nation-states' major financial organisations. The main stakeholders are the very banks and insurance companies that diffuse them. Although these companies spread the new institutions through their diffusion of specific rules and practices, the resulting "industry-wide" effects are often not intentional and instead occur as a result of most banks' diffusing the same institutions. The tables below present these main stakeholders in more detail, along with their rankings according to assets.

Table 21: Sample of German financial organisations

Name	Total assets	Employees	Stock exchange listings
Deutsche Bank	~€2,2 EUR trillion	Over 100.000	(Frankfurt) Xetra as DBK
One-line summary	Germany's largest bank		
Business activities/	Corporate & Investment Bank, Private Clients and Asset Management, and Corporate Investments		

Name	Total assets	Employees	Stock exchange listings
segments			
Commerzbank	~€661 EUR billion	~56.000	(Frankfurt) Xetra as CBK
One-line summary	Germany's second largest bank		
Business activities/ segments	Corporate banking and financial markets, asset-based finance, financing for SMEs (small and medium-sized enterprises), private clients, and banking in Central and Eastern Europe		
UniCredit	~€950 EUR billion	~163.000	(Frankfurt) Xetra as CRIH
One-line summary	A takeover by UniCredit of Bayerische Hypovereinsbank AG in 2005 formed UniCredit Bank AG: Europe's largest private international banking network		
Business activities/ segments	Private Banking, Corporate & Investment Banking, Central and Eastern Europe		
DZ Bank (Group)	~€404 EUR billion	~27.000	(Frankfurt) Xetra as DZ6Z65
One-line summary	Central bank, corporate bank, and parent holding company of the DZ Bank Group, a role which includes serving as the subsidiary partner of ~900 cooperative banks, approximately three quarters of all cooperative banks in Germany		
Business activities/ segments	Banking, insurance, home savings, and personal investment products for the cooperative banks through four strategic business lines: retail banking, corporate banking, capital markets, and transaction banking		
Allianz	~€1.657 EUR billion	~151.000	(Frankfurt) Xetra as ALV
One-line summary	Ranks among the world's largest insurance companies and the top 5 largest asset managers		
Business activities/ segments	Property-casualty insurance, life/health insurance, and asset management		

(Sources: see footnote[78])

[78] Allianz, 2011a; Allianz, 2011b; Allianz, 2011c; Allianz, 2011d; Allianz-Annual Report, 2010; Allianz-Annual Report, 2011; Allianz-CDP, 2011; Allianz-CDP, 2006; Allianz-CSR, 2011; Allianz-Sustainable

Table 22: Sample of Canadian financial organisations

Name	Total assets	Employees	Stock exchange listings
BMO	~$412 CAD billion	~38.000	TSX[79], NYSE[80] as BMO
One-line summary	In 1998 BMO almost merged with RBC before the merger was blocked by the Canadian government		
Business activities/ segments	Retail banking, wealth management, and capital markets (investment banking products and services)		
TD	~$649 CAD billion	~82.000	TSX and NYSE as TD
One-line summary	Canada's second largest bank		
Business activities/ segments	Asset Management, Investment and Wealth Management, Wholesale Banking, Retail and Commercial Banking, Insurance		
BNV	~$575 CAD billion	~75.000	TSX and NYSE as BNS; TTSE[81] as SBTT
One-line summary	Canada's most international bank with operations in over 50 countries		
Business activities/ segments	Canadian Banking (Retail and Small Business Banking), Commercial Banking, International Banking, Scotia Capital (changed to Global Banking and Markets), Global Wealth Management, Insurance, and Global Transaction Banking		
CIBC	~$301 CAD billion	~42.000	TSX and NYSE as CM

Development, 2010; Allianz/WWF, 2011; Commerzbank-CDP, 2011; Commerzbank-Jahresbericht, 2011; Commerzbank- Nachhaltigkeitsbericht, 2011; Deutsche Bank, 2011; Deutsche Bank-Annual Review, 2010; Deutsche Bank-CDP, 2011; Deutsche Bank-CSR, 2010; Deutsche Bank Investor Relations, 2010; DZ Bank, 2013b; DZ Bank, 2013c; DZ Bank-Jahresbericht, 2010; DZ Bank-Jahresbericht, 2011; DZ Bank-Sustainable Investments, 2011; DZ Bank-Sustainability Report, 2010; HypoVereinsbank, 2013; Prinz, A., 2011; UniCredit, 2010; UniCredit, 2011; UniCredit-Annual Report, 2010; UniCredit-CDP, 2011; UniCredit-Environmental Statement, 2009; UniCredit-Sustainability Report, 2010.

[79] Toronto Stock Exchange

[80] New York Stock Exchange

[81] Tokyo Stock Exchange

Name	Total assets	Employees	Stock exchange listings
One-line summary	In 1998 CIBC almost merged with TD before the merger was blocked by the Canadian government		
Business activities/ segments	Retail and Business Banking, Wealth Management, and Wholesale Banking (targeting Canadian and international markets)		
RBC	~706 CAD billion	~79.000	TSX, NYSE as RY
One-line summary	Canada's largest bank		
Business activities/ segments	Canadian Banking, Wealth Management, International Banking, Capital Markets, Insurance		

(Sources: see footnote[82])

Table 23: German financial organisations, worldwide ranking according to assets

Name	Global rank 2011-12 (according to assets)	Return on assets (%)
Deutsche Bank	#1	0,25%
Commerzbank	#30	0,08%
UniCredit	> #150	(not in ranking)
DZ Bank (Group)	#47	0,08%
Allianz	(not in ranking)	(not in ranking)

(Source: Canadian Bankers Association, 2012a)

Table 24: Canadian financial organisations, worldwide ranking according to assets

Name	Global rank 2011-12 (according to assets)	Return on assets (%)
BMO	#50	0,80%

[82] BMO, 2008; BMO, 2011a; BMO, 2011b; BMO-Annual Report, 2010; BMO-Annual Report, 2011; BMO-CDP, 2011; BMO-CSR, 2007; BMO-CSR, 2010; CIBC, 2011; CIBC-Annual Report, 2010; CIBC-CDP, 2011; CIBC-CSR, 2010; CIBC-CSR, 2011; RBC, 2011a; RBC, 2011b; RBC, 2011c; RBC-Annual Report, 2010; RBC-Annual Report, 2011; RBC Blueprint Progress Report, 2010; RBC Blueprint Progress Report, 2011; RBC-CDP, 2011; RBC-CSR, 2010; RBC Environmental Blueprint, 2011; BNV, 2010; BNV, 2011a; BNV, 2011b; BNV, 2011; BNV-Annual Report, 2010; BNV-Annual Report, 2011; BNV-CDP, 2011; TD, 2011a; TD, 2011b; TD-Annual Report, 2010; TD-Annual Report, 2011; TD-CDP, 2011; TD-CSR, 2010; TD-PRI Engagement Report, 2010; TD-Sustainability Investment Policy, 2010.

Name	Global rank 2011-12 (according to assets)	Return on assets (%)
TD	#39	1,05%
BNV	#44	1,16%
CIBC	#67	1,15%
RBC	#34	0,90%

(Source: Canadian Bankers Association, 2012a)

Several points, based on the tables above, are noteworthy. Firstly, all the financial organisations are listed on public stock exchanges: the German companies are traded on the Frankfurt Exchange (Deutsche Börse), and the Canadian banks are all traded on both the Toronto and New York Exchanges.[83] Secondly, the three German financial organisations (included in the cited survey) have an average return on assets of 0,14%, while the Canadian banks have a significantly higher average return on assets of 1,01%.

Before exploring the other stakeholders concerning climate-change risk-management institutions of major financial organisations, the definition of institutions will be elaborated to allow another level of detail that will enrich the thesis' discussion of diffusion and legitimacy.

3.4.3 THREE PILLARS OF INSTITUTIONS

Scott's model of the three pillars of institutions is a major contribution to neoinstitutional theory. The model shows how institutions are made up of—to different degrees—three types of elements. In Scott's words: "*Institutions are comprised of regulative, normative, and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life*" (2008, p.48). Scott's model extends this thesis' definition of institutions to the following: institutions are structures that are based upon concepts and that together both (1) comprise regulative, normative, and cultural-cognitive elements, (2) employ regulative and constitutive rules to govern activities, and (3) are always strengthening or weakening.

[83] BNV is also listed on the Tokyo Stock Exchange.

The inclusion of Scott's model extends this thesis' original definition of institutions in three ways. Firstly, Scott's model emphasises elements (regulative, normative, and cultural-cognitive elements) that are present in both institutions' conceptual foundations, as well as in the structures that ensue from those conceptual beginnings.

Secondly, Scott's definition builds upon Saerle's view that institutions collectively employ regulative and constitutive rules, i.e. rules that "*regulate antecedently existing activities*" (regulative rules), and those that allow activities to exist in the first place (constitutive rules) (Saerle, 1995, p.27). While scholars who embrace the regulative view highlight institutions' regulatory elements, and those who embrace the constitutive view stress cultural-cognitive elements, Scott's three-pillar model distinguishes a third alternative: the presence of normative elements in institutions (Scott, 2008, p.64). Normative elements are present (to varying degrees) in rules regardless whether the rules are regulative or constitutive in nature.

Thirdly, Scott's model improves the original definition of institutions by clarifying that their continuous strengthening or weakening is determined by the growth (or diminishment) of these three categories of institutional elements. In his words: "*Institutions exhibit these properties because of the processes set in motion by regulative, normative, and cultural-cognitive elements*" (2008, p.48). This addition enriches the works of both Tolbert and Zucker (1996) and DiMaggio and Powell (1983) who relate the property-based characteristics, as well as the process-based characteristics that derive from institutions' strengthening (institutionalisation) and/or weakening (de-institutionalisation). Below is a snapshot of the three pillars and how their elements manifest according to different institutional characteristics.

Table 25: Scott's model: three pillars of institutions

	Pillars		
	Regulative	**Normative**	**Cultural-Cognitive**
Basis of compliance	Expedience	Social obligation	Taken-for-grantedness, shared understanding
Basis of order	Regulative rules	Binding expectations	Constitutive schema

Mechanisms	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules, laws, sanctions	Certification, Accreditation	Common beliefs, shared logics of action
Affect	Fear, guilt/innocence	Shame/honour	Certainty/confusion
Basis of legitimacy	Legally sanctioned	Morally governed	Comprehensible, recognizable, culturally supported, conceptually correct

(Sources: Scott, 1995; 2001, p.52; 2008, pp.47-48)

Few institutions can be described as purely belonging to one of the regulative, normative, or cultural-cognitive pillars; although institutions tend to have more elements from one pillar than from another, elements from all pillars will usually be present to different degrees in most institutions (Scott, 2008, p.59).

This notion, that institutional pillars always work—to some degree—in synergy, highlights a central theme among all three pillars, that "*institutions impose restrictions by defining legal, moral, and cultural boundaries, setting off legitimate from illegitimate activities*" (Scott, 2008, p.50). Moreover, legitimacy is not simply pursued for its own sake, but for social and economic fitness (Aldrich, 1979, p.265; DiMaggio and Powell, 1983, p.149). Such fitness is not only the product of institutions' constraints, but also from their liberalising effects, which Saerle emphasises with his view of constitutive rules (Saerle, 1995). By defining what is illegitimate, institutions can engender freedom for activities and pursuits that escape this definition.

One factor that can be clarified with the addition of Scott's three-pillar model to this thesis' definition of institutions is economic success. Financial organisations diffuse risk-management institutions to simultaneously mitigate risks and maximise profits in competitive markets. In purely economic terms, a successful diffusion will advance the attainment of these goals. However, there is more at stake when it comes to climate-change. Unlike pure risk-management institutions, climate-change risk-management institutions have to allow financial organisations to not only adapt to, but also to drive both the underlying conceptual principles (such as sustainable economic development) and the more tangible, structural outcomes of climate-change institutions (such as

reducing GHG emissions). If large financial organisations adapt to climate-change institutions with the intention of doing the bare minimum in order to secure legitimacy, then the positive multiplier effects of the financial sector on other industries—in terms of spreading the diffusion of climate-change institutions—will likely be lost. From this perspective, economic success depends not only upon the success of the individual organisation, but also on the success of other stakeholders, of society at large, and of the environment.

This requires large financial organisations to both: (1) diffuse the institutional elements of all three pillars of Scott's model, so as to assure a pervasive, thorough diffusion, and (2) to assure that this diffusion maintains alignment of the institutions' conceptual levels with their structural levels. For example, the institutional characteristic "basis of compliance" in the three-pillar model suggests that a thoroughly-diffused institution will: (1) have regulatory expedience, (2) be a social obligation, and (3) be so obvious to the implementing actor as to be taken for granted. This case of institutional diffusion can only be considered economically successful if it also aligns the conceptual level (i.e. the institution helps the bank preserve its reputation and strengthen its adherence to its corporate environmental policy) with the structural level (i.e. the institution supports the bank's regulatory requirement to implement a Basel-based credit-risk mitigation strategy, while simultaneously allowing the bank's client to have access to the necessary funds in order to implement a profitable, quantifiable GHG-reduction strategy). The economic success is experienced by multiple stakeholders and includes the bank's mitigated risk and profit.

3.5 STAKEHOLDERS AND INSTITUTIONS

This chapter's fifth part has five sections that present an overview of the stakeholders and institutions related to the banks' climate-change risk-management institutions. The overview is broken down according to stakeholders' and institutions' types of reliance on regulatory, normative, or cultural-cognitive influence, and according to their role-scopes (i.e. international, national, and/or financial/sectorial).

From Scott's six categories of actors (2008) shown above that can be termed stakeholders, the actors related to the banks' climate-change risk-management institutions come (with few exceptions) from three categories:

1. government and regulatory agencies;
2. private/public companies;
3. civil-society organisations.[84]

These categories include actors on both international and national levels. Regardless of their origins, stakeholders and institutions are interlinked in the organisational field. Even in cases where a rule, policy measure, or corporately-accepted mode of behaviour can be isolated, that very institution's existence (through its creation, diffusion, or abandonment) is still related to the synergy of both stakeholder and institutional linkages within the greater organisational field. In other words, stakeholders and institutions do not simply exist on their own; they exist in conjunction with other stakeholders and institutions.

Especially for institutions, this inter-connectedness results in a symbiotic function at work: not only do they govern the activities of the banks, but they also shape the very environment in which the banks' economic activities take place (Williamson, 2000; Frances, 2004, p.3-4 in Garside, 2007). Research into corporate approaches to GHG management suggests that companies "*actively influence the design of the behaviour framework or of the organisational field*" and is evidenced by related developments at UN, EU, and national levels (Antes, 2006, p.203).

To add more complexity to the often unclear boundaries of institutions, Djelic and Quack point out that "*institution building in the transnational arena* [is] *a space traditionally and typically pictured and described as anomic and adversarial*" (Own modification) (Djelic and Quack, 2003a, p.3). Especially in a global context, organisational fields regularly offer stakeholders not only conflicting institutions involving conflicting actors with different goals, but also conflicting means of pursuing them (Alford and Friedland, 1991; Djelic and Quack, 2003a, p.303). Antes points out that conflicts are implicit among the demands of different stakeholders and that it is, in all

[84] In this study the most prominent forms are NGOs, NFPs, activist groups, industrial organisations, and professional associations.

likelihood, impossible for any company to satisfy all of its stakeholders' demands (2006, p.203).

Four widely-referenced categories of economic instruments at stakeholders' disposal are:

1. traditional regulatory instruments;
2. voluntary agreements;
3. market-based instruments;
4. informational devices and/or instruments of moral suasion (Jordan et al., 2003).

Although these categories are useful in labelling certain institutions or practices, the institutions and stakeholder roles in this thesis tend to bypass these conceptual boundaries. For example, a bank's response to the CDP is simultaneously the enactment of a voluntary agreement (according to the classification above: category 2), a market-based instrument (category 3) and an instrument of moral suasion (category 4). Scott's three-pillar model is more precise because it focuses on the elements that make up these categories.

Lastly, the stakeholders and institutions shown in the following four sections are only those directly related to the banks' diffusion of climate-change risk-management institutions. For example, although the EU-ETS specifically targets certain LSEs, it also plays a direct role in the ways several German banks design their credit-risk screens and due-diligence procedures. Therefore, the EU-ETS is reviewed here as a relevant institution.

3.5.1 REGULATIVE PILLAR, INTERNATIONAL LEVEL

The regulative pillar emphasises processes that rely on coercion (DiMaggio and Powell, 1983). Scott points out that procedures include the establishment of rules, monitoring others' conformity to them, and administering rewards and punishments to influence future behaviour (2008, pp.74-75). While Meyer and Scott (1983) both emphasise the fact that institutions that are strongly based on the regulative pillar must not necessarily be formal mechanisms, i.e. enforceable through courts of law, these institutions must nonetheless be firm, have transparent rules, and entail penalties for breaking them.

For banks in Annex-2 countries, the first reference point for regulatory stakeholders and institutions at the international level is the UNFCCC and its core institution, the Kyoto Protocol. Although there is no enforcement mechanism, the Protocol sets a rule: between 2008 and 2012 member countries of the EU were required to produce an 8% reduction of GHG emissions below 1990 levels. For Canada a 6% reduction was required.

The problem is that the responsibility of compliance is delegated to the Protocol's signatories, and even the biggest, global issues are far from resolved. For example, which countries can apply sanctions for non-compliance, and which types of sanctions are permissible, and under which scenarios?

This lack of clarity extends right down to the ground level, i.e. to how GHG-emissions inventories are calculated. Surveillance issues are attempted in Article 5.1 of the Protocol which requires each Annex-2 country to establish a "National System" for preparing and monitoring GHG-emissions inventories. There are also principles that must be adhered to (transparency, consistency, comparability, completeness, and accuracy) in keeping these inventories (Umweltbundesamt, 2011, p.62). The guidelines, however, lack clarity. While the 2006 IPCC Guidelines for National Greenhouse Gas Inventories have updated procedures, these guidelines have still not been adopted by the UNFCCC (Environment Canada, 2011, p.40). In order to follow rules, Annex-2 countries must resort to a patchwork of guidelines:

1. Revised IPCC Guidelines for National Greenhouse Gas Inventories, year 1996;
2. Good Practice Guidance;
3. Uncertainty Management in National Greenhouse Gas Inventories, year 2000;
4. Good Practice Guidance for Land Use, Land-Use Change and Forestry, year 2003 (Environment Canada, 2011, p.40).

The Kyoto Protocol also gives vague expectations of what types of policies countries must implement. Policies are required to define a nation's institutional arrangements that define the agreed-upon governance structures of micro-level relationships between actors (Davis, North, and Smorodin, 1971). The most critical policies—for reducing GHG emissions—that each country is expected to implement are:

1. cross-cutting measures (ET, CDM, JI, energy/carbon taxes);

2. energy-policy measures;
3. agriculture;
4. forestry;
5. waste recycling/treatment (Umweltbundesamt, 2011, p.584-585).

Concerning the effectiveness of the Kyoto Protocol, the stance of the BMU is that success depends on the signatories' abiding by the rules of the Protocol, and the parties' use of reliable GHG-emissions data for controlling compliance obligations (Umweltbundesamt, 2011, p.62).

How the Kyoto Protocol relates to major banks is straightforward: banks rely on their governments to provide clear rules—based on the Protocol—concerning their own GHG responsibilities and those of the industries they invest in. A report by BAML states that "*governments need to introduce stronger measures to drive investment in efficient and low-carbon technologies*" (Lucas-Leclin and Nahal, 2013, p.32). Banks are thus affected indirectly by the UNFCCC and the Kyoto Protocol:

> "*In light of changes in regulation and public attitudes, investors increasingly want to understand the carbon footprint of their investment portfolios. In the coming years, BAML thinks that environmental measures, such as a company's carbon footprint, will become increasingly important factors in capital allocation*" (Lucas-Leclin and Nahal, 2013, p.32).

As stated previously, LSEs are the culprits of climate-change and the main stakeholders for this topic in most banks' investment portfolios. These industries are listed below.

Table 26: Industries targeted by the Kyoto Protocol

Sector	Source category	Industries
Energy	Fuel combustion	Energy industries Manufacturing industries Construction industries Transport Other sectors Other
	Fugitive emissions from fuels	Solid fuels Oil and natural gas

		Other
Industrial processes	Mineral products Chemical industry Metal production Other production Production (halocarbons and sulphur hexafluoride) Consumption (halocarbons and sulphur hexafluoride) Other	
Agriculture	Enteric fermentation Manure management Rice cultivation Agricultural soils Prescribed burning of savannas Field burning of agricultural residues Other	
Waste	Solid waste disposal on land Waste water handling Waste incineration Other	
Solvent and other product use		

(Sources: Environment Canada, 2011, p.19; Kyoto Protocol, 1997, p.19)

According to BAML, the utilities sector (energy) has the highest direct GHG-emissions exposure proportionate to its sales, followed by the oil and gas sector (a sub-sector of the "energy" category) (Lucas-Leclin and Nahal, 2013, p.1). A portfolio with large investments in these industries would therefore have the highest exposure to climate-change risks.

The next level of stakeholders and institutions on an international scale comprises GHG exchanges (trading platforms) and their linkages to other (transnational) policies and/or initiatives. In North America the main initiatives that include the participation of certain Canadian provinces are:

1. RGGI (Regional Greenhouse Gas Initiative);
2. Western Climate Initiative;
3. Midwestern Regional Greenhouse Gas Reduction Accord; and
4. California/Quebec Cap-and-Trade Program (from 2013 onwards).

These pricing schemes affect the industries targeted by the Kyoto Protocol, not the banks directly. Certain schemes are voluntary (where several Canadian provinces act as "observers") while others have penalty mechanisms (such as the cap-and-trade program linked between the California Air Resources Board and the Government of Quebec).

In Europe, the pricing mechanism is more unified: the single EU-ETS imposed emissions restrictions on constituent nations as of January 1, 2005 and remains the only pricing scheme with nation-wide (i.e. on EU nations) mandated restrictions with specified sanctions and penalties for non-compliance.[85] The EU-ETS is currently in its third round (2013-2020); the first round was 2005-2007, and the second was 2008-2012. The duties of regulators include monitoring and verifying emissions claims, tracking the transfer of emissions allowances, ensuring that companies hold enough allowances to match their emissions, and assessing any causes for penalties (Kruger, 2008, p.4).

One banker from the German research sample of banks stated that the EU-ETS's lack of direct influence on major banks is not a geographical limitation, but a legal one, and despite its transparency, the EU-ETS leaves banks a slim option to review a given company's GHG allowances (UniCredit, personnel interview, 2012).[86] The problem is that for a bank to review a company's EU-ETS GHG-emissions requirements, the bank executive must know the company's operating area, company category, and then there could still be dozens of facilities potentially pertaining to the company in question (UniCredit, personnel interview, 2012). Moreover, the facilities in question could be only partly-owned by the company in question, in which case responsibility could be borne by another party.

Another category of uncertainty concerning the EU-ETS is the lack of consistent rules for affected companies. "Fat Cats" are companies that participate in the EU-ETS

[85] For a discussion of the EU-ETS and its potential international linkages, see chapter section 3.2 Towards an international carbon market? (pp.37-42) of *RECIPE: The Economics of Decarbonization*, a joint study by The Potsdam Institute for Climate Impact Research (PIK), Centro Euro-Mediterraneo per i Cambiamenti Climatici (CMCC), Centre International de Recherche sur l'Environnement et le Développement (CIRED), and The Electricity Policy Research Group (EPRG) of the University of Cambridge (see reference under Edenhofer et al., 2009).

[86] Reviewing a company's compliance (allowances) can be done, for example, online using data from the Deutsche Emissionshandelsstelle (DEHSt) for German facilities. For trading, the platform is the Carbon International Transaction Log (CITL) (intended to combine all the registries of EU nations for phase 3 of the EU-ETS), or the EU Transaction Log/EU Trading Registry.

but are not required to reduce their GHG emissions, and therefore have an excessive abundance of surplus permits. Moreover, these companies can bank their permits for future phases of EU-ETS trading. The top ten Fat Cats had, in the aggregate, approximately 35 million surplus EUA permits in 2008 (worth an estimated €500 EUR million at 2010 EU-ETS GHG allowance prices) which was equivalent to the annual emissions of Latvia and Lithuania (Pearson, 2010, p.4). Below is the list of Fat Cats.

Table 27: Carbon Fat Cats of the EU-ETS

Company	Sector	Net surplus permits	Estimated surplus 2009	Estimated surplus, Phase 2
ArcelorMittal	Iron & Steel	14.439.897	42.041.545	99.801.132
Lafarge	Cement & Lime	4.184.417	6.769.892	23.507.560
Corus	Iron & Steel	3.065.061	14.705.533	26.965.777
SSAB - Svenskt Stal	Iron & Steel	3.250.635	4.698.599	17.701.139
Cemex	Cement & Lime	2.710.846	3.825.673	14.669.057
Salzgitter	Iron & Steel	1.969.958	4.757.032	12.636.864
Heidelberg Cement	Cement & Lime	1.747.280	3.916.077	10.905.197
CEZ	Power & Heat	1.671.918	1.671.918	8.359.590
U.S. Steel	Iron & Steel	1.574.118	4.985.432	11.281.904
Slovenské elektrárne	Power & Heat	1.352.143	1.352.143	6.760.715

(Source: Pearson, 2010, p.16)

Adjustments and regulatory changes also plague the EU-ETS. Although these changes are intended to allow participating firms to cope with rising administrative and transactions costs (which they alone must bear), the result is often a state of bewilderment that simply leaves firms in a financial standstill. A 2012 discussion paper from the Centre for European Economic Research suggests that the EU-ETS could eventually

bankrupt small firms due to the heavy financial burdens of participating in the scheme, and that more government intervention is necessary to prevent this (Heindl, 2012).

Rising administrative and transaction costs are highly relevant for financial organisations that lend to companies that participate in the EU-ETS. This is because rising costs borne by those companies increase the likelihood of default on loan payments, which increases credit risk. Moreover, in ETSs, regulators defer decisions regarding technology matters and compliance strategies to the affected companies, and it is assumed that they best understand their business operations and how to adapt (Kruger, 2008, p.4). Banks know that change creates uncertainty, and uncertainty increases risk. Affected companies not only have to devise and execute strategies to comply with EU-ETS regulations, but also update these strategies in line with ongoing (actual) and even proposed (expected) changes to the EU-ETS. In light of these changes to the EU-ETS in 2012, the UK bank Barclays called the scheme a "regulatory omnishambles" (i.e. a state of total regulatory disorder) (Point Carbon, 2012a).

Maintaining ongoing compliance with the EU-ETS means affected companies must be aware not only of EU-ETS regulations, but also of EU regulations, and in addition—depending where facilities are operated—of how individual countries implement those regulations.[87] The tables below present the main laws that are relevant to LSEs in Europe (regardless of their status in the EU-ETS), and to their financiers. As stated in this thesis' research methodology chapter, the time period for collecting empirical data prioritised information gained from records, documents, publications, and interviews from two periods: (1) 2005 to 2008 (the research periods of the thesis' two pilot studies), and (2) 2009 to 2012 (the year in which the field research was concluded).

Table 28: EU climate-change regulations (1)

Law	The EU Climate and Energy Package
Date of entry into force	2009

[87] The allocation of EU-ETS allowances, as well as the EU's implementation of the Kyoto Protocol, are both left to the individual European countries (Pinske, 2008, p.200).

Categories	Carbon Pricing; Energy Supply; Energy Demand; REDD+ and LULUCF[88]; Transportation; Institutions / Administrative arrangements
Summary of bill	Binding legislation to implement the 20-20-20 targets. The 20-20-20 targets: a reduction in EU GHG emissions of at least 20% below 1990 levels by 2020; 20% of EU energy consumption to come from renewable resources; and a 20% reduction in primary-energy use compared with projected levels, to be achieved by improving energy efficiency.

(Source: Modified from Aybar, R. et al, 2013)

Table 29: EU climate-change regulations (2)

Law	**Improve and extend the GHG emission allowance trading scheme (Directive 2009/29/EC)**
Date of entry into force	2009
Categories	Carbon Pricing; Energy Supply; REDD+ and LULUCF; Transportation; Institutions / Administrative arrangements
Summary of bill	A revision and strengthening of the EU-ETS

(Source: Modified from Aybar, R. et al, 2013)

Table 30: EU climate-change regulations (3)

Law	**An "Effort Sharing Decision" (Decision No. 406/2009/EC)**
Date of entry into force	2009
Categories	Energy Demand; REDD+ and LULUCF
Summary of bill	It aims to reduce GHG emissions from sectors not included in the EU-ETS such as transport, buildings, agriculture, and waste.

(Source: Modified from Aybar, R. et al, 2013)

Table 31: EU climate-change regulations (4)

Other laws	Promotion of the use of energy from renewable sources (Directive 2009/28/EC)
	Directive on Energy Efficiency and repealing Directives 2004/8/EC and

[88] LULUCF (Land Use, Land-Use Change and Forestry) is a similar initiative to increase the removal of GHGs from the atmosphere or by reducing emissions.

	2006/32/EC
	Emission-performance standards for new light-commercial vehicles as part of the EU's integrated approach to reduce GHG emissions from light-duty vehicles (Regulation [EC] No. 510/2011)
	White paper – Adapting to climate change: towards a European framework for action (Communication COM/2009/0147)

(Source: Modified from Aybar, R. et al, 2013)

As shown above, the EU's Climate and Energy Package (to achieve the 20-20-20 targets) is complemented by these main legislative initiatives:

1. reform of the EU-ETS by strengthening its legislation from 2013 onwards;
2. binding national targets for new major industrial sectors previously outside the EU-ETS;
3. binding national renewable-energy targets;
4. a legal framework for carbon capture and storage technologies (EU Climate Action, 2012).

3.5.2 REGULATIVE PILLAR, NATIONAL LEVEL

Prior to 2013, the EU (with 15 Member States at the time of the Kyoto Protocol's 2005 induction) had committed to an 8% reduction in GHGs which was divided among EU Member States in a burden-sharing arrangement. As stated previously, Germany had agreed to a 21% reduction in its GHGs, a considerable role in fulfilling the EU's commitment (Umweltbundesamt, 2011, p.54). Germany met its 2012 goal by 2009 with a 25,3% reduction (Umweltbundesamt, 2011, p.55).

Canada, on the other hand, increased its GHG emissions by 24,1% between 1990–2008, giving it the highest growth in GHG emissions among G8 countries and making it the sixth-largest emitter among Annex-1 nations (Environment Canada, 2011, pp.33-36). This is despite the fact that Canada was among the first countries to sign the Kyoto Protocol (April 29, 1998) before ratifying it on Dec. 17, 2002 (Environment Canada, 2011, p.33). Canada also has its own variation of the EU-ETS's Carbon Fat Cats, the "dirty dozen" (Lovely, Rubin, and Tal, 2007). Unlike the Fat Cats, which participate in the EU trading scheme without any obligation to reduce GHG emissions, the dirty dozen

are simply the top 12 companies (of approximately 170 companies) most responsible for Canada's GHG emissions from major facilities. The dirty dozen emit 57% of Canada's facility-based GHG emissions (Lovely, Rubin, and Tal, 2007).

At the annual UNFCCC meeting (COP 15, Copenhagen) in 2009, Canada agreed to the Copenhagen Accord and a GHG-reduction commitment of 17% below 2005 levels by the year 2020 (Environment Canada, 2010, p.85). Canada developed its Action Plan on Climate Change, a program with several goals:

1. 90% of the country's electricity to be provided by hydro, nuclear or wind power by 2020;
2. new regulations to limit GHG emissions from the automotive sector;
3. advancing discussions with the USA towards a coordinated North American reduction program (the "Clean Energy Dialogue"); and
4. investing to support GHG-reduction technologies and initiatives (Environment Canada, 2010, pp.85-86).

However, by the end of 2011, at COP 17 in Durban, Canada was viewed by several developing countries such as India and South Africa as a barrier to achieving an effective response to global warming (Marshall and Bruce, 2011). Canada's Environment Minister (and Conservative Party member) confirmed that Canada would not renew its commitment to the Kyoto Protocol upon its expiration in 2012, and therefore would not participate in the Protocol's commitment period from 2013 to 2017. Canada's announcement came alongside one from China (the world's largest GHG emitter) that set a list of criteria for its own post-2020 participation in a legally-binding treaty to address global warming (National Post, 2011).

The similarities between the Canadian and German legislative responses to climate-change come in four types: biofuel laws, technological/industrial adaptation, energy-supply acts, and energy-demand acts.

Table 32: Federal-level Canadian and German climate-change regulations (1)

Biofuel laws		
	Canada	**Germany**
Law	Biofuel Bill C-33: An Act to amend	Biofuel Quota Act

	the Canadian Environmental Protection Act	
Date of entry into force	June 26, 2008	July 15, 2009; amended on September 17, 2009
Categories	Energy Supply	Energy Supply; Transportation
Summary of bill	The bill is designed to establish a framework within which the government can regulate biofuel content.	The legal basis for the Meseberg Integrated Energy and Climate Programme, which contained a 17% target for biofuels by 2020

(Source: Modified from Aybar, R. et al, 2013)

Table 33: Federal-level Canadian and German climate-change regulations (2)

Technological/industrial adaptation		
	Canada	**Germany**
Law	Greenhouse Gas Technology Investment Fund Act	Energy Concept for an Environmentally Sound, Reliable and Affordable Energy Supply
Date of entry into force	Enacted in 2005; not in force	September 28, 2010
Categories	R&D; Institutions/Administrative Arrangements	Carbon Pricing; Energy Supply; Energy Demand; REDD+ and LULUCF; Transportation; Adaptation; R&D; Institutions / Administrative arrangements
Summary of bill	An Act to establish the GHG-Technology Investment Fund for the reduction of GHG emissions and the removal of GHGs from the atmosphere	To set a long-term energy strategy (up to 2050) that will provide an environmentally-sound, reliable and affordable energy supply. Scientifically-tested monitoring is to occur every three years and be published; the methodology is still to be established.

(Source: Modified from Aybar, R. et al, 2013)

Table 34: Federal-level Canadian and German climate-change regulations (3)

Energy Supply Acts		
	Canada	**Germany**
Law	Canada Foundation for Sustainable	EEG (Renewable Energy Sources

	Development Technology Act	Act)[89]
Date of entry into force	June 14, 2001	October 25, 2008; amended in 2009 and 2011
Categories	Energy Supply	Carbon Pricing; Energy Supply
Summary of bill	The establishment of an NFP foundation that finances and supports the development and demonstration of clean technologies which provide solutions to issues of climate change, clean air, water and soil quality.	Grid operators must feed renewable-energy into the grid and charge a state-prescribed price for it. The 2011 revision made amendments to the Biomass Ordinance, which came into effect on January 1, 2012.

(Source: Modified from Aybar, R. et al, 2013)

Table 35: Federal-level Canadian and German climate-change regulations (4)

Energy Demand Acts		
	Canada	**Germany**
Law	Energy Efficiency Act	Energy Industry Act
Date of entry into force	1992; regulations made under the Act have been amended several times to expand the list of products covered by the Act and enhance standards for some products already in place	July 13, 2005
Categories	Energy Demand	Energy Demand; Energy Supply
Summary of bill	The establishment of minimum energy-efficiency standards for a broad range of products and equipment in order to decrease overall Canadian energy consumption.	A framework policy to enhance competition, security of supply and sustainable energy production

(Source: Modified from Aybar, R. et al, 2013)

Despite limited federal regulation in Canada, the country's provinces are undertaking their own initiatives. Those related to a bank's investment considerations are:

1. a carbon tax in British Columbia (2008);
2. a cap-and-trade program in Quebec (2013);

[89] Original: *Gesetz zur Änderung des Rechtsrahmens für Strom aus PV (EEG-Änderung)*

3. a feed-in-tariff of the Ontario Green Energy and Green Economy Act (2009); and
4. the Alberta-Based Greenhouse Gas Reduction Program (2007), which relies upon intensity-based targets to reduce GHG-emissions intensity by 50% by 2050 (Aybar, R. et al, 2013).

Facilities affected by the Alberta-Based Greenhouse Gas Reduction Program and Offset Credit System have four means to comply:

1. reduce emissions through facility improvements;
2. pay $15 CAD per tonne of CO2e per year to Alberta's technology fund;
3. buy a ET credit generated from non-affected facilities in Alberta; or
4. buy Emissions Performance Credits from affected facilities that have successfully reduced their emissions intensity below their targets (EDF & IETA, 2013, p.3).

Germany has a much stronger federal climate-change framework than Canada, evidenced not only by its multitude of laws and acts, but also by their implementation. Below are the laws that are relevant to how a bank develops climate-change risk-management institutions, i.e. for the bank to determine which regulatory boundaries exist for its clients (i.e. LSEs).

Table 36: German federal climate-change regulations (1)

Law	Integrated Climate and Energy Programme
Date of entry into force	2007 and 2008
Categories	Energy Supply; Energy Demand; Transportation; R&D; Institutions/ Administrative arrangements
Summary of bill	The guiding principles are security of supply, economic efficiency, and environmental protection with the aim to cut GHG emissions by 40% by 2020 compared with 1990 levels, through the implementation of 29 measures.

(Source: Modified from Aybar, R. et al, 2013)

Table 37: German federal climate-change regulations (2)

Law	German Strategy for Adaptation to Climate Change
Date of entry into force	December 17, 2008

Categories	Adaptation; R&D
Summary of bill	A framework for adapting to climate-change impacts in Germany, as well as the foundation for a medium-term, step-by-step process undertaken in cooperation with the federal states and other civil groups.

(Source: Modified from Aybar, R. et al, 2013)

Table 38: German federal climate-change regulations (3)

Law	**Renewable Energies Heat Act**
Date of entry into force	August 7, 2008; amended 2009 and 2011
Categories	Energy Supply; Energy Demand
Summary of bill	The statutory obligation to satisfy a percentage of heat demand from renewable-energy sources. The percentage involved depends on the type of energy used and ranges from 15% for solar energy, to 50% for biofuels.

(Source: Modified from Aybar, R. et al, 2013)

Table 39: German federal climate-change regulations (4)

Law	**Energy Saving Law[90] and the (multiple) Energy Saving Ordinance(s) (EnEV) on energy-saving insulation and energy-saving systems technology in buildings**
Date of entry into force	Energy Saving Law: September 1, 2005 EnEV: July 24, 2007; last amended 29 April 2009
Categories	Energy Demand
Summary of bill	Requirements for buildings, i.e. limits on specific annual primary-energy consumption (Section 3 and 4 EnEV).

(Source: Modified from Aybar, R. et al, 2013)

Table 40: German federal climate-change regulations (5)

Law	**Law to amend the Mineral Oil Tax Law and Renewable Energy Law**
Date of entry into force	June 2002
Categories	Energy Supply

[90] Original: *Energieeinsparungsgesetz (EnEG)*

Summary of bill	The cap on total photovoltaic capacity that is eligible for premium payments is raised. There is also an extension to mineral-oil tax exemptions to cover all biomass fuels.

(Source: Modified from Aybar, R. et al, 2013)

Table 41: German federal climate-change regulations (6)

Law	**Act amending the regulatory framework for electricity from PV (EEG)**
Date of entry into force	August 23, 2012
Categories	Energy Supply; R&D; Institutions / Administrative arrangements
Summary of bill	Monthly tariff digressions are introduced into the national feed-in-tariff, replacing the annual feed-in-tariff cut that typically occurred every January.

(Source: Modified from Aybar, R. et al, 2013)

Table 42: German federal climate-change regulations (7)

Law	**Act amending the Combined Heat and Power Act (KWK)[91]**
Date of entry into force	July 19, 2012
Categories	Energy Supply
Summary of bill	An increase in electricity generation from combined heat and power plants by promoting the modernisation and construction of combined heat and power plants, the support of the launch of the fuel cell and the funding for the construction and expansion of heating and cooling systems, etc.

(Source: Modified from Aybar, R. et al, 2013)

3.5.3 FINANCIAL

The final group of stakeholders and institutions with dominant institutional traits based on regulatory elements is each country's financial regulators and regulations. In Germany, the BaFin, along with the DPR e.V. (German Financial Reporting Enforcement

[91] Original: *Gesetz zur Änderung des Kraft-Wärme-Kopplungsgesetzes (KWK)*

Panel)[92] oversee the banking sector and its disclosure requirements. In Canada, the equivalent agencies are OSFI and the Canadian Auditing and Assurance Standards Board in conjunction with the Canadian Institute of Chartered Accountants.

In each country, such agencies assure banks' alignment with the Basel Accords (and Solvency, for insurance companies) and, for the lion's share of reporting standards, with GAAP (Generally Accepted Accounting Principles).[93] This assures financial organisations' compliance with standardised Minimum Regulatory Capital Requirements. Specifically in Germany these are the MaK (Minimum Requirements for the Credit Business of Credit Institutions).[94]

Through their alignment with these stakeholders and institutions (which do not require disclosure of climate-change matters), financial organisations maintain their legitimacy concerning disclosure and transparency issues, regardless of how the laws at the international and national levels (shown above) affect industries financed by major banks.

3.5.4 NORMATIVE AND CULTURAL-COGNITIVE PILLARS

A general, although not exhaustive distinction between regulative and normative/cultural-cognitive institutions is that the latter emphasise how, what, and why things **should** be done, while the former—regulative institutions—stress how, what, and why things **need** to be done.

Institutions with dominant normative traits stress prescription, evaluation, and social obligations, both as values and as norms (Scott, 2008, p.52). In Scott's words, they specify "*how the game is to be played*" (2008, p.52). Cultural-cognitive institutions, on the other hand, are more subtle and in the case of diffusing climate-change risk-management institutions in financial organisations, the emergence of the cultural-cognitive pillar is often the result of diffusing both regulative and normative institutions. The cultural-cognitive pillar is what remains hidden, but is still everywhere present: it is the organisation's culture, the shared beliefs of its executives, and the forms of behaviour

[92] DPR e.V.: *Deutsche Prüfstelle für Rechnungslegung*
[93] The Basel Accords are discussed in more detail in chapter 4.
[94] MaK: *Mindestanforderungen an das Kreditgeschäft*

(or ways of responding to events) that are considered obvious and self-evident. Langlois and Scott draw attention to this institutional pillar's informational-support function and how this role "*enables the routine accomplishment of highly-complex and interdependent tasks, often with a minimum of conscious deliberation or decision-making*" (Langlois 1986, p.237; Scott, 2008, p.58).

The results of this thesis' field research show that the banks' stakeholders and institutions that are not most heavily reliant on the regulative dimension of influence (presented hitherto) cannot be reliably categorised as either dominantly related to the normative pillar or to the cultural-cognitive pillar: these two pillars act together more synergistically than each does with the regulative pillar. Also, the stakeholders which predominantly rely on the types of influence based on the normative and cultural-cognitive pillars can be referred to as supply-side diffusers of institutions because of their deliberate attempts to spread new institutions in the organisational field. Many stakeholders that are more closely related to the regulative pillar can also be termed supply-side diffusers; however, caution is needed in this case. Stakeholders that rely more heavily on influence from the regulative pillar are characterised by their reliance on institutions with coercive mechanisms, which lessens any need to "attempt" to spread institutions, as opposed to simply mandating them. Stakeholders more closely related to the regulative pillar, such as the BaFin, are less reliant on the mutual support of the organisations they influence, unlike the CDP or privately-owned SRI indices.

A characteristic of institutions based more heavily on the normative and cultural-cognitive pillars is voluntary participation. Langrock observed this tendency in his research of BP. BP's climate-change strategy fit into a larger class of voluntary initiatives—promoting sustainable development—by multinationals (2006, p.242). The common factor among these initiatives is that they are not mandatory and are instead based on other drivers of behaviour.

Below are the bank's stakeholders and institutions that rely more heavily on the types of influence from the normative and cultural-cognitive pillars. The first three tables show the banks' industry memberships, collective policies, as well as voluntary declarations and studies. The second set of three tables presents the banks' presence on

sustainability indices and ratings by third-party agencies focussed on sustainability issues.

The presence of the banks in media, both as receivers of praise (e.g. in 2010 the industry magazine Environmental Finance ranked Deutsche Bank as "Best Renewable-Energy Finance House – Europe") and of criticism (the 2012-2013 raids, by police, of Deutsche Bank's offices in a ET credit tax-fraud probe) are not included in either of the sets of tables. While the collective concept of news media is a major institution to all banks of both samples, it is not one that is supposed to be influenced by the companies (e.g. banks), people, and events it reports about. News media is supposed to be objective, conducted at arm's length, and indifferent to the consequences of its reporting, although this is rarely (if ever) the case.

Table 43: Industry memberships, collective policies, voluntary declarations/studies present in both banking samples

Stakeholder/ Institution	Description
CDP	An independent, global NGO based in the UK with several disclosure initiatives (such as water disclosure, supply chain, etc.), although its main endeavour is to ask large corporations (on behalf of 655 institutional investor signatories with a combined $78 US trillion in assets) to disclose their plans for tackling climate change (Investor CDP, 2012).
Equator Principles	Criteria (usually used in due-diligence procedures) to help financial institutions determine, assess, and manage environmental and social risk in projects (http://www.equator-principles.com)
UNEP FI	UN Environment Programme Finance Initiative, a global partnership between UNEP and the financial sector. The CCWG (Climate Change Working Group) raises awareness of climate change among financial institutions, policymakers and the public. (http://www.unepfi.org/work_streams/climate_change/index.html).
UN Global Compact	A code of conduct for large corporations regarding environmental, social, and governance issues (www.unglobalcompact.org/)
UN-PRI (Principles for Responsible Investment)	An initiative that brings together investors with the aim of incorporating six principles for responsible investment into their decision-making (http://www.unpri.org/)

(*Note: direct internet links to the initiative/organisation are provided, when available, and were last accessed in March 2014*)

Table 44: Industry memberships, collective policies, voluntary declarations/studies present only in the German sample

Germany
2°C Initiative of German Entrepreneurs
VfU e.V. (Association for Environmental Management and Sustainability in Financial Institutions)[95]
BMBF (German Ministry of Education and Research)[96] Klima-Forschungsgipfel
ClimateWise
Enhanced Analytics Initiative
CFI (Forum for Climate Change, Financial Markets and Innovation)
B.A.U.M. e.V. (German Environmental Management Association)[97]
German Government's Council for Sustainable Development
GRI
Global Roundtable on Climate Change
Institutional Investors Group on Climate Change
Investor Network on Climate Risk
Kyoto Club
McKinsey Climate Change Policy Study for the USA
Munich Climate Insurance Initiative
Joint-business declaration: "Increasing Europe's climate ambition for the EU economy and jobs."
Project sponsorship of "Let's Clean Up the World"
Rhine-Main Environmental Forum
Rhine-Main Office and Building Ecology Network
Signatory to the Global Investor Statement on Climate Change
Signatory to the Investor Statement on Catalyzing Investment in a Low-Carbon Economy
Steering Group of the UK Government's Capital Markets Climate Initiative
The Geneva Association
Tokyo Declaration
UN Finance Committee on Climate Change Finance
WBCSD
World Economic Forum
Global partnership with WWF (World Wide Fund for Nature)

(Note: brief descriptions and direct internet links [those available were last accessed in March 2014] are provided in Appendix 3: Industry memberships, collective policies, voluntary declarations/studies [German sample].)

[95] Original: *Verein für Umweltmanagement und Nachhaltigkeit in Finanzinstituten*
[96] Original: *Bundesministerium für Bildung und Forschung*
[97] Original: *Bundesdeutsche Arbeitskreis fuer Umweltbewusstes Management*

Table 45: Industry memberships, collective policies, voluntary declarations/studies present only in the Canadian sample

Canada
Business Charter for Sustainable Development
Environmental Issues Specialists Group of the Canadian Banker's Association
Canadian Business for Social Responsibility
Canadian Climate Change Adaptation Project
Consumers Council of Canada
Canadian Coalition for Good Governance
Canadian Green Building Council
Climate Prosperity Initiative
Conference Board of Canada's Business Council for Sustainability
Conference Board of Canada's Council on Climate Change Adaptation
Environmental Banker's Association
EXCEL Partnership
Montreal Climate Exchange
Signatory to the Copenhagen and Cancun Communiques
Sustainable Development Technology Canada

(Note: brief descriptions and direct internet links [those available were last accessed in March 2014] are provided in Appendix 4: Industry memberships, collective policies, voluntary declarations/studies [Canadian sample].)

Table 46: Presence on sustainability indices and ratings by third-party agencies (appearing in both samples)

Stakeholder/ Institution	Description
DJSIs (Dow Jones Sustainability Indices)	These include companies in terms of economic, environmental, and social criteria and provide a benchmark for sustainability-driven equity portfolios (www.sustainability-indices.com)
FTSE4Good Index	A financial index series designed by the FTSE (Financial Times Stock Exchange) to identify and facilitate investment in companies that meet globally-recognised corporate responsibility standards (www.ftse.com/Indices/FTSE4Good_Index_Series)
Sustainalytics	Investment research firm serving investors who integrate environmental, social and governance criteria into investment-management decisions (http://www.sustainalytics.com/)

(*Note: direct internet links to the initiative/organisation are provided, when available, and were last accessed in March 2014*)

Table 47: Presence on sustainability indices and ratings by third-party agencies (appearing only in the German sample)

Germany
ASPI Eurozone-Index
Carbon Disclosure Leadership Index
Ceres
DJSI: DJSI EURO STOXX; DJSI STOXX; DJSI (World Indices)
ECPI: Ethical EMU Equity; Ethical Euro Equity
ETHIBEL Sustainability Indices
imug
oekom
SAM Research Inc

(Note: brief descriptions and direct internet links [those available were last accessed in March 2014] are provided in Appendix 5: Presence on sustainability indices and ratings by third-party agencies [German sample].)

Table 48: Presence on sustainability indices and ratings by third-party agencies (appearing only in the Canadian sample)

Canada
DJSI: DJSI North American Indices
Ethical Funds Company
Jantzi Social Index
NASDAQ (National Association of Securities Dealers Automated Quotations) OMX CDR
Real Assets Social Impact Balanced Fund
RiskMetrics Group
Vigeo

(Note: brief descriptions and direct internet links [those available were last accessed in March 2014] are provided in Appendix 6: Presence on sustainability indices and ratings by third-party agencies [Canadian sample].)

The initiatives listed above are all analysed further in chapter 6. Prior to analysing the banks' risk-management frameworks (for the support of which these climate-change initiatives are diffused), institutional diffusion must first be clarified.

3.6 DEFINING INSTITUTIONAL DIFFUSION THROUGH RATIONALISATION

This chapter's sixth part has three sections that explain the lens through which institutional diffusion is analysed in this thesis, namely, as the spread of rationalised

institutions through (DiMaggio and Powell's) three mechanisms and interpreted by three research paradigms, i.e. Scott's triple-significance model.

Like institutions, institutional diffusion also has a variety of definitions and interpretations in research literature. In order to clarify its meaning throughout the rest of the thesis, it must be defined, its mechanisms must be clarified, and lastly its significance in institutional research must be presented.

"Diffusion" is the noun form based on the verb "to diffuse," which comes from the Latin verb "*diffundere*," which means "to pour away," "to spread out," or "to extend" (Oxford English Dictionary, 2014). In English it means to spread something out over a wide area, or among a large number of people; in physics it means to intermingle something with another substance by movement (Oxford English Dictionary, 2014).

In this thesis, institutional diffusion means the spread of rationalised institutions. Scott and Meyer define rationalisation as "*the creation of cultural schemes defining means-ends relationships and standardising systems of control over activities and actors*" (Scott and Meyer, 1994, p.3).

There is a thin line separating rationalisation from other, similar concepts. The difference is the researcher's focus: if the focus is primarily on the processes and conditions that give rise to new rules, practices, and modes of behaviour, then the subject is institutional creation (Scott, 2008, p.94). This chapter's earlier parts, which presented the foundational concepts of financial organisations' climate-change risk-management institutions—i.e. sustainability, materiality, and scope—dealt with institutional creation.

Rationalisation is also not the same as institutional construction, which highlights "*how institutions arise, achieve stability, legitimacy, and* [other] *adherents*" (Own modification) (Scott, 2008, p.94). Rationalisation looks at the bigger picture, at how existing institutions evolve and converge into an inter-dependent nexus within a specific organisational field. It is implicit in rationalisation that the institutions are already both "created" and "constructed."

The final boundary for the definition of rationalisation is its distinction from structuration. Structuration also involves a "*patterning of social activities and relations through time and across space*" (Scott, 2008, p.74). The difference lies in the assumption—upon which structuration is based—that the organisational field's social

structures and patterns already exist. While structuration does apply to the financial industry and the diffusion of climate-change risk-management institutions within it, the term allows little room for interpreting this diffusion according to its ever-changing state. This thesis' definition of institutions underscores their existence as processes with variables, and not as static mechanisms that remain unaffected by stakeholders. Although the writer who coined the term structuration (Giddens) emphasised how social structures were, at the same time, "*both the medium and the outcome of the practices they recursively organise*," Giddens also clarified that institutional practices were "*deeply embedded in time and space*" (Giddens, 1984, p.25 and p.13, respectively). Considering the constantly-evolving nature of the banks' climate-change risk-management institutions, rationalisation is a better fit than structuration for this study's neoinstitutional focus on the study of economic processes, and not on equilibrium states.

3.6.1 MECHANISMS

The spread of rationalised institutions—institutional diffusion—is done through three mechanisms: coercive, mimetic, and normative (DiMaggio and Powell, 1983). These mechanisms of coercion and suasion (based on norms, morals, and so on) are contained in Scott's three-pillar model of institutions. Coercion as a means to sway or influence organisational behaviour is most easily understood according to the regulative pillar (although normative and cultural-cognitive forms of coercion can also be strong factors to sway organisational behaviour), because of its option to exercise regulatory authority. Normative (or moral) suasion relates more strongly to the normative and cultural-cognitive pillars of institutions. These pillars rely on characteristics such as prescription and social obligations.

Institutional diffusion through mimetic mechanisms applies to all three pillars. Mimetic diffusion results from competitive and institutional processes and relies on isomorphism (DiMaggio and Powell, 1983). DiMaggio and Powell use Hawley's description for isomorphism as "*a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions*" (Hawley, 1968).

Like the three pillars, these three mechanisms are also all at work—to some degree or another—in all cases of institutional diffusion, albeit with different degrees of influence, as shown below.

Table 49: Degrees of influence of the three mechanisms of diffusion among the three pillars of institutional elements

Three mechanisms	Three pillars		
	Regulative	Normative	Cultural-Cognitive
Coercive	+++	+	+
Mimetic	++	++	++
Normative	+	+++	+++

(Sources: based on DiMaggio and Powell, 1983; Scott, 1995)

3.6.2 TRIPLE SIGNIFICANCE

This last section examines how institutional diffusion fits into institutional research paradigms. Scott cites three paradigms in institutional research that attempt to understand, conceptualise, and explain cases of institutional diffusion. As presented in chapter 1 of this thesis, Scott's observation of a triple significance in analyses of institutional diffusion suggest that diffusion is:

1. characterised by the strength/reach of institutional structures;
2. follows different principles and has different institutional effects because of the changing strength/reach of the institutions;
3. changes institutions convergently, i.e. existing patterns reinforce or challenge the spread of new institutions (Scott, 2008, pp.132-3).

These viewpoints will be referred to as institutional "strength," "effects," and "roots," respectively. They form the theoretical framework for understanding how, and proposing why the specific institutions in the bank samples are diffused the way they are. These paradigms are presented to show as broad a "lay of the land" as possible.

Following chapter 4, these paradigms are described in more detail, along with the modes of diffusion (top-down, bottom-up, and horizontal [as well as the few cases of de-

institutionalisation]) that pertain most strongly to each of the three viewpoints.

3.7 CONCLUSION

The speed with which the world develops a pro-active stance to mitigate climate change can be largely influenced by the financial sector. The sooner this sector can diffuse institutions that mitigate climate-change risks in investments, the faster the great capital shift (the "market shock," according to The Stern Review) from climate-destructive to sustainable market practices can occur.

This chapter extended the scope of this thesis' theoretical foundation to include Scott's view of institutional diffusion and its triple significance for institutional analysis. This model, along with the concepts of institutional elements (or "pillars"), and DiMaggio and Powell's mechanisms of diffusion, form the theoretical basis for analysing the banks' diffusion of climate-change risk-management institutions.

This theoretical basis begins with the combination of Summer's and Parsons's complementary definitions of institutions, i.e. that institutions comprise both conceptual and structural levels, and that the conceptual level is the source of meaning, legitimacy, and support that makes the institution's implementation possible. It was argued throughout this chapter that the "umbrella" concepts of sustainability (regarding climate-change), materiality (concerning risks), and scope (concerning the banks' responsibilities for GHG emissions—or lack thereof) were the core conceptual drivers of the banks' climate-change risk-management institutions. From analysing the conceptual level of these institutions, it is apparent that they are not only vague (e.g. their foundational definitions lack clarity, consensus, and moreover, range in meaning among stakeholders), but are also contradictory in some cases. For example, if so many climate-change risks pose colossal threats to most industries, then why are so many of these risks considered immaterial and left out of required disclosures?

This vagueness (and contradiction) is transposed from the conceptual into the structural level, i.e. the organisational field where the banks' stakeholders diffuse climate-change institutions. These stakeholders, i.e. the nation-states, governments, NGOs/NPOs, public/private enterprises, social movements—as well as the institutions

they create and diffuse—can be categorised according to their dominant regulative, normative, and/cultural-cognitive elements.

A division is observable in these categories: the stakeholders and institutions that rely primarily on sway derived from regulative elements have influence on the industries (i.e. the LSEs) in which the banks invest, but very little influence on the banks themselves. The stakeholders and institutions more heavily characterised by their normative and cultural-cognitive pillars are empowered by "constitutive rules" and driven by prescriptions, guidance, and moral suasion (Scott, 2008, pp.52, 64). This category includes organisations and agencies that issue industry memberships, collective policies, voluntary declarations and studies, as well as presence on sustainability indices, ratings, and even rankings. Noteworthy is that through their alignment with these stakeholders and institutions (which do not require disclosure of climate-change matters), the financial organisations maintain their legitimacy without having to report climate-change risks in mandatory reports, regardless of the regulations (at the international, national, and industry levels) and how they affect the industries financed by major banks.

The next chapter continues to build the theoretical foundation by presenting the risk paradigm (i.e. conceptual level) and structure (i.e. ERM framework) through which banks diffuse climate-change risk-management institutions. In following Silverman's recommendations for qualitative research designs, chapter 4 concludes the identification of the thesis' main research elements according to neoinstitutional theory, and provides the platform for the thesis' final three chapters (5, 6, and 7) which examine, more exhaustively, how the empirical data and theoretical foundation relate to one another (Silverman, 2010, p.65). Each of these final chapters is dedicated to exploring one view of Scott's "triple-significance" model to understand how and why the banks diffuse climate-change risk-management institutions the ways they do. Before this can be done, the risk-management paradigm of Annex-2 nations' major banks must be understood, which is the focus of the next chapter.

CHAPTER 4: RISK

4.1 INTRODUCTION

This chapter examines the risk-management paradigm of major banks, from how banks view risks to how they deal with them—or even dismiss them. This paradigm shows why major banks in different countries with contrasting regulatory scenarios approach climate-change risks in remarkably similar ways. Unlike the previous chapter, which explored the vagueness of the institutional concepts and structures upon which the banks try to align and diffuse their own climate-change risk-management initiatives, this chapter offers a contradictory view. It emphasises that the banks' highly-elaborated institutional environments require precise concepts and structures with a technical character.

This chapter has six parts that discuss risk and risk management in terms of their relevancy to the banks' diffusion of climate-change risk-management institutions. Following this introduction, the chapter's second part looks at the concept of risk itself. The third part has eight sections that present ERM as it is employed by most of the world's major banks. The chapter's fourth part has three sections that examine how the banks in both samples interpret climate-change risks. The chapter's fifth part has nine sections that provide an overview of how the banks diffuse climate-change risk-management practices specifically in the realm of ERM frameworks. This analysis excludes other initiatives indirectly-related to risk management. Examples of these indirect initiatives are maintaining knowledge-networks and measuring carbon foot-prints. Such indirect initiatives typically do not penetrate all levels of the banks and can be termed "distant" from the banks' central, ERM frameworks. These "distant" initiatives are nonetheless critical components of the banks' efforts to diffuse climate-change risk-management institutions, and are analysed in chapters 5, 6, and 7. Also paramount in this fifth part is its emphasis through multiple sections on the special roles of reputation and credit risk. These two risk types function as "receiver risks" and/or as "gateway risks" for many of the unmitigated climate-change risks from other risk categories. The sixth and final part concludes the chapter by highlighting its main points.

This chapter concludes the presentation of the thesis' foundational research elements and, together with the previous chapter, forms the basis for the deeper theoretical analysis to come in chapters 5, 6, and 7.

The central theme of this chapter is that **banks interpret risks through highly-elaborated institutional paradigms called ERM frameworks**. By their design—which is technical and relies primarily on quantitative inputs—these ERM systems maintain a narrow scope of what constitutes a material risk. Regardless of climate-change risks' materiality, they can still threaten banks in numerous ways (e.g. threats to a bank's reputation, higher risk of default on loans, etc.) and therefore banks diffuse methods and practices that are connected or "close" to the central components of their ERM frameworks. These "close" climate-change risk-management initiatives involve more qualitative procedures (such as due-diligence procedures) usually derived from international best-practice measures, as opposed to regulatory requirements. As such, these "close" initiatives are often heavily characterised by normative and cultural-cognitive institutional elements.

4.2 RISK

Banks are risk-taking enterprises and risk-management practices penetrate, to varying degrees, nearly every bank department. Risk-management institutions appear everywhere between banks' front lines, such as their retail businesses and trading desks, and their highest levels of management and ownership: the boardrooms and the annual shareholder meetings.

Risks were implicit in bank's earlier historical roles in lending to farmers to purchase grains and to finance expeditions and new routes for merchant ships. As banks evolved into safe houses for protecting depositors' valuables and money, new risks emerged. Banks have always had to adapt their practices.

The global consultancy Booz & Company argues that the GFC that began in 2007/2008 happened neither because of cheap central-bank money, nor due to overly-complex risks, but rather "*bad governance, bad incentive systems, and astonishingly poor risk management at some major banks*" (Golder et al., 2008, p.2).

In order to understand risk management in banks, the concepts "risk" and "vulnerability" must be de-coupled. A risk is the likelihood that a given action, as well as choosing not to act, will give an unwanted result. The key word here is "unwanted," undesired. ISO defines a risk as "*the combination of the probability of an event and its consequences*" (ISO 73:2009, 2013). Assessing risks means identifying all possible unwanted outcomes and assigning a probability value to the likelihood of each event's occurrence. The standard formula for a risk is:

$$x = \sum_{Accidents} ((probability)(loss))$$

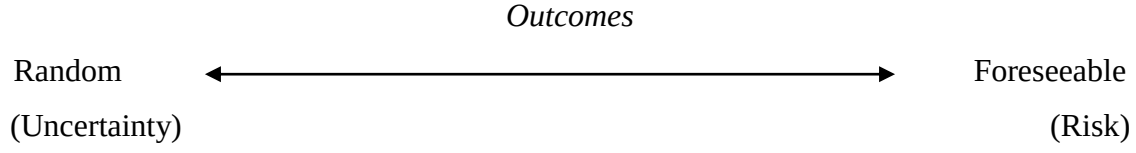
The risk (x) equals the sum of the combined probability of potential **outcomes** (called *accidents* above) with the amount of anticipated **losses** of all the possible unwanted outcomes. Noteworthy here is that both the probability of any given event and the expected amount of loss are unknown. "Unknowns" increase when multiple scenarios are combined, hence the old-age advice of avoiding "piling risks on top of risks."

In his 1921 publication Risk, Uncertainty, and Profit, Frank Knight de-couples risk and uncertainty:

> "*The essential fact is that "risk" means in some cases a quantity susceptible of measurement, while at other times it is something distinctly not of this character* […]. *We shall accordingly restrict the term "uncertainty" to cases of the non-quantitative type*" (Own modification) (Knight, 1921, Chapter 1/Section 26).

Although Knight uses the concept of "quantifiability" to distinguish risks (quantifiable) from uncertainties (not quantifiable), another insight from his work is that outcomes occur on a spectrum of expectation, i.e. what can be expected and what cannot be.

Figure 7: Spectrum of outcomes



Something that is foreseeable means that the outcome is measurable and carries a probability of occurrence, while something that is random, on the other hand, means the outcome's occurrence remains unknown (Knight, 1921, Chapter 3/Section 7.13). When an outcome is based on something random, its occurrences cannot be analysed.

For foreseeable outcomes, risks are calculated according to the likelihood of their occurrence and the range of damage they can cause. This does not suggest that risks lack randomness, but rather that their range of randomness is minimised (Knight, 1921, Chapter 3/Section 7). Writing about risk management and climate change, Allen et al. of the The Wharton School's Risk Management and Decision Processes Center point out that:

> "*ambiguous (or imprecise) situations are ones in which the uncertainty about possible outcomes cannot be objectively characterized by a single well-defined probability density function. Individuals and institutions are ambiguity-averse* […]" (Own modification) (Allen et al., 2012, p.5).

Even though the universe of uncertainty is infinite, the vulnerability of banks to climate-change "uncertainties" is narrow, at least according to the demands of current regulatory stakeholders. Vulnerability continues to be a focus of the IPCC which defines the concept as "*the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes*" (Rolfe, 2008, p.83). In their research on the economics of climate change, Antes and Hansjürgens use the term vulnerability to determine the degree to which a person, societal group, or economic sector is affected (2008, p.3). These authors use the definition of Blaikie et al. (1994, p.9) for vulnerability which emphasises, like the IPCC definition, the coping capacity of those who are deemed susceptible (Antes and Hansjürgens, 2008, p.3). Thus "being affected" entails both susceptibility and the ability to cope.

Banks focus on risks and uncertainties, and far less on vulnerability. Vulnerability issues, e.g. a bank's retail branch in a flooded coastal town, are already taken into consideration by banks' BCPs (business-continuity plans). The essential difference between banks' BCPs and ERM systems is that the former are used to manage threats to the banks' **ability to do business** (natural disasters, cyber-attacks, computer

failure, piracy, theft, etc.) while the latter are used to manage the risks of **doing business**. Banks' ERM systems function to push decisions from one end of the spectrum of outcomes, i.e. uncertainty, towards the other end, risk, where the decision-maker can ideally quantify (and hence, calculate) the chances of gain or loss of each decision.

This does not suggest that banks and their giant asset portfolios are not vulnerable to climate-change threats, but rather that their ERM systems do not yet have institutions in place to quantify those threats and manage them in the same, systematic manner that other risks are mitigated.

4.3 ERM

This chapter's third part has eight sections (not including this introductory section) that examine ERM as it is employed by most of the world's major banks. The eight sections begin with broad overviews of ERM's divisions (institutional foundations, structural framework, governance), then progress to explore the framework's functions (risk appetites, techniques, and strategies), followed by presentations of the risk types and how climate-change risks are integrated into the framework.

4.3.1 INSTITUTIONAL FOUNDATIONS (BASEL [I-III] & SOLVENCY [II])

Before exploring a generic model of a banking ERM framework, it is useful to first introduce the institutional foundation that determines banks' ERM systems, their core components, and functions. Banks use a standardised ERM framework due to their considerable challenges with risk management and to meet regulatory requirements. Risks stem from changing global economic conditions, such as the 2007/2008 GFC, and from the need to adapt new regulatory standards, such as the incorporation of Basel III or IFRS (International Financial Reporting Standards). Risks also stem from competitive pressures (e.g. from other banks), changing government fiscal, monetary, or other policies (e.g. Canada's withdrawal from the Kyoto Protocol), and the continual integration of newly-acquired businesses. Risk-management practices must be continually harmonised with all these changing conditions.

Although recent research has been successful in compiling climate-change risk overviews for multinationals (e.g. Günther, Nowack, and Weber, 2011) and for corporate executives with fiduciary responsibilities (e.g. Lorenz, 2008), little information is available concerning climate-change risks as seen through the current paradigm of major banks. These risks must be reviewed through the institutional lenses of the Basel Accords.

The Basel Accords attempt to address the issues banks face of "piling risks on top of risks." The Accords do this by setting standards for risk-management frameworks. These institutions exist to minimise losses invariably suffered in the course of business, and to set minimum capital requirements to cover expected losses.[98] This package of banking standards currently forms a *de facto* best-practice framework for large banks around the world, delivered in the form of recommendations from the BCBS. The Basel Accords are the international institutions which national regulations require to be diffused with some modifications (which in turn form, hence, the *de jure* standards specific to each country).

There are three sets of accords (Basel I, II, and III), and many banks around the world were already beginning preparations in January 2013 to implement Basel III.[99] Although there is variation from one country's national implementation of the Accords to another's (e.g. concerning how strictly each country enforces the Accords' recommendations) the differences between Germany and Canada are nominal and include, among other issues, slight differences in reporting formats. These differences bear little to no significance on this study.

Basel I (the 1988 Basel Accord) dealt chiefly with credit risk, and required banks to maintain a minimum level of capital (i.e. 8% of all risk-weighted assets). [100] Following the fast evolution of the capital markets industry, Basel II was published in 1994 to create

[98] The Basel Accords are no panacea: the institutional framework is heavily criticised both from within the banking industry and without, primarily for allowing banks loopholes through which they can subvert established fiduciary practices and for worsening the effects of financial crises, instead of mitigating or preventing them.

[99] The Basel Accords I and II are enforced in G-20 countries as well as in significant banking hubs (such as Singapore). G-20 leaders ratified Basel III in November, 2010.

[100] Risk-weighted assets are bank's capital requirements multiplied by the number 12.5. Banks use several approaches to calculate market and operational-risk capital, while they use formulas directly from the Basel Accords to calculate risk-weighted assets.

a standard that could protect the international financial system against crises and potential collapse. It replaced Basel I in 1996. The Basel II standard is more robust and has undergone several revisions since its release.[101] Its three pillars (not to be confused with the Accords' risk categories, which are also called "pillars" and are discussed later in this chapter) do three things:

1. they provide standardised methodologies and parameters to track a broader range of quantifiable risks, i.e. operational and market risks in addition to credit risks, and to calculate the minimum capital requirements for them;
2. they require a risk framework with set appetite guidelines, strategies, and internal review to manage risk exposures (quantitative and qualitative) and processes used to mitigate them—this framework includes "residual risks" such as liquidity and reputational risks;
3. they enhance public disclosure and engender a more risk-sensitive approach to capital reserves (Basel Committee on Banking Supervision, 2006).

Basel III is an even more comprehensive set of guidelines, emerging largely in response to the 2007/2008 GFC. The chief goal of Basel III is to strengthen the banking sector to absorb losses. Golder et al. point out that cheap debt contributed to the explosive growth in banks' balance sheets prior to the GFC (Golder et al., 2008, p.1). Cheap debt enabled the purchase of assets that were then used in irresponsible forms of leverage: the result at some major banks was a rise of their debt-to-equity ratios of 30:1, 40:1, and even 100:1 (Golder et al., 2008, p.1). Basel III elaborated previous recommendations and created further guidelines to improve the quality, consistency, and transparency of banks (Basel Committee on Banking Supervision, 2011). The guidelines involve a new global liquidity standard and significant increases to minimum capital requirements (Basel Committee on Banking Supervision, 2011). National banking authorities, for example in Germany and Canada, diffuse these institutions within their jurisdictions by requiring banks to implement these rules.

Before discussing how the Basel Accords shape the banks' ERM frameworks, it should be pointed out that one of the banks (an insurance multinational) of the German

[101] An example is the Basel Committee's response to substantial losses in banks' trading books from 2007 to 2009: in July 2009 the Committee revised the market-risk framework with the expectation that banks would implement these changes by 2011 (Bank for International Settlements, 2009).

sample, Allianz, bases its ERM system on Solvency II, and not on the Basel Accords. Solvency II is, in simplest terms, the Basel Accords for insurance companies. Solvency II mirrors the recommendations for ERM systems of major banks in most aspects, but simultaneously satisfies a legal technicality that applies to financial conglomerates such as giant insurance companies.[102] Like Basel II, Solvency also has three main pillars: (1) regulatory capital adequacy (i.e. "eligible capital") and how to quantify and calculate this, (2) structures for risk-management systems (governance, supervision, and risk-management techniques), and (3) transparency requirements (Solvency, 2002; Solvency II, 2009). Solvency II requirements were released in 2009, but came into effect in 2014. Allianz had begun implementation of many of the Solvency requirements years before, and therefore is comparable alongside the thesis' sample banks. Like the banks, Allianz has an ERM system with risk governance led by a top role: a CRO (chief risk officer). The key difference is added emphasis on underwriting risks (i.e. premium catastrophe risk, premium non-catastrophe, reserve [for insurance claims that have not yet been settled], biometric [variability in policyholder benefits], etc.) which are specific to insurance companies.

4.3.2 FRAMEWORK

Nocco and Stulz argue that companies strengthen their abilities to carry out their strategic plans when they both measure and manage risks consistently and systematically, and give their business managers the information and incentives needed to do so (2006, p.8). There are two dominant approaches to this end:

1. IRM (integrated risk management)[103;]
2. the "silo-approach" (or simply, "silo") (Bloos, 2008, p.16).

Silo is the traditional risk-management methodology where each department of an organisation handles its own risks. IRM, on the other hand, is an alternative term for ERM, which deals with a company's overall risk and in which individual risks are

[102] German law and the EU Financial Conglomerates Directive categorise Allianz as a financial conglomerate (Allianz also consults with the European Insurance and Occupational Pensions Authority regarding changes in European insurance solvency requirements). EU directives 2002/83/EC and 2009/138/EC require Allianz to implement Solvency I and II regulatory measures.

[103] IRM is also referred to as holistic risk management, or strategic risk management (Bloos, 2008, p.16).

considered in terms of their contribution to the firm-wide risk (Bloos, 2008, p.16). A core strength of the ERM approach is that the firms' overall risks are not simply the sum of individual risks; the approach takes into account that some risks offset each other, while others amplify each other (Bloos, 2008, p.16).

The Basel Accords (and Solvency II) promote ERM among major financial organisations, and therefore most banks' ERM systems highly resemble one another, and in many cases are nearly identical. These systems are implemented through the same framework that consists of three pillars:

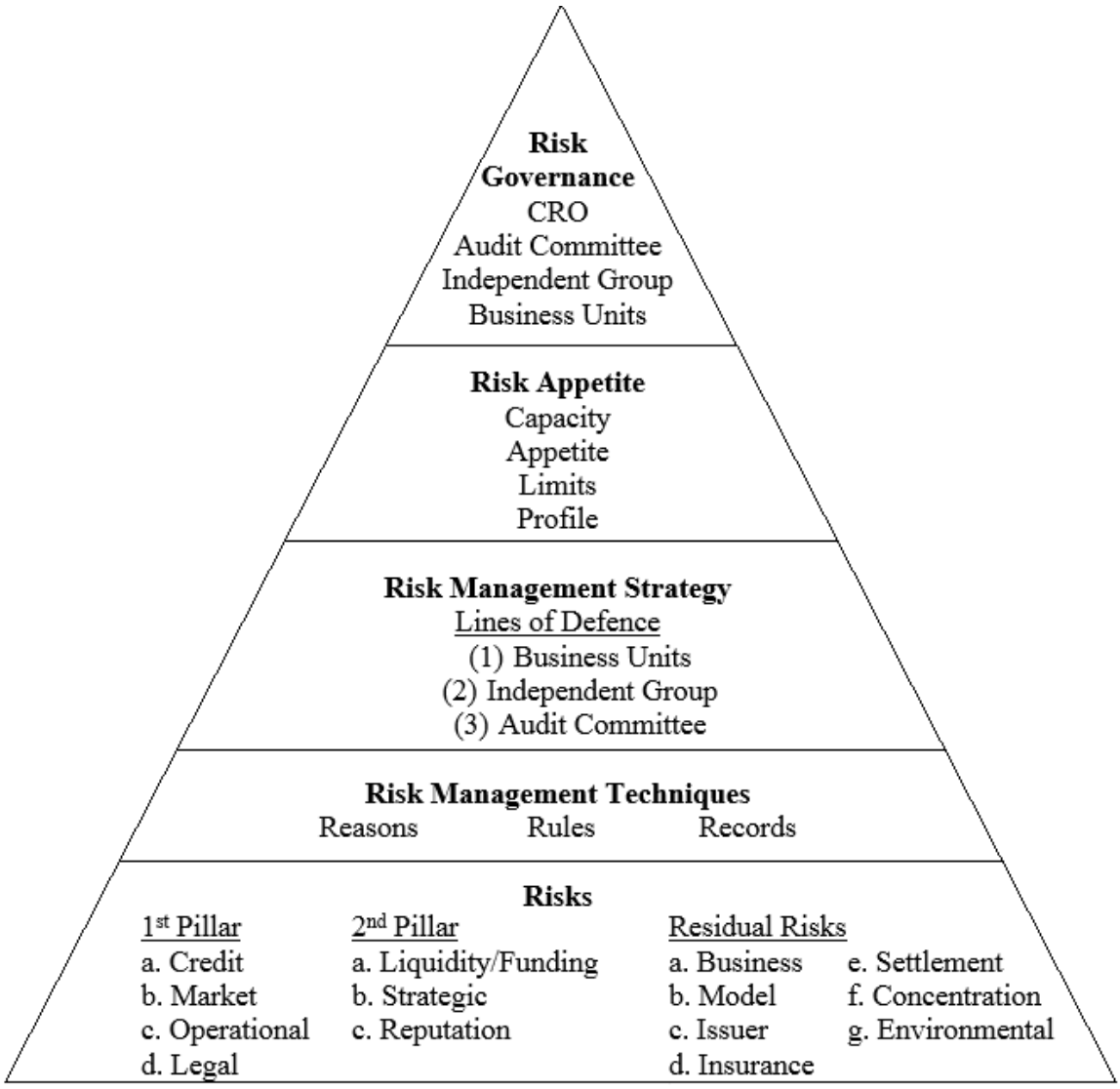
1. a risk governance structure;
2. a risk appetite;
3. an operating model (with standardised risk-management strategies, techniques, and risk categorisation).

In each of these pillars, the framework has ready-made ways of organising resources and roles, much of which fall in line with Goffman's writings on institutional interaction within institutional frameworks (1983). Another way of understanding ERM frameworks, from a structural (or organisational) perspective, is to view them as organisational archetypes. The concept of an organisational archetype is an organisational structure, along with its procedures, and how together—in their synergy—they represent the implementation of a particular conceptual model (Greenwood and Hinings, 1993; Scott, 2008, pp.59, 188). The conceptual model is, in this case, the risk-management precepts of the Basel Accords.

Implicit in this framework's execution is that it be consistently applied across the organisation (or across the entire group of companies, for example, in a corporate group), and that risk considerations and capital needs be integrated into all decision-making processes (Allianz-CDP, 2011). What differs from one bank to another is neither the framework, nor the interpretation of core concepts such as materiality, but rather how each bank implements the pillars, i.e. how it organises its governance structure, defines its risk appetite, and carries out its operating model. A core function of the three pillars—working synergistically—is to assure the bank continually adheres to its own defined risk appetite.

Below is a generic model of the components of a bank's ERM framework. These are presented in a pyramid form to emphasise each component's degree of oversight and focus/responsibility for execution. Risk governance, at the top, has oversight over the entire ERM framework. On the other hand, specific techniques for risk management (the second-bottom level) are applied to mitigating actual risks (the bottom level) and play no role in determining the bank's risk appetite (the second-top level).

Figure 8: ERM framework



(Sources: based on Basel Committee on Banking Supervision, 2011; BNV-Annual Report, 2010, p.64; BNV-Annual Report, 2011, p.63; Solvency, 2002; Solvency II, 2009)

4.3.3 GOVERNANCE

The top level of an ERM framework is a bank's risk governance and management structure. This hierarchical structure links different corporate units.

At the top of the governance structure is a bank's board of directors. They oversee the ERM system and approve the bank's risk appetite, but otherwise play a limited role. Active and independent oversight for identifying risks and dealing with them is the responsibility of the CRO or a similar, high-level role. The CRO (or equivalent) manages the ERM system and typically reports directly to the bank's CEO.

Figure 9: ERM governance

(Sources: based on Basel Committee on Banking Supervision, 2011; BNV-Annual Report, 2010, p.64; BNV-Annual Report, 2011, p.63; Solvency, 2002; Solvency II, 2009)

Between the CRO at the top and the business units at the bottom—which face risks directly on the "front lines" of the bank's businesses—the Basel Accords and Solvency call for additional layers of management for the ERM framework's oversight. Below the CRO are two committees, an audit committee (to oversee the methodology behind an independent review of the bank's risk policies, models, etc.), and an independent risk-management committee (to manage the bank's performance against its risk appetite) (CIBC-Annual Report, 2010).

Below the risk management and audit committee are one (or more) independent groups that report to the CEO about their duties in monitoring, evaluating, and managing risks across the bank. Notable here is that both the CEO and the bank's operational units fall under the scrutiny of the risk management and audit committees.

Lastly, at the front lines of business are the risk management groups that pertain to each of the bank's business units. Several of the executives interviewed in each country sample came from this level. Executives from this level understood both their bank's risk-management framework and their bank's involvement with climate-change risks and opportunities.[104] These groups at the front lines set risk strategies to manage risks in conjunction with the bank's overall risk appetite; they also identify and review potential and emerging risks that fall outside "established" risk limits of specific business groups (CIBC-Annual Report, 2010). Climate-change risks are usually "outside" these risk limits and mitigation initiatives. Later in this chapter are examples of the combinations of new due-diligence procedures based on climate-change risks with standardised, credit-risk screening procedures.

Concerning the diffusion of climate-change risk-management institutions, the key concept in ERM governance is the separation of business and risk functions. The hierarchical linkages between corporate units serve to promote cooperation between risk professionals and the bank's business units. The reason for the separation of departments is based on each department's different motives: business units are motivated to take risks (and thereby earn rewards), while risk professionals focus on mitigating risks (to minimise losses). In this sense, the departments' conflicting objectives balance one another out and work synergistically. The separation is designed to assure that business is conducted within the bank's defined risk appetite.

Problems can occur when a risk manager is either unaware of climate-change risks, or aware of them but without the institutional support (policies, procedures, guidance, tools) to mitigate them. By their nature, major banks are highly conservative and do not typically invest in endeavours they do not understand. The result is simply to refrain from climate-change mitigation investments, or to invest very little.

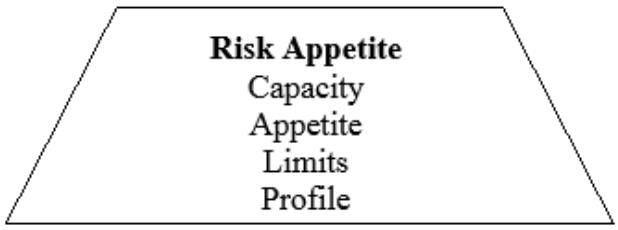
[104] Duties included, e.g. reviewing transactions and advising business units on the risks (i.e. related to the environment, climate-change, social issues, etc.) implicit in certain deals the banks were considering.

It is noteworthy that the hierarchical levels below the CRO (i.e. the audit committee, independent group, and the business units) function in a reversed sequence when implementing the ERM framework's strategy for risk management: 3 LOD (lines of defence). This assures that the higher roles in the risk-management hierarchy (e.g. the audit committee) have more responsibility over the framework's implementation (e.g. to assure its functionality), while the lower roles (e.g. the business units) deal with risks in the course of everyday business.

4.3.4 RISK APPETITE

Following the establishment of roles in an ERM system, guiding principles for these roles are required. The principles (or institutional "concepts") come in the form of a risk appetite, the cornerstone of a bank's risk culture. A risk appetite is the amount and type of risk that a bank is willing to accept in pursuit of its business objectives (CIBC-Annual report, 2010). An ERM system's risk appetite is the "compass" or "true north" of the entire risk-management system.

Figure 10: ERM appetite



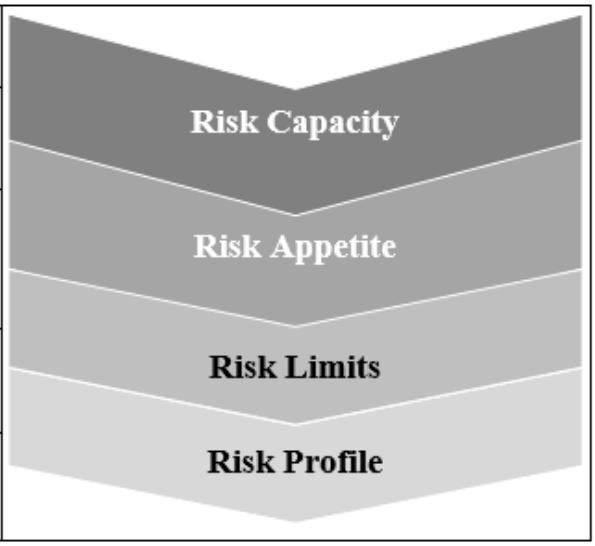
(Sources: based on Basel Committee on Banking Supervision, 2011; BNV-Annual Report, 2010, p.64; BNV-Annual Report, 2011, p.63; Solvency, 2002; Solvency II, 2009)

The implementation of the risk-appetite throughout the ERM framework involves the planning, development, modification of existing policies, and the selection and execution of specific risk-management techniques in line with the bank's areas of

business (BMO-Annual Report, 2011, p.82). Developing a risk-appetite that can be implemented in all areas of the bank involves several steps, as shown below.

Figure 11: Risk-appetite development

Developmental Steps
1) Identify external restrictions that limit the bank's ability to accept risk;
2) define internal restrictions and drivers to influence the choice of risks and in which amount to take them;
3) translate these restrictions and drivers into limits that guide all risk-taking in business matters;
4) regularly measure and evaluate the alignment of risk limits with the risk appetite.



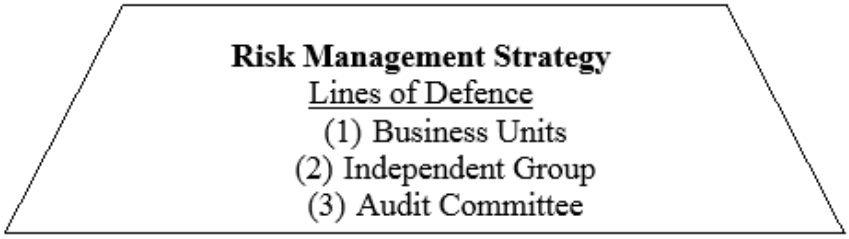
(Sources: based on BMO-Annual Report, 2011, p.82; RBC-Annual Report, 2010, p.39; BNV-Annual Report, 2010; BNV-Annual Report, 2011)

4.3.5 STRATEGY

Once the risk appetite is developed, the ERM framework uses a formal strategy (called for by the Basel Accords and Solvency) to both assure and buffer the execution of risk-management techniques in strict alignment with the risk appetite. The risk-management strategy gives clear actions to carry out while the bank conducts its business.

This bank-wide risk strategy is known as "three/3 LOD." These three lines of defence are found, to different degrees, in nearly all banks worldwide. As mentioned above, the hierarchy of risk governance levels below the CRO (i.e. the audit committee, independent group, and the business units) function in a reversed order to implement 3 LOD.

Figure 12: Execution sequence, by organisational divisions, of 3 LOD



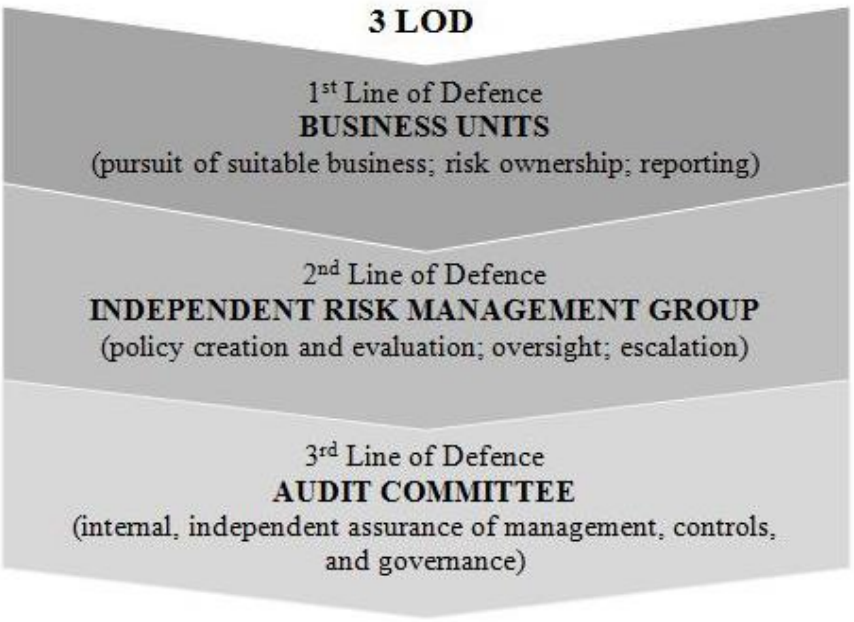
(Sources: based on Basel Committee on Banking Supervision, 2011; BNV-Annual Report, 2010, p.64; BNV-Annual Report, 2011, p.63; Solvency, 2002; Solvency II, 2009)

The three lines assure a flow of information among:

1. top-management and front-office functions (business units/operational units/risk functional groups), then
2. risk-management functions (e.g. a management-oversight committee), and finally
3. the audit committee (Golder et al., 2008, p.2).

Booz & Company reports that 3 LOD—as long as the bank is staffed with capable executives with a strong sense of risk awareness—are at the heart of effective risk management (Golder et al., 2008, p.1). The specific functions of each line of defence are shown below.

Figure 13: ERM LOD



(Sources: based on Basel Committee on Banking Supervision, 2011; BNV-Annual Report, 2010, p.64; BNV-Annual Report, 2011, p.63; Solvency, 2002; Solvency II, 2009)

The first line of defence is essentially the ongoing pursuit of business opportunities within the bank's risk appetite, and within each department's/unit's delegated risk-taking authority (BMO-Annual Report, 2011; CIBC-Annual Report, 2010; Golder et al., 2008, p.2).

Each business unit has to ensure that significant risk issues are escalated to the second line of defence, the bank's centralised, independent risk-management group.[105] As mentioned above, this is the group that develops the bank's risk appetite, risk-management policies and limits, practices, and standards (BMO-Annual Report, 2011).

The last line of defence, the internal audit, is done by an internal audit group to provide independent assurance of the ERM system's processes and performance. The audit group then reports to the bank's management and to its board of directors.

4.3.6 TECHNIQUES

[105] These senior risk/business-management groups vary in size, complexity, and inter-connectedness from bank to bank.

Once roles and guiding principles are established, the Basel-based organisational archetype requires the diffusion of reliable risk-management techniques among several bank departments. The techniques must scrutinise both quantitative and qualitative aspects of risks. These duties are carried out by the ongoing execution of three main tasks:

1. monitoring the bank's overall risk profile while considering market developments, trends, as well as external and internal events;
2. screening both trading and non-trading portfolios;
3. assessing risks in: (1) new business activities and processes, (2) restructuring and re-organisation, (3) complex and unusual business transactions, and (4) lending and trading credit exposures (CIBC-Annual Report, 2010, pp.67-68).

Although ERM techniques perform several functions, the common denominator is continuous alignment with the bank's risk appetite. ERM techniques are used in combination to measure a risk's ranges of uncertainty—not vulnerability—according to the risk appetite. These ranges of uncertainty are expected loss, unexpected loss, and economic capital:

1. expected loss (a statistical estimate) is loss that is expected to occur in the normal course of business within a fixed time period;
2. unexpected loss (also a statistical estimate) measures the amount by which actual losses might exceed expected losses over a fixed time period;
3. economic capital estimates how much capital is needed to protect the bank against unexpected losses (CIBC-Annual Report, 2010, p.67).

In the scope of ERM for financial organisations, risk-management techniques can be grouped, for simplicity's sake, into three categories: reasons, rules, and records.

Figure 14: ERM techniques

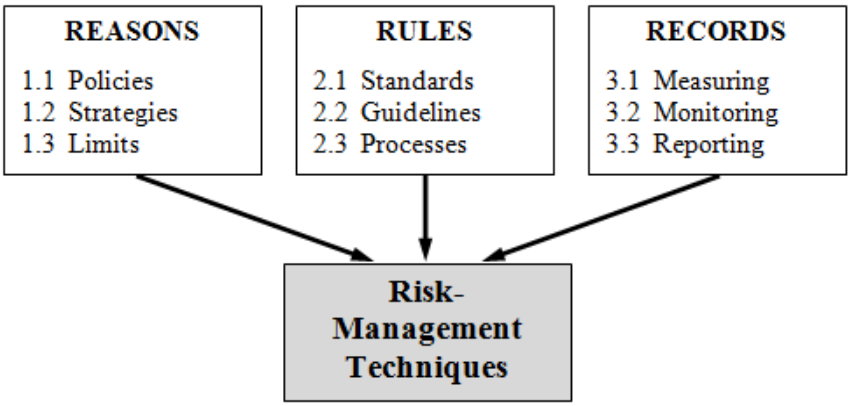
(Sources: based on Basel Committee on Banking Supervision, 2011; BNV-Annual Report, 2010, p.64; BNV-Annual Report, 2011, p.63; Solvency, 2002; Solvency II, 2009)

Risk-management techniques typically include the following functions, with overlap among the three groups of reasons, rules, and records:

1. oversight through risk-focused committees and governance structures;
2. identifying and testing compliance with key controls under an independent control framework, as well as stress testing (i.e. model-based scenario testing) to consider the potential impacts of changes in the business environment on capital, liquidity and earnings;
3. risk reporting between departments to identify and communicate risk levels (CIBC-Annual Report, 2010).

Each function has, nonetheless, its own set of components embedded in the risk-management techniques. Standard components found in most financial organisations are listed below.

Figure 15: Reasons, rules, records

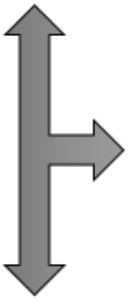


(Sources: based on BNV-Annual Report, 2010, pp.64-65)

The determinants and components work synergistically to assure that the risk-management techniques balance the bank's risk-taking activities with its risk appetite, as elaborated below.

Figure 16: Reasons, rules, records

Reasons: 1st set of components: policies, strategies, and limits		
1	**Policies**	Set boundaries for specific types of risk and/or for activities used to measure, monitor, and control risk exposure;
2	**Strategies**	provide both guidance (quantitative and qualitative) for each technique and limits and/or guidelines for all risk-based activities;
3	**Limits**	establish conditions and required tasks by which transactions may be carried out, as well as control risk-based activities within the bank's established tolerance levels.



Rules: 2nd set of components: standards, guidelines, and processes		
1	**Standards**	Set the required breadth, quality of analysis, and quality of information for decision-making; standards are to be documented in policies, manuals and handbooks;
2	**Guidelines**	give guidance to implement the bank's policies and to define required business conditions for a given deal[15];
3	**Processes**	guide risk identification, evaluation, documentation, and reporting.

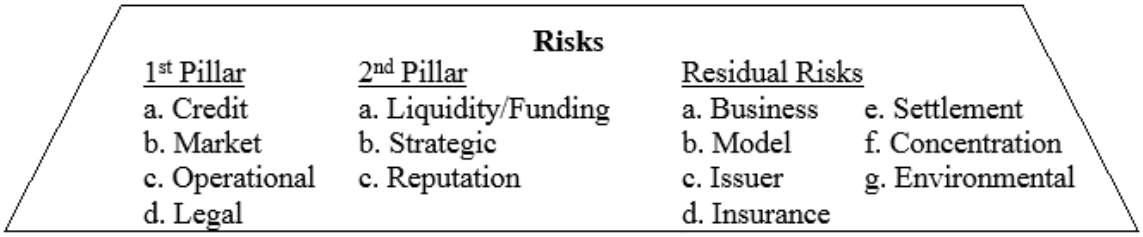
Records: 3rd set of components: measuring, monitoring, reporting		
1	**Measuring**	Develop and maintain a suite of tools (i.e. models and stress testing) to quantify risks across the bank and determine overall and specific risk exposures;
2	**Monitoring**	monitor risk exposures to ensure operations are conducted within approved limits, guidelines, strategies and risk appetite, and report any breaches to more senior levels of the bank;
3	**Reporting**	report to senior levels of the bank, through the use of tools, the aggregate risk measures of activities across the bank, as well as conduct independent audits.

(Sources: based on BNV-Annual Report, 2010, p.64-65; BNV-Annual Report, 2011, p.63; BMO-Annual Report, 2011, p.82; RBC-Annual Report, 2010, p.39).

4.3.7 RISK TYPES

Regarding the diffusion of climate-change risk-management institutions, the final relevant component of the Basel-based ERM framework is risk categorisation. The ERM risk types are shown below.

Figure 17: ERM risks



(Sources: based on Basel Committee on Banking Supervision, 2011; BNV-Annual Report, 2010, p.64; BNV-Annual Report, 2011, p.63; Solvency, 2002; Solvency II, 2009)

As stated previously, banks categorise all risks deemed material. Immaterial risks are not ignored by banks, but will not be monitored with the same rigour by the ERM system.

Although unrelated to the requirements set out by the Basel Accords, the concept of positive and negative risks is another layer, or filter, that banks use to categorise risks coming from certain types of deals. The risks coming from renewable-energy investments, for example, would be deemed positive. Banks would make efforts to mitigate these risks. Negative risks, on the other hand, come from deals such as the financing of weapons manufacturing, and will be shunned by most banks.

The Basel Accords focus primarily on credit, market, and operational risks, but because of the Accords' comprehensive assessment requirements, banks are also required to consider additional risks as well, and encouraged to develop processes to estimate and manage other risk exposures such as liquidity, reputational, and strategic risks (Basel Committee on Banking Supervision, 2006, pp. 206-8.). How banks interpret climate-change risks within these risk categories is discussed in the following section.

The following tables show the typical ERM risk categories, called "pillars" in the Accords. Concerning the first pillar of risks, banks require a minimum amount of capital against the risks.[106]

Table 50: Risk categories of Basel's first pillar

<table>
<tr><th>Risk type</th><th>Origin</th></tr>
<tr><td>Credit</td><td>The risk of loss if a borrower or counterparty fails to pay in transactions from direct lending, investment, hedging, and trading activities.[107]</td></tr>
<tr><td>Market</td><td>The risk of losses in both on and off-balance-sheet positions arising from movements in market prices.[108] This involves exposure to changes in the value of market-risk factors, namely: fluctuating share (e.g. equities) and commodity prices (e.g. oil), interest rates, and foreign exchange rates—each as individual risks and their correlations. Market risks involve not only trading-portfolio positions in currencies, securities, and derivatives, but also in non-trading activities such as retail banking and investment portfolios.[109] Market-risk factors can be assigned to a bank's business activities the following way:[110]
<table>
<tr><th>Trading risks</th><th>Investment risks</th><th>Funding risks</th></tr>
<tr><td>Interest-rate risk
Foreign-exchange risk
Equities risk
Credit-spread risk[111]
Commodities risk</td><td>Interest-rate risk
Currency risk
Equities risk
Credit-spread risk</td><td>Interest-rate risk
Currency risk</td></tr>
</table>
Under the market-risk category, Basel II requires disclosure of the following market-risk factors: interest-rate, foreign-exchange, and commodities risk.[112]</td></tr>
<tr><td>Operational</td><td>The risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events.[113] This Basel II definition includes legal risk and excludes strategic and reputational risk.</td></tr>
<tr><td>Legal</td><td>Legal risk includes, but is not limited to, exposure to fines, penalties, or punitive damages resulting from supervisory actions, as well as private settlements.[114] Civil litigation, and/or criminal/regulatory proceedings</td></tr>
</table>

[106] In the case of credit and concentration risk, the minimum amount of capital can include guarantees, collateral, and credit derivatives. A relevant example: ET credits tradable in a regulated scheme (e.g. EU-ETS).
[107] Basel Committee on Banking Supervision, 2006, pp. 97, 144; BNV-Annual Report, 2010, pp.64, 69.
[108] Basel Committee on Banking Supervision, 2006, pp. 97, 144.
[109] BNV-Annual Report, 2010, p.69.
[110] BNV-Annual Report, 2010, p.69.
[111] A credit risk that influences market risk because of changes in overall market prices of credit, or a change in the credit worthiness of a particular issuer (BNV-Annual Report, 2010, p. 69).
[112] Basel Committee on Banking Supervision, 2006.
[113] Basel Committee on Banking Supervision, 2006, p. 144.
[114] Basel Committee on Banking Supervision, 2006, p. 97.

Risk type	Origin
	against a bank can adversely affect its business, operations, and financial condition.[115]

Basel's risk categories of the second pillar are called "residual risks." Banks include risks of this category in their supervisory review processes and annual reports.

Although these risks are recognised by the Basel Accords, and banks are expected to manage their exposure to these risks, the Basel Accords does not define all of these risks. Moreover, no guidance is provided in Basel I or II for the oversight of strategic and reputation risk. Reputation risk is not defined Basel I, II, or III. From a regulatory perspective, these risks must be recognised, i.e. their existence must be acknowledged and some mitigation strategy should be proposed, but nothing more. This is significant because many banks see climate-change risks predominantly as reputational threats.

Table 51: Risk categories of Basel's second pillar

Risk type	Origin
Liquidity/ Funding	This risk is the potential loss if a bank cannot meet its financial commitments (e.g. to depositors, suppliers, borrowers, and funding partners), at favourable rates (and without having to sell assets), when due. Banks' capital positions can have an effect on banks' abilities to obtain liquidity, especially during a crisis, and therefore each bank must have adequate systems for measuring, monitoring and controlling liquidity risk.[116] Banks should evaluate the adequacy of capital given their own liquidity profile and the liquidity of the markets in which they operate.[117]
Strategic	Ineffective business strategies or the failure to effectively execute them. It includes, but is not limited to, potential financial loss due to the failure of acquisitions or weak organic-growth initiatives, such as failure to retain clients and key employees.[118]
Reputation	The risk of stakeholders' perceptions of a bank's reputation deteriorating, especially due to business ethics and moral judgments.[119]

[115] Basel Committee on Banking Supervision, 2006, pp. 97, 144; BNV-Annual Report, 2010, p.69.
[116] Basel Committee on Banking Supervision, 2006, p. 208.
[117] Basel Committee on Banking Supervision, 2006, p. 208.
[118] BMO-Annual Report, 2010; CIBC-Annual Report, 2010; BNV-Annual Report, 2010.
[119] BNV-Annual Report, 2010, p.69.

The risks in the following table were acknowledged by most banks in both country samples, i.e. the banks reported that they were aware of such risks and that the risk exposures were managed under their ERM frameworks.

Table 52: Other residual risks

Risk type	Origin
Business	The risk of a company—to which the bank has a capital or debt interest—suffering a reduction in profits and finding itself unable to further cut costs as a result of poor planning, failed strategies, and/or changes in the business environment.
Model	Potential loss due to a model not performing as intended, or from using the wrong model, or from using the right model inappropriately.
Issuer	Occurs in trading and underwriting portfolios (when a bank agrees to purchase, from an issuance of securities, a specified number of shares with a view to their public distribution, or to guarantee financial support in a specific undertaking), and measures the adverse impact of combined risks.
Insurance	Occurs in insurance businesses (e.g. annuities, life, accident, sickness, creditor, and re-insurance).[120] The risk is any loss due to the occurrence of events other than those assumed to occur when a given insurance product was designed and priced.
Settlement	Where one party fails to deliver, at the time of settlement, on contract terms.
Concentration	Two types of risks: (1) name-concentration risk: the overall spread of a bank's outstanding accounts over its debtors, which can show an uneven distribution of exposures (loans) to its borrowers; (2) sectoral-concentration risk: special consideration must be made to avoid heavy concentrations of risks in specific economic sectors, regions, industries, and/or products.
Environmental	Financial loss or damage to reputation associated with environmental issues, whether arising from the bank's credit and investment activities, or related to its own operations.

(Sources: based on Basel Committee on Banking Supervision, 2011; BMO-Annual Report 2010; BNV-Annual Report, 2010, p.64, p.69; BNV-Annual Report, 2011, p.63; Solvency, 2002; Solvency II, 2009)

4.3.8 INTEGRATION OF CLIMATE-CHANGE RISKS

[120] This is relevant for Allianz (of the German sample) and in general for the banks in the Canadian sample, several of which also have substantial insurance businesses.

As shown above, climate-change risks have no direct role or even classification in the Basel Accords. From the ERM paradigm, financial organisations have no regulatory obligations to address climate-change risks unless they pose direct, material risks to one of Basel's risk categories.

Noteworthy is that the concept of materiality functions in banks' ERM systems as a gatekeeper. It determines which risks the banks engage through their ERM systems, and which risks can be dismissed, or delegated to standardised BCPs. As mentioned above, BCPs and systems are used to manage threats to the banks' ability to conduct business, while materiality determines whether threats can cause major impacts on the bank's capability to take risks. This raises the question: what is the difference between a material risk, which would be integrated into the ERM system, and a non-material risk destined for the BCPs? There is no clear answer, especially because many risks are both integrated into the ERM system and simultaneously prepared for as part of the bank's BCPs. Moreover, it is not clear whether the threat must be "major," i.e. according to the definition of materiality, or it must simply be something upon which the bank exercises direct influence. Regardless of this ambiguity, one deciding factor is immediacy, i.e. how immediate the threat would cause damage should it materialise. For example, banks cannot influence the likelihood of cyber-attacks or coastal flooding, but they can influence, for example, which companies they invest in based on those companies' GHG emissions. Nonetheless, the likelihoods of cyber-attacks and coastal flooding are interpreted to be immediate threats should they occur, and are therefore integrated into both the bank's ERM frameworks and BCPs. On the other hand, although investing in a company with high GHG emissions (and without any plans to reduce them) poses direct risks according to several Basel-based categories (1st pillar: credit risk, operational risk; 2nd pillar: reputation risk; residual risks: business and environmental), and is something over which the bank has direct influence, this threat is integrated to a far-less technical and streamlined manner compared to other risk types.

Likewise, many of the physical risks posed by climate change are indeed considered relevant by the banks, but not material. There are three dominant categories of risks concerning changes in physical-climate parameters that can threaten banks. The first is threats to a bank's investments in profit-generating assets or services. A 2013

article by Reuters Point Carbon cites a U.S. Department of Energy report, released the same year, which warns of climate risks driven by geographical changes. The report refers to risks including storms and coastal flooding to oil and gas installations, the perverse effects of extreme heat on the USA's electrical grids, and how water shortages limit the use of drilling technologies (Point Carbon, 2013g, p.5).

The second category concerns financial organisations with insurance businesses. The major risks are from changes in extreme temperatures and sea-level rise. The increase of floods, droughts, and severe weather can affect, for example, the casualty and property divisions of insurance businesses.[121]

Lastly, the third category is how both geographical limitations on industrial production, and the effects of extreme weather on insurance claims change the ability of banks' clients to repay loans. The banks' clients for financing could be affected by physical risks related to their adaptation to climate change, e.g. impacts to infrastructure upon which they depend to conduct their businesses. An example from TD's 2011 CDP response are delays by the bank's clients in the mining sector: their project schedules and costs were affected by shortened winter road-construction seasons.

Regardless of the ways the physical risks of climate change threaten banks and their assets, banks tend to delegate these risks to their BCPs and operational risk-management systems. Examples from some of the banks' responses to the CDP Annual Questionnaire's section on the mitigation of physical risks from climate-change are:

1. (German sample) Deutsche Bank: *The bank's division Corporate Security & Business Continuity (CSBC) constantly assesses the global security situation and business-specific risks. It applies a fully-integrated approach to large-scale events including natural catastrophes* (Deutsche Bank-CDP, 2011).
2. (Canadian sample) RBC: *RBC has an enterprise-wide group focusing on management of business disruption risks, including disruptions from weather-related incidents* (RBC-CDP, 2011).
3. (Canadian sample) CIBC: *CIBC's Business Continuity Management methodologies and strategies are being adjusted to account for the potential for*

[121]In TD's 2011 CDP Response, the bank reported that claims arising from severe weather increased three-fold since 2007 (TD-CDP, 2011, section 5.1d).

> *higher frequency and severity of natural disasters associated with climate change* (CIBC-CDP, 2011).

Physical risks can be excluded from the ERM system because of their magnitude: e.g. the monetary loss suffered due to a flooded retail bank branch is considerably smaller than the same types of equity losses incurred by the destruction—based on extreme weather events, for example—of one of the bank's partially-owned offshore oil platforms or hotel resorts. The risks of extreme weather threaten the banks' assets in different ways, regardless of whether the risks are deemed material or not. Deutsche Bank, for example, acknowledged that the physical risks of climate change could cause the bank "major" threats:

> *"Losses of production, higher expenditures for natural resources and even the loss of the foundation for business can also be detrimental to business relationships with Deutsche Bank and may be relevant for the assessment of new and existing client relationships in the future.* [...] ***An unprecedented accumulation of extreme events could even threaten our solvency***" (Own modification; own bold) (Deutsche Bank-CDP, 2011).

Notwithstanding these facts, most major banks acknowledge a wide range of climate-change risks and include **some** of their oversight as sub-initiatives under the mandatory, Basel-based risk categories. This new layer of climate-change risk-management institutions simultaneously address several risk categories (e.g. credit risk and reputation risk) and involve departments (e.g. public relations, corporate sustainability) that have been hitherto less related to the banks' ERM systems. The UNFCCC recognises the multi-disciplinary paradigm required to manage the complex nature of climate-change risks:

> "[it] *has consequences for all spheres of existence on our planet. It either impacts on—or is impacted by—global issues, including poverty, economic development, population growth, sustainable development and resource management. It is not surprising, then, that solutions come from all disciplines and fields of research and development*" (Own modification) (UNFCCC, 2012d).

Studies by Lempert et al. (2006) and Allen et al. (2012) review a range of climate-change risk-management approaches. Allen et al. support the view that any attempt to

choose climate-change policies should reflect numerous sources of uncertainty. They write:

> "*Studies of climate change and its impacts rarely yield consensus on the distribution of exposure, vulnerability, or possible outcomes. Hence policy analysis cannot effectively evaluate alternatives using standard approaches such as expected-utility theory and benefit-cost analysis*" (Allen et al., 2012, p.1).

Below are several generic risk categories and examples of some of the climate-change risks pertaining to them. It is noteworthy that unlike the standard risk categories of the Basel Accords, there is no globally-accepted, standardised list of climate-change risks (or similar risks, under different names, such as GHG/carbon/ET/offset/CO2 foot-print risks). Investment reports use different variations of climate-change risks; CDP uses a specific list; the World Bank uses another.

Table 53: Examples of climate-change risks and their possible interpretations according to Basel-based risk pillars/types

Risk type	Generic examples	Basel risk pillars/types
Regulatory	Emissions from a company's own operations	1st Pillar / Credit, Operational
		2nd Pillar / Reputation
		Residual / Business, Environmental
	Indirect emissions from a company's supply chain, especially energy-related emissions	1st Pillar / Credit, Operational
		2nd Pillar / Reputation
		Residual / Business, Environmental
	Emissions linked to the use of a company's goods and services	1st Pillar / Credit
		2nd Pillar / Reputation, Strategic
		Residual / Business, Environmental
	Policy changes, e.g. termination of subsidies for renewable energy	1st Pillar / Credit
		2nd Pillar / Strategic
		Residual / Business
	Investments in energy companies that	1st Pillar / Credit

Risk type	Generic examples	Basel risk pillars/types
	may or may not meet national renewable-energy proportion targets	2nd Pillar / Strategic
		Residual / Business, Concentration
Physical	Negative weather developments, especially in industries that tend to have GHG-emissions regulations, such as electric power, oil, and gas production	1st Pillar / Credit, Operational
		Residual / Business
	Additional costs due to change in weather patterns, e.g. for utilities	1st Pillar / Credit, Operational
		Residual / Model
	Loss of property assets	1st Pillar / Credit, Operational
	Loss from investments in agriculture, fisheries, forestry, health care, tourism, water, real estate, and insurance	1st Pillar / Credit, Market, Operational
Legal	Litigation against companies that contribute to climate change	1st Pillar / Legal
		2nd Pillar / Reputation
		Residual / Environmental
	Litigation against companies that fail to address climate-change risks	1st Pillar / Legal
		2nd Pillar / Reputation
		Residual / Environmental
Reputation	Investments in controversial energy projects	1st Pillar / Legal
		2nd Pillar / Reputation
		Residual / Environmental
Competitive	Investments in immature technologies	1st Pillar / Credit
		2nd Pillar / Strategic
		Residual / Business, Concentration
	Business-disruption coverage	1st Pillar / Operational
		Residual / Insurance
	Price volatility in ET markets	1st Pillar / Credit, Market
		2nd Pillar / Strategic
		Residual / Business, Concentration
	Rising energy costs	1st Pillar / Credit, Market, Operational
		2nd Pillar / Strategic

Risk type	Generic examples	Basel risk pillars/types
		Residual / Business, Insurance
	Increased credit risk by affected clients	1st Pillar / Credit
		2nd Pillar / Strategic, Reputation
		Residual / Business, Concentration
Project	Legitimacy of a chosen standard for validating/verifying ET credits (ISO 14064, Gold Standard, etc.)	1st Pillar / Credit, Operational
		2nd Pillar / Strategic, Reputation
		Residual / Business
	Host country letter of approval revoked	1st Pillar / Credit, Operational
		2nd Pillar / Strategic
		Residual / Business
	Incorrect/insufficient baseline or monitoring methodology used	1st Pillar / Credit, Operational, Legal
		Residual / Model
	Validation risk	1st Pillar / Credit, Operational
		Residual / Model
	Verification risk	1st Pillar / Credit, Operational
		Residual / Model

(Sources: based on Elkinton, 2007; Kiernan, 2007; Labatt and White, 2007; Nicholls, 2007a; Nicholls, 2007b; Richardson, 2007)

Standardised ERM methods have limitations when it comes to climate-change risks. In general, the more novel a risk, the less technical the method used to deal with it. Liquidity risk, for example, is well understood by banks and therefore banks have quantifiable ranges that determine their tolerance for it. The means to mitigate this risk are technical, formulaic, and require a minimum degree of evaluation in order to make decisions.

Climate-change risks, on the other hand, are far less understood than most standardised risks: this is why banks—even though they have near mirror-like approaches to implementing ERM systems—have different approaches to manage climate-change

risks. Examples of these different approaches are shown below, as well in chapters 5, 6, and 7.

As pointed out in this thesis' introduction, banks have yet to find standard approaches to market risks stemming from climate-change, and few theoretical approaches that examine the integration of climate-change risks into credit ratings have been attempted (Onischka, 2009 in Dierks et al., 2010, p.8). Market risk is a major risk category for the financial industry and relies heavily on statistics, financial modelling, simulation, and so on.

Banks' methods used to manage market risks function effectively as long the balance sheet of a given borrower (or investments, trades, etc.) can be calculated using "mark-to-market." Mark-to-market, concerning assets, implies that the value of a balance sheet is based on current market values, and not book values. When the balance sheet can be calculated using mark-to-market, the bank (the lender) can use a model to predict the value of a given asset, i.e. assuming a liquid market already exists for it. These economic valuations are often inconsistent. For example, companies in LSEs hold significant investments in plants and equipment which cannot be calculated using mark to market. Energy producers will own (or for example, partially own—dividing ownership with their financiers) assets that can last over twenty years. Examples are wind parks, or a coal-fired plant. There are no reliable growth curves for such time periods.

An analogy for the bank's attempts to integrate climate-change risk-management institutions into their ERM systems is a patchwork family. The institution of family unity—like the core principal driving ERM systems, i.e. to unify a bank's risk-management institutions with the risk appetite—is constantly challenged by institutional changes in society. Examples are new risks coming from climate-change. These institutional changes in society force the organisational model (the family, the ERM system) to adapt. With some "patchwork," the banks' ERM systems are including climate-change risk mitigation in different ways, and to different degrees. Nonetheless, despite the two bank samples' contrasting regulatory scenarios, the banks' approaches in both samples are remarkably similar.

4.4 CLIMATE-CHANGE RISKS ACCORDING TO MAJOR FINANCIAL ORGANISATIONS

This chapter's fourth part has three sections (including this introductory section) that examine how the banks in both samples interpret climate-change risks. The two following sections set the grounds for the chapter's fifth part which presents the banks' climate-change risk-management institutions that are directly connected to (i.e. "close to") the ERM systems. Although climate-change opportunities form the other half of the climate-change risk paradigm, these are addressed in chapter 6 by reviewing the banks' actual climate-change market endeavours.

The bank-specific data presented in the figures of the second section (below) comes directly from the banks' CDP responses from the years 2010 and 2011.[122] Using drop-down menus in the CDP Annual Questionnaire, the banks chose which risks (from a list of 28 risks) they considered relevant, and to what degree potential impacts were expected. The degrees of potential impacts are based on a scale from 1 to 10: 1 being "low," 5 "medium" or "unknown," and 10 "high." The classification of risks by the CDP does not follow the same categorisation as the Basel Accords and Solvency. Instead, the CDP's lists of risks were based on three macro categories of risks:

1. changes in regulation (11 risks to choose from);
2. changes in physical-climate parameters (11 risks to choose from);
3. changes in other climate-related developments (6 risks to choose from).

The CDP risk categories can be readily understood according to both more general, generic categories of climate-change risks, and the Basel-based risk categories presented in the tables above. The table below puts these three categorisation typologies side-by-side.

[122] One bank from each sample is missing from this section's data presentation: RBC from the Canadian sample, and DZ Bank from the German sample. RBC used a qualitative, descriptive method to disclose its interpretation of climate-change risks in the CDP Response, and DZ Bank—despite being an active supporter of the CDP—did not have a CDP Response.

Table 54: Comparative typologies of climate-change risks according to CDP and Basel-based categories

Climate-change risk type	CDP risk category and examples	Basel risk pillars/types
Regulatory Risk	Changes in regulation (11 risks): 1. Carbon taxes 2. Fuel/energy taxes and regulations 3. Voluntary agreements 4. Uncertainty (new regulation) 5. Lack of regulation 6. International agreements 7. Air-pollution limits 8. Cap and trade schemes 9. Emission reporting obligations 10. Product labelling regulations 11. General environmental regulations	1st Pillar: Credit, Operational 2nd Pillar: Reputation, Strategic Residual: Business, Environmental, Concentration
Physical Risk	Changes in physical-climate parameters (11 risks): 1. Change in temperature extremes 2. Change in average temperature 3. Change in precipitation pattern 4. Change in precipitation extremes 5. Change in average precipitation 6. Sea level rise 7. Snow and ice 8. Tropical cyclones 9. Uncertainty of physical risks 10. Changes in natural resources 11. Other physical climate drivers	1st Pillar: Credit, Operational, Market Residual: Business, Model

Climate-change risk type	CDP risk category and examples	Basel risk pillars/types
Legal, Reputation, Competitive, Project Risk	Changes in other climate-related developments (6 risks): 1. Reputation 2. Changing consumer behaviour 3. Changes in social environment 4. New socio-economic conditions 5. More humanitarian demands 6. Other drivers	1st Pillar: Credit, Operational, Market, Legal 2nd Pillar: Reputation, Strategic Residual: Business, Environmental, Concentration, Model, Insurance

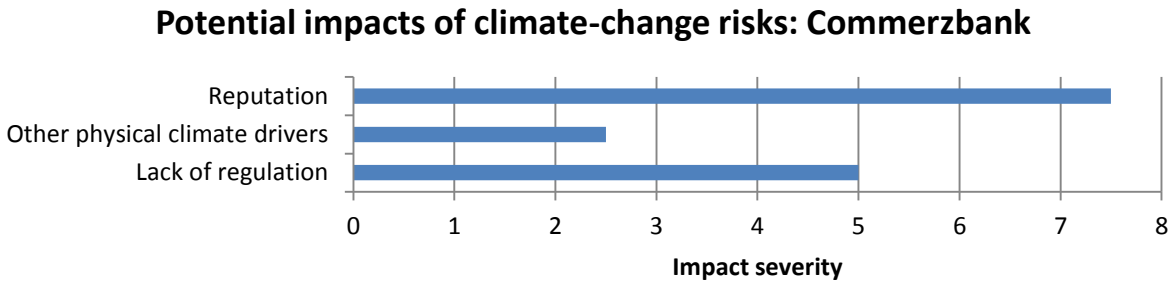
(Sources: based on Elkinton, 2007; Allianz-CDP, 2006; Allianz-CDP, 2011; BMO-CDP, 2011; CIBC-CDP, 2011; Commerzbank-CDP, 2011; Deutsche Bank-CDP, 2011; Kiernan, 2007; Labatt and White, 2007; Nicholls, 2007a; Nicholls, 2007b; Richardson, 2007; RBC-CDP, 2011; BNV-CDP, 2011; TD-CDP, 2011; UniCredit-CDP, 2011)

The bank-specific data presented in the following section also highlights the voluntary nature of the CDP. The financial organisations were free to choose which risks they considered relevant and how specific they wished to rate those risks' impact severities. Risks considered irrelevant were simply not included in the banks' responses to the CDP Annual Questionnaire. For example, BNV from the Canadian sample considered 13 of the CDP's 28 risk types to be relevant, however rated them all with an equal severity of "5," which can mean either "medium severity" or "unknown severity." Allianz, on the other hand, only considered 2 of the 28 risk types to be relevant, and yet rated them specifically with severities of "2.5" and "10."

It should be noted as well that the risks disclosed were always those appearing under one of the three macro categories of risks included in the CDP questionnaire. The option to simply select the macro category (such as "Changes in physical-climate parameters") was not available.

4.4.1 THE GERMAN SAMPLE

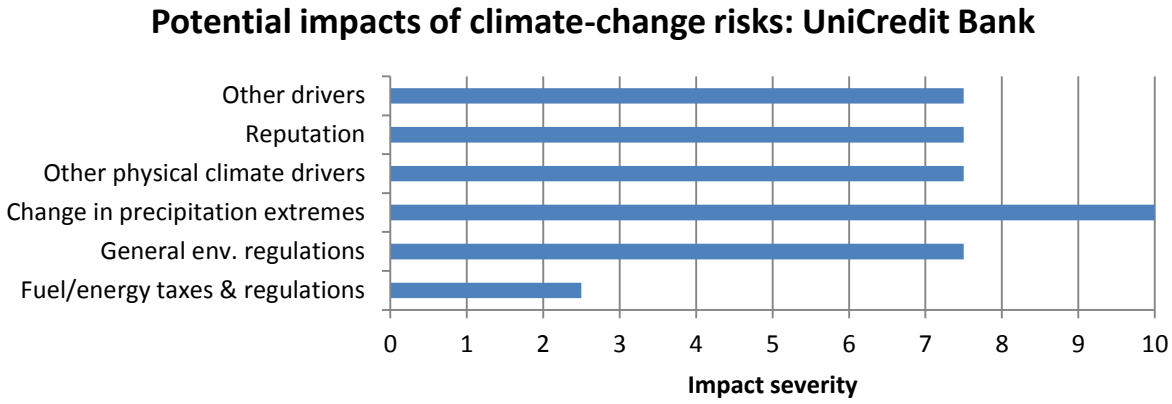
Figure 18: CDP-based risk-categorisation (Commerzbank)



(Source: Commerzbank-CDP, 2011)

Commerzbank sees reputation as the main risk stemming from climate-change, and has a joint department that specifically combines reputation and sustainability management. The bank's Group Environmental Committee reports to this joint department, and this department reports directly to the CEO.

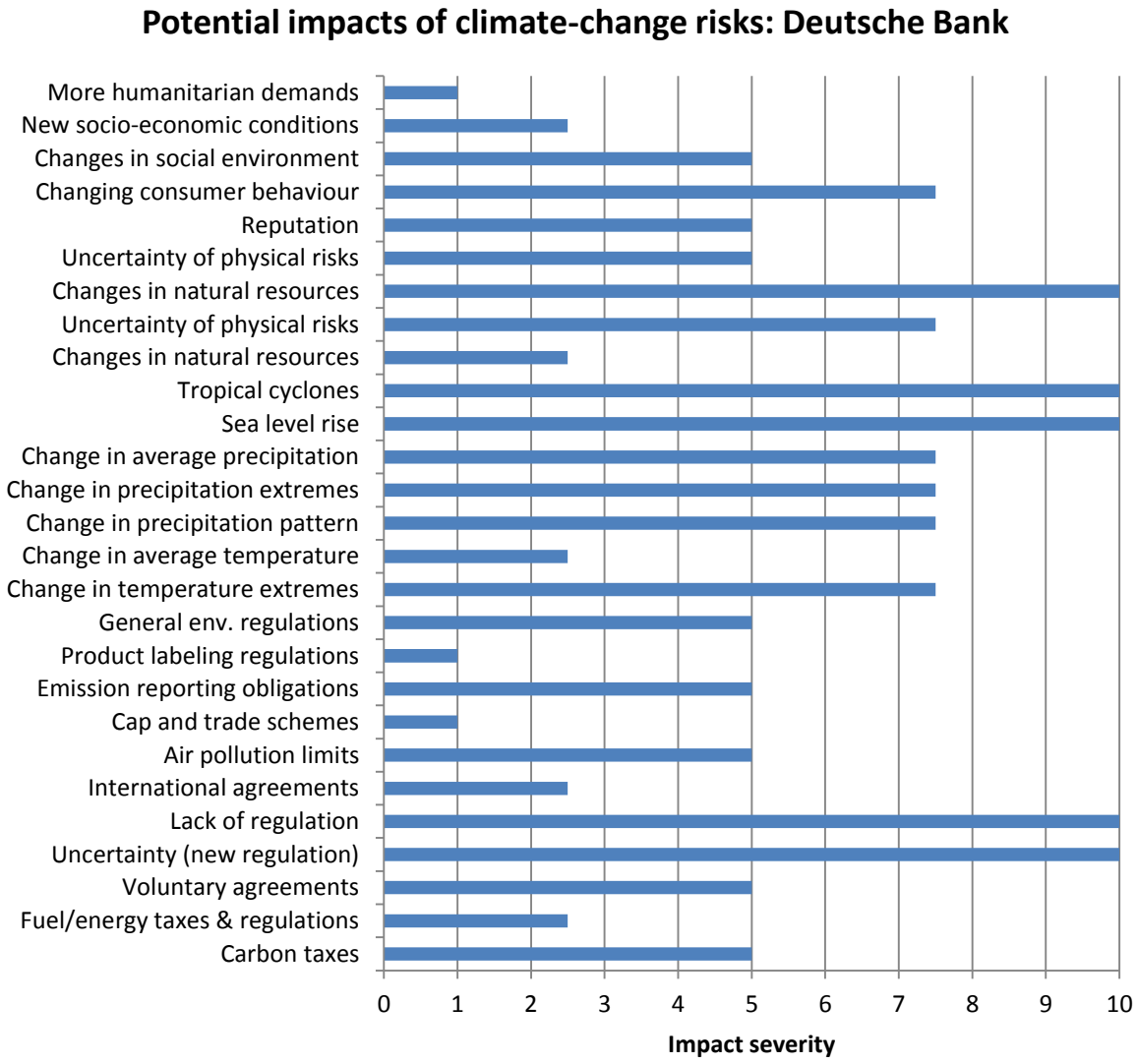
Figure 19: CDP-based risk-categorisation (UniCredit Bank)



(Source: UniCredit-CDP, 2011)

UniCredit considers climate-change risks to have above-average impacts and to involve several risks among the regulatory, physical, and socio-economic categories. In the bank's Group Risk Management department, climate-change risks fall mainly under the domains of reputation risk and credit risk.

Figure 20: CDP-based risk-categorisation (Deutsche Bank)

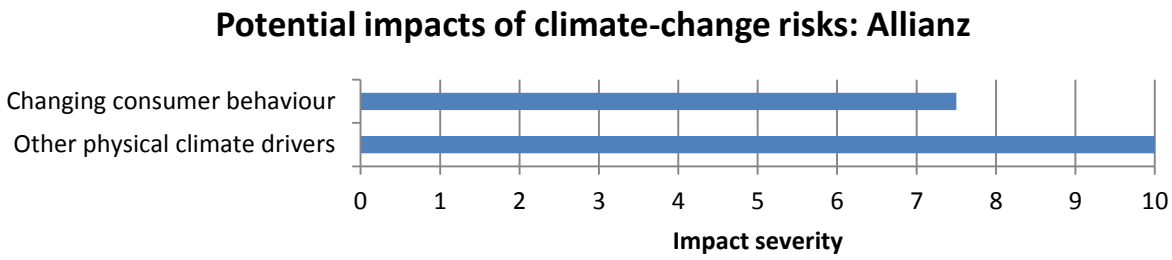


(Source: Deutsche Bank-CDP, 2011)

Deutsche Bank has the broadest acknowledgement of climate-change risks among the financial organisations of both samples, with particular emphasis on physical risks such as extreme weather developments. This is noteworthy because these risks fall under the official responsibility of the bank's BCPs and systems. The lack and uncertainty around new regulatory scenarios were seen by Deutsche Bank to carry equally high risk

impacts as cyclones, rises in sea levels, and changes in the availability of natural resources.

Figure 21: CDP-based risk-categorisation (Allianz)



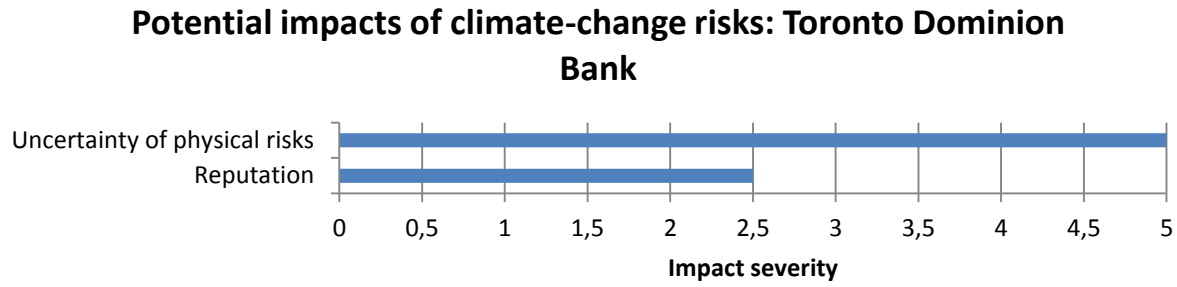
(Source: Allianz-CDP, 2011)

The one insurance giant in the samples, Allianz, appeared to be the most confident financial organisation concerning climate-change issues, emphasising a business-as-usual manner which likely comes from the greater demands of risk-management in the insurance business than in the banking industry. Unlike Deutsche Bank, Allianz viewed "Other physical climate drivers" as the primary source of concern for physical risks (which it rated "10" for impact severity) instead of changing temperature extremes, precipitation patterns, cyclones, etc.

4.4.2 THE CANADIAN SAMPLE

Noteworthy in the Canadian sample is that none of the climate-change risks were ranked above a level 5. In contrast, three of the German banks ranked physical risks at level 10, bearing the highest possible impacts. In both samples, 3 of 4 financial organisations interpreted climate-change risks to pose threats to their reputations.

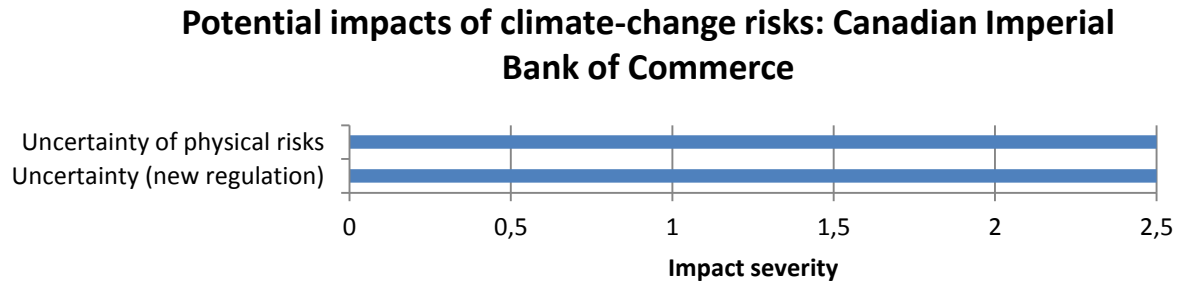
Figure 22: CDP-based risk-categorisation (TD)



(Source: TD-CDP, 2011)

TD ranked reputation with a low-medium risk impact and the uncertainty around physical risks—which impact credit-risk mitigation—with a medium impact.

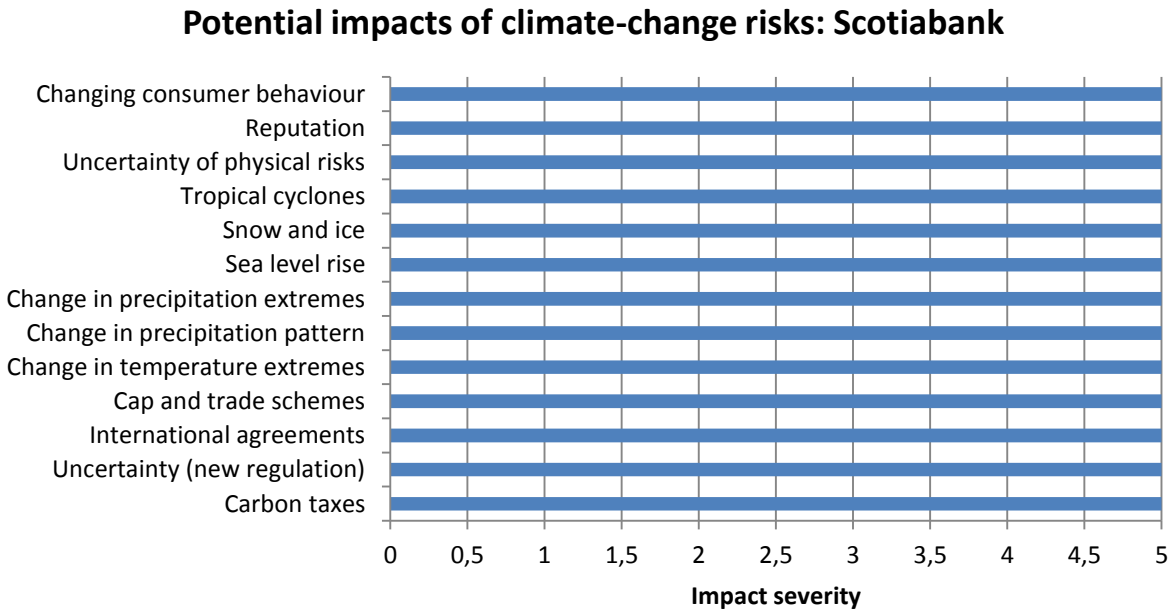
Figure 23: CDP-based risk-categorisation (CIBC)



(Source: CIBC-CDP, 2011)

CIBC views the impacts of the climate-change risks proposed by the CDP as low to medium. CIBC's low ranking of regulatory risks might have to do with the many studies, which model the impacts of different regulatory scenarios on their business lines, that the bank has carried out to date.

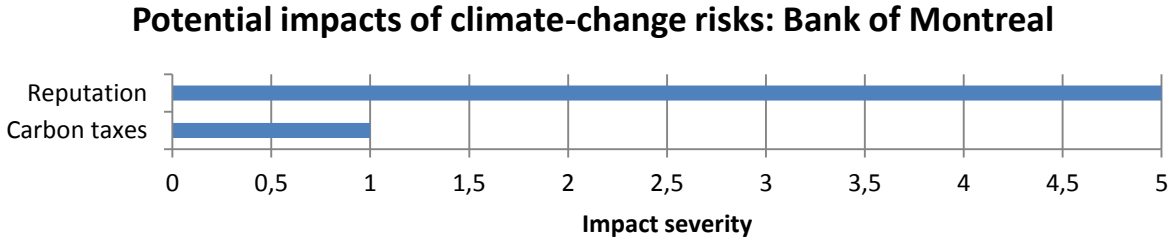
Figure 24: CDP-based risk-categorisation (BNV)



(Source: BNV-CDP, 2011)

BNV has the broadest base of international clients and chose to label climate-change risk impacts as "medium" or "unknown." Environmental-risk management is bundled together with social-risk management under the bank's Global Risk Management unit.

Figure 25: CDP-based risk-categorisation (BMO)



(Source: BMO-CDP, 2011)

BMO sees the impacts of climate-change risks primarily according to their potential to affect the bank's reputation. BMO has climate-change criteria built into its lending guidelines (i.e. concerning credit risk) and extensively manages its own carbon foot-print.

4.5 DIFFUSION OF CLIMATE-CHANGE RISK-MANAGEMENT PRACTICES

This chapter's fifth part has nine sections (not including this introductory section) which together present an overview of how the banks diffuse climate-change risk-management practices specifically in the realm of their ERM frameworks. These are the initiatives termed "close" to the ERM framework, but not integrated with the same degree of technicality as the standardised, mandatory components of the ERM system.

The first six sections explain the special relevance of reputation and credit risk. They also explain two core concepts from credit risk that help clarify why banks analyse credit-risk regarding climate-change the ways they do. The sixth section shows the guidance recommended by the World Bank's IFC (International Finance Corporation) for performing climate-change credit-risk analyses. Sections seven to nine present the rules and procedures employed by the banks of both samples to manage credit and reputation risk. Section seven presents the institutions that are simultaneously present in both bank samples, while sections eight and nine show the breakdowns of credit and reputation-risk institutions in each country's banks.

4.5.1 RECEIVER RISKS AND GATEWAY RISKS

Regardless of the different ways banks view climate-change risks, two of the Basel-based risk types stand out more prominently in the banks' development of climate-change risk-management institutions: reputation risk and credit risk. Concerning climate-change issues, these two standardised risk categories often "receive" the risks of other risk categories and can therefore be referred to as "receiver risks." Although some climate-change risks can be deemed immaterial and are therefore not monitored with the same rigour as the standardised Basel-based risks, climate-change risks do not simply

disappear. Instead, many of them appear on the side-lines to be "received" by other risk categories—such as reputation risk, credit risk, and even market risk.

Depending on the types of business transactions a bank is considering, side-line risks can function as "gateway risks" and move into centre-stage and become major threats to, for example, a bank's reputation. Regulatory risk is an example of a risk with a strong threat as a gateway risk. Regulatory risk is categorised under the Basel-based, first-pillar category "legal risk," and under different circumstances, it leads to bigger, more significant—i.e. material—risks, such as market, reputation, or credit risk. A German banker shared:

> *If there's a price risk coming from a change in the regulatory situation, then most people have some knowledge, but probably not as much as they need. Most stock traders, I can't imagine, know much about carbon risks* (UniCredit, personnel interview, 2012).

Another gateway risk is environmental risk. Environmental risks belong to neither the first, nor the second-pillar Basel-based risk categories. Nonetheless, most major banks at least acknowledge environmental risks in both annual reports and in their risk-management institutional practices. In several banks' ERM frameworks, environmental risk is treated as a sub-category under reputational risk. In other banks, environmental risk falls under legal risks. Both these practices suit the general definition of environmental risk, which is financial loss or damage to a bank's **reputation** in association with environmental issues relating to the bank. Although lawsuits can threaten banks' assets or earnings, the real damage (which remains unquantifiable) is to the banks' reputations through media coverage of lawsuits and criticism by civil-society. The "gateway" characteristic of environmental risk is explained by a Canadian banker:

> "*Environmental risk isn't an actual risk: it's like a short-form for saying all the traditional risks that arise from environmental issues. It doesn't appear on our risk pyramid. It's really about environmental risks giving rise to standard risks*" (RBC, personnel interview, 2012).

Another banker emphasised how the presence of environmental risks often signalled the need to investigate risks in other categories:

> "*What tends to happen is that if a company is really shoddy on environmental performance, it's usually the case that they're shoddy on other things as well such as governance, financial transparency, and performance, and everyone else like regulators and NGOs are already on their case* (BNV, personnel interview, 2012).

4.5.2 REPUTATION RISK

Reputation risks bring a company's ethics and integrity into question. These risks grow when there is public perception that a company is falling short of its stakeholders' expectations, and given the fast evolution of evidence about climate-change impacts, public scrutiny is growing (Stenek and Connell, 2010, p.6). Reputation risk can come through negative publicity in any form and can be spurred by a host of issues, from members of the public scrutinising a bank's business deals, to an audit that exposes a bank's sub-standard internal practices. Because of banks' vulnerability to reputation risks from so many angles, a given bank's approach to reputation risk will often be developed and included at the very starting point from which the bank's ERM system is executed: the risk appetite. An example from TD of the Canadian sample is:

> "*TD's Risk Appetite Statement is summarized as follows: we take risks required to build our business, but only if those risks:*
>
> 1. *Fit our business strategy, and can be understood and managed*
> 2. *Do not expose the Enterprise to any significant single loss events; we don't 'bet the bank' on any single acquisition, business, or product*
> 3. ***Do not risk harming the TD brand***" (Own bold) (TD-Annual Report, 2010, p.59)

Reputation risks tend to align themselves with current events and trends and intensify when the status quo on any subject is broadly known. A report on climate risk and financial institutions by IFC states that "*the increasing amount of information about climate-change impacts is raising stakeholder expectations about institutional responses*" (Stenek and Connell, 2010, p.6).

Because reputation risk can materially harm a bank—by adversely affecting its business units, internal operations, or overall financial condition (e.g. its stock price)—the Basel Accords require that it be addressed in a capital-assessment process alongside the other major risk categories (Basel Committee on Banking Supervision, 2006, p. 206). As mentioned above, reputation risk is a second-pillar Basel-based risk category, and although banks are required to manage their exposure to it, the Accords provide no guidance for its oversight. Unlike the other Basel-based risks, and even though reputation risk is a significant threat to banks, it remains unquantifiable. Credit, market, and operational risks, on the other hand, are all managed using pre-determined, quantifiable thresholds.

Impacts from reputation risks on banks include the loss of key employees, litigation, revenue loss, declines in client loyalty, sanctions, regulatory discipline, and so on (BMO-Annual Report, 2010). The CDP response by the Canadian bank CIBC stated:

> *Financial institutions that do not have policies or programs in place to address their own contribution to climate change, as well as the impact of climate change on their business, may face criticism from clients, investors, and other stakeholders. This, in turn, could lead to disruptions at public events like annual shareholders' meetings, boycott campaigns and negative financial impacts* (CIBC-CDP, 2011).

Most banks cite reputation to be among their most valuable assets and therefore manage it through corporate governance practices and, to different degrees, in their ERM frameworks. A particular complexity of reputation risk is that it can function simultaneously as a receiver and a gateway risk: it receives the threats from unmitigated regulatory risks and can channel (and multiply) these threats into credit risks:

> *Financial institutions in Canada are not expected to face direct regulation of their carbon emissions. However,* ***regulatory risk may have financial and reputational impacts on our clients, thereby potentially posing a credit risk****. Examples of financial impacts on our customers include potential rising energy prices, carbon mitigation costs and/or tax liabilities due to regulation* (Own bold) (BNV-CDP, 2011).

4.5.3 CREDIT RISK

Credit risk is the other Basel-based risk type to stand out most prominently in the banks' development of climate-change risk-management institutions. Credit risk deals with the bank's ability to manage risk of the most generic type: the risk of loss if a borrower or counterparty fails to pay in transactions from direct lending, investment, hedging, and trading activities (Basel Committee on Banking Supervision, 2006, pp. 97, 144; BNV-Annual Report, 2010, pp.64, 69). In other words, credit risk concerns the risk implicit in lending activities.

As referred to in this thesis' methodology chapter, one of the "big four" accounting firms (PricewaterhouseCoopers) carried out a study in 2011 of German banks and their development of lending processes since the 2007/2008 GFC. The surveys and interviews across the three German banking sectors (private, cooperative, and public) yielded the following conclusions about the lending businesses of major German banks:

1. the lending business continues to be the most important business area;
2. most banks generate most of their income from the lending business;
3. diversification into the commissions business has only been partly successful;
4. the commissions business has not become the "second pillar" as hoped for by many banks;
5. increasing loan volumes and a favourable interest-rate structure suggest that this trend's change is unlikely, also in the near future; and
6. despite the GFC of 2007/2008, it was possible for most of the banks to increase their loan volumes and grow their interest income (Kroog et al., 2013, pp.12, 21).

On the one hand, by focussing the thesis' research less on market risks, this study's risk scope is narrow because a considerable portion of risk-management institutions in major financial organisations handle market risks specifically. On the other hand, because the primary business of banks is lending, this thesis' emphasis on non-market risks (such as credit and reputation risk) covers the lion's share of climate-change risk-management institutions in major banks.

Unfortunately for the banks, credit risk (like reputation risk) is a risk category with a high degree of uncertainty, not only based on the results of current best-practice

risk-management, but also uncertainty regarding which risk-management initiatives are really “best-practice” in the first place.

For most aspects of credit risk, banks use their standardised policies and limits (credit-concentration limits) to control credit concentrations in their credit portfolios. These limits apply to all borrowers and are specified according to: industry sectors, country and geographic regions, related borrowers, and products or portfolios (CIBC-Annual Report, 2010, pp.70-73). Once a bank lends to a borrower, the transaction credit is continually reviewed according to the account’s risk rating (CIBC-Annual Report, 2010, pp.70-73). As mentioned earlier in this chapter, banks often obtain third-party guarantees, insurance, etc. in order to mitigate credit risk.

When it comes to climate-change risks, knowledge of the risks themselves is still emerging and is therefore difficult to assess and calculate. Moreover, the risks carry variables that change in different sectors, geographic locations, and under different regulatory scenarios. LSEs tend to be the largest and most consistent deliverers of ROI to major banks, and climate-change risks permeate those industries. Moreover, both legislation and voluntary practices (e.g. with disclosure by “scopes”) remain vague (or non-existent) concerning who is responsible for GHG emissions.

Before examining the credit-risk assessment process recommended by the World Bank, along with the actual credit-risk initiatives of the banks in the samples, several concepts pertaining to credit risk must be clarified. Concerning climate-change issues, KYC and “Chinese walls” are two core risk-management concepts that heavily influence the boundaries of climate-change credit-risk analyses. It should be noted that these two risk-management concepts do not apply exclusively to credit risk, but rather also work synergistically with the other risk-management institutions of banks’ ERM frameworks.

4.5.3.1 KYC

KYC is a due-diligence procedure used by banks to uncover relevant information about their clients, their clients’ suppliers, partners, etc. Traditionally KYC has been used to screen banks’ business initiatives for issues of money laundering, fraud, corruption, identity theft, and so on. These procedures not only verify and document relevant data,

but also clarify the origin of the assets employed within the business relationship or transaction (Commerzbank-Annual Report, 2010). KYC is often also employed as a tool for reputation-risk mitigation (Commerzbank, personnel interview, 2012).

Relevant here is the environmental component of KYC, where banks assess corporate clients against criteria based on exposing climate-change risks in the clients' (i.e. borrowers') businesses. In this thesis' bank samples, the criteria used to screen a given deal or client for such risks tend to be based on a bank-wide environmental or CSR policy.

4.5.3.2 CHINESE WALLS

A Chinese wall is an information boundary between different bank divisions. These "walls" are based on the Basel Accords and are therefore standardised rules to avoid conflicts of interest in the banking industry.

An example from Deutsche Bank is the separation of its (economics) research division and its investment teams. While the research team performs industry-specific research, the team members can have no details concerning the bank's actual deals, for this could influence their research and cause a conflict of interest. The research team can give supportive information to the bank's investment teams (for example, on trend developments in off-shore wind-energy financing), but not the other way around. When Deutsche Bank circulates an internal carbon-market memo, the research teams are not included on the mailing list because this could leak information about the bank's business deals to the research team. For this reason, research divisions in banks are run independently of the commercial or business units.

An example of a potential breach of a Chinese wall is the lawsuit (of €82 EUR million) against the UK bank Barclays, begun in 2013. Barclays is accused of breaking a contractual agreement and misusing confidential information to buy a Swedish company (Tricorona) that invests in ET credits (Point Carbon, 2013d).

An example of a Chinese wall used properly can be taken from this thesis' German banking research sample: UniCredit. UniCredit has a full-service ET desk for its corporate clients. Although the bank was interested in financing ET projects (based on

the CDM), these endeavours could have no linkages to the bank's ET trading desk, which has the foremost function to support the best interests of its own clients (UniCredit, personnel interview, 2012). A link between these two endeavours would have given the bank a conflict of interest: it would have been in the bank's interest to sell its own ET credits (generated from its own CDM projects) to its clients, as opposed to sourcing other ET credits (potentially) more suited to those clients' specific needs. Any linkage between such units would breach the Chinese wall.

4.5.3.3 CLIMATE-CHANGE ANALYSIS PROCESS

In 2010 the IFC issued a process to serve as potential guidance for climate-change credit-risk analysis performed by financial organisations. Noteworthy here is that the process is guidance: it is not mandatory, although some banks (such as RBC, from the Canadian sample) consider the World Bank's guidelines to be a reliable international benchmark.

The process involves four steps with the aim of overseeing as many climate-change risks as possible. Below is a simplified version of the analysis process alongside examples of climate-change risks considered relevant by the IFC.

Table 55: IFC's credit-risk analysis for climate-change risks

Phase of the analysis	Climate-change risks
1: Understanding the market and project; obtaining and verifying information	1. Changing market conditions 2. Industry competitiveness under changing conditions 3. KPIs (key-performance indicators) (i.e. in terms of model risk) 4. Managerial strengths and weaknesses under changing conditions
2: Identifying critical investment risks; performing credit-risk analysis	1. Project-completion risk 2. Technical and operational risk 3. Industry risk 4. Environmental/social risk 5. Country risk
3: Developing financial projections; assessing cash-flow sensitivity, analysing key ratios; evaluating the	1. Financial models (i.e. model risk)

Phase of the analysis	Climate-change risks
investment	
4: Mitigating credit risk	1. Deterioration of investee creditworthiness 2. Flawed mitigation measures 3. Inability to re-finance

(Source: modified from Stenek and Connell, 2010, pp.18-21)

4.5.4 CREDIT & REPUTATION-RISK MANAGEMENT: PROCEDURES

Although there is variation among the ways the banks of each sample implement climate-change risk-management institutions to mitigate credit and reputation risks, there is also considerable similarity between both samples.

All ten banks have credit-risk procedures that include the analysis of not only the borrower's institutional alignment with existing regulatory frameworks, but also with normative and cultural-cognitive institutional pillars. In fact, the borrower's compliance with environmental laws and regulations is only the starting point for subsequent reviews. Below are examples of benchmarks and procedures—drawn from both nations' bank samples—that verify borrowers' alignments with existing normative and cultural-cognitive institutional elements present in the banks' organisational fields.

Table 56: Normative and cultural-cognitive institutional alignment benchmarks and procedures

Risk type	Examples of climate-change risk-mitigation benchmarks and procedures
Climate-change risks (i.e. related to credit, reputation, environmental, legal, concentration, and business risks)	1. Evidence of any activities that could threaten the bank's reputation; 2. qualitative reviews to evaluate the borrower's sustainability initiatives; 3. review of energy-efficiency measures; 4. evidence of the borrower's GHG-emissions; 5. evidence of the borrower's GHG-emissions reductions strategies; 6. review of the borrower's market position in a low-carbon society; 7. evidence of monitoring carbon foot-prints; 8. measuring the borrower's susceptibility to stronger GHG regulations;

Risk type	Examples of climate-change risk-mitigation benchmarks and procedures
	9. review of other ecological risks implicit in the borrower's business activities; 10. evidence of the borrower's corporate environmental policies; 11. evidence of the amount of capital destined for environmental compliance and rehabilitation; 12. evidence of whether the company's board of directors participates in developing the company's GHG- mitigation strategy.

4.5.4.1 GERMAN SAMPLE

Below are the credit and/or reputation-risk management initiatives disclosed by the German sample of financial organisations. These initiatives, which screen risks according to the criteria in the table above (as well as other criteria), are integrated into the banks' ERM frameworks.

Table 57: Allianz's institutions for managing reputation and credit-risks stemming from climate-change

Risk type	Allianz
Reputation	**Early warning** Each operating entity identifies, assesses, and manages reputational risks within its business scope. The key objective is early recognition of changes in the risk environment. All activities that could endanger Allianz's reputation must be reported to Allianz SE for approval prior to their execution. On a group level, reputation risks are assessed qualitatively on a quarterly basis. Twice per year the group's Global Issues Forum undertakes an assessment of large-scale developing risks, opportunities, and the evolution of long-term trends that may impact Allianz. Within this framework, climate-change risks are surveyed and risk-mitigation strategies are developed.
Credit	**Credit risk in real-estate portfolios: ARE (Allianz Real Estate Sustainability Program)** Allianz is working to improve its property portfolio concerning energy usage based on anticipated regulatory requirements and changing market demand. ARE provides both a baseline measurement and standards to assess a given property's performance in terms of energy consumption and GHG emissions. ARE has four sets of methods: (1) increase transparency through use of common metrics for real-estate sustainability; (2) include sustainability criteria in investment due-diligence processes; (3) include

Risk type	Allianz
	asset-specific sustainability strategies as well as energy efficiency into target setting with property and facility managers; (4) implement specific abatement measures into property planning and suggest measures to further optimise performance.

(Sources: Allianz, 2011a; Allianz, 2011b; Allianz, 2011c; Allianz, 2011d; Allianz-Annual Report, 2010; Allianz-Annual Report, 2011; Allianz-CDP, 2011; Allianz-CDP, 2006; Allianz-CSR, 2011; Allianz-Sustainable Development, 2010; Allianz/WWF, 2011; 1 personnel interview)

Table 58: Commerzbank's institutions for managing reputation and credit-risks stemming from climate-change

Risk type	Commerzbank
Reputation and Credit	**Qualitative risk management from three angles** Commerzbank manages climate-change risks qualitatively and approaches them from three main angles. Transactions and customer relationships are researched through individual qualitative reviews to evaluate their sustainability aspects. Criteria include UN Global Compact principles. **First angle: risks occurring in a specific country/sector** Risks are broken down according to which country and industrial sector they occur in. For both country and sector-level assessments, climate-change risks are considered possible factors that can influence a country's or sector's companies. **Second angle: on-going screening for reputational risks** Climate-change issues are monitored by the RSM (Reputation and Sustainability Management) department as part of their regular screening efforts (alongside ecological, social, and ethical issues) of potential reputation risks. A priority in these assessments is early identification in order to avoid affecting the confidence of key stakeholders (i.e. the public, customers, employees, rating agencies, investors and business partners). **Third angle: possible additional case-by-case evaluations** Combining both approaches (the country/sector analysis and reputational screening) the bank performs an additional evaluation (research) of all business transactions and relationships that involve significant sustainability issues. Depending on the evaluation's outcome, the transactions might be cancelled or the business relationship terminated. An example is Commerzbank and oil extraction from tar sands: the bank avoids all deals directly related to the industry. In 2011 over 150 transactions or customer relationships were reviewed monthly: 10% of these reviews received a negative rating for social, ecological, or ethical

Risk type	Commerzbank
	reasons and were terminated. **Internal communication of risks** On a quarterly basis, the RSM department reports relevant reputational risks to the Board of Managing Directors and the Supervisory Board. This includes not only updates, but also hints and clues about the increasing materiality of climate-change risks.

(Sources: Commerzbank-CDP, 2011; Commerzbank-Jahresbericht, 2011; Commerzbank- Nachhaltigkeitsbericht, 2011; Prinz, A., 2011; 1 personnel interview)

Table 59: Deutsche Bank's institutions for managing reputation and credit-risks stemming from climate-change

Risk type	Deutsche Bank
Reputation	**Green Filter** Deutsche Bank integrated a "Green Filter" into its Group Reputational Risk Management Policy. The filter is based on five criteria concerning environmental issues. All transactions must be evaluated against these criteria and any positive response, i.e. "yes," requires that the transaction be escalated for a more detailed evaluation. The questions based on the criteria are: 1. Does the transaction relate to an activity which may be described as harmful to the environment? 2. Is the transaction not consistent with the Bank's aspiration to be a leader in the transition to a low carbon society? 3. Is the transaction not consistent with the Bank's intention to contribute to greater carbon efficiency – accepting that in some circumstances it will still be necessary to finance carbon-intensive industries as they transition to a low carbon society? 4. Does the risk extension facilitate a commercial business activity that increases the "carbon footprint" of a counterparty active in the areas of coal, forestry, agriculture, chemicals, mining, or cement sectors? 5. Are the economics of the transaction likely to be materially affected if anticipated changes to the regulation of GHGs are introduced?
Credit	Credit Directives is Deutsche Bank's global group lending policy and deals with issues such as embargoes and other lending restrictions. Climate-change criteria fall under this policy.

(Sources: Deutsche Bank, 2011; Deutsche Bank-Annual Review, 2010; Deutsche Bank-CDP, 2011; Deutsche Bank-CSR, 2010; Deutsche Bank Investor Relations, 2010; 3 personnel interviews)

Table 60: DZ Bank's institutions for managing reputation and credit-risks stemming from climate-change

Risk type	DZ Bank
Credit	**Credit risk: "Sustainability Check"** For DZ Bank's lending businesses, the bank has used a sustainability checklist since 2008, heavily based on UN Global Compact's 10 principles and those of the Equator Principles. As part of a due-diligence procedure, these checks set the limits for project finance, traditional loans, and trading transactions. Since 2009 the sustainability check is a compulsory component of all loan applications with any sensitive ESG component. The checklist includes 4 main categories and 11 sub-criteria: 1. Social rating 1.1 Labour standards 1.2 Safeguarding human rights 1.3 Protecting heritage/culture 1.4 Protecting neighbouring residential property 2. Environmental rating 2.1 Environmental protection 2.2 Risk classification 2.3 Insurance cover for damage 2.4 Products 2.5 Previous use of business site 3. Anti-corruption 4. Competition and tax The bank gives each transaction four ratings, each with a range from "exemplary" (a score of 1) to "questionable" (a score of 4). The results are added and the resulting number, the "sustainability factor," must be less than 3.5 in order for the transaction to be approved. The questions are tailored by the bank executive performing the sustainability check.

(Sources: DZ Bank, 2013b; DZ Bank, 2013c; DZ Bank-Jahresbericht, 2010; DZ Bank-Jahresbericht, 2011; DZ Bank-Sustainable Investments, 2011; DZ Bank-Sustainability Report, 2010; 3 personnel interviews)

Table 61: UniCredit's institutions for managing reputation and credit-risks stemming from climate-change

Risk type	UniCredit
Reputation	**Special Reputational Risk Policies** Sustainability initiatives fall under the responsibility of the bank's communication department and Reputation Risk Council. UniCredit's reputational risk committee developed a General Reputational Risk

Risk type	UniCredit
	Governance Guideline along with several "Special Reputational Risk Policies." Relevant to climate-change risks are the mining and water policies, which are both under development. These policies are heavily influenced by the adoption of the Equator Principles and the bank's partnership activities with NGOs such as WWF.
Credit	**Carbon Model** Since 2011 the bank has run a pilot project to understand the correlation between expected carbon constraints and bank clients' cash-flows. Final metrics are being determined for UniCredit's "Carbon Model" and the underlying impacts of financed emissions are under review. The objective is to develop and implement new climate-change credit-risk policies. **Credit Policy based on the Equator Principles** The bank's credit policy for project finance requires all UniCredit companies to comply with the Equator Principles. The policy requires an extended screening of all credit applications for ecological and social impacts. Indirect risks are assessed through an environmental risk audit. The minimum standards are based on both national and international laws that are effective in the areas under consideration, as well as the environmental and social standards of the World bank Group Environmental, Health, and Safety Guidelines and the IFC Performance Standards. Lending activities are increasingly monitored through the insertion of environmental variables among the bank's rating models; these allow the bank to consider credit-risk profiles with environmental risks. Which models are used for rating activities depends on the business category: 1. **Groupwide** (for sovereign states, banks, global project finance, multinationals); or 2. **Local** (for business customers [large corporate, corporate, or retail]). For **groupwide business**, the models include environmental requisites not met, assessments of compliance with environmental standards, compliance with current laws, adoption of international reference standards, Environmental Management System certification according to the ISO14001 standard, EMAS, etc. For **local portfolios**, the model assesses exposure to environmental risk factors including: the impact of environmental regulations and legislation on the company, corporate conduct attributable specifically to the presence of environmental and ecological risks, and so on.

(Sources: HypoVereinsbank, 2013; UniCredit, 2010; UniCredit, 2011; UniCredit-Annual Report, 2010; UniCredit-CDP, 2011; UniCredit-Environmental Statement, 2009; UniCredit-Sustainability Report, 2010; 1 personnel interview)

4.5.4.2 CANADIAN SAMPLE

Below are the credit and/or reputation-risk management initiatives disclosed by the Canadian sample of banks. These initiatives are integrated into the banks' ERM frameworks.

Table 62: BMO's institutions for managing reputation and credit-risks stemming from climate-change

Risk type	BMO
Reputation	BMO evaluates its clients' environmental impacts and attempts to help them manage difficult environmental circumstances. Should a client with poor environmental performance be unwilling to work with the bank and meet its terms, the bank would have to consider eliminating that business relationship.
Credit	**General environmental risk assessment** All potential borrowers for commercial and corporate loans are subject to BMO's environmental risk-assessment process. The bank's lenders follow guidelines which identify over fifty environmentally-sensitive industries that require more detailed screening. On a case-by-case basis, the bank may use questionnaires, checklists, "Phase I Assessments," "Phase II Assessments," as well as environmental impact assessments." Environmental Impact Assessments are carried out by third parties according to standards set by the Canadian Standards Association or a similar organisation. In assessment procedures, the bank considers: 1. the borrower's type of environmental risks; 2. the borrower's corporate policies and procedures for environmental risks; 3. the amount of capital destined for environmental compliance and rehabilitation; and 4. the borrower's compliance with environmental laws and regulations. **Specific borrowers (LSEs)** Credit-risk and professional-lending officers operate in a dual-control structure to authorise lending transactions. For clients operating in GHG-intensive industry sectors, the bank considers each transaction with climate-change guidelines based on rendering the borrower's climate-change adaptation and mitigation strategies transparent and understandable. The guidelines assess each transaction from five angles: 1. whether the borrower monitors and reports its GHG emissions, as well

Risk type	BMO
	as the extent and quality of these activities; 2. the amount of the borrower's GHG emissions; 3. whether the borrower has a GHG-offset plan; 4. the plan's implementation, and whether the company's board of directors participated in that plan's development; and 5. the borrower's readiness to deal with forthcoming GHG-regulatory requirements. **Escalation** Should any issues arise during the assessments, the appropriate managers or management committees deal with those issues to the fullest extent possible. In rare circumstances, issues could be escalated to the CEO who could then determine whether the bank's board should get involved. Board involvement would be extremely rare.

(Sources: BMO, 2008; BMO, 2011a; BMO, 2011b; BMO-Annual Report, 2010; BMO-Annual Report, 2011; BMO-CDP, 2011; BMO-CSR, 2007; BMO-CSR, 2010; 1 personnel interview)

Table 63: TD's institutions for managing reputation and credit-risks stemming from climate-change

Risk type	TD
Credit	**Environmental and Social Credit-Risk Process** The Environmental & Social Risk Policy for Non-Retail Credit Business Lines sets standards for identifying and managing environmental and social risk across non-retail lending operations (corporate purpose, project, and fixed-asset finance) in the Wholesale Bank. The same process, in a scaled-down version, is applied to most of the bank's other business units involved in credit and lending. The process has five steps and includes due-diligence requirements: 1: *High-Level Screen*: the screen is applied against all borrowing accounts to identify prohibited activities; 2: *Social and Environmental Assessment*: each client's commitments are reviewed, along with the company's capacity and track record concerning regulatory issues and other environmental risks, the degree of stakeholder engagement, etc.; 3: *Equator Principles Categorization Tool*: for project or fixed-asset financing deals; 4: *Sector-Specific Due Diligence Guides*: for environmentally-sensitive sectors; 5: *Escalation*: high-sensitivity applications are assessed by TD Environment to determine whether those risks can be mitigated. When necessary, deals are escalated from Credit Risk Management to

Risk type	TD
	(ultimately) the bank's Reputational Risk Committee.

(Sources: TD, 2011a; TD, 2011b; TD-Annual Report, 2010; TD-Annual Report, 2011; TD-CDP, 2011; TD-CSR, 2010; TD-PRI Engagement Report, 2010; TD-Sustainability Investment Policy, 2010; 2 personnel interviews)

Table 64: CIBC's institutions for managing reputation and credit-risks stemming from climate-change

Risk type	CIBC
Credit	**Climate-change risk-assessment tools** CIBC is developing climate-change risk-assessment tools to determine both risks and opportunities linked to climate change and ET markets. These developments support the CIBC Corporate Environmental Policy and are assessed through elements of the bank's Carbon Management Program. Developments include the continual refinement of the bank's Environmental Credit Risk Management Standards and Procedures. These include methods and metrics to 1. identify environmental risks; 2. assess risk materiality; 3. manage the bank's exposure to environmental high-risk situations. A tangible example is the Environmental Review Questionnaire which assesses the mitigation costs, borne by the bank's clients, of adapting to climate-change regulations. All lending opportunities that may pose environmental risks are escalated to the Environmental Risk Management group. In 2007 the bank consolidated its environmental credit-risk management practices into the CIBC Environmental Credit Risk Management program (CIBC's Environmental Credit Risk Management Standards and Procedures) which covers all business lending, merchant, and investment banking services for both CIBC and its wholly-owned subsidiaries.

(Sources: CIBC, 2011; CIBC-Annual Report, 2010; CIBC-CDP, 2011; CIBC-CSR, 2010; CIBC-CSR, 2011; 1 personnel interview)

Table 65: BNV's institutions for managing reputation and credit-risks stemming from climate-change

Risk type	BNV
Credit	**Credit-risk review process** Concerning corporate, international, and commercial lending, the credit-

Risk type	BNV
	risk review process covers physical, regulatory, and reputational climate-change risks when the risks are material, as well as those related to changes in consumer behaviour.

(Sources: BNV, 2010; BNV, 2011a; BNV, 2011b; BNV, 2011c; BNV-Annual Report, 2010; BNV-Annual Report, 2011; BNV-CDP, 2011; 1 personnel interview)

Table 66: RBC's institutions for managing reputation and credit-risks stemming from climate-change

Risk type	RBC
Credit	**Due-diligence** Lending, debt, and equity underwriting services are assessed using environmental due-diligence procedures which include climate-change criteria. Sector-specific guidelines are used in environmental risk assessments which also include management and escalation protocols. RBC assesses corporate clients for debt and equity transactions against 10 areas that underpin the bank's procedure called Environmental and Social Risk Review. Related to climate change are the review's first three subjects: 1. Environmental management systems; 2. Record of environmental compliance; 3. Future environmental legislation (such as carbon regulations). This review process, as well as the bank's environmental due-diligence procedures (i.e. environmental impact assessment) within its Climate Change Review in Capital Markets, stem from RBC's Policy on Environmental and Social Risk Management. **Environmental risk ratings** RBC categorises industry sectors on a scale from 0 to 3: category 0 are low-risk sectors (such as professional services firms) while category 3 sectors include high-risk sectors such as mining, energy, etc. The bank requires clients that operate in categories 2 and 3 (medium and high environmental-risk sectors) to undergo enhanced environmental and social due-diligence procedures. These procedures include an evaluation of climate-change issues.

(Sources: RBC, 2011a; RBC, 2011b; RBC, 2011c; RBC-Annual Report, 2010; RBC-Annual Report, 2011; RBC Blueprint Progress Report, 2010; RBC Blueprint Progress Report, 2011; RBC-CDP, 2011; RBC-CSR, 2010; RBC Environmental Blueprint, 2011; 3 personnel interviews)

4.6 CONCLUSION

This chapter concludes the presentation of the thesis' foundational research elements. These elements form the basis for chapters 5, 6, and 7 and their deeper theoretical analysis of the triple significance of institutional diffusion in institutional analysis.

The risk-management paradigm of major banks shows little variation among the two samples of Annex-2, G8 nations' banks, despite those nations' contrasting governmental approaches to diffusing climate-change institutions. A very suggestive reason for the similarity among the banks' risk-management paradigms is their common ERM frameworks, based on the Basel Accords or Solvency. These ERM frameworks limit the risk paradigm to include material risks. Other threats, vulnerabilities, uncertainties, and otherwise "undesired" outcomes are typically dealt with in several ways: they are delegated to the banks' BCPs and systems, acknowledged in CSR reports, dismissed, or approached pro-actively by using "add-on" initiatives that are integrated into the ERM frameworks.

Fortunately, most major banks recognise that regardless of their reliance on materiality as a risk "gatekeeper," both their revenue-generating business practices, as well as their giant asset portfolios face risks from climate change. The add-on initiatives used by the banks to adapt their ERM systems to these new risks primarily focus on mitigating credit and reputation risk. The initiatives are attempts to identify threats and manage them in the systematic manner used to mitigate other major risks. Nonetheless, the Basel-based, standardised credit-risk mitigation methods are different from the new initiatives that incorporate climate-change criteria. For example, many of the new initiatives handle unquantifiable risks and require staff with special knowledge to perform the risk assessments. This is because the Basel Accords focus specifically on three endeavours that do not formally include climate-change risks:

1. the provision of standardised methodologies and parameters to track quantifiable risks and to calculate their minimum capital requirements;
2. the requirements of a risk framework to set risk-appetite guidelines, strategies, and internal reviews to manage risk exposures;

3. the requirements to enhance public disclosure and emphasise more risk-sensitive approaches to maintaining capital reserves (Basel Committee on Banking Supervision, 2006).

The banks' ERM frameworks consist of three pillars: a risk-governance structure, a risk appetite, and an operating model with standardised risk-management strategies, techniques, and risk categorisation. The last pillar—categorising risks according to the ERM system's operating model—is where the challenge of diffusing climate-change risk-management institutions begins. As mentioned above, climate-change risks find no standard sub-category under which they can be categorised. These risks are far less understood than the standard risks. The analogy used to summarise the banks' attempts to integrate climate-change risk-management institutions into their ERM systems is a patchwork family.

This notwithstanding, and despite the two sample countries' contrasting climate-change regulatory scenarios, their banks' ways of interpreting and diffusing risk-management institutions are exceptionally similar. One difference shown so far is that banks in the Canadian sample, which operate under a lax climate-change regulatory framework, rank climate-change risk impacts as medium-level (or uncertain) or below. In contrast, three of the German banks ranked impacts from physical risks at the highest possible level. One similarity between the samples was how both countries' financial organisations considered climate-change as a threat to their reputations.

This chapter concluded its presentation of empirical data with an overview of how the banks diffuse climate-change risk-management practices specifically in the realm of their ERM frameworks. These are the initiatives termed "close" (i.e. "close" to the ERM framework) but not integrated with the same degree of technicality as the standardised, mandatory institutions of the ERM system.

Two of the Basel-based risk types stand out more prominently in the banks' developments of climate-change risk-management institutions: reputation risk and credit risk. Reputation risk is vague, unquantifiable, and can cause small to colossal damage to a bank. Credit risk affects banks' lending businesses, which are their most important business areas, and from which they generate most of their income (Kroog et al., 2013,

pp.12, 21). Because the primary business of banks is lending, credit-risk initiatives regarding climate change are the most important institutions that banks can diffuse.

Other initiatives (such as carbon foot-prints, etc.), which—in most cases—receive equally as much, or even more of the banks' focus, are discussed in the next three chapters. These initiatives are more "distant" from the banks' core ERM systems and play a smaller role in determining whether climate-change risks are mitigated in investments. The "close" credit-risk initiatives shown in this chapter involve predominantly qualitative procedures, such as due-diligence screens. These are usually derived from best-practice measures, as opposed to government-issued regulatory requirements. Although these procedures are designed to measure a borrower's alignment with existing regulatory frameworks, in all of the ten banks reviewed these procedures include as many, or even more tasks to measure the borrower's alignment with normative and cultural-cognitive criteria. Examples of such alignment are the degree to which a borrower engages its stakeholders, maintains transparent reporting standards, or whether the borrower's way of doing business can pose reputation threats to the bank.

As discussed in the last chapter, these institutions all stem from both their vague conceptual roots (i.e. based on the nexus of sustainability, materiality, and scope) and their vague structural roots (i.e. each bank assembling its own network of stakeholders based on regulatory, normative, and cultural-cognitive institutional pillars). The initiatives fall outside the technical character of data that is required by the banks' standardised ERM systems.

CHAPTER 5: INSTITUTIONAL STRENGTH

5.1 INTRODUCTION

This chapter, along with the next two, analyse the three paradigms of Scott's observation of a triple significance in analyses of institutional diffusion. As stated previously, Scott's observation suggests that diffusion is:

1. characterised by the strength/reach of institutional structures;
2. follows different principles and has different institutional effects because of the changing strength/reach of the institutions;
3. changes institutions convergently, i.e. existing patterns reinforce or challenge the spread of new institutions (Scott, 2008, pp.132-3).

These viewpoints present a broad "lay of the land" for understanding institutional diffusion in the bank samples. Although the paradigms do overlap one another, the focus of this chapter is on the first viewpoint, i.e.: that institutional diffusion is characterised by the strength/reach of institutional structures (Scott, 2008, pp.132-3). This viewpoint is referred to as institutional "strength." Strength is the foundational concept for this chapter's theoretical arguments to explain the ways (i.e. the "what," "how," and "why") banks diffuse climate-change risk-management institutions.

The **three paradigms** in Scott's observation of a triple significance in analyses of institutional **diffusion** are not to be confused with his model of the **three pillars** of institutional **elements**. The three pillars of institutions is a model that shows how institutions are made up of—to different degrees—three types of institutional elements: "*Institutions are comprised of regulative, normative, and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life*" (2008, p.48). This categorisation of three distinct pillars of institutional elements helps highlight different characteristics in each of the three viewpoints (paradigms) of institutional diffusion.

Institutional diffusion, when studied according to institutional strength (examples of which are institutions' clarity and synergy between their conceptual and structural levels, as well as their reinforcement by authorities with the use of sanctions or other

corrective mechanisms) can be understood to occur in a "top-down" mode of diffusion. Top-down diffusion is argued here to be not only a mode of diffusion, but an observable first step of institutional diffusion of climate-change risk-management institutions by the Annex-2, G8 nations' major banks.

Of DiMaggio and Powell's three mechanisms of institutional diffusion (coercive, mimetic, and normative), coercion—and its option to exercise regulatory authority—is the mechanism most often associated with Scott's regulative pillar of institutions (DiMaggio and Powell, 1983; Scott, 2008, pp.132-135). Like Scott's observation of a triple significance in analyses of institutional diffusion, DiMaggio and Powell's three mechanisms also overlap one another. This chapter's focus on institutional strength, however, leads much of the discussion towards coercive mechanisms.

This chapter's central argument is that **the degree of institutional strength that can be achieved through top-down diffusion—specifically concerning climate-change risk-management institutions—is limited, and because of this limitation, the banks all "institutionalise" beyond regulatory requirements**. This argument extends the central themes of chapter 3 (i.e. that both the concepts and structures of climate-change risk-management institutions are vague) and chapter 4 (i.e. that banks interpret climate-change risks through highly-elaborated, technical institutional paradigms and structures called ERM frameworks). This chapter emphasises that institutionalisation allows the banks to overcome the institutional "gap" (or institutional weakness) left open between the vague rules and structures of climate-change risk-management institutions and the specific requirements banks need in order to accommodate their highly-elaborated ERM institutional environments. While the banks' initiatives to institutionalise do not necessarily mitigate climate-change risks directly, institutionalisation does help the banks gain legitimacy and protect their reputations. Within the discussion of institutionalisation, the concept itself is re-defined from its meanings in existing research literature to suit the empirical findings of this thesis.

This chapter has six parts. Following this introduction, the chapter's second part explains what is meant by institutional "strength." The chapter's third part has four sections that introduce the concept of top-down diffusion, discuss how it relates to institutional strength, and draw attention to its use and limitations as a mode of diffusion

for climate-change risk-management institutions. Next, the chapter's fourth part has five sections that deal with institutionalisation and present evidence of its occurrence from each of the ten banks from both samples. The chapter's fifth part takes a more critical view of the banks' cases of institutionalisation. It suggests that the current initiatives fall short of the financial industry's unique potential to significantly influence LSEs to reduce and mitigate their GHG emissions. The chapter's sixth and final part concludes the chapter by highlighting its main points and presenting a summary of the sample banks' cases of institutionalisation.

5.2 INSTITUTIONAL DIFFUSION PARADIGM: STRENGTH

The term "institutional strength" is used here to designate the extent of institutional diffusion according to the first paradigm of Scott's observation of a triple significance in analyses of institutional diffusion. Scott writes,

> "[the] *extent of diffusion of a set of rules or structural forms is often taken as an indicator of the growing strength of an institutional structure. In this sense, studies of institutional diffusion may be regarded as studies of increasing institutionalisation*" (Own modification) (Scott, 2008, pp.132-133).

The subject of the second half of this statement, institutionalisation, will be addressed later in this chapter part. In the first half of Scott's statement, he emphasises two indicators to determine the "extent of diffusion": (1) rules and (2) structural forms (Scott, 2008, pp.132-133). The first indicator, rules, is also accentuated by Underdal who stresses their critical importance:

> "*certain types of rules—including those specifying property rights, regulating access to a particular resource, and determining decision-making procedures—can make a substantial difference and will do so under many real-world circumstances*" (Underdal, 2008, p.49).

The rules that make up the Kyoto Protocol have this intention, i.e. to change industrial practices in ratifying countries, regardless of their circumstances. Rules and laws such as the Kyoto Protocol position the first paradigm of institutional diffusion (strength) more prominently towards the regulative pillar, and less towards the normative

or cultural-cognitive pillars. The regulative pillar also links more prominently to DiMaggio and Powell's coercive mechanism of institutional diffusion, as mentioned in this chapter's introduction. In other words, when "strength" is considered in terms of rules, coercive mechanisms (as opposed to mimetic or normative mechanisms) come to the forefront. According to Scott, rules that are strong must have: (1) "clear demands" and (2) "significant sanctions" (Scott, 2001, p.115).

Chapter 3 showed how several of the most important global climate-change institutions have rules that are vague and even, in some cases, contradictory. At its very foundations, the Kyoto Protocol suffers from a lack of cohesion among its stakeholders, the UN member countries (Morton, 2011). The countries not only disagree on what the environmental issues need to be, but also on how to prioritise and deal with them (Morton, 2011). Other institutions that also establish sustainability principles, such as the outcome agreement of Rio+20 (The Future We Want), show similar bottlenecks in their development. Concerning the outcomes of the UN Conference on Sustainable Development (i.e. the 2012 Earth Summit, Rio+20), Reuters Point Carbon referred to the resulting agreement as "lacklustre" (i.e. dull, lacking in force) and related that many attendees were "*convinced that individuals and companies, rather than government, must lead efforts to improve the environment*" (Point Carbon, 2012b).

In addition to clear demands and significant sanctions, Scott also emphasises that strong rules require a third criterion, effective surveillance (Scott, 2001, p.115). This criterion, surveillance, stresses the notion of a rule's implementation or execution, which is carried out through its institutional structure. Structural forms are the second indicator used by Scott to determine an institution's extent of diffusion (Scott, 2008, pp.132-133).

As mentioned throughout the previous chapters, institutions have both conceptual bases and structural forms (Summer, 1906). Summer distinguishes institutional structures from the "high-level" institutional concepts upon which they are based (involving principles, values, and sources of meaning). An institutional structure will take its shape and form by combining different institutional elements from any of Scott's three institutional pillars.

At its structural level, the Kyoto Protocol suffers the same shortcomings in enforcing compliance ever since it came into effect in 2005. Chapter 3 showed that, to

date, there has been little advancement in establishing institutional structures for what Ulfstein and Werksman term the "hard" elements (i.e. corrective mechanisms) for breaches of obligations (2005).

The Kyoto Protocol not only lacks the establishment of these necessary structures, but it is also missing the international standing and status it needs in order to influence its member countries to hold one another accountable for the institution's global implementation. The effect is that most LSEs around the world are far less likely to view governments as enforcers of climate-change rules. Scott points out the distinction between coercive agents (who are supposed to exercise authority) that are viewed as legitimate agents of control, versus those who rely on the use of inducements (Scott, 1987). This dimension—the authority's power to enforce corrective measures—plays a major role in studying institutional diffusion among LSEs and major financial organisations. Even though governments have the ultimate authority among these climate-change stakeholders, governments also rely on support from these major industrial sectors. Therefore, it is in the authority's direct interest to find mutually-beneficial (i.e. win-win) solutions to problems. For this reason, the fact that a country has both the rules and structures to "coerce" adherence to climate-change laws does not necessarily imply any intention to do so.

What both indicators of institutional strength—the extent of diffusion of both rules (i.e. clear demands and significant sanctions) and structures (i.e. effective surveillance and the intention and means to enforce adherence)—have in common, specifically concerning the diffusion of climate-change risk-management institutions, is a "top-down" mode of diffusion. Given authorities' inherent regulatory power and their established structures to enforce their rules (such as banking laws), one way that institutions undergo diffusion among stakeholders is in a top-down manner, i.e. "down" to the banking level. Top-down diffusion explains the strength paradigm of analysing institutional diffusion by emphasising the authority's reliance on coercion and regulative institutional mechanisms. The following table shows the connection (darkened in the table) between the strength paradigm, the mechanism of coercion, and the dominant reliance upon regulative institutional mechanisms.

Table 67: Institutional paradigms, mechanisms, and elements

Institutional diffusion		**Institutional elements** *(Three pillars)*		
Three paradigms	*Three mechanisms*	Regulative	Normative	Cultural-Cognitive
Strength	Coercive	+++	+	+
Effects	Mimetic	++	++	++
Roots	Normative	+	+++	+++

(Sources: based on DiMaggio and Powell, 1983; Scott, 1995; Scott, 2008, pp.132-133)

Before narrowing the discussion of institutional strength to its top-down mode of diffusion among climate-change stakeholders in the financial industry, a second look at Scott's explanation of strength, in terms of the extent of diffusion of rules and structural forms, is warranted. Scott clarifies that "*In this sense, studies of institutional diffusion may be regarded as studies of increasing institutionalisation*" (Scott, 2008, pp.132-133). Scott does not specify one particular definition of institutionalisation, but reviews those of numerous other authors (see: Scott 1987, pp.493-498; Scott, 2008, pp.121-147). In Part 5 of this chapter, the institutionalisation definitions of Selznick (1957) and D'Andrade (1984) are reviewed, along with a re-definition of institutionalisation made to interpret this thesis' empirical data. The new definition of institutionalisation is an organisation's striving beyond regulatory requirements through the continual engagement of legitimate stakeholders and institutions, and the alignment of the organisation's existing institutions with both of them.

Institutionalisation is the theoretical bridge to explain the concept of institutional strength despite the clear gap (shown in this chapter's next part) between the top-down diffusion of rules and structural forms, and the needs of the banks to maintain and increase their legitimacy concerning climate-change risk management. Scott's use of the term institutionalisation qualifies his claim that institutional strength is indicated by the extent of diffusion of rules and structural forms. In other words, while their extent of diffusion does indicate institutional strength, their extent of diffusion is—by no means—the only indicator of strength. By linking the concept of institutionalisation to this claim, Scott appears to acknowledge that organisations often strive beyond rules and their structural forms in order to strengthen alignments, in additional ways, with key

stakeholders and institutions.

The banks both strengthen their diffusion of climate-change risk-management institutions and get their legitimacy needs met by institutionalising—through their own initiatives—beyond the (limiting) rules and institutional structures gained through top-down diffusion.

5.3 TOP-DOWN DIFFUSION

This chapter's third part has four sections, including this introductory section, which focus on top-down diffusion. The presentation of institutional concepts in chapter 3 showed the top-down mode of diffusion in an abstract way by revealing the highest conceptual levels of the IPCC and its scientific stance, and distinguishing these sources of meaning from their practical interpretation and diffusion into the detailed rules and structures (and loopholes) relating to, for example, the GHG Protocol's concepts of scope 1, 2, and 3.

Scott relates that top-down approaches focus "*on the ways in which models, menus, and rules constituted and constrained organization-level structures and processes*" (Scott, 2008, p.191). In other words, top-down diffusion both generates and constrains institutions' diffusion among (implementing) organisations. This mode of diffusion is contrasted in the next chapter which focuses on the bottom-up mode of diffusion. Bottom-up diffusion is constrained by isomorphic forces that force "*one unit in a population to resemble other units that face the same set of environmental conditions*" (Hawley, 1968). Both modes of diffusion engender isomorphism, but in different ways. Bottom-up diffusion results in the banks' climate-change risk-management initiatives' resembling one another. Top-down diffusion can also be described as a process of isomorphism, but one that aligns the banks' initiatives with the rules of the top authorities (e.g. a government, a regulatory body, etc.), as opposed to alignment with other actors (i.e. banks, NGOs) on the non-governmental level.

Although regulatory authorities (such as the government) and the stakeholders they oversee (the banks, in this case) are both actors in the same organisational field, governments and governmental agencies operate on different institutional levels from

those of the banks. Governments and their agencies can rely on "legitimate coercion" (Streeck and Schmitter, 1985, p.20) and can "exercise authority over other organisations" (Lindblom, 1977, p.21). As mentioned in chapter 3 of this thesis, the "rules" for banks in Germany predominantly come from the BaFin and the DPR e.V.; in Canada, the equivalent authorities are the OSFI and the Canadian Auditing and Assurance Standards Board in conjunction with the Canadian Institute of Chartered Accountants. Despite regulatory authorities' high-level roles and their considerable influence on organisations, there are also numerous limits to their power and reach.

5.3.1 LIMITS

Top-down diffusion has limits concerning the extent of diffusion of rules and structures. Top-down diffusion of climate-change risk-management institutions leaves institutional "gaps" or weaknesses that the banks end up having to address through their own initiatives. These resulting organisational initiatives are often endeavours with heavy emphasis on the normative and cultural-cognitive pillars of institutions. As argued hitherto in this thesis, the weakness inherent in climate-change risk-management institutions originates from their vagueness at the conceptual level. These weak links are reflected in the institutions' interpretations and implementations through actual rules and their structural forms. While considerable space in chapter 3 was devoted to exploring the lack of focus and clarity at the conceptual level of banks' climate-change risk-management institutions, the discussion will now shift to issues in the resulting rules and their implementation at the structural level.

A strong limitation of top-down diffusion is its reliance on institutional "reach." In other words, an assumption in top-down diffusion is that if an authority's rules and structures target a specific stakeholder, then that stakeholder is "reached," or captured within the institution's boundaries. Once a stakeholder is within an institution's reach, it is usually assumed that this stakeholder abides by the rules and structures imposed upon it. This is because in cases of non-compliance, the stakeholder (for example, a brokerage firm) is punished (e.g. given a fine) and either coerced into abiding by the rules (e.g. the firm pays the fine and resumes business according to the rules and within the boundaries

of the structures) or is taken out of the organisational field altogether (e.g. the authority revokes its business license).

The Kyoto Protocol does both, in theory. It pinpoints which types of organisations are responsible for GHG reductions and has loosely-defined mechanisms to hold their governments accountable for implementing the rules. The Protocol has provisions specifically for subjects of international law (i.e. nation states, the EU, and some international governmental organisations), but none for multinational corporations, many of which account for more GHGs than many signatories to the Protocol (Langrock, 2006, p.250). The rules of the Protocol state that its subjects—e.g. governments—must oversee these firms' activities within their jurisdictions. While the Protocol has compliance mechanisms, they are not actively enforced. To make matters worse, it is only through extensive research that one can find out which countries are actually implementing the rules of the Protocol, and which are not.

An example is a study by EMPA (Swiss Federal Laboratories for Materials Science and Technology).[123] EMPA concluded that European chemical manufacturers are emitting HFC-23 (the Kyoto Protocol's GHG with the highest global-warming potential, with a carbon-dioxide ratio of 14.800 : 1) in amounts 60-140% higher than were officially reported (EurActiv, 2011). EMPA cites a 2011 report by Geophysical Research Letters that shows Italy has been emitting 10-20 times more HFC-23 than it had claimed, and the Netherlands and the United Kingdom (UK) emitted roughly double the amounts of those they had reported (Keller et al., 2011). EMPA reports:

> *"International agreements such as the Kyoto Protocol to reduce greenhouse gases basically have one snag: it is almost impossible to independently verify whether participating countries abide by the agreement. Thus the evaluation of whether or not the countries have achieved their reduction targets is based on the official reports by the countries that are signatories to the UNFCCC"* (EMPA, 2011).

The lack of reliable regulations not only exists at the highest, nation-state level of GHG reporting, but also at the Protocol's institutions targeting the "ground-level," such

[123] Original: *Eidgenössische Materialprüfungs- und Forschungsanstalt*

as those specifying how its market-mechanisms are to be implemented. Commerzbank shared in one of its responses to the CDP Annual Questionnaire:

> "[…] *Commerzbank's emissions trading team is currently not participating in primary CDM projects. Though, in the public perception, the deficiencies of the CDM affect the reputation of Emissions Trading in general and similar mechanisms such as JI projects.* [...] *The CDM has been criticized for the insufficient additionality and inadequate ecological integrity of its projects and the tediousness and uncertainty of the bureaucratic process*" (Own modification) (Commerzbank-CDP, 2011).[124]

Another flaw of top-down diffusion is its reliance on an authority to create rules and structures that are sufficient to address whatever issues are at stake, i.e. those identified at the institutions' conceptual levels. When stakeholders follow an authority's rules and meet its standards, they gain regulatory legitimacy. This is no guarantee, however, that the rules sufficiently address the issue at hand. Many NGOs for over a decade have been demanding rules and institutional structures to complement the Kyoto Protocol and fortify other areas of massive industrial potential for mitigating GHG emissions. The IEA, for example, has stated that "*carbon pricing needs to be flanked by supplementary policies to fully realise its least cost potential*" and has called for policies concerning energy-efficiency and more efficient use of R&D (IEA, 2011, p.8).

5.3.2 COOPERATION AND MAINTAINING ALIGNMENT

Most banks in both samples have networks of government or regulatory points of contact. For banks to diffuse climate-change rules and structural forms into their risk-management frameworks, they require precise information and accurate interpretations of new and evolving institutions.

There was no evidence of the banks having roles of "institutional bandits," i.e. trying to influence policy development so as to minimise their own liabilities concerning

[124] For an institutional review of flaws in the Kyoto Protocol's project-based market mechanisms, see "Post-Kyoto GHG-Offset Project Eligibility Criteria" (Robertson, 2011b).

(for example) their ownership of scope 3 GHG emissions, or to delay the passing of firm legislation that mandates GHG reductions. Pinkse's research (2008) points out that:

> "[…] *the sectoral pattern of corporate political activities suggests that those industries that expect to be affected by regulation (oil, gas & mining; automotives; manufacturing and metals; utilities; and chemicals) are also the ones that have tried to shape public policy as much as possible*" (Own modification) (p.205).

Banks indeed attempt to influence policy makers, however the evidence gathered in this thesis' research suggests that the banks are pushing for stronger climate-change rules and structures from governments, and not the other way around. Clearer rules are, in general, less open to interpretation. Reporting on Deutsche Bank's role in the co-chair of the UNEP FI/CCWG, the bank has called for:

> *"*[…] *the establishment of policy regimes that demonstrate transparency, longevity, and certainty ("TLC") to encourage investment in climate change-related sectors, and has advocated the use of feed-in tariffs to scale up renewable energy in developing countries.*" (Own modification) (Deutsche Bank, CDP, 2011)

The banks have more to gain from firm climate-change legislation than many of the LSEs they finance. Stronger climate-change legislation would require many LSEs to face GHG emissions limits (and reduction quotas) head on, while banks have numerous exercisable options. For example, banks can diversify their lending portfolios and hedge climate-change risks (such as higher credit risk from LSEs) with investments in renewable-energy development, carbon capture and storage, clean-technology, and so on.

Several of the banks in both samples reported that strong climate-change regulations were necessary so they could perform reliable analyses that could show which companies would benefit from the new climate-change rules, and which would suffer. Without clear climate-change rules with sanctions and enforcement, decisions concerning which companies to include or exclude from a given portfolio (i.e. based on climate-change criteria) were unnecessarily complicated and prone to mistakes. Banks need reassurance concerning which companies and sectors will be the "winners" and the "losers" of climate change. An example is UniCredit's claim:

> "*We consider that current or anticipated regulatory requirements offer opportunities because, particularly as a reaction to the current crisis* [GFC], *requirements under several climate change related regulations will create competitive advantages for the leading companies within the industry in providing climate change mitigation products*" (Own modification) (UniCredit-CDP, 2011).

Deutsche Bank used its international policy network to influence the establishment of a policy regime to allow "Desertec" (a North African renewable-energy development plan to generate 100 gigawatts of power) to come to fruition (Deutsche Bank-CDP, 2011; Deutsche Bank-CSR, 2010).[125]

The following tables show each bank's "policy network," i.e. their connections to governments, regulatory agencies, and groups/members of civil-society and industry that can exercise legitimate coercion and influence (to different degrees) concerning climate-change risk-management issues.

Noteworthy is that in both samples, three of the five banks included disclosure of their connections to governments in their knowledge networks. Of the banks that either do not have connections to governments, or do not disclose them, there are possible reasons for this. In the German sample, UniCredit has a more international focus than the other German banks which penetrate the German market more deeply. It is therefore possible that UniCredit indeed maintains government contacts within several nations. DZ Bank's market efforts, on the other hand, are highly concentrated on the German market, but predominantly in a banking division (i.e. cooperative banking) in which climate-change risk-management and market opportunities (such as ET) play a less significant role than they do in global banks with a broad market focus, such as Deutsche Bank.

In the Canadian sample, the climate-change knowledge network of CIBC does not directly engage policy makers (CIBC-CDP, 2011; CIBC-CSR, 2010; CIBC-CSR, 2011). The bank has, however, done numerous studies and issued several reports that suggest an in-depth understanding of the Canadian government's activities and proposals concerning climate-change legislation, as well how these considerations might affect the bank's businesses. Lastly, while TD also reported no direct connections to the Canadian

[125] The Desertec Industrial Initiative seeks to finance the development of renewable-energy operations in North Africa and the Middle East in order to supply Europe with ~15% of its electrical demand by 2050 (Deutsche Bank-CDP, 2011; Deutsche Bank-CSR, 2010).

government, the bank has nonetheless played an active role on the Ontario Securities Commission's Environmental Reporting Advisory Committee, as well as corporate teaching for the Toronto Stock Exchange about environmental and social disclosure.

Table 68: German banks' policy networks

Bank	Connections with authorities (governments, regulatory agencies, etc.)
Deutsche Bank	**Engagement with policy makers (global-level)** High-level executives participate in UN organs to engage with global policy makers. Examples are the bank's Vice Chairman serving on the High Level Advisory Group on Climate Change Finance, assembled by the UN Secretary General. The bank also sends representatives to the annual UNFCCC COP negotiations; its representatives sit on panels alongside country presidents, the UNFCCC Executive Secretary, and EU Commissioners for environmental matters. **Engagement with policy makers (international-level)** In 2011 the bank's Global Head of Climate Change Investment Research was in the co-chair of the UNEP FI/CCWG and serves as a member of the Steering Group of the UK Government's Capital Markets Climate Initiative. The bank also engages with policy makers in China (e.g. to develop domestic carbon markets), Brazil (to discuss low-carbon business development with business leaders, senior officials from the Finance Ministry, Planning Ministry, and Environment Ministry), Saudi Arabia, etc.
Allianz	**Engagement with policy makers (international-level)** The department Group Government Relations and Public Policy coordinates the company's political activities, as well as partnerships in consultations and policy research. These activities are done from offices in Berlin, Munich, Brussels, Rome, Beijing, and Washington D.C. Additional liaison points in ~35 countries (called "Allianz Political Contacts") support the company's engagement with policy makers in two ways: direct contact and indirect contact through working groups.
Commerzbank	**Engagement with policy makers (national-level): (1) BMU** The bank regularly engages with policy makers, such as the BMU in multi-stakeholder dialogues as well as initiatives related to promoting climate-friendly investments and financial products for SMEs.

Bank	Connections with authorities (governments, regulatory agencies, etc.)
	Engagement with policy makers (national-level): (2) BMBF The bank engages regularly with the BMBF as a member of the ministry's "Climate Change Finance Forum." Members of this forum also form the advisory board for the ministry's initiative called CFI.[126] **Engagement with policy makers (regional-level)** The bank is a member of the discussion group "Climate Change and Banks," hosted by HMUELV[127], the state of Hessen's Ministry of the Environment, Rural Affairs and Consumer Protection.

(Sources: Allianz, 2011a; Allianz, 2011b; Allianz, 2011c; Allianz, 2011d; Allianz-Annual Report, 2010; Allianz-Annual Report, 2011; Allianz-CDP, 2011; Allianz-CDP, 2006; Allianz-CSR, 2011; Allianz-Sustainable Development, 2010; Allianz/WWF, 2011; Commerzbank-CDP, 2011; Commerzbank-Jahresbericht, 2011; Commerzbank-Nachhaltigkeitsbericht, 2011; Deutsche Bank, 2011; Deutsche Bank-Annual Review, 2010; Deutsche Bank-CDP, 2011; Deutsche Bank-CSR, 2010; Deutsche Bank Investor Relations, 2010)

Table 69: Canadian banks' policy networks

Bank	Connections with authorities (governments, regulatory agencies, etc.)
BMO	**Engagement with policy makers (national-level)** The bank engages with policy makers to encourage further action on climate-change mitigation and/or adaptation, and continually monitors the regulatory landscape.
TD	**Engagement with civil-society and industry** The bank maintains an open-dialogue policy for on-going discussions related to climate-change and resource development with environmental groups and aboriginal peoples. The bank's divisions TD Securities and TD Asset Management have the same open-door policy with bank clients concerning climate-change mitigation, adaptation, and opportunities. **Engagement with regulatory agencies** TD Bank helped the Ontario Securities Commission prepare a notice on environmental disclosure which was subsequently adopted by all Canadian securities regulators. The bank also helped train ~150 staff members of the Canadian Securities Administrators on environmental

[126] As mentioned in chapter 3, the CFI's purpose is the development and coordination of policy-oriented research and dialogue among financial market stakeholders, the BMBF, and other industries involved in climate change.
[127] HMUELV: *Hessisches Ministerium für Umwelt, Klimaschutz, Landwirtschaft und Verbraucherschutz*

Bank	Connections with authorities (governments, regulatory agencies, etc.)
	and social disclosure. **Engagement with stock exchanges** The bank ran a workshop for the Toronto Stock Exchange to teach the executives of Canadian-listed companies about environmental and social disclosure.
BNV	**Engagement with policy makers (regional-level)** The bank engages with provincial governments on environmental regulations and policy development.
RBC	**Engagement with policy makers (regional-level)** The bank holds consultation meetings with the Ontario Minister of the Environment and Climate Change Secretariat about the design of future GHG cap-and-trade legislation and on the integration of climate-change policy across government sectors. Updates concerning the oil sands are exchanged with the Provincial Government of Alberta. **Engagement with policy makers (national-level)** Both the bank's Corporate Sustainability Group and RBC Emissions Trading engage with politicians, policy makers, and other stakeholders concerning climate-change issues. **Engagement with civil-society and industry** RBC participates in the on-going Shell-Pembina dialogue on a "no regrets" Canadian climate policy. The bank also holds discussions with the Canadian Association of Petroleum Producers National Oil Sands Dialogue. Lastly, the bank exchanges updates concerning the oil sands with aboriginal leaders, NGOs, industry associations, academic researchers, and large corporate clients.

(Sources: BMO, 2008; BMO, 2011a; BMO, 2011b; BMO-Annual Report, 2010; BMO-Annual Report, 2011; BMO-CDP, 2011; BMO-CSR, 2007; BMO-CSR, 2010; RBC, 2011a; RBC, 2011b; RBC, 2011c; RBC-Annual Report, 2010; RBC-Annual Report, 2011; RBC Blueprint Progress Report, 2010; RBC Blueprint Progress Report, 2011; RBC-CDP, 2011; RBC-CSR, 2010; RBC Environmental Blueprint, 2011; BNV, 2010; BNV, 2011a; BNV, 2011b; BNV, 2011; BNV-Annual Report, 2010; BNV-Annual Report, 2011; BNV-CDP, 2011; TD, 2011a; TD, 2011b; TD-Annual Report, 2010; TD-Annual Report, 2011; TD-CDP, 2011; TD-CSR, 2010; TD-PRI Engagement Report, 2010; TD-Sustainability Investment Policy, 2010)

5.3.3 LIMITS TO COOPERATION

The limitations of top-down diffusion also surface in the theoretical reach of certain approaches based on new institutionalism. The game analogy, for example, where

authorities set rules and organisations play by them, is not a fitting parallel for the banks' diffusion of climate-change risk-management institutions.

The importance that the banks in each sample place on their connections to governments and regulatory stakeholders ranges considerably. Deutsche Bank, for example, stressed the large role played by the government in the bank's climate-change endeavours:

> "*Government plays a big role, so do regulators. Yesterday in Brussels there were climate change heads from several EU member states and they have a big influence on what we end up doing. There's a constant push to improve the EU-ETS. It's kind of like a think tank to improve the market. We also have informal contacts with governments; I'm often in touch with government officials to share information*" (Deutsche Bank, personnel interview, 2012).
>
> TD Bank, however, from the Canadian sample, maintained a different view:
>
> "*The government isn't a particularly huge stakeholder for us. Obviously we have to continually make sure we are complying with regulations, but we hope to continue operating at a level that goes beyond regulation for a baseline of what's considered acceptable*" (TD, personnel interview, 2011).

These two examples are not indicative of a split between the samples: banks in both samples had different views on the roles of governments and regulatory authorities. Deutsche Bank, for example, strives to be a "climate ambassador" within the financial industry, and therefore places a high priority on its relationships with governments (Deutsche Bank, 2011; Deutsche Bank-CDP, 2011; Deutsche Bank-CSR, 2010).

What is common to both samples is that the banks' diffusion of climate-change risk-management institutions that align with regulatory requirements is merely a first step of diffusion. In fact, the banks' cases of institutional diffusion are overall less directed at meeting regulatory institutional requirements in the organisational field (i.e. requirements from authorities) and more related to attaining alignment with non-regulatory stakeholders and institutions, i.e. those with more normative and cultural-cognitive institutional characteristics. Meyer and Rowan (1977) also stress that routines, practices, and roles that align with norms and expected modes of behaviour are "*guided by and reflect prescriptions conveyed by wider rationalized institutional environments*" (Scott,

2008, p.152). The banks' diffusion of climate-change risk-management institutions goes far beyond their alignment with the conditions set by authorities, and instead take on a more innovative, pioneering character.

Much of the effort by the banks to strive beyond the mere fulfilment of regulatory requirements can be explained by the institutional weaknesses of those regulatory requirements' rules and structures. These weak rules and structures concerning climate change lack clear demands, significant sanctions, and effective surveillance. It is well established that companies are more likely to develop pro-active environmental strategies when faced with environmental uncertainty (Aragón-Correa and Sharma, 2003; Ettlie, 1983; Hoffmann and Trautmann, 2008, p.112). In fact, corporate pro-active measures are not only induced by environmental uncertainty (i.e. in the organisational field), but also by "*loosely organised, or narrowly technical activities*" (Selznick, 1992, p.232). These types of limiting, conflicting, and/or constraining conditions engender institutionalisation.

5.4 INSTITUTIONALISATION

This chapter's fourth part has five sections, including this introductory section, which focus on institutionalisation, why it happens, and how it happens in a way common to all the banks and in ways specific to each bank.

As mentioned hitherto in this chapter, the "strength" paradigm of Scott's observation of a triple significance in institutional diffusion states that studies of increasing institutionalisation are synonymous with studies of institutional diffusion (2008, p.132). Concerning the banks' diffusion of climate-change risk-management institutions, institutionalisation is interpreted to be the continuation of the diffusion begun through top-down diffusion. Institutionalisation pushes beyond the rules' and their structural forms' regulatory institutional aspects and continues their diffusion by embracing the normative and cultural-cognitive institutional elements related to those rules and structural forms.

Selznick views institutionalisation from a new-institutional paradigm and defines it as "*to infuse with value beyond the technical requirements of the task at hand*" (1957, pp.16-17). This definition stems from what Scott calls the "transaction-cost" paradigm

that is characteristic of studies based on theories of new institutional economics (2008, p.27). This view of institutionalisation stresses proper conduct: "to infuse with value," as opposed to simply "infusing" with whatever is deemed status quo or that might promote legitimacy, such as in cases of corporate "green-washing."[128] Selznick's definition also marks clear boundaries: the focus is on what is technically required, and as opposed to what is not. Lastly, the definition sets a definite time frame: the focus is on whatever task is currently "at hand."

Concerning the banks' diffusion of climate-change risk-management institutions, Selznick's definition of institutionalisation points in the right direction, but not far enough. A neoinstitutional paradigm, on the other hand, would allow more prominence to the uncertainties and intangible qualities of the banks' cases of institutionalisation. A more suitable definition of institutionalisation for this thesis is to strive beyond regulatory requirements by continually engaging legitimate stakeholders and institutions and aligning existing institutions with both of them. This re-definition emphasises:

1. the importance of institutional linkages and/or relationships with other organisations in the organisational field;
2. a main activity (i.e. striving and engaging) that:
    a. is ongoing (without a definite time frame);
    b. has vague boundaries (i.e. to achieve and maintain legitimacy, in whatever form it takes, and regardless of known technical requirements);
    c. can be used for noble purposes (i.e. improved risk mitigation) or misleading purposes (i.e. supporting claims that a bank's business is carbon neutral).

Moreover, striving or "doing the upmost" does not imply the creation of value, although value can be created through such effort. A more idealised definition of institutionalisation would specify the activity of innovating instead of striving, because it is advantageous in competitive markets to "infuse with value" (according to Selznick's definition) in a new, fresh, or pioneering way. While the banks' efforts do help them gain and maintain legitimacy, and many are novel, pioneering, and indeed commendable, these efforts do not all show an innovative spirit, nor do they all necessarily create value.

[128] D'Andrade (1984) also emphasises that the "infusion" of value into institutions can be overdone.

Unlike Selznick's definition of institutionalisation, this thesis' interpretation of institutionalisation is in line with Selznick's observation that the direction institutionalisation takes, i.e. its character, comes through "*the organization's own distinctive history, the people who have been in it, the groups it embodies and the vested interests they have created, and the way it has adapted to its environment*" (1957, pp.16-17). In other words, each bank institutionalises according to its own organisational character, network of stakeholders and institutions, position within the institutional environment, and so on.

Other authors offer helpful interpretations and elaborations of institutionalisation and how it takes place. D'Andrade, for example, sees institutionalisation as an implicit function within institutions themselves, by their very nature, which are: "*overdetermined in the sense that social sanctions plus pressure for conformity, plus intrinsic direct reward, plus values, are all likely to act together* ***to give a particular meaning system*** *its directive force*" (Own bold) (D'Andrade, 1984, p.98). D'Andrade's interpretation brings attention to the major role that legitimacy plays in institutions, especially those that involve social sanctions, pressure for conformity, and values. Suchman's definition of legitimacy also emphasises its intangible, cultural-cognitive aspects: "*a generalized perception or assumption that the actors of an entity are desirable, proper, or appropriate* ***within some socially constructed system***" (Own bold) (Suchman 1995b, p.574). These views help justify the multidimensionality of institutionalisation that reaches far beyond both the "transaction-cost" and even the regulative paradigm.

Satisfying regulatory demands can be seen as the first step banks take in order to diffuse climate-change risk-management institutions. Gaining normative and cultural-cognitive legitimacy, especially in a constantly-evolving organisational field where actors (i.e. banks, NGOs, rating agencies) all compete for legitimacy and reputational prominence, requires institutional diffusion beyond the regulative paradigm.

5.4.1 MOTIVATION BASED ON LEGITIMACY

The motivation to strive beyond the limits of institutional strength inherent in the top-down mode of diffusion is highly related to legitimacy. No observable institutional

initiative from any of the banks in the samples threatened their own legitimacy; instead, the initiatives promoted regulative, normative, and cultural-cognitive legitimacy. The ways each bank institutionalised beyond the rules' and their structural forms' regulatory requirements ranged considerably from one bank to the next. This is because institutionalisation pushes into vague institutional territory that is more heavily saturated with normative and cultural-cognitive institutional elements, as opposed to clearer, more discernible regulative elements.

Walgenbach and Meyer write that legitimacy is not a resource to be had, but a necessary condition for survival because of how it links an organisation with the world, its values, and its norms (2008, p.12). Banks need not only regulatory legitimacy for survival, but they also need (and achieve, especially through institutionalisation) normative and cultural-cognitive legitimacy.

From a purely regulative perspective, banks maintain legitimacy by fulfilling their fiduciary duties. Nonetheless, even fiduciary duties are not clear-cut responsibilities with consistent boundaries. Fulfilling these responsibilities is not a straightforward process and provides some, but limited institutional strength. While fiduciary duties can, depending on their context, exclude climate-change risks, Lorenz's research (2008) suggests that while fiduciary duties require companies to act in the interests of their shareholders, these duties also require managers to protect the financial stability and growth of their companies. On the one hand, a company that acts in the interest of its shareholders could benefit—at least in the short term—by ignoring climate-change issues, continuing business as usual, and avoiding the costs of climate-change institutional diffusion in its many forms (risk management, internal environmental assessments [such as GHG audits], voluntary initiatives, knowledge transfer, etc.). On the other hand, fiduciary duties that seek to maintain the financial growth of a company must invariably perform a risk assessment of climate-change issues, especially given that "*the more significant the risk or risks to an industry or company, the more amplified a director's duty of case and diligence*" (Lorenz, 2008, p.289).

Scott writes that the depth or shallowness of institutionalisation varies according to the presence of an authority—"*higher penetration being associated with authority*" (Scott, 2008, p.134). Research by Pinkse (2008) partly shows this tendency concerning

companies that operate in countries that ratified the Kyoto Protocol. While companies from the EU were ahead (i.e. in forming strategies for ET) of American and Japanese firms, companies from the US and Australia (i.e. non-ratifying countries) did not lag behind Japanese and Canadian companies (Pinkse, 2008, p.200). The study concludes that "[...] *whether or not a country ratified the Kyoto Protocol does **not** appear to be decisive for a company to become involved in ET; **more important is the extent to which regulation is being implemented***" (Own modification; own bold) (p.200).[129] In other words, it is not the presence (or image) of an authority, but rather the extent to which that authority implements and enforces its rules and their structural forms.

The empirical data from the banks suggests that neither the presence of a reliable authority (i.e. the Canadian government) nor one that implements the Kyoto Protocol (i.e. the German government) plays a significant role in determining the extent of institutionalisation. While the German sample of banks does come from an organisational field with a stronger climate-change regulatory authority (i.e. a government that implements the Kyoto Protocol), there are no significant indicators that suggest that those banks have more extensive—or deeper—institutionalisation than the banks of the Canadian sample. On the contrary, in most regards the German sample's extent of institutionalisation is remarkably similar to that of the Canadian sample of banks.

The banks of both samples pursue institutional strength first through top-down diffusion of rules and structural forms, and because climate-change risks have a scope that stretches far beyond the reach of these rules and structural forms, the banks institutionalise to achieve the legitimacy they require. The evidence of the banks' cases of institutionalisation shows that the banks—in few ways—rely on the regulatory authorities and their rules and structural forms to address their industry-specific climate-change needs. Mitchell (2008) relates that by itself "*the UNFCCC may induce member states to develop emission-reducing technologies that prove economically attractive and are adopted by all countries, regardless of treaty membership*" (p.83). It is the same case

[129] Research on sulphur dioxide emissions in Europe also shows that differences in emission-reduction rates between ratifying (of long-range transboundary air pollution protocols) and non-ratifying nations were virtually identical before and after ratification (Mitchell, 2003; Ringquist and Kostadinova, 2005, p.99 in Underdal, 2008, p.73).

for the banks: regardless of authorities' rules, banks focus their institutional diffusion on the evolving demands of climate-change, as opposed to solely adapting to the authorities' rules about climate-change.

There is research that shows cases of companies that follow the authorities' rules, assess climate-change risks, use the flexible market mechanisms of the Kyoto Protocol, and still do not receive the legitimacy they need in order to obtain other resources. Malmborg's review of Swedish companies that used the Kyoto-based mechanisms revealed that:

> "[…] *participation in the Kyoto project mechanisms is less attractive than other options. These mechanisms do not provide companies with the legitimacy they need to obtain other resources, and they are associated with transaction-specific costs that are too high to be viable alternatives*" (Own modification) (Malmborg, 2008, p.207).

Malmborg's research reaffirms that the need for legitimacy extends beyond the "transaction-cost" dimension and plays a significant role concerning a company's survival. Banks, for example, can maintain **regulatory** legitimacy (i.e. their "survival," to use the viewpoint of Walgenbach and Meyer [2008, p.12]) and, at the same time, lose **reputational** legitimacy. An example is the large number of "surviving" banks that followed banking laws and yet needed government bail-outs following the 2007/2008 GFC.

As mentioned in the last chapter, climate-change risks are a major threat to banks' reputational legitimacy, even when banks satisfy regulatory obligations. A banker from the Canadian sample shared:

> "*OFSI regulates the banking industry in Canada. There are other influences but in terms of setting rules and boundaries, OFSI does it. Often where OFSI's rules leave off, reputational and credit risk practices will drive us to do other activities*" (RBC, personnel interview, 2011).

Specifically concerning reputation risk, a study by Kolk into corporate responses to climate change cites advertising efforts by BP over the last decade. One campaign, highlighting the BP logo with the slogan "Beyond Petroleum" became the subject of ridicule in both the oil industry and by NGOs, and resulted in alternatives for the BP

acronym such as: “Beyond Protest,” “Beyond Posturing,” and “Beyond Propaganda” (Kolk and Levy, 2001 in Kolk, 2008, p.222).

Reputation risks play an even larger role for the banking sector, which not only has a significant business-to-business network of stakeholders, but often an equally sizeable (or even larger) base of business-to-customer relationships. There is evidence that reputation and legitimacy issues play an even larger role than the roles of governments and regulatory agencies in the ways banks institutionalise to achieve the institutional strength they need. A banker from the Canadian sample, shared:

> “*Banks are incredibly sensitive to reputational issues. We have branches on every corner and we’re very visible in the community.* ***Banks are also very responsive to media hits or customer concerns.*** *The general media plays a big role. NGOs and environmental groups can use the media to their advantage. Often it takes a shaming aspect. Social media matters as well. Media also is interested in news about the banks.* ***Government is not such a big deal concerning climate change at the moment—they’re not very interested. I wouldn’t put too much weight on government***” (BNV, personnel interview, 2011).

To achieve legitimacy, the banks need to not only institutionalise beyond the rules and structural forms inherent in the top-down mode of diffusion, but also to do so in a way that simultaneously covers traditional economic concerns (such as sunk costs, opportunity costs, and other elements relating to the “transaction-cost” paradigm) and all the institutional concerns relating to the regulative, normative, and cultural-cognitive pillars.

5.4.2 “HOW TO”

Institutional strength can be achieved through top-down diffusion in a responsive manner: banks use their policy networks to learn about regulatory requirements, and respond by diffusing appropriate institutions. This is also often done by mimicking other firms, i.e. implementing—as necessary to keep up with competition—best-practice

benchmarks once those benchmarks and practices have become ubiquitous and taken on an orthodox character.

On the other hand, the achievement of institutional strength through institutionalisation requires a more pro-active stance from an organisation. A bank has to strive to diffuse normative and cultural-cognitive aspects of climate-change rules and structural forms, and it must do so continually and congruently in line with its own organisational character, network of stakeholders, and so on.

Busch's research in 2006 concluded that financial organisations could contribute to establishing and promoting ET through their own pro-active involvement. The IFC issued a report that shared this view and added that pro-active involvement would also decrease the threats posed by physical risks from climate change:

> "*At the level of an individual business, management's awareness and treatment of climate risk factors will be key determinants of business success. Pro-active assessment and management will decrease the likelihood of adverse impacts from creeping changes or extreme events*" (Stenek and Connell, 2010, p.7).

This suggests that a pro-active approach to institutionalisation beyond the requirements of an authority provide benefits to not only the (institutionalising) organisation itself, but also to society at large.

The timing of an organisation's initiatives to pro-actively institutionalise has less significance in this thesis' bank samples than has been evidenced in other studies. Busch's conclusions suggest that early adoption (or pro-active involvement in ET) enables companies to generate a better earnings/risk ratio for their portfolios, and this in turn provides early-adopters with competitive advantages (2006, pp.261-262). Both bank samples analysed in this thesis began their major initiatives to diffuse climate-change risk-management institutions between roughly 2005 and 2009. Moreover, these initiatives are not quickly and routinely implemented—they take years to conceptualise (often stuck at the board level), then they must be scheduled for implementation, and then be diffused and tweaked until they become mainstays in the organisations. Furthermore, given the striking resemblance and isomorphism of the banks' institutional initiatives to mitigate climate-change risks, a comparative analysis based on market performance would be impracticable, especially given that the two country samples have such similar

initiatives. Lastly, ET and climate-change markets still remain so small (with the exception of renewable-energy markets) compared with the banks' main lines of business, that it is far too early to warrant analyses of competitive advantages.

Common features of pro-active institutionalisation are either initiatives to continually engage and involve current stakeholders and institutions, or to expand the bank's network in order to include new stakeholders and institutions, especially those with high degrees of legitimacy. Examples of stakeholders and institutions engaged by many of the banks are the CDP and the UNEP FI.

Cole's study of quality circles among companies in Japan, Sweden, and the United States showed that many different kinds of stakeholders (such as industry associations and unions) supported this development in the corporate sector (1989). In the two samples of banks, however, it is the banks themselves that must review, choose, and engage other stakeholders and institutions in the organisational field. Engaging certain stakeholders and institutions (e.g. the CDP or the Equator Principles) means aligning the bank's institutions with those of the stakeholder or institution (e.g. by collecting and disclosing GHG information, as in the case of the CDP, or by adding specific environmental criteria to credit-risk due-diligence procedures, as in the case of the Equator Principles). A banker from the Canadian sample shared:

> *"We do these activities from our own initiative. The government certainly hasn't come to us and told us what to do. In our due-diligence processes it's what we do even if it's not part of official requirements. We decide that we need this information*" (BNV, Personnel Interview, 2011).

5.4.3 BASEL ACCORDS

The banks' diffusion of the Basel Accords in the context of climate-change risk management is an example that includes institutionalisation. The banks all strive beyond the Accords' rules and their structural forms and diffuse risk-management institutions with predominantly normative and cultural-cognitive elements related to the Accords' requirements.

Once the top-down requirements of the Basel Accords are adhered to, i.e. its rules and structural forms are complied with, banks have achieved the necessary regulatory legitimacy in this area. On the surface, there appears to be little reason to direct more effort than necessary into diffusing these institutions beyond what is required. Scott, however, points out that:

> "*Organizations require more than material resources and technical information if they are to survive and thrive in their social environments. They also need social acceptability and credibility*" (Scott et al., 2000, p.237).

To increase institutional strength, the banks institutionalise by diffusing more than is required. Examples of institutionalisation concerning the Basel Accords were given in the last chapter, where the banks' reputation and credit-risk management procedures, diffused specifically for climate-change risks, were presented. All of the banks added new layers of risk-assessment to their reputation and/or credit-risk due-diligence "screening" procedures. This new practice requires the banks' business units to screen certain clients and deals for specific aspects of risks related to climate-change.

These new initiatives surpass the banks' own thresholds for materiality and risk-scope accountability. One example is Deutsche Bank's "Green Filter" that was integrated into the bank's Group Reputational Risk Management Policy. The filter consists of five criteria—in the form of questions—to which any positive response (i.e. "yes") requires the transaction's escalation for a more detailed evaluation. One example of the broad questions is "*does the risk extension facilitate a commercial business activity that increases the 'carbon footprint' of a counterparty active in the coal, forestry, agriculture, mining, cement, or chemical sector?*" (Deutsche Bank-CDP, 2011; Deutsche Bank-CSR, 2010).

These initiatives focus on institutional characteristics of the normative and cultural-cognitive pillars. After some time, the execution and expectations of these institutions will become self-evident to bank executives. In other words, each time these institutions are enacted, they develop and reinforce their distinctive normative and cultural-cognitive elements within the organisation. For example, resistance to any of the five questions in Deutsche Bank's Green Filter—by a potential client wishing to borrow funds—would be, in time, seen as unorthodox and unacceptable. Over time, the new

institution continually penetrates the cultural-cognitive dimension and influences the wider belief systems of the organisation (Meyer and Rowan, 1997).

Rather than relying on Scott's observation (mentioned above) of how the presence of an authority deepens institutionalisation (Scott, 2008, p.134), a more appropriate fit for this thesis' empirical findings is that normative and cultural-cognitive institutional pressures not only deepen, but also reinforce institutionalisation. Whether these initiatives (such as Deutsche Bank's Green Filter) fulfil regulatory requirements (or even transaction-cost requirements) will eventually cease to be relevant. Their continual existence will gradually reinforce the cultural-cognitive understanding of their necessity. The result is a self-fulfilling prophesy—a positive one, in this case, for Deutsche Bank's climate-change risk-management institutions. Regardless of their beginnings, they can become deeply engrained in the organisation and promote a stronger risk-management culture.

Institutionalisation of the Basel Accords' rules and structural forms is also beneficial for encouraging more disclosure. The samples' climate-change initiatives, such as Deutsche Bank's Green Filter, were published and in some cases (such as certain institutions diffused in DZ Bank), in considerable detail. This norm goes beyond what is actually required, because climate-change (and environmental risks) are deemed immaterial. Reputation risk and its mitigation are excluded from clause 824, the Accords' "General qualitative disclosure requirements" which state that: "*For each separate risk area (e.g. credit, market, operational, banking book interest rate risk, equity) banks must describe their risk management objectives and policies*" (Basel Committee on Banking Supervision, 2006, p.232). The regulatory requirement could have been satisfied by, for example, making a statement in the bank's annual report (as is commonly done) that the bank acknowledges reputation risks and includes management of these risks in the bank's ERM system. A more thorough adherence to the rule would be to acknowledge that reputation risks are linked to CSR issues (of which climate-change implicitly plays a role). The bank's executives, however, go beyond the regulatory dimension and enter the normative/cultural-cognitive one by diffusing an institution that implements this requirement in a far deeper manner than simply playing by the rules, and only by the rules. A quote from Albert Einstein sums up the logic of

institutionalisation: "*You have to learn the rules of the game. And then you have to play better than anyone else*" (University of California [Berkeley], 2010).

5.4.4 INDIVIDUAL CASES (BANK SAMPLES)

This section reviews each bank's individual case of climate-change risk-management institutionalisation. These cases show the banks' attempts to achieve more institutional strength than was available by means of top-down diffusion.

Each bank approached this challenge in its own unique way. The figures in this section depict only the most distinctive features of each bank's case of institutionalisation, and thereby show a broad range of creative approaches to it. This method to review the banks' cases of institutionalisation was favoured over attempts to evaluate the cases using criteria and variables applicable to them all. This latter approach required the assignment of arbitrary values to certain practices (such as knowledge transfer) that were more important to some banks than others. For example, most banks—but not all—placed some degree of emphasis on establishing channels of knowledge transfer among internal and external stakeholders. However, the establishment of knowledge-transfer channels was not done for its own sake, but to support the bank's institutionalisation of climate-change risk-management institutions. For example, the Canadian bank BNV pursued an "international balanced-scorecard" approach to institutionalisation. While knowledge transfer certainly plays a role in BNV's approach (all the banks' knowledge networks were presented earlier in this chapter), it does not need to be highlighted in order to emphasise the bank's priority of pursuing a balanced-scorecard approach, i.e. balancing financial and non-financial elements against best-practice target values in its international market focus.

As mentioned above, Selznick observed that the direction institutionalisation takes comes through each organisation's own character, network of stakeholders and institutions, and so on. D'Andrade emphasised that institutionalisation reflects the overdetermined nature of institutions that—together with "*intrinsic direct reward, plus values*"—give them their directive force (1984, p.98). Moreover, this thesis' empirical data is new, and the climate-change risk-management institutions have only just begun

diffusion and integration into the banks' ERM frameworks. The banking industry is still far from having standardised approaches to institutionalisation.

Each case is labelled with a caption that was created to summarise the most prominent characteristics of the bank's institutionalisation. Each case has:

1. its own caption;
2. its own combination of explanatory elements (explained in the table below);
3. its own figure (organisational snapshot); and
4. its own explanatory paragraphs to emphasise the uniqueness of the bank's approach to institutionalisation.

As mentioned in this thesis' research methodology, the figures and the data upon which they are based have been verified, concerning their accuracy, by nine of the ten sample banks.

The ten cases involve different departments, roles, pre-existing institutions and institutional frameworks, as well as organisational archetypes (such as ERM systems). Scott writes that "*robust institutionalisation is often the product of multiple mechanisms that interact and reinforce each other*" (2008, p.128). The combinations of the following terms (and accompanying arrows in the figures) show the extent of institutionalisation by each bank in a particular direction, and with a particular focus. Each case includes only the terms required to expose the most unique features of the bank's case of institutionalisation; none of the cases include all the following terms.

Table 70: Terms used in the banks' institutionalisation representations

Terms	Definition or example
Department, unit, division, business group, interdisciplinary team, committee, third-party auditor	Stakeholders/stakeholder groups that are either internal or external
Organisational boundary	The boundary that separates the financial organisation from other (related, but separate) stakeholders and external influences
Knowledge transfer	The exchange of knowledge (information) between stakeholders, but not (necessarily) to influence, manage, or give directions
Institutional diffusion	Organised and purposeful diffusion of regulative, normative, or cultural-cognitive

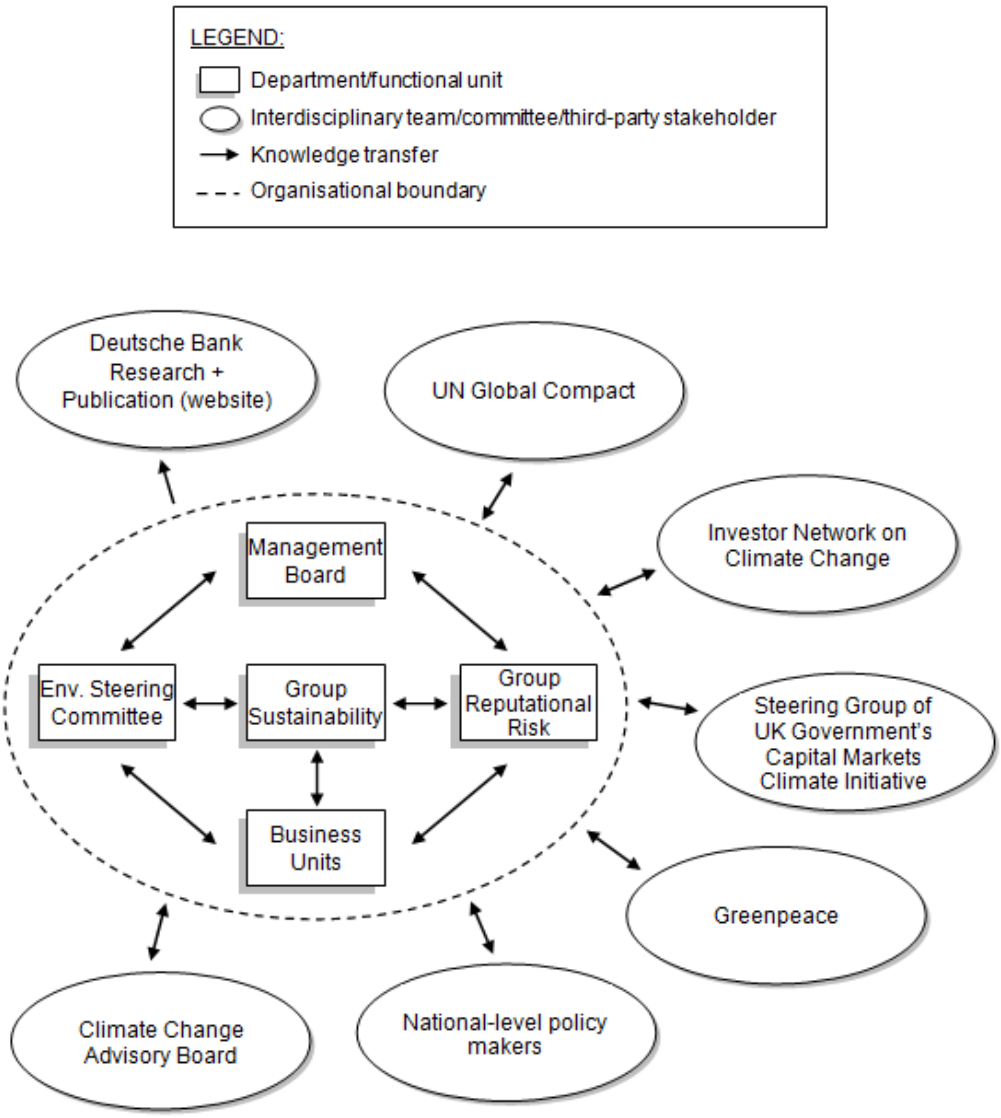
Terms	Definition or example
	institutional elements that comprise rules, rules' structural forms, norms, practices (formal or informal), guidelines, etc. that are specifically related to climate-change risk-management
Program/set of institutions	Risk management frameworks, credit-risk management programs, environmental management systems, GHG-risk reviews

As explained in chapter 3, institutional diffusion means the spread of rationalised institutions. In the following figures, institutional diffusion is presented in terms of its purposive and organised diffusion of regulative, normative, or cultural-cognitive institutional elements that comprise rules, rules' structural forms, norms, practices (formal or informal), guidelines, etc. that are specifically related to climate-change risk-management. For example, in the figure for Deutsche Bank, there is no explicit depiction of institutional diffusion (i.e. with an arrow or linking mechanism) because the bank's most unique feature of its institutionalisation is its extensive coordination of global-based knowledge transfer among internal and external stakeholders. Deutsche Bank's case does involve institutional diffusion among its stakeholders, but this is intentionally left out from its figure and subsequent explanatory paragraphs because it is not a feature that is unique to, or essential to explain the most unique characteristic of Deutsche Bank's case of institutionalisation.

The banks' cases of institutionalisation are presented below, beginning with the German sample, and followed by the Canadian sample.

Figure 26: Deutsche Bank's institutionalisation: "Positioned to grow"[130]

[130] Both the figure and subsequent explanatory paragraphs have been compiled based on information from the following sources: Deutsche Bank, 2011; Deutsche Bank-Annual Review, 2010; Deutsche Bank-CDP, 2011; Deutsche Bank-CSR, 2010; Deutsche Bank Investor Relations, 2010; 3 personnel interviews.



What most distinguished Deutsche Bank's climate-change risk-management institutionalisation was the bank's focus on establishing a global network of stakeholders and institutions that would support the bank's business growth in climate-change, renewable energy, and sustainability markets. Deutsche Bank can be described as "positioned to grow." The bank reports that its environmental strategy "*is mainly influenced by the fact that climate change and low-carbon energy is considered as a business which will triple in size over the next ten years*" (Deutsche Bank-CDP, 2011). Deutsche Bank recognises that climate-change markets could reach values of ~$2,0 US trillion by 2020. Deutsche Bank's extensive network of the biggest climate-change

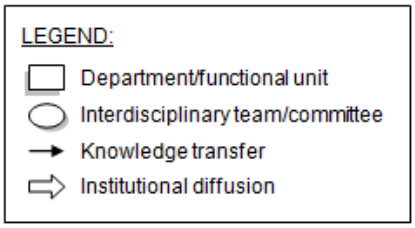
organisational and institutional stakeholders gives the bank a position at the forefront of climate-change issues, opportunities, and legitimacy.

Climate-change risks are categorised as ESG risks and are monitored by Group Sustainability according to the same three pillars. Group Sustainability oversees the bank's climate-change strategy.

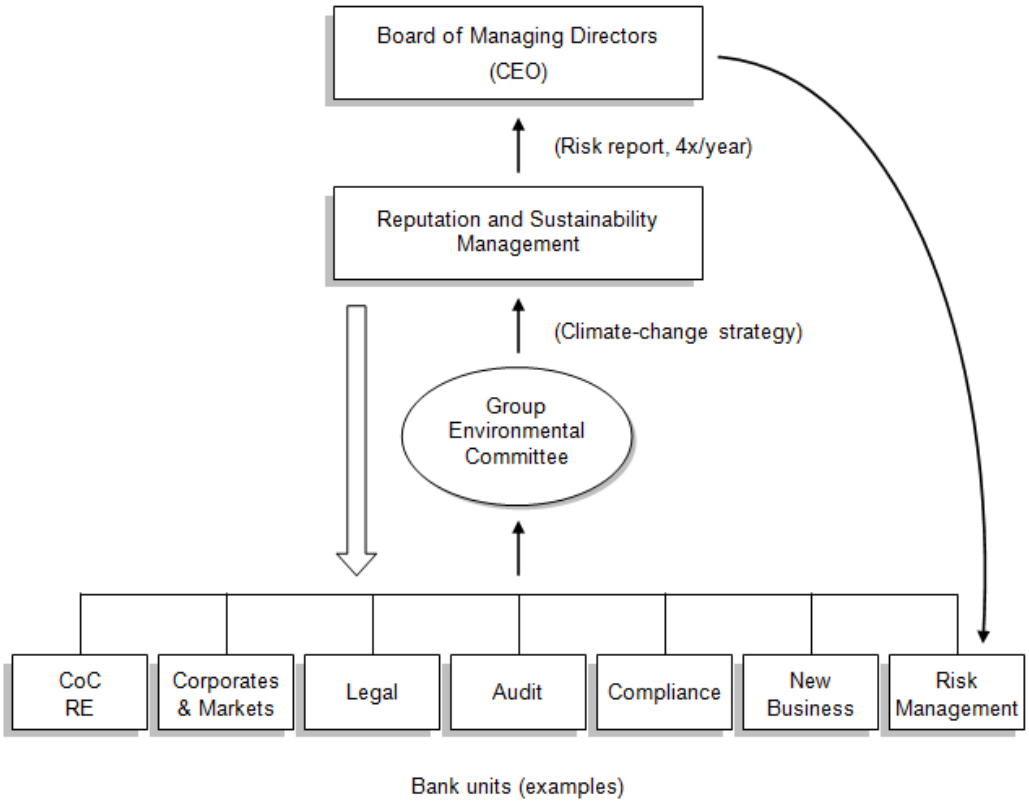
Climate-change policy is overseen by the group-wide, cross-divisional Environmental Steering Committee. The Environmental Steering Committee works directly with senior managers across the bank to drive business opportunities in climate-change industries.

An external Climate Change Advisory Board supports the Environmental Steering Committee in executing the bank's climate-change strategy. The Climate Change Advisory Board comprises ten global experts from business, politics, and academia.

Figure 27: Commerzbank's institutionalisation: "Early detection"[131]



[131] Both the figure and subsequent explanatory paragraphs have been compiled based on information from the following sources: Commerzbank-CDP, 2011; Commerzbank-Jahresbericht, 2011; Commerzbank-Nachhaltigkeitsbericht, 2011; Prinz, A., 2011; 1 personnel interview.



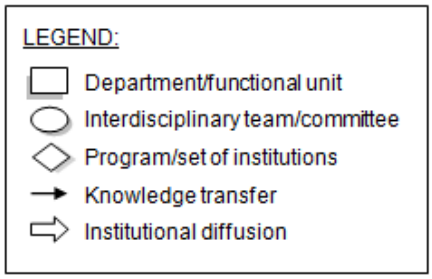
Institutionalisation by Commerzbank can be described according to its emphasis on "early detection." Its bank units all have the additional functions as legitimacy "radars" and are expected to inform the bank's centralised risk-management department of any risks that can be considered potentially material. This approach to risk management emphasises risk detection through a pro-active stance.

Climate-change policy is dealt with at the highest corporate level, i.e. below that of the Board of Directors. The Group Environmental Committee comprises executives appointed by the Managing Board of Directors. The Group Environmental Committee links the Managing Board with the bank's units, drives environmental matters throughout the bank (into bank products and sales portfolios), and acts as a central clearing house for all environmental-protection issues.

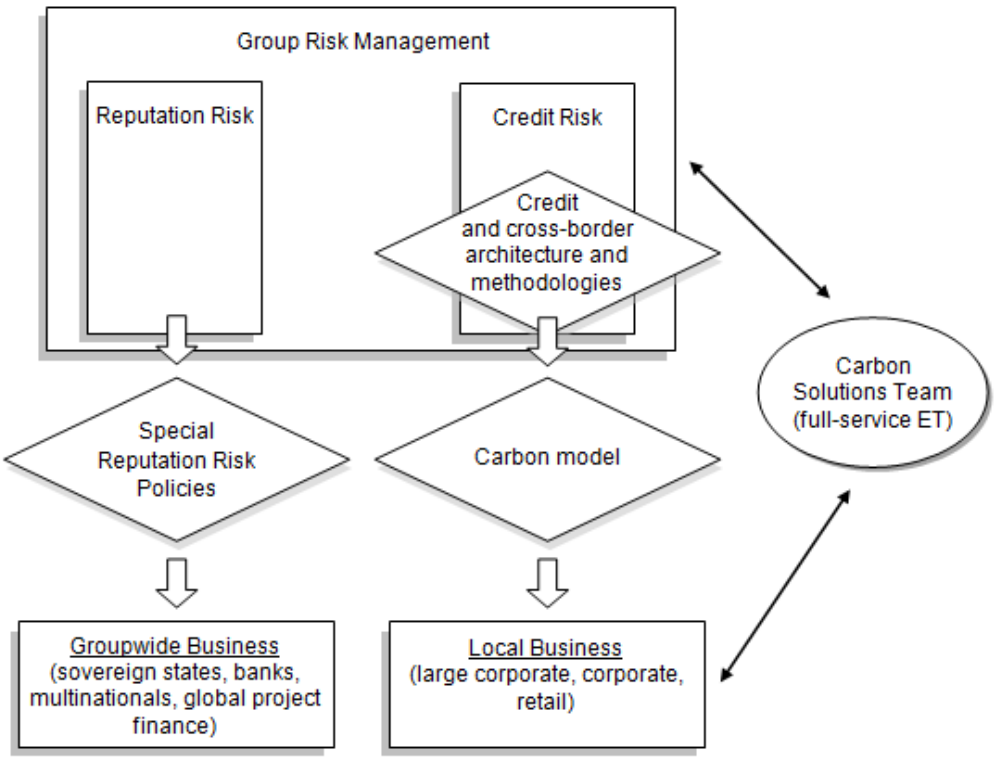
The RSM department is responsible for the central management of climate-change matters and the diffusion of climate-change institutions throughout the bank's units. RSM's executives perform external sensory functions by evaluating and observing climate-change issues and engaging regularly with relevant stakeholders. RSM also has

an intra-bank focus which functions as an interface to departments that manage client relations such as the Center of Competence Renewable Energies, Compliance, the Private Customer segment, Human Resources, Environmental Management, and SME finance (*Mittelstandsbank*).

Figure 28: UniCredit's institutionalisation: "Taking responsibility"[132]



[132] Both the figure and subsequent explanatory paragraphs have been compiled based on information from the following sources: HypoVereinsbank, 2013; UniCredit, 2010; UniCredit, 2011; UniCredit-Annual Report, 2010; UniCredit-CDP, 2011; UniCredit-Environmental Statement, 2009; UniCredit-Sustainability Report, 2010; 1 personnel interview).



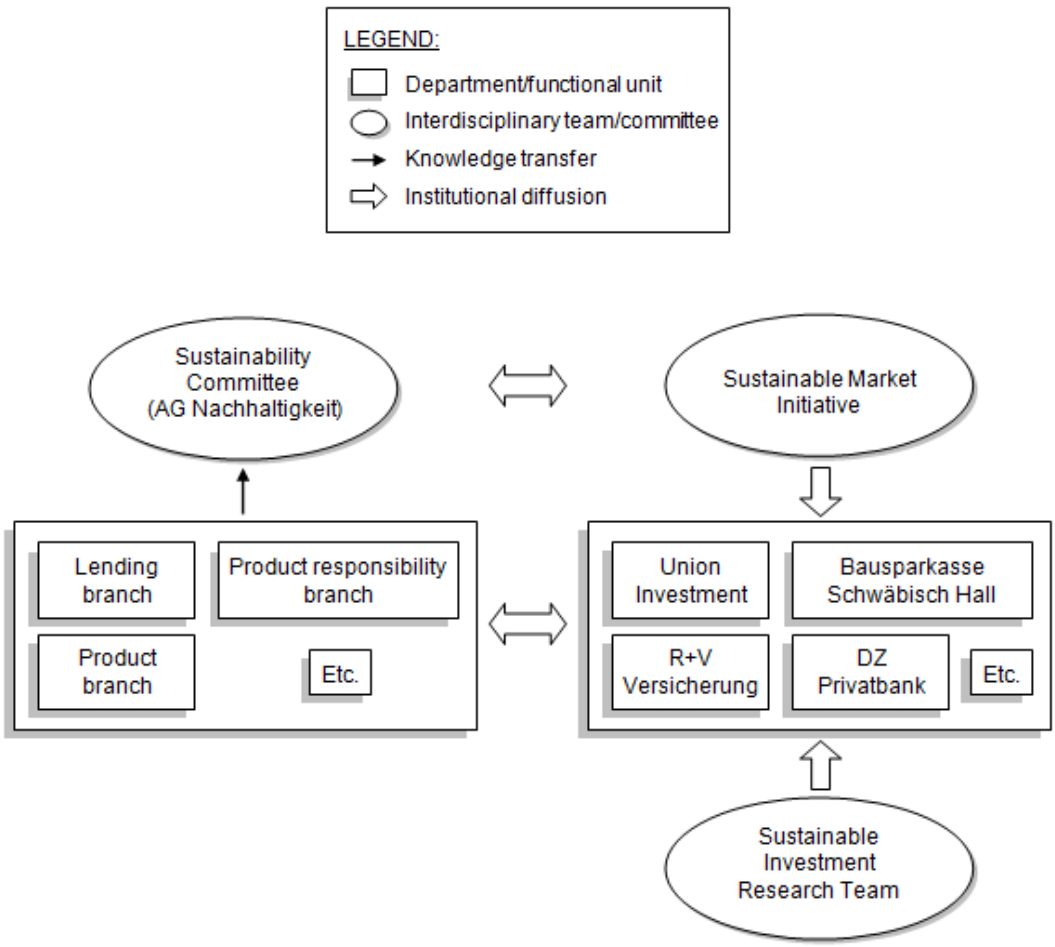
Institutionalisation by UniCredit can be described as "taking responsibility." The most noteworthy insight gained from the thesis' research on UniCredit was the bank's tolerance of a lower ROI in order to drive investments into climate-friendly initiatives. This acceptance of short-term sacrifices suggests that an institutional foundation for a responsible, long-term climate-change vision has been set.

Group Risk Management oversees the bank's ERM system. Climate-change risk management falls into three categories: (1) credit risk, (2) reputation risk (i.e. sustainability management), and (not shown in the figure) (3) price/default/liquidity risk. Unlike credit and reputation risk, price/default/liquidity risks stemming from the bank's ET business are already fully integrated into the ERM system.

Under the Credit Risk division, the bank is developing and diffusing a set of institutions ("Carbon Model") to manage credit risks stemming from climate-change issues. The department Credit & Cross-Border Architecture and Methodologies ensures the inclusion of environmental variables in the bank's rating models and its monitoring of loan exposures.

Under the Reputation Risk division, which oversees and diffuses the bank's sustainability institutions, the reputation risk committee developed a General Reputational Risk Governance Guideline along with several "Special Reputational Risk Policies." Examples of these are mining and water policies which reflect the criteria of the Equator Principles.

Figure 29: DZ Bank's institutionalisation: "First things first"[133]



[133] Both the figure and subsequent explanatory paragraphs have been compiled based on information from the following sources: DZ Bank, 2013b; DZ Bank, 2013c; DZ Bank-Jahresbericht, 2010; DZ Bank-Jahresbericht, 2011; DZ Bank-Sustainable Investments, 2011; DZ Bank-Sustainability Report, 2010; 3 personnel interviews.

Institutionalisation by DZ Bank can be described as "first things first." Instead of prioritising reputational matters, DZ Bank has made a strong first attempt at not only tackling climate-change credit risk in lending activities but also in the asset portfolios of a major investment arm, Union Investment. This shows an innovative, "walking the talk" approach to climate-change risk mitigation in investments. R&D is carried out by the bank's Sustainable Investment Research Team. DZ Bank also offers equity investments on the sales-side of securities and assets screened using sustainability criteria.

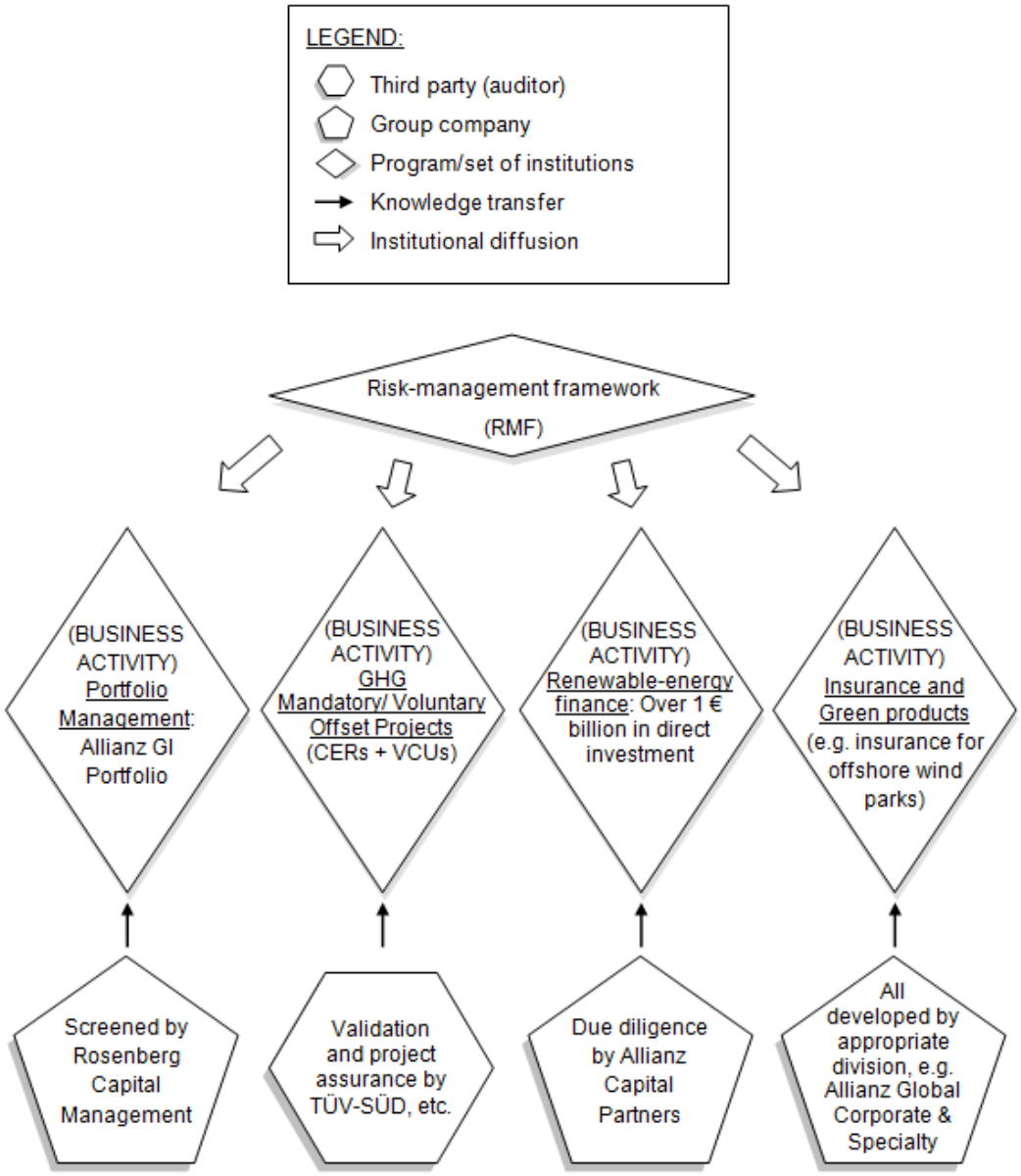
Noteworthy is that unlike UniCredit, which accepts a lower ROI in order to drive investments into climate-friendly endeavours, DZ Bank's Sustainable Investment Research Team argues that high ROIs through sustainable investing is indeed possible.

DZ Bank has a central "Sustainability Committee" (AG Nachhaltigkeit) that brings together representatives from relevant parts of the bank (i.e. the lending branch, product branch, product-responsibility branch) to determine climate-change policy on a group-wide level. Based on this policy, corporate governance initiatives and group-wide standards on climate change are diffused throughout the bank and its 900 cooperative banks.

The central bank's climate-change institutions come from its Sustainability Market Initiative. This initiative requires all DZ Bank Group companies to incorporate sustainability into their strategies. DZ Bank also uses this initiative to find new opportunities in sustainability-oriented markets. The bank initiated a group-wide coordinated approach to refine its group companies' sustainability approaches and to raise external awareness of sustainability initiatives.

Figure 30: Allianz's institutionalisation: "Business as usual"[134]

[134] Both the figure and subsequent explanatory paragraphs have been compiled based on information from the following sources: Allianz, 2011a; Allianz, 2011b; Allianz, 2011c; Allianz, 2011d; Allianz-Annual Report, 2010; Allianz-Annual Report, 2011; Allianz-CDP, 2011; Allianz-CDP, 2006; Allianz-CSR, 2011; Allianz-Sustainable Development, 2010; Allianz/WWF, 2011; 1 personnel interview).

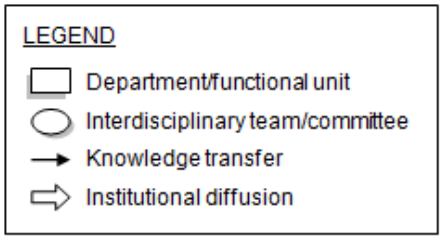


Institutionalisation by the one insurance giant of the two samples, Allianz, can be described as "business-as-usual." As an insurance company, Allianz has a more robust ERM system (which also serves its many insurance offerings) that is regularly adapted to changing demographics, weather trends, social trends, etc. Allianz focuses on preparing its own business divisions for climate-change opportunities, impacts, as well as impacts on the businesses of its clients. A major focus of Allianz is providing products and services to help mitigate new risks.

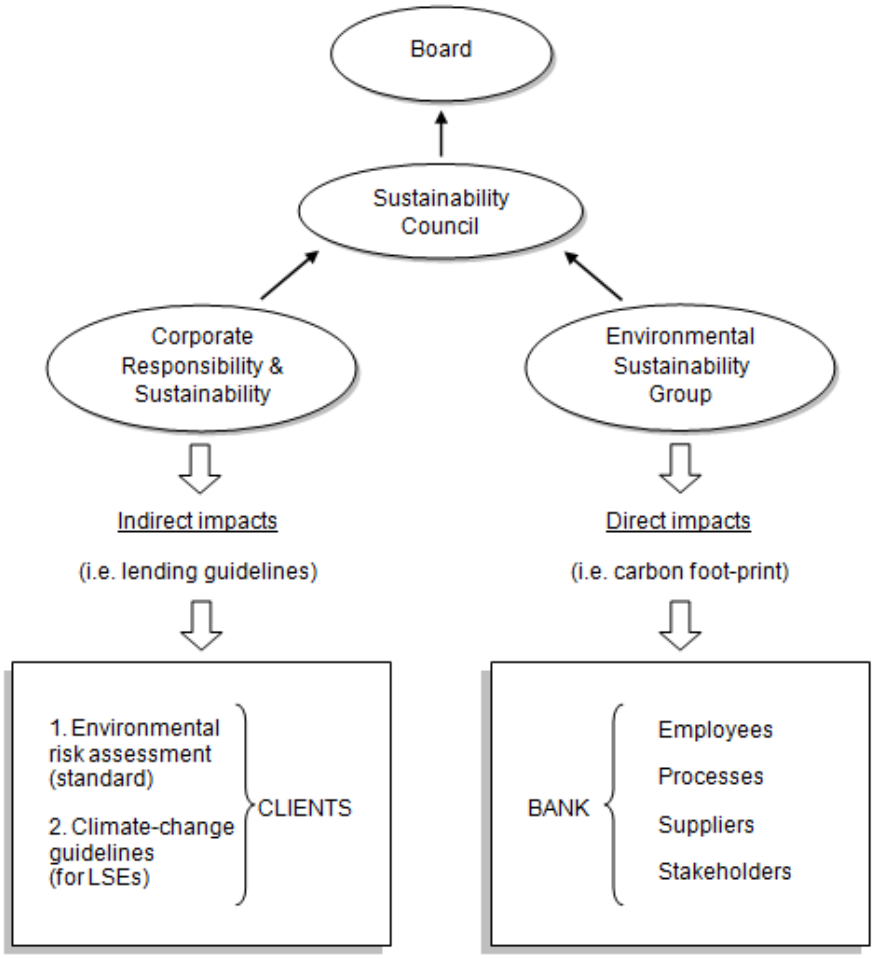
Climate-change risk-management institutions are diffused from Allianz's ERM system (called the Risk Management Framework) into specific business functions. Allianz's additional methods that are used to manage the impacts of natural catastrophes and weather-related events, which are standard practices in the insurance industry, are integrated into the Risk Management Framework. Risks that cannot be fully quantified (such as liquidity, strategic, and reputational risk) are targeted with a systematic assessment based on qualitative criteria and/or scenario analyses.

Allianz uses the expert capabilities of its group companies to perform specialised tasks. There are several examples. Allianz had one of its portfolios (Allianz GI) screened for climate-change risks by one of its group companies, Rosenberg Capital Management. The insurance giant also had due-diligence procedures performed on its renewable-energy financing portfolio by its group company Allianz Capital Partners. A third example is Allianz's offerings of insurance and other "green" products related to climate-change: these too are developed by specific divisions of the company or by associated group companies.

Figure 31: BMO's institutionalisation: "Bases covered"[135]



[135] Both the figure and subsequent explanatory paragraphs have been compiled based on information from the following sources: BMO, 2008; BMO, 2011a; BMO, 2011b; BMO-Annual Report, 2010; BMO-Annual Report, 2011; BMO-CDP, 2011; BMO-CSR, 2007; BMO-CSR, 2010; 1 personnel interview).

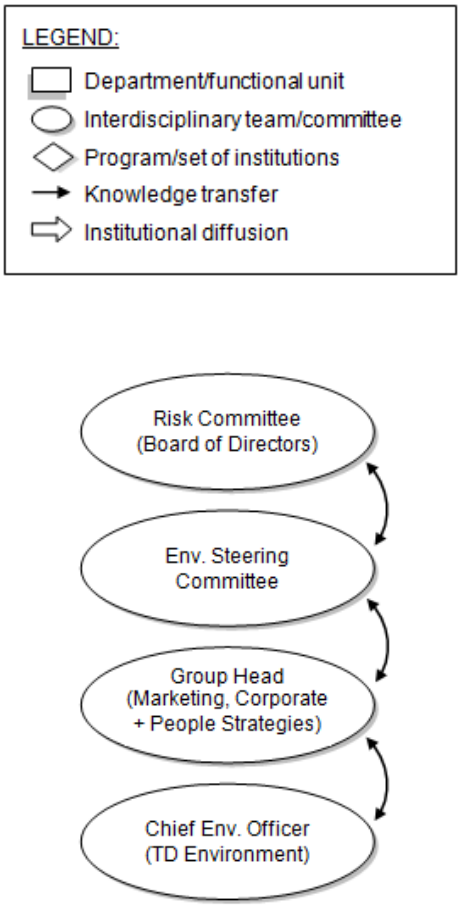


Institutionalisation by BMO can be described as "bases covered." BMO has both a climate-change credit-risk mitigation endeavour as well as a thorough carbon-neutrality initiative for offsetting the bank's own operational foot-print.

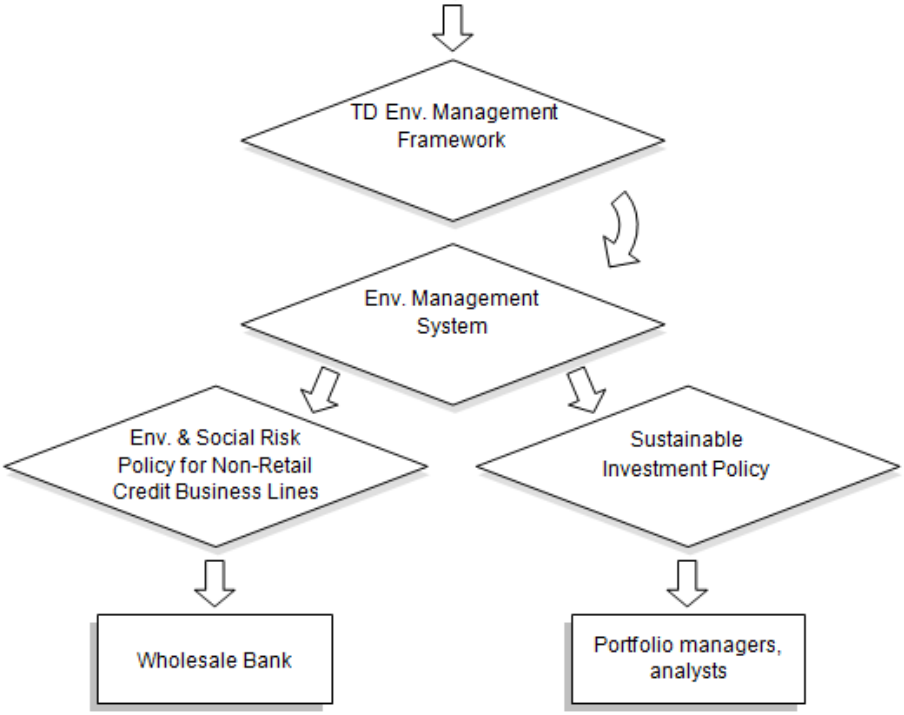
BMO has an advisory body called the Sustainability Council that comprises executives from each of the bank's business areas and corporate departments (e.g. strategic management, legal, human resources, etc.) and also includes members of two other groups: Environmental Sustainability and Corporate Responsibility & Sustainability. These groups provide oversight and guidance to execute the bank's environmental strategy and to coordinate the development and maintenance of the bank's environmental responsibilities.

The two groups have different functions. The environmental group manages the bank's GHG foot-print while the corporate responsibility group handles indirect climate-change impacts, i.e. those arising from the bank's business activities, such as lending.

Figure 32: TD's institutionalisation: "Innovative"[136]



[136] Both the figure and subsequent explanatory paragraphs have been compiled based on information from the following sources: TD, 2011a; TD, 2011b; TD-Annual Report, 2010; TD-Annual Report, 2011; TD-CDP, 2011; TD-CSR, 2010; TD-PRI Engagement Report, 2010; TD-Sustainability Investment Policy, 2010; 2 personnel interviews.



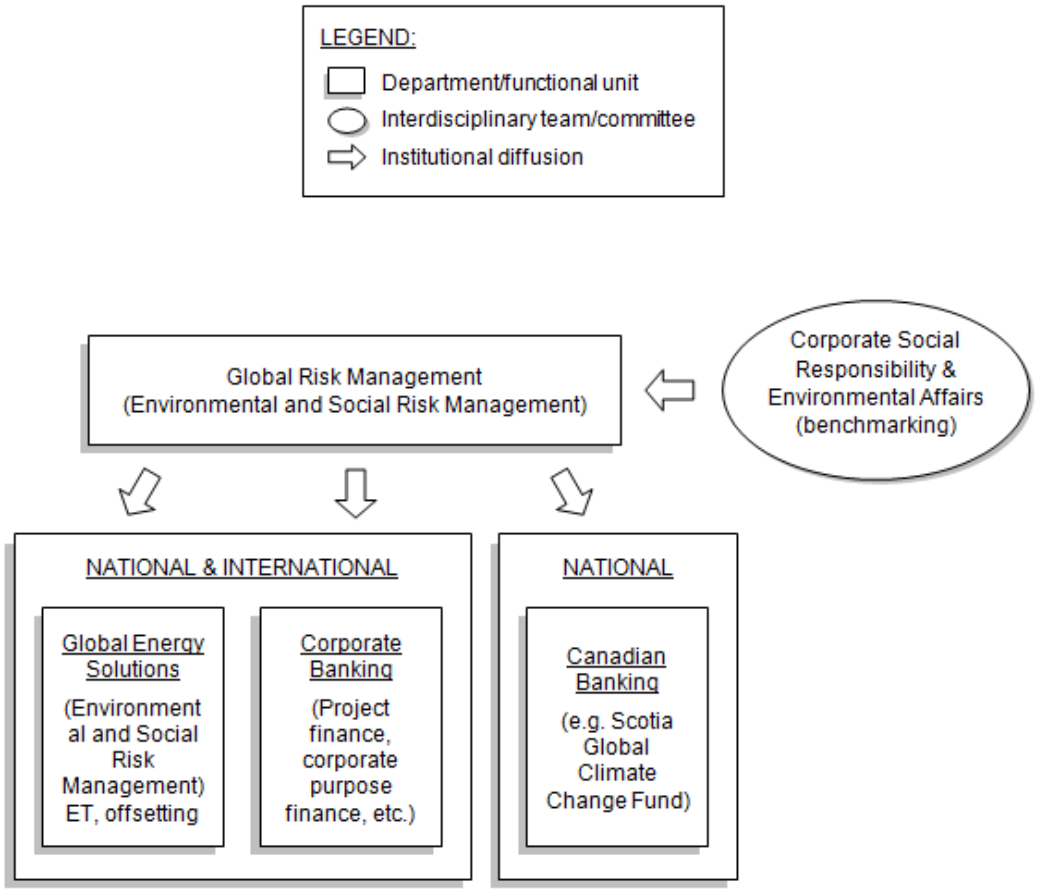
Institutionalisation by TD can be described as "innovative." While the bank pursues reputation-building climate-change institutional development with carbon neutrality initiatives, it also developed a proprietary sustainability matrix which gives snapshots to portfolio managers and analysts of how companies manage their ESG capital. The matrix is managed by TD staff and uses data from Asset4. Concerning climate-change, asset-management risk-mitigation institutions are usually, in most banks, the most under-developed, under-diffused institutions in the banks.

Climate-change responsibilities begin with the Risk Committee of the Board of Directors. TD Bank has an Environment Steering Committee which pulls together senior executives from all business units and reviews environmental strategy and performance. The next level down is the Group Head of Marketing, Corporate and People Strategies, followed by the Chief Environment Officer, who handles day-to-day operational responsibility. There is knowledge transfer between all these groups and roles.

TD's Environmental Management Framework sets the bank's priorities and boundaries for climate-change. TD Environment oversees and manages both the development and implementation of the bank-wide Environment Management System.

The Environmental & Social Risk Policy for Non-Retail Credit Business Lines sets standards for identifying and managing environmental and social risk across non-retail lending operations (i.e. corporate-purpose, project, and fixed-asset finance) in the Wholesale Bank. The Sustainable Investment Policy incorporates ESG criteria into investment analysis and decision-making processes for asset-management.

Figure 33: BNV's institutionalisation: "International balanced-scorecard"[137]



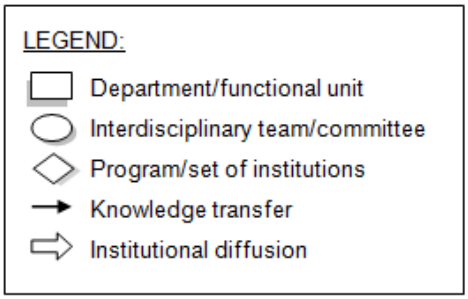
Institutionalisation by BNV follows an "international balanced-scorecard" approach. A "balanced-scorecard" is an approach to planning and management of business activities

[137] Both the figure and subsequent explanatory paragraphs have been compiled based on information from the following sources: BNV, 2010; BNV, 2011a; BNV, 2011b; BNV, 2011c; BNV-Annual Report, 2010; BNV-Annual Report, 2011; BNV-CDP, 2011; 1 personnel interview).

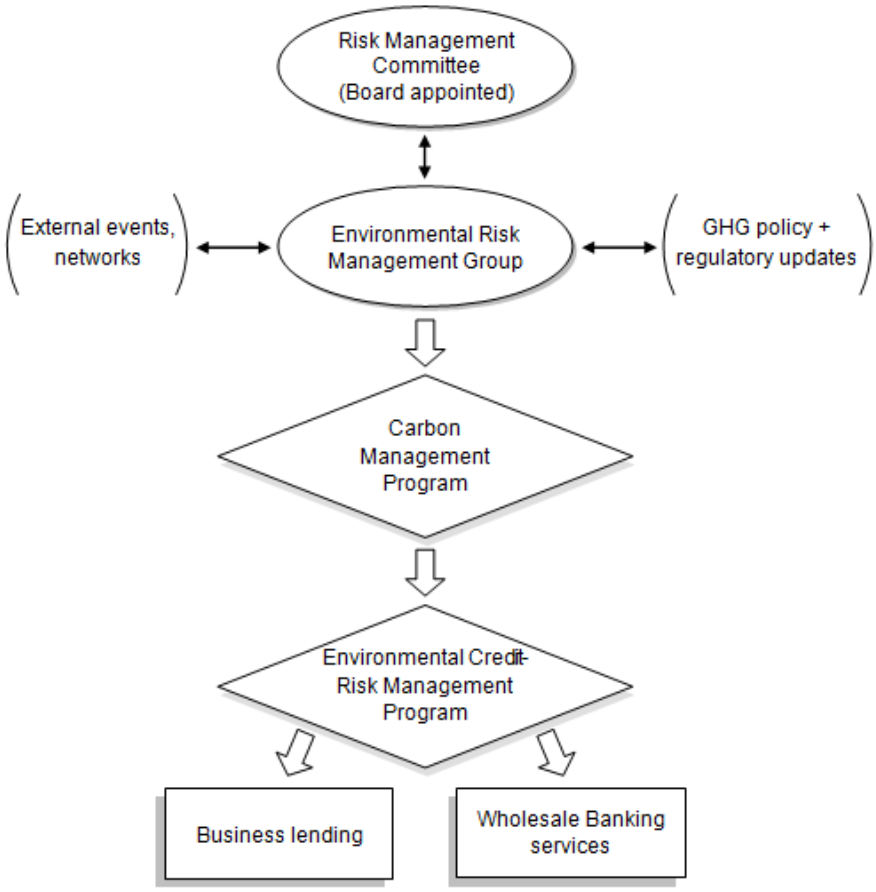
that line up, in this case, the bank's vision with the way the bank is run. Balanced-scorecard approaches often weigh both financial and non-financial elements against best-practice target values, such as a KPIs. BNV is the most internationally-focused bank of the Canadian sample: two of its three business units penetrate both national and international markets. All three business units identify climate-change opportunities for the bank.

Global Risk Management has the top responsibility for establishing processes and standards for environmental risks in lending practices. The interdisciplinary unit Corporate Social Responsibility and Environmental Affairs helps set the bank's general strategic direction on climate-change matters, benchmark BNV's performance against competitors, and diffuse best-practice institutions.

Figure 34: CIBC's institutionalisation: "Straightforward"[138]



[138] Both the figure and subsequent explanatory paragraphs have been compiled based on information from the following sources: CIBC, 2011; CIBC-Annual Report, 2010; CIBC-CDP, 2011; CIBC-CSR, 2010; CIBC-CSR, 2011; 1 personnel interview).



Institutionalisation by CIBC can be described as "straightforward." Unlike BNV and RBC, CIBC does not require ET because its clients face no pressing need (i.e. real or self-prescribed) to buy or sell ET credits.

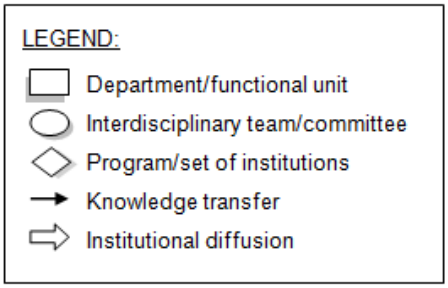
Although CIBC's climate-change strategy does include carbon foot-printing initiatives, the focus is minimal as such initiatives are costly and the value they deliver (e.g. organisational learning, reputational legitimacy, etc.) are neither quantifiable nor necessarily beneficial in the short or long-term.

CIBC's highest level of climate-change responsibility is the Risk Management Committee. The bank's Environmental Risk Management group, which comprises several business and functional units, oversees environmental risks throughout the bank. Environmental Risk Management is also accountable for both leading and managing climate-change affairs. Execution is carried out through the Carbon Management

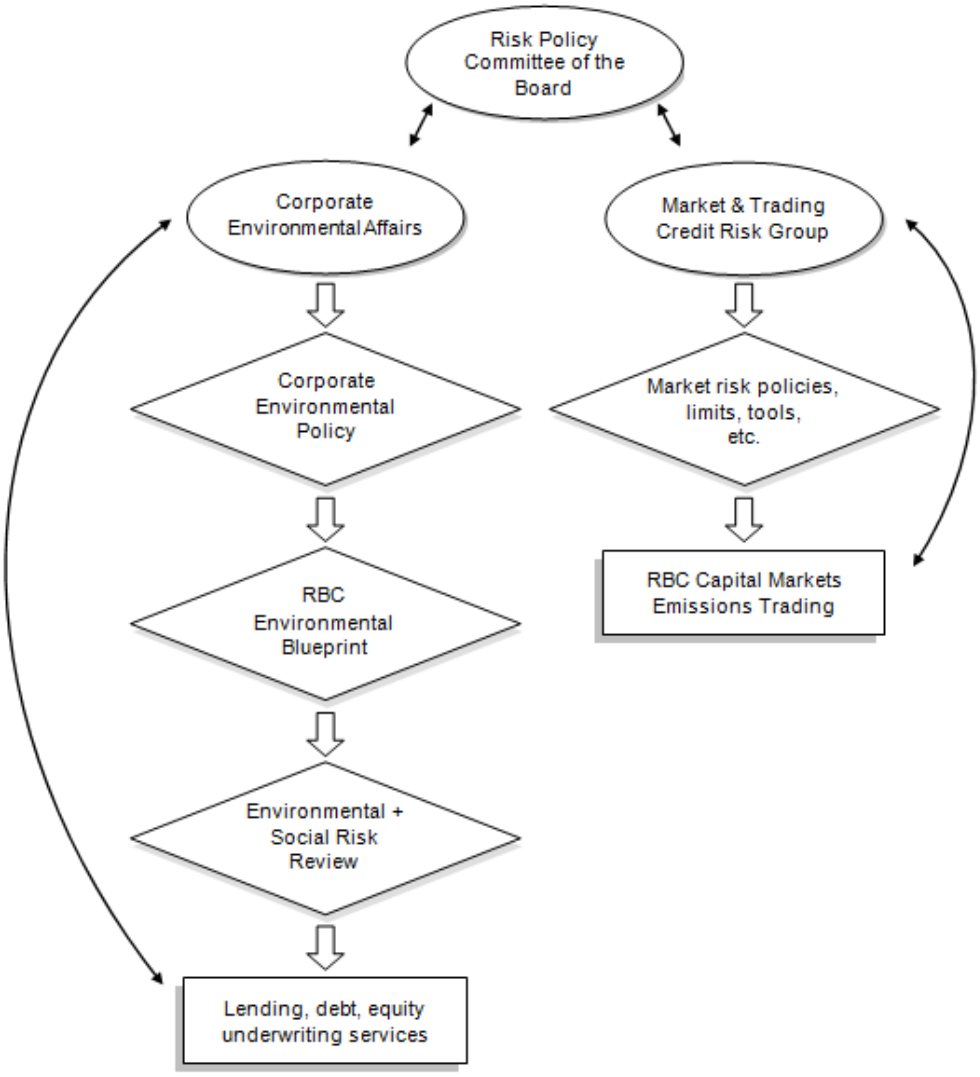
Program, which takes regulatory, operational, market, and physical climate-change aspects into consideration.

CIBC is developing climate-change risk-assessment tools to determine both risks and opportunities linked to climate-change and ET markets. These developments continually refine the standards and procedures of the bank's Environmental Credit Risk Management Program.

Figure 35: RBC's institutionalisation: "Pervasive"[139]



[139] Both the figure and subsequent explanatory paragraphs have been compiled based on information from the following sources: RBC, 2011a; RBC, 2011b; RBC, 2011c; RBC-Annual Report, 2010; RBC-Annual Report, 2011; RBC Blueprint Progress Report, 2010; RBC Blueprint Progress Report, 2011; RBC-CDP, 2011; RBC-CSR, 2010; RBC Environmental Blueprint, 2011; 3 personnel interviews.



Institutionalisation by RBC can be described as "pervasive." Many overlapping policies assure that the bank is active on all possible fronts.

The "RBC Environmental Blueprint" outlines the bank's commitments for climate-change mitigation and diffuses climate-change institutions into the bank's corporate practices, products, and services. Three policies that include climate-change considerations are:

1. Policy on Environmental and Social Risk Management (which requires all of the bank's units to consider climate change for organisational decisions as well as lending and investment procedures);

2. Policy on Environmental and Social Risk Management for Capital Markets (which assesses corporate clients against ten environmentally-sensitive criteria); and,
3. Responsible Procurement Policy.

Noteworthy is RBC's ET desk, which exposes the bank to climate-change market risks. These risks are integrated into the bank's Group Risk Management subgroup called Market and Trading Credit Risk Group. This group establishes market-risk policies, limits, analytical tools, etc. that are characteristic of regular market-risk management institutions. The RBC Capital Markets Emissions Trading group transfers knowledge to the Market and Trading Credit Risk Group, which then shares that information with the very top: the Risk Policy Committee of the Board.

The bank's lending, debt, and equity underwriting services are assessed using environmental due-diligence procedures (Environmental and Social Risk Review) which include climate-change criteria. Knowledge from this front line division is then transferred upward to Corporate Environmental Affairs.

5.5 TOP-DOWN LEGITIMACY: DANGER OF MIS-INSTITUTIONALISATION

Regulatory legitimacy is based on conformity to rules: "*legitimate organisations are those established by and operating in accordance with relevant legal or quasi-legal requirements*" (Scott, 2008, p.61). However, even by conforming to the rules, structural forms, and even and norms (such as industry-wide practices of implementing the Basel Accords), there is still a general consensus that these institutions are too shallow, when it comes to climate change, to confer legitimacy to banks.

Banks do not have the option—given their fiduciary duties—of simply implementing the types of rules that they eventually expect to receive imposed upon them by their governments. A banker from the German sample shared: "*banks can't just tighten the rules—then they'll lose their clients. Clients are a major concern for every bank*" (DZ Bank, personnel interview, 2011).

To this end, the banks institutionalise as much as possible without threatening their revenue sources or stakeholder relationships. The result is a "wait-and-see" attitude,

as observed by Pinkse's research which included (among 218 companies) giant Canadian oil firms such as Petro-Canada and Suncor: "*Uncertainty about the position of the government* [concerning GHG-reduction targets] *thus leads to a wait-and-see attitude of business, which is currently seen in Japan and Canada*" (Own modification) (2008, p.206). Some examples are shown below.

Table 71: Examples of "wait-and-see" approaches

Bank	Example
Commerzbank	"[…] no clear rules about future successor to the Kyoto Protocol (post-2012), no agreement (at time of reporting) from UNFCCC parties on reduction targets for post 2012. This weakens confidence that carbon markets will grow, and means Commerzbank's emissions trading team has limited opportunities outside the EU-ETS, such as in the US" (Commerzbank-CDP, 2011).
Deutsche Bank	"The share of business in emerging markets which still lack intensive regulation in this field is comparably small. Assuming that Deutsche Bank will increase its performance in these areas and regulation will become more restrictive, **risks driven by changes in regulation will be more relevant in the medium and long term**" (Own bold) (Deutsche Bank-CDP, 2011).
CIBC	"Here in Canada concerning climate change regulations, there have been so many starts and stops that industry and others get to the point where they consider this as just something unimportant that won't materialise any time soon" (CIBC, personnel interview, 2011).
BMO	"In the absence of regulation and clear guidance right now, we have not isolated the potential financial implications associated with this risk" (BMO-CDP, 2011).
BMO	"Most of the bank's operations are in North America where firm climate-change regulations do not exist. Nonetheless, potential reputation risks exist because of the bank's association with clients in LSE industries" (BMO-CDP, 2011).

Much institutionalisation results from the wait-and-see approach. Dierks et al. draw attention, however, to what is missing from these institutionalisation initiatives. They ask which of these "active initiatives" contribute to a structural shift that can allocate capital towards low-carbon endeavours (2010, p.8).[140]

[140] Original: „[...] *Finanzdienstleister werden sowohl dafür verantwortlich sein, Klimarisiken einzupreisen als auch Investitionskapital für einen Strukturwandel hin zu einer treibhausgasarmen Wirtschaftsweise zu allozieren (Vgl. Labatt/White 2007; Richardson 2009). Schwieriger und bisher noch unbeantwortet ist die*

As presented so far in this thesis, there is considerable evidence that the banks are diffusing specific climate-change credit-risk due-diligence procedures and other initiatives to mitigate risk in lending transactions. Lending, as shown in chapter 4, is the most significant business area for banks. But for mitigating climate-change, even more important is the development of similar measures to screen and filter LSEs' equities (stocks) and debts (bonds, corporate debt holdings, etc.) that make up banks' investment and asset portfolios. It is not banks' fiduciary duties to deny funds to LSEs that do not pro-actively reduce and mitigate their own GHG emissions. This is, however, the evolving direction for the status quo concerning the concept of sustainability—the conceptual pillar of Agenda 21, the Rio Declaration, the UNFCCC, the Kyoto Protocol, the UN Millennium Development Goals—in short: all major global climate-change institutions. Denying funding to LSEs that do not pro-actively reduce and mitigate their own GHG emissions is the most focal point of leverage that financial organisations can apply in order to massively influence a reversal of the wait-and-see approaches of most of the world's LSEs concerning climate-change.

Diffusing the types of institutions that can drive such a global industrial reversal (or "market shift," as referred to in The Stern Review), such as market-risk (or "carbon-risk") management for climate-change risk in asset portfolios, requires a far more challenging and innovative direction for institutionalisation. It is recognised that some banks in each sample (such as DZ Bank and TD) have begun similar developments for SRI criteria which include climate-change risks. Moreover, there are also private, third-party initiatives, some of which are presented in chapter 7. It is acknowledged here that such developments—if they are to be reliable—depend on the stability of certain factors. For example, if a government-mandated carbon tax fluctuated from year to year, then this range of fluctuation could be built into a risk model as a variable. But without a clear direction for regulations (especially for the Canadian sample of banks), creating models with quantitative requirements that can be synchronised with ERM systems is far more daunting. Moreover, such initiatives can run R&D expenses for years without bringing back any verifiable ROI.

Frage, welche aktiven Maßnahmen sie diesbezüglich treffen können" (Own modification) (Dierks et al., 2010, p. 8).

DZ Bank's Sustainable Investment Research Team emphasises not ROI, but the development of "reputation capital" (Pratsch and Wermann, 2011, p.6). Pratsch and Wermann write:

> "*Acting sustainably increases the legitimacy of a company in society and assures its credibility. The company improves its image, consequently building up its "reputation capital." The "reputation capital" of a company is the surplus market value of its shares – that is the difference between the actual market value and the value of its asset items. It increases the value of the company from a non-financial perspective.*" (Pratsch and Wermann, 2011, p.6).

While the focus on reputational legitimacy is within the banks' reach, it comes at a major opportunity cost. Banks are forgoing an even bigger opportunity to not only turn the tables on the world's approach to climate-change mitigation, but also to redeem themselves of their negative status quo image following the 2007/2008 GFC spurred by their industry's mismanagement of risk. After their downfall, banks now have a chance to embrace sustainable business practices.

5.6 CONCLUSION

This chapter analysed the banks' diffusion of climate-change risk-management institutions from the viewpoint that diffusion is characterised by the strength and reach of institutional structures (Scott, 2008, pp.132-3). "Institutional strength" has two main indicators to measure the extent of diffusion: rules and structural forms (Scott, 2008, pp.132-133).

The viewpoint of institutional "strength" was reviewed as a "top-down" mode of diffusion. Moreover, top-down diffusion was argued to be an observable first step of the banks' diffusion of climate-change risk-management institutions. Because top-down diffusion relies predominantly on coercive institutional mechanisms, and the rules and structural forms of the authorities are vague, there are therefore several limitations to top-down diffusion. Furthermore, governments rely on support from both banks and LSEs and have no interest in coercing them into arrangements that are not mutually beneficial.

Banks maintain networks of government and regulatory points of contact which, in many cases, they attempt to influence in a push for stronger climate-change rules.

The limits of top-down diffusion leave institutional "gaps" or weaknesses such as the reliance on institutional "reach" and the dependence on an authority to create rules that sufficiently address the issues at hand. Banks address these institutional "gaps" through their own initiatives to "institutionalise" beyond the regulative pillar and into the normative and cultural-cognitive institutional dimensions. While the banks' initiatives to institutionalise do not necessarily mitigate climate-change risks directly, institutionalisation does help the banks gain legitimacy and protect their reputations.

Each bank's case of climate-change institutionalisation emphasised a unique approach to strive beyond the regulative pillar. The banks' continual engagement and involvement of legitimate stakeholders and institutions tend to reflect the organisations' distinctive histories, existing network of stakeholders, etc. (Selznick, 1957, pp.16-17).

The "characters" of the banks' cases of climate-change institutionalisation can be summarised as follows:

Table 72: Summary of the sample banks' cases of institutionalisation

Bank	One-line summary
Deutsche Bank	"Positioned to grow" by maintaining an extensive network of the world's biggest climate-change organisational and institutional stakeholders
Commerzbank	"Early detection" by maintaining a pro-active stance on risk detection
UniCredit	"Taking responsibility" through a lower ROI tolerance to drive investments into climate-friendly initiatives
DZ Bank	"First things first" by tackling climate-change credit risk not only in lending activities, but also in the asset portfolios of a major investment arm
Allianz	"Business-as-usual" with its robust ERM system for insurance activities as well as standardised banking activities, such as asset management, credit risk, etc.
BMO	"Bases covered" through climate-change credit-risk mitigation and a carbon-neutrality initiative for the bank's operational foot-print
TD	"Innovative" by developing its own sustainability matrix for portfolio managers and analysts
BNV	"International balanced-scorecard" by approaching climate-

Bank	One-line summary
	change issues on both national and international levels
CIBC	"Straightforward" through industry studies and the development of climate-change credit-risk management metrics
RBC	"Pervasive" through extensive activity on all possible fronts

Despite banks' diffusion of institutions that align their ERM frameworks with vague regulatory requirements concerning climate-change (often, these are interpreted or even self-assigned by the banks themselves), there is a general consensus that these institutions are too shallow to give the banks the legitimacy they require. The result is a "wait-and-see" approach that advances little towards the development of technical risk-management institutions that can screen and filter equities and debts of LSEs from the banks' investment and asset portfolios. While these endeavours are not within the scope of banks' fiduciary duties, they do align with the conceptual foundations of the world's most significant climate-change and sustainability institutions (such as the Rio Declaration, the Kyoto Protocol, the UN Millennium Development Goals, and also the World Bank's stance on significantly reducing investments in coal-fired plants). Shifting investments away from LSEs that do not reduce and mitigate GHG emissions is the biggest way banks can influence a global, industry-wide, pro-active "market shift" towards climate-friendly endeavours.

CHAPTER 6: INSTITUTIONAL EFFECTS

6.1 INTRODUCTION

This chapter examines the second perspective of the three viewpoints of Scott's observation of a triple significance in analyses of institutional diffusion. The core arguments of this chapter build upon the re-definition of institutionalisation presented in the previous chapter.

The second viewpoint of Scott's observation of a triple significance in institutional diffusion is that diffusion follows different principles and has different institutional effects because of the institutions' changing degrees of strength and reach (Scott, 2008, pp.132-3). This viewpoint is summarised here with the term "institutional effects." This term is the base concept for this chapter's theoretical arguments to explain the ways (i.e. the "what," "how," and "why") in which climate-change risk management institutions are diffused by the banks. The institutional effects of diffusion play a role not only in each organisation, but also for other stakeholders and institutions in the organisational field.

The effects of institutional diffusion—such as resulting institutional arrangements, plans, stakeholder alignments, organisational designs, and levels of market penetration—can be understood to occur largely as the result of a particular mode of institutional diffusion: "bottom-up." Bottom-up diffusion is argued here to be not only a mode of diffusion, but also an observable second step of institutional diffusion of climate-change risk-management institutions by Annex-2, G8 nations' major banks.

As in the last chapter, one of this chapter's central themes is again institutionalisation; however, this concept is broken down and presented as a process involving phases and initiatives both based on Tolbert and Zucker's model of institutionalisation (1996). The new model of institutionalisation presented in this chapter shows that **the banks are both innovating (albeit, to different degrees) and diffusing climate-change risk-management institutions, but in specific ways, i.e. bottom-up, and with a significant focus on normative and cultural-cognitive institutional initiatives that are isomorphic in nature.** While the high degree of

institutional isomorphism helps the banks gain legitimacy and protect their reputations, it does not necessarily suggest that the initiatives help the banks develop climate-change risk-management institutions that can mitigate climate-change risks.

This chapter has eight parts. Following this introduction, the chapter's second part explains how institutional effects are interpreted in this chapter. The third part introduces the concept of bottom-up diffusion and shows how it fits into a modified version of Tolbert and Zucker's model of institutionalisation (1996). The fourth part introduces the concept of radars and their functions in progressing most of the initiatives in banks' knowledge networks. The chapter's fifth part has six sections that present the banks' market initiatives and a review of the limitations implicit in acquiring legitimacy through those initiatives. The chapter's sixth part has two sections that present the banks' alignments with extensive networks of stakeholders and institutions. The chapter's seventh part takes a more critical view of bottom-up diffusion and the isomorphism it engenders. The eighth and final part concludes the chapter by highlighting its main points.

6.2 INSTITUTIONAL DIFFUSION PARADIGM: EFFECTS

The term "institutional effects" is used in this study to designate a modified understanding of the second viewpoint of Scott's observation of a triple significance in analyses of institutional diffusion. Scott writes,

> "*because the diffusing elements are being adopted by and incorporated into organizations, studies of diffusion are also properly treated as studies of institutional effects. In such studies, early or later adoption is often argued to follow different principles because of the changing strength of the institutions and also because of the varying characteristics of the adopting organizations*" (2008, p.132)

Just as with Scott's definition of institutional strength and reach, his definition above also emphasises two indicators to explain the effects of early or later adoption: (1) the changing strength of the institutions and/or (2) the varying characteristics of the adopting organisations (Scott, 2008, p.132). Both indicators are intended to explain the

differing principles implicit in early or later adoption. To focus, however, on the timing of adoption will not maximise the theoretical interpretation of this chapter's empirical data. It is too early to consider the timing of adoption as a variable that reveals insights into the institutional effects resulting from the banks' diffusion of climate-change risk-management institutions.

The banks' diffusion of their current frameworks of climate-change risk-management institutions began around the year of the Kyoto Protocol's international ratification, 2005. All of the banks already had environmental policies in place, but it was around this period that a general shift in policy-making is observable: the word "climate-change" began to appear (and with higher frequency) in the sample banks' CSR reports, as well as in their environmental policies. Compared to other studies of institutional diffusion that analyse institutional effects, this thesis' empirical time frame is not simply recent and short (in most of the banks' cases of institutional diffusion: a six-year time frame from 2006 to 2012), but it is moreover the only time frame because these same institutional frameworks are still evolving. There is currently no second group of banks whose institutional diffusion—for example, at a later time period—can be compared with the empirical results of the banks studied in this thesis.

Scott's focus on the timing of adoption when studying institutional effects takes into account well-known studies such as those by Tolbert and Zucker (1983) and Fligstein (1985). These studies have two characteristics in common: (1) the data is from long periods of time, and (2) the data is compared among multiple time frames. For example, Tolbert and Zucker's study analyses civil-service reforms in cities first during 1885-1904 (a nineteen-year period) and then compares this first examination with snapshots of the institutions' effects during later dates, such as in 1935 (thirty-one years later) (1983). Likewise, Fligstein's study, The Spread of the Multidivisional Form Among Large Firms, 1919-1979, includes empirical data grouped into five time frames, each lasting ten years (1985).

An alternative paradigm for studying institutional effects is performance. Mitchell summarises typical features of performance-based studies of institutions, such as performance scales (i.e. a "*system of measurement for a given performance dimension*") and performance scores (i.e. "*the numeric or nonnumeric value assigned to an*

institutional outcome on a given scale") (2008, p.81). Notwithstanding the value of these metrics, the concept of performance assumes that diffusion is complete and therefore measurable and comparable. Complications arise when the diffusion of institutions among multiple organisations are to be compared, as in this study. Moreover, the banks' diffusion of climate-change risk-management institutions is far from complete; in fact, it is only just beginning. Chapter 5 shared numerous examples of the "wait-and-see" attitudes underpinning most of the banks' initiatives to institutionalise. Furthermore, there is a theoretical parallel to a point raised in chapter 3: the subtle (yet significant) differences between the concepts of rationalisation and structuration. Rationalisation highlights "*how institutions arise, achieve stability and legitimacy*" which reflects the current observable evolution of the banks' climate-change risk-management institutions (Scott, 2008, p.94). Diffusion, in this thesis, means the spread of rationalised institutions (see chapter 3). On the other hand, structuration—like performance—emphasises that an organisational field's existing social structures and patterns are "*deeply embedded in time and space*" (Giddens, 1984, p.13).

Viewing performance from another angle, Underdal also sees performance as an implicit feature in studies of institutional effects (2008). Underdal shares that studies of institutional effects must have a point of reference from which change is measured, and choosing this point of reference usually entails one of two options. The first option, used to assess whether a particular regime makes a difference, is "*the hypothetical state of affairs that would have arisen without the regime, sometimes referred to as the business-as-usual scenario*" (2008, p.64). The second option, used to determine the degree to which a particular problem is solved under current arrangements, is to "*assess the actual outcome observed with the regime in place against some notion of what qualifies as a "good" or "optimal" solution*" (2008, p.64).

While the timing of adoption and performance are important issues to address in assessing an institution's effects, a better fit for this thesis' empirical findings is a view that embraces the novelty of the banks' climate-change risk-management institutions and focuses on both their intentions and the current results of these intentions.

This desired view is found in Tolbert and Zucker's model of the component processes of institutionalisation (1996, p.182). The effects of the banks' diffused

institutions—their intended effects and the current results of these effects—fit into the model's phases termed "pre-institutionalisation" (as referred to by Scott, 2008, p.126) and a modified interpretation of the model's second phase called "objectification" (Tolbert and Zucker, 1996, p.182).

While chapter 5 presented both a modified definition of institutionalisation and empirically-based snapshots of each bank's unique case thereof, this chapter examines the "micro" perspective: the components and processes of institutionalisation. When viewed from the perspective of pre-institutionalisation and objectification, the empirical data can be presented in a way so as to highlight the banks' intentions driving their unique cases of institutionalisation. The intentions appear in the data as milestones that show what has been accomplished so far. These milestones set the grounds for the next stage of evolution in Tolbert and Zucker's model: continued objectification and eventually, sedimentation (1996, p.182). Relevant here is that if institutional effects can be studied as milestones or waypoints in an ongoing process, then they do not need to be examined through the lenses of temporal significance (i.e. Scott's emphasis on the timing of adaptation [2008]) or performance-based criteria (as proposed by both Mitchell [2008] and Underdal [2008]).

Pierson compiled a list of institutional effects that are embedded in institutional creation and construction (2004, pp.109-122). Three relevant items from this list form this chapter's scope for its inclusion of institutional effects.[141] Institutional effects result from the facts that:

1. "*Institutional designers may not act instrumentally*" (Pierson, 2004, p.110);
2. "*Specific institutional arrangements invariably have multiple effects*" (109);
3. "*Institutional designers may have short time horizons*" (112).

Concerning the first observation, that "*institutional designers may not act instrumentally*," it was argued in chapter 5 that all of the banks, in their drives to institutionalise in order to gain legitimacy, diffuse institutions that reach beyond the "transaction-cost" dimension (i.e. based on a logic of instrumentalism) and far deeper into normative and cultural-cognitive institutional realms (Scott, 2008, pp.27, 96). The

[141] The other effects on Pierson's list are: (4) institutional effects might not be anticipated; (5) institutional persistence and changes in the environment are both subject to change; (6) there is a continuous in-flux and out-flux of actors' associations with institutions (Pierson 2004, pp.109-122).

second and third observation by Pierson will both be examined throughout the remainder of this chapter, i.e. that institutional arrangements have multiple effects (intended and unintended) and often reflect short-term goals or foresight (Pierson, 2004, pp.109, 112; Scott, 2008, p.96).

The fact that institutional arrangements often have multiple effects and reflect short-term foresight is highly attributable to the dominant mode of diffusion—an observable second step in the banks' diffusion of climate-change risk-management institutions—that organisations in competitive markets engage in: bottom-up diffusion.

6.3 BOTTOM-UP DIFFUSION

This chapter's third part deals with bottom-up diffusion. In the banks' cases of institutionalisation, bottom-up diffusion is the second stage of diffusion that explains what banks choose to diffuse after they complete top-down diffusion, i.e. after diffusing any regulatory or mandatory obligations.

The concept of choice takes on significance in bottom-up diffusion. Concerning the first stage of diffusion (top-down), it cannot plausibly be argued that organisations in highly-elaborated institutional environments (such as banks) ponder which regulatory requirements to follow, weigh the pros and cons, and then decide. These types of institutional alignments are almost always diffused: what is left open to interpretation is not whether, but **how** they will be diffused. Put another way, the questions bank executives ask are not "should we do this?" but rather "will we do this using a turn-key approach, or something more innovative?" What chapter 5 showed is that the sole reliance on this first stage of institutional diffusion (i.e. top-down) is too limited to give the banks the legitimacy they require concerning climate-change risk management. The banks in both samples are not reassured by their authorities' implementations of global climate-change institutions. Busch writes:

> "*Reliability and certainty of the regulations and laws is a vital condition for markets functioning in an effective way. Without this, there is no secure foundation for investments and corporate decisions and the success of ET as a means of reducing emissions is endangered*" (Busch, 2006, p.269).

These limitations are inherent in Scott's view of bottom-up approaches, which are pursued when "*actors pursue their interests by designing institutional frameworks that solve collective action problems or improve the efficiency of economic exchanges*" (Scott, 2008, pp.191-192).

A simplified way of explaining bottom-up diffusion is its focus on institutions at the "ground" level. While top-down diffusion allows organisations to align themselves with institutions "above" them, e.g. those from an authority, bottom-up diffusion allows organisations to align their institutions with those of other organisations, i.e. those at their own levels. Of DiMaggio and Powell's three mechanisms of institutional diffusion, mimetic and normative mechanisms take precedence in bottom-up diffusion. Mimetic diffusion, and its reliance on isomorphism, is the mechanism most often associated with the results of competitive and institutional processes (DiMaggio and Powell, 1983; Scott, 2008, pp.132-135). Concerning this chapter's empirical data, mimetic diffusion is especially apparent in the banks' market initiatives. The normative mechanism of diffusion, on the other hand, relates strongly to the normative and cultural-cognitive pillars of institutions which rely on social obligations and adherence to moral suasion (DiMaggio and Powell, 1983; Scott, 2008, pp.132-135). Normative diffusion is particularly evident in the banks' extensive engagements and alignments with other stakeholders and institutions.

A more detailed way of explaining bottom-up diffusion, which also clarifies why its institutional effects are so isomorphic, is by viewing how it fits into Tolbert and Zucker's paradigm of institutionalisation (1996, p.182). This section's presentation of a model of institutionalisation will integrate the concepts of top-down, bottom-up, and horizontal modes of diffusion.

Tolbert and Zucker's model has four dominant phases (innovation, habitualisation, objectification, and sedimentation) and several institutional processes that occur between each phase (1996, p.182). Scott refers to the two first phases, along with their institutional processes, as "pre-institutionalisation processes" (Scott, 2008, p.126). Scott's simplification of their model results in three phases:

pre-institutionalisation > objectification > sedimentation

This interpretation of Tolbert and Zucker's model is the starting point for a more

appropriate theoretical fit to interpret the banks' cases of institutionalisation. Pre-institutionalisation is argued here to include both top-down processes of diffusion (i.e. alignment with changing regulatory stakeholders and institutional demands) and bottom-up processes (e.g. monitoring the competitive landscape to see what other banks are doing).

The following table shows Tolbert and Zucker's model of institutionalisation with Scott's simplification of the first two phases, as well as other modifications made to emphasise the empirical data from the banks.

Table 73: Model of institutionalisation

Phase	Linking processes
Pre-institutionalisation	Monitoring legislation, technological change, competitors, and market forces ⇩
	Theorisation
Objectification	⇩ Contemplation (a.k.a. confronting outcomes); Interest group advocacy and resistance
Sedimentation	Spread of the institution to other actors in the organisational field

(Sources: based on Berger and Luckmann, 1967; Scott, 2008, pp.126-127; Tolbert and Zucker, 1996, pp.182, 184)

Pre-institutionalisation begins the process of top-down diffusion, continues into the bottom-up mode of diffusion, and ends with the process of theorisation. Theorisation is "*the self-conscious development and specification of abstract categories and the formulation of patterned relationships such as chains of cause and effect*" (Meyer and Strang, 1993, p.492). In other words, theorisation is when actors speculate as to whether institutional developments in their organisational field will help them gain, or cause them to lose legitimacy. An example of theorisation from BMO concerns the interpretation of materiality. BMO's group Corporate Responsibility and Sustainability gathers information from specific sources to identify climate-change risks for the bank (BMO-CDP, 2011; BMO-CSR, 2010). The bank shares in its CDP response that:

> "*The information gathered is then distilled to determine the impact to our business and in collaboration with the potentially affected areas, a determination of materiality (against other issues and priorities) is made*" (BMO-CDP, 2011).

Scott's view is that pre-institutionalisation ends with objectification, not theorisation, but the banks' cases of diffusion suggest otherwise. Institutionalisation by the banks shows that pre-institutionalisation ends with theorisation, and that their processes of theorisation are ongoing and do not simply function as bridges between the phases of pre-institutionalisation and objectification. This is because banks will not simply maintain a stakeholder or keep an institution going because it was once deemed legitimate. Just as they do with their lending clients, banks continually probe stakeholders and institutions to look for evidence of continued legitimacy. Because processes such as theorisation are continuous throughout institutionalisation (even in the sedimentation phase), two changes to Tolbert and Zucker's model (in combination with Scott's simplification shown above) are proposed: a new sequence of phases and an emphasis on their processes as continuous procedures.

Meyer and Strang show theorisation to involve a particular type of coding or categorisation process with which actors in an organisational field attempt to interpret features of institutional pillars (i.e. those predominantly related to the normative and cultural-cognitive dimensions) (1993). This categorisation process takes the form, in the banks' cases, of the usage of specific terminology in public bank reports/bank websites, evidence of stakeholder alignments and knowledge networks, new and innovative risk-management practices, and even market initiatives of other banks. When these institutional "signals" are interpreted to suggest legitimacy, a preliminary conclusion is reached in the theorisation process: the banks have their signal to begin the implementation of the institutions. Diffusion starts with attempts to integrate the new institutions within the banks' already-existing institutional frameworks. Institutional diffusion is progressive; sometimes it requires years and sometimes it is never completed. This process of "attempted implementation" is what starts the phase of objectification.[142]

This view contrasts with Scott's view of pre-institutionalisation which includes

[142] In chapter 7 this process of "attempted implementation" is argued to be a form of "agency," a power-play that designates a third type (and step) of institutional diffusion: horizontal diffusion.

proposed solutions that are "*invented or adopted, but prove to be unsatisfactory and are then dropped*" (Scott, 2008, p.126). The view presented here refers to proposed solutions as cases of "attempted implementation" which belong to the next phase of institutionalisation, objectification. For example, banks will attempt to implement institutions they perceive to be legitimate regardless of whether these institutions can ever be fully diffused and integrated into the complex requirements of the ERM system. Moreover, if the institution to be diffused carries enough legitimacy, banks will even publically announce their efforts to diffuse the initiative (for example, by declaring this on their websites, or in their CSR reports). One instance from the German sample is DZ Bank Group's announcement that it had signed and begun implementation of the Equator Principles—an institution that will take years to diffuse given DZ Bank's corporate network of 900 daughter banks (Equator Principles, 2013).

Despite its rejection of Scott's view concerning where objectification starts, the model of institutionalisation being presented here remains in line with how Tolbert and Zucker clarify objectification by its involvement of:

> "*the development of some degree of social consensus among organizational decision-makers concerning the value of a structure, and the increasing adoption by organizations on the very basis of that consensus*" (Tolbert and Zucker, 1996, pp.182-183).

Tolbert and Zucker's view of objectification also follows the logic of Zucker's overall paradigm of institutionalisation, which contains "*both a process and a property variable*" (1977, p.728). While the process variable of Zucker's definition is implicit in objectification's "*development of some degree of social consensus*" and "*increasing adoption*" (Tolbert and Zucker, 1996, pp.182-183), the property variable of Zucker's definition, on the other hand, is the very state—"the social consensus"—which can accept or reject an institution that is undergoing diffusion (Zucker, 1996, p.182). Objectification, therefore, solidifies a previously-conceived (i.e. a "theorised") opinion; it passes a judgement through actual attempts to diffuse an institution and thereby determines, through this process, whether the institution is "diffusible" or "not-diffusible" in the organisation. It objectifies and manifests an institution's real capacity to be diffused in a particular institutional environment.

An example is a bank's institutional alignment with the CDP. The process begins when the bank purposefully observes other banks and their engagements with NGOs in the organisational field. Theorisation begins with attempts to interpret these field observations and ends, in this example, with the recognition (an initial opinion) that taking part in the CDP is an activity that brings legitimacy. The bank then appoints one or more executives and gives them authority to collect GHG-emissions data throughout all bank departments in order to issue a response to the CDP's Annual Questionnaire. The institutional diffusion—the alignment of the bank with the CDP—has entered the phase of objectification. The bank will either succeed in issuing a CDP response, or it will not, for example, because the bank's appointed officers discover data that, if made public, could harm the bank's legitimacy.[143] In this case the institution could be abandoned by the bank. If, on the other hand, the institution's diffusion were successful, then the institution itself would stand a higher change of undergoing diffusion in other banks and thereby enter the phase of sedimentation. Jepperson relates that social patterns, "*when chronically reproduced, owe their survival to relatively self-activating social processes*" (1991, p.145). This reproduction by other organisations will occur either through normative/moral suasion (relying on, e.g. prescription and social obligations), or through mimetic mechanisms (relying on, e.g. isomorphism of perceived competitive advantages) (DiMaggio and Powell, 1983).

The last stage of institutionalisation—sedimentation—is defined here to designate the moment when an objectified institution achieves status quo, i.e. a generalised consensus of legitimacy by most actors in an organisational field. In this phase, the recurring process of theorisation automatically "approves" the institution in question. Because of this, the institution spreads to most other actors. The CDP is a fitting example: companies will issue responses to its Annual Questionnaire even though they often hide their GHG emissions data from the public. In these cases, the companies issue responses (and usually highlight this fact in their CSR reports, on their websites, and/or in press releases) but make the data available only to the CDP. When sedimentation occurs, the objectification process of "attempted implementation" will more often be successful

[143] The CDP offers alternatives for firms that "objectify" (i.e. attempt to implement) its core institution, the CDP Annual Questionnaire: firms can show, on the CDP website, that they have responded, but hide their actual data.

regardless of a particular organisation's pre-existing institutional frameworks and their readiness to "receive" and integrate the new institution. This is because organisations need legitimacy and will strive to get it.

Another example of an institution undergoing sedimentation is CSR reporting. Even before it became mandatory in several countries (in the early to mid-2000s), CSR reporting was becoming status quo among giant multinational corporations. At that point most major financial organisations (i.e. banks and insurance companies) and other multinationals (such as those from the oil and mining industries) began issuing CSR reports regardless of the reports' regulatory status.[144]

To summarise the concepts and definitions used so far in this chapter, the following table brings the model's main elements together.

Table 74: Model of diffusion based on institutionalisation

Phase	Linking processes	Step and mode of diffusion
Pre-institutionalisation	Monitoring legislation ⇩ Monitoring technological change, competitors, and market forces	(1st) Top-down (2nd) Bottom-up
Theorisation (i.e. opinion-forming)		
Objectification	⇩ Development of social consensus; "attempted implementation" ⇩	(2nd) Bottom-up; (3rd) Horizontal
Achievement of status quo		
Sedimentation	Spread of the institution to other actors in the organisational field	(3rd) Horizontal
	⇩	

[144] For more research on CSR reporting and its emergence see Tschopp, 2005; Tschopp, Wells, and Barney, 2012a; and Tschopp, Wells, and Barney, 2012b.

Phase	Linking processes	Step and mode of diffusion
(*Re-occurring*) Pre-institutionalisation & Objectification	Theorisation (*now: automatic approval of the institution's legitimacy)* ⇩ "Attempted implementation" (*now: with a high chance of successful diffusion*) ↻	(3^{rd}) Horizontal (*with minimal or no resistance to diffusion*)

(Sources: based on Berger and Luckmann, 1967; Scott, 2008, pp.126-127; Tolbert and Zucker, 1996, pp.182, 184)

Following the top-down diffusion of institutions heavily based on the regulative pillar, banks take pro-active measures to observe other banks, stakeholders, and institutions in their organisational fields. Based on the institutionalisation model presented above, the main purpose of these organisational-field observations is to find sources of legitimacy. Making these observations requires several pro-active measures that take many forms (e.g. studies, knowledge networks) and occur in both intra- (e.g. internal knowledge transfer between departments) and inter-organisational spheres (e.g. between actors). These initiatives are all captured in this study under the umbrella term "radars."

6.4 STARTING POINT FOR BOTTOM-UP DIFFUSION: RADARS

Bottom-up diffusion relies heavily on the use of radars: processes to methodically observe an organisational field. Radars promote exchanges of information that help banks build cases for theorisation. This information helps bank executives decide which institutions to diffuse, which initiatives to undertake, which stakeholders to engage, and so on.

While the discussion of policy networks in chapter 5 focused on the banks' connections to government officials and other authorities related to the regulative pillar of institutions, Langrock offers a broader view of policy networks that includes "*industry*

associations that dispose of steering capacity with respect to their members, local authorities that dispose of knowledge about the local situation, [and] *non-governmental organisations that have the capacity to set standards, etc.*" (Own modification) (2006, p.244). Moreover, Langrock's study of BP's stakeholders points out that the relationships between the actors were not hierarchical, but "*characterised by rather informal structures*" (Langrock, 2006, p.244). Despite the overlap between policy networks (reviewed in chapter 5) and radars, the main difference between them is that the latter comprise each bank's initiatives to engage a wider audience of stakeholders that can dispose climate-change risk-management knowledge and help the banks decide what to do.

Like policy networks, radars also have two roles. They not only serve to gather information for the banks, but they also serve as a means for the banks to communicate and influence outside stakeholders. From the German sample, Commerzbank states that it:

> "*wants to increase sensitivity towards climate change and promote active climate protection among its stakeholders wherever possible. To this purpose, Commerzbank uses the available internal communication channels to sensitize its employees for climate change issues. The bank also engages with competitors, NGOs, public institutions and other relevant stakeholders in order to encourage further action against climate change and to increase public awareness for climate change issues*" (Commerzbank-CDP, 2011).

The tables below summarise the banks' main radar activities of their climate-change risk-management knowledge networks. Although considerable overlap exists among the initiatives, they can be grouped into three categories: (1) external knowledge transfer, (2) internal knowledge transfer, and (3) studies and scientific contribution. External knowledge transfer includes initiatives such as engagement with industry associations and the use of third-party consultants such as ESG service providers. Several stakeholders engaged by the banks are the same ones sought by LSEs for institutional alignment: NFPs, policy think tanks, and "*the critical NGOs that engage in the policy making process through campaigning*" (Langrock, 2006, p.248).

Internal knowledge transfer includes initiatives such as employee training and awareness initiatives, corporate-wide knowledge campaigns on specific issues related to climate-change, and inter-departmental communication channels. Lastly, studies and scientific contribution includes initiatives such as market, economics, and risk-profile research as they relate to climate-change, as well as specific research partnerships with NGOs, universities, and so on.

Table 75: German banks' knowledge networks

Bank	Radars
Deutsche Bank	**External knowledge transfer** The bank hosted the UNEP FI/VfU e.V. Roundtable and a stakeholder workshop on improving integration of social issues into GRI indicators. Deutsche Bank also engages Greenpeace, urgewald e.V., and BankTrack regarding climate-change issues pertaining to oil, gas, and mining development. **Internal knowledge transfer** To improve decision-making for the bank's asset-management arm, executives from Deutsche Asset Management Investmentgesellschaft have access to the latest ESG research via G-CUBE, the bank's investment portal and global communications platform.
Commerzbank	**External knowledge transfer** Since 2008 the bank has hosted executives from competing financial organisations (along with NGOs) for dialogue-oriented workshops such as "Banks, pulp and paper," "Sustainable financial decisions," "Bio fuels," "Nuclear Power," and "Coal and Climate." The bank also participates in the NGO-Bank Dialogue Forum events put together by urgewald e.V. **Internal knowledge transfer** The bank uses internal communication channels to communicate climate-change developments in an effort to increase employees' sensitivity to climate-change issues.
UniCredit	**External knowledge transfer** Pioneer Investments (bought by UniCredit in 2000) subscribes to an ESG service provided by Institutional Shareholder Services to access analyses, ratings, and screening tools. The bank also sponsors meetings with the Italian organisation *Campagna per la Riforma*

Bank	Radars
	della Banca Mondiale (Campaign for the Reform of the World Bank) to discuss subjects of high environmental sensitivity. Lastly, the bank's ESP (environmental-sustainability program) stems from a 2008 agreement between UniCredit S.p.A. and the WWF in Italy. The bank supports WWF's environmental protection activities and WWF, in turn, helps the bank develop a sustainability strategy. **Internal knowledge transfer** UniCredit's ET unit, the Carbon Solutions Team in the Commodities & CO2 department, delivers climate-change updates (political changes, price fluctuations of ET credits, etc.) to key departments to support their knowledge bases. With WWF the bank has other initiatives to raise employee awareness of environmental issues through the sharing of scientific studies, video clips, etc. Since 2009 the bank has further developed training modules on environmental matters such as courses on legislative updates, audits, etc. For the bank's finance specialists and credit-risk officers who manage transactions with climate-change risks, specific training on the Equator Principles is provided. **Studies and scientific contribution** The bank began a pilot project in 2011 (UniCredit's "Carbon Model") to understand the correlation between expected GHG emissions constraints and the bank clients' cash flows.
DZ Bank	**External knowledge transfer** DZ Bank's officers regularly give speeches, raise awareness of the bank's sustainability initiatives, and interact with other stakeholders at events such as the TBL Investing conference in London and the summer academy of the German Foundation for the Environment.[145] Other events include DZ Bank's annual Investment Dialog and participation in the non-financials committee of the Society of Investment Professionals in Germany.[146] **Internal knowledge transfer** The bank offers SRI seminars for its divisions involved in lending. Attendees then spread this knowledge throughout their departments, acting as multipliers. Also, information about the bank's sustainability approach and its measures are regularly communicated via e-mail and internet-based magazines.
Allianz	**External knowledge transfer & studies and scientific contribution**

[145] Original: *Deutsche Bundesstiftung Umwelt (DBU)*
[146] Original: *Deutsche Vereinigung für Finanzanalyse und Asset Management GmbH*

Bank	Radars
	Allianz contributes to climate-change research and science through partnerships with external experts and NGOs such as WWF. A partnership with the latter produced the study Major Tipping Points in the Earth's Climate System and Consequences for the Insurance Sector, which influenced Allianz's Reinsurance Catastrophe Management unit. Another project that involved WWF also included other external experts focused on surface water flooding resulting from extreme rainfall in Italy. Allianz performs ongoing investigations concerning the insurability, technical feasibility, and overall risk profiles of renewable-energy projects and clean-energy initiatives that are still under development. **Internal knowledge transfer** Allianz developed a corporate climate-change awareness campaign which was implemented throughout the company's units. The goal was to establish climate change as a critical issue for the entire group of companies. Allianz also has a team of experts called the Global Issues Forum which systematically monitors medium and long-term climate-change risk developments.

(Sources: Allianz, 2011a; Allianz, 2011b; Allianz, 2011c; Allianz, 2011d; Allianz-Annual Report, 2010; Allianz-Annual Report, 2011; Allianz-CDP, 2011; Allianz-CDP, 2006; Allianz-CSR, 2011; Allianz-Sustainable Development, 2010; Allianz/WWF, 2011; Commerzbank-CDP, 2011; Commerzbank-Jahresbericht, 2011; Commerzbank-Nachhaltigkeitsbericht, 2011; Deutsche Bank, 2011; Deutsche Bank-Annual Review, 2010; Deutsche Bank-CDP, 2011; Deutsche Bank-CSR, 2010; Deutsche Bank Investor Relations, 2010; DZ Bank, 2013b; DZ Bank, 2013c; DZ Bank-Jahresbericht, 2010; DZ Bank-Jahresbericht, 2011; DZ Bank-Sustainable Investments, 2011; DZ Bank-Sustainability Report, 2010; HypoVereinsbank, 2013; Prinz, A., 2011; UniCredit, 2010; UniCredit, 2011; UniCredit-Annual Report, 2010; UniCredit-CDP, 2011; UniCredit-Environmental Statement, 2009; UniCredit-Sustainability Report, 2010)

Table 76: Canadian banks' knowledge networks

Bank	Radars
BMO	**Internal knowledge transfer** The bank has Environmental Ambassadors (employee volunteers) to promote the bank's sustainability efforts on reducing the bank's GHG emissions. **Studies and scientific contribution** BMO supports the development of ISO 50001 (standard for energy management) by contributing staff to the Canadian Standards Association Technical Committee responsible for its development.

Bank	Radars
TD	**External knowledge transfer** The bank participates in external forums and maintains an "open-door" policy for on-going discussions related to climate-change and resource development with environmental groups and aboriginal peoples. The bank's divisions TD Securities and TD Asset Management have the same open-door policy with bank clients on climate-change mitigation, adaptation, and opportunities. TD helped the Ontario Securities Commission prepare a notice on environmental disclosure which was subsequently adopted by all Canadian securities regulators. The bank also ran a workshop for the Toronto Stock Exchange to teach its executives about issues of environmental and social disclosure for Canadian-listed companies. **Internal knowledge transfer** The bank promotes climate-change awareness throughout the bank and provides advisory services to all of TD's businesses and infrastructure groups. **Studies and scientific contribution** TD is a member of a research network called the Network for Business Sustainability which brings together industry and academic researchers. The network funds research and publishes reports such as Business Adaptation to Climate Change and Socially Conscious Consumers.
BNV	**External knowledge transfer** BNV Mexico sponsored the World Climate Change Summit in Cancun, Mexico. **Internal knowledge transfer** The Director of Environmental and Social Risk Management reports and updates the following units on the identification and management of climate-change risks and opportunities: (1) Canadian Corporate Banking, (2) International Corporate and Commercial Banking, and (3) Global Risk Management. Also, the bank's CSR Advisory Committee regularly reviews climate-change issues and integrates updates into the bank's overall strategy and reporting practices.
CIBC	**External knowledge transfer** The bank's ERM group performs ongoing reviews of GHG policy/ regulatory developments and attends external events. Relevant information is then used to update the Carbon Risk Management program. The ERM group also maintains a database of Canadian

Bank	Radars
	environmental consulting practices that meet the bank's standards when performing environmental-site assessments or other third-party investigations. Lastly, CIBC organises the annual Clean Energy Investor Conference involving companies from the hydroelectric, alternative fuel, geothermal, bio-energy, solar, and wind-power sectors. **Internal knowledge transfer** The bank's ERM group participates in training and information briefings on specific environmental topics (i.e. climate-change, brown-field finance, etc.). ERM then circulates relevant information internally (to specific stakeholders such as overseers of lending portfolios) as well as externally (to clients in affected sectors). **Studies and scientific contribution** Since 2004 CIBC has been publishing reports and presenting papers at workshops and conferences about integrating long-term climate-change issues into finance, investment, research, and advisory. The bank's Equity Research group published the first equity research study on the impacts of GHG regulation on Canada's oil and gas sector. Since then the bank has published other papers such as Carbon and the Forest Sector, and Carbon and the Rails. Other studies include investigations into the potential physical impacts of climate change in the Caribbean (where the bank operates CIBC FirstCaribbean International Bank) as well as quantitative climate-change risk analyses.
RBC	**External knowledge transfer** RBC contracted a third-party consultant to analyse credit-risk exposures of the bank's borrowers (in loan and investment portfolios) to climate-change risks and regulations. The bank also sponsored the Climate Prosperity Initiative. **Internal knowledge transfer** RBC developed an environmental e-learning module to teach global staff about climate-change science and to give updates on the bank's related initiatives. The bank also trains its staff from Capital Markets and Group Risk Management, as well its procurement staff on climate-change issues and bank policies to address them. Every two months the bank circulates an environmental e-newsletter (with climate-change content) to ~8.000 internal and external contacts. **Studies and scientific contribution** RBC works with several organisations to analyse climate-change topics. RBC published the report Primer on Energy Systems in

Bank	Radars
	Canada, with Pollution Probe, and wrote a report on greening the manufacturing sector with Canadian Manufacturers and Exporters. The bank also participated in an advisory group for a University of Waterloo study on the climate-change adaptation needs of Canadian industrial sectors.

(Sources: BMO, 2008; BMO, 2011a; BMO, 2011b; BMO-Annual Report, 2010; BMO-Annual Report, 2011; BMO-CDP, 2011; BMO-CSR, 2007; BMO-CSR, 2010; CIBC, 2011; CIBC-Annual Report, 2010; CIBC-CDP, 2011; CIBC-CSR, 2010; CIBC-CSR, 2011; RBC, 2011a; RBC, 2011b; RBC, 2011c; RBC-Annual Report, 2010; RBC-Annual Report, 2011; RBC Blueprint Progress Report, 2010; RBC Blueprint Progress Report, 2011; RBC-CDP, 2011; RBC-CSR, 2010; RBC Environmental Blueprint, 2011; BNV, 2010; BNV, 2011a; BNV, 2011b; BNV, 2011; BNV-Annual Report, 2010; BNV-Annual Report, 2011; BNV-CDP, 2011; TD, 2011a; TD, 2011b; TD-Annual Report, 2010; TD-Annual Report, 2011; TD-CDP, 2011; TD-CSR, 2010; TD-PRI Engagement Report, 2010; TD-Sustainability Investment Policy, 2010)

Just as banks do not fully rely on regulatory-based institutions for climate-change risk-management legitimacy, so too must banks implement their own studies to learn about extreme cases of climate-change risks. Nestle brings attention to research that shows how many climate-change studies have neglected catastrophic possibilities (2008). In their study of institutional "misfits," which are mismatches between environmental institutions (e.g. the Kyoto Protocol) and the biophysical systems they are designed to manage (e.g. the world's greenhouse effect), Galaz et al. propose solutions, two of which are relevant here:

1. early-warning systems and national-preparedness plans (Wilhite, 1996); and
2. scenario planning (Peterson et al., 2003) (both in Galaz et al., 2008, pp.150-151).

The common link among radar initiatives is their attempts—in different ways—to detect risks, to do so as early as possible, and continually. Below are samples from the banks' CDP reports and quotes from bank executives concerning the ongoing use of radars.

Table 77: Functions of radars with examples from the sample banks

Emphasis on radars as...	Examples
Tools for ongoing,	"*We continue to use the analytical tools that were developed in 2006*

Emphasis on radars as...	Examples
continual use	[...] *as a baseline for future analysis and assessment updates as new regulations are imposed*" (Own modification) (CIBC-CDP, 2011). "*Half my job deals with engagement with all kinds of stakeholders. The issues are not black and white at all. This is the case especially in areas where the government is not willing to step up regulations on the issues. There's considerable pressure from society*" (TD, personnel interview, 2011).
Tools for early risk detection	"*To adapt, the bi-annual Global Issues Forum is responsible for early recognition of large-scale developing risks and opportunities as well as for the assessment of long-term trends that may have a significant impact on the Group's risk profile*" (Allianz-CDP, 2011).
Tools for brand and reputation management	"*BNV meets regularly with relevant stakeholders, such as environmental NGOs, academics and lawyers with expertise in climate change to assist in protecting the reputation of the bank through dialogue and enhanced knowledge of the issues*" (BNV-CDP, 2011). "*We strive toward being a "knowledge company" and are committed to bring the message across to all of our stakeholders*" (Deutsche Bank-CSR, 2010).
Analyses of ET markets	"*Our current position is to monitor the evolution of cap and trade legislation, primarily in North America, and assess the opportunities for participation in new emission trading markets when there is more certainty*" (BMO-CDP, 2011).
Analyses of effects of regulatory scenarios	"*Allianz works together with local insurance associations, like the German equivalent, in assessing the potential effects of climate change on clients in Germany*" (Allianz-CDP, 2011). "*Carbon pricing scenarios are reviewed in considering how potential legislation in the U.S. and Canada may impact key sectors, and carbon stress testing has been performed on the Bank's power and utilities portfolio*" (BNV-CDP, 2011).
Analyses of other banks	"*This is done by* [...] *engaging stakeholders to further understand their perspective on the business impacts of climate change and benchmarking ourselves against best practice organizations to get a sense of what actions they are taking in this regard*" (Own modification) (Bank of Montreal-CDP, 2011).

Emphasis on radars as...	Examples
	"*In 2009 and 2010 we did a scan of what other banks were doing and talked to every stakeholder we could identify and developed a more prescriptive, descriptive environmental and social review process for large corporate clients*" (RBC, personnel interview, 2011).
Platforms for stakeholders	"*The Global Issues Forum ensures that Allianz can access information from a body of experts who systematically monitor medium- to long-term risk developments*" (Allianz-CDP, 2011).
Platforms for studies	"*Together with the Munich Climate Insurance Initiative, which Allianz is supporting, we investigate the creation of multi-peril insurance covers for the agricultural sectors in developing countries on a micro-insurance level*" (Allianz-CDP, 2011).

In their usage to continuously search for sources of legitimacy in the organisational field, radars engender isomorphism by reviewing institutions and stakeholders that already exist. Not all initiatives that banks undertake achieve objectification, and far fewer achieve sedimentation. Which institutions have a higher likelihood of reaching these institutionalisation phases are those perceived to bring more legitimacy to the bank. Part 6 of this chapter demonstrates this.

Busch's study (2006) emphasises the novelty of climate-change markets that are relevant to financial organisations, as well these markets' varieties of immature investment strategies and varied technological deployments. Busch advises that

> "*it is in participants' best interests to build national and global alliances and networks. These* [...] *provide essential information about the market and, therefore, contribute to generating the basis for best solutions, for their own, and for their clients' strategies*" (Own modification) (p.266).

Following the diffusion of institutions to secure regulatory legitimacy, the banks all diffuse risk-management institutions to support their climate-change market initiatives. Not all the banks in the samples disclose GHG emissions or are involved with the CDP; not all have carbon foot-print initiatives—but all of them attempt to penetrate climate-change financial markets.

The explanation for this is twofold: firstly, banks' radars pick up on the climate-change market initiatives of other banks, and the initial opinions resulting from the

theorisation processes is that these initiatives bring legitimacy. Secondly, profit—following regulatory legitimacy—is among the highest forms of legitimacy for private enterprises. Despite their minimal ROI to date, climate-change market initiatives are nonetheless expected to become profitable in the future. Profit is, by itself, the type of legitimacy that allows the world's five biggest multinationals (all oil companies: Chevron, Exxon Mobil, Petrobras, Petrochina, and Royal Dutch Shell) to also be, arguably, among the world's most influential organisations. In fact, profit is such a potential awarder of legitimacy that often the mere attempt to seize available profits, or even the attempt to penetrate a new business area deemed to grow (such as ET), both grant some degree of legitimacy, regardless of the results.

6.5 MARKET EFFECTS

This chapter's fifth part has six sections, not including this introductory section, which present the banks' market initiatives. Five categories of the banks' climate-change market initiatives are presented: (1) CPF (corporate-purpose financing), (2) SRI/ESG funds, (3) advisory services and investment banking, (4) ET and GHG-offsetting (a.k.a. ET origination), and (5) renewable-energy initiatives. The most significant category for the banks, concerning climate-change risk mitigation, is the first: CPF.[147] This chapter part's final section reviews the limitations implicit in acquiring legitimacy through such initiatives.

6.5.1 CORPORATE-PURPOSE FINANCING

[147] Although a sixth category could be presented that shows the banks' retail initiatives related to climate-change (i.e. mortgages, solar-power financing for residential units, etc.), and these initiatives do fortify the banks' reputations and help them gain legitimacy, these initiatives are not presented for several reasons. Firstly, retail initiatives have little to do with how banks diffuse climate-change risk-management institutions on a bank-wide level. Instead, these initiatives expand the banks' business offerings to retail clients who, for example, want better interest rates on their mortgages so they can add solar panels to their homes. Secondly, the data of the banks' retail initiatives is not as comparable as their data concerning ET, renewable-energy finance, etc. Retail initiatives are very well established in Germany and offered by a host of organisations other than major banks (such as by "green" banks [*Ökobanken*] and retail financial brokers [who also offer private retirement savings plans, insurance products, etc.]. In short, although retail initiatives do include climate-change issues (i.e. defined very broadly), they nonetheless fall outside this thesis' empirical and theoretical scope of climate-change risk-management institutional diffusion in banks.

CPF, particularly involving loans to LSEs, simultaneously carries the biggest climate-change risks and has little to do with climate-change markets directly. CPF is a traditional business activity of banks: it is their main type of lending. However, because these deals increasingly involve credit risks specifically related to climate change, it is prudent that any overview of banks' market initiatives related to climate change begin with CPF.

These loans are not for projects (e.g. to build a new mine) or project finance (e.g. to finance the purchase of new wind-turbines for a wind park); they are for the ongoing operations or expansions of existing companies and whatever those operations require to stay in business and remain profitable. This type of loan allows companies to use banks' money as, for example, operating lines of credit. An analogy is a credit card, although the sums are incomparably larger. This type of deal is the riskiest for banks in terms of climate-change risks, particularly because of the large sums of capital exposed to credit risks. If a company were expanding operations in the Canadian oil sands, for example, then pending federal climate-change legislation, or a proposed change in prices of offset credits (e.g. for compliance with the Alberta-Based Greenhouse Gas Reduction Program and Offset Credit System) could pose significant credit risks, i.e. that the company might not be able to repay the bank according to the terms of the loan.

These deals, also called syndicated loans, usually involve several banks each lending a portion of the desired amount to the borrowing company. A banker from CIBC shared:

> "*It's never one bank lending to the company. It's a syndicate: four or five banks participating in a deal. That's good risk management and that's how most large corporate loans happen. These are large sums of money—hundreds of millions of dollars*" (CIBC, personnel interview, 2011).

The climate-change dimension of these investments includes extra costs necessary for possible GHG-reduction technologies, the need to meet current or pending GHG regulations, and/or other related threats and opportunities (Busch, 2006, p.264). Due-diligence procedures help to pervasively uncover many issues requiring further consideration. From the German sample, a banker commented that:

> "*In a big financing deal it's always several banks that are involved, and usually at least one of them has signed the Equator Principles so there's no way that the company seeking money can escape this kind of requirement*" (DZ Bank, personnel interview, 2011).

In cases where the company has potential GHG liabilities or other unmitigated exposure to climate-change risks, the banks (more so in Canada, although also in Germany, as discussed in chapter 7) tend to work with the company to find solutions. An executive from BNV shared:

> "*There are always other banks requesting that the company gets a third-party review to check their policies and consider shaping-up, but it's usually some kind of process of working with the client as opposed to simply giving a 'yes' or 'no' to the deal*" (BNV, personnel interview, 2011).

Although this type of deal is not an initiative in a climate-change financial market, it is the main reason why banks diffuse their most significant climate-change risk-management institutions: those to mitigate reputation and credit-risks, as discussed in chapter 4.

6.5.2 SRI/ESG FUNDS COMPARISON

As mentioned previously, although sustainable investing is becoming increasingly mainstream, its volumes are still very small compared to the annual flows of capital on worldwide stock exchanges. The main form of sustainable investing is in funds (called SRI, ESG, TBL, or even "green" or "eco" funds[148]) that expose investors to climate-friendly technologies, clean-technology, renewable-energy developments, and so on.

Pratsch and Wermann from DZ Bank cite surveys from the European Sustainable Investment Forum (Eurosif) that show an almost doubling of sustainable financial investments in Europe from 2008 to 2010, i.e. from €2,7 EUR trillion to €5,0 EUR trillion (Pratsch and Wermann, 2011, p.2). Dierks et al. draw attention to other factors that motivate financial organisations to penetrate sustainable-investment markets:

[148] In German-speaking Europe: „*Ökofonds*"

"*The share prices of large companies are hardly affected by these types of funds; however, several large companies have special interests in climate-friendly investments. Climate-friendly investments can also play an important pioneering role for conventional capital markets in that these new investments can show how to best integrate climate risks and opportunities into financial products*" (Own translation) (Dierks et al., 2010, p. 7).[149]

Factors such as these echo Pierson's observation that institutional arrangements have multiple effects (Pierson, 2004, p.109). Effects such as organisational learning about the integration of climate-change risks and opportunities act as milestones that can help banks advance institutional diffusion and innovation in other areas. Noteworthy in the table below is that although four banks in each sample penetrated the SRI/ESG fund market, two of the Canadian initiatives were eventually discontinued.

Table 78: SRI/ESG fund offerings by banks of both samples[150]

German sample	Number of funds / Amount of €/$ under management
Deutsche Bank	Unknown / at least €2,8 EUR billion
Commerzbank	3 / unknown
DZ Bank (Group)	At least 9 / unknown
Allianz	Unknown / over €3,1 EUR billion

[149] Original: „*Die Aktienkurse von Großunternehmen werden durch diese Fonds kaum beeinflusst, gleichwohl haben diverse Großunternehmen ein besonderes Interesse an klimafreundlichen Investoren. Klimafreundliche Kapitalanlagen können darüber hinaus für den konventionellen Kapitalmarkt eine wichtige Vorreiterrolle spielen, indem sie aufzeigen, wie Klimachancen und -risiken am besten in Finanzprodukte integriert werden*."

[150] The sources for tables 78 – 82 are: Allianz, 2011a; Allianz, 2011b; Allianz, 2011c; Allianz, 2011d; Allianz-Annual Report, 2010; Allianz-Annual Report, 2011; Allianz-CDP, 2011; Allianz-CDP, 2006; Allianz-CSR, 2011; Allianz-Sustainable Development, 2010; Allianz/WWF, 2011; BMO, 2008; BMO, 2011a; BMO, 2011b; BMO-Annual Report, 2010; BMO-Annual Report, 2011; BMO-CDP, 2011; BMO-CSR, 2007; BMO-CSR, 2010; CIBC, 2011; CIBC-Annual Report, 2010; CIBC-CDP, 2011; CIBC-CSR, 2010; CIBC-CSR, 2011; Commerzbank-CDP, 2011; Commerzbank-Jahresbericht, 2011; Commerzbank-Nachhaltigkeitsbericht, 2011; Deutsche Bank, 2011; Deutsche Bank-Annual Review, 2010; Deutsche Bank-CDP, 2011; Deutsche Bank-CSR, 2010; Deutsche Bank Investor Relations, 2010; DZ Bank, 2013b; DZ Bank, 2013c; DZ Bank-Jahresbericht, 2010; DZ Bank-Jahresbericht, 2011; DZ Bank-Sustainable Investments, 2011; DZ Bank-Sustainability Report, 2010; HypoVereinsbank, 2013; Prinz, A., 2011; RBC, 2011a; RBC, 2011b; RBC, 2011c; RBC-Annual Report, 2010; RBC-Annual Report, 2011; RBC Blueprint Progress Report, 2010; RBC Blueprint Progress Report, 2011; RBC-CDP, 2011; RBC-CSR, 2010; RBC Environmental Blueprint, 2011; BNV, 2010; BNV, 2011a; BNV, 2011b; BNV, 2011; BNV-Annual Report, 2010; BNV-Annual Report, 2011; BNV-CDP, 2011; TD, 2011a; TD, 2011b; TD-Annual Report, 2010; TD-Annual Report, 2011; TD-CDP, 2011; TD-CSR, 2010; TD-PRI Engagement Report, 2010; TD-Sustainability Investment Policy, 2010; UniCredit, 2010; UniCredit, 2011; UniCredit-Annual Report, 2010; UniCredit-CDP, 2011; UniCredit-Environmental Statement, 2009; UniCredit-Sustainability Report, 2010.

Canadian sample	
BMO	2 / unknown
TD	1[151] / unknown
BNV	1[152] / unknown
RBC	7 / ~$900 CAD million

6.5.3 ADVISORY AND INVESTMENT BANKING

Advisory and investment banking in climate-change markets is still minimal in both samples. The next two categories of climate-change markets (ET/ET origination and renewable-energy investing) receive considerably more attention from the banks.

Table 79: Advisory/Investment-banking activities by banks of both samples

German sample	Advisory/Investment-banking activities
Deutsche Bank	Led the IPO for Tesla (electric-vehicle company); the bank also raises capital for environmental technology through private placements and bond issues for companies of all sizes
Commerzbank	Runs an advisory instrument "climate:coach" that advises SMEs concerning energy matters
Canadian sample	
BNV	Exclusive advisor to Enbridge Income Fund (which invests in wind-power projects)
CIBC	Led an IPO for a fund that exposed investors to ET credits

6.5.4 ET AND GHG-OFFSETTING

ET is the buying and selling of voluntary and/or mandatory ET credits; GHG-offsetting (a.k.a. ET origination) involves investing in GHG-reduction projects based on a voluntary project mechanism (e.g. a voluntary carbon standard) or one related to a mandatory ET scheme (e.g. the CDM) that can certify the projects' resulting ET credits. GHG-offsetting activities are used to create supplies of ET credits for different purposes.

[151] This fund was discontinued as of 2012/2013 due to a lack of investment and the bank's decision to mainstream ESG in investment decision-making. The fund had three target investor markets: Canadian retail customers, Canadian institutional investors, and US clients.
[152] Discontinued as of 2012/2013.

Banks use ET credits for bank clients who require them, or equally as common, for the banks themselves to "offset" their own GHG emissions, i.e. their carbon foot-prints.

Not all the banks are tempted into ET and GHG-offsetting, which are activities plagued with unmitigated risks. A banker from CIBC stated: "*Essentially we're waiting for a liquid market. When there's a liquid market, then we can start pushing towards new opportunities*" (CIBC, personnel interview, 2011). Another Canadian bank had an ET desk, but the volumes were discouraging: "*We had a desk based in Montreal but little is happening. When we set it up we had anticipated more, but not much is happening because there are no reliable rules or legislation*" (TD, personnel interview, 2011).

Without strong policy changes, the EU-ETS could soon be headed in a similar direction: the unanticipated low prices of ET credits stifle speculation and investment in the Kyoto-based project mechanisms and are leading banks—even the ones with the biggest ET desks (Barclays, Deutsche Bank, UBS, JPMorgan, Morgan Stanley, Nedbank, etc.)—out of the market (Pickard and Makan, 2013).

The time frames in The Stern Review, as well as those that underpin the UN-based institutions, focus on market-based mitigation measures until 2020, 2030, 2050, an even beyond, so it is highly unlikely that the banks had anticipated they would be shutting down their ET desks in 2012 and 2013. Regardless of how long the banks had expected their ET units to remain stable, the current conditions of these trading operations—many of which are undergoing processes of de-institutionalisation—show what Pierson described as the effects of short-term goals and foresight of institutional initiatives (Pierson, 2004, p.109).

Table 80: ET and GHG-offsetting activities by banks of both samples

German sample	ET and GHG-offsetting
Deutsche Bank	Participation in over 85 CDM and JI projects (producing ~215 million ET credits) will full ET trading
Commerzbank	Carbon Trade & Finance is a joint-venture (launched in 2006 with Gazprombank) with the primary focus of developing CDM and JI projects; the bank's commodities trading unit (under Corporate & Markets) has overseen the bank's ET team since 2008 when Commerzbank acquired Dresdner Bank's ET operation; the ET team provides climate-change risk-management solutions and ET credits for

	clients to manage their GHG-compliance costs
UniCredit	The bank's Carbon Solution Team runs "Customer Advisory & Trading" under the Corporate Treasury Sales department (called "Commodities & CO2") which offers full-service CO2-advisory for clients' liabilities, compliance issues, trading and hedging strategies, etc.
Allianz	Allianz Climate Solutions GmbH invests in CDM/voluntary GHG-reductions projects with the intention of using the ET credits to reduce the company's carbon foot-print
Canadian sample	
BMO	From 2006 to 2011 BMO invested $10 CAD million in a voluntary-based GHG emissions-offset fund ("Greening Canada Fund") which supports banks' commitments to carbon neutrality
TD	TD is one of the founding investors of the "Greening Canada Fund"
BNV	The bank's division Global Energy Solutions mitigates clients' exposures to energy prices by trading ET credits as well as structuring programs to meet clients' GHG-reductions goals; the Environmental Markets Group offers full-service ET and GHG-origination
RBC	The Capital Markets Emissions Trading desk trades on the EU-ETS, RGGI, and on other voluntary markets; Carbon Market Advisory Services advises the banks' biggest clients regarding anticipated regulatory scenarios

6.5.5 RENEWABLE-ENERGY INITIATIVES

The banks' investments and other initiatives concerning renewable-energy development are also similar in both samples despite their contrasting regulatory scenarios. Besides the fact that renewable-energy is considered, globally, to be a highly-legitimate business endeavour, another possible factor for the samples' likeness is their countries' highly similar energy mixes.

Table 81: Energy mixes of Germany and Canada

Energy type	Germany	Canada
Fossil fuels (including coal, lignite, natural gas/petroleum)	77,9%	70%
Nuclear power	10,8%	11%
Biomass (including wood)	8,2%	6%
Renewable	Water/wind/solar power 1,8%	Hydroelectric power 11%, other 1,5%
Other sources	1,8%	0%

Energy type	Germany	Canada

(Sources: based on BMWi, 2014; U.S. Energy Information Administration, 2009/2010; White, 2010, pp.16-17)

As in the previous tables of data showing the banks' market initiatives, the endeavours below show small differences between the country samples (e.g. slightly higher volumes for renewable-energy investments in Germany) and very little variation within both samples concerning the range of the banks' market initiatives (e.g. renewable-energy investments and advisory services for clients).

Table 82: Renewable-energy initiatives by banks of both samples

German sample	Renewable-energy market volume / initiatives
Deutsche Bank	Over €1,3 EUR billion (loans) / Deutsche Bank also financed and developed, in Europe, 21 wind parks, 10 solar parks, with others under construction.
Commerzbank	Over €4,4 EUR billion (loans) / Breakdown: wind energy (~60%), solar energy (~20%), and bioenergy and hydropower (~15%). The Centre of Competence for Renewable Energies is the bank's unit for financing renewable-energy development. Solarlight is a funding service from the bank to help SMEs finance solar-energy system installation.
UniCredit	Over €1,1 EUR billion (loans) / Breakdown: wind energy (81%), solar power (13%), biomass (3%), bio-fuels (2%), and hydroelectric power (1%). UniCredit MedioCredito Centrale has issued project finance loans to develop wind power (~700 megawatts) throughout Italy. UniCredit acquired equity in Desertec Industrial Initiative.
DZ Bank (Group)	Over €834 EUR million (loans) / Breakdown: wind power (€489 EUR million), biogas (€32 EUR million), biomass (€16 EUR million), and photovoltaics (€297 EUR million). The bank has six renewable-energy competence centers and offers development/classic loans, and project finance.
Allianz	Over €1 EUR billion (loans) / Allianz Capital Partners invests for Allianz and has developed over 30 wind and solar parks in Europe.
Canadian sample	
BMO	Over $4,5 CAD billion (raised for its clients) / Breakdown: wind, biomass, and hydro-electric projects. BMO Capital Markets' Power & Utility Group leads renewable-energy development. Also, Commercial Account Managers support clients (based on the Province of Ontario's Micro Feed-in-Tariff Program) for financing small-scale renewable-energy projects.

BNV	Over $1,1 CAD billion (loans) / Scotia Capital makes the investments.
CIBC	Over $1,5 CAD billion (arranged in public and private-equity financing) / Breakdown: hydroelectric, wind, biomass, and biogas. CIBC has an investment team focused on renewable-energy and clean-technology markets. Since 2009 CIBC has advised on the purchase/sale of over $20 CAD billion in assets for companies in renewable-energy sectors.
RBC	Over $1,6 CAD billion (loans) / Breakdown: wind power, biomass, solar, and hydroelectric. RBC Capital Markets also provides renewable-energy financing advisory through the group's Energy and Utility teams.

6.5.6 LIMITED LEGITIMACY

It was argued above that two reasons suggest why the banks have such similar attempts to penetrate climate-change markets: (1) radars pick up on these initiatives in the organisational field; and (2) profit—following regulatory legitimacy—is among the highest forms of legitimacy for private enterprises.

A deeper look into both motives, however, reveals that a more fitting theoretical explanation is required to clarify not only why banks undertake these initiatives in the first place, but why they do so in such similar ways.

Concerning the second premise—that profit and even its pursuit help businesses gain legitimacy—there is considerable evidence that suggests that the opportunity costs of these initiatives far outweigh the benefits. If the initiatives are ineffective (low, or no profits) and inefficient (require too much time, staff with specialised knowledge, external consultants, specialised third-party auditors, and extensive reporting requirements[153]), then opportunity costs rise (Begg, 2006). Companies implementing climate-change initiatives based on the Kyoto mechanisms, for example, not only run the risk of low profits, but also that these initiatives become cost-prohibitive (Begg, 2006; Malmborg, 2008; Wagner, 2008). From the viewpoints of the financial organisations, three reasons hinder Kyoto-based climate-change initiatives: (1) the market is too new, (2) a lack of rules, and (3) lax rules.

[153] Bubnienė's research on Lithuanian companies and their experiences with ET showed that "*positioning a company in the market, monitoring and reporting were among the most complex issues* [...]" (Own modification) (2008, p.261).

A general view shared by most bank executives interviewed is that these markets have yet to develop and will only do so when firmer rules are legislated. Allianz shared in its CDP response:

> "*although we see opportunities through the demand from our clients globally for products mitigating the effects of climate change, the overall share of business is still considered small and increasing client demand is expected to materialize only in the mid-to long term*" (Allianz-CDP, 2011).

A lack of rules is the second reason that explains the limited developments in climate-change markets. From the Canadian sample, BMO disclosed that "*To date there has been limited opportunities in North America as legislation is unclear and existing markets are very thin"* (BMO-CDP, 2011). A similar view was shared by a banker from Commerzbank: "*There's not much additional demand and there won't be unless the EU raises its targets*" (Commerzbank, personnel interview, 2011). Noteworthy is that most of the financial organisations understood that the price drops of ET credits in the EU-ETS are the effects of weak policies, and not the "natural" results of the market mechanisms (supply and demand) that those policies are supposed to harness. An executive from Allianz stated: "*The price drops of the EU-ETS have made the market barely sustainable. If these prices continue to be so low then these projects could likely go under because of the operational costs required*" (Allianz, personnel interview, 2011).

The third reason climate-change markets are small and unprofitable is that the rules are too lax. This affects the banks' willingness to further develop risk-management institutions specific for certain business initiatives. One example is the insurance giant, Allianz, which is also among the world's largest asset managers. The company estimated that a maximum of 5% of its portfolio of real-estate holdings (valued at ~€18,8 EUR billion) is required to comply with requirements for sustainable and energy-efficient properties (Allianz-CDP, 2011).

Another example from RBC addresses climate-change risks in CPF. The bank disclosed that:

> "*In a study conducted by a third-party consultant, three GHG pricing scenarios were used over two time periods on RBC's 100 biggest clients in 12 industry sectors. The results suggested that the bank's clients would continue to be*

profitable even when carbon is priced at $100/tonne and the impact on most companies will represent less than 5% loss of net income" (RBC-CDP, 2011).

What RBC learned from this part of its study was that GHG regulations—even when hypothetically implemented in an extreme way—would affect only 5% of the net profits of LSEs financed by the bank. From this perspective, climate-change risks driven by regulation-induced credit risk are still minimal.

Another point of consensus among the banks' understanding of regulatory-based credit risks was that affected companies would pass any extra costs (such as having to pay a fixed price per emitted tonne of carbon dioxide) onto stakeholders other than their financiers, the banks. Energy consumers, for example, would have higher energy costs, but the bank lending to the energy company that is generating those costs would not carry these burdens. A banker from RBC shared: "*Every cost in a company goes to customers, employees, or shareholders*" (RBC, personnel interview, 2011).

Based on these three hindrances to Kyoto-based climate-change initiatives, it appears that not only are the profits too small, but also the initiatives to generate those profits are too costly and too burdensome to award banks sufficient legitimacy concerning climate-change risk (and opportunity) management.

This notwithstanding, the first reason proposed to explain why the banks have such similar attempts to penetrate climate-change markets (i.e. because banks' radars pick up on these initiatives in the organisational field) can be explored further. Colombo and Delmastro emphasise that in cases of high uncertainty, organisations might prefer reputation or similar intangible results (2008). A banker from Commerzbank sums up the connection between climate-change credit-risk initiatives and intangible sources of legitimacy, such as reputation: "*Reputation issues show up when using "know-your-client" procedures. Emissions trading is probably the smallest of the bank's activities. But reputational issues are big in this small area*" (Commerzbank, personnel interview, 2011).

Like the limited possibilities of institutional diffusion based on the regulative pillar, banks also reach far beyond the "profit" source of legitimacy to be gained in climate-change markets. The banks engage and align with institutions and stakeholders they perceive to be legitimate, and they do so extensively. Meyer and Rowan argued that

the rationalisation of cultural rules and other elements based on the normative and cultural-cognitive pillars of institutions are pursued for their own sake by organisations (1977). Hasse and Krücken take this view even further, emphasising that such intangible sources of legitimacy can even help organisations survive:

> "*In extreme cases, an organisation in compliance with such expectations can survive even long after it should have ceased to exist according to the lenses of efficiency, economy, and rationality*" (Own translation) (Hasse and Krücken, 1999, p.40).[154]

6.6 INSTITUTIONAL AND STAKEHOLDER ALIGNMENT EFFECTS

This chapter's sixth part has two sections, not including this introductory section, which present the banks' alignments with extensive networks of stakeholders and institutions deemed to be (i.e. "theorised" to be) legitimate.

6.6.1 INDUSTRY MEMBERSHIPS, COLLECTIVE POLICIES, AND JOINT-VOLUNTARY INITIATIVES

The following tables present the banks' engagements and alignments with stakeholders and institutions concerning climate-change risk-management. The stakeholders and institutions presented are those introduced in chapter 3; references and descriptions of them are available in appendices 3-6.

The seven tables in this section comprise the banks' stakeholders and institutions with which the banks' maintain industry memberships, collective policies, and declarations that demonstrate a certain stance or position on climate-change issues. Stakeholders and institutions with which at least two banks maintained alignments are called "common stakeholders/institutions" in the tables. As established hitherto in this study, major banks undertake neither partnerships nor any form of association with stakeholders and/or institutions that, if the relationship were made public, could damage

[154] Original: „*Im Extremfall kann eine Organisation unter Beachtung solcher Erwartungen nämlich auch dann überleben, wenn dies unter Gesichtspunkten der Effizienz, Ökonomie, Rationalität längst nicht mehr gelingen würde.*"

the banks' reputations or legitimacy in any way. Instead, banks undertake partnerships and different forms of association with stakeholders and/or institutions that are not only marketable (and often made public in multiple mandatory and voluntary reporting initiatives by both the stakeholders and the banks themselves), but that also serve to raise the legitimacy of both the banks and the stakeholders and/or institutions. For these reasons, partnerships or forms of association with common stakeholders and/or institutions are particularly relevant because they show evidence of multiple banks' attempts to secure legitimacy with the same stakeholder/institution, i.e. despite the fact that these "common" stakeholders and institutions often have different features from one another. In fact, the common rationale behind all the banks' stakeholders and institutional alignments is legitimacy. In the words of Antes,

> "*The object of cognition cannot be formally defined by a single type of rationality—such as efficiency—but rather a measure must be found that is can encompass and accommodate the heterogeneity of allowed rationalities. This measure is legitimacy*" (2014, p.376).[155]

The stakeholders and institutions in the samples' organisational fields that have more banks seeking alignment with them are assumed to provide more legitimacy—regardless of which type of legitimacy—than those with fewer banks seeking alignment. An example from both samples is the CDP. The CDP had the participation of 9 of the 10 sample banks (4 banks from Germany, 5 from Canada), while the WBCSD had the involvement of only 1 bank. The WBCSD is one of the two partnership organisations that both created and still drives the evolution of the GHG Protocol, the most globally-recognised GHG calculation and transparency methodology upon which ISO 14064, multiple other global initiatives, and even the CDP itself are based. Although both the CDP and WBCSD are associated with each other, the banks strive to maintain relationships with the CDP because it brings more legitimacy than the WBCSD in several ways. The CDP is more broadly recognised; it has a clear boundary for determining association with it, i.e. a company either responds to the Annual Questionnaire or, like DZ Bank, maintains its status as a signatory; it provides functional value, i.e. the banks

[155] Original: *„Das Erkenntnisobjekt kann daher auch nicht durch einen (einzigen) Rationalitätstypen - z.B. Effizienz - formal definiert werden, vielmehr muss ein Maßstab gefunden werden, der die Heterogenität der erlaubten Rationalitäten aufzunehmen in der Lage ist. Dieser Maßstab ist die Legitimität."*

can request responses to the Questionnaire from clients wishing to borrow funds. Despite the WBCSD's strong global reputation, it delivers less legitimacy to partnership organisations than the CDP. Alongside the tables below, indicators of legitimacy pertaining to certain categories of stakeholders and institutions are also presented.

The first table shows the stakeholders and institutions with which the German banks maintain alignments. The second table presents the same information involving the Canadian banks. The third and fourth tables bring the findings of the first two tables together and shift the focus to common stakeholders and institutions. To add a level of detail, and to avoid double-counting, the third table presents only the alignments common to both samples, i.e. stakeholders and institutions with which at least one bank of each sample maintained alignment. The fourth table, on the other hand, draws attention to alignments that were maintained by at least two banks of the same sample. The fifth, sixth, and seventh tables bring the findings of the previous four tables together. Table 5 measures the degree of isomorphism of each sample of banks, specifically concerning the isomorphism implicit in their choices to align with stakeholders and institutions. Table 6 shows the choices by the banks of each sample to align with common stakeholders and institutions. The seventh table shows the total number of common stakeholders/institutions as a percentage of the total possible alignments for each sample. These findings support the claim of Meyer and Rowan that organisations which exist in highly-elaborated institutional environments—the major banks, in this case—gain the legitimacy and resources needed to survive when they become isomorphic with these environments (Meyer and Rowan, 1977, p.352).

While some alignments might function as extensions to the banks' knowledge networks or radars (both of which may contribute, albeit to varying degrees, to the banks' ERM systems), they do help the banks gain legitimacy and protect their reputations.

Table 83: Industry memberships, collective policies, voluntary declarations/studies present in the German banking sample[156]

	Allianz	Commerzbank	Deutsche Bank	DZ Bank	UniCredit
2°C Initiative of German Entrepreneurs	X				
VfU e.V.		X		X	
BMBF Klima-Forschungsgipfel	X				
CDP	X	X	X	X	
ClimateWise	X				
Enhanced Analytics Initiative	X				
Equator Principles				X	X
CFI	X				
B.A.U.M. e.V.		X			
German Government's Council for Sustainable Development	X				
GRI			X		
Global Roundtable on Climate Change	X				
Institutional Investors Group on Climate Change			X		
Investor Network on Climate Risk			X		
Kyoto Club					X
McKinsey Climate Change Policy Study for the USA			X		
Munich Climate Insurance	X				

[156] The sources for tables 83 – 96 are: Allianz, 2011a; Allianz, 2011b; Allianz, 2011c; Allianz, 2011d; Allianz-Annual Report, 2010; Allianz-Annual Report, 2011; Allianz-CDP, 2011; Allianz-CDP, 2006; Allianz-CSR, 2011; Allianz-Sustainable Development, 2010; Allianz/WWF, 2011; BMO, 2008; BMO, 2011a; BMO, 2011b; BMO-Annual Report, 2010; BMO-Annual Report, 2011; BMO-CDP, 2011; BMO-CSR, 2007; BMO-CSR, 2010; CIBC, 2011; CIBC-Annual Report, 2010; CIBC-CDP, 2011; CIBC-CSR, 2010; CIBC-CSR, 2011; Commerzbank-CDP, 2011; Commerzbank-Jahresbericht, 2011; Commerzbank-Nachhaltigkeitsbericht, 2011; Deutsche Bank, 2011; Deutsche Bank-Annual Review, 2010; Deutsche Bank-CDP, 2011; Deutsche Bank-CSR, 2010; Deutsche Bank Investor Relations, 2010; DZ Bank, 2013b; DZ Bank, 2013c; DZ Bank-Jahresbericht, 2010; DZ Bank-Jahresbericht, 2011; DZ Bank-Sustainable Investments, 2011; DZ Bank-Sustainability Report, 2010; HypoVereinsbank, 2013; Prinz, A., 2011; RBC, 2011a; RBC, 2011b; RBC, 2011c; RBC-Annual Report, 2010; RBC-Annual Report, 2011; RBC Blueprint Progress Report, 2010; RBC Blueprint Progress Report, 2011; RBC-CDP, 2011; RBC-CSR, 2010; RBC Environmental Blueprint, 2011; BNV, 2010; BNV, 2011a; BNV, 2011b; BNV, 2011; BNV-Annual Report, 2010; BNV-Annual Report, 2011; BNV-CDP, 2011; TD, 2011a; TD, 2011b; TD-Annual Report, 2010; TD-Annual Report, 2011; TD-CDP, 2011; TD-CSR, 2010; TD-PRI Engagement Report, 2010; TD-Sustainability Investment Policy, 2010; UniCredit, 2010; UniCredit, 2011; UniCredit-Annual Report, 2010; UniCredit-CDP, 2011; UniCredit-Environmental Statement, 2009; UniCredit-Sustainability Report, 2010.

	Allianz	Commerzbank	Deutsche Bank	DZ Bank	UniCredit
Initiative					
Multilateral business declaration: "Increasing Europe's climate ambition for the EU economy and jobs"					X
Project sponsorship of "Let's Clean Up the World"					X
Rhine-Main Environmental Forum		X			
Rhine-Main Office and Building Ecology Network		X			
Signatory to the Global Investor Statement on Climate Change	X				
Signatory to the Investor Statement on Catalyzing Investment in a Low-Carbon Economy	X				
Steering Group of the UK Government's Capital Markets Climate Initiative			X		
The Geneva Association	X				
Tokyo Declaration	X				
UN Finance Committee on Climate Change Finance			X		
UN Global Compact	X	X	X	X	X
UN-PRI			X	X	
UNEP FI	X		X		X
WBCSD			X		
World Economic Forum			X		
WWF (global partnership)	X				
Total: 33	**16**	**6**	**12**	**5**	**6**

Table 84: Industry memberships, collective policies, voluntary declarations/studies present in the Canadian banking sample

	BMO	TD	CIBC	BNV	RBC
Business Charter for Sustainable Development			X		
Canadian Banker's Association: Environmental Issues Specialists Group		X	X	X	
Canadian Business for Social	X				

	BMO	TD	CIBC	BNV	RBC
Responsibility					
Canadian Climate Change Adaptation Project				**X**	
CDP	**X**	**X**	**X**	**X**	**X**
Consumers Council of Canada				**X**	
Canadian Coalition for Good Governance	**X**				
Canadian Green Building Council					**X**
Climate Prosperity Initiative					**X**
Conference Board of Canada's Business Council for Sustainability					**X**
Conference Board of Canada's Council on Climate Change Adaptation				**X**	
Environmental Banker's Association	**X**	**X**	**X**		**X**
Equator Principles	**X**	**X**	**X**	**X**	**X**
EXCEL Partnership					**X**
Montreal Climate Exchange		**X**			
Signatory to the Copenhagen and Cancun Communiques				**X**	
Sustainable Development Technology Canada					**X**
UN Global Compact				**X**	
UN-PRI		**X**			
UNEP FI	**X**	**X**	**X**	**X**	**X**
Total: 20	**6**	**7**	**6**	**9**	**9**

The following table presents the numbers of banks in each sample that engaged and aligned with a specific stakeholder or institution. An example for the first stakeholder, the CDP, is: Germany (from the German sample, 4 banks completed CDP responses to its Annual Questionnaire); Canada (5 banks completed responses); total (9 banks from both samples).

Several points about the following table are noteworthy. The stakeholders and institutions that were present in both samples had common features that suggest they brought more legitimacy than the stakeholders and institutions that had either alignments with German banks, or with Canadian banks (but not both). The characteristics of the alignments in the table below are:

1. an international scope with a high degree of visibility, manifested in some cases by, e.g. the use of the stakeholder's/institution's logo on the bank's website, in a CSR report, or in a press release (as contrasted with alignments with a lower

degree of visibility, such as a bank's status as a Signatory to the Global Investor Statement on Climate Change);

2. specifically targeting financial organisations (as opposed to initiatives such as the joint-business declaration: "Increasing Europe's climate ambition for the EU economy and jobs," which is not industry-specific); and
3. considerable reach as a major organisation or initiative, such as the Equator Principles (as opposed to smaller ones such as B.A.U.M. e.V.).

Table 85: Industry memberships, collective policies, voluntary declarations/studies present in both samples

Common stakeholder/institution	Germany	Canada	Total
CDP	**4**	**5**	**9**
Equator Principles	**2**	**5**	**7**
UN Global Compact	**5**	**1**	**6**
UN-PRI	**2**	**1**	**3**
UNEP FI	**3**	**5**	**8**
Total: 5	**16**	**17**	**33**

Like the previous table, the following one presents alignments maintained by at least two banks of the same sample. These alignments also have certain features that point to higher legitimacy, such as:

1. a national scope with a high degree of visibility (as opposed to a focus on one state or region of the country, such as the German industry association, the Rhine-Main Environmental Forum[157]);
2. specifically targeting financial organisations (as opposed to alignments with organisations with generic industrial scopes, such as the Canadian Coalition for Good Governance); and
3. a focus on specific topics, but not overly specific, such as "environmental finance" (as opposed to very narrow topics, such as voluntary ET with a particular Canadian ETS, such as the Montreal Climate Exchange).

[157] Original: *Umweltforum Rhein-Main e.V.*

Table 86: Industry memberships, collective policies, voluntary declarations/studies present in at least 2 banks of the same sample

Common stakeholder/institution	Germany	Canada
VfU e.V.	**2**	
Environmental Banker's Association		**4**
Environmental Issues Specialists Group of the Canadian Banker's Association		**3**
Total: 1 (Germany); 2 (Canada)	**2**	**7**

This section's three last tables present three views of the extent of isomorphism observable in each bank sample. From the left, the table below shows the total number of stakeholders and institutions present in each sample's organisational field. It is acknowledged that the total number is not exhaustive—other stakeholders and institutions do exist, i.e. those with which none of the banks engaged for institutional alignment because such an engagement would either be questionable or bring little legitimacy. However, any attempt to compile such a list would be guesswork based upon criteria with multiple assumptions. For this reason it is assumed that the "universe" of possible, legitimate alignments is the total number of stakeholders and institutions to which at least one bank of each sample maintained alignment.

The total number of stakeholders and institutions in each sample is then multiplied by the number of banks (i.e. 5) of each sample. Each bank in the German sample has 33 possible stakeholders and institutions to consider for alignment. Therefore the 5 banks of the German sample have a total of (33 x 5) 165 choices to be made. Next, of those 165 choices were 45 actual occurrences (based on the results presented above) where at least one German bank chose an alignment with a stakeholder or institution. The total of 45 occurrences, within 165 possible choices results in a stakeholder/institutional-alignment isomorphism rate for the German sample of 27,3%. The same data for the Canadian sample results in a rate of 37%.

Therefore, the institutional effects show a higher amount of stakeholder/institutional-alignment isomorphism in the Canadian sample, which has a weaker regulatory institutional environment.

Table 87: Isomorphism in the total number of choices of stakeholder/institutional alignments (i.e. in industry memberships, collective policies, voluntary declarations/studies)

Bank sample	(**a**) Total: possible alignments	(**b**) Total: banks in each sample	(**c**) Number of choices of alignments ([**a**] x [**b**])	(**d**) Occurrences of alignments (with stakeholders/ institutions)	% of isomorphic alignment in organisational field ([**d**]/[**c**])
Germany	33	5	165	45	27,3%
Canada	20	5	100	37	37%

Similar to the table above, the table below emphasises a different angle: not the total number of possible alignments, but rather the choices by the banks of each sample to align with common stakeholders and institutions. In the German sample, common stakeholders/institutions were aligned with 60% of time, while the same rate for the Canadian sample was 68,6%.

Table 88: Isomorphism among choices of stakeholder alignments with common stakeholders/institutions (i.e. in industry memberships, collective policies, voluntary declarations/studies)

Bank sample	(**a**) Total: common stakeholders/ institutions	(**b**) Total: banks in each sample	(**c**) Number of choices of alignments ([**a**] x [**b**])	(**d**) Occurrences of isomorphic alignments (with "common stakeholders/ institutions")	% of isomorphic alignment in organisational field ([**d**]/[**c**])
Germany	6	5	30	18	60%
Canada	7	5	35	24	68,6%

The final table below shows the total number of common stakeholders/institutions as a percentage of the total number of possible alignments for each sample. In the German sample, 18,1% of the stakeholders/institutions were common stakeholders/institutions; the Canadian number is 35%. In all three views (i.e. from tables 87, 88, and 89), the Canadian sample has more isomorphism.

Table 89: Isomorphism among stakeholder/institutional alignments (i.e. in industry memberships, collective policies, voluntary declarations/studies)

Bank sample	(**a**) Total: possible alignments	(**b**) Total: common stakeholders/ institutions	% of isomorphic alignment in organisational field ([**b**]/[**a**])
Germany	33	6	18,1%
Canada	20	7	35%

6.6.2 PRESENCE ON SUSTAINABILITY INDICES AND RATINGS BY THIRD-PARTY AGENCIES

Just as in the previous section, this section also presents tables with stakeholders and institutions from the banks' organisational fields concerning climate-change risk-management. The stakeholders and institutions presented are those introduced in chapter 3; references and descriptions of them are available in appendices 3-6.

The seven tables in this section comprise the ratings by third-party agencies and sustainability indices on which the banks are present or subscribed to. The first table shows these stakeholders and institutions, and which of the German banks are present on their rating platforms, rankings, and indices. The second table presents the same information involving the Canadian banks.

The third and fourth tables bring the findings of the first two tables together and shift the focus to common stakeholders and institutions. To add a level of detail, and to avoid double-counting, the third table presents only the alignments common to both samples, i.e. stakeholders and institutions with which at least one bank of each sample maintained alignment. The fourth table, on the other hand, draws attention to alignments that were maintained by at least two banks of the same sample. The fifth, sixth, and seventh tables bring the findings of the previous four tables together. Table 5 measures the degree of isomorphism in each sample of banks, specifically concerning the isomorphism implicit in their options of alignment with rating platforms, rankings, and indices. Table 6 shows the choices by the banks of each sample to align with common stakeholders and institutions. The seventh and final table shows the number of common

stakeholders and institutions as a percentage of the total number of rating platforms, rankings, and indices.

As in the previous section, the findings in the last three tables below (i.e. tables 94, 95, and 96) reinforce Meyer and Rowan's assertion that the banks gain the legitimacy and resources needed to survive when they become isomorphic with their institutional environments (Meyer and Rowan, 1977, p.352). These alignments function primarily as rankings or platforms upon which the banks can compare themselves to other banks (and other organisations) and identify which initiatives promote legitimacy, and which decrease it.

Table 90: Presence on sustainability indices and ratings by third-party agencies (German sample)

	Allianz	**Commerzbank**	**Deutsche Bank**	**DZ Bank**	**UniCredit**
ASPI Eurozone-Index		**X**	**X**		
Carbon Disclosure Leadership Index			**X**		
Ceres			**X**		
DJSI (3): DJSI EURO STOXX; DJSI STOXX; DJSI (World Indices)	**X**		**X**		
ECPI (2): Ethical EMU Equity; Ethical Euro Equity		**X**	**X**		**X**
FTSE4Good Index	**X**		**X**		**X**
Imug				**X**	
Oekom	**X**		**X**	**X**	**X**
Sustainaltyics			**X**		
Total: 9	**3**	**2**	**8**	**2**	**3**

Table 91: Presence on sustainability indices and ratings by third-party agencies (Canadian sample)

	BMO	**TD**	**CIBC**	**BNV**	**RBC**
DJSI: DJSI North American Indices	**X**		**X**	**X**	**X**
Ethical Funds Company			**X**	**X**	**X**
FTSE4Good Index	**X**		**X**	**X**	**X**
Jantzi Social Index	**X**	**X**	**X**	**X**	**X**
NASDAQ OMX CDR					**X**

	BMO	TD	CIBC	BNV	RBC
Real Assets Social Impact Balanced Fund				**X**	
RiskMetrics Group		**X**			
Vigeo		**X**			
Total: 8	**3**	**3**	**4**	**5**	**5**

The following table shows the number of banks, in each sample, that is present on a given stakeholder's/institution's rating platforms, rankings, and indices. An example for the table's first institution, the DJSIs (collectively), is: Germany (2 banks present); Canada (4 banks); Total (6 banks from both samples).

The stakeholders and institutions with the presence of banks from both samples had common characteristics that suggest how they provide more legitimacy than the other initiatives in the two tables above. These characteristics were:

1. an international focus (as opposed to those with a national focus, such as a bank's involvement with ASPI Eurozone-Index [focus on Europe] or Imug [available only in German]); and
2. a reliance on globally-recognised best-practice CSR/SRI/ESG standards (such as the DJSI and FTSE4Good indices).

Table 92: Presence on sustainability indices and ratings by third-party agencies (appearing in both samples)

Common stakeholder/institution	Germany	Canada	Total
DJSIs	**2**	**4**	**6**
FTSE4Good Index	**3**	**4**	**7**
Total: 2	**5**	**8**	**13**

Similar to the previous table, the following one presents stakeholders and institutions with which at least two banks of the same sample are involved. Unlike the stakeholders and institutions in the table below, those with the involvement of only one bank (e.g. Imug, Real Assets Social Impact Balanced Fund) tend to be smaller than those below which have bigger market scopes and a stronger, industry-wide market presence (e.g. Jantzi Social Index, Ethical Euro Equity). These factors suggest that these stakeholders and institutions have a higher degree of visibility and represent bigger brand names—both characteristic of more legitimacy.

Table 93: Presence on sustainability indices and ratings by third-party agencies (appearing in at least 2 banks of the same sample)

Common stakeholder/institution	Germany	Canada
ASPI Eurozone-Index	**2**	
DJSI (3): DJSI EURO STOXX; DJSI STOXX; DJSI (World Indices)	**2**	
DJSI: DJSI North American Indices		**4**
ECPI (2): Ethical EMU Equity; Ethical Euro Equity	**3**	
Ethical Funds Company		**3**
Jantzi Social Index		**5**
Oekom	**4**	
Total: 4 (Germany); 3 (Canada)	**11**	**12**

This section's final three tables show the extent of isomorphism observable in each bank sample. It uses the same calculations as in tables 87, 88, and 89 in the previous section.

From the left, table 94 shows the total number of stakeholders and institutions present in each sample's organisational field. The total number of stakeholders and institutions is then multiplied by the number of banks in each sample. Each bank, for example, in the Canadian sample has 8 possible alignments. Therefore, the 5 banks of the Canadian sample have a total of (8 x 5) 40 choices to be made. Next, of those 40 choices were 20 actual occurrences where at least one Canadian bank chose to align itself with a stakeholder/institution. A total of 20 occurrences within 40 possible choices results in a stakeholder/institutional-alignment isomorphism rate for the Canadian sample of 50%. The same data for the German sample results in a rate of 40%. Just as the tendency observed in the previous section, so too is there less stakeholder/institutional-alignment isomorphism in the German sample, which also operates in a stronger regulatory institutional environment.

Table 94: Isomorphism in the total number of choices of sustainability indices and ratings by third-party agencies

Bank sample	(**a**) Total: possible alignments	(**b**) Total: banks in each sample	(**c**) Number of choices of alignments ([**a**] x [**b**])	(**d**) Occurrences of alignments (with stakeholders/ institutions)	% of isomorphic alignment in organisational field ([**d**]/[**c**])
Germany	9	5	45	18	40%
Canada	8	5	40	20	50%

The table below emphasises not the total numbers of options for alignment, but rather the percentages of alignments by the banks of each sample with common stakeholders and institutions. In the German sample, 53,3% of the alignments were maintained with common stakeholders and institutions, while the same rate for the Canadian sample was 80%.

Table 95: Isomorphism among choices of "common" sustainability indices and ratings by third-party agencies

Bank sample	(**a**) Total: common stakeholders/ institutions	(**b**) Total: banks in each sample	(**c**) Number of choices of alignments ([**a**] x [**b**])	(**d**) Occurrences of isomorphic alignments (with "common stakeholders/ institutions")	% of isomorphic alignment in organisational field ([**d**]/[**c**])
Germany	6	5	30	16	53,3%
Canada	5	5	25	20	80%

The final table below shows the total number of common stakeholders/institutions as a percentage of the total number of possible alignments for each sample. In the German sample, the number is 66,6%; in the Canadian sample, 62,5%. In two of three views (i.e. from tables 94, 95, and 96), the Canadian sample has clearly more isomorphism shown by a higher tendency to seek alignments, and a higher concentration of alignments within the total number of common stakeholders/ institutions, as shown by the two preceding tables.

Table 96: Isomorphism among stakeholder/institutional alignments (i.e. regarding sustainability indices and ratings by third-party agencies)

Bank sample	(**a**) Total: possible alignments	(**b**) Total: common stakeholders/ institutions	% of isomorphic alignment in organisational field ([**b**]/[**a**])
Germany	9	6	66,6%
Canada	8	5	62,5%

6.7 BOTTOM-UP LEGITIMACY: DANGERS OF OBJECTIFICATION AND SEDIMENTATION

This section examines four dangers of both bottom-up diffusion and the banks' prioritisation of diffusing institutions with high legitimacy. These dangers highlight the fact that institutional arrangements often have unintended effects and reflect short-term goals or foresight (Pierson, 2004, pp.109, 112). These effects could eventually work to the detriment of climate-change risk-management institutions' legitimacy. The four dangers are:

1. banks risk continually spreading existing institutions based on their legitimacy, not necessarily based on their effectiveness or efficiency;
2. radars limit the inputs banks receive to existing sources of information in an organisational field;
3. the assumption that stakeholders and institutions deemed legitimate are actually appropriate and therefore do not need to be continually questioned further because of their persistence in the organisational field;
4. the persistence and spread of institutional structures that are deemed appropriate and a reduction in both the number, and the legitimacy of those deemed less appropriate, regardless of levels of effectiveness and efficiency.

Isomorphism acts as a constraining process that influences, in this case, the banks' institutions to resemble one another (Hawley, 1968). Several researchers have drawn attention to the vicious cycle this can create when so-called best-practices, or institutions that are deemed highly legitimate, become status quo and can risk obscuring organisations' abilities to recognise changes in their organisational fields (Berger and

Luckmann, 1967; Meyer and Rowan, 1977; Scott, 2008; Staw et al., 1981). As discussed earlier, when normative or cultural-cognitive institutional alignments become self-evident, organisations tend to diffuse these institutions automatically, i.e. with minimal or no process of theorisation.

In pre-institutionalisation, banks diffuse rules and regulatory standards in a top-down manner in order to secure regulatory legitimacy. The next step is bottom-up diffusion, which banks perform by using their radars as a package of initiatives with the primary aim of gaining information to begin processes of theorisation. This is where the problems inherent in bottom-up diffusion begin: radars engender isomorphism by their focus on other stakeholders and institutions in the organisational field. Banks theorise with this information and give priority to institutions, market initiatives, and stakeholder alignments that have high degrees of legitimacy. There are advantages to reviewing other actors and their initiatives in the same organisational field: banks, for example, share best-practice management programmes which can increase stability in the financial sector. Two examples from the Canadian sample are:

> *"Another objective of the Corporate Responsibility and Sustainability group's monitoring activities is the benchmarking of BMO against the best practices of other organizations*" (BMO-CDP, 2011); and
>
> "*The CSR and Environmental Affairs area assist in setting the overall strategic direction on climate change issues, benchmark the bank's performance against its peers and disseminate best practices internally*" (BNV-CDP, 2011).

There disadvantages as well. The first danger is that banks determine how they will institutionalise largely based on the feedback gained from their radars. The result is a continued spread of existing institutions and stakeholder relationships based on their legitimacy, not necessarily based on their effectiveness or efficiency. Concerning climate-change institutions, these initiatives are generally acknowledged by the banks themselves to be both minimalistic and based on a generalised wait-and-see paradigm.

The second danger is that radars produce isomorphism of existing radars and knowledge networks. This means the inputs the banks receive from their radars for their theorisation processes are limited to the development of existing sources of information. In the general course of business there is little escape from a given paradigm and

insufficient room for lateral thinking. When such paradigms persist unchecked—with the same, limited inputs of information to challenge them—routine and ritual eventually take precedence over purpose: function begins to follow form.

In conjunction with the issue of limited inputs is the problem of repetition. When organisations theorise and move towards objectification, their "*impetus for diffusion shifts from simple imitation to a more normative base*" (Tolbert and Zucker, 1996, p.183). Radars continually feed their organisations the same (or similar) sources of evidence showing the legitimacy of certain organisational practices. Over time, normative institutions that were once contested can become continually reinforced with approval. This continual reinforcement feeds these institutions' cultural-cognitive pillars with positive views of their legitimacy that become taken for granted (Scott, 2008, p.51). In this way, institutions and organisational practices become less and less subject to critical attempts at theorisation and are instead taken "off the shelf" and simply diffused (Meyer and Rowan, 1977, p.345). This is where continued objectification leads to sedimentation. In the phase of sedimentation, the legitimacy of these same institutions is self-evident to bank executives. As argued in chapter 5, executives or organisations that oppose these beliefs sacrifice their own legitimacy by doing so. Participation remains voluntary (i.e. it is not mandated), but it can come at the price of reputation, which is not something banks put at risk. The 2011 CDP Canada 200 Report put forward a ratio to illustrate the relationship between perceived legitimacy and monetary value:

> "*A 1% decrease in brand value of the company due to unfavourable evaluations from investment organizations and/or NGOs, caused by an insufficient climate change response is equivalent to losing about US$200 million*" (p.14).

The third danger of bottom-up diffusion is the assumption that the institutions deemed legitimate are actually appropriate. Scott writes:

> "*Not only is our overall conception of an instrumental organisation based on a cultural model, but many of the components comprising any given organisation are not locally designed to produce efficiency in a specific context*" (Scott, 2008, p.151).

An example is the reliance by many organisations (including banks) on initiatives such as the CDP for activities far outside its scope. There is currently a myth in the

practice of CSR reporting that firms can be absolved of their uncertainties and challenges with climate-change issues by taking part in the CDP. As quoted in chapter 2, the senior advisor to the Secretary General of the UN Earth Summit in Rio de Janeiro and the original overseer of the CDP's global research (from 2002 to 2008) states concerning the CDP's scope that "*as a risk-assessment exercise, disclosure means positive little*" (Kiernan, 2007).

The fourth danger of the vicious cycle inherent in bottom-up diffusion is how institutions are determined to be legitimate. Institutional structures often persist because they are deemed appropriate by "*entrenched authorities*" despite the fact that their legitimacy is often still challenged by "*less powerful constituencies*" (Scott, 2008, p.60). However, in later stages of objectification and sedimentation, the "less powerful constituencies" Scott refers to not only shrink in number, but also their legitimacy is reduced. This further facilitates the spread of whichever institutions are deemed legitimate, regardless of their levels of effectiveness and efficiency.

As for the "entrenched authorities" Scott refers to, they have an interest in their (or their associated) institutions' spreading to other organisations. As was argued in tables 83-96, Tolbert and Zucker also defend the idea that the prevalence of an organisational form is positively correlated with its legitimacy: higher presence in the organisational field means more legitimacy (1983). Meyer and Scott, on a different note, take an inverted, negative view of a similar correlation: they propose that an organisation's legitimacy "*is negatively affected by the number of different authorities sovereign over it and by the diversity or inconsistency of their accounts of how it is to function*" (1983, p.202). Although climate-change risk-management institutions have numerous authorities, standard-setters, institutional entrepreneurs, and other "legitimate" organisations as stakeholders, what they all have in common is that their institutional concepts and structures are consistently vague. This explains why climate-change institutions often have such differentiated requirements from one another, extensive overlap, and even contradiction. Synergies do exist: an example is the joint-issued documents from the CDP and GRI in order to support organisations' attempts to align with their different institutions (Global Reporting Initiative, 2011).

Isomorphism and sedimentation of less-optimal institutions in a multiplier (hub)

industry such as the financial sector could eventually slow down and even impede the world's response to mitigate climate change. The institutional effects of organisations that individually pursue their own benefits (such as building strong reputations) by aligning with climate-change stakeholders and institutions can result in a tragedy of the commons for the entire financial industry. Because of the four dangers reviewed above, the conformity to highly-legitimate climate-change risk-management stakeholders and institutions could eventually increase the financial industry's vulnerability to rising climate-change risks. The banks risk a form of organisational blindness resulting from their own efforts.

6.8 CONCLUSION

The second perspective of the three viewpoints of Scott's (2008) observation of a triple significance in analyses of institutional diffusion was summarised with the term "institutional effects." Because institutional effects are interpreted as milestones or waypoints in the ongoing process of institutionalisation, they do not need to be examined through the lenses of temporal significance or performance-based criteria. Empirical examples of institutional effects are risk-management institutional arrangements, plans, stakeholder/institutional alignments, organisational designs, and levels of market penetration.

Pierson (2004) stresses that institutional arrangements often have multiple effects (intended and unintended) and often reflect short-term goals or foresight (pp.109, 112). These institutional effects occur largely as the result of bottom-up diffusion, an observable second step of institutional diffusion of climate-change risk-management institutions by major banks.

A revision of Tolbert and Zucker's model of institutionalisation (1996) showed that the banks' bottom-up diffusion of climate-change risk-management institutions was strongly isomorphic in its focus on institutions related to the normative and cultural-cognitive pillars. Although isomorphism helps banks gain legitimacy and protect their reputations, it does not necessarily help them develop robust climate-change risk-management institutions that can be integrated into their ERM frameworks.

The model of institutionalisation used in this chapter evolved from Tolbert and Zucker's model in the following ways:

1. the institutionalisation phases and processes take on a new sequence and are continuous: they continue to influence institutionalisation regardless of the actual phase taking place;
2. top-down, bottom-up, and horizontal modes of diffusion are included in the model;
3. an inclusion of Scott's simplification of Tolbert and Zucker's first two phases of institutionalisation, which he calls "pre-institutionalisation processes" (Scott, 2008, p.126);
4. pre-institutionalisation is interpreted to include both top-down and bottom-up processes of diffusion;
5. pre-institutionalisation ends with theorisation, defined as actors' speculations as to whether institutional developments in specific organisational fields help actors gain, or cause them to lose legitimacy;
6. theorisation eventually reaches a preliminary conclusion—a "signal" or opinion—to either begin the institution's implementation or not to;
7. this "signal," when positive, begins the objectification process of "attempted implementation";
8. "attempted implementation" begins horizontal diffusion (discussed further in chapter 7);
9. objectification solidifies an initial (i.e. a "theorised") opinion and determines, through the process of institutional implementation, whether the institution is "diffusible" or "not-diffusible" in the organisation;
10. institutional diffusion is not only progressive, but it is also often never completed;
11. sedimentation begins when an objectified institution achieves status quo which then influences (ongoing) processes of theorisation (to different degrees) and "attempted implementation" in the following ways: theorisation will tend to automatically approve the institution in question, and the process of "attempted implementation" will more often result in successful cases of diffusion. Bottom-up diffusion makes use of pro-active measures that take many forms (e.g.

studies, knowledge networks) referred to here as "radars." Radars can be grouped into three groups of initiatives: (1) external knowledge transfer, (2) internal knowledge transfer, and (3) studies and scientific contribution. The data from the bank samples showed eight main functions of radars:

1. tools for ongoing, continual use;
2. tools for early-risk detection;
3. tools for brand and reputation management;
4. analyses of ET markets;
5. analyses of (expected) effects of regulatory scenarios;
6. analyses of other banks;
7. platforms to engage stakeholders;
8. platforms to perform studies.

By their nature, radars engender isomorphism by reviewing institutions and stakeholders that already exist. The first and most apparent way banks benchmark against one another is in their market initiatives. The empirical data showed five main categories of highly isomorphic climate-change market initiatives in both samples: (1) CPF, (2) SRI/ESG funds, (3) advisory services and investment banking, (4) ET and GHG-offsetting, and (5) renewable-energy initiatives. Despite the possible exception of renewable-energy investing, these efforts to penetrate the new markets are of little significance when it comes to ROI. In fact, many of the initiatives (especially those directly related to the Kyoto Protocol) are as burdensome as they are beneficial, especially considering their high opportunity costs (Begg, 2006; Malmborg, 2008; Wagner, 2008).

Nonetheless, these initiatives bring the banks increased legitimacy and reputational benefits, especially because they create a need for extensive stakeholder and institutional engagement in the organisational field. The financial organisations do not simply align their institutions with as many stakeholders and institutions as possible; instead, they engage stakeholders and institutions with characteristics that suggest higher legitimacy. Some examples are stakeholders and institutions with:

1. high degrees of visibility;
2. national and international scopes;

3. designs that facilitate alignments specifically with financial organisations;
4. considerable reach as major organisations or initiatives;
5. reliance on globally-recognised CSR/SRI/ESG standards;
6. focus on specific topics related to environmental issues.

There was considerable isomorphism among the alignments with stakeholders and institutions in both samples, but clearly more in all instances of the Canadian sample of banks (which operate in a weaker climate-change regulatory environment).

This chapter's presentation of its main findings finished with a critical view of bottom-up diffusion. The isomorphism engendered by bottom-up diffusion brings specific problems that affect all actors in an organisational field. These issues primarily stem from the constraints of isomorphism that push organisations into a vicious cycle whereby their institutions reinforce their own legitimacy and therefore risk persisting often longer than they should. This can happen in four main ways.

Firstly, banks depend on their radars to highlight legitimate opportunities to institutionalise based on the institutions'/stakeholders' legitimacy and not necessarily on their effectiveness or efficiency. Secondly, radars focus on legitimate initiatives in the organisational field, which includes radars and the maintenance of specific knowledge networks. This restricts the available sources of information that can challenge the legitimacy detected by the radars and their findings. Thirdly, the focus on highly-legitimate initiatives leaves the banks susceptible to taking certain paradigms and views for granted, instead of continually questioning them. The result is a near-automatic diffusion of institutions that are taken "off the shelf" (Meyer and Rowan, 1977, p.345). Lastly, the spread of legitimate institutions and stakeholders implies the reduction of those deemed less legitimate, regardless of their levels of effectiveness and efficiency in serving their purposes. Isomorphism and sedimentation of less-than-optimal institutions and stakeholders in a multiplier (hub) industry such as the financial sector can slow down and even impede the world's response to mitigate climate change.

CHAPTER 7: INSTITUTIONAL ROOTS

7.1 INTRODUCTION

This chapter examines the third viewpoint of the three paradigms from Scott's observation of a "triple significance" in analyses of institutional diffusion. The theoretical analysis of this chapter extends those of the previous two chapters.

The focus here is on the viewpoint that institutional diffusion changes institutions convergently, i.e. existing patterns reinforce or challenge the spread of new institutions (Scott, 2008, pp.132-3). This viewpoint is referred to as institutional "roots." This term is the base concept for this chapter's theoretical arguments to explain the ways (the "what," "how," and "why") in which climate-change risk-management institutions are diffused by banks.

This viewpoint focuses on the roots or "background institutions" that affect cases of institutional diffusion. Pre-existing institutions that exist in an organisation (or in an organisational field) prior to the diffusion of new institutions can be understood to influence diffusion in a particular way: "horizontally." Horizontal diffusion is argued here to be not only a mode of diffusion, but an observable third step of institutional diffusion of climate-change risk-management institutions by Annex-2, G8 nations' major banks.

Of DiMaggio and Powell's three mechanisms of institutional diffusion (coercive, mimetic, and normative), the two latter mechanisms play more significant roles in this chapter. Their functions overlap between the isomorphic constraints of mimetic diffusion, and the social obligations and adherence to moral suasion of normative mechanisms (DiMaggio and Powell, 1983; Scott, 2008, pp.132-135). These mechanisms are all present (to different degrees) among the background institutions that exist in the banks' cases of institutional diffusion. Unlike the last chapter, which encompassed major institutional **effects** that are observable in the banks' cases of institutionalisation (except for the institutional effects of carbon foot-printing and asset-management initiatives, which are discussed below), this chapter limits its analysis to two major, pre-existing, background institutional **forces** that influence horizontal diffusion in all of the sample

banks' cases of institutionalisation: (1) the need for institutions with turn-key/quantitative approaches and (2) each country's unique environmental culture.

The central argument of this chapter is that although there are many institutions available to be diffused by the banks, a major determining factor for **which institutions actually undergo diffusion is the function of agency, i.e. a power-play implicit in the horizontal mode of institutional diffusion. This power-play, between pre-existing institutions and new ones, favours legitimacy achieved through isomorphism**. There is a significant need for institutional diffusion (such as the development of more technical means to screen asset portfolios for climate-change risks) which is neglected in favour of GHG-offsetting activities and other initiatives that engender the institutional effects presented in the last chapter (such as the penetration of climate-change markets and the development of extensive stakeholder networks).

This chapter has six parts, including this introduction. The chapter's second part explains what is meant by institutional "roots." The third part introduces the concept of horizontal diffusion, discusses how it relates to institutional roots, and brings attention to its use and limitations in diffusing climate-change risk-management institutions. The chapter's fourth part has seven sections that present two categories of institutional roots (along with examples from both countries) that influence all the sample banks' cases of institutionalisation. The chapter's fifth part takes a more critical view of horizontal diffusion and shows how organisations' implicit focus on legitimacy can hinder the development and diffusion of more important institutions, such as technical processes to screen for (and eventually filter out, or hedge against) climate-change risks in asset portfolios. The chapter's sixth and final part concludes the chapter by highlighting its main points.

7.2 INSTITUTIONAL DIFFUSION PARADIGM: ROOTS

The term "institutional roots" designates a specific way of understanding the third viewpoint of Scott's observation of a triple significance in analyses of institutional diffusion. Scott writes,

> "*the spread of a new form or practice is also an instance of institutional change—but change of a particular kind. It is convergent change: change that reinforces and diffuses existing patterns*" (2008, p.133).

Just as with Scott's definitions of institutional strength and effects, he specifies two factors to consider when analysing cases of convergent change: (1) reinforcement and (2) existing patterns (Scott, 2008, p.133). Research by Grief also emphasises the driving ideas behind both of these indicators: "*Beliefs, norms, and organisations inherited from the past will constitute part of the initial conditions in the processes leading to new institutions*" (2006, p.17).

While the notion that institutions resist change is established in the literature (e.g. Giddens, 1984; Jepperson, 1991), authors such as Zucker emphasise that existing institutions tend to be maintained (1977). The difference between institutions **being maintained** and institutions **resisting change** is subtle, yet noteworthy. For a bank to maintain an institution, the bank simply has to recognise it and continue its application in whichever pillars the institution predominantly exists. An example of maintaining an institution in the normative pillar is to continue to acknowledge an institution in decision-making processes, such as banks' annual reviews of the integration of environmental policies (which are not mandatory to begin with) into bank-wide management structures. There is no reason to stop performing an annual review of the progress and integration of such policies into the bank-wide management structures. Therefore the institution (e.g. the environmental policies) remains connected to, and kept "alive" by its stakeholders (e.g. the bank's board): it is maintained.

Resisting change, on the other hand, means the institution is forcibly maintained, often for its own sake. As shared in chapter 6, cases of resisting change can occur when institutions that are currently in the objectification phase of the institutionalisation process and moving into sedimentation (i.e. their spread—through isomorphism—in the organisational field) eventually become over-infused with legitimacy. The original institutions—now over-esteemed—are not only maintained but resist change to the point where their functions can begin to conform to their forms, instead of vice-versa. An example is how the banks maintain ET desks and extensive carbon foot-printing initiatives despite their low (and often even negative) ROI: the logical course of action—

from a purely economic perspective—would be to end those initiatives. As discussed in chapter 6, the views of Meyer and Rowan (1977) and Hasse and Krücken (1999) both emphasise the striving for legitimacy as the main driver behind this type of institutional evolution. This helps explain why, for example, major banks maintain ET and GHG-offsetting market offerings that require extensive resources (time, staff with specialised knowledge, reporting requirements, external verification, etc.) and, in many cases, incur direct opportunity costs to the point of being cost-prohibitive (Begg, 2006; Malmborg, 2008; Wagner, 2008). The concept of horizontal diffusion proposes reasons for how and why this happens.

7.3 HORIZONTAL DIFFUSION

This chapter's third part explains the concept of horizontal diffusion, discusses how it relates to institutional roots, and focusses on its use and limitations in diffusing climate-change risk-management institutions.

The revised model of institutionalisation presented in the last chapter showed the horizontal process of institutional diffusion beginning in the phase of objectification, continuing in sedimentation, and following sedimentation, continuing indefinitely throughout the (renewed and continual) phases of what can be called "second-cycle" pre-institutionalisation and objectification. The relevant parts of the model are shown below.

Table 97: Model of diffusion based on institutionalisation, without pre-institutionalisation

Phase	Linking processes	Step and mode of diffusion
Theorisation (i.e. opinion-forming)		
Objectification	⇩ Development of social consensus; "attempted implementation" ⇩	(2nd) Bottom-up; (3rd) Horizontal
Achievement of status quo		

Sedimentation	Spread of the institution to other actors in the organisational field	(3rd) Horizontal
⇩ **(*Re-occurring*)** Theorisation (*with automatic approval of the institution's legitimacy)* ⇩ "Attempted implementation" (*with higher chances of successful diffusion*) ↻		(3rd) Horizontal

(Sources: based on Berger and Luckmann, 1967; Scott, 2008, pp.126-127; Tolbert and Zucker, 1996, pp.182, 184)

Following theorisation (defined as the ongoing speculation as to whether institutional developments in the banks' organisational fields will help them gain, or cause them to lose legitimacy), banks begin "attempted implementation" of the institution(s) in question, which is part of the process of objectification to develop more social consensus. Attempted implementation is, at the same time, the crossroads to which the second step of institutional diffusion (bottom-up) leads. In cases of diffusion where enough social consensus has been gained, the institutions move progressively into the horizontal mode of diffusion, the third step. This third step cannot adequately be considered a final step because diffusion is an ongoing process in which property and process variables are always either strengthening (institutionalisation) or weakening (de-institutionalisation) (Tolbert and Zucker, 1996; DiMaggio and Powell, 1983).

Chapter 6 pointed out that Scott's view of pre-institutionalisation includes proposed solutions that are "*invented or adopted, but prove to be unsatisfactory and are then dropped*" (Scott, 2008, p.126). This is relevant because it was argued that such proposed solutions are—according to this thesis' data—more appropriately interpreted as cases of "attempted implementation" which belong to the phase of objectification. This is because objectification blends bottom-up and horizontal modes of diffusion. The

attempted implementation is what reinforces the initial decision (resulting from the process of theorisation) to begin implementing an institution, regardless of whether a successful diffusion can be accomplished. Should a case of attempted implementation show signs of progress (for example, increasing success in diffusing new climate-change criteria into several processes of a bank's ERM system), then social consensus increases and diffusion continues. The question remains: what determines an approving or disapproving social consensus of an attempted implementation? There is no single answer, but much of the banks' institutionalisation can be explained by focussing on existing institutions—i.e. "roots"—and how these affect horizontal diffusion.

A simplified way of distinguishing horizontal diffusion from top-down and bottom-up diffusion is its focus on existing institutions, and often those that are less apparent and persist "behind the scenes." In banks, ERM frameworks are examples of institutional "roots" (i.e. existing institutions) that are obvious; less obvious roots are the specific quantitative requirements of those ERM systems, as well as different cultural factors in both bank samples that influence decision-making concerning environmental issues and their prioritisation.

Chapters 5 and 6 emphasised that top-down diffusion aligns organisations' institutions with those of regulatory stakeholders, and that bottom-up diffusion engenders alignment with the institutions of other organisations. Horizontal diffusion is the struggle, the power-play that determines which institutions can or will be diffused, and which will not.

This power-play is implicit in the concept of agency. Scott defines agency to be "*an actor's ability to have some effect on the social world—altering the rules, relational ties, or distribution of resources*" (Scott, 2008, p.77). Unlike Scott's definition of agency, the focus in this chapter is on agency in the institutions, not in the organisational field's stakeholders. Agency will be used throughout this chapter to designate an institutional power-play whereby different institutions, all of which are candidates for diffusion, are brought up against one another. This "matching up" or review of new, candidate institutions against existing ones applies to different types of diffusion, such as to cases of institutional refinement, building, synergy, and even to cases of diffusion with a more confrontational character, e.g. in cases of attempted institutional replacement. An

example of agency is the power-play that ensues when **existing** institutions, such as banks' ERM frameworks (and not the main stakeholder behind this institution: the Basel Committee on Banking Supervision) are expected to integrate **new** institutions, such as the case of DZ Bank's internal diffusion of the Equator Principles (and not the stakeholder behind them: the Equator Principles Association).

Scott points out that certain authors view agency through the lens of structuration, as opposed to rationalisation (Scott, 2008, p.77). The viewpoint of structuration assumes that existing, established institutions are already "*deeply embedded in time and space*" among the actors (Giddens, 1984, p.13). Diffusion, however, is the spread of rationalised institutions which emphasises "*how institutions arise, achieve stability and legitimacy*" (Scott, 2008, p.94). The concept of agency used in this chapter stresses the process by which attempts to diffuse an institution are subject to the agendas and legitimacy of pre-existing institutions.

Although this usage of agency is not focussed on stakeholders, it is still in line with DiMaggio's view of power-plays which are more apparent when institutions are undergoing change (1991). Concerning the empirical data from the banks, the existing institutions are constantly undergoing change and therefore have, in Campbell's words, a "*continuing effect on subsequent decision-making and institution-building episodes*" (2004, p.25). This is less apparent in later phases of institutionalisation, such as in cases of sedimentation in organisational fields that are already saturated with institutions (DiMaggio, 1988).

As mentioned above, this chapter's review of horizontal diffusion focuses on two pre-existing institutions that are highly relevant to all banks in the samples: the banks' needs for institutions with turn-key, quantitative approaches (due to their ERM systems) and each country's unique environmental culture. Despite the numerous pre-existing institutions that influence institutional diffusion in banks, this chapter's narrowed focus on pre-existing institutions that are highly relevant to all the banks is essential in order to establish that these pre-existing institutions are indeed strong "causes" and have observable cause-and-effect relationships that influence the diffusion of new institutions. The assignment of cause-and-effect relationships involving pre-existing institutions that are only relevant to specific banks would be more difficult to establish, especially

because each bank's individual case of diffusion has countless variables at play. Moreover, most of the diffusion in the banks' cases of institutionalisation (regardless of which pre-existing institutions are under consideration) involves heavy emphasis on the normative and cultural-cognitive institutional pillars, which are vague to begin with. Furthermore, Mitchell adds the vast dimension of timing to the challenge of establishing strong cases for cause-and-effect hypotheses. Mitchell points out that:

> "*sorting out causality with respect to norms is particularly challenging, since the causal links between norms and behaviour are bidirectional: norms at time period T influence behaviour at T+1, but so too does behaviour at T+1 influence norms at T+2*" (Mitchell, 2008, p.96).

Mitchell's views support the rationale for 2 of the (11 total) changes proposed in chapter 6 to modify Tolbert and Zucker's model of institutionalisation to explain the banks' cases of institutionalisation (1996). The two changes are that:

1. (Change 1) institutionalisation phases and processes are continuous: they continue to influence institutionalisation regardless of the actual phase taking place;
2. (Change 10) institutional diffusion is not only progressive, but it is also often never completed.

Attempts to delineate and determine at which point institutional influence (agency) begins or ends is also arbitrary. Mitchell writes about attempts to do so:

> "*Therefore, if they can successfully alter norms, institutions can wield significant long-term influence over behaviour. Yet precisely because altering actors' normative convictions takes time, unambiguously identifying an institution as the cause of such changes proves difficult. Evidence of institutional influence on norms might include the frequency with which particular phrases (such as "sustainable development") appear in speeches and news articles*" (2008, p.97).

7.4 ROOTS

This chapter's fourth part has six sections, not including this introductory section, which present two major categories of institutional roots that influence the sample banks' cases of institutionalisation: (1) the need for institutions that embrace turn-key and/or

quantitative approaches, and (2) each country's unique environmental culture. These two major institutional roots influence the types of institutional effects reviewed in chapter 6: the isomorphism between the samples, as well as the isomorphism among the banks' initiatives in each sample, i.e. their market activities, stakeholder/institutional alignments, and the short-term focus of many of their institutionalisation initiatives.

7.4.1 QUANTITATIVE REQUIREMENTS

A major factor influencing institutionalisation is banks' requirements for turn-key approaches in order to function effectively and efficiently. In the words of a Canadian banker: "*It's no accident that the escalation process is simple and linear. We can't be inundated with deals and data*" (TD, personnel interview, 2011). This precept—simplicity—is what allows highly-institutionalised, technical environments to function resourcefully.

The requirement of specialised routines and procedures with specific, task-oriented characteristics is not just particular to banks; it is for organisations in general. Nelson and Winter share their well-known view:

> "*It is quite inappropriate to conceive of firm behaviour in terms of deliberate choice from a broad menu of alternatives that some external observer considers to be 'available' opportunities for the organization. The menu is not broad, but narrow and idiosyncratic; it is built into the firm's routines, and most of the 'choosing' is also accomplished automatically by those routines*" (Nelson and Winter, 1982, p.134).

The "automatic choosing" they refer to is accomplished in banks by diffusing institutions based on quantitative methodologies that integrate seamlessly into ERM frameworks. Concerning the development of such institutional structures, Scott and Meyer write that "*those who formulate institutional rules strive to make them appear technical in nature*" (1991, p.124).

The Basel Accords are an example: they are increasingly evolving towards more technical requirements. While Basel I focused on risk-weighted assets and credit risk, Basel II involved several other risk types to manage with the use of prescribed

measurement and monitoring methods. Basel III includes specific capital-adequacy, liquidity, and leverage-ratio requirements that build on the recommendations of the previous Accords.

The following table shows how banks not only require strong institutional controls (such as licenses, adherence to reporting protocols, etc.) but also strong technical controls (such as accounting systems, stress-testing methods, etc.).

Table 98: "Technical and Institutional Controls, with Illustrative Organizations"

		Institutional controls	
		Stronger	**Weaker**
Technical controls	**Stronger**	Utilities, banks, general hospitals	General manufacturing
	Weaker	Mental health clinics, schools, churches	Restaurants, health clubs, child care

(Source: Scott, 2003, p.140)

An audit, for example, is a typical case in which a process verifies both types of controls. Banks usually approach the need for controls through technical solutions, or at least, as technical as possible so processes can be streamlined and synchronised with the rest of the bank's procedures. The current best-practice for most types of controls involves software to one degree or another.

Research by Kroog et al. into the lending arms of the German banking sector reveals that the use of standardised software continues to grow and that issues of cost reduction through automation are most easily achieved with such software (Kroog et al., 2013, p.12). Their research also shows that there are increasing possibilities for differentiation in software, such as the deployment of specific in-house applications or special software solutions (Kroog et al., 2013, p.12). Nonetheless, problems with standardised software are still commonplace. Research from the global consultancy Booz & Company into risk-management and the GFC explains that:

> "*few banks have focused sufficiently on addressing the root causes of poor data integrity and quality, resulting in systems that have proved ineffective at producing timely, relevant, decision-oriented information. When this*

> *information is available, too few managers have the experience, authority, and oversight to make actionable decisions. In addition, overreliance on complex models that were understood by too few people within the bank (let alone the regulators) created a false sense of comfort*" (Golder et al., 2008).

Concerning environmental issues, the gap between available software and the phenomenon (e.g. climate-change risks) to be understood (and ideally, quantified) is much wider. In The Sustainability Mirage, Foster further clarifies that scientific modelling of environmental matters is extremely challenging because natural systems are "*complex, multi-variant and emergent—that is, both interactive and open-ended*" (Foster, 2008, p.28). Underdal extends this argument to perhaps an even less-predictable element of environmental change: human behaviour, and how it influences environmental change (2008, p.76).

The challenges of quantification are not only inherent in the creation of models and risk metrics capable of encapsulating climate-change issues, but also in their institutional integration into ERM frameworks. ERM frameworks result in decisional hierarchies where information flows upwards and thereby have both specific and extensive information needs (Bloos, 2008).

One method used to measure and compare environmental factors is EKPIs (environmental key-performance indicators). These have some, but limited uses in banks. EKPIs are quantifiable metrics that address technical and institutional control issues, such as helping businesses both measure their own performance in key environmental issues, and also to issue targets and benchmarks for different units of an organisation (DEFRA, 2006, p.12). There are numerous EKPIs for specific industrial sectors. Opponents of these metrics tend to criticise their misuse. The VfU e.V. emphasises that while EKPIs compress information, their core function is to reveal "key" information which means the indicator of performance has to focus on "key" measures, i.e. those most critical to understanding a business (VfU, 1997, p.14). EKPIs are supposed to replace the need for reading lengthy business reports on a wide range of measures (DEFRA, 2006). For publically-listed companies that must disclose GHG emissions in the UK, the government issued GHG-reporting methodology guidance (Guidance on how to measure and report your greenhouse gas emissions) which uses

EKPIs (DEFRA, 2011). The government's guidelines cite 22 performance indicators which are considered significant to UK businesses (DEFRA, 2006). By 2006, over a third of FTSE 350 companies (the 350 largest-capitalised companies of the Financial Times Stock Exchange Index) used the government's guidance to report on EKPIs (DEFRA, 2006). The 22 EKPIs comprise four categories: (1) resource use (e.g. oil, forestry), (2) emissions to water, (3) emissions to land, and (4) emissions to air. GHG emissions are one of the six EKPIs from the "emissions to air" category.

Noteworthy here are the two key functions of EKPIs: internal (i.e. inside the organisation) and external use. Internally, EKPIs function as management tools for planning, monitoring, and control; externally, they are information tools for reaching target audiences and for benchmarking (VfU, 1997, p.14).

Concerning climate-change risks and opportunities, EKPIs fall far short compared to their utility in other, more established industries. Metrics (e.g. to calculate a company's total GHG emissions) and ratios (e.g. to show the amount of GHG emissions per sale or profit value) both paint a limited picture of the large, and often vague role that GHGs play in most business models. GHG emissions are deeply embedded or somehow related to most business activity. Isolating GHGs as a relevant variable is complicated and almost always based on multiple assumptions. The five other EKPIs in the UK's guidance category "emissions to air" ([1] acid rain, [2] dust and particles, [3] ozone-depleting substances, [4] volatile organic compounds, and [5] metal emissions to air) are overall better understood and tend to be either industry, or sector-specific (DEFRA, 2006, p.12).

Calvello (2010b) brings together climate-change characteristics that are relevant to financial markets, but remain challenging to quantify:

1. long time frames: climate change involves multiple decades and transcends economic cycles;
2. secular change: climate change represents major trans-generational economic and societal change (like the information revolution) and is not a trend that will pass away;
3. global: mitigation and adaptation efforts are local, while their consequences are trans-national;

4. non-conforming: climate change poses challenges not only to individual companies, but also to entire sectors and even economies (p.155).

Issues such as these are among the reasons for what Kiernan calls the "intellectual and institutional inertia" within the financial sector concerning climate change (Kiernan, 2010, p.130). These factors, as well as a lack of available analytical tools, overly-conservative interpretations of fiduciary responsibilities, and a general aversion to environmental issues all help explain why climate change:

> "*tends to be, quite inappropriately, lumped together with the litany of 'socially responsible' investment issues, and thereby trivialized and delegitimized in the eyes of 'professional,' returns-driven investors*" (Kiernan, 2010, p.131).

In summary, because of specific turn-key and quantitative requirements of the financial industry and in particular, the ERM systems of major banks, the power-play between the agency of new institutions (even those with high legitimacy, such as the UN-PRI) and existing ones often results in limited institutional synergy. This is evidenced by the numerous attempts by banks to add new climate-change criteria to their credit and reputation risk-management institutions, as presented in chapter 4. Concerning the example with the UN-PRI, although this institution is deemed highly legitimate by the banks' bottom-up processes of theorisation, the next step of diffusion—"attempted implementation"—allows only a superficial "patchwork" integration of the institution into ERM systems and largely relies on specialised staff to evaluate transactions on a case-by-case basis. This simultaneously limits both the industry's efforts to standardise case-by-case analyses and, implicitly, the number of deals that can be reviewed.

7.4.2 ENVIRONMENTAL CULTURE

Another major institutional force in the power-play of horizontal diffusion is the culture of each bank sample's society. While culture has many facets (e.g. regulatory culture, grassroots and civil-society participation, etc.) and several of these play roles concerning horizontal diffusion of the banks' climate-change risk-management institutions, the most significant observable difference between the samples was the environmental culture of each country. Even a superficial examination of each country's laws (as presented in

chapter 3) reveals contrasting environmental approaches. DiMaggio's writings indicate that institutionalisation—viewed as a process, as in this thesis—is "*profoundly political and reflects relative power of organised interests and the actors who mobilise around them*" (DiMaggio, 1988, p.13).

Research by Kirzner, McGeachie, and Kiernan shows that environmental issues, as they relate to investment decisions, are "*considered much more seriously and systematically in the United Kingdom and Europe than in North America*" (2005, p.9). Although the study dates back to 2005, the data is equally or even more relevant now because the regulatory gap upon which this thesis is largely based—the gap between the stronger climate-change regulatory environment in Germany and the lax one in Canada—actually grew larger since 2005. In chapter 3, legislative developments in Germany were reviewed alongside those in Canada. While Germany continued as a leader in environmental performance and institutional development, Canada's GHG emissions rose considerably and its institutional frameworks worsened to unprecedented levels.

7.4.2.1 CANADA

In 2006 the Conservative Party won Canada's federal election and began de-institutionalising the previous government's climate-change initiatives. As presented in chapter 3, by the end of 2011 Canada announced that it would not renew its commitment to the Kyoto Protocol upon the expiration of the Protocol's first phase in 2012. The following two tables show pinnacle events concerning the turnaround of climate-change policies in Canada before and after the Conservative Party's victory in 2006. The events presented are only those related to the institutionalisation and initial phase of de-institutionalisation surrounding the Conservative Party's entry to government. The minor development in Canada between 2007 and 2012 (i.e. the 2008 Biofuel Bill C-33, an Act to amend the Canadian Environmental Protection Act) was presented in chapter 3.

Table 99: Canada's government-level institutionalisation of the Kyoto Protocol

Date	Federal party[158]	Institutionalisation
April 29, 1998	**Liberal**	Canada is among the first countries to sign the Kyoto Protocol.
October 6, 2000	Liberal	Government launches "Action Plan 2000 on Climate Change" and commits $500 CAD million towards GHG-reduction measures.
Nov. 21, 2002	Liberal	Government releases "Climate Change Plan for Canada" and commits to annually cut 240 million tonnes of GHG emissions.
Dec. 17, 2002	Liberal	Canada ratifies the Kyoto Protocol.
August 12, 2003	Liberal	Government pledges another $1,0 CAD billion towards its climate-change plan. Total federal spending on Kyoto reaches $3,7 CAD billion.
April 13, 2005	Liberal	Government updates its Kyoto-implementation plan and commits $10,0 CAD billion to reduce GHG emissions.

(Sources: CBC News, 2007; Environment Canada, 2010; Environment Canada, 2011)

Table 100: Canada's government-level de-institutionalisation of the Kyoto Protocol

Date	Federal party	De-institutionalisation
January 23, 2006	**Conservative**	The Conservative Party wins the federal election. Prior to becoming Prime Minister, the party leader Stephen Harper calls the Kyoto Protocol a "*socialist scheme to suck money out of wealth-producing nations*."
April 5, 2006	Conservative	Government cuts funding to several climate-change programs, including 40 public information offices and several scientific and research programs.
April 25, 2006	Conservative	Government supports the Asia-Pacific Partnership on Clean Development and Climate (which includes the United States, Australia, Japan, South Korea, China, and India), a voluntary alternative to the Kyoto Protocol.
February 8, 2007	Conservative	Government declares that Canada will not try to meet its Kyoto targets and instead national

[158] Canada has five major federal political parties. Their names, political stances, and founding dates are listed in order of each party's relative power: (1) Conservative: centre-right (founded in 1854); (2) Liberal: centre (founded in 1867); (3) New Democratic: left (founded in 1961); (4) Bloc Québécois: centre-left party for the sovereignty of Québec (founded in 1991); and (5) Green: centre-left, pro-environment (founded in 1983).

Date	Federal party	De-institutionalisation
		legislation will be introduced.

(Sources: CBC News, 2007; Environment Canada, 2010; Environment Canada, 2011)

While these policy and political developments, along with those presented in chapter 3, show the regulatory institutional gap between Germany and Canada, they explain little concerning the cultural drivers and norms that foster these contrasting institutional environments. However, even a brief examination of each country's environmental culture reveals suggestive reasons to explain why each country treats their environmental impacts so differently.

Cultures are socially-established structures of meaning (Geertz, 1973, p.12). Based on the definitions of institutional concepts and structures from Summer (1906) and Parsons (1960), cultural structures can be understood to be generalised normative and cultural-cognitive frameworks stemming from unique national histories and belief systems. Nestle's study of risk analyses in climate-change recognises that research in different cultures has many variables that would be better served if the analyses were rooted in psychology (2008). Nonetheless, there is still evidence that is available between the extreme methodological viewpoints of comparative political analyses (e.g. most-similar/different-systems-designs) and studies of cultural psychology.

Referring again to the study of Kiernan, Kirzner, and McGeachie (2005), they cite two reasons and one possible factor that explain the discrepancy in the treatment of environmental issues concerning investment decisions in Europe and North America:

1. a lack of legislative support in North America;
2. an overall lack of investment interest in such issues from the private sector;
3. "*the third factor may be cultural: there is, quite simply, a stronger overall ethos of environmental awareness and concern in the United Kingdom and Europe*" (Kiernan, Kirzner, and McGeachie, 2005, p.9).

In fact, the evidence of a cultural difference regarding environmental concern is equally valid as the policy evidence to explain why Germany and Canada have such different regulatory scenarios. While Canada's newly-elected government (in 2006) dismantled the country's climate-change institutional framework, the underlying culture of environmental concern in the Canadian government—even before the Conservative

victory—suggests Canada would likely not have met its Kyoto targets even under the rules of its former (Liberal) government, which had been far more supportive of climate-change institutional development, or at least had appeared to be.

The Canadian Liberal Party, up to 2005, wanted to position Canada as a top-performing country in reaching its Kyoto-based GHG-reduction targets. As shown by table 99 above, the former government had pledged considerable sums of funding and created extensive programs to support GHG mitigation, renewable-energy subsidies, R&D, and so on. In 2006 the demise of government support for climate-initiatives began with the change of government. Later, by May 2009, only the provincial governments (of the country's 10 provinces and 3 territories) of British Columbia, Alberta, and Quebec had enacted climate-change mitigation institutions (White, 2010, p.3). White reveals that a year later, "*not surprisingly, Canada's GHG levels have continued to rise; we are now 30% **over** our 1990 baseline*" (Original emphasis) (White, 2010, p.3).

Nonetheless, several factors suggest that prior to 2006 it was already clear that the Kyoto targets would not have been met. These factors, gleaned from the Canadian Broadcasting Corporation (CBC News, 2007) are:

1. April, 2004: the government's 2002 GHG inventory showed emissions 28% above the country's 2012 Kyoto target.
2. December, 2004: after repeated attempts, Canada abandoned its hopes of winning ET credits for exporting natural gas and hydroelectric power to the U.S. Perhaps the Liberal government had expected that Canada's GHG issues would have been easily resolved.[159]
3. February, 2005: the government had still not released details of how it planned to reach Kyoto targets.
4. April 13, 2005: the Liberal government committed $10,0 CAD billion (of an assumed future budget) to reduce GHG emissions between 2008-2012 (i.e. assuming that the party would win the election the following year, in 2006). At the same time, the government relaxed GHG-emissions targets for LSEs.
5. April 14, 2005: the government was openly criticised (e.g. by environmental

[159] See Robertson (2011b) for a discussion of the concept of "additionality" in Kyoto-based project mechanisms. Additionality limits which activities and projects can receive ET credits.

groups) for being lenient with Canada's largest firms that are responsible for half the nation's GHGs.

6. Nov. 3, 2005: Alberta—Canada's oil-producing province—formally objected to Kyoto-based plans and requested to have its own rules to regulate GHG emissions.

The Liberal government's tendency to simultaneously portray institutional alignment with the Kyoto Protocol, while not taking the necessary actions to reach its targets can also be interpreted in Canada's Kyoto-based National Inventory Report, which was prepared under the subsequent (Conservative) government. An example is the statement that GHG emissions totals would be released in 2012, which ended up being the same year Canada pulled out of the Kyoto Protocol:

> "*As a signatory to the UNFCCC, Canada is obligated to prepare and submit an annual national GHG inventory covering anthropogenic emissions by sources and removals by sinks.* [...] *These Kyoto estimates do not affect Canada's national emissions total, and will only be accounted for at the end of the five-year commitment period (2012 inventory year)*" (Own modification) (Environment Canada, 2010, p. 31).

As mentioned in chapter 3, Canada increased its GHG emissions by 24,1% between 1990 and 2008, giving it the highest GHG-emissions increases among G8 countries and making the nation the sixth-largest emitter among Annex-1 countries (Environment Canada, 2011, pp.33-36). The country is one of the highest per capita GHG emitters: its total population, roughly 34 million people (~0,48% of the world's population) contributed 2% of the world's total GHG emissions in 2005 (Environment Canada, 2010). Canada's National Inventory Report, submitted to the UNFCCC in May 2011, emphasises three reasons for Canada's high per capita emissions: (1) the country's size (therefore requiring more transportation of goods), (2) the climate (i.e. high energy demands due to freezing temperatures), and (3) a resource-based economy (Environment Canada, 2010). White extends these factors to include:

1. the prevalence of the detached single-family dwelling, comprising approximately 60% of all dwellings in Canada;
2. the locations of these detached single-family dwellings are usually in residential-

only areas where population density is too low to support public transit, and therefore most people depend on cars;

3. widespread car ownership (77% of all households own one or more vehicles) (White, 2010, p.16).

Many of the bankers interviewed in the Canadian sample shared that the most significant factor driving Canada's GHG emissions and the country's reluctance to enact nation-wide measures to mitigate them is the heavy economic dependency on resource extraction. The main industry sectors are oil and gas, coal, pulp and paper, mining, and agriculture, all of which are more energy intensive than, for example, manufacturing and services (White, 2010, p.16).

7.4.2.2 ECONOMIC CONSEQUENCES: CANADIAN OIL SANDS

Environment Canada relates that the extraction of fossil-fuel resources drives Canada's growth in energy production in order to keep up with demand from the United States, its biggest export market (Environment Canada, 2010). The industrialisation of Canada's oil sands is criticised by numerous NGOs for relying on the most environmentally-destructive activities that are currently permitted in the country. Oil from tar sands is the worst type of oil for climate-change because its production (to extract and process it) causes three times the GHG emissions of conventionally-produced oil (Louvel, 2014). However, from an economic-historical perspective Canada's flourishing oil-sands industry is nothing new: it represents one more resource in the country's history of economic dependence on natural resources and resource extraction.

The CDP response of TD clarifies why Canadian banks are so heavily engaged in financing companies that extract resources as a main or integral part of their businesses: "*Of all of the G8 countries, Canada's economy is most heavily dependent on natural resource development*" (TD-CDP, 2011). The cultural tolerance of oil extraction from the tar sands did not emerge unexpectedly in the last decade—instead, it is the result of a long-standing economic focus by developing countries (and developed countries that were former colonies or dominions, such as Canada) on resource exploitation.

All five of the major Canadian banks invest in the oil-sands industry. Regarding the cultural-cognitive institutional pillars that influence decision-making by Canada's major banks, it appears that this type of investment is considered more legitimate in Canada than it would be in Germany (where, for example, the country is preparing to completely phase-out nuclear power by 2022). Nonetheless, because of the Canadian banks' institutionalised climate-change initiatives, transactions concerning the oil sands involve climate-change risk-management processes that both mitigate risk and potentially also influence environmental improvements in the way these destructive activities are carried out:

> "*It's not an option at the moment for Canadian banks to get out of the resource business. The challenge is to set a model for how resource development should be done. In engaging our oil-sands clients I always start with the same opening question: 'you let others define what dirty oil is, now you have to figure out what clean oil looks like'*" (TD, Personnel Interview, 2011).

A noteworthy contrast from the German sample of banks is Commerzbank's stance on the oil sands:

> "*Reputation and Sustainability Management has been following the debate about the carbon balance of oils extracted from tar sands closely and decided to avoid any financial transactions directly connected to this controversial industry*" (Commerzbank-CDP, 2011).

Of the 25 major banks worldwide that finance much of the Canadian oil-sands development, 5 are Canadian, 3 are from the United States, and the rest are French, English, Italian, Belgian, German, Swiss, Dutch, Australian, and Japanese (Louvel, 2014). While only Deutsche Bank from the German sample financed tar-sands initiatives (with its total financing figure unknown), the other German bank (WestLB AG) contributed $43,9 USD million (Louvel, 2014). More revealing of a potential cultural divide on environmental finance are the total figures contributed by the Canadian banks up to 2009:

Table 101: Canadian banks' financing of tar-sands development

Bank	Total tar-sands financing ($USD)
BMO	5,9 billion
TD	16,0 billion
BNV	5,59 billion
CIBC	15,58 billion
RBC	22,89 billion
Total tar-sands financing	65,96 billion

(Source: based on Louvel, 2014)

7.4.2.3 GERMANY

Germany has a different environmental culture from Canada that reflects cultural-cognitive institutional elements in line with what Kiernan, Kirzner, and McGeachie call a "*stronger overall ethos of environmental awareness and concern*" (2005, p.9). Germany's successful implementation of the Kyoto Protocol—achieving not only an early fulfilment (by 2009) of its 2012 GHG-reductions goal, but also by exceeding the reduction goal of 21% with a 25,3% reduction—is not the result of, for example, a sudden national focus on driving technological change towards environmental priorities (Umweltbundesamt, 2011, p.55). A major historical precedent was Germany's need to rapidly modernise its eastern half immediately following German re-unification in 1990.

Russia and other former Eastern Bloc countries had advantageous timing concerning the UNFCCC's choice for the Kyoto Protocol's year for baseline emissions (1990): their economies were nearly collapsing that year and therefore their GHG emissions were abnormally low for the period. For Germany it was the opposite: re-unification in 1990 meant former West Germany had to include GHG emissions from the former German Democratic Republic (East Germany) (Umweltbundesamt, 2011, p.119). This made (re-unified) Germany's 1990 baseline GHG-emissions levels challenging in two ways: (1) they were exceptionally high; (2) they were unique and required more national-level policy adaptation than any other European country (Umweltbundesamt, 2011, p.119). Former East-German industries needed extensive modernisation and often, outright replacement. This involved the de-commissioning of obsolete industrial facilities and their replacement with new, state-of-the-art ones (Umweltbundesamt, 2011, p.119). Installations that were not de-commissioned underwent extensive retro-fitting

with equipment that enhanced GHG-emissions reductions and efficiency (Umweltbundesamt, 2011, p.119). It is fruitful to review the parallels of these changes alongside Germany's later industrial changes necessary to reach the country's Kyoto targets.

Table 102: Germany's industrial changes to modernise (for re-unification) and to reach Kyoto-based targets

Modernising eastern half	Reaching Kyoto-based targets
(1) changing fuel mixes from local-lignite fractions to lower-emission energy carriers such as natural gas and petroleum; (2) making pollutant-reducing technology concerning emissions legally-binding in all of eastern Germany; (3) diffusing legal regulations and economic incentives to spread efficient usage of energy and raw-materials; (4) adopting international rules; (5) increasing use of renewable energy.	(1) transitioning gradually, since 1990, from solid fuels to liquid and gaseous ones (with lower GHG emissions); (2) deploying and spreading renewable energy usage and fossil-fuel substitutes; (3) increasing plant/industrial efficiencies; (4) reducing livestock and changing animal-housing methods; (5) changing data-management methods for the waste-management sector.

(Source: Umweltbundesamt, 2011, pp.113, 119)

Evidence of a pro-active environmental culture is also observable in German states' local initiatives. Like Canada, Germany also has varying degrees of support for climate-change initiatives at the regional level. On July 17, 2013 in Germany's most industrialised state (Baden-Württemberg), the "Climate Change Act" (KSG BW) was passed.[160] Baden-Württemberg is Germany's second state to pass the law after the country's most populated state, Nordrhein-Westfalen (which includes the Ruhrgebiet, Germany's major steel and mining industry hub for over a century) took the initiative. The law requires that state-wide GHG emissions be reduced by 25% by the year 2020, and by 90% by 2050 (both figures are based on the Kyoto-baseline GHG-emissions scenario of 1990). The law is flanked by strategies that combine energy and climate-protection concepts, as well as over a hundred methods for reducing GHG emissions (Widmann, 2013).

[160] Original: *Klimaschutzgesetz Baden-Württemberg*

7.4.2.4 DEPENDENCIES: RESOURCE EXTRACTION

Regardless of Germany's and Canada's cultural differences concerning their approaches to environmental matters, their LSEs and banks—albeit, to different degrees—will need to speed up their shift away from resource exploitation. Even though cultural factors appear to award legitimacy differently in German and Canadian banks, both samples are subject to international institutions that are increasingly shunning environmentally-destructive activities. Banks will require ongoing institutional adjustments and continual development of climate-change risk-management institutions capable of screening climate-mitigating investments.

Coal is an example of a resource that is significant to both countries' economies: both countries are among the top-ten producers of coal and coking coal. Coal is increasingly becoming a source of reputation risk as it is a primary target of environmental groups: burning coal yields one third of annual global GHG emissions (Greenpeace, 2013). What makes forgoing coal as an energy resource so challenging is that it also provides almost 40% of the world's electricity (Greenpeace, 2013). Coal is cheap, profitable, abundantly available, and building new coal-fired plants—as well as financing them—are simple, well-understood processes with a consistent, predictable ROI.

The World Bank, for example, had suffered criticism for urging global action to reduce GHG emissions while the organisation itself continued to fund coal-fired power plants (Point Carbon, 2013e, p.3). As referred to in this thesis' introduction, the World Bank's board in 2013 had agreed to a new energy strategy that would limit the financing of coal-fired power plants to "rare circumstances" (Point Carbon, 2013e, p.1).

One reason for the World Bank's bolder stance on climate change could be the bank's new president, Jim Yong Kim. Kim took the role in mid-2012 and is the first scientist to head the organisation (Point Carbon, 2013e, p.3). Since the beginning of his five-year term, the bank has taken a more aggressive stance on climate change (Point Carbon, 2013e, p.3). In 2012 the World Bank doubled its aid for climate-change adaptation (up to $4,6 USD billion) (Harvey, 2013). The bank's vice-president, Rachel

Kyte, has called for a further doubling of the amount and the need to tie the bank's disaster aid and climate-change adaptation funding closer together (Harvey, 2013).

The World Bank's stance on climate change influences the degree of legitimacy awarded to, or removed from other financial organisations that invest in climate-destructive endeavours. Shortly after the World Bank declared its move away from coal-fired plant investments, the EIB (European Investment Bank) decided (the same month) to also curb loans on coal-fired power (Point Carbon, 2013f; Point Carbon, 2013h). The aim of this decision was to ensure that the EIB's energy-lending criteria reflected both EU-energy/climate policy and current investment trends (EIB, 2013; Point Carbon, 2013f; Point Carbon, 2013h). This alignment with broad formal institutions (EU policy) and informal institutions (investment trends) shows the distillation of these greater institutions into technical requirements, such as lending criteria. Two mandatory criteria will be used to screen all fossil-fuel power plants:

1. a cost-benefit analysis using a shadow GHG price (starting at 25€/tonne in 2010 and progressively reaching 45€/tonne by 2030); and
2. an Emission Performance Standard set at 550g CO2/kilowatt-hour, aligned with the EU-ETS directive levels (which lead to a 70% GHG reduction by 2050) (EIB, 2013).

By restricting where its funds may be invested, the EIB supports the EU's 28 nations in reducing GHG emissions and meeting their joint climate targets (Point Carbon, 2013h). Germany not only contributes to, but also benefits from this institutional support.

7.5 HORIZONTAL LEGITIMACY: DANGER OF SHORT-TERM FOCUS

This chapter's fifth part takes a more critical view of horizontal diffusion and how organisations' implicit focus on legitimacy can hinder the development and diffusion of more important institutions, such as technical processes to screen for (and eventually filter out, or hedge against) climate-change risks in asset portfolios.

Hawley's view of the constraining process of isomorphism begins at a particular point in horizontal diffusion during the objectification phase of institutionalisation

(1968). Legitimacy is achieved in top-down diffusion when organisations align their institutions with those of regulatory stakeholders "above" them. Bottom-up diffusion grants legitimacy when organisations align their institutions with those of other legitimate stakeholders and institutions. As with gaining bottom-up legitimacy, gaining legitimacy from horizontal diffusion involves both types of DiMaggio and Powell's non-coercive mechanisms of institutional diffusion: mimetic and normative mechanisms (1983).

Legitimacy in horizontal diffusion occurs through the influence of mimetic and normative mechanisms on the agency of a new institution that is undergoing "attempted implementation." The results of the power-play between the new institution and existing institutions leans heavily towards isomorphism with the status quos of the organisational field. In becoming isomorphic with the financial sector's highly-elaborated institutional environment, banks gain the legitimacy and resources they need concerning climate-change risk management (Meyer and Rowan, 1977, p.352).

The work of Pierson was referred to in chapter 6 for the observations that institutional arrangements often have unintended effects and reflect short-term goals or foresight (Pierson, 2004, pp.109, 112). This chapter extends Pierson's focus on short-term goals because this issue is of particular relevance to horizontal diffusion.

While developments of climate-change risk-management institutions that support the mitigation of market risks are slowly emerging, the banks continue to develop advanced carbon foot-printing systems that track, monitor, and record data that can be readily disclosed (e.g. in response to the CDP Annual Questionnaire) and used in CSR reports and press releases. Because banks' scope 1 and 2 GHG emissions are so low, banks can conveniently use carbon foot-printing initiatives to:

1. claim their promotion of GHG-emissions transparency;
2. engage multiple stakeholders and fulfil normative reporting requirements (such as EMAS, GRI, GHG Protocol: A Corporate Accounting and Reporting Standard, ISO 14064:1, etc.);
3. market the bank as a "carbon-neutral" organisation.

These activities can be used to fortify the banks' reputations regarding climate change. White shares that:

> "*'Carbon neutral' is another beguiling term that has come into heavy usage in our carbon-constrained world.* [...] *The term "carbon neutral" was first used in the corporate context to signify that a corporation had established policies to ensure that in its own operations it would purchase carbon credits to compensate for any GHG emissions that it could not eliminate.* [...] *There would be a process of verification by an independent third party. This was the state of play until two or three years ago when a more critical approach became widely accepted*" (Own modification) (White, 2010, p.136).

After widespread criticism from NGOs and environmental groups, many multinationals have since stopped claiming to be carbon neutral. Nonetheless, four banks out of five in both samples continue to audit their scope 1 and 2 GHG emissions—the process that "allows" an organisation to claim carbon neutrality when its operations have a GHG-emissions balance of zero (i.e. according to a standard chosen by the bank). In the German sample, the bank that neither reports nor audits its emissions (DZ Bank) does not yet take part in the CDP Annual Questionnaire because of the bank's unique responsibility as an overseer of ~900 cooperative banks in Germany. In the Canadian sample, CIBC did not audit its reported GHG emissions (which it did, however, disclose in its full response to the CDP Annual Questionnaire) because these audits were considered time-consuming, expensive, and moreover neither mandatory, nor material (CIBC, personnel interview, 2011).

The dangers of these activities, as pointed out by the executive at CIBC, is that they take away resources that could be used for other, more significant activities. Despite the marketing and public-relations utility of banks' reports on scope 1 and 2 emissions (along with the audits to prove the results), these activities can help the banks learn about GHG disclosure, mitigation, and what to expect from their clients. GHG disclosure involves considerable personnel development and institutional/organisational learning that must be done "hands-on." Nonetheless, these initiatives have extremely low-potential impacts on the banks' financial stability. BMO, for example, reported that risks driven by potential regulatory schemes involving carbon taxes would carry low impacts, i.e. an increase to the bank's total annual operating costs of about 1% (BMO-CDP, 2011,

pp.15-16).[161] Besides the costs of audits and collecting GHG-emissions data, several of the banks (and Allianz as well) also carry the expenses of GHG-origination projects and investments in order to offset their organisations' GHG-emissions. BMO shared in its 2011 CDP response:

> "*Our achievement of Carbon Neutrality in 2010 comes with a cost. In addition to the annual capital costs (upwards of $3 million) related to ongoing conservation efforts, we spend just under $3 million annually on the purchases of renewable energy (RECs)and high quality voluntary carbon offset credits*" (BMO-CDP, 2011).

A far more significant, and hitherto neglected activity, is developing and diffusing climate-change risk-management institutions that can help mitigate the types of risks that will help asset managers choose climate-friendly investments. The need for this development and diffusion is increasing annually because of what the Financial Times calls "mission creep" (Gapper, 2013).

Banks over the past hundred years have continually sought increasing ownership of commodities, assets, and infrastructure that have little to do with banks' core functions as deposit-taking organisations (Gapper, 2013). The reason is the ease of doing so: banks can leverage their capital and buy into capital-intensive industries to reap profits therein. Although German and Canadian banks are considerably less aggressive than US banks in influencing policy and regulatory matters, these non-US banks' considerable (and increasing) ownership of non-banking assets, commodities, and infrastructure shows that they follow the same trend of "mission creep" far beyond their roles as deposit-takers (Gapper, 2013).[162] Of the many problems cross-ownership causes, the main danger is the risk that these industries transfer to banks. Because the financial industry has an implicit

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[161] BMO calculated a nominal potential increase in the bank's operational and capital costs: the bank's fiscal 2010 reported operating costs totalled approximately $7,6 CAD billion; energy costs amounted to less than $100 CAD million of this amount (BMO-CDP, 2011).

[162] In the US, the Glass-Steagall Act of 1933 separated banking activities from active ownership through their securities businesses (Glass-Steagall Act, 2013). This was partly done to prevent a re-occurrence of how JPMorgan ended up controlling considerable portions of the steel and railway industries in the late 19th century (Gapper, 2013). The Act also sought to prevent another wave of bank collapses seen in the Great Depression (Glass-Steagall Act, 2013). Commercial banks could neither own (they were barred from holding more than 5% equity in industrial companies), nor have any close ties to brokerage businesses (Glass-Steagall Act, 2013). In 1956, the Bank Holding Company Act barred banks from underwriting insurance. The Glass-Steagall Act was gradually taken apart, and the Gramm-Leach-Bliley Act of 1999 loosened the rules further for US banks (Gapper, 2013).

mutual dependency through its loans to other industries, banks are threatened by risks that normally have no materiality to banks. The journalist writes:

> "*What would happen if a Morgan Stanley oil tanker ran aground (it partly owns a company with a fleet of 120 tankers), or there were a fatal accident at a Goldman coal mine (it has a stake in Colombian mines)?*" (Gapper, 2013).

Relevant here is the transfer of unmitigated climate-change risks from LSEs to the banks. While there are some third-party tools and software in use to systematically measure climate-change risks across multiple industrial sectors, these are still not developed to the quantitative and technical level of reliability of the banks' other standardised risk-management tools, models, and methods. An executive from Deutsche Bank shared that "*It's not at the nuts-and-bolts level, we're still at 50,000 feet, far from the detailed level*" (Deutsche Bank, personnel interview, 2012). Other executives who could comment on this specific topic also shared that third-party tools are integrated into investment models, but they are not signals to buy or sell assets. The same executive from Deutsche Bank related that these methods and models are "*just information that goes into a risk matrix. Not a mathematical one, but a set of criteria we look at to determine whether the company in question fits our risk profile*" (Deutsche Bank, personnel interview, 2011).

Below are two tables that conclude this chapter's presentation of empirical data and theoretical analysis. The tables show the attempts by the banks to diffuse climate-change risk-management methods with which they can screen their asset portfolios. For financial organisations, these are among the most quantitative and technical institutions to diffuse. Like the empirical data presented in previous chapters, these findings also show strong isomorphism among the banks' initiatives. Although the banks' developments in this category are thin in both samples, there are more initiatives in the German sample than in the Canadian one. The data and analyses from the previous chapters show striking resemblances in the banks' cases of institutionalisation. It has been established that the banks diffuse climate-change risk-management institutions so similarly because these initiatives are mostly based on the same global conceptual and structural levels of climate-change institutions. However, each country's specific regulative, normative, and cultural-cognitive institutional elements do matter. In order to gain legitimacy with their

climate-change risk-management institutions, banks diffuse them isomorphically in line with these elements in all three steps of institutional diffusion: top-down, bottom-up, and horizontally.

Horizontal diffusion and the influence of background institutions (roots) help explain why each sample's cases of institutionalisation are mostly similar, and in some instances—such as the asset-management initiatives presented below—different. Both samples of banks experience the difficulty of innovating in order to quantify climate-change risks for their asset portfolios, but it appears that in Germany the banks are expected by the local environmental culture to institutionalise more than what is expected of the Canadian banks.

Table 103: Climate-change risk-management initiatives related to asset portfolios (German sample)

Bank	Asset management initiatives
Deutsche Bank	Deutsche Bank Climate Change Advisors is the climate-change investment and research-business arm of the bank's asset-management business. Deutsche Bank Climate Change Advisors examines climate-change risks across different asset classes and finds ways (by using frameworks and guidelines such as the World Bank Standards, the Wolfsberg Principles, UN Global Compact, and the OECD Guidelines) for asset managers to manage these risks.
UniCredit	With support from WWF, the bank is establishing quantitative targets to limit its financing of GHG-emitting endeavours. The pilot project began in 2009 to develop a theoretical model to quantify climate-change risks for certain companies. Testing is underway.
Commerzbank	Commerzbank launched an information campaign on sustainability and sustainable financial investments for its Wealth Management customers.
DZ Bank (Group)	Sustainable-investment research formally began at DZ Bank in the spring of 2011 for the equities (sales-side) of the bank's investment arm (i.e. Union Investment, which has assets of ~€180 EUR million). Companies are rated on a daily basis according to sustainability factors which in turn allows investors to promptly re-structure their portfolios. This initiative serves Union Investment's asset managers (who serve institutional investors, such as German and international pension funds), investment managers for the

Bank	Asset management initiatives
	bank's high-net-worth clients, and consultants of the cooperative banks. DZ Bank's internal sustainability ratings combine sustainability data (ESG criteria) and financial performance based on standardised-fundamentals analyses. Investments are deemed sustainable or non-sustainable: the former are approved by the bank and considered valid options for investing in. Data is provided by Systainalitics.
Allianz	The Allianz GI portfolio is screened for climate-change risks by Rosenberg Capital Management, an Allianz Group subsidiary that oversees the group's Global Water, Sustainability, and EcoTrends Funds. Client portfolios are evaluated concerning climate-change risks from several angles, specifically each company's: (1) ability to respond to changes in climate-change policy and legislation; (2) understanding of climate-change impacts by its managers; and (3) strategies to minimise risks and maximise opportunities.

(Sources: Allianz-CDP, 2011; Allianz-CSR, 2011; Allianz-Sustainable Development, 2010; Allianz/WWF, 2011; Commerzbank-CDP, 2011; Commerzbank-Nachhaltigkeitsbericht, 2011; Deutsche Bank-CDP, 2011; Deutsche Bank-CSR, 2010; DZ Bank-Sustainable Investments, 2011; DZ Bank-Sustainability Report, 2010; UniCredit-CDP, 2011; UniCredit-Sustainability Report, 2010)

Table 104: Climate-change risk-management initiatives related to asset portfolios (Canadian sample)

Bank	Asset management initiatives
TD	In 2010 TD assessed climate-change risks in its lending portfolio (~$267 CAD billion) to be: (1) low-sensitivity: 91,5%; (2) moderate-sensitivity: 5,3%; (3) high-sensitivity: 3,2%. In 2009 TD completed its proprietary sustainability matrix (using data from Asset4[163]) to give snapshots to portfolio managers and analysts of how companies manage ESG capital.
RBC	RBC tracks the GHG-emissions intensities of LSEs in its lending portfolios. The bank contracted a third-party consultant to analyse credit-risk exposures of the bank's borrowers (in loan and investment portfolios) to climate-change risks and regulations.

(Sources: RBC-CDP, 2011; RBC-CSR, 2010; TD-CDP, 2011; TD-CSR, 2010; TD-PRI Engagement Report, 2010; TD-Sustainability Investment Policy, 2010)

[163] Asset4 provides ESG data based on hundreds of criteria such as KPIs and other ratios/variables.

7.6 CONCLUSION

This chapter examined institutional roots and horizontal diffusion of banks' climate-change risk-management institutions. The discussion focussed on the convergent change of institutions, or in Scott's words, how "*existing patterns reinforce or challenge the spread of new institutions*" (Scott, 2008, p.133). These background institutions influence diffusion "horizontally." Horizontal diffusion is not only a mode of diffusion, but it is also an observable third step of institutional diffusion of climate-change risk-management institutions by banks. The concept of agency explains how and why these institutions are diffused: a successful diffusion is largely the result of an institution's superior legitimacy which is determined by a power-play between pre-existing institutions and new ones. Superior legitimacy tends to reflect a higher degree of isomorphism.

In this power-play, institutional roots both maintain existing structures (Zucker 1977), and resist new ones (Giddens, 1984; Jepperson, 1991). This occurs especially where the original institutions are highly infused with legitimacy and tend to exist for their own sake. In the modified model of institutionalisation presented in chapter 6, the process of theorisation was shown to yield either a negative, or a positive opinion of an institution's legitimacy. A positive opinion serves as a signal for the bank to begin the institution's diffusion. As diffusion progresses, this "attempted implementation" of the new institution undergoes horizontal diffusion: a power-play whereby the institution undergoing diffusion gains or loses social consensus and its power to withstand and/or influence existing institutions.

There are countless institutional roots contending for superiority in institutional diffusion. Some are obvious and challenge new institutions directly, such as ERM systems; some are less obvious but with equal or even more agency to challenge new institutions. Two less-obvious (but major) institutional forces were explored in this chapter: (1) the pre-requisites to quantify and "package" climate-change risks for ERM systems' quantitative requirements, and (2) the environmental-cultural factors of each bank sample's country.

Banks' ERM systems require specialised routines and procedures with specific, task-oriented characteristics that allow little choice and variation in terms of what can be

diffused (Nelson and Winter, 1982). While institutions tend to evolve towards increasing degrees of technicality (see Scott, 1991), banks attempt to use solutions involving software that has not yet evolved to reliably measure climate-change risks (and environmental risks in general). Many banks attempt to use EKPIs in their models to mitigate climate-change risks, but these attempts are still undergoing development. They show no strong signs of objectification, and no signs of sedimentation into a standardised, industry-wide practice. This is primarily because EKPIs—as they relate to climate-change risks and opportunities—fall short of their utility in other, more established industries. The power-play implicit in the horizontal mode of diffusion explains why there is often little synergy between the ERM systems and the new climate-change risk-management institutions. The result of this "attempted implementation" is usually a superficial "patchwork" type of institutional integration. The banks are improving in their attempts to diffuse these institutions, but so far their limited development restricts the numbers of transactions (i.e. deals that involve climate-change risks) that can be considered. These transactions are time-consuming, require specialised staff and ongoing training, and so on.

Environmental culture is another institutional force that plays a significant role in horizontal diffusion. Two key examples of the effects of Canada's climate-change institutional environment were reviewed. Firstly, despite Canada's de-institutionalisation of its government-backed climate-change programs following a change of government in 2006, the country's weak environmental culture also explains why the country is so far behind in terms of climate-change performance. Up to 2005, the Canadian Liberal government showed institutional alignment with the Kyoto Protocol, but did not follow through with the measures and enforcements required to actually diffuse the institutions throughout the country's LSEs. The clearest example is the Liberal government's commitment, in April of 2005, of $10,0 CAD billion to reduce the nation's GHG emissions between 2008-2012, i.e. during a government term that the Liberal party had not yet won (2006 was an election year). At the same time, the government relaxed GHG-emissions targets for the country's LSEs (CBC News, 2007).

The industrialisation of the oil sands is another highly-distinguishing feature of Canadian environmental culture. Oil extraction and production from the oil sands are

arguably the most environmentally-destructive economic activities. Moreover, they cause three times the GHG emissions of conventionally-produced oil (Louvel, 2014). Like many ex-colonies/dominions and developing countries, Canada continues to depend on resource exploitation to sustain economic growth.

The effects of Germany's climate-change institutional environment were also reviewed by using two key examples. The first was Germany's exceeding its Kyoto goals despite their abnormally high targets due to the country's re-unification (Umweltbundesamt, 2011). These goals were achieved three years early and above the targets for GHG reductions (Umweltbundesamt, 2011). Secondly, Germany's climate-change institutional development is also strong on the regional level: industrial states such as Baden-Württemberg and Nordrhein-Westfalen have both passed climate-change laws with state-wide GHG-reduction targets of 25% by the year 2020, and 90% by 2050 (Widmann, 2013).

Although both Germany and Canada rely on resource exploitation to different degrees (both countries are among the top-ten producers of coal and coking coal), their banks and LSEs will have to increasingly shift away from these dependencies due to increasing reputation risks linked to these activities. Giant organisational stakeholders such as the World Bank and the EIB have already diffused institutional criteria to move away from these resources.

Besides the positive effects of horizontal diffusion and the self-sustained preservation of institutions by the agency embedded in their roots, horizontal diffusion also has its dangers. Legitimacy is achieved in horizontal diffusion primarily through the influence of mimetic and normative mechanisms that lead the power-play of "attempted implementation" towards isomorphism. Through this process, banks gain the legitimacy and resources they need concerning climate-change risk management. The danger is when institutions that either reflect short-term goals or foresight carry, nonetheless, a high degree of legitimacy. An example is carbon foot-printing approaches that banks use to strengthen their reputations concerning climate-change. Pursuing such initiatives drives the opportunity costs of other initiatives that promote long-term institutional improvement and a higher likelihood of achieving global climate-change mitigation targets.

An example of necessary long-term institutional growth is the development and diffusion of climate-change risk-management institutions for asset portfolios. The growing issue of "mission creep" by banks' increasing ownership of assets outside banks' core functions drives this particular opportunity cost all the higher (Gapper, 2013). While the banks' initiatives to innovate and diffuse these new institutions are promising, they are still thin. There are more initiatives to mitigate climate-change risks in the asset portfolios of the German banking sample, which can be explained by horizontal diffusion and its emphasis on institutional roots. While both samples of banks experience the challenges of quantifying climate-change risks and integrating them into their ERM systems for use with their asset portfolios, there is a difference between the samples. The German banks have higher expectations placed upon them by their country's environmental culture which awards more legitimacy to tackling long-term, ground-breaking needs for innovation.

CHAPTER 8: CONCLUSION

8.1 INTRODUCTION

This chapter concludes the thesis with four parts. Following this introduction, the second part has two sections, the first of which presents the main features of the study (methodology, structure, etc.) along with its main advances in knowledge concerning the banks' diffusion of climate-change risk-management institutions. These advances in knowledge take two main forms: (1) the highlights of the empirical results in light of the thesis' hypothesis, and (2) the utility, limits, and expansion of specific concepts from institutional theory. The second section gives an overview of the study's theoretical findings.

This chapter's third part has two sections that present relevant areas for future research. The fourth part concludes both this chapter and the thesis with an action recommendation for speeding up the financial sector's prioritisation of climate change: integrated reporting.

8.2 OVERVIEW

This thesis examined global climate-change institutions and their influence on the risk-management practices of two samples of the world's most influential banks. Neoinstitutional theory helped expose how the diffusion of new risk-management institutions in major financial organisations can have an unequivocal impact on speeding up the world's mitigation of climate change.

The destructive weather trends from climate change are continually breaking records of droughts, wildfires, floods, sea-ice melting, and so on. The urgency is growing: by 2010 the world had already heated up by 0,7°C of the 2,0°C buffer within which the world's temperature can rise and "predictably" sustain human life on earth (Umweltbundesamt, 2011, p.61).

The emissions-trading (ET) industry evolved along the assumption that free-market forces (e.g. supply and demand) would most effectively and efficiently re-direct

capital flows away from climate-destructive endeavours and into mitigation activities. The Stern Review showed that the costs of this market shift can be limited to around 1% of annual global gross domestic product (GGDP), i.e. if the shift happens quickly enough (Stern, 2006a; 2006b). United Nations (UN) institutions, such as the Kyoto Protocol, require diffusion by governments within their jurisdictions. In each country, not only must large-scale emitters (LSEs) transform themselves for a low-carbon economy, but also major financial organisations have this challenge. Not all governments implement the rules the same way: some thoroughly implement the rules, others barely at all. Nonetheless, just as governments considered banks to be "too big to fail" during the global financial crisis (GFC) of 2007/2008, banks and many multinational corporations consider climate-change risks too big to ignore, even if their governments neglect the issue.

Banks and LSEs have a mutually-dependent relationship: LSEs are subject to banks for finance, and banks rely on LSEs to provide dependable sources of return-on-investment (ROI). A study by Dierks et al. in 2010 pointed out that if the world's climate-protection goals are to be met, colossal sums of money must be redirected. The majority of these investments will have to come through financial markets (e.g. stock exchanges, etc.), because 86% of the world's capital flows through these markets (UNFCCC, 2007 in Dierks et al., 2010, p.10). To do this, banks need to mitigate risks in these investments, and climate-change risks are different from banks' standardised risk types (e.g. credit risk, operational risk, etc.). Because of banks' interdependent relationships with LSEs, banks must not only manage their own investment risks, but also (to different degrees) the risks of all the industries they have interests in.

To mitigate these risks, new climate-change risk-management institutions are being developed and diffused by banks worldwide, regardless of regional or national ET schemes underway or other forms of government support for climate-change market development.

Two samples of banks from Annex-2 nations (the developed countries of the Kyoto Protocol, i.e. those with the highest climate-change liabilities) were studied. Canada has been among the worst-ten performing countries since 2006 in terms of climate-change adaptation and mitigation performance, while Germany has been among

the top-five performers during the same time period (Germanwatch, 2006; 2007; 2008; 2009; 2010; 2011; 2012). Neoinstitutional theory, along with both the enterprise-wide risk management (ERM) framework common to major banks, and concepts from the Basel Accords were used to expose how climate-change risk-management institutions have been diffused in each sample of banks.

This thesis advanced neoinstitutional theory by building upon Scott's observation of a triple significance in analyses of institutional diffusion. The triple significance explains, from three viewpoints, the new climate-change risk-management practices in German and Canadian banks. These three viewpoints were tailored to fit this study as institutional strength, effects, and roots, respectively. These three viewpoints formed the theoretical framework for explaining what, understanding how, and proposing why the institutions in the bank samples are diffused in different ways. This theoretical framework set the grounds to approach the thesis' driving theme: how can institutional diffusion be done in order to propel the financial sector to invest more heavily into climate-change mitigation endeavours and less into environmentally-destructive activities?

The research data suggested that the regulatory institutional developments in both countries (Germany and Canada) are still too weak to be properly incorporated into the technical requirements of standardised financial risk-management models. Moreover, most climate-change risks have still not attained the status of "materiality" to banks. These discoveries raised an unexpected question during the course of field research: why was the institutional diffusion within both samples of banks—despite their governments' opposite institutional approaches to climate-change—so similar? The lack of regulatory development leaves the banks without the means, economic necessity, or possibly even the motivation to develop climate-change risk-management institutions for, e.g. market risks, asset management, and portfolio exposure. This question lead to the development of the thesis' hypothesis that the banks' institutional developments made in order to mitigate climate-change risks help the banks gain legitimacy and protect their reputations. Moreover, regardless of their effectiveness and efficiency, these institutional developments help the banks gain the legitimacy they require for managing climate-

change risks by becoming isomorphic with their institutional environments, which is supported by the writings of Meyer and Rowan (1977).

The research methodology to develop and explore this hypothesis grew out of two pilot studies (i.e. Robertson, 2011a; Robertson, 2011b) which emphasised top-down and bottom-up views of institutionalisation in climate-change markets: the top-down view from major banks, and the bottom-up view from project developers, such as those implementing the Clean Development Mechanism (CDM) of the Kyoto Protocol. The conclusions of both studies pointed out that Canadian and European organisations approached climate-change risks and opportunities to varying degrees. A research methodology was designed based on this finding to create two samples of financial organisations and compare their diffusion of climate-change risk-management institutions.

The research methodology's theoretical base, goals, model, and epistemological approach were executed through two main research methods that mutually supported each other: documentation analysis and interviews. The interviews were tailored to explore missing links and expose extra layers of information among those uncovered in the documentation analysis. The field research was formally concluded in 2013 with a quality-assurance (QA) check whereby the data from the two core samples of financial organisations was confirmed to be valid by nine of the ten banks in both samples. One bank did not participate in this final QA verification.

The main weakness of the research methodology (and the results it yielded) relates to the comparability of the two bank samples. While the "Big Five" banks in the Canadian sample essentially constitute the organisational population of Canadian banks (they are the biggest five banks of the six that control approximately 90% of all bank assets [DoF, 2011]), the German organisational banking population is far larger than the five sample banks chosen from it. The German organisational banking population is divided among three main categories according to the German Banking Act, the KWG[164]: commercial banks, public sector banks, and cooperative banks (KWG, 2013). For this reason, banks in the German sample were chosen from each of these three categories in order to represent, as much as possible, the German organisational banking population.

[164] Original: *Kreditwesengesetz*

The German banks were chosen according to the same criteria used to select the Canadian financial organisations:

1. specifications according to Standard and Poor's/Morgan Stanley Capital International's Global Industry Classification Standard (GICS);
2. involvement with ET/climate-change initiatives;
3. representativeness of the country's overall banking sector;
4. availability of comparable information.

Already during the field research it became apparent that both the concepts upon which climate-change institutions are based, and the structures whereupon they proliferate themselves into the organisational field (the banking industry) were vague and their interpretations by each bank varied considerably. Summer's (1906) and Parsons's (1960) complementary definitions of institutional levels helped interpret this finding in the empirical data. The analysis revealed that the "umbrella" concepts of sustainability (regarding climate-change), materiality (concerning risks), and scope (concerning the banks' accountability of climate-change issues) were the core conceptual drivers of the banks' climate-change risk-management institutions. The structural level showed equal vagueness among the stakeholders, their functions, practices, and standards.

A clear division in the institutions appeared when viewed according to Scott's **three pillars** of institutional elements (not to be confused with the **three viewpoints/triple significance** of analyses of institutional diffusion). The institutions and stakeholders primarily based in the regulative pillar have influence on the LSEs in which the banks invest, but very little influence on the banks themselves. The institutions and stakeholders more heavily characterised by normative and cultural-cognitive elements (such as industry memberships, collective policies, voluntary declarations and studies, as well as sustainability indices and ratings by third-party agencies) are empowered by "constitutive rules" and driven by prescriptions, guidance, and moral suasion (Saerle, 1995, p.27; Scott, 2008, pp.52, 64).

After the institutions and stakeholders were mapped out, the thesis examined the risk paradigms (at the conceptual level) and structures (i.e. the ERM frameworks) through which banks diffuse climate-change risk-management institutions. Banks interpret risks through ERM frameworks, which are highly-elaborated institutions with

both technical and regulatory controls. By their design—which relies primarily on pre-determined structural, technical, and quantitative inputs—these ERM systems maintain a narrow scope of what constitutes a material risk. This risk-management paradigm of major banks shows little variation among the two samples. Regardless of climate-change risks' materiality, these risks can still threaten banks in numerous ways (e.g. threats to a bank's reputation, higher risk of default on loans, etc.). Because of this, banks attempt to diffuse rules, policies, methods, and practices that are connected or "close to" the central components of their ERM frameworks. Other threats, vulnerabilities, uncertainties, and otherwise "undesired" outcomes are typically dealt with in several ways: they are delegated to the banks' business-continuity plans (BCPs) and systems, acknowledged in corporate social responsibility (CSR) reports, dismissed, or approached pro-actively by using "add-on" initiatives to the ERM frameworks.

Fortunately, major banks recognise that regardless of their reliance on the concept of materiality as a risk "gatekeeper," both their revenue-generating business practices, as well as their giant asset portfolios face risks from climate change. The add-on initiatives used by the banks to adapt their ERM systems to these new risks primarily focus on mitigating credit and reputation risk, which are also "gateway" and "receiver" risks. The initiatives by the banks are attempts to identify threats and manage them in the systematic manner that other major risks are mitigated.

One difference that stood out in the assessment of climate-change risks between the samples is that the banks in the Canadian sample, which operate under a lax climate-change regulatory framework, rank climate-change risk impacts as medium-level (or uncertain) or below. In contrast, three of the German banks ranked impacts from physical risks at the highest possible level. One clear similarity between the samples was how both countries' financial organisations considered climate-change as a threat to their reputations.

Two of the Basel-based risk types stood out more prominently in the banks' developments of climate-change risk-management institutions: reputation risk and credit risk. Reputation risk is vague, unquantifiable, and can cause small to colossal damage to a bank. Credit risk affects banks' lending businesses, which are their most important business areas, and from which they generate most of their income (Kroog et al., 2013,

pp.12, 21). Because the primary business of banks is lending, credit-risk initiatives are the most important institutions (regarding climate change) that banks can diffuse concerning their own economic survival.

Up to chapter 4, the thesis had presented: (1) the climate-change risk-management institutions' core concepts and structures at the global level, (2) their stakeholders and frameworks in which they must be integrated (i.e. banks' ERM systems), and (3) the study's core theoretical foundations. The discussion then shifted to analyse the three viewpoints of Scott's observation of a triple significance in analyses of institutional diffusion.

The first analysis (chapter 5) examined institutional strength, which emphasised the institutions' clarity and unity at the conceptual and structural levels, as well as their reinforcement by authorities with the use of sanctions or other corrective mechanisms. These institutions are diffused in a "top-down" mode of transmission. Top-down diffusion was argued to be not only a mode of diffusion, but an observable first step of institutional diffusion of climate-change risk-management institutions by banks. A lack of institutional strength limits the opportunities inherent in top-down diffusion, and because of this limitation, the banks all "institutionalise" beyond the regulative pillar.

Institutionalisation allows the banks to overcome the institutional "gap" left open between the vague conceptual/structural foundations of climate-change risk-management institutions and the narrow requirements of highly-elaborated ERM institutional environments. Institutionalisation also means that the banks develop institutions beyond mere alignment with the regulative pillar and further into the normative and cultural-cognitive institutional dimensions. While the banks' initiatives to institutionalise do not necessarily mitigate climate-change risks directly, institutionalisation does help the banks gain legitimacy and protect their reputations. This chapter also reviewed each bank's unique case of striving beyond the regulative pillar of institutions and diffusing in innovative ways. The review focussed on the most unique feature or distinguishing characteristics of each bank's case of institutionalisation.

Chapter 6 analysed the second viewpoint of the triple significance in analyses of institutional diffusion: institutional effects. In several respects, the thesis' previous five chapters prepared the way to present and interpret the effects of the banks' cases of

institutional diffusion. These effects—such as resulting institutional arrangements, plans, institutional/stakeholder alignments, organisational designs, and levels of market penetration—are understood to occur largely as the result of a particular mode of institutional diffusion: "bottom-up." Bottom-up diffusion was argued to be not only a mode of diffusion, but also an observable second step of institutional diffusion of climate-change risk-management institutions.

A modified version of Tolbert and Zucker's model of institutionalisation (1996) was presented to emphasise the three modes of diffusion (top-down, bottom-up, and horizontal diffusion) occurring in the banks' cases of institutionalisation.

Bottom-up diffusion of climate-change risk-management institutions was shown to be strongly isomorphic in its focus on institutions related to the normative and cultural-cognitive pillars. Although isomorphism helps the banks gain legitimacy and protect their reputations, it does not necessarily help them develop robust climate-change risk-management institutions that can be integrated into ERM frameworks.

The empirical findings showed that isomorphism is implicit in the bottom-up mode of diffusion, especially due to the banks' use of pro-active measures (e.g. studies, knowledge networks) called "radars." Radars can be classified among three groups of initiatives: (1) external knowledge transfer, (2) internal knowledge transfer, and (3) studies and scientific contribution. The data from the bank samples showed eight main functions of radars. By their focus on institutions and initiatives that already exist, radars engender isomorphism among five main categories of climate-change market initiatives in both samples:

1. corporate-purpose financing (CPF);
2. socially-responsible investment (SRI)/environmental, social, and governance (ESG) funds;
3. advisory services and investment banking;
4. ET and greenhouse-gas (GHG) offsetting; and
5. renewable-energy initiatives (i.e. investing and advisory).

With the exception of renewable-energy investing, these initiatives are of little significance concerning profit-generation and ROI. In fact, in many cases the initiatives are burdensome and can carry increasingly high opportunity costs (Begg, 2006;

Malmborg, 2008; Wagner, 2008). Nonetheless, these initiatives bring the banks legitimacy and reputational benefits, especially because they create a need for extensive institutional and/or stakeholder engagement in the organisational field.

Concerning alignment with other institutions and stakeholders, the financial organisations do not simply align themselves with as many as possible; instead, they engage those with characteristics that suggest high legitimacy. Six characteristics of such forms of legitimacy were identified between both samples.

In addition, while both samples showed considerable isomorphism among the choices of alignments with institutions and stakeholders, the Canadian sample of banks had notably more isomorphism in both groups of institutions and stakeholders. The first group included industry memberships, collective policies, and voluntary declarations/studies; the second group included the presence of the banks on rating platforms, rankings, and indices. Where there is less regulatory clarity, banks institutionalise more isomorphically in terms of their alignments with stakeholders and institutions in the organisational field.

Bottom-up diffusion must be executed with caution, as it is not without dangers to organisations. These dangers stem from bottom-up diffusion's isomorphic constraints that can push organisations into a vicious cycle whereby their institutions reinforce their own legitimacy and therefore persist longer than they should. The empirical data and theoretical analysis revealed four ways that this vicious cycle can occur. Firstly, banks' radars focus on legitimate stakeholders and institutions, not necessarily ones that promote effectiveness or efficiency in mitigating climate-change risks. Secondly, radars copy other radars and knowledge networks in the organisation field, which restricts the available sources of information that can challenge the legitimacy of current (and incoming—through horizontal diffusion) institutional frameworks and practices. Thirdly, these previous two dangers leave the banks susceptible to taking certain paradigms and views for granted: an organisation can start diffusing institutions that are taken "off the shelf" without proper due-diligence and analyses of organisational fit (Meyer and Rowan, 1977, p.345). Lastly, because banks only seek alignments with specific institutions and stakeholders, the spread of legitimate institutions implies the reduction of those deemed less legitimate, regardless of their levels of effectiveness and efficiency in serving their

purposes. Sedimentation of less-than-optimal institutions in a multiplier (hub) industry such as the financial sector can not only slow down, but also even impede the world's response to mitigate climate change.

Chapter 7 examined institutional roots and horizontal diffusion of banks' climate-change risk-management institutions. Like top-down and bottom-up diffusion, horizontal diffusion was also argued to be both a mode of diffusion, and an observable third step of institutional diffusion by banks. A modified understanding of the term "agency" explained how and why these institutions are diffused: a successful diffusion is largely the result of an institution's superior legitimacy which is determined by a power-play between pre-existing institutions and new ones. "Superior" legitimacy suggests, in this case, a higher degree of isomorphism with the institutional environment and hence, stronger agency.

Horizontal diffusion was explored by examining two less-obvious (but major) institutional forces that influence the banks' diffusion of climate-change risk-management practices: (1) the necessary prerequisites to quantify and "package" climate-change risks for ERM systems' technical and quantitative requirements, and (2) relevant environmental-cultural factors of each country.

The attempted implementation of environmental key-performance indicators (EKPIs) in banks' models to mitigate climate-change risks, as well as the use of specialised software both have promising future effects, but limited current results. The outcomes of these "attempted implementations" are "patchwork" types of institutional integration. Until these institutions are better developed, the numbers of transactions (i.e. deals that involve climate-change risks) that can be considered will remain limited to the availability of specialised staff to perform the analyses.

The second factor, environmental culture, was reviewed along with two key examples from each country that show contrasting approaches to environmental sustainability in long-term economic development. For Canada, the first example was its government's de-institutionalisation, beginning in 2006, of the country's original climate-change institutions. Even prior to 2006, the government showed a tendency to portray institutional alignment with the Kyoto Protocol, and at the same time, not follow through with the measures and enforcements required to actually diffuse the institutions

throughout the country. The second example is the industrialisation of the oil sands, which involves not only the destruction of the environment on a mass geographical scale (affecting an area of ~150.000 square kilometres, the size of England), but also causes three times the GHG emissions of conventionally-produced oil (Louvel, 2014).

The first example of Germany's approach to environmental sustainability in long-term economic development is the country's exceeding its own Kyoto goals despite their abnormally high targets due to the country's re-unification during the baseline year of the Kyoto Protocol (Umweltbundesamt, 2011). The second example is Germany's strong institutional development at the regional level, i.e. the climate-change laws of Baden-Württemberg and Nordrhein-Westfalen with state-wide GHG-reduction targets to be reached by the years 2020 and 2050 (Widmann, 2013).

The danger of horizontal diffusion occurs when there is high legitimacy to be found in institutions that reflect short-term goals or foresight (Pierson, 2004). The example presented was the banks' developments of carbon foot-printing systems that strengthen the banks' reputations concerning climate-change instead of driving banks to develop and diffuse climate-change risk-management institutions for their giant asset portfolios. There were more initiatives to mitigate climate-change risks in the asset portfolios of the German banking sample where the country's environmental culture awards more legitimacy to tackling these types of challenges with innovation.

8.3 THEORETICAL FINDINGS

Scott refers to the existing literature on institutions and institutionalisation processes as a "*jungle of conflicting conceptions, divergent underlying assumptions, and discordant voices*" (2008, p.vii). There is, nonetheless, considerable utility available to researchers who are willing to use, combine, and if necessary, re-define the literature's available concepts, theories, and their multiple interpretations by different authors. The combination and re-definition of existing interpretations and concepts from the literature is what allowed institutional theory to not only explain tendencies and patterns in this thesis' empirical data, but also to show advantages and disadvantages of the banks'

approaches to diffusing climate-change risk-management institutions. The main concepts from institutional theory that were used and combined in this thesis were:

1. Summer's (1906) and Parsons's (1960) complementary definitions of institutions, i.e. that institutions comprise both conceptual and structural levels, and that the conceptual level is the source of meaning, legitimacy, and support that makes the institution's subsequent implementation possible;
2. Scott's model of institutional pillars (2001; 2008);
3. Scott's observation of a triple significance in analyses of institutional diffusion (2008);
4. DiMaggio and Powell's three mechanisms of diffusion (1983);
5. Tolbert and Zucker's model of institutionalisation (1996);
6. Pierson's categorisation of institutional effects (2004); and
7. Meyer and Rowan's explanation of attaining legitimacy and resources through isomorphism with the institutional environment (1977).

Of the ideas above, Scott's three pillars of institutions was of particular value in showing the divisions among groups of stakeholders and institutions based on their dominant regulative, normative, or cultural-cognitive elements (Scott, 2001; 2008). The three pillars of institutions also allowed a clearer distinction among the three viewpoints of institutional-diffusion analyses (i.e. institutional strength, effects, and roots). These distinctions made it possible to explain the banks' cases of institutional diffusion, as well as the advantages and disadvantages of their approaches, in the following way.

1. *Institutional strength:*
    a. highly related to the *top-down mode of diffusion* primarily based in the regulative pillar;
    b. limited by *institutional gaps or weaknesses* inherent in relying on authorities to create rules that sufficiently address the issues at hand;
    c. example: the necessity for banks to *institutionalise beyond the reach of regulatory institutional initiatives* in order to gain the legitimacy they require.
2. *Institutional effects:*

   a. highly related to the *bottom-up mode of diffusion* primarily based in the normative and cultural-cognitive pillars;
   b. limited by *isomorphic drivers* which push organisations into vicious cycles whereby the organisations' institutions reinforce their own legitimacy, i.e. regardless of their effectiveness;
   c. example: the reliance by banks on initiatives such as the Carbon Disclosure Project (CDP) for risk-management activities far *outside the scopes* of those initiatives.

3. *Institutional roots:*
   a. highly related to the *horizontal mode of diffusion* primarily based in the normative and cultural-cognitive pillars combined with superior agency;
   b. limited by the achievement of legitimacy through isomorphism with the institutional environment, even if the dominant institutions reflect only *short-term goals or foresight*;
   c. example: the common pursuit of carbon foot-printing initiatives *despite considerable and growing long-term needs* for ways to mitigate climate-change risks in asset portfolios.

What unified the three viewpoints of institutional-diffusion analyses with their corresponding modes of diffusion was a re-defined model of institutionalisation heavily based on Tolbert and Zucker's model (1996). The main adjustments to Tolbert and Zucker's model of institutionalisation were:

1. the institutionalisation phases and processes were given a new sequence that emphasises their continuous influence, regardless of the actual phase of diffusion taking place;
2. top-down, bottom-up, and horizontal modes of diffusion were included in the model;
3. an inclusion of Scott's simplification of Tolbert and Zucker's first two phases of institutionalisation, which he calls "pre-institutionalisation processes" (Scott, 2008, p.126);
4. pre-institutionalisation was interpreted to include both top-down and bottom-up processes of diffusion;

5. pre-institutionalisation ends with theorisation, which was defined as actors' speculations as to whether institutional developments in their organisational fields help them gain, or cause them to lose legitimacy;
6. theorisation eventually reaches a preliminary conclusion—a "signal" or opinion—to either begin an institution's implementation or not to;
7. this "signal," when positive, is what begins the objectification process of "attempted implementation";
8. "attempted implementation" is what begins horizontal diffusion;
9. objectification is interpreted to solidify an initial (i.e. a "theorised") opinion and also to determine, through the process of institutional implementation, whether the institution is "diffusible" or "not-diffusible" in the organisation;
10. institutional diffusion is not only progressive, it is often never completed; and lastly,
11. sedimentation begins when an objectified institution achieves status quo which then influences (ongoing) processes of theorisation and "attempted implementation" in the following ways: theorisation will tend to automatically approve the institution in question, and the process of "attempted implementation" will more often result in successful cases of diffusion.

8.4 AREAS FOR FUTURE RESEARCH

This chapter's third part has two sections that present areas where future research is needed. The first section shows the need for more empirical research to further develop institutional theory concerning de-institutionalisation in highly-elaborate institutional environments, such as the financial industry. The second section shows the need for more research to extend institutional theory regarding: (1) experiences with institutionalisation by outlier cases from the German sample (i.e. cooperative banks and insurance multinationals with giant asset portfolios), (2) the influence of culture on institutional diffusion, and (3) the diffusion of institutions where international laws (i.e. the Kyoto Protocol) have had, to date, considerably different regulatory influence than

elsewhere to reduce GHG reductions, such as in BRIC countries (i.e. Brazil, Russia, India, and China).

8.4.1 DE-INSTITUTIONALISATION

Oliver defines de-institutionalisation as "*the process by which the legitimacy of an established or institutionalised organisational practice erodes or discontinues*" (1992, p.564). From the outset of research for this thesis, it was assumed that de-institutionalisation would be an observable concept at work in the empirical results. The GFC had set in, banks were operating in a severe market downtown, and the prices of ET credits were plummeting. Most of the banks reported terrible conditions of their economic environments; the Toronto-Dominion Bank (TD) referred to the year 2010 as having one of the worst economic environments since the great depression (TD-Annual Report, 2010).

Despite these market conditions, there was remarkably little de-institutionalisation of the banks' climate-change risk-management institutional frameworks. In fact, the banks' climate-change policies, GHG-emissions disclosure, and risk-management development continued to progress—in most cases, unburdened by the GFC. What was observable were attempts by the banks to penetrate climate-change markets that had been anticipated to grow, but ended up shrinking. Following the onset of the GFC, the ET industry underwent unprecedented, chaotic changes: waves of bankruptcies, lay-offs, mergers, and acquisitions. Prices of ET credits fluctuated downwards to ever-lower levels and much of the news media began to predict the industry's demise—a tone the media maintained from 2011 to 2014 as well.

These occurrences were observable not only in ET markets, but also in related markets such as renewable-energy development. Dierks et al. relate that in 2007, $23,0 USD billion were invested over stock exchanges in renewable-energy development, while the following year—during the GFC—the number sank to $11,4 USD billion (UNEP SEFI, 2009 in Dierks et al., 2010, p.10). Nonetheless, the effects of the GFC do not show a market-wide downturn in every respect. For example, between 2008 and 2012, 28 companies exited the Canadian financial system (OSFI, 2008; OSFI, 2009; OSFI, 2011;

OSFI, 2012). There is 1 less deposit-taking company (from a total of 150 in 2008), and 31 fewer insurance companies (down from 299 in 2008). However, there are also 5 new banks, with 4 foreign banks entering the Canadian market during the GFC.

The GFC also had varying effects on climate-change markets. While prices collapsed, volumes (surplus permits) in ET markets continued to grow. Volumes of EU emission allowances (EUAs) quadrupled from January 2008 to mid-2011, while Certified Emission Reductions (CERs) and Emission Reduction Units (ERUs) from Kyoto-based flexible-mechanism projects increased over tenfold and twofold, respectively (World Bank, 2012). This does not suggest that the GFC set the grounds for de-institutionalisation, but rather for institutional learning: global climate-change institutions that were recently brought to life were (and still are) experiencing the trials of operating in free-market, competitive economies. In fact, the clearest example of de-institutionalisation in the empirical data was discussed in chapter 7 concerning the Canadian government's withdrawing itself from the Kyoto Protocol and dismantling the climate-change institutions diffused by the previous (pre-2006) Liberal-party government. Despite this, the Canadian banks continued to institutionalise climate-change risk-management institutions throughout their corporate and business units.

Despite the limitations of climate-change market possibilities due to weak regulations, the International Finance Corporation (IFC) still emphasises that: "*the first businesses to grasp new opportunities arising from changing conditions will be well positioned to gain competitive advantage*" (Stenek and Connell, 2010, p.7). This includes institutional and market-based learning, which often comes through attempts that do not immediately succeed. Examples of the sample banks' market initiatives that did not grow as quickly as anticipated and were therefore removed as offerings (or less actively pursued by the banks) were:

1. weather bonds (Allianz);
2. joint-venture with Gazprombank to penetrate Joint-Implementation (JI) market (Commerzbank);
3. Global Sustainability Fund (TD);
4. Scotia Global Climate Change Fund (Bank of Nova Scotia);
5. ET operations and GHG-offset portfolio (Deutsche Bank);

6. CDM fund (Kreditanstalt für Wiederaufbau [KfW], from the secondary core sample of financial organisations).

The banks' institutional structures presented in chapter 5 still exist despite the coming and going of market initiatives. In fact, an opportune time to study de-institutionalisation would be when global financial market conditions improve. There is a new wave of climate-change institutional initiatives to be expected from global leaders who have spent the last several years "*heavily burdened with overall economic stability, and less concerned with green policy*" (Morton, 2011). Research by Kroog et al. on the outcomes of the GFC suggests that major German banks'

> "*expectations regarding loan portfolio development as a result of economic recovery are broadly positive. Accordingly, the intensity of competition in the lending business can be expected to increase.* [...] *...an increase in efficiency in the lending business will be a high priority for the banks in the future*" (Own modification) (Kroog et al., 2013, p.30).

A strong global financial recovery would also likely re-stimulate an interest in a more definitive role for sustainability in LSEs and mainstream investments. This renewed focus on climate-change institutional development and strengthening could fortify some institutions and make others redundant. An ideal area of research to buffer the findings of this thesis would be the de-institutionalisation—not only of redundant climate-change initiatives begun prior to the GFC—but also of the banks' older institutions that support market activity in climate-destructive activities, such as tar-sands development. This would add to the emerging body of research called "stranded assets" which, for example, seeks to understand banks' portfolios and the effects of these portfolios' assets being rendered obsolete by the growing global awareness of climate-change risks.[165]

8.4.2 OUTLIERS, CULTURE, AND POST-KYOTO

Besides de-institutionalisation, there are several other areas that would benefit from

[165] An example is the Stranded Assets Programme of the Smith School of Enterprise and the Environment, University of Oxford (http://www.smithschool.ox.ac.uk/research/stranded-assets/).

further research. Three stand out from this thesis' empirical data analyses and theoretical discussions: outlier cases, cultural factors, and post-Kyoto scenarios.

Research into outlier cases refers to more detailed, in-depth case-study analyses of the institutionalisation by certain banks. Two examples of outlier financial organisations from the German sample are DZ Bank and Allianz.

DZ Bank operates in the cooperative financial sector and maintains a central-bank function for ~900 banks. While the DZ Bank Group is developing institutions to support its interests in three main areas related to climate change (loans, equity [sales-side], and marketing/branding initiatives), research could explore institutional diffusion modes from one "top" actor down to the banks in its network. Would bottom-up and horizontal modes of diffusion play roles for the banks in the network, or only for the central bank? Would the network banks employ radars the same way as the central bank does? Such an analysis would expose the effects of company-specific organisational hierarchies on diffusion, as opposed to the findings of this thesis, which explored the hierarchies implicit in top-down diffusion within the organisational field.

Another case for outlier research from the German sample of banks is Allianz's case of institutionalisation. Allianz is unique because it is the only insurance company in both samples, although it performs many of the functions of the banks and manages an equally-sized asset portfolio. While this thesis heavily explored the Basel Accords and their requirements for integrating and diffusing new risk-management institutions into banks' ERM systems, the same research could be carried out for the requirements of Solvency I and II—the equivalent of the Basel Accords for insurance companies. Allianz's case of institutionalisation emphasised a "business-as-usual" approach to climate-change risks. Allianz also showed a full appreciation of the physical risks of climate-change, unlike several of the banks. While it was proposed in chapters 4 and 5 that Allianz's confident approach is likely related to the greater demands of risk-management in the insurance business than in the banking industry, it could also be that climate-change institutions are more easily diffused according to the requirements of Solvency as opposed to the Basel Accords. If this were the case, knowledge of how those requirements are different and whether those requirements could also be implemented according to the (vague) rules of the Basel Accords would open up new possibilities for

banks to consider integrating new institutions into their ERM systems.

Cultural factors offer another area of research that could reveal other insights as to why the banks approach climate-change the ways they do. In Canada the "staples thesis" (i.e. that economic growth that is driven primarily by the availability of exploitable resources [staples]) could help explore the co-dependencies between the nation's banks and its LSEs. Moreover, such research could examine the role of cultural-cognitive and normative institutional elements in transactions between the Canadian banks and their clients. Studying these elements could expose the types of influence that banks can have on how their clients integrate environmental sustainability into resource extraction.

Likewise, in Germany there are also distinctive cultural factors (such as a generalised scepticism towards the government) that possibly influence organisations to institutionalise beyond the regulative pillar and take matters into their own hands. Research could explore whether the German banks' cases of institutionalisation are driven by distinctly local environmental-cultural factors, or whether these environmental-cultural aspects are actually part of a larger cultural response to, for example, organisations' experiences with the country's governments during the last century.

Lastly, research into the current and future roles of banks in Kyoto-based non-Annex-2 countries, and particularly those in developing countries, would bring the top-down mode of diffusion into clear focus. These countries (especially BRIC countries) have different climate-change responsibilities from a regulatory perspective, and increasingly large liabilities from a growing global awareness that GHG reductions in these countries are decisive factors in the world's mitigation of climate-change. Some estimates suggest that emerging economies are accountable for up to half the world's current GHG emissions. Do normative and cultural-cognitive institutional pillars play significant roles for banks in these countries? Do their banks reach beyond minimal regulatory requirements and drive institutional diffusion into areas threatened by climate-change risks?

8.5 CONCLUSION: ACTION RECOMMENDATION: INTEGRATED REPORTING

Concerning this thesis' original driving question about how to speed up the financial sector's prioritisation of climate-change, the following recommendation is proposed. Even though governments are delaying to pass firm climate-change laws (i.e. legally-mandated GHG reductions), there is another way to quicken the banks' development of climate-change risk-management institutions to a level of effectiveness and efficiency on par with the banks' standardised, Basel-based risk-management institutions: integrated reporting. Integrated reporting requires increases in disclosure and transparency for banks' portfolios and for activities where climate-change plays a role—"material" or not.

In the words of DZ Bank's Sustainable Investment Research Team:

> "*since the accounting scandals of Enron and WorldCom, shareholders have been forced to realise that focusing on the promised return alone is not enough for an investment decision. Companies must be valued more holistically, which means that in addition to economic analysis criteria, environmental, social and above all corporate governance dimensions must also be taken into account in equal measure*" (Pratsch and Wermann, 2011, p.4)

The key word in the above quote is "holistic," which is a fundamental concept of integrated reporting. Integrated reporting (IR) is:

> "*a process founded on integrated thinking that results in a periodic integrated report by an organization about value creation over time and related communications regarding aspects of value creation*" (IIRC, 2014).

A simplified way of explaining IR for this thesis is its combination of the information of an organisation's (mandatory) annual report, CSR report, (voluntary) CDP disclosure, along with relevant information about the organisation's strategy, governance and stakeholders. Moreover, IR focuses on the short, medium, and long-term time frames and should be as concise as possible (IIRC, 2014). IR is based on a framework for reporting that is currently under development by the International Integrated Reporting Council (IIRC) with the support of major businesses (e.g. Unilever, HSBC, Deutsche Bank, Hyundai, Microsoft, etc.) and investors (e.g. Goldman Sachs, ING, Norges Bank, etc.) from over 25 countries (IIRC, 2014).

IR addresses a major commonality visible throughout this thesis' empirical data and theoretical analysis: the push from most institutions for increases in disclosure and

transparency. These two demands are not only implicit in the evolving criteria for issuing reports, but also from an ever-increasing number of climate-change stakeholders such as NGOs, rating-agencies, and so on.

Through current reporting mechanisms, organisations can pick and choose how they use certain standards to gain legitimacy. For example, research by Tschopp, Wells, and Barney shows the limits of the Generally Accepted Accounting Principles (GAAP) standard as interpreted by the US Financial Accounting Standards (FAS): FAS-5 requires only the reporting or disclosure of environmental liabilities and loss contingencies related to social or environmental issues, which are limited based on both materiality and the very likelihood of occurrence (2012a, p.11). It can be argued that CSR reporting serves this "information gap" between what is required by law and what should be disclosed to keep shareholders informed. But CSR reporting is predominantly based on Global Reporting Initiative (GRI) guidelines. Since 2007, GRI and the sustainability arm of the multinational professional services firm KPMG have conducted research into climate-change disclosure and have found that:

> "*although most businesses report on climate change, the majority avoid reporting the risks to their business posed by this environmental threat. Rather, they extensively report on new business opportunities arising from it, such as establishing carbon funds*" (GRI, 2009).

Shareholders and other stakeholders implicitly experience an asymmetry of information with major organisations, and individuals naturally have few objective standards by which to monitor and judge organisational performance (Hinings and Kondra, 1998).

Even if banks continue to invest heavily in GHG-intensive industries, IR would expose their contributions to climate-destructive activities. Banks would take swift, decisive actions—given their unwillingness to tolerate reputation risk—in order to protect their reputations and legitimacy. Organisations are remarkably innovative when they are motivated. IR offers the hope of bringing an organisation's relevant environmental information to one place (a report, on paper or on-line) and with the added feature of disclosing the organisation's strategies to not only meet its own goals, but also those of

its stakeholders. Certainly the environment is a stakeholder of every organisation, regardless of “scopes” and materiality.

APPENDICES

APPENDIX 1: SAMPLE SELECTION

Because of the high level of detail required about the new institutions, the number of cases had to be small, but still maximally-representative of the Annex-2 nations' financial organisations. An inclusive approach to this challenge required a system to categorise all possible cases. On such a continuum, extreme cases could then be studied and compared as dichotomous types of the same phenomenon.

An ongoing joint-research project (with ongoing annual reports dating back to 2006) conducted by both the German NGO Germanwatch and Climate Action Network-International (i.e. a European umbrella group of environmental NGOs) ranks the climate-protection performance of the 58 countries that are, together, responsible for over 90% of global energy-related GHG emissions (Germanwatch, 2012). This climate-change performance continuum for the world's most significant climate-change contributing nations is the Climate Change Performance Index. The index's results are based on three indicators relating to each country:

1. the country's GHG emissions trends (50% weighting);
2. GHG emissions levels (30% weighting); and
3. national and international climate policy assessments (20% weighting).

The Climate Change Performance Index gives a reliable overview of Annex-2 nations' climate-change performance and ranks the individual countries, comparatively, on a spectrum from strong to poor performance. This significantly helped narrow down the number of countries from which representative banking sample candidates could be assembled.

To enable an inclusive view of Annex-2 nations' financial organisations, the opposite ends of the climate-change performance continuum were reviewed. The goal was to select two countries—one from the ten-best (called "good" by the Index) and one from the ten-worst performing countries ("very poor") in order to progress to the more complicated task of selecting samples of financial organisations from each country. In

the table below, the best and worst-performing nations of 2012 are shown in descending order according to their rankings on the Index.

Table 105: Best and worst-performing nations of 2012

Rank	"Good"	Rank	"Very Poor"
1	Sweden	49	USA
2	United Kingdom	50	Canada
3	Germany	51	Croatia
4	Brazil	52	Russia
5	France	53	Poland
6	Switzerland	54	China
7	Mexico	55	Turkey
8	Slovakia	56	Kazakhstan
9	Denmark	57	Iran
10	Belgium	58	Saudi Arabia

(Source: Germanwatch, 2012, pp.6-7)

Four criteria determined which of the 20 countries above would be chosen for the study. The countries had to have:

1. the same UNFCCC classification;
2. comparable GDPs and banking risk-ratings;
3. comparable challenges with climate-change mitigation; and
4. as disparate climate-change performance as possible (the best and the worst-performing countries).

The first criterion for selecting two countries for the banking samples was that both countries be Annex-2. This narrowed down the possible choices to the following countries (in order of performance ranking):

Table 106: Annex-2 candidate nations for sample studies

Rank	"Good"	Rank	"Very Poor"
1	Sweden	45	Australia
2	United Kingdom	49	USA
3	Germany	50	Canada
5	France	55	Turkey
6	Switzerland		

Rank	"Good"	Rank	"Very Poor"
9	Denmark		
10	Belgium		
11	Portugal		

(Source: Germanwatch, 2012, pp.6-7)

The second criterion was overall economic and banking risk-management (institutional) comparability. While Annex-2 countries are the world's wealthiest nations, G8 nations comprise approximately 45% of the world's GGDP and are widely considered the world's largest, most developed economies.[166] Concerning their banks' institutional comparability, almost all Annex-2 countries use the Basel Accords. Moreover, The Wall Street Journal showed that 24 of the world's 50 safest banks (with the best overall mitigated risk) were all from G8 countries (Benoit, 2012). The study used credit ratings and risk-weighted assets as criteria. Of the 26 safest banks not from G8 nations, 14 were from Annex-2 nations, and the remaining 12 were from wealthy or strongly-emergent economies.[167] From the extremes of the Climate Change Performance Index, the countries that are both Annex-2 and G8 are:

Table 107: Annex-2 and G8 nations (sample candidates)

Rank	"Good"	Rank	"Very Poor"
2	United Kingdom	49	USA
3	Germany	50	Canada
5	France		

(Source: Germanwatch, 2012, pp.6-7)

The third criterion was that the countries face comparable challenges with climate-change mitigation. Among the G8 countries themselves, there are considerable differences in the share of global GHG emissions each country contributes. Of the five

[166] This excludes BRIC countries (Brazil, Russia, India, and China). While they have among the world's largest economies, they are also considered emergent/transitional and are therefore not Annex-2 countries according to the Kyoto Protocol.

[167] The world's other 26 safest banks in 2012 were from the following countries: Australia (4 banks), Netherlands (3), Singapore (3), Sweden (3), Chile (2), China (2); and one bank each from the following countries: Switzerland, Luxembourg, New Zealand, United Arab Emirates, Finland, Kuwait, Qatar, Saudi Arabia, and Taiwan (Benoit, 2012).

countries above, France is the only one not among the ten largest GHG emitters and therefore faces a smaller challenge with climate change (Germanwatch, 2012). France also has an extremely high reliance on nuclear power for its energy needs: 77,1% of its power in 2011 came from nuclear reactors (International Atomic Energy Agency, 2012). The USA in 2011 contributed 17,91% of the world's GHG emissions—a number roughly ten times higher than the lower percentages of Canada, the United Kingdom, and Germany: 1,80%, 1,61%, and 2,59%, respectively (Germanwatch, 2012). The exclusion of France and the USA left the following country candidates:

Table 108: Candidate nations with comparable total GHG emissions

Rank	"Good"	Rank	"Very Poor"
2	United Kingdom	50	Canada
3	Germany		

(Source: Germanwatch, 2012, pp.6-7)

Lastly, the fourth criterion used was climate-change performance. To decide between comparing Canadian financial organisations with those of the United Kingdom or Germany, the two latter countries were compared over the last seven years (since the first publication, in 2006, of the Climate Change Performance Index) according to their climate-change performance. The better performer (which, according to the Index, earns a lower score) was chosen.

Table 109: Climate-change performance ratings

Ranking year	2006	2007	2008	2009	2010	2011	2012	Total score
Number of countries reviewed	53	56	56	57	57	57	58	394
Top performer / Rank	Iceland / 1	Sweden / 1	Sweden / 1	Sweden / 1	Brazil / 1	Brazil / 1	Sweden / 1	7
Germany's rank	5	5	2	2	4	4	3	25
UK's rank	3	2	7	6	3	5	2	28

Ranking year	2006	2007	2008	2009	2010	2011	2012	Total score
Canada's rank	46	51	53	56	56	54	51	367

(Sources: Germanwatch, 2006; 2007; 2008; 2009; 2010; 2011; 2012)

The rankings show Germany at the forefront of climate-change mitigation. Germany has been among the top-five performers every year of the study, while the United Kingdom, despite having a 38% lower share of global emissions than Germany in 2011, dropped to the 7th and 6th ranks in 2008 and 2009. In all the countries' rankings over the seven-year period, a perfect score would be 7 (first-place every year, for seven years). Germany scored 25 and the United Kingdom, 28. Therefore, the financial organisations of Germany—which had a better score than the UK—were chosen to compare with those of Canada.

Canada's total ranking score over the seven-year period was 367—the worst possible score would have been 394 (the aggregate of the last places every year of the study). Canada was ranked the second worst-performing country in both 2009 and 2010, and in 2012 it moved up to the eighth-worst spot, sharing the bottom ranks with countries such as Saudi Arabia, Iran, China, and Kazakhstan.

While both Canada and Germany are among the top-ten contributors of GHG emissions globally, they are also comparable extremes among the Kyoto-signatory nations in terms of their different levels of adherence to the Protocol.

Apart from the four criteria used to choose the two countries, there are still differences between them. In terms of annual GDP, the International Monetary Fund ranked Germany fourth and Canada tenth in 2012. The table below contrasts some core features of both countries:

Table 110: Key macro-economic data of Germany and Canada

2012	Germany	Canada
Population	81,7 million	34,7 million
GDP	€2.040 EUR billion	€1.045 EUR billion
GDP Growth	0,0%	2,0%
Inflation	1,8%	1,4%

2012	Germany	Canada
GDP per head	€25.609 EUR (Purchasing power parity: €23.571 EUR)	€30.155 EUR (Purchasing power parity: €24.496 EUR)

(Sources: Economist Intelligence Unit, 2012a; 2012b)
(Note: currencies in the table above were converted into EUR{€} using the following rates: [1] American dollar USD{$} to EUR{€}: 0,76 to 1; [2] Canadian dollar CAD{$} to EUR{€}: 0,77 to 1 [Market rates of October 19, 2012]).

Germany and Canada compare well in terms of their total GHG emissions, which give them similar challenges to grapple with concerning climate-change mitigation. Both countries also have a similar degree of vulnerability to climate-change threats; on such indices by risk-management firms, both countries tend to receive low to medium-risk ratings because of their population densities in urban areas, exposure to climate-related events, and reliance on flood and drought-prone agricultural land (Bittner, 2010; Germanwatch, 2012).[168]

[168] An example is Maplecroft's Climate Change Vulnerability Index (Bittner, 2010).

APPENDIX 2: INTERVIEW QUESTIONNAIRE

Title: Climate-change investment risks and institutional diffusion in German and Canadian Financial Organisations

Questions:

1. Quantitative
2. Qualitative
3. Research Quality-Assurance (Additional questions)

Planned Duration: 25-45 minutes
Actual Duration: (_____) minutes
Form: In person / phone / email
Observations: _____
_____

Name and title of executive: _____
Organisation/Firm: _____
Notes: _____
_____

Role and responsibilities: _____
_____
_____
_____

1. Quantitative Questions:

SURVEY (FROM EARLY QUESTIONNAIRE DRAFT)

1. Do the following risks apply to your firm's investments? (circle: Yes / No)

Risk	Examples		If yes, which? (examples)
Regulatory Risk	Emissions from the company's own operations	**Yes / No**	
	Indirect emissions from the company's supply chain, especially energy	**Yes / No**	
	Emissions linked to the use of a company's goods and services	**Yes / No**	
	Policy changes, e.g. termination of subsidies for renewable energy	**Yes / No**	
	Investments in energy companies that may not meet their national renewables proportion targets	**Yes / No**	

Physical Risks	Negative weather developments, especially in carbon-regulated industries such as electric power, oil, and gas producers	**Yes / No**	
	Additional costs due to change in weather patterns, especially in the utilities sector	**Yes / No**	
	Loss of property assets	**Yes / No**	
Legal Risks	Litigation against companies that contribute to climate change	**Yes / No**	
	Litigation against companies that failed to address climate change risks	**Yes / No**	
Reputation Risks	Investments in controversial energy projects	**Yes / No**	
Competitive Risks	Investments in immature technologies	**Yes / No**	
	Business disruption coverage	**Yes / No**	
	Price volatility in carbon markets	**Yes / No**	
	Higher energy costs	**Yes / No**	
	Increased credit risks by affected clients	**Yes / No**	
Project Risks	Local legitimacy of a chosen standard of validation/verification used for attaining emissions credits (ISO, Gold Standard, etc.)	**Yes / No**	
	Designated Operational Entity (DOE) not available	**Yes / No**	
	Host country letter of approval revoked	**Yes / No**	
	Incorrect/insufficient baseline or monitoring methodology used	**Yes / No**	
	Validation risk	**Yes / No**	
	Verification risk	**Yes / No**	
	International Transaction Log risk	**Yes / No**	

2. Which of the following markets does your firm penetrate? (circle: Yes / No)

Opportunities	Examples		If yes, which? (examples)
ET Profit	Arbitrage (with emissions credits or other)	**Yes / No**	
Insurance Products	Alternative risk transfer and new insurance products	**Yes / No**	
	Carbon-neutral insurance coverage	**Yes / No**	
	Carbon-delivery guarantee for CDMs	**Yes / No**	
	ET insurance	**Yes / No**	
	Insurable carbon	**Yes / No**	
	Weather derivatives	**Yes / No**	
Retail Banking	New climate mitigation products	**Yes / No**	
	Microfinance for climate-friendly activities	**Yes / No**	
	Advisory service for small renewable energy project loans	**Yes / No**	
Corporate Banking and	Clean-technology/energy investments	**Yes / No**	
	Counterparty credit for carbon trading	**Yes / No**	

Project Finance			
Investment Banking	Climate change-related products	**Yes / No**	
	Carbon funds trading services	**Yes / No**	
	Green technology	**Yes / No**	

2. Qualitative Questions:

3. Who are your stakeholders concerning climate change and to whom is the bank responsible? (e.g. Shareholders? Government? Other industry bodies/associations?)

4. Are the responsibilities concerning climate change/ET delegated to a specific department OR are they embedded in existing departments? (Or both?)
    a. Which risks (cited in question 1) do(es) the given department(s) manage?
    b. Who leads this/these department(s)? (E.g. a CRO?)

5. (Present policies/practices) What policies and/or programs exist in the bank for climate change/ET?
    a. How are the risks cited in Question 1 abated?
        i. (E.g. Through the use of financial screens which evaluate firms' regulatory adherence to their GHG emissions allowances? Or through the internal implementation of organisational programs [i.e. CSR programs] and organisational adherence to standardised criteria from SRI initiatives?).
    b. What are the methods used?
    c. Do different methods manage different risks? Which?
    d. Are these risks considered complicated/burdensome OR normal and fall within traditional investment risk-management practices?

(Unless mentioned…)

    d. Does your firm employ:
        i. IRM? (A.k.a. Enterprise[-wide] Risk Management, Holistic Risk Management, or Strategic Risk Management)
        ii. Silo? (The traditional risk management methodology, the "silo-approach")

(Unless mentioned…)

    e. Are your firm's risk-management techniques/strategies centred around:
        i. FRM (Financial risk management)?
        If so, how does your firm handle the uncertainty around LSEs' significant investments in plants and equipment which cannot be calculated using mark to market?
        ii. Book value accounting, which adapts FRM and ALM (asset-liability management) techniques as appropriate?
        If so, how does your firm handle risks such as technological redundancy for equipment and assets, short-term gains at the

expense of long-term gains, and pending changes in regulatory mechanisms?

6. (Past policies/practices) How have your firm's policies/practices concerning climate change/ET changed since the implementation of the EU-ETS in January, 2005?

7. (Future policies/practices) Which, if any, future policies concerning ET and risk management are planned?

8. Are your organisation's practices, policies, and methods considered to be best-practice? How do your organisation's practices compare with those of other similar organisations?

9. Do the firms in which your firm invests avoid/resist transparent disclosure of their ET strategy/records?

10. What role does CDM/JI play concerning the financial industry's response to climate change/ET?

3. Research Quality Assurance (Additional questions):

1. Who are the main players among the banks that deal heavily in ET and/or ET risks in regular (LSE) investments?

2. Which firms provide knowledge/consulting services to your banks/other industry members? (e.g. KPMG, etc.)?

3. Which reports/publications do you recommend for further research into this topic?

APPENDIX 3: INDUSTRY MEMBERSHIPS, COLLECTIVE POLICIES, VOLUNTARY DECLARATIONS/STUDIES (GERMAN SAMPLE)

2°C Initiative of German Entrepreneurs (*Stiftung 2° - Deutsche Unternehmer für Klimaschutz*): a foundation to support political change that promotes the establishment of economic frameworks to help mitigate climate change (www.stiftung2grad.de)
VfU e.V.: a think tank and network of financial-service providers in Germany, Austria and Switzerland, organised around promoting sustainable development (http://www.vfu.de)
BMBF Klima-Forschungsgipfel: a global roundtable on climate change to consider sound public policies on climate change (http://www.bmbf.de/foerderungen/10416.php)
ClimateWise: a UK-based leadership group on climate-change risk for the global insurance industry (http://www.climatewise.org.uk/)
Enhanced Analytics Initiative: a partnership to stimulate sell-side analysts to produce research incorporating environmental, social and governance issues; now a global partnership with the UN-PRI (http://www.uss.co.uk/UssInvestments/Responsibleinvestment/RIResources/ArchivedMaterials/Pages/EnhancedAnalyticsInitiative.aspx)
CFI: a project sponsored by the BMBF titled "Climate Change, Financial Markets and Innovation" with the Sustainable Business Institute (SBI) (http://www.cfi21.org/cfi-finanz-forum.0.html)
B.A.U.M. e.V.: A working group with ~550 members related to Europe's largest environmental initiatives; the objective is to promote environmental leadership and awareness (http://www.baumev.de)
German Government's Council for Sustainable Development (*Rat für nachhaltige Entwicklung*): (http://www.csr-in-deutschland.de/en/csr-in-germany/activities-pursued-by-the-german-government/federal-chancellery/german-council-for-sustainable-development.html)
GRI: promotes sustainability reporting as a way to promote sustainability among organisations (https://www.globalreporting.org)
Global Roundtable on Climate Change: organised by Columbia University and brings together stakeholders from industry and leaders of international governmental and NGOs with the objective to engender consensus regarding core scientific, technological, and economic issues concerning climate change (http://www.earth.columbia.edu/articles/view/1753)
Institutional Investors Group on Climate Change: an investor forum for collaboration on climate-change issues (http://www.iigcc.org/)
Investor Network on Climate Risk (INCR): a network of ~100 institutional investors, which represent over $11 US trillion in assets, with the common goal of addressing risks and opportunities resulting from climate change and other sustainability issues (http://www.ceres.org/investor-network/incr)
Kyoto Club: a non-profit Italian organisation comprised of companies, associations, along with municipalities and governments with the goal of reaching the Kyoto Protocol's GHG reduction targets (www.kyotoclub.org)
Munich Climate Insurance Initiative (MCII): an initiative for finding solutions to the risks posed by climate change, begun by Munich Re in April 2005, hosted at the United

Nations University Institute for Environment and Human Security (UNU-EHS) (www.climate-insurance.org)
Partners in the declaration: WWF International, Climate Group, Cambridge Programme for Sustainability Leadership, along with other European business leaders (http://www.wwf.se/nyhetsbrev/source.php/1372873/european%20voice%20cover%20WWF%20ok.pdf)
A project of the Italian NGO Legambiente (the Environmental League): to inspire communities to take pro-active stances on environmental issues at the grass-roots level (www.cleanuptheworld.org)
Signatory to the Global Investor Statement on Climate Change: The Institutional Investors Group on Climate Change (IIGCC) is a forum for collaboration on climate change for investors (http://www.iigcc.org/publications/publication/2010-global-investor-statement-on-climate-change)
Signatory to the Investor Statement on Catalyzing Investment in a Low-Carbon Economy: The Institutional Investors Group on Climate Change (IIGCC) is a forum for collaboration on climate change for investors (http://www.iigcc.org/publications/publication/2010-investor-statement-on-catalyzing-investment-in-a-low-carbon-economy)
Steering Group of the UK Government's Capital Markets Climate Initiative: provides guidance about the UK government's initiatives to raise private funding for renewable energy projects in the developing world (https://www.gov.uk/capital-markets-climate-initiative)
The Geneva Association: international insurance think tank (https://www.genevaassociation.org/)
An alliance of companies that declare their support for the IPCC and that all necessary action should be taken to limit the global-average temperature increase to a maximum of 2 degrees (file:///C:/Users/Admin/Downloads/climate_savers_tokyo_declaration_final.pdf)
UN Finance Committee on Climate Change Finance: standing committee under the COP to assist the COP in exercising its functions concerning the financial mechanism of the UNFCCC (http://UNFCCC.int/cooperation_and_support/financial_mechanism/items/6054.php)
WBCSD: a major, international knowledge-sharing platform comprised of CEOs and other high-level stakeholders (http://www.wbcsd.org/about/organization.aspx)
World Economic Forum: an independent NPO that brings together business, political, academic and other leaders to influence global, regional and industry agendas (http://www.weforum.org/)
WWF (global partnership): global partnership in communication, joint-projects, and research topics (www.wwf.de)

APPENDIX 4: INDUSTRY MEMBERSHIPS, COLLECTIVE POLICIES, VOLUNTARY DECLARATIONS/STUDIES (CANADIAN SAMPLE)

Business Charter for Sustainable Development (BCSD): International Chamber of Commerce's 16 principles for sound environmental management in the realms of health, safety, and product stewardship (http://www.iccwbo.org/advocacy-codes-and-rules/areas-of-work/environment-and-energy/business-charter-for-sustainable-development)
Environmental Issues Specialists Group of the Canadian Banker's Association (CBA-EISG): provides feedback on proposed new and revised environmental statutes that may affect the business activities of the Canadian banks and their clients
Canadian Business for Social Responsibility (CBSR): An NPO that brings together Canadian business leaders to promote CSR (www.cbsr.ca)
Canadian Climate Change Adaptation Project (CCAP): identifies and implements cost-effective adaptation solutions for climate-change adaption issues in Canada (http://adaptnowcanada.ca)
Consumers Council of Canada (CCC): an NPO with the aim of promoting the united interests of consumers, business and government (www.consumerscouncil.com)
Canadian Coalition for Good Governance (CCGG): promotes good-governance practices among its member companies (which are generally listed in the Standard and Poor's and TSE Composite Index) (www.ccgg.ca)
Canadian Green Building Council: promotes the shift to sustainable building management, homes, and communities throughout Canada (https://www.cagbc.org/)
Business Council for Sustainability (BCS): a network of business executives responsible for environmental/sustainability management in medium-sized and large Canadian organisations
Environmental Banker's Association (EBA): An NPO trade association that promotes the exchange of environmental risk-management and sustainable-development lending information (www.envirobank.org)
EXCEL Partnership: Canadian business group focused on corporate sustainability issues, founded by the GLOBE Foundation (www.excelpartnership.ca/)
Montreal Climate Exchange: voluntary ET scheme (www.mcex.ca)
Sustainable Development Technology Canada (SDTC): an NPO (foundation) to finance and support the development of clean-technology in Canada (www.sdtc.ca)

APPENDIX 5: PRESENCE ON SUSTAINABILITY INDICES AND RATINGS BY THIRD-PARTY AGENCIES (GERMAN SAMPLE)

Carbon Disclosure Leadership Index: a ranking of companies according to their scores based on their responses to the CDP Annual Questionnaire (https://www.cdp.net/en-us/results/pages/leadership-index.aspx)
Ceres: a coalition of investors, environmental groups, and public interest organisations working with companies to address sustainability challenges (www.ceres.org)
ECPI: develops sustainability indices and index strategies (e.g. beta solutions) (www.ecpigroup.com/indices)
ETHIBEL: indices concerning funds that invest in shares of companies with high CSR scores (www.forumethibel.org)
imug: research and consulting firm specialised in sustainability in investments; imug also conducts research for NAI (*Natur Aktien Index*), an index with shares analysed with nature-based criteria (www.forum-ng.org)
oekom research AG: rating agency for sustainable investments, e.g. for share and bond issuers (www.oekom-research.com)
RobecoSAM: asset management, equity provider, and rating agency for sustainability investing, and that serves investors and corporates with sustainability solutions (www.robecosam.com)

APPENDIX 6: PRESENCE ON SUSTAINABILITY INDICES AND RATINGS BY THIRD-PARTY AGENCIES (CANADIAN SAMPLE)

The Ethical Funds Company: offers a socially-responsible mutual funds with approximately $2 US billion in assets under management (www.ethicalfunds.com)
Jantzi Social Index: a market-capitalisation-weighted common stock index consisting of ~60 Canadian companies that pass a set of social and environmental screens (www.sustainalytics.com/indexes)
NASDAQ OMX CRD Global Sustainability Index: an equally-weighted equity index that rates shares of US companies listed on major US stock exchanges and that lead in sustainability-performance reporting in terms of energy usage, carbon footprint, water consumption, waste, community investing, and so on (https://indexes.nasdaqomx.com/Index/Overview/QCRD)
Real Assets Social Impact Balanced Fund: a fund that assesses companies according to seven environmental and social-performance measures in addition to financial criteria
RiskMetrics Group: a provider of risk management and corporate governance products and services to the financial industry; the group also has an ESG practice (www.msci.com)
Vigeo: a European firm that assesses companies and organisations with regard to their sustainability practices and performance (http://www.vigeo.com/csr-rating-agency)

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