

Environmental Credit Risk Management in Banks and Financial Service Institutions

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ABSTRACT

How do Canadian banks integrate environmental risks into corporate lending and where are they located compared with their global peers? In this paper we report a mixed method analysis of the integration of environmental risks into the credit management. The qualitative and quantitative analyses suggest that all analyzed Canadian commercial banks, credit unions and Export Development Canada manage environmental risks in credit management to avoid financial risks. Some of the institutions even connect environmental and sustainability issues with their general business strategies. Compared with other countries, Canadian banks are best in class, as all six Canadian commercial banks, comprising over 90 percent of Canadian assets, systematically examine environmental risks for credits, loans and mortgages. We conclude that Canadian banks are proactive regarding environmental examinations of loans and that there is a need for a more accountancy related reporting on environmental risk management in financial institutions. Further research is needed to be able to calculate costs and benefits of integrating environmental and sustainability issues into the credit risk management. Copyright © 2011 John Wiley & Sons, Ltd and ERP Environment.

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Introduction

BANKS AFFECT SUSTAINABLE DEVELOPMENT DIRECTLY AND INDIRECTLY (MACDONALD, 2010; SCHOLTENS, 2008). THEY select which types of project or commercial borrower they finance and whether they offer products and services that provide a blended or shared value (Emerson, 2003, Porter and Kramer, 2011) for the environment or the society in addition to the financial return. Therefore, they have to manage sustainability risks and opportunities like firms from other sectors as well, and have a potential impact on the sustainability of other sectors by channeling loans to certain sectors (Scholtens, 2006).

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Background

What is the business of banks? Banks accept deposits and channel the capital into lending or investment activities. They are intermediaries with an economic control and channeling function (Jeucken, 2004). Thereby, banks are primarily concerned about the financial return of their activities in relation to the risk that has to be taken. They often stress the trade-off between financial return and corporate sustainability (Delmas and Blass, 2010; Hahn *et al.*, 2010; Keele and DeHart, 2011) rather than seeing a win-win situation (Schaltegger and Wagner, 2011).

Sustainable Credit Risk Management

One of the main businesses of banks is the loan business, and thus credit risk management is a major activity to guarantee the business success of a bank. Those lenders that are best able to evaluate and price risks will be successful in the banking business (Hempel *et al.*, 1990). In order to be successful, lenders must rate those factors that influence the borrower's ability to repay the loan. This ability is dependent on the capital stock, the earnings or the liquidity of a borrower. In theory, these factors are called counterparty credit risks and have a main influence on the default risk of a borrower (Saunders, 1999, Caouette *et al.*, 1998; Fitch, 1997).

Our study is based on the assumption that environmental risks influence the counterparty risk. Theoretically, this risk is influenced by various borrower characteristics such as reputation, leverage, earnings and collateral (Altman and Saunders, 1998; Caouette *et al.*, 1998; Saunders, 1999; Saunders and Allen, 2002). Different environmental risks and their influence on credit risks are described below. Thus borrowers with lower environmental performance will face higher risks and vice versa. In order to anticipate credit defaults caused by environmental risks, banks examine environmental credit risks of their borrowers (Bauer and Hann, 2010; McKenzie and Wolfe, 2004). Empirical evidence for a correlation between environmental risks and credit risks has recently been presented, e.g. by Goss and Roberts (2011), Bauer and Hann (2010) or Weber *et al.* (2008, 2010).

Let us have a look at how environmental risks influence credit risks and how they have been integrated into the credit risk management of banks and financial institutions. At the end of the 1980s European and North American commercial banks were confronted by environmental risks for the first time. Under the US Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), the owner of a contaminated site was responsible for the decontamination and redevelopment of a site if the site was contaminated. Some banks were held liable under CERCLA because they participated in the management of a contaminating business (Bacow, 1998) and could have influenced the borrowers' compliance with environmental laws (Labatt and White, 2002). In other countries a number of similar cases occurred as well (Scholz *et al.*, 1995). One reason for higher credit risks is contaminated sites used as collateral. The contamination has a negative impact on the value of the collateral and thus the loss given default increases. Additionally, changes in environmental regulations often resulted in costs for the implementation of environmental technologies or other costs. This has an influence on the leverage and earnings of a borrower. Earnings and the liquidity of a borrower are influenced by market changes caused by changing environmental attitudes of clients as well. Also, the negative reputation of being connected with debtors that caused negative environmental impacts (Case, 1996; Noor and Syumanda, 2006; Thompson and Cowton, 2004; Weber, 2005) is seen as a major environmental credit risk (McKenzie and Wolfe, 2004).

Having said this, not only does the integration of environmental risks produce costs because of a more costly process of credit rating, but it increases the quality of the credit risk rating. Weber *et al.* (2010) demonstrated that the rate of correct credit default predictions improved about 7.7 percent if sustainability criteria were added to conventional credit risk indicators. Furthermore, if lower risks are connected with lower interest rates, debtors being rated well regarding their environmental performance have better access to better priced loans. Therefore, the integration of standardized environmental risks assessment procedures (Evangelinos and Nikolaou, 2009) into the credit rating process could be interpreted as a precautionary action and responsibility for both the environment and financial risks (Coulson, 2009, Egede and Lee, 2007). Thus it can be classified as beyond compliance according to Willard (2005).

The Canadian Banking Sector

The Canadian banking sector is considered as one of the safest and efficient banking sectors globally (Schwab, 2010). Six major banks comprise over 90 percent of the assets in Canada. These banks are the five big banks Bank of Montreal (BMO), Canadian Imperial Bank of Commerce (CIBC), TD Bank Financial Services (TD), Royal Bank of Canada (RBC) and Scotiabank, and the smaller National Bank Financial Group (Allen *et al.*, 2006). In 2002 some key measures were introduced in Canada to regulate the banking sector. These measures created a relatively efficient banking system (Allen and Engert, 2007) that was much less affected by the last financial crisis than banks in other countries (Schwab, 2010). Furthermore, with a penetration of 47%, expressing the percentage of the economically active population that is a member of a credit union (World Council of Credit Unions, 2009), Canada is the leader in North America regarding the market share of credit unions and savings banks. The Desjardins Group is Canada's largest association of credit unions. In 2010 the group had \$ 159 billion under management. Vancity, with \$ 14.6 billion under management in 2010, is Canada's second largest savings and credit union and is located in Vancouver, BC. In addition to these institutions we analyzed Export Development Canada (EDC), a so-called Crown Corporation, a wholly owned federal organization. EDC supports and develops Canada's export trade and the capacity to engage in trade and respond to international opportunities. They provide credit insurance, financing, contract insurance and bonding, and political risk insurance (EDC, 2010, p. 3). Their business volume in 2009 was \$ 86 billion (EDC, 2010, p. 9). We present the data on the analyzed Canadian banks and financial institutions in Table 1.

We selected Canadian banks because they are probably more exposed to environmental risks than banks in other many countries (Mercer and Trucost, 2010). The contribution of mining and oil and gas extraction to the gross domestic product (GDP) in 2009 in Canada was 5.9%. Together with agriculture, forestry, fishing and hunting, other sectors that are strongly connected with the environment, this industry provided 8.8% of Canada's GDP in the same year. As companies that are active in mining, oil and gas extraction are exposed to risks that could occur i.e. from future carbon pricing (Mercer and Trucost, 2010), Canadian banks financing these industries are exposed to environmental risks connected with these industries as well. One example for the occurrence of environmental risks for Canadian banks is the discussion about the financing of the Canadian oil-sands by RBC (van Hasselt, 2010).

With this background we analyzed the following questions using a mixed methods approach that combines qualitative and quantitative methods.

1. How do Canadian banks integrate sustainability risks into their credit risk management?
2. How do Canadian banks perform regarding the environmental examination of loans, credit and mortgages compared to their global peers?

Bank/financial institution	Assets in \$ billion
Bank of Montreal	417
Canadian Imperial Bank of Commerce	357
Desjardins Group	159
Export Development Canada	86 ²
National Bank Financial Group	147
Royal Bank of Canada	735
Scotiabank	534
TD Bank Financial Services	628
Vancity	14.6
Sum	3077.6

Table 1. Canadian banks and financial institutions¹

¹Sources: annual reports 2010.

²Business volume.

Reliability, Objectivity, and Validity of Environmental Reports

We conducted our research using environmental, corporate social responsibility or sustainability reports. This kind of reporting is a means to communicate the performance of a company in this field to stakeholders such as investors (Chan and Welford, 2005; Ziek, 2009), employees, clients or communities. The goal of these reports is to communicate a positive image of the respective company. In analyzing environmental or sustainability reports it has to be kept in mind that their reliability, consistency and relevance (Kolk, 1999) is uncertain. As Spence (2009) found, these reports are often created to communicate what the company wants to be. Companies report many more positive events than negative events (Niskanen and Nieminen, 2001) and there is a heterogeneity in reporting quality (Peck and Sinding, 2003). This sometimes even leads to non-compliance with legal requirements on environmental reporting where they exist (Vormedal and Ruud, 2009). As such legal requirements on environmental or sustainability reporting exist only in a few countries such as Norway, one important mechanism to control the content of the reports is third party verification (Lober *et al.*, 1997). Actually, frameworks such as the Global Reporting Initiative (GRI) and third party verification contribute to the reliability, consistency and relevance of environmental and sustainability reports, whereby third party verification is seen as a means to increase the credibility (Fonseca, 2010; Lober *et al.*, 1997) and the transparency of a report (Kolk and Perego, 2010).

Canadian banks and financial institutions with equity greater than \$1 billion are obliged to publish a so-called public accountability statement (Department of Finance Canada, 2006). This statement contains issues that can often be found in corporate social responsibility reports. The statements are regularly reviewed by the Department of Finance of the Government of Canada and contribute to the transparency of Canadian banks and financial institutions. This regulatory practice increases the validity of the reports. Furthermore the reports by EDC and Vancity were verified by Price Waterhouse Coopers and Ernst & Young respectively. The reports by Scotiabank and TD were assured by the Canadian Business for Social Responsibility, an independent non-government organization. Vancity reported according to A+, TD according to C+ and EDC reported to an application level of B+ of the GRI Reporting Guidelines (GRI, 2011). The application levels are verified by the GRI. Desjardins and National Bank use GRI indicators. Their reports are not verified by an independent party. These findings suggest that the quality of the reports is high compared with non-verified reports that do not use the GRI framework. Additionally, we mainly analyzed a positive aspect of environmental performance, the integration of environmental risks into the credit risk management process. In contrast to negative events, that are reported less often, there is no motivation for the institutions not to report on this important part of environmental management (Babiak and Trendafilova, 2011; Niskanen and Nieminen, 2001).

Sample and Methods of the Qualitative Analysis

We analyzed the six big Canadian commercial banks BMO, CIBC, National Bank Financial Group, RBC, Scotiabank and TD. In addition to these banks we conducted research on EDC and the credit unions Vancity and Desjardins. All these institutions publish environmental or sustainability reports although they belong to the financial sector, which tends to have a lower percentage of environmental reports (Kolk *et al.*, 2001). An overview of the reports that were analyzed is presented in Table 2.

All available reports from 2006 to the newest report (see Table 2) were analyzed with respect to mentioning the terms 'environmental risk' or 'sustainability risk'. Then we checked in which business fields these terms were used. We only considered them if they were used in relation to credit business or project finance. The analysis was done by two researchers independently. After having conducted the analysis the results were discussed and aggregated. This method guaranteed that we could find out whether and at what level of detail the respective institution reports on the integration of environmental risks into its credit risk management procedure.

To conduct the analysis, the reporting about the environmental examination of credit risks was categorized in different reporting levels according to the guidelines of the GRI (2008): general reporting, financial importance reported, quantitative indicators reported, trend analysis reported and benchmark reported. 'General reporting' means that the institution reports on the integration of environmental indicators into the credit risk management

Bank/financial institution	Report
Bank of Montreal	2006, 2007, 2009, 2009 Corporate Responsibility Report and Public Accountability Statement
Canadian Imperial Bank of Commerce	CIBC Annual Accountability Report 2006, 2007, 2008, 2009 Lending and investment from http://www.cibc.com/ca/inside-cibc/environment/lending-investment.html
Desjardins	2006 Social Responsibility Report 2007, 2008 Social Responsibility and Cooperative Report
Export Development Canada	Corporate Social Responsibility Report 2006, 2007, 2008, 2009
National Bank Financial Group	Our Social Responsibility Report 2006, 2007, 2008, 2009
Royal Bank of Canada	2006, 2007, 2008, 2009 Corporate Responsibility Report and Public Accountability Statement RBC® Environmental Blueprint: policy, priorities and objectives
Scotiabank	2006, 2007, 2008, 2009 Corporate Responsibility Report, Public Accountability Statement
TD Bank Financial Group	Corporate Responsibility Report 2006, 2007, 2008 2009 Corporate Responsibility Summary Report
Vancity	Accountability Report 06/07 2008–2009 Accountability Report

Table 2. Analyzed reports

procedure. If the institution reported on potential financial influences of the integration it was categorized as ‘financial importance reported’. Reporting of quantitative indicators meant that the institution reported on the number or percentage of cases that were analyzed using environmental indicators. In order to report a trend analysis, the institution had to present data for the antecedent years or present an outlook for the following years. Comparisons with other institutions or other sectors were categorized as ‘benchmark reported’.

Sample and Methods of Quantitative Analysis

In addition to the qualitative analysis of the reports we benchmarked the integration of environmental risks into the credit risk rating of Canadian banks compared with their global peers using descriptive statistics and statistical tests. Therefore, we used the Inrate database on environmental and social responsiveness of companies (see www.inrate.ch). At present, more than 2500 securities are covered across all major markets. To gather the data, Inrate focuses on corporate policies, management actions and published facts and data. The data was gathered using reports of the respective companies, databases (Reuters, Factiva), media and NGO information. Data was analyzed by a team of analysts and checked by specialized analysts for specific topics or sectors such as financial services. Furthermore, a board of experts regularly analyzes the research methods, criteria used and results. The ratings are conducted on a yearly basis. Our data sample comprises the data from the fiscal year 2009. The companies are rated on a scale from 0 to 1, with 0 indicating that no policies, management action or published facts are disclosed and 1 indicating that fully integrated policies and management actions are in place and facts and data are published by the analyzed entity.

The database contained the six Canadian commercial banks that were analyzed in the qualitative study above. Vancity as a credit union, Desjardins as a co-operative and EDC as a Crown Corporation were not members of the sample. We analyzed securities that belong to the same Global Industry Classification Standard (GICS) code as the Canadian banks (40101010, Diversified Commercial Banks). Because we were especially interested in the integration of environmental risks into the credit risk management, we only analyzed the performance regarding one

of the more than 200 environmental, social and governance indicators: the systematic examination of environmental credit risks.

The country distribution of the analyzed banks is presented in Figure 1.

Nine commercial banks in the sample are located in North America, 18 in Asia–Pacific and 44 are from Europe.

Results

We shall start by presenting the results of the analysis of the corporate social responsibility reports. This section is followed by the results of the quantitative analysis.

Qualitative Analysis

As described above, we categorized the reporting on the integration of environmental risks into the credit risk management in different levels: general reporting, economic importance reported, quantitative indicator reported, trend analysis reported and benchmark reported. This reflects the depth of integration of environmental issues into the risk management processes. We present the results of the analysis in Table 3.

Table 3 shows that all analyzed banks report that they systematically integrate environmental risks into their credit management processes. Five of the nine banks reported on the economic importance of the integration as well and six out of nine presented figures either on financial issues connected with the integration of environmental risks into the credit risk management or on the number of cases that were analyzed regarding environmental, social or sustainability issues. Only two institutions provided a trend analysis and none of the nine institutions provided a benchmark. Thus it seems that environmental risks are perceived as having a financial impact on the credit risks of Canadian banks and therefore have to be managed. However, none of the banks reports in such a way that stakeholders could get insight about the financial risks of environmental issues or about the financial benefits occurring by managing these risks. There is no disclosure related to environmental risks for financial institutions' lending activities as described by the US Security and Exchange Commission (SEC) in its Guidance Regarding Disclosure Related to Climate Change (Hancock, 2005).

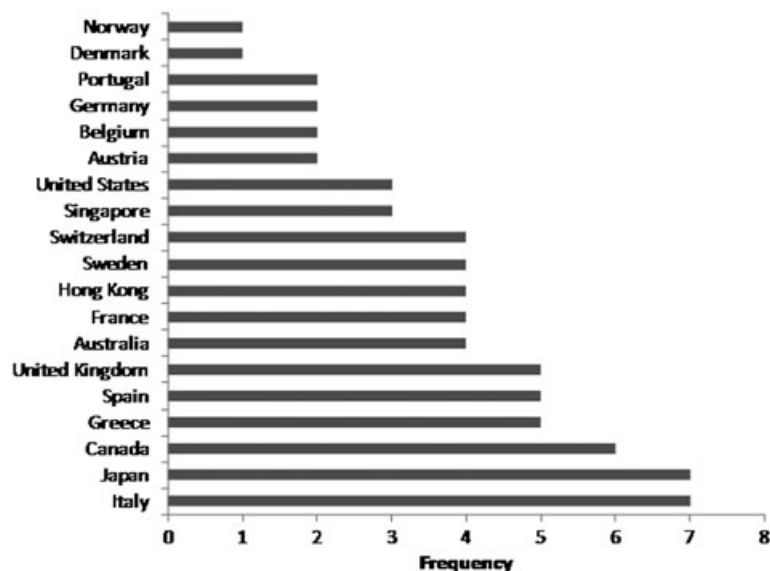


Figure 1. Country distribution of the sample

Bank	Reported	Economic importance reported	Quantitative indicator	Trend analysis	Benchmarking
BMO	yes	yes	all eligible borrowers for commercial and corporate loans subject to environmental risk assessment process	no	no
CIBC	yes	yes	423 environmental risk assessment reviews	15% increase	no
Desjardins	yes	no	150,000 with borrowings that could be addressed	no	no
EDC	yes	no	21 projects under review and 14 signed under the Environmental Review Directive in 2009	no	no
National Bank	yes	no	no	no	no
RBC	yes	yes	750 transactions in 2009	15% increase over 2008	no
Scotiabank	yes	no	no	no	no
TD	yes	yes	5% of the total lending portfolio exposed to climate change risks	no	no
Vancity	yes	yes	79 ethical policy screens	no	no

Table 3. Reporting of Canadian banks and financial institutions on the integration of environmental risks into credit management processes

After this short overview of the reporting related to environmental credit risk management, we present the activities of the nine banks and financial institutions in detail to demonstrate how the results in Table 3 were gathered. Thus we will show the passages in the respective reports that demonstrate the reporting on the integration of the environmental risks into the credit risk management process, the economic importance, quantitative indicators, trend analysis and benchmarking.

Bank of Montreal

BMO mentions in their 2009 report that all eligible corporate and commercial borrowers are subject to their environmental risk management process (BMO Financial Group, 2009, p. 48). We categorized this statement as 'integration of environmental risks into credit risk management process reported'. Furthermore, we categorized mentioning 'all eligible corporate and commercial borrowers' as a quantitative indicator. The bank concentrates on 'responsible lending practices' and developed strategies, training programs and tools to ensure effective decision making regarding environmental credit risks (BMO Financial Group, 2010, p. 28).

Regarding the economic importance, BMO sees a relation between sustainable development and the long-term success of their business and states that environmental risks are consequently integrated into the credit risk assessment of all corporate and commercial borrowers (BMO Financial Group, 2010). However, BMO does not disclose the financial costs and benefits of the environmental credit risk management, report on trends in this field or benchmark itself with its peers.

Canadian Imperial Bank of Commerce

CIBC reports on integrating environmental risks into their credit management process as well. The bank reports that identifying and managing environmental risks is an important consideration in its lending decisions. The CIBC Environmental Credit Risk Management program, introduced in 1991, plays a critical role in this effort, as the following citation shows.

We developed policies and guidelines throughout the 1990s to ensure that environmental issues were identified and managed appropriately. As a result, environmental risk is evaluated for all small business, mid-market and large corporate lending transactions, and for merchant banking and project finance (CIBC, 2010b).

CIBC explicitly mentions the integration of environmental risks into all lending transactions and explains how environmental risks are assessed during the credit risk management process using nine principles. The use of risk

management standards and procedures is based on 'the loan amount, the borrower's industry sector, and whether real property is taken as collateral security' (CIBC, 2010b). Furthermore, the bank declares that environmental risks are material for the credit business and thus reports on the economic importance of assessing these risks.

The bank even provides data on the frequency of environmental credit reviews and thus provides quantitative indicators and a trend analysis: Since 2007, the number of transactions analyzed by specialized environmental credit reviews has increased by 15% (CIBC, 2010a, p. 32). In 2009, 423 environmental risk assessment reviews were conducted compared with 369 in 2007. Thus CIBC reports on four of the five levels we analyzed. Only information about a performance benchmark could not be found.

Desjardins

In its 2008 Social Responsibility and Cooperative Report, Desjardins reports on the integration of environmental risks into their credit risk management:

Desjardins also includes an environmental risk analysis when assessing corporate credit risk. Since 2006, Desjardins has made considerable efforts to raise awareness among business members of the importance of properly assessing the environmental risks related to their projects and to support them in performing that assessment. As Desjardins has more than 400,000 business members in Québec and in Ontario, including 150,000 with borrowings, its potential for reaching members is particularly high (Desjardins, 2009, p. 20).

The credit union publishes in its 2006 report that a credit policy related to environmental risks was adopted that guarantees the analysis of environmental factors in the credit risk assessment (Desjardins, 2007, p. 23). However, Desjardins does not comment on the economic importance or publish any quantitative indicators. Moreover, they do not report on a trend analysis or a benchmarking.

Export Development Canada

As a financier and lender, EDC reports on the integration of environmental risks into their risk management practices:

The point of departure is EDC's Environmental Policy, an overarching commitment that establishes the principles to be followed when assessing the environmental risks of transactions that EDC is asked to support. All EDC business is screened for environmental impacts (EDC, 2010, p. 37).

In addition to environmental risks, EDC assesses social and political risks that could become material for an export finance agency as well (US Government Accountability Office, 2003). They completed the development of a standardized assessment process for human rights in 2009. This assessment uses indicators including the World Bank's Country Governance Indicators and Minorities at Risk data amongst others (EDC, 2010, p. 31). Thus EDC conducts comprehensive social and environmental risk analyses for all transactions and discloses the basis of the indicators as well.

Though EDC does not explicitly report the economic performance of the integration of environmental risks into the credit risk management procedures, they report that they had 21 projects under review and 14 signed under the Environmental Review Directive in 2009 (EDC, 2010) and thus disclose quantitative indicators. However, they do not report a trend analysis or a benchmark.

National Bank Financial Group

The National Bank Financial Group states in its 2009 Corporate Social Responsibility Report that financial institutions have a very limited direct environmental impact but that 'they play an important role through their financing policies and by offering services that promote responsible behaviors' (National Bank of Canada, 2010, p. 14). Thus the bank acknowledges the importance of integrating environmental issues into its business and its indirect impact on the environment.

The bank reports that it incorporated environmental criteria into the credit policies and ascertains that 'property taken by National Bank Financial Group conforms to environmental standards' (National Bank of Canada, 2010, p. 17). Therefore, the bank concentrates on environmental site assessments that are required for

all financing applications for commercial or industrial properties or for bigger residential properties (National Bank of Canada, 2010, p. 17). Additionally, National Banks specifies that site assessments have to be done by an external environmental assessment firm and that the bank closely monitors the decontamination of a property (National Bank of Canada, 2010, p. 17).

Thus the National Bank reports on the integration of environmental risks into credit risk management processes. They do not report on the economic importance of environmental risks for the lending business, quantitative indicators, trend analyses or benchmarking procedures.

Royal Bank of Canada

RBC reports that the bank implemented credit rules and requirements, and environmental risk policies and procedures to assess credit, legal and reputation risks connected with environmental issues. In addition to environmental risks they assess social risks as well (RBC, 2010, p. 17). To be able to integrate these risks into the credit risk management activities, RBC drafted an environmental risk management policy for all corporate lending activities. This policy regulates environmental management and compliance as well as climate change, biodiversity and water related issues (RBC, 2010, p. 35). Thus they report on the integration of environmental risks into credit risk management processes.

Unlike other banks in this analysis, RBC concentrate not only on counterparty risks but on sector risks as well. They analyzed the exposure of about 100 of their largest borrowers in heavy industry sectors regarding climate change risks and regulations. This supports a sector-specific environmental risk assessment (RBC, 2010, p. 49) and demonstrates that the bank reports on the economic importance of environmental risks for the lending business.

Furthermore, RBC reports quantitative indicators and a trend analysis: 750 transactions were analyzed regarding environmental credit risks in 2009 and the number of environmental risk assessments increased by 15% between 2008 and 2010 (RBC, 2010). RBC does not benchmark its performance in the field of environmental credit risk assessment.

Scotiabank

This bank addresses environmental risks in lending activities but does not report their economic importance, quantitative indicators, a trend analysis or a benchmarking. In its 2008 and 2009 CSR reports Scotiabank states

Scotiabank has an environmental lending policy in place, which seeks to identify and mitigate environmental risks in the Bank's commercial and corporate lending activities. Environmental risks associated with the business operations of each borrower and any real property offered as security are considered in the Bank's credit evaluation procedures. The Bank recently updated its corporate lending practices by providing greater guidance on what climate change is and the additional due diligence and commentary that should be undertaken in cases where climate change could have a material impact on our clients and their growth (Scotiabank, 2009, p. 17).

However, as mentioned above, the report does not contain information either about the financial impact of environmental risk management procedures or about the number of credit transactions that were analyzed regarding environmental risk.

TD Bank Financial Group

TD considers environmental risks and benefits in lending and investing practices according to the 2009 CSR Report (TD Bank Financial Group, 2010a, p. 14). Under this umbrella, TD specifies

In 2009, we further developed and strengthened our environmental and social credit-risk management processes in our wholesale and business banking groups. These include company and sector-specific reviews for existing and emerging environmental and related social issues (TD Bank Financial Group, 2010a, p. 14).

The environmental risk management procedure is described in detail in TD's internet report on responsible financing and lending (TD Bank Financial Group, 2010b). The procedure comprises a screening of the environmental

performance of a borrower, the use of a risk management decision tree, social and environmental assessment procedures, the Equator principle categorization and sector specific due-diligence guidance (TD Bank Financial Group, 2010b).

Thus, obviously, TD reports on the integration of environmental risks into their credit risk management processes. Concerning environmental risks of lenders from different sectors, TD accomplished a review of the borrowers' exposure to climate risks. The results of the review suggest that about 5% of TD's lending portfolio is exposed to high risks caused by greenhouse gas regulations. The risks are connected with the sectors of oil and gas, power generation, mining and smelting, automotive and chemical industry (TD Bank Financial Group, 2010a, p. 14). Thus TD reports on the economic importance of these risks and provides quantitative indicators as well. However, TD does not report trends and does not disclose a benchmark.

Vancity

Vancity's lending policy requires 'that lending activities be conducted according to the requirements and limits of the Policy and in conjunction with Ethical Policy, Environmental Risk Policy and operating procedures' (Vancity, 2009, p. 18).

In contrast to the other institutions in the sample, Vancity reports that it includes the management of social risks in addition to environmental risks in the lending processes and uses a more integrative concept of environmental and social risk management in the lending practices:

These policies state that we don't want to do business with any organizations that are involved in projects or practices where significant environmental damage results, or that have a track record of human rights violations or non-compliance with laws, regulations or professional standards governing their operations. Our lending processes encompass a review of environmental and social issues, including climate-related risks, and loan underwriting includes an assessment of the potential financial, legal, and reputational risks associated with these issues (Vancity, 2009, p. 22).

Thus the credit union reports not only on the integration of environmental risks into the credit risk management but on the consequences of their business for the environment or the society as well. They report that they are 'working to build the financial, social and environmental prosperity of our [their] communities as a whole' (Vancity, 2009, p. 1). As a quantitative indicator, they disclose that they conducted 79 ethical screens in 2008 (Vancity, 2009). Trend analyses and benchmarking are not reported.

Results of the Quantitative Analysis

The performance of the financial institutions regarding the environmental examination of loans, credits and mortgages was rated on three levels: no examination, punctual examination and systematic evaluation. 21 banks (29.6%) do not conduct any environmental examination, 12 banks (16.9 %) conduct punctual examinations and 28 banks (53.5%) conduct systematic environmental evaluations.

We analyzed regional differences concerning the detailed environmental examination of loans, credit and mortgages as well using an ANOVA with the region of the commercial banks as the factor and the rating for the detailed environmental examination of loans, credit and mortgages as the dependent variable. No examination was rated 0, punctual examination was rated 1 and systematic environmental evaluation was rated 2. We could not find a significant difference ($p = .53$, $F = .65$, $df = 70$) between the regions Asia Pacific ($N = 18$), Europe ($N = 44$) and North America ($N = 9$).

Furthermore, the detailed environmental examination of loans, credit and mortgages of banks from different countries was analyzed. In order to do this we calculated the percentage of banks that conduct no examination, a punctual examination or a systematic evaluation for the respective countries of origin. In eight countries all banks conducted a systematic environmental examination (100 percent). However, two of these countries have only one and two countries have two banks in the sample. This being said, we calculated Fisher's exact test to analyze whether there is a difference between the countries with respect to the percentage of banks in the different categories 'no', 'punctual' and 'systematic' environmental examination of loans, credit and mortgages. The results are presented in Table 4.

Country	Indicator	Detailed environmental examination of credit, loans and mortgages		
		no	punctual	systematic
Australia	frequency	0	0	4
	expected frequency	1.2	0.7	2.1
	Chi ² contribution	1.2	0.7	1.6
Austria	frequency	1	1	0
	expected frequency	0.6	0.3	1.1
	Chi ² contribution	0.3	1.3	1.1
Belgium	frequency	0	2	0
	expected frequency	0.6	0.3	1.1
	Chi ² contribution	0.6	8.2	1.1
Canada	frequency	0	0	6
	expected frequency	1.8	1	3.2
	Chi ² contribution	1.8	1	2.4
Denmark	frequency	0	0	1
	expected frequency	0.3	0.2	0.5
	Chi ² contribution	0.3	0.2	0.4
France	frequency	0	3	1
	expected frequency	1.2	0.7	2.1
	Chi ² contribution	1.2	8	0.6
Germany	frequency	0	0	2
	expected frequency	0.6	0.3	1.1
	Chi ² contribution	0.6	0.3	0.8
Greece	frequency	4	0	1
	expected frequency	1.5	0.8	2.7
	Chi ² contribution	4.3	0.8	1
Hong Kong	frequency	3	0	1
	expected frequency	1.2	0.7	2.1
	Chi ² contribution	2.8	0.7	0.6
Italy	frequency	4	0	3
	expected frequency	2.1	1.2	3.7
	Chi ² contribution	1.8	1.2	0.1
Japan	frequency	2	1	4
	expected frequency	2.1	1.2	3.7
	Chi ² contribution	0	0	0
Norway	frequency	0	0	1
	expected frequency	0.3	0.2	0.5
	Chi ² contribution	0.3	0.2	0.4
Portugal	frequency	0	0	2
	expected frequency	0.6	0.3	1.1
	Chi ² contribution	0.6	0.3	0.8
Singapore	frequency	3	0	0
	expected frequency	0.9	0.5	1.6
	Chi ² contribution	5	0.5	1.6
Spain	frequency	2	0	3
	expected frequency	1.5	0.8	2.7
	Chi ² contribution	0.2	0.8	0
Sweden	frequency	0	0	4
	expected frequency	1.2	0.7	2.1
	Chi ² contribution	1.2	0.7	1.6
Switzerland	frequency	0	4	0
	expected frequency	1.2	0.7	2.1

Country	Indicator	Detailed environmental examination of credit, loans and mortgages		
		no	punctual	systematic
United Kingdom	Chi ² contribution	1.2	16.3	2.1
	frequency	0	0	5
	expected frequency	1.5	0.8	2.7
United States	Chi ² contribution	1.5	0.8	2
	frequency	2	1	0
	expected frequency	0.9	0.5	1.6
Total	Chi ² contribution	1.4	0.5	1.6
	frequency	21	12	38
	expected frequency	21	12	38
	Chi ² contribution	26.1	42.6	20.1

Table 4. Frequency, expected frequency and Chi² contribution regarding the detailed environmental examination of credit, loans and mortgages

We found a significant difference between the countries ($\text{Chi}^2 = 88.7$, $N = 71$, $p = .0001$). Canadian banks provided the highest Chi² contribution (11.4%) for the 'systematic environmental examination' (Chi² contribution = 2.4 of 20.1) and thus differ significantly from the expected frequency. This result suggests that Canada is the country with the highest rate of systematic integration of environmental risks into credit risk management processes in the sample. The highest Chi² contribution for 'no environmental examination' is from Singapore's banks (Chi² contribution = 5.0 of 26.1), suggesting that Singapore is the country with the lowest rate of systematic integration of environmental risks into credit risk management processes in the sample.

Conclusions

We conducted a two-step mixed methods analysis of the integration of environmental risks into credit risk management policies, strategies and procedures. In a first step we analyzed the corporate social responsibility reports of nine Canadian financial institutions in a qualitative way. To check whether independent ratings show similar results as the qualitative analysis and to be able to compare the results of the Canadian financial institutions with their peers, the qualitative analysis was complemented by a quantitative comparison between Canadian commercial banks and their global peers as a second step.

The qualitative approach that analyzed the examination of environmental risks in credit risk management on different levels checked the consistency and reliability of the reporting as well. For all the reports, we found that the institutions in the sample reported on a more general level and that reporting on a more specific level such as trend analyses and benchmarking is much less conducted, though these are needed to compare the efficiency of environmental strategies and operations (Burritt, 2004). However, there are trends to report more facts and figures compared with policies: at least four bank reported figures on the number of loans analyzed per year and both CIBC and RBC even provided a trend analysis. In order to increase the validity of the reports, some of them are verified by third parties as well.

The qualitative analysis of the reports showed that Canadian financial institutions report that they manage environmental risks because they are supposed to have an impact on credit risks. Given that some of the reports present numbers about how many credit cases are actually analyzed with respect to environmental risks, it seems that at least some of the institutions really do integrate environmental risks into the credit risk management strategies and procedures because they have data that this seems to avoid financial risks. Generally, presenting numbers about cases analyzed regarding environmental risks increases the reliability, consistency and relevance (Kolk, 1999) of company reports and the knowledge about costs and benefits of environmental strategies and operations. In contrast to disclosing general environmental policies and strategies, these figures show whether these strategies and policies really

become operational. However, looking at the figures, which show that CIBC analyzed 423 cases and RBC analyzed 750 cases per year, suggests that an environmental examination was not done for all commercial loans. Given the assumptions that environmental risks may occur in more or less all sectors, there should be more cases being examined regarding these risks. It seems that the banks do environmental examinations only for those loans that are seen as potentially risky. As EDC is only conducting systematic environmental evaluations for bigger projects that are potentially adverse to the environment, the 21 projects that were examined seem to be reasonable. EDC's transparency with respect to disclosing the risks of a group of their financed projects confirms the results of Tagesson *et al.* (2009), who found that state-owned corporations disclose more CSR information than privately owned corporations do.

Generally, a stronger tendency in reporting on environmental accounting (Yakhou and Dorweiler, 2004) that takes impacts on the environment and full cost accounting (Bebbington, 2009; Bebbington *et al.*, 2007; Lee, 2011) into consideration could be expected. Financial service institutions should report on their, often indirect, impacts on the environment and sustainable development as well as other industries do. Academic research (see, e.g., Bebbington, 2009; Bebbington *et al.*, 2007; Schaltegger and Burritt, 2010) is available as well as practical guidelines for conducting this kind of full-cost accounting (Bent and Richardson, 2003).

Thus Canadian banks and financial service institutions in the sample are clearly beyond compliance (Willard, 2005, p. 27) and proactive, and manage environmental risks to increase their shareholder value. The integration of environmental risks provides a sustainability innovation and a win-win situation (Schaltegger and Wagner, 2011). However, the six commercial banks in particular seem to manage sustainability and the environment in isolation rather than as a part of the general business strategy. In contrast to this, Vancity emphasizes the opportunity to have a positive impact on the environment through all products and services. Consequently, a significant part of the lending portfolio is invested in projects with a social impact (Vancity, 2009). This credit union transforms and re-brands itself to a sustainable financial institution and pursues an integrative sustainability strategy (Willard, 2005), and is able to show its positive impact on sustainable development. A transparent reporting of conventional banks should show this impact on sustainable development as well and better integrate sustainability and business issues.

EDC integrates sustainability and environmental risks into the general strategy by stressing the balance between supporting Canadian international trade and meeting stakeholder expectations. In doing so, they connect international trade issues with the environment and sustainable development (US Government Accountability Office, 2003). EDC could be a positive model for other export development corporations of other countries that do not integrate environmental and sustainability issues into their decision making processes. However, in order to take sustainability issues into account, governments should introduce guidelines for integrating sustainability indicators into decision making processes of their export development agencies.

Generally, more transparency could be achieved by disclosing the indicators that are used for the environmental credit risk assessment. Furthermore, reporting the number of loan applications being assessed by environmental credit risk indicators compared to all loan applications and the number of cases that were rejected because of environmental risks would contribute to a better transparency about the benefits of integrating environmental and social issues into the credit risk management process. Reporting on the costs and benefits of the environmental credit risk assessment would be a step into a more integrated reporting (Eccles *et al.*, 2010) that connects financial and sustainability performance and addresses the needs of the stakeholders (Berman *et al.*, 1999). Guidelines for this kind of reporting, that connects sustainability management directly with the management of business risks, is still missing from the Financial Sector Supplement of the GRI Framework.

Based on our results, we are inclined to recommend to both industry groups and public policy to use more indicators that show the contribution of sustainability activities for both sustainable development and the business performance of banks and other financial institutions. Only if the cost and benefits of the integration of environmental risks into the credit risk management are presented will stakeholders be able to analyze the impact of a bank or financial institution on the environment and sustainable development. However, because these impacts are mostly indirect, further research is needed on how to allocate environmental risks and impacts to financial service institutions. Regulative frameworks such as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1986 made lenders liable for environmental impacts of their corporate borrowers (Gebhardt, 1990; McCammon, 1995) and some NGOs asked banks to disclose their financed emissions, meaning those that are emitted by their clients (Barclay, 2008; Hogue, 2002).

The comparative quantitative analysis showed that Canadian banks are best in class in conducting detailed and systematic environmental examinations of loans, credits and mortgages. Given a relatively high exposure of Canadian banks to environmental risks (Mercer and Trucost, 2010), this strategy may be adequate to manage environmental risks effectively. Therefore, it seems that the proactive behavior of Canadian banks and financial service institutions provides a solid basis to establish and extend their sustainability leadership and to integrate environmental issues into their general business strategies. As the Canadian banks are ranked as the soundest banks worldwide (Anonymous, 2010), other banks should follow their example and integrate sustainability issues into their business to be able to manage environmental, social and sustainability risks in an efficient and transparent way.

Further research is needed on the costs and benefits of integrating environmental risk assessment into the general credit risk assessment and in developing credit services and products that actively foster borrowers that positively contribute to the environment. Though a number of case studies can be found that demonstrate the business case for integrating sustainability risks into the banking business, systematic and quantitative analyses are still missing.

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References

- Allen J, Engert W. 2007. Efficiency and competition in Canadian banking. *Bank of Canada Review* Summer: 33–45.
- Allen J, Engert W, Liu Y. 2006. Are Canadian banks efficient? A Canada–U.S. comparison. In *Bank of Canada Working Paper Series* Vol. 33. Bank of Canada: Ottawa; 44. <http://www.bankofcanada.ca/publications-research/research/working-papers/> [16 March 2011].
- Altman EI, Saunders A. 1998. Credit risk measurement: developments over the last 20 years. *Journal of Banking and Finance* 21: 1721–1742.
- Anonymous. 2010. World Economic Forum Ranks Canadian Banks Soundest in the World for the Third Consecutive Year. Kitchener. <http://www.fin.gc.ca/n10/10-078-eng.asp>
- Babiak K, Trendafilova S. 2011. CSR and environmental responsibility: motives and pressures to adopt green management practices. *Corporate Social Responsibility and Environmental Management* 18: 11–24. DOI: 10.1002/csr.229
- Bacow LS. 1998. Risk sharing mechanisms for brownfields redevelopment. In *Risk-Based Corrective Action and Brownfields Restoration*, Benson CH, Meegoda JN, Gilbert RB, Clemence SP (eds). American Society of Civil Engineers: Reston, VA pp. 178–195.
- Barclay B. 2008. *Financing Global Warming: Canadian Banks and Fossil Fuels*. Rainforest Action Network: San Francisco, CA.
- Bauer R, Hann D. 2010. Corporate Environmental Management and Credit Risk. SSRN. <http://ssrn.com/abstract=1660470> [02 October 2011].
- Bebbington J. 2009. Measuring sustainable development performance: possibilities and issues. *Accounting Forum* 33(3): 189–193. DOI: 10.1016/j.accfor.2008.09.002
- Bebbington J, Brown J, Frame, B. 2007. Accounting technologies and sustainability assessment models. *Ecological Economics* 61(2/3): 224–236. DOI: 10.1016/j.ecolecon.2006.10.021
- Bent D, Richardson J. 2003. *Sustainability Accounting Guide*. Sigma Project: London.
- Berman SL, Wicks AC, Kotha S, Jones TM. 1999. Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance. *Academy of Management Journal* 42(5): 488–506.
- BMO Financial Group. 2009. *2008 Corporate Responsibility Report and Public Accountability Statement*. BMO Financial Group: Toronto.
- BMO Financial Group. 2010. *2009 Corporate Responsibility Report and Public Accountability Statement*. BMO Financial Group: Toronto.
- Burritt RL. 2004. Environmental management accounting: roadblocks on the way to the green and pleasant land. *Business Strategy and the Environment* 13(1): 13–32. DOI: 10.1002/bse.379
- Canadian Imperial Bank of Commerce (CIBC). 2010a. *Annual Accountability Report 2009*. CIBC: Toronto.
- Canadian Imperial Bank of Commerce (CIBC). 2010b. *CIBC – Lending and Investment*. <http://www.cibc.com/ca/inside-cibc/environment/lending-investment.html> [12 August 2010].
- Caouette JB, Altman EI, Narayanan P. 1998. *Managing Credit Risk: the Next Great Financial Challenge*. New York: Wiley.
- Case P. 1996. Land, lending and liability. *Chartered Banker* 2(4): 44–49.
- Chan JC, Welford R. 2005. Assessing corporate environmental risk in China: an evaluation of reporting activities of Hong Kong listed enterprises. *Corporate Social Responsibility and Environmental Management* 12: 88–104. DOI: 10.1002/csr.088

- Coulson AB. 2009. How should banks govern the environment? Challenging the construction of action versus veto. *Business Strategy and the Environment* 18: 149–161. DOI: 10.1002/bse.584
- Delmas M, Blass VD. 2010. Measuring corporate environmental performance: the trade-offs of sustainability ratings. *Business Strategy and the Environment* 19: 245–260. DOI: 10.1002/bse.676
- Department of Finance Canada. 2006. 2006 *Financial Institutions Legislation Review: Proposals for an Effective and Efficient Financial Services Framework*. Department of Finance Canada: Ottawa.
- Desjardins. 2007. 2006 *Social Responsibility Report*. Desjardins: Levis, QC.
- Desjardins. 2009. 2008 *Social Responsibility and Cooperative Report*. Desjardins: Levis, QC.
- Eccles RG, Beiting C, Saltzman D (eds). 2010. *The Landscape of Integrated Reporting Reflections and Next Steps*. The President and Fellows of Harvard College: Cambridge, MA.
- Egede T, Lee R. 2007. Bank lending and the environment: not liability but responsibility. *The Journal of Business Law* December: 868–883.
- Emerson J. 2003. The blended value proposition: integrating social and financial returns. *California Management Review* 45(4): 35–51.
- Evangelinos KI, Nikolaou IE. 2009. Environmental accounting and the banking sector: a framework for measuring environmental–financial risks. *International Journal of Services Sciences* 2(3/4): 366.
- Export Development Canada (EDC). 2010. 2009 *Corporate Social Responsibility Report – Trusted Partner in Trade*. EDC: Ottawa.
- Fitch TP. 1997. *Dictionary of Banking Terms* (3rd edn). Barron's: Hauppauge, NY.
- Fonseca A. 2010. How credible are mining corporations' sustainability reports? A critical analysis of external assurance under the requirements of the international council on mining and metals. *Corporate Social Responsibility and Environmental Management* 17(6): 355–370. DOI: 10.1002/csr.230
- Gebhardt LJ. 1990. The environmental inspection easement – an essential commercial loan document. *Banking Law Journal* 107(4): 317–333.
- Global Reporting Initiative (GRI). 2008. *Sustainability Reporting Guidelines Version 3.0*. GRI: Amsterdam.
- Global Reporting Initiative (GRI). 2011. Application Levels. 18 August 2011. www.globalreporting.org/ReportingFramework/ApplicationLevels/ [02 October 2011].
- Goss A, Roberts GS. 2011. The impact of corporate social responsibility on the cost of bank loans. *Journal of Banking and Finance* 35(7): 1794–1810.
- Hahn T, Figge F, Pinkse J, Preuss L. 2010. Trade-offs in corporate sustainability: you can't have your cake and eat it. *Business Strategy and the Environment* 19: 217–229. DOI: 10.1002/bse.674
- Hancock EE. 2005. Red dawn, blue thunder, purple rain: corporate risk of liability for global climate change and the SEC disclosure dilemma. *Georgetown International Environmental Law Review* 17(2): 223–251.
- van Hasselt C. 2010. Aboriginal groups chastise Royal Bank Canada for oil-sands role. *The Wall Street Journal* 3 March. <http://ran.org/content/aboriginal-groups-chastise-royal-bank-canada-oil-sands-role> [02 October 2011].
- Hempel GH, Colema, AB, Simonson DG. 1990. *Bank Management*. Wiley: New York.
- Hogue I. 2002. The cost of living richly: Citigroup's global finance and threats to the environment. *Multinational Monitor* 23(4): 9.
- Jeucken MHA. 2004. *Sustainability in Finance*. Eburon: Delft, The Netherlands.
- Keele DM, DeHart S. 2011. Partners of USEPA climate leaders: an event study on stock performance. *Business Strategy and the Environment*. DOI: 10.1002/bse.704 [02 October 2011].
- Kolk A. 1999. Evaluating corporate environmental reporting. *Business Strategy and the Environment* 8(4): 225–237. DOI: 10.1002/(sici)1099-0836(199907/08)8:4 < 225::aid-bse206 > 3.0.co;2-4
- Kolk A, Perego P. 2010. Determinants of the adoption of sustainability assurance statements: an international investigation. *Business Strategy and the Environment* 19(3): 182–198. DOI: 10.1002/bse.643
- Kolk A, Walhain S, van de Wateringen S. 2001. Environmental reporting by the Fortune Global 250: exploring the influence of nationality and sector. *Business Strategy and the Environment* 10(1): 15–28. DOI: 10.1002/1099-0836(200101/02)10:1 < 15::aid-bse275 > 3.0.co;2-y
- Labatt S, White RR. 2002. *Environmental Finance*. Wiley: Hoboken, NJ.
- Lee KH. 2011. Motivations, barriers, and incentives for adopting environmental management (cost) accounting and related guidelines: a study of the republic of Korea. *Corporate Social Responsibility and Environmental Management* 18(1): 39–49. DOI: 10.1002/csr.239
- Lober DJ, Bynum D, Campbell E, Jacques M. 1997. The 100 plus corporate environmental report study: a survey of an evolving environmental management tool. *Business Strategy and the Environment* 6(2): 57–73. DOI: 10.1002/(sici)1099-0836(199705)6:2 < 57::aid-bse81 > 3.0.co;2-e
- Macdonald K. 2010. Re-thinking 'spheres of responsibility': business responsibility for indirect harm. *Journal of Business Ethics*. 99(4): 549–563. DOI: 10.1007/s10551-010-0668-x
- McCammon ALT. 1995. Banking responsibility and liability for the environment: what are banks doing? *Environmental Conservation* 22(4): 297.
- McKenzie G, Wolfe S. 2004. The impact of environmental risk on the UK banking sector. *Applied Financial Economics* 14: 1005–1016. DOI: 10.1080/0960310042000261880
- Mercer and Trucost. 2010. *Carbon Counts: Assessing the Carbon Exposure of Canadian Institutional Investment Portfolios*. WWF-Canada: Toronto.
- National Bank of Canada. 2010. *Our Social Responsibility – 2009 Report*. National Bank of Canada: Montreal, QC.
- Niskanen J, Nieminen T. 2001. The objectivity of corporate environmental reporting: a study of Finnish listed firms' environmental disclosures. *Business Strategy and the Environment* 10(1): 29–37.
- Noor R, Syumanda R. 2006. *Social Conflict and Environmental Disaster: a Report on Asia Pulp and Paper's Operations in Sumatra, Indonesia*. World Rainforest Movement: Montevideo, Uruguay.
- Peck P, Sinding K. 2003. Environmental and social disclosure and data richness in the mining industry. *Business Strategy and the Environment* 12(3): 131–146. DOI: 10.1002/bse.358
- Porter ME, Kramer MR. 2011. Creating shared value. *Harvard Business Review* 89(1/2): 62–77.

- Royal Bank of Canada (RBC). 2010. *2009 Corporate Responsibility Report and Public Accountability Statement*. RBC: Toronto.
- Saunders A. 1999. *Credit Risk Measurement: New Approaches to Value at Risk and Other Paradigms*. Wiley: New York.
- Saunders A, Allen L. 2002. *Credit Risk Measurement – New Approaches to Value at Risk and Other Paradigms*. John Wiley & Sons: New York.
- Schaltegger S, Burritt RL. 2010. Sustainability accounting for companies: catchphrase or decision support for business leaders? *Journal of World Business* 45(4): 375–384. DOI: 10.1016/j.jwb.2009.08.002
- Schaltegger S, Wagner M. 2011. Sustainable entrepreneurship and sustainability innovation: categories and interactions. *Business Strategy and the Environment* 20(4): 222–237. DOI: 10.1002/bse.682
- Scholtens B. 2006. Finance as a driver of corporate social responsibility. *Journal of Business Ethics* 68(1): 19–33. DOI: 10.1007/s10551-006-9037-1
- Scholtens B. 2008. Corporate social responsibility in the international banking industry. *Journal of Business Ethics* 86: 159–175. DOI: 10.1007/s10551-008-9841-x
- Scholz RW, Weber O, Stuenzi J, Ohlenroth W, Reuter A. 1995. Umweltrisiken systematisch erfassen. Kreditausfälle aufgrund ökologischer Risiken – Fazit erster empirischer Untersuchungen [The systematic measuring of environmental risk. Credit defaults caused by environmental risk – results of a first study]. *Schweizer Bank* 4: 45–47.
- Schwab K. 2010. *The Global Competitiveness Report 2010–2011*. World Economic Forum: Zurich.
- Scotiabank. 2009. *2008 Corporate Social Responsibility Report*. Scotiabank: Toronto.
- Spence C. 2009. Social and environmental reporting and the corporate ego. *Business Strategy and the Environment* 18(4): 254–265. DOI: 10.1002/bse.600
- Tagesson T, Blank V, Broberg P, Collin SO. 2009. What explains the extent and content of social and environmental disclosures on corporate websites: a study of social and environmental reporting in Swedish listed corporations. *Corporate Social Responsibility and Environmental Management* 16(6): 352–364. DOI: 10.1002/csr.194
- TD Bank Financial Group. 2010a. *2009 Corporate Responsibility Summary Report*. TD Bank Financial Group: Toronto.
- TD Bank Financial Group. 2010b. Responsible Finance and Lending. http://www.td.com/corporateresponsibility/cr2009/environment/responsible_financing/index.jsp [2 November 2010].
- Thompson P, Cowton CJ. 2004. Bringing the environment into bank lending: implications for environmental reporting. *The British Accounting Review* 36(2): 197–218.
- US Government Accountability Office. 2003. Environmental reviews for export credit agency projects slowly gaining momentum. *Hazardous Waste Consultant* 21(6): B31–B34.
- Vancity. 2009. *Vancity's 2008–2009 Accountability Report*. Vancity: Vancouver.
- Vormedal I, Ruud A. 2009. Sustainability reporting in Norway – an assessment of performance in the context of legal demands and socio-political drivers. *Business Strategy and the Environment* 18(4): 207–222. DOI: 10.1002/bse.560
- Weber O. 2005. Sustainability benchmarking of European banks and financial service organizations. *Corporate Social Responsibility and Environmental Management* 12: 73–87.
- Weber O, Fenchel M, Scholz RW. 2008. Empirical analysis of the integration of environmental risks into the credit risk management process of European banks. *Business Strategy and the Environment* 17: 149–159. DOI: 10.1002/bse.507
- Weber O, Scholz RW, Michalik G. 2010. Incorporating sustainability criteria into credit risk management. *Business Strategy and the Environment* 19(1): 39–50. DOI: 10.1002/bse.636
- Willard B. 2005. *The Next Sustainability Wave Building Boardroom Buy-In*. New Society: Gabriola Island, BC.
- World Council of Credit Unions. 2009. *2009 Statistical Report*. World Council of Credit Unions: Madison, WI.
- Yakhou M, Dorweiler VP. 2004. Environmental accounting: an essential component of business strategy. *Business Strategy and the Environment* 13(2): 65–77. DOI: 10.1002/bse.395
- Ziek P. 2009. Making sense of CSR communication. *Corporate Social Responsibility and Environmental Management* 16(3): 137–145. DOI: 10.1002/csr.183