

Environmental Credit Risk Assessment,
Lending Decisions and Bank Liabilities

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Key words: Banks, corporate lending, credit risk analysis, environmental accidents and lender liability

Abstract:

Under the lender liability legislative framework, banks can be held liable for clean up costs caused by their corporate borrowers, in order to ensure proper internalization of an externality such as an environmental accident. The role that banks can play in protecting the environment is not widely researched in the literature. In this paper, we examine the financial and legislative risks incurred by banks with respect to environmental accidents arising from borrowers' activities, with special focus on corporate lending activities. In terms of solution, we examine the integration of environmental factors in a bank's credit risk analysis. Such a holistic approach enables a bank to *ex-ante* minimize losses and exposure to liability. Thus, banks can raise corporate environmental awareness, reward environmental performance, help prevent environmental accidents and ultimately act as responsible lenders. We then review a number of surveys to capture the attitude of banks towards environmental risks and the integration of environmental factors in their corporate loan decisions. Finally, we strongly recommend the systematic adoption of the environmental credit risk assessment by banks.

1. Introduction

Banks¹ hold a key intermediate position in the economic system. As one of their primary roles, banks provide financial funding for firm's operation and are in a powerful position where they can dictate whether production will occur and at which level, depending on the amount of funding granted (Jeucken, 2004). The nature of the impact of banks can hence influence the pace and direction of economic growth as well. Banks are a dominant factor in the economy and their intermediary role can lead to indirect impacts on sustainability² (Jeucken, 2004). The level of efficiency of banks' corporate lending decision-making has far-reaching impacts and can indirectly lead to environmental damage through the activities of borrowing firms. There is an emerging consensus amongst academics and professionals that banks are inextricably linked by their lending and investment practices to commercial activity that degrades the natural environment (Sarokin and Schulkin, 1991; Smith, 1994).

Since the early 1990s, banks are increasingly facing the potential for legal action arising from environmental accidents caused by their borrowing clients. In several instances, mainly in the U.S., banks have been held liable and were forced to cover the clean up costs of environmental accidents caused by their borrowers.³ Environmental Non-Governmental Organization (ENGOS) and the media particularly scrutinize banks' lending decisions when banks are associated with or provide capital to firms involved in activities that can create environmental damage (Thompson, 1998). The link between

¹ The term 'bank' refers to chartered banks throughout this paper.

² Sustainability is defined as development that "meets the needs of the present generation without compromising the ability of future generations to meet their own needs." (World Commission for Environment and Development, 1987)

³ The term 'borrower' refers to corporate borrower.

environmental impacts stemming from borrowers' activities and banks' lending decisions also represent a matter of growing interest from shareholder's perspective. Environmental accidents are described as generally costly events and their occurrences need to be minimized. Indeed, clean up costs of a site contaminated by the release of hazardous substances can range in billions of dollars, representing a threat to banks' profitability. Banks undeniably remain profit-motivated and as a result, they aim at minimizing any activity that can affect their bottom lines.

With the objective of minimizing losses and exposure, some banks have gradually modified their lending approval process in order to integrate environmental⁴ considerations (Jeucken, 2004). For this approach to be effective, banks' credit risk analysis should be holistic and integrate as many decisive risk factors as possible, including the environmental dimension (ISIS, 2002). Given the bank's influential position in the economy, it also has the capacity to positively impact borrowing firms' environmental performance, promote the prevention of environmental accidents and act as drivers of change towards responsible lending.

The objective of this paper is to demonstrate the finance-environment nexus, where a bank can minimize financial losses by integrating environmental considerations into its financial decision-making, more particularly its lending approval process that includes credit risk analysis. However, this paper does not seek to examine how a bank can minimize its own ecological footprint.⁵ The desired outcome of this paper is to show that with a more thorough and holistic credit risk analysis that incorporates environmental

⁴ The term 'environment' refers to the natural capital only and not social or human environment.

⁵ Like any corporation, a bank has direct environmental impacts which stem from the use of energy, paper and other resources consumption.

risks associated with potential site contamination caused by borrowers' activities, banks' exposure to lender liability⁶ regime can be reduced. This in turn leads to reduced financial losses for the banks and the borrowing firms and also sends a signal to the corporate world about the necessity to achieve adequate environmental performance as a pre-requisite to access funding. In the end, corporate environmental awareness and performance are further raised.

The approach used is a review of the literature and case studies in order to first show in what circumstances and to what extent, banks are presently at risk with the lender liability legislative framework. Then, we proceed by highlighting why the bank is part of the solution and the additional positive impacts that banks can create on the economy, with the strategic solutions available to face the issue of lender liability. Subsequently, we describe a key step that can be integrated in the credit risk analysis, despite some inherent challenges to the financial market, in order to determine the likelihood and magnitude of the materialization of an environmental accident caused by the borrower. Finally, we present key results of several surveys and case studies among mainstream banks mainly in Europe, to capture the extent to which banks are integrating environmental considerations in their credit risk analysis.

Section II provides a theoretical framework describing a number of key variables associated with risks faced by bank and the legal and financial implications of these risks with respect to lender liability. Section III explores how a bank can adopt a responsible lending behaviour and its implications on the corporate world. Section IV highlights key

⁶ Lender liability is defined as the responsibility and costs of remediation of an environmental accident, by a bank.

study findings pertaining to bank's new role as responsible lenders and section V concludes.

2. Theoretical and institutional framework

As part of their production process, in general, firms involved in natural resources and chemical manufacturing sectors, generate waste that can pose risks if released into the environment. In general, these firms are held responsible for clean up. However, the growing trend in most developed countries is to also make the bank, the lender, accountable for sharing the clean up costs since they are financing these firms' activities.⁷ Such is the case in the United States and the UK with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and the UK Environment Act of 1995. As banks become increasingly liable through lender liability legislation, a few studies looked at a number of frameworks that link environmental risks with lender's liability.

2.1 Environmental risks

The concept of risk is fundamental in economics. According to Greene (2000) there is no all-encompassing definition of risk. In general, risk is multi-dimensional and related to uncertainty and exposure to loss, caused by a hazard or damaging factor that leads to harm such as damage, reduced performance and finances (Chicken & Posner, 1998). Smith (1999) further defines risk as a decision that can be expressed as a range of outcomes with a given probability. The key concept of uncertainty that prevails introduces an element of perception that is associated with measuring risk with respect to

⁷ Exhibit 1 in the Appendix illustrates the link between the issue of contaminated sites and borrowers and banks.

the hazard (Adams, 1995). Risk assessment refers to a formal or informal procedure that produces a quantitative estimate of risk. Risk analysis is used more broadly to include quantitative and qualitative evaluation of all relevant attributes of hazards, risks, adverse events and conditions, that lead to adverse effects, as well as the evaluation on the populations or environments that influence or experience adverse effects.

The concept of environmental risks refers to the uncertainty and magnitude of the financial and non-financial impacts of environmental hazards or accidents⁸ on the economic well-being of society (Egyptian Banking Institute). Environmental risks are inherent in some corporate lending transactions. This is due to the growing number of stringent environmental regulations that expose borrowing firms to a greater probability of non-compliance, potential lawsuits and clean up costs that can result in heavy financial losses for both the firm and the bank involved.

Risks of environmental accidents represent financial risks that can affect the present value of the bank's loan portfolio and profit level (Smith, 1994). They can materialize into financial and non-financial costs that can even exceed the value of the loan granted. The implications of environmental accidents are usually long term or inter-generational or even irreversible. Given that loan transactions are long term in nature, environmental risks can occur at any point in time during the loan transaction. Hence the probability of the risk of environmental accidents materializing from the borrower's activities is positively correlated with the timeframe of the loan.

⁸ Environmental accidents are caused by past or ongoing manufacture, use, release, or threatened release of a particular substance, or other activities that adversely affect the environment.

2.1.1 Environmental risks and firms' activities

The economic sector where a firm is evolving, along with its activities, inherently determines the magnitude of the environmental risks posed. Firms in the resource extraction sector such as mining, oil and gas, and the chemical manufacturing sector are generally more at risk from an environmental perspective. Nevertheless, it is also true that borrowers operating in low environmental risk sectors can be exposed to high level of environmental risks if they do not manage environmental risks in a sound, efficient and systematic manner. Environmental risks can vary significantly from one branch of an industry to another as well as within a branch, depending on the corporate environmental attitude. According to Jeucken (2004) and McKenzie & Wolfe (2004), the size of the firm can also pose a risk. In general, the size of a firm inversely varies with the capacity of the firm to handle environmental risks and its implications. Large companies are in a better position to adopt sustainable practices and handle environmental challenges as compared to small and medium enterprises (SMEs). However, in most cases, progressive companies will have lower environmental risks, regardless of their size.

2.1.2 Environmental risks and implications for banks

From a bank's perspective, environmental risks can be broadly described as the potential to be exposed to the risks entailed by environmental accidents caused by borrower's activities (Environment Canada, 1998). The client's risks become the bank's risks to assume. According to Wanless (1995) and Case (1996), there are three types of environmental risks faced by banks: direct, indirect and reputation risks.

1. Direct environmental risk refers to banks that are determined legally liable for cleaning up contamination caused by an insolvent borrowing firm. The clean-up costs can be significant and can even exceed the loan principal or the initial security value. For instance, in cases where the polluter cannot be identified and found, the clean up responsibility and costs fall upon the owner or present occupier of the land. When the owner or occupier is insolvent, the responsibility and clean-up costs are to be incurred by the bank which has taken ownership of the land, according to the UK Environment Act 1995 (Thompson, 1998).

2. Indirect environmental risk impairs the ability of the borrower to repay its loan. When environmental damage is caused by the borrower's activities, the borrower is forced to pay financial penalties due to non-compliance to environmental regulations or it has to incur clean up costs. These expenses represent an additional financial burden for the borrowing firm. They erode the firm's cash flow, reduce its profitability and impact its repayment capacity. With less cash flow, risks of loan default and bad debt increase for the borrowing firm, thus creating a risk for the bank's bottom line as well (Thompson, 1998). Similarly, incremental environmental investments and conversion costs incurred by the borrowing firm in order to comply with changes in environmental legislation or changes in market conditions are other forms of indirect risk for the bank. The bank is also at risk in case it has to repossess contaminated land which initially served as collateral.

3. Reputation risk is caused by the negative publicity for the bank as a result of being associated with a polluter or operations causing detrimental impacts on the environment. By financing the polluter, the bank is viewed as a partner in crime and

hence guilty in the eyes of ENGOs, of the media, of customers and of the general public. The bank's reputation is adversely affected "even if the bank is acting in full compliance with the law." (Thompson, 1998, p. 245). Reputation risk is the most difficult risk to identify, quantify and monetize. Scandals related to poor environmental management by the borrowing firm does not however impact the value of the existing loan. In addition, a bank's tarnished corporate image and reputation can significantly undermine the bank's future revenue streams by impairing the bank's own ability to attract future customers and retain existing customer in the retail, corporate, investment and asset management lines of business.

According to Thompson (1998), environmentalists are watching closely a growing number of industries, including banks. ENGOs⁹ such as banktrack.org closely monitor incidences of environmental damage as part of their goal of raising environmental awareness and bringing to public attention, polluting firms and the banks involved (ISIS, 2002). Environmental risks are therefore an increasing concern to firms and banks. Hence, it is in the banks' own interest to minimize or avoid environmental risks arising from their lending operations. The next section discusses the lender liability regimes.

⁹ Exhibit 2 in the Appendix illustrates the various types of pressure exercised on borrowers, including ENGOs.

2.2 Bank's environmental liability

In response to the growing concern associated with the increasing number of contaminated sites¹⁰ and the threat they pose to the environment and human health, legislations pertaining to environmental damages and liability¹¹ have evolved in the lender liability area (Fischel, 1999). Lender liability holds the bank liable for environmental damages caused by its borrower's activities or negligence. In general, lender liability regimes serve two main goals: to protect the environment by ensuring the cleaning up of contaminated sites and the prevention of future contamination (Piette, March 2002). Furthermore, the issue of lender liability originates from environmental law which is founded on three guiding principles, namely the polluter-pay-principle, the prevention principle and the precautionary principle.

1. The polluter-pay principle provides a means to internalize the costs of the negative externality¹² that is generated from the activities of a firm. Liability legislation increasingly applies the polluter pays principle in the area of environmental risks (Boyer & Laffont, 1997). As a result, this principle seeks to avoid market distortions which arise in instances where a firm does not factor in the costs of pollution, in a context of competition, and pass these costs to third parties.

2. The prevention principal provides a framework to identify known risks, in order to avoid or mitigate these risks prior to undertaking a project. The outcome can

¹⁰ A contaminated site is a site where substances occur at concentrations (1) above background levels and pose or are likely to pose an immediate or long-term risk to human health or to the environment, or (2) exceed levels specified in relevant regulations (Environment Canada).

¹¹ Environmental Liability is defined as the process through which responsibility for the cost of damaging the environment is transferred back to those who caused the damage in the first place.

¹² A negative externality such as an environmental accident arises when a firm's operations negatively affect other's well-being. The associated costs are not reflected in market prices as the firm does not consider the costs that pollution impose on others.

either be to prevent the project from going forward or to impose measures designed to ensure that the project adheres to environmentally sound management practices that limit harm to the environment.

3. The precautionary principle is recognized as a means of dealing with uncertainty to protect civil society against potential hazards in contrast with the polluter-pay and prevention principles which address known situations and risks. According to the *Rio Declaration on Environment and Development* (1992), in cases of threats of serious or irreversible damage, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically, in order to prevent environmental degradation. Governments, through environmental law and regulations, seek to change the behaviour and environmental attitudes of firms, in particular natural resourced-based ones in order to preserve the well being of society. Over the past two decades, various industrialized countries have enacted lender liability regimes to safeguard public's interest.

The rationale for banks to be part of the broad net of responsible parties is that banks can effectively influence corporate decision-making of borrowing firms. The banks' "deep pocket syndrome" is evoked in courts' decision rule, as it is believed that banks can absorb the clean up costs following environmental accidents caused by their default clients (McKenzie & Wolfe, 2004). The dynamics that exist between the lender and the borrower is thus affected.

2.3 Lender liability legislative framework

The legislation pertaining to environmental liability is complex and the level of stringency varies considerably from country to country (Jeucken, 2004). Under the

Canadian Environmental Protection Act (CEPA) 1999, the government¹³ can prescribe administrative orders to be used for clean up of contaminated sites and the prevention of any additional discharge of contaminants. Provisions under the legislation also afford liability for payment of these clean up costs. They are based on the degree of control exercised by the responsible parties when the unintended contamination occurred. Potential responsible parties can range from parties that own or have charge, manage or control the substance released; have caused, or contributed to the discharge of contaminant or own property affected by the release.¹⁴

2.3.1 Problems inherent in the lender liability regime

There are several problems inherent in the lender liability legislation as described in this section. According to a study conducted for the Canadian National Round Table on the Environment and the Economy (Ernst & Young, 1992), the legislative frameworks governing contaminated sites are described as unsatisfactory from the economic and environmental standpoints. The study finds that during a lender liability case, due to the lack of precision in the wording of the legislative text, courts are faced with the challenge of assigning responsibility for clean up of environmental damage caused by the borrower's activities between parties including banks. In general, the absence of guiding principles to enable consistent decision-making in identifying the potential responsible parties for the allocation of responsibility, leads to uncertainty and different interpretations by courts. The broad net of responsible parties is not clearly defined. McKenzie & Wolfe (2004, p. 1012) describe the legal approach concerning lender liability as blurred given that "the process assigning liability for environmental

¹³ This case refers to CEPA 1999 paragraphs 95 to 99, 118, 119 and 212 on the release of substances.

¹⁴ Please refer to the Canadian Environmental Protection Act (CEPA) 1999, paragraph 212.

remediation is itself unclear". All circumstances and actions such as degree of control that can lead to lender liability as well as rights and duties of the lender towards the borrower are not clearly identified (Fischel, 1999). Such an approach also prevents banks to have a systematic and coherent approach to protect themselves against liability and make better corporate lending decisions, as they do not know the exact circumstances where they are held liable for clean up costs. The findings of the study broadly apply to liability regimes in industrialized countries.

2.3.2 Lender liability allocation regimes

This section provides an overview of the various legal liability regimes which attempt to allocate responsibility to banks, in case of environmental accidents caused by the negligence of their borrowers.¹⁵ In essence, there are two main challenges in the lender liability allocation regimes: the need to balance the need between the internalization of costs generated by an environmental accident and risk aversion of banks. In general, liability regimes can be regrouped into two categories: partial or full liability of lenders.

1. **Limited liability** is the opposite of unlimited liability. It is equivalent to partial level of responsibility of a bank where liability is limited to a fixed and maximum sum if an environmental accident occurs. Limited liability does not lead to internalization of the social costs of environmental damages as the liable party tends to underestimate the social cost of an environmental accident (Boyer and Laffont, 1997). It distorts the free market by allowing the polluting firm to externalize some of the costs of the environmental accidents and impose these on society at large. However, according to

¹⁵ The following definitions have been extracted from various documents such as the study conducted by Thompson (1998) and Environment Canada (March 1998).

Boyer & Laffont (1997), partial liability of banks is considered a solution to the liability and environmental damage issues. When faced with limited liability, banks are less risk averse. Limited liability therefore meets the need to internalize the negative externality and the reluctance of banks to lend due to the threat of lender liability.

2. **Fault-based liability** is the attribution of responsibility only if the legal entity is at fault. It is considered a powerful tool that can ensure both the implementation of environmental regulations and recovery costs in case of non-compliance. However the difficulty still lies in identifying the polluter. In the absence of mechanism to determine the polluter, non-recovery of costs occurs. Hence, this approach is characterized by a lack of effectiveness.

3. **Strict liability** is also referred to as absolute liability or liability without fault. It is a legal doctrine that attributes responsibility for environmental damages caused by hazardous activities or products undertaken, to some parties, regardless of fault. There is no need to prove negligence, as strict liability does not depend upon actual negligence or intent to harm. The current landowner(s) or occupier(s) assume(s) full burden of the clean up costs. Defining the scope of strict liability on an ex ante basis is an essential step. It can be argued that strict liability of banks provides incentives to potential polluters to adopt proactive measures to prevent environmental accident, as they will bear the brunt of the clean up costs. Hence, banks tend to be more risk averse.

4. **Unlimited liability** is also referred to as full responsibility of the bank. In the event of an unintended environmental accident created by the activities of its corporate borrower, the bank will bear total responsibility and costs for clean up and compensation of the victims. The bank can therefore lose an unlimited amount of money. Unlimited

liability of the bank also means limited liability constraints for the borrowing firm, and hence weaker incentives for the firm to reduce the probability of an environmental accident. The borrower may also be inclined to invest in risky projects once the funds are channelled, since all potential losses will be shared with the lender (Fischel 1999).

In order to minimize losses when a bank assumes full responsibility, it tends to reduce the amount of lending to the potential polluting borrower. Other protective measures for the bank facing an unlimited liability regime, include more rigorous arrangements in loan contracts between the lender and the corporate borrower, as well as increased cost of capital in an attempt to cover for risks involved in the loan transaction. However on the environmental front, unlimited liability regime enables full internalization of the costs of a negative externality and an efficient level of effort to prevent environmental accidents (Boyer & Laffont, 1995).

5. **The principle of joint and several liability** assigns the responsibility of the costs of remediation to all parties involved. Liability may be apportioned to one or more parties. In this particular case, the key step is to determine who is liable and how to apportion the clean up costs among these identified responsible parties. In such a case, banks tend to be more risk averse.

6. **Extended Liability** of banks arises when the polluting firm becomes insolvent by its liabilities and hence cannot afford remediation costs. Extended liability thus expands the capital pool available to compensate victims; it stimulates monitoring between firms; and thereby motivates greater levels of precaution. As a result, banks tend to adopt a more risk averse behaviour. Extended liability or retroactive liability occurs where previous owner(s) or occupier(s) can be charged for clean up. The lender

who is also the current property owner can avoid clean up costs only in case it can diligently prove in court that site contamination occurred prior to his acquisition and control of the property (Ernst & Young, 1992).

According to Boyd & Ingberman (1997), extending liability forces greater joint cost internalization. It does not necessarily improve welfare and can lead to two types of cost-increasing distortions. First, the bank can reduce lending as a safe strategy to externalize liabilities. Second, extended liability can distort the pattern of transactions between risk generating borrowers and the bank, since deep-pocketed banks have an incentive to avoid transactions with more shallow-pocketed firms. Pitchford (1995) underscores the trade-off between efficiency and fairness in the case of extended liability: while ensuring proper internalization of the externality through remediation of a contaminated site, the borrower can be less inclined to prevent environmental accident. Extending liabilities to banks can also lead to disincentives for banks to channel funding to firms operating in environmentally sensitive sectors. However, this regime also encourages banks to first insist upon good environmental records of these borrowing firms, as a prerequisite to access credit and second to closely monitor the borrowers' activities and safety effort to minimize occurrence of environmental accidents (Boyer & Laffont, 1995).

In general, the challenge with the above mentioned types of liability regimes is to adequately compensate the pollutees in case of unidentifiable polluter, of default borrower, of limited liability of banks and of borrowing firm, without reverting to the argument of banks' deep pockets. The mainstream belief stands that banks are well capitalized and hence are not subject to insolvency where "economic theories of

environmental policy are partial in the sense that they assume that lending banks have deep pockets”(McKenzie & Wolfe 2004, p. 1006). Lender liability regimes therefore can pose a dilemma. It ensures internalization of negative externality leading to better protection of the environment while raising equity issues by not necessarily assigning responsibility for clean up to the polluter(s). As a result, lender liability regimes, although initially intended to protect the environment and ensure proper compensation of victims, can impact the structure of lending contracts, the dynamics of the financial market, the availability of credit, the cost of capital and the level of investment (Boyer & Laffont, 1995).

2.3.3 Comparing USA and UK liability legislative frameworks

By comparing two alternative environmental policy frameworks, namely CERCLA and the UK Environment Act of 1995, clear differences appear in their approaches to lender liability.

Controversy over CERCLA in the USA

The CERCLA was instituted in the USA in 1980. According to Boyer & Laffont (1997), CERCLA is described as the most comprehensive and most widely publicized and controversial legal framework that seeks recognition and clean up of contaminated land despite its difficulty in defining an acceptable level of risk. It seeks permanent clean-up and assigns responsibility to only one party which in turn needs to sue other parties, including financial institutions involved, to share clean-up costs. CERCLA includes retrospective liability with respect to current and past owners and operators of the source of environmental damage as well as strict and joint and several liability regimes. It also includes full liability of banks when these are operator or owner or

closely involved in the borrowing firm's supervision to the extent of influencing management or only by monitoring the financial aspects of the borrowing firm. Since 1996, the Secured Creditor Exemption in CERCLA can protect a lender from being held liable for contamination caused by its borrower on its secured property. However, under the following circumstances, banks are not exempted: if contamination occurred prior to foreclosure and while the borrower is still in possession; if the lender exercises decision-making control over environmental compliance; or managerial control for the overall management encompassing day-to-day decision making with respect to environmental compliance; or managerial control over all or substantially all of the operational functions of the facility other than environmental compliance. The transaction costs of this court-based approach to identify responsible party are very significant. Because CERCLA¹⁶ seeks *ex post* a permanent clean-up solution, it results in inefficiency (McKenzie & Wolfe, 2004).

The following three cases illustrate the three distinct court's decision in that respect (Boyer & Laffont, 1995). First, U.S court found Mellon Bank liable due to its major involvement and supervision in the firm's operations. Second, in 1986, Maryland Bank and Trust was held liable as it had a mortgage on the property that was contaminated. The banks became the owner of the property by purchasing the mortgage at the foreclosure sale. Third, in the US versus Fleet Factors Corporation in 1990-1991, the court condemned the bank financing the firm for decontamination costs of the environmental damage caused by its borrower on the grounds that it had the capacity to

¹⁶ In the early 1980s, the cost of the Superfund under CERCLA was used to clean up environmental damage. These funds, financed by taxes, are intended to allow rapid indemnification of pollutees and clean up of the environmental damage caused. European countries such as Germany also adopted this system (Bianchi, A. 1994).

influence the management of the polluting firm. Such a court decision created consternation within the bank industry in the US in 1991. In general, experience in the US reveals that courts' decisions do not favour lenders which are instead held liable for environmental damage caused by their borrowing clients (McKenzie & Wolfe, 2004).

The treatment of liability under the UK Environment Act of 1995

In designing the UK Environment Act of 1995, care was taken to avoid the major problems encountered with the implementation of CERCLA. Hence, in contrast with CERCLA, the objective of the UK contract-based decision is to reach *ex ante* clean-up solutions that are "suitable for the use to which a site is to be put." (McKenzie & Wolfe 2004, p. 1013). The Act recognizes that risk assessment is subjective in nature, and integrates both the benefits and costs of environmental remediation. Furthermore, unlike CERCLA which targets only one party with all remediation costs, the apportionment of liability under the Act has a framework¹⁷ that enables the simultaneous apportionment of liability to more than one party. Banks are also included as a potential liable party due to their provision of liquid assets to firms that are involved in contamination or by holding collateral against loans. Boyer & Laffont (1997, p. 1429) highlight that this framework seeks to "explicitly hold banks liable for environmental damage caused by the companies the banks finance" to promote efficiency. Finally, the UK approach eliminates costly legal actions since more than one party is held liable to share the clean up costs. However, lack of precision still prevails in the legislation which leads to difficulty in identifying the responsible parties.

¹⁷ Please refer Exhibit 5 in the Appendix for a description of the framework that apportions liability under the UK Environment Act 1995.

2.4 Asymmetry of information

The next section describes how a bank can be misled in its lending approval decisions in a context of uncertainty caused by asymmetry of information. The financial market is characterized by asymmetry of information which leads to the principal-agent problem. When the information structure is asymmetric, a bank has incomplete information on the borrowing firm's profit potential and environmental accident prevention effort. Despite the numerous sources of information¹⁸ available, gathering information regarding environmental performance specific to a firm is not an easy task. For instance, environmental reporting¹⁹ is viewed as a communication instrument that describes the level of environmental performance of companies; however, since it is not an established practice, banks' task remains complicated.²⁰ Banks face a bigger challenge of data gaps when dealing with SMEs which rarely publish environmental reports (Jeucken, 2004). Moreover, the lack of formal templates of environmental report adds to bank's difficulty to undertake benchmark comparison between firms operating in environmentally sensitive sectors.

2.4.1 The implications of asymmetry of information

The danger of asymmetry of information is that it can prevent an effective assessment of current and potential environmental risks involved in a lending transaction. Economic literature seeks to analyze the implications of asymmetric information which

¹⁸ Sources of information include environmental reports, government sources such as the NPRI (National Pollutant Release Inventory), specialized magazines and newspapers, policy documents, Canada Gazette for new and updated environmental regulations and environmental experts.

¹⁹ It is to be noted that environmental reports are not mandatory, but are rather a voluntary initiative on behalf of corporations. Financial reports do not include information on the environmental performance of the company.

²⁰ Disclosure of environmental information can be regarded as a sensitive issue by the borrower as he can fear that revealing poor environmental performance of his firm can negatively affect his credit approval.

leads to market failure. Operating under information asymmetry, banks are faced with the principal-agent problem of adverse selection²¹ and moral hazard²² vis-à-vis the borrowing firm (Boyer & Laffont, 1997; Pitchford, 1995). Where complete information about the borrower is required, Laffont (2000) describes the bank's situation as a control problem pertaining firstly to the firm's cash flow to ensure its repayment capacity and secondly to the firm's safety effort undertaken to prevent environmental accident. Assuming a perfect world where the bank has all the necessary information on the borrowing firm's current, past and future environmental performance, limited liability of the firm is optimal and banks are not reluctant to lend more.

According to Akerlof (1970), under adverse selection, banks are unable to properly gauge the borrowers' creditworthiness and the magnitude of the probability of an environmental accident. As a point in case for adverse selection, a bank (the principal) facing full or unlimited or strict or extended or joint and several liability, is assumed to observe the (agent) firm's level of effort exerted to prevent environmental accidents but not its level of profit. The outcome is that the bank runs the risk of attracting a borrower with poor repayment capacity. The bank also tends to have a lower propensity to lend in order to minimize its potential indirect environmental risks and liability (Boyer & Laffont, 1995). A bank can also make an adverse selection, due to lack of information, by refusing capital or by raising the cost of capital to a borrower with a good environmental record. By over-estimating the scope and potential of an environmental

²¹ Adverse selection occurs as a borrower knows more than the bank about its own repayment prospects and potential environmental risks. The bank can therefore wrongly choose to provide capital to polluting firm.

²² Moral hazard refers to a careless behaviour of a party given that there is the possibility of redistributing risks.

accident, and adopting corresponding measures such as raising the cost of capital for that borrower, the bank penalizes the borrower. The reverse is also true.

In case of limited or fault-based lender liability, banks create a moral hazard if they lend irresponsibly as they are aware that they will not be held liable for most of the clean up costs (Pitchford, 1995). Banks can thus overlook major potential environmental accidents by not having the urge to conduct a thorough review of the borrower's environmental records. On the other hand, a borrower facing limited liability does not deploy an optimal level of effort to decrease the probability of causing an environmental accident given that it will not bear the full consequences of the accident. In case, a bank is assumed to observe the level of profit but not the level of effort exerted by the firm, in the face of full or unlimited or strict or extended or joint and several liability, the bank therefore adopts a very cautious lending behaviour (Boyer & Laffont, 1995). Under the threat of lender liability, banks tend to reduce the number of lending transactions or the amount of capital to very risky firms.

In general, Boyer & Laffont (1995 & 1997) recommend partial liability of banks as the appropriate lender liability regime. First, partial liability of banks leads to a proper lending level and second, there is a proper internalization of the social cost of an environmental accident. Banks are not arbitrarily penalized for unintended consequences of their corporate clients related to environmental accidents. Adequate incentives are required in order for both the bank and the borrowing firm to change their behaviour towards integrating environmental considerations into their respective economic decision-making. This is more particularly relevant in the case of limited liability of the borrower and full and extended liability of banks.

2.5 Banks' response to the environmental agenda

The hotly debated subject of lender liability has its merits regarding the protection of the environment although banks generally tend to strongly oppose courts' decisions to allocate clean up costs to lenders. Environmental agencies in the USA and UK and Europe have raised concerns on the implications of banks' lending decisions (McKenzie & Wolfe, 2004). Under the principle of joint and several liability of the UK Environment Act 1995, the issue of the extent of liability to be borne by a bank is therefore seen as a major concern (McKenzie & Wolfe, 2004). In general, banks in Europe strongly oppose potential unlimited and retrospective liability. Banks also protest when they are liable for lending funds, for monitoring a borrower's performance and for holding land or other assets as security. The *British Bankers Association's* stance is that in case of strict liability, it should be clearly stipulated that banks should be excluded of any liability (McKenzie & Wolfe, 2004; Goldberg, 1995). *The House of Lords Select Committee on the European Communities* (1993) argues that "a lender who has taken possession to enforce his security should not be liable for previous acts of a borrower where the lender has acted responsibly in making and continuing his loan." (McKenzie & Wolfe, 2004, p. 1015).

On a more pragmatic level, banks' reaction to environmental risks can be described as cautious or proactive or ambivalent. Based on the bank's perception of the risk of an environmental accident arising, different strategies are adopted by banks with regards to environmental risks management. The process of deciding what should be done about a hazard, the population exposed, or adverse effects, implementing the decision, and evaluating the results is referred to as environmental risk management.

These various reactions can be fundamentally attributed to the threat of liability regimes, corporate attitude towards environmental risks and their perception as to the probability of the materialization of these risks (Jeucken, 2004).

Cautious banks tend to limit environmental risks and liabilities. The daunting uncertainty that prevails in environmental liability legislation with regard to banks' role and responsibilities can act as a major deterrent in extending credit (Jeucken, 2004). A bank's marketing strategy in attracting or deterring particular segments of borrowing firms, determines the composition of the bank's loan portfolio and the risk profile of the borrowers that are deemed acceptable by the bank (Thompson, 1998). Some banks have discontinued granting loans to firms operating in environmentally sensitive sectors (Jeucken, 2004; Case, 1999). The danger of this restrictive approach on behalf of banks can lead to underinvestment in those sectors due to lack of financial funding channeled (Goldberg, 1995). The restricted flow of funds to these sectors can even impact the adoption of innovative techniques and equipment intended to reduce the probability of environmental accidents and improve efficiency in general. However, as far as possible, steering clear of directly financing projects and rejecting all loans closely associated with environmental issues, is not always recommended (Jeucken, 2004).

It is also true that some banks still do not factor in environmental risks in the lending decision process. Such banks generally do not have an established corporate environmental policy (Jeucken, 2004). Other banks may decide to grant funding to borrowing firms with a sensitive high environmental risk profile, but at higher interest rates. The higher cost of capital is thus intended to partially offset the higher level of environmental risks involved in the loan transaction.

The next section shows how banks can be responsible lenders with respect to environmental issues.

3. Banks as actors in the prevention of environmental damage: an overview

3.1 Why banks are part of the solution?

In a context of continuously evolving environmental laws and liability regimes that are not worded carefully to clearly define first the roles and responsibilities of banks and second, the allocation of clean up costs, it is in the bank's own interest to strategically integrate environmental considerations in its credit risk analysis and lending practices in order to avoid lender liability. This practice is even more relevant in the case of full or strict or extended lender liability regimes (Thompson, 1998).

In addition, it is widely recognized that banks' core activities revolve around risk management and hence, banks can manage the risks associated with their borrowers (McKenzie & Wolfe, 2004). Boyer and Laffont (1997) describe the modern banking industry as geared towards greater risk management that requires the bank to better identify, manage and put a price on risks. Banks' practices which factor in environmental considerations in their credit risk analysis are regarded as part of good governance.

It is also important for banks to assume their responsibility in corporate lending, as they are part of the supply chain, but appearing in an early stage. "The supply chain thus imparts a vertical structure to corporate finance." (McKenzie & Wolfe, 2004, p. 1011). Through the adoption of a comprehensive credit risk assessment framework,

banks send a strong signal through their lending decisions to borrowing firms. End of pipe solutions for clean up of contaminated sites are thus minimized.

Banks can be viewed as powerful agents of change to promote environmental performance in the corporate world and to integrate environmental considerations in economic decision-making. Banks unique position in the capital market can be used as a strong leverage to influence corporations to adopt higher environmental standards. The interface that therefore exists between the environment and bank's lending operations cannot be overlooked.

“Banking and the environment meet in many ways, most notably through the corporate lending operations.....which lend considerable sums to commercial customers in order to finance activities which inevitably have an impact on the quality of the natural environment. It thus follows that banks have a role to play in helping raise environmental standards.”
(Thompson, 1998, p. 243).

Banks can send a significant signal to the corporate world by establishing good corporate environmental records as a pre-requisite for obtaining credit. This is in line with the prevention of environmental accidents. Firms requiring capital will need to first demonstrate good environmental performance. They will therefore strive to reach better environmental standards as they seek to reduce the likelihood of site contamination in order to avoid environmental liability. Firms will thus fulfill the requirements of the bank's credit risk analysis (Ernst & Young, 1992). Banks direct efforts will also contribute towards the environmental objective of the command and control approach implemented by worldwide departments of the environment mainly in industrialized countries, which is the protection of the environment.

As a direct result of bank's influential role in the capital market, the general public expects business as having a major role and responsibility in protecting the environment (Shrivastava, 1993). In this line of thought, critics argue that banks are not to only take the credit when a project succeeds but to also share the responsibility and costs in case of environmental accidents.

In addition, over time, international institutions such as the *World Bank*, the *United Nations Environmental Programme for Financial Institutions* (UNEP FI), the *Organization for Economic Co-operation and Development* (OECD) have spearheaded frameworks and guidelines to set the stage for financial institutions to take into account environmental considerations into their core businesses. Engaging international banks to adopt responsible lending behaviour is viewed as a key step towards the prevention of environmental accidents. Responsible financing will lead to raising corporate environmental awareness and standards among borrowers. Adoption of those guidelines demonstrates a bank's heightened good governance and corporate social responsibility. Such an approach improves the bank's corporate image and shareholders' perception and value (Jeucken, 2004).

In light of the threat of lender liability, banks have elaborated measures to integrate environmental considerations into their decision-making process, more precisely in their lending approval process, by first examining the current and potential environmental risks posed by the potential borrower through environmental credit risk assessment (ECRA). The next section describes ECRA.

3.2 Environmental credit risk assessment

3.2.1 What is Environmental credit risk assessment?

The ECRA²³ is a formal, rigorous, integrated and comprehensive risk assessment that enables a bank to achieve two primary goals in credit risk analysis. It has only been applied by some banks in developing countries during the last decade. First, ECRA helps to identify, on an *ex ante* basis, current and potential environmental risks posed by the potential borrowing firm and second, ECRA also helps to assess the capacity of the firm to absorb any financial costs associated with their current and potential environmental risks (Jeucken, 2004). The ECRA is part of a bank's overall risk management, more particularly of credit risk analysis, as it seeks to determine the environmental risk profile of the borrowing firm through the likelihood, extent, costs and impact of an environmental risk materializing (Jeucken, 2004). Default risk minimization is viewed as the fundamental objective underlying ECRA establishment and implementation in banks (ISIS, 2002). The ECRA is based on the polluter-pays principle and the pollution prevention principle.

Given the possibility of risks materializing into monetary loss impacting a bank, a comprehensive credit risk analysis, taking into account both as many relevant direct and indirect risk factors is necessary (ISIS, 2002). According to McKenzie & Wolfe (2004) banks are concerned in UK with the following three risks: environmental credit risks, legal risk arising from the application of the Principle of Joint and Several Liability, as

²³ Exhibits 4 and 5 in the Appendix clearly illustrate the steps required to conduct an environmental risk assessment in a credit review process.

well as reputation risks from being associated with a polluter-borrower. Overall, the results of the ECRA are intended to play a decisive role in extending credit to firms:

“Successful ECRA is recognized as a key element of bad debt avoidance. Bad debts can make or break a bank’s profitability throughout the economic cycle and therefore any moves a bank takes to pro-actively address the issue can only be interpreted as beneficial for shareholder value.” (ISIS 2002, p. 3)

Ultimately, ECRA enables the lending and risk officers to take appropriate risk mitigation measures in collaboration with the firm seeking capital and to ultimately make efficient lending decisions.

3.2.2 When to apply ECRA?

The timing and frequency of applying ECRA within a loan transaction vary from bank to bank. Banks with a more cautious approach and thorough risk analysis, apply ECRA from the start of the loan application process through to the lending decision and subsequent monitoring of the borrowing firm (ISIS, 2002). McKenzie & Wolfe (2004) recommend using ECRA at two phases: during credit risk assessment and that of collateral valuation. Furthermore, Jeucken (2004) asserts that banks can assess environmental risks at four distinct stages: before granting the loan, periodically during the term of the loan, when dealing with a default borrower and at foreclosure and liquidation.

3.2.3 How to apply ECRA?

The adoption of ECRA lies within the realm of the Board of directors of a bank. It depends on the bank's corporate attitude towards lender liability regimes, environmental risks and implications, and perception with regards to the probability of materialization of these environmental risks. Once the buy-in of the Board of directors is obtained, environmental policies and guidelines can be mainstreamed and integrated in the bank's credit risk process. As described below, several instruments and methods can be used by lending officers, to implement ECRA.

Environmental instruments used in environmental risk analysis

Several instruments have been developed by international institutions to facilitate and encourage banks to adopt environmental risks assessment instruments such as environmental audit²⁴ and environmental impact assessment (EIA). Stages in an EIA include: project screening, site selection, baseline data, environmental impacts and risk assessment, analysis of alternatives, environmental mitigation plans and public consultation. However, an EIA "does not fulfill the requirements for analyzing direct and indirect financial risks to banks" (Jeucken 2004, p. 176). Hence, an EIA does not always contain information suitable for banks to assess environmental risk assessment.

For internal purposes related to EA²⁵, the *World Bank* has developed the Pollution Prevention and Abatement Handbook which can be used by banks when financing projects in developing countries. The responsibility and cost of conducting an EA is primarily incumbent upon the borrowing firm. In other cases, some banks choose to

²⁴ An environmental audit is an assessment of the nature and extent of harm or risk of harm to the environment posed by an industrial process or activity, waste, substance or noise.

²⁵ EA became part of standard procedures at the World Bank in 1989 (Operational Directive 4.00; in 1991 amended to Operational Policy 4.01)

establish environmental audit systems within their credit policy. Environmental audit systems or due diligence²⁶ are used to prevent lender liability.

Methods used for environmental assessment

At a more detailed level, various methods exist to identify current and potential environmental risks involved in a loan transaction. Some methods are qualitative, others are quantitative or combine both in order to assess the probability that the borrower will default after the loan has been granted. Different models use various levels of information in an attempt to encapsulate a number of factors suited for financiers.

Lending decisions mostly lie in the hands of lending officers who examine loan transaction by considering credit risk profile of borrowing firms on a case by case basis. In weighing the details of each borrower on its individual merits, some guidance tools can be used to provide a standardized approach for the lending officer. These tools include flowcharts which are accompanied by a series of questions; guidelines and risk matrices. They serve to guide the lending officers through the ECRA process.

Banks may use 'rough checklists'²⁷ for environmental risks involved in lending activities, with standardized questionnaire that requires straightforward answers such as 'yes' or 'no' or 'not applicable'. However, a checklist is not enough to encapsulate the necessary level of detail and reach the outcome of an analytical process intended to identify and assess the existing and potential environmental risks involved in a loan

²⁶ An environmental due diligence audit provides an opportunity to identify and evaluate environmental risks that could have a material impact on the business transaction. It is also a means to monitor a firm's against previously agreed standards.

²⁷ Please refer to Exhibit 6 and 7 in the Appendix for details on a typical checklist used by banks.

transaction. In addition, a checklist cannot convert the identified environmental risks into financial risks (Jeucken, 2004).

The *Centre for the Study of Financial Innovation* (CSFI) standardized method also attempts to capture the corporate environmental risk profile (Jeucken, 2004). The method primarily revolves around two main questions regarding the scope and scale of potential environmental risks and, the extent to which the borrowing company can handle the materialization of these environmental risks and costs. The outcome of the CSFI method is a seven-point scale classification of environmental risks that factor in the financial position of the company, the level of environmental risks at play, the capacity to cope with those risks as well as potential upcoming more stringent government policy.

The Repetto and Austin Method (2001) is another method used to assess various environmental scenario analyses in order to deal with uncertainties. This method allows the assessment of potential environmental issues within a sector or for a specific company within a sector. The eleven steps involved in the *Repetto and Austin Method* include building scenarios around the specific relevant environmental issue identified; assigning probabilities to the scenarios; assessing the company's exposure; estimating the financial impacts contingent on the scenarios and constructing overall measures of expected impact and risk. It has been recognized as particularly useful in environmentally sensitive sectors by providing banks and investors with relevant insights (Jeucken, 2004).

Quantification of risks assessment can be used with the help of modeling techniques for environmental risks classification. The Basle Accord (Bank for International Settlements, 1988) and the European Union Bank Solvency Directive (CEE, 1989) have

instigated sophisticated procedures to monitor credit risks and satisfy complex capital adequacy standards worldwide. The purpose of these measures is to ensure both the competitiveness and safety of the banking sector, based on robust risk analyses weighing risks against returns. However, despite collaborative international efforts to promote the use of quantitative techniques for risk analysis,²⁸ qualitative methods remain the most popular approach used (McKenzie & Wolfe, 2004).

3.2.4 Type of information relevant to ECRA

In profiling the current and potential environmental risks of the borrower, despite the lender's diligence, accurate assessments can be limited due to lack of information. In addition to information related to the borrower's capitalization and cash flow to assess the soundness of business practices, environmental corporate risk analysis requires information²⁹ regarding qualitative and quantitative assessment of environmental performance, risk and environmental policy in place, environmental management system such as ISO 14001, permits granted and production processes (Jeucken, 2004). Examining the sector and industry branch is of primary importance in order to pay closer attention to environmental risks inherent to that particular sector. Banks also examine the value of the land³⁰ used as collateral because incidence of contaminated properties can become a risk to security for banks when the land serves as negative collateral. In addition, banks tend to view the possession of such contaminated property as a sign of the borrowing firm's poor overall management.

²⁸ Quantitative risk assessment procedures include J.P Morgan's Credit Metrics (1994) and Risk Metrics (1997)

²⁹ Exhibits 6 and 7 in the Appendix provide a list of the type of environmental information required for ECRA.

³⁰ Land value can be determined during an environmental site assessment conducted by environment specialists.

The bank also takes into account any foreseeable relevant future new environmental legislation that may imply the need for additional investment. This can imply that the borrower will no longer be in compliance, and potential disbursement may negatively impact the borrower's cash flow and even impair his repayment capacity. The bank thus needs to assess the borrower's financial capacity to bear incremental environmental investment required to comply with future environmental regulations.

In addition, among the decisive factors at play in the assessment of financial and environmental risks, banks increasingly take into account the corporate attitude of the borrowing firm towards the environment and its business capacity to handle the financial impacts of potential environmental accidents.

3.2.5 Limitations of ECRA

Implementing ECRA policies comes at a quite significant cost. First, it takes time to mainstream, integrate and implement a bank's innovative environmental throughout all its operations. Then, in order to operationalize ECRA guidelines and procedures in its internal core businesses, a bank needs to build a team of lending officers equipped with the necessary training to conduct ECRA. Thus, a bank incurs costs related to the training of staff in case it opts to develop in-house expertise. Otherwise, the bank can hire external consultants to conduct ECRA. Furthermore, the more elaborate procedures involved in ECRA need to be effected by lending officers on a case by case basis, which require more time, more resources and broader expertise in terms of legal, environmental, financial and economic expertise. In addition, gathering relevant data to conduct ECRA can be time-consuming. Last but not least, with information asymmetry, the process of

forecasting and estimating events that will occur after a loan is granted, complicates ECRA.

3.3 Additional measures to minimize impacts of environmental accidents

In addition to ECRA, effective solutions for banks against the threat of lender liability include the following measures which can be used as complementary to ECRA.

1. Incentives are required to motivate economic agents, lender and borrower, to respectively seek and disclose environmental performance information. Banks have strong incentives to offset the adverse effects of asymmetric information to avoid lender liability. If borrowing firms understand how disclosing environmental information can be to their mutual interest and advantage, they will be motivated to provide the relevant information to the bank. This approach avoids problems associated with bank's adverse selection (Spence, 1973).

2. Banks also choose to incorporate contractual arrangements between the bank and the borrowing firm, before granting capital. The arrangements may contain stringent provisions with regard to environmental management and performance, to be executed by the borrowing firm, and monitored by the bank on a regular basis throughout the period of the loan. Indemnifications that attempt to absolve the bank from clean up costs and *ex ante* arrangements on the sharing of the responsibilities in case of environmental accidents can also be included in the arrangements. According to Boyer & Laffont (1997), based on the principal-agent literature and the theory of optimal financing contracts founded on informational asymmetries, incentive structure for lenders and borrowers to avoid clean up costs, can promote efficiency of loan agreements (Fischel,

1999). Such a proactive measure results in reduced litigation costs in the event of an environmental accident.

3. Environmental damage insurance represents an effective measure to help polluters to deal with the clean up costs and mitigate the impact of environmental accidents. The role of Environmental Insurance is to transfer risk and reduce uncertainty. It attempts to include back up indemnity, bringing certainty to clean up costs, transferring risk of unknown pre-existing and new contamination, transferring risk of third party or regulatory liability, transferring risk associated with clean up process and transferring risk for loan loss in foreclosure (Evans, J. RBC Financial Group, 2004).

4. Borrowers can set money aside to cope with potential future clean-up costs. Such an initiative is welcome and is viewed as solid business practice by banks and the community.

5. Finally, another solution is for banks to work with firms on a one to one basis in order to seek solutions to eliminate or treat or manage or transfer the risks involved in the lending transaction (Environment Canada, March 1998). Such an approach also helps to raise corporate environmental awareness and work towards accident prevention. The common goal is to help a borrowing firm to minimize the materialization of environmental accidents, without excluding the possibility of incorporating innovations and reducing resource inefficiency.

The next section discusses the results of a number of surveys conducted in the UK and more generally in Europe. These surveys have attempted to capture to what extent banks are integrating environmental considerations in their credit risk analysis and the main challenges and issues faced by the banks.

4. CASE STUDIES

The key findings of several surveys conducted to measure the integration of the finance-environment interface, survey are discussed hereafter.

The integration of environmental issues into lending procedures

In view of minimizing losses related to environmental issues generated by borrowing clients, credit risk assessment with regard to sustainability issues has gained ground within the banking sector, although results vary. According to Jeucken (2004) only fifty-six per cent of banks consider environmental issues in credit risk analysis. This proportion is considered to be low given that banks have been aware, since the early 1990s, of the significant threat of lender liability that drove some banks into bankruptcy in the USA. Some banks in North America, but not in Oceania, Belgium, France and Italy, apply ECRA. In addition, the socio-economic dimension of sustainability is more prominent in North America, as compared to Europe and Oceania. This behaviour may be explained by the existence and enforcement of regulatory frameworks such as CERCLA in the USA.

According to the Thompson survey (1998), about sixty percent of banks surveyed integrated environmental risks in their credit risk assessment analysis. All interviewees unanimously acknowledge the potential threat of environmental risk; however, their perceptions on the materialization of environmental risks vary. The ambivalent attitude of banks is mainly attributed to their perception that environmental risk is to be considered on a level playing field with the other risks factors. Also, banks handle environmental risks differently according to the environmental risk profile of their borrowers. Environmental risks are sometimes handled informally and on an ad hoc

basis. On the other hand, the more cautious banks attribute special significance to environmental risks by systematically incorporating these risks into their credit risk assessment. All banks surveyed by ISIS (2002) embrace ECRA as these banks are of the opinion that environmental risks can directly impact their profitability.

Method of risk assessment

Jeucken (2004) shows that, to account for environmental factors in their credit decision, some of the surveyed banks explicitly adhere to standardized guidelines established by the *World Bank* and to a lesser extent those of the OECD when financing international projects. North American banks are more willing to adopt these guidelines whereas other banks have set up internal ECRA guidelines to mitigate environmental risks generated by the borrowing client. The ISIS study (2002) shows that internal banking procedures factoring in environmental issues are however less well developed.

According to the McKenzie & Wolfe survey (2004), sixty percent of the banks are UNEP FI signatories while seventy percent of the banks apply the *World Bank* or *European Bank for Reconstruction and Development Guidelines* when lending to large overseas corporate borrowers. In conducting ECRA, the UK banks surveyed prefer qualitative over quantitative methods. Ninety-two percent of the surveyed banks use quantitative techniques in conducting their credit risk assessment while seventy-five percent of the banks use both quantitative and qualitative procedures. Also, eighty percent of these banks use quantitative procedures when evaluating credit risks profiles of SMEs, UK corporate and transnational sectors, as compared to fifty percent in the case of the retail sector.

Banks' risk assessment procedures vary according to class of borrowers. Banks consider capitalization as an important factor in the case of large corporate borrowers as it indicates the borrower's capacity to absorb potential clean-up costs. As for SMEs, banks assess the environmental risks associated with collateral. The survey did not indicate evidence of banks having deep pockets, as is generally assumed.

Banks environmental attitude

In general, a bank's stance with respect to environmental risks can be described as 'defensive' or 'preventive' or 'offensive' (Jeucken, 2004, p. 356). In the ISIS study (2002), significant variations across the sample exist, relative to the bank's approach and degree of experience in the application of ECRA. As a result, banks surveyed can be categorized into three groups in order to demonstrate the thoroughness and sophistication of their procedures: first, banks "on the starting grid"³¹ acknowledge the relevance of ECRA but have not yet created a framework to implement ECRA; second, "the chasing pack"³² refers to banks already "engaged in a serious review of ECRA", establishing internal policies and applying operational procedures in their home countries. The third category of banks is "the race leaders"³³ which have relatively mature and detailed review procedures, training systems and communications in place.

Factors influencing banks environmental attitude

Jeucken's survey (2004) shows that banks' attitude primarily depends on their perception of the probability of the materialization of the environmental risks. Banks' perception of the importance of environmental issues is influenced by their respective

³¹ The first group of banks includes Santander Central Hispano, Société Générale and UniCredito Italiano.

³² The second group of banks refers to HSBC, ING Group, Royal Bank of Scotland and Standard Chartered.

³³ The third group of banks includes Barclays, Credit Suisse Group and Lloyds TSB.

general context, including first and foremost environmental regulations and pressure exercised by ENGOs and the media. In addition, the survey also shows that there is a main distinction between large mainstream international small or local sustainability-niche banks where the former tends to focus on risk management, communication and organization. Jeucken's survey also tentatively shows correlations between the level of sustainability of a bank and its efficiency, its size corresponding to its assets, and the degree to which it is international. In UK, a number of banks are concerned about the legal risks stemming from the application of joint and several liability under the UK Environmental Protection Act of 1995 for environmental damage caused by their borrowing clients. There is a strong positive correlation between the level of commitment of the Board of Directors and environmental risk assessment implementation (McKenzie & Wolfe, 2004).

Possibility of screening out some sectors

According to Jeucken (2004), motivated by a concern for lender liability, a number of European banks³⁴ deliberately avoid extending credit to sectors posing threats to the environment where such a behaviour is only among the banks which factor in environmental risks in their credit policies. Some sectors and activities include for instance, project related to defence equipment and landmines and project that lead to the destruction of tropical rainforests. Exclusion of sectors and activities is considered a sensitive issue for banks. Financing on a case by case basis is also applied. Generic codes of conduct when assessing financing are applied.³⁵

³⁴ See the Deutsche Bank report 2000, p22.

³⁵ The Rabobank has its own code of conduct in this regard (after fig 6.1); ING uses its comprehensive set of 'Business Principles' and HSBC also has its position for responsible financing.

According to the McKenzie & Wolfe survey (2004), in the face of unlimited liability, banks may be deterred to lend to some sectors to avoid lender liability. However, in general, the banks surveyed are willing to extend credit to well-established firms even though they are profiled as potential polluters. In contrast with SMEs, UK banks tend to view these large firms as having the means to absorb potential clean up costs in the event of an environmental accident.

Environmental risks that matter the most to banks

Banks surveyed by Jeucken (2004) acknowledge that the impacts of reputation risks, potentially difficult to quantify and monetize, can be devastating for the bank granting capital to the borrowing firm. The ISIS survey (2002) shows that some banks assign a relatively greater importance to reputation risks and in general recognize the strategic importance of managing risks to reputation. This reflects the extent to which banks only have limited influence over how major corporate borrowers manage risks to their own reputation.

The McKenzie & Wolfe survey (2004) reveals that ninety per cent of the respondents consider the impacts of environmental risks on their own institutions as significant, particularly regarding reputation issues and to a lesser extent borrower default rates and recovery value of collateral. In addition, ninety percent of the respondents rate the risk arising from low recovery value of collateral due to land contamination as important. Fifty percent consider important the legal risks following possible court's decision to apply the Principle of Joint and Several Liability under the UK Environment Act of 1995, along with reputation risk leading to loss of customers. Forty percent of the surveyed banks are of the opinion that the risk of insolvency where the borrower is forced

into bankruptcy following an environmental accident is important too. In the Thompson survey (1998), most of the banks consider all types of environmental risks as potent. However, banks which rely heavily on individual depositors, consider reputation risk as the most important type of risk.

Sources of environmental risks

Ninety percent of the banks in the McKenzie & Wolfe survey (2004) indicate that the major sources of political environmental risks stem from multinational organizations such as the *World Bank*; international pressure groups as well as the evolving perceptions of long-term environmental risks. Sixty percent of the banks also consider local environmental pressure groups as a source of environmental risk.

Environmental law

Banks need to have an in-depth understanding of environmental regulations and market developments with regard to sustainability issues in order to conduct thorough ECRA's. However, to a large extent, government regulations of banks with regard to sustainability issues revolve around the banks internal activities. In the McKenzie & Wolfe survey (2004) sixty percent of respondents factor in the current environmental liability regime with respect to the Principle of Joint and Several Liability. In addition, bank liability is constrained by both internal risk management practice and legal capital requirements stemming from the BASEL Accord aimed at assessing overall global exposures.

Factors included in ECRA

According to the McKenzie & Wolfe survey (2004), eighty percent of the surveyed banks take into account factors in lending decisions such as capitalization, cash flow,

quality of management and staff training. Environmental factors include compliance to regulations, the impact of environmental regulations on the borrowing company, and environmentally related licenses held by the borrower. Ten percent of the respondents mentioned that the adoption of ISO 14001 environmental risk management system is important for borrowers as the implementation of effective environmental programmes is viewed by banks as an important signal of good corporate environmental management

Effectiveness of ECRA

According to the ISIS survey (2002, p. 2), ECRA is perceived as “a traditional question of risk versus financial return”. The majority of the banks surveyed mentioned that the primary reason of conducting ECRA was its role in reducing the bank’s liability namely through bad debt and security exposure. Not using ECRA has indeed led to financial losses due to loan payment difficulties or unexpected cost of repossessing contaminated property charged as security.³⁶ Such losses have reportedly influenced past operating results and by implication, shareholder value as well. ECRA, when applied to entire lending portfolios,³⁷ is also believed to be a tool that can improve the financial bottom line. It can help to increase revenue, customer satisfaction, loyalty and market share.

Communication of a bank’s environmental policies

The McKenzie & Wolfe survey (2004) shows that, within the realm of managing environmental risks, banks rank in order of importance, conducting stringent credit risk

³⁶ In some cases, the value of the loss can exceed the monetary value of the underlying loan facility. Such losses have reportedly influenced past operating results and by implication, shareholder value as well.

³⁷ Entire lending portfolios include secured and unsecured loans, as well as recourse and non-recourse project finance (ISIS, 2002).

and recovery risks assessment first, followed by advertising the bank's environmental policies and third, providing environmental products.

Limitations and room for improvement

The ISIS survey (2002, p. 2) shows that most of the banks surveyed do not attempt to monetize these risks and rather "rely on experience as a guide" due to the difficulty of assigning a monetary value to potential environmental risks. Respondents have no definitive means of either measuring the impact of environmental risks on loan pricing (i.e the interest rate) or on contract terms. In addition, ECRA management through objective setting and reporting is considered challenging due to the lack of clear numerical measures. The respondents were unanimous in admitting that there is room for improvement, including plans for harmonizing practices on a global scale.

Expectations regarding survey results

Generally the ISIS survey (2002) shows that banks characterized by strong overall management and control systems have implemented ECRA. However, unexpectedly, some banks "with traditionally robust risk management practices" have relatively weaker ECRA policies (*ibid*, p. 3). Some banks encounter considerable challenges to implement ECRA. There is a non-level playing field with competing drivers where banks faced with less challenges can outperform their peers easily while the banks with riskier portfolios can be strongly motivated to carefully manage these risks.

5. Conclusion

The lack of precision prevailing in the liability lender regimes is deterring the channelling of funds by banks to environmentally risky firms, by fear of being held liable for clean up costs. As far as lender liability and the various liability allocation regimes

are concerned, they seek to prevent environmental accidents leading to site contamination, and to internalize the resulting clean up costs in order to safeguard public's interest. However, these regimes lead to inefficiency due to legal disputes over potential liability and the frequent unfair apportionment of clean up costs among responsible parties that include banks. It is also said that the path forward with respect to lender liability remains unclear (Jeucken, 2004).

Banks increasingly recognize the environmental impacts of their lending decisions. Motivated by the threat of lender liability and the financial losses that it entails, banks- are gradually integrating environmental risk assessment as part of their corporate lending approval process. Overall, based on a number of studies conducted mainly in European countries, a relatively small number of banks have adopted and successfully integrated ECRA in their corporate lending approval process. In general, the integration of ECRA in banks' lending decisions is motivated by the threat of lender liability and the need to avoid reputation risk and its implications on future revenue streams. It has also been found that the majority of banks encounter challenges to implement ECRA. In addition to the problem of asymmetry of information, the inclusion of environmental considerations in deriving the credit risk profile of the potential borrowing firm, renders the credit risk analysis a much more complex undertaking.

Overall, despite the threat of lender liability, systematic use of the ECRA framework by banks, can lead to favourable outcomes including reduced probability of default loans, of negative security value and ultimately of lender liability. The reduction in the number of contaminated sites ultimately leads to a safer and better protected environment. With ECRA, banks' integrated risk management lead to responsible

lending decisions and more efficient capital markets. Good environmental record is bound to become one of the pre-requisites to access funding as banks seek to minimize their exposure to borrowers' environmental risks.

Capital markets therefore work to financially reward green performance of firms through access to capital and provision of funding at a reasonable interest rate. Such a strong price signal sent by banks will further contribute to raising corporate environmental awareness and performance. Hence, despite short run challenges in implementing and conducting ECRA, it pays off in the long run.

This paper is a contribution to the finance and environment nexus. It shows how banks can attempt to protect themselves against the threat of environmental liability. It demonstrates that by integrating environmental considerations into their financial decision-making, more specifically in its lending activities and credit risk analysis, banks can positively impact their bottom line and that of the borrowing firm by minimizing the risk of materialization of environmental accidents. Ultimately, a comprehensive and holistic credit risk assessment that integrates environmental considerations, can not only protect banks against lender liability, but also significantly contribute to raising corporate environmental performance of borrowers. The ECRA represents a major milestone in ensuring that banks are managing their environmental risk exposures through their borrowers' activities, in ways that are consistent with the objectives of preventing environmental accident. Banks should therefore be further encouraged to adopt ECRA and help reconcile and reinforce profitability and environmental protection in their lending decisions. Moreover, as part of future research, it would be interesting to

investigate the extent to which Canadian banks integrate ECRA in their lending decisions.

References

Adams, J (1995) *Risk*. UCL Press

Akerlof, George (1970), *The Market for Lemons: Quality, Uncertainty and the Market Mechanism*, *The Quarterly Journal of Economics*, vol. 84, pp. 488-500.

Bianchi, Andrea, (1994) *The harmonization of laws on liability for environmental damage in Europe: An Italian perspective*, *Journal of Environmental Law*, vol. 6, no. 1, pp 21-42.

Berry, R.H., Crum, R.E and Waring, A. (1993) *Corporate Performance Evaluation in Bank Lending Decisions*, CIMA Research Studies, London.

Boyd, J and Ingberman, D. (1997), *The Search for Deep Pockets: Is "Extended Liability" Expensive Liability?* *Journal of Law, Economics, and Organization*, vol. 13.

Boyer, Marcel and Laffont, Jean-Jacques (1995), *Environmental Protection, Producer Insolvency and Lender Liability*, Discussion Paper 95s-50, CIRANO, Montreal, Quebec, Canada.

Boyer, Marcel and Laffont, Jean-Jacques (1997), *Environmental Risks and Bank Liability*, *European Economic Review*, vol. 41, pp. 1427-1459.

Canadian Council of Ministers of the Environment, 2006, *Recommended Principles on Contaminated Sites Liability*.

Case, P. (1996), *Land, Lending and Liability*, *Chartered Banker*, vol. 2 No. 4, pp. 44-49.

Chicken, J C & Posner T. (1998), *The Philosophy of Risk*. Thomas Telford.

Coase, R. (1988), The firm, the market and the law in *The Firm, the Market and the Law* (Ed) R. Coase, Chap 1, University of Chicago Press, Chicago.

Commission of the European Communities (CEC) (1993a) *Council Directive on the capital adequacy of investment firms and credit institutions*, *Office Journal of the European Communities*, No. L 141, 15 March, CEC, Brussels, 1-26.

Coulson, A.B. and Dixon, R. (1995), *Environmental risk and Management Strategy: the Implications for Financial Institutions*, *International Journal of Bank Marketing*, vol. 13, no. 2, pp. 22-29.

Environment Canada (March 1998), *Assessing Creditworthiness: Baseline Survey of Environmental Information Required by Lending Institutions in Atlantic Canada*.

Evans, James. *Transferring the Risk Using Environmental Insurance*. RBC Financial Group, Environmental Risk Management. Presented at the Industrial College of Armed Forces, April 13, 2004.

Ernst & Young, (1992), *Lender Liability for Contaminated Sites: Issues for Lenders and Investors*, Working Paper for the National Round Table on the Environment and the Economy.

Fischel, R. Daniel, *The Economics of Lender Liability*, Yale Law Journal, 1999, vol. 1, pp. 131-154.

Greene Adam (2000), *A process Approach to Project Risk Management*, Loughborough University – doctoral research workshop, February 2000.

ISIS, *A Benchmarking Study: Environmental Credit Risk Factors in the Pan-European Banking Sector*, September 2002.

Jeucken, MHA (2004), *Sustainability in Finance: Banking on the Planet*. Delft, The Netherlands: Eburon.

Laffont, Jean-Jacques (2000), *Group Lending with Adverse Selection*, European Economic Review, vol. 44, pp. 773-784.

McGowen, C (1999) *Elements of Risk: Attitude measurement and the implications for senior management*. Research Essay, University of Otago, New Zealand.

McKenzie, G and Wolfe, S. (2004), *The Impact of Environmental Risk on the UK Banking Sector*, Applied Financial Economics, vol. 14, pp. 1005-1016.

Odendahl, S. *Due Diligence: An Environmental Risk Manger's Perspective*. RBC Financial Group, Environmental Risk Management. Presented at the Environmental and Property Damages Symposium, April 5, 2002.

Pitchford, R. (1995), *How Liable should a Lender Be? The case of Judgment-proof and Environmental Risk*, American Economic Review, vol. 85, pp. 1171-1186.

McKenzie, G. and Wolfe S. (2004) *The Impact of Environmental Risk on the UK Banking Sector*, Applied Financial Economics, 2004, vol 14, pp. 1005-1016.

Sarokin, D.R and Schulkin, J. (1991), *Environmental Concerns and the Business of Banking*, Journal of Commercial Bank Lending, vol. 74, no. 5, pp. 6-19.

Schierow, L. *The Role of Risk Analysis and Risk Management in Environmental Protection*. The Library of Congress, National Library for the Environment - Science, and Industry Division, September 6, 2001.

Shrivastava, P. (1983), *The Greening of Business*, in Smith, D. (Ed), *Business and the Environment: Implications of the New Environmentalism*, Paul Chapman Publishing, London, pp. 27-39.

Smith, D.R. (1994), *Environmental Risk: Credit Approaches and Opportunities*, An Interim Report, United Nations Environment Programme, Geneva.

Smith, N J. (1999), *Managing Risk in Construction Projects*. Oxford, Blackwell Science.

Spence, M. (1973), *Job Market Signaling*, Quarterly Journal of Economics, 87, no. 3 pp. 355-374.

Thompson, P. (1998), *Bank Lending and the Environment: Policies and Opportunities*, International Journal of Bank Marketing, pp. 243-252.

Vaughan, S. (1994), *Environmental Risk and Commercial Banks*: Discussion Paper, Geneva.

Wanless, D. (1995), *Banking and the Environment*, The Gilbert Lecture 1995, The Chartered Institute of Bankers, October, London, UK.

“Your Business, Your Bank and the Environment: An overview of how banks address environmental risk in the credit review process.” Canadian Bankers Association, January 2000.

Websites:

Assessing Creditworthiness: Baseline Survey of Environmental Information Required by Lending Institutions in Atlantic Canada, Appendix A:

http://www.atl.ec.gc.ca/epb/pollprev/assessing_creditworthiness/appendixa.html

BankTrack: www.banktrack.org

The Basel Accord: <http://www.bis.org/publ/bcbsca.htm>

The Canadian Environmental Protection Act:

www.ec.gc.ca/CEPARRegistry/the_act/Download/CEPA_Full_EN.pdf

Egyptian Banking Institute Financial Infos Issue (7): <http://www.ebi.gov.eg>

Environmental Auditing of Forestry in Victoria, Australia:

The Victorian Statutory Environmental Audit System administered by EPA, Publication 902: <http://www.epa.vic.gov.au/envaudit/forestry.asp>

Piette Jean, Seminar at Environment Canada on the *Fundamental Principles of Environmental Law*, March 22, 2002: http://www.ec.gc.ca/seminar/Piette_e.html

The Concise Encyclopedia of Economics: <http://www.econlib.org/library/ENC/>

The Federal Brownfields Regulatory Program:
http://www.mgkfbrownfields.com/brownfields_regulatory_programs1.html

The Rio Declaration on Environment and Development (1992), Principle 15 on the Precaution Measures: <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>.

World Commission for Environment and Development, on sustainability:
<http://www.un.org/esa/sustdev/>

List of Acronyms

CEPA – the Canadian Environmental Protection Act

CERCLA- the Comprehensive Environmental Response Compensation and Liability Act

ECRA –Environmental Credit Risk Assessment

ENGOS - Environmental Non-Governmental Organization

EA – Environmental Assessment

EIA – Environmental Impact Assessment

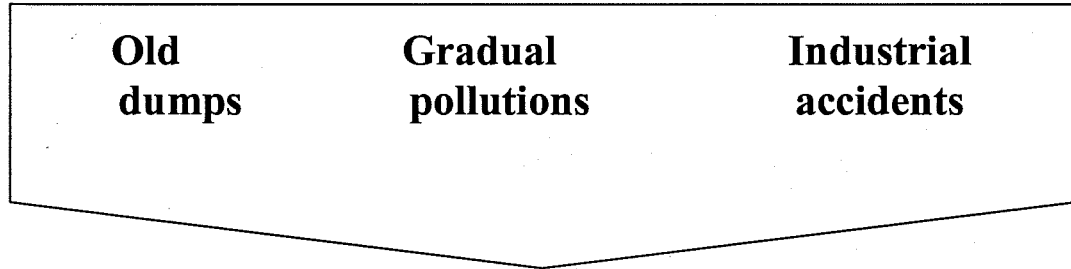
OCDE - Organization for Economic Co-operation and Development

SMEs - Small and Medium Enterprises

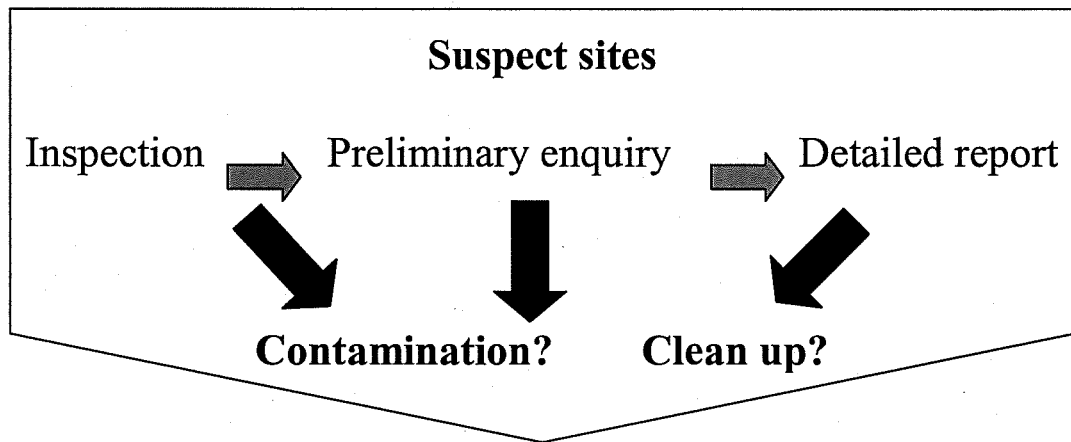
UNEP FI - United Nations Environmental Programme for Financial Institutions

APPENDIX

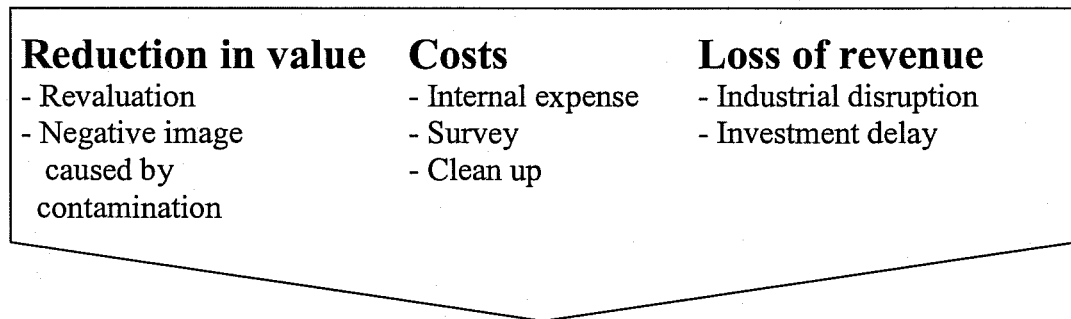
Exhibit 1: Linking Site Contamination to Risks for Borrowers and the Bank



**Identification
by specialists**



**Risks for the
borrower**



**Risks for the
bank**

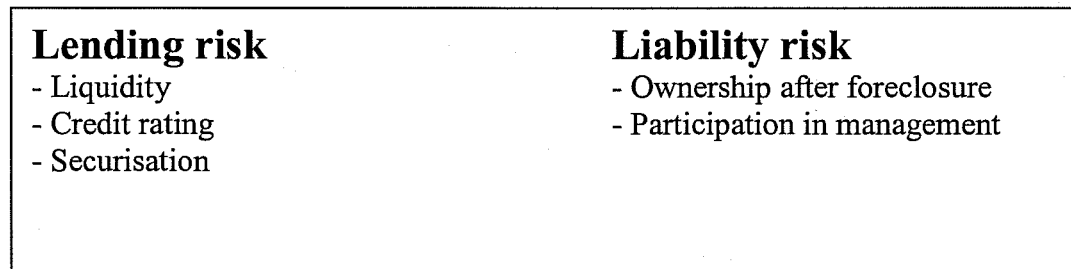
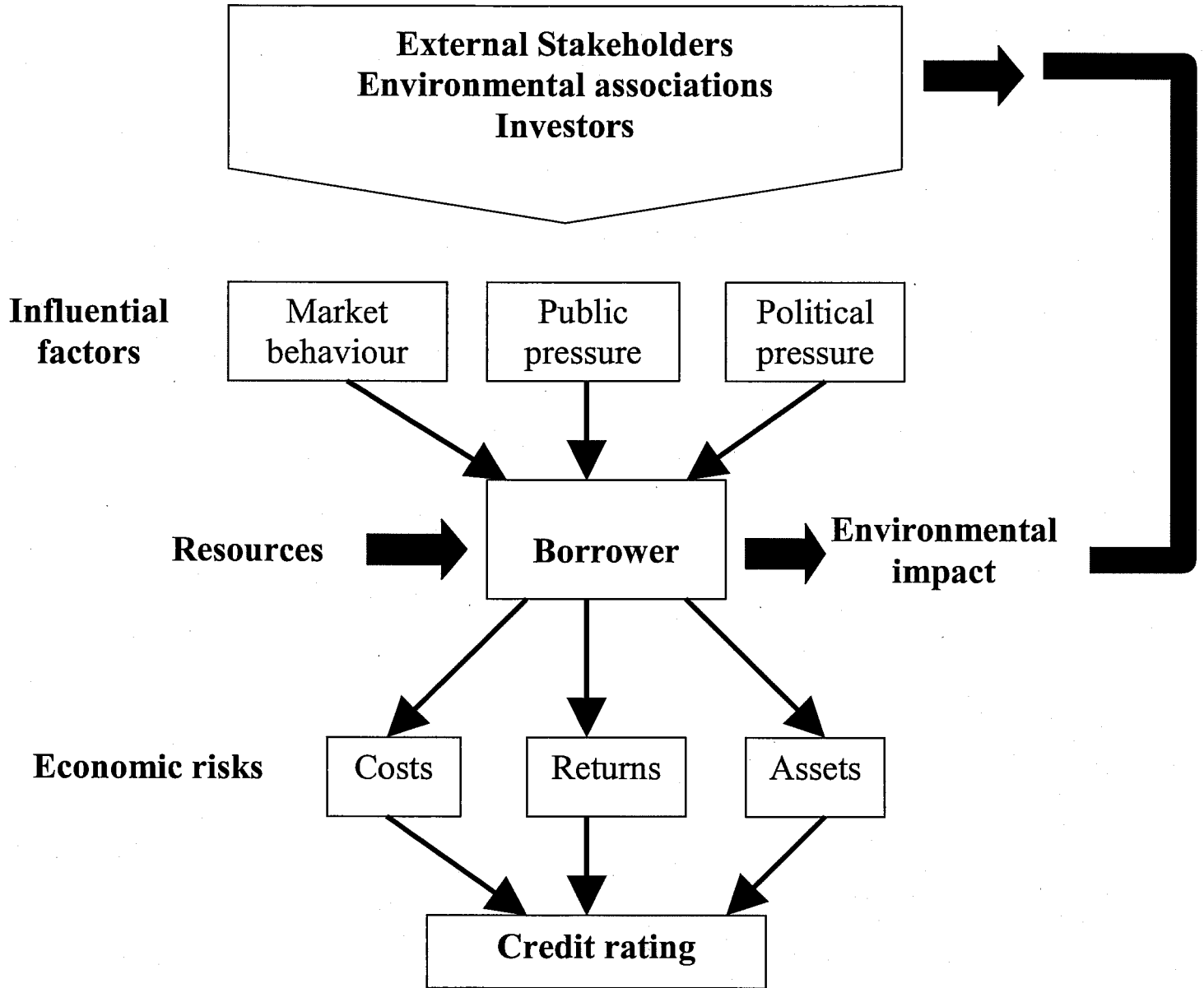
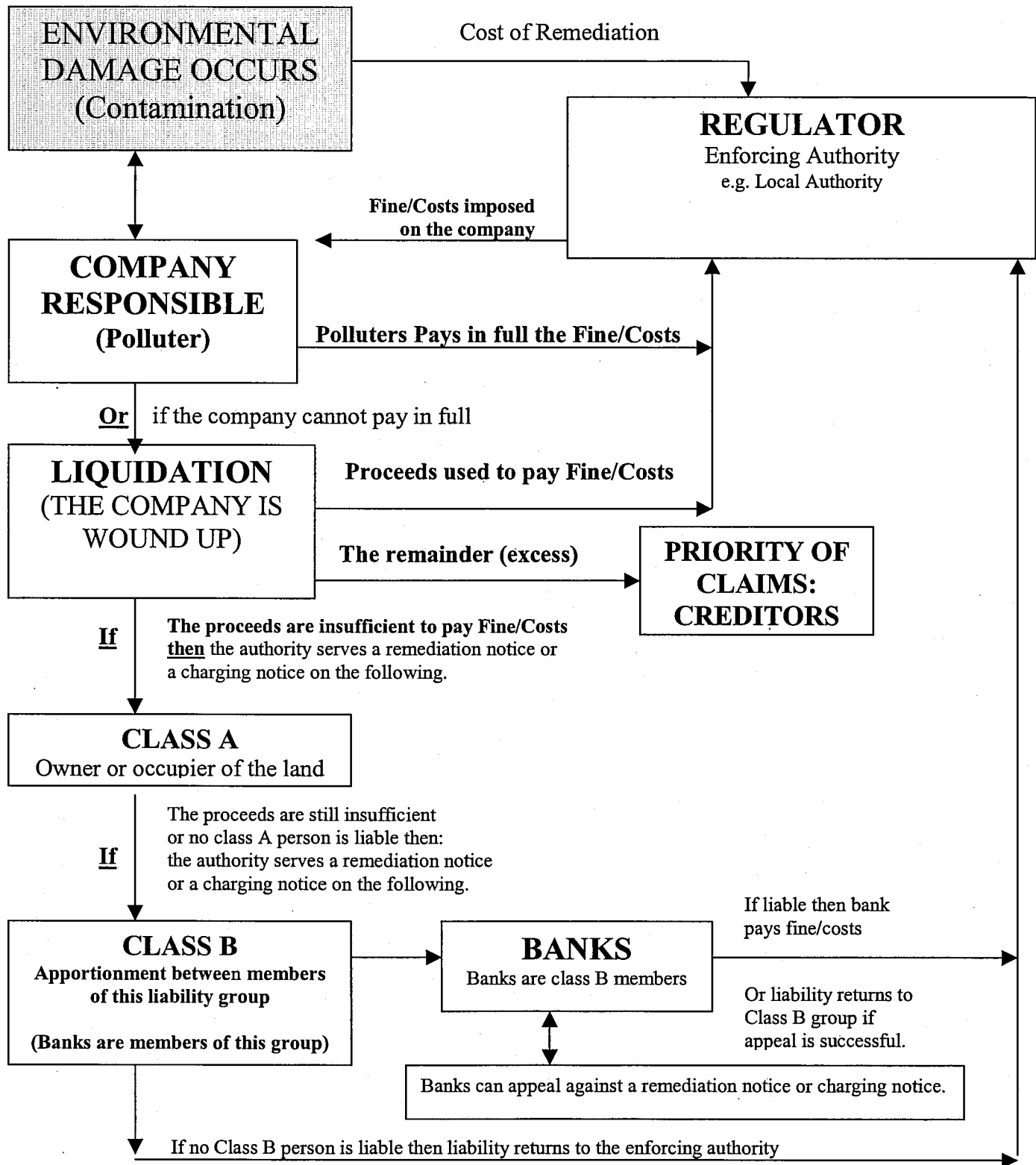


Exhibit 2: Factors Influencing Borrowers



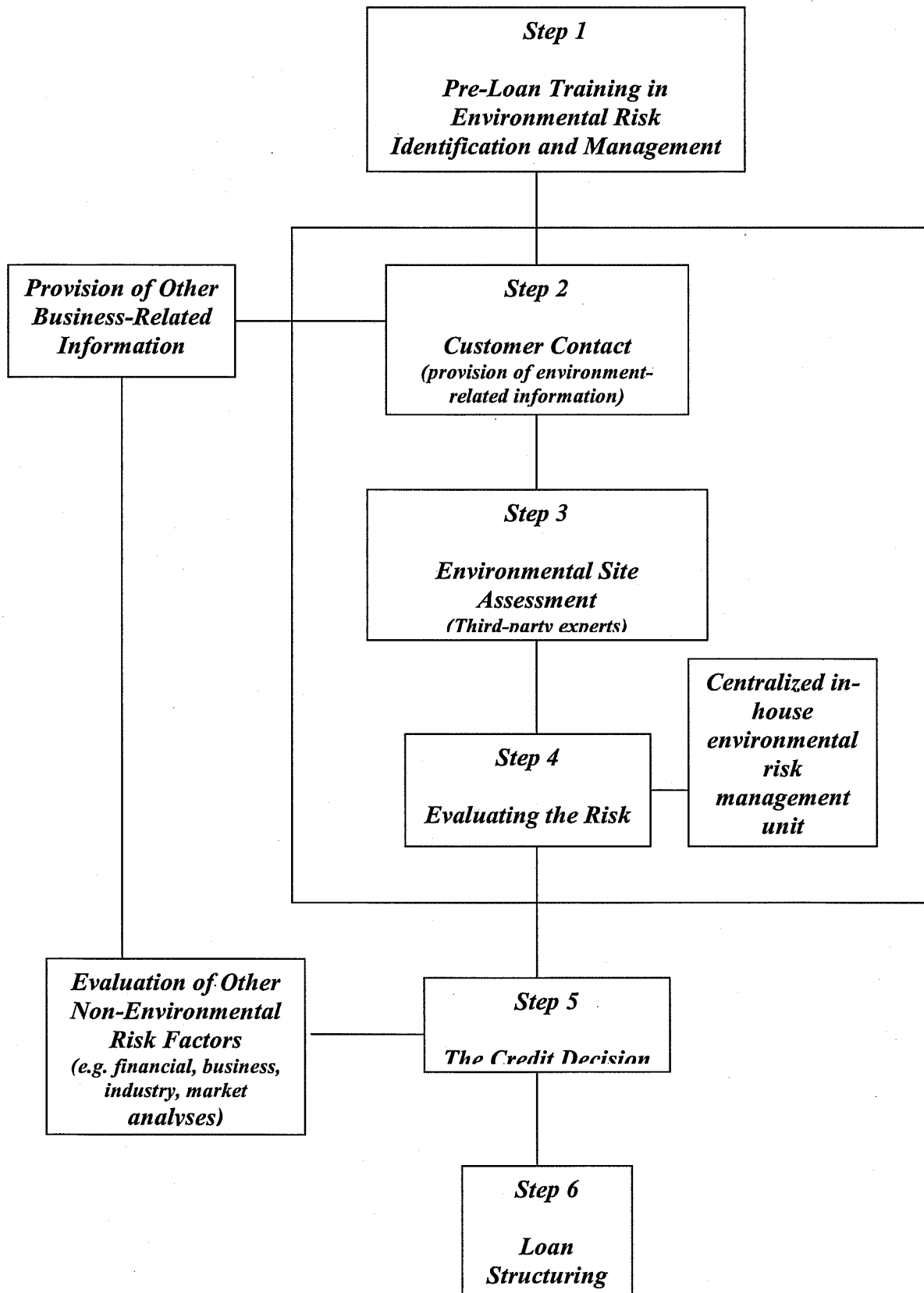
(Source: Environment Canada)

Exhibit 3: Framework for Apportionment of Liability under the UK Environment Act 1995



Note: Apportionment of liability is determined by a test of "causing or knowingly permitted".

Exhibit 4: ECRA: Steps to Minimize Lender Exposure to Environmental Risk



(Source: *Assessing Creditworthiness: Baseline Survey of Environmental Information Required by Lending Institutions in Atlantic Canada*, Environment Canada, March 1998.)

Exhibit 5: Addressing Environmental Risk Assessment in the Credit Review Process

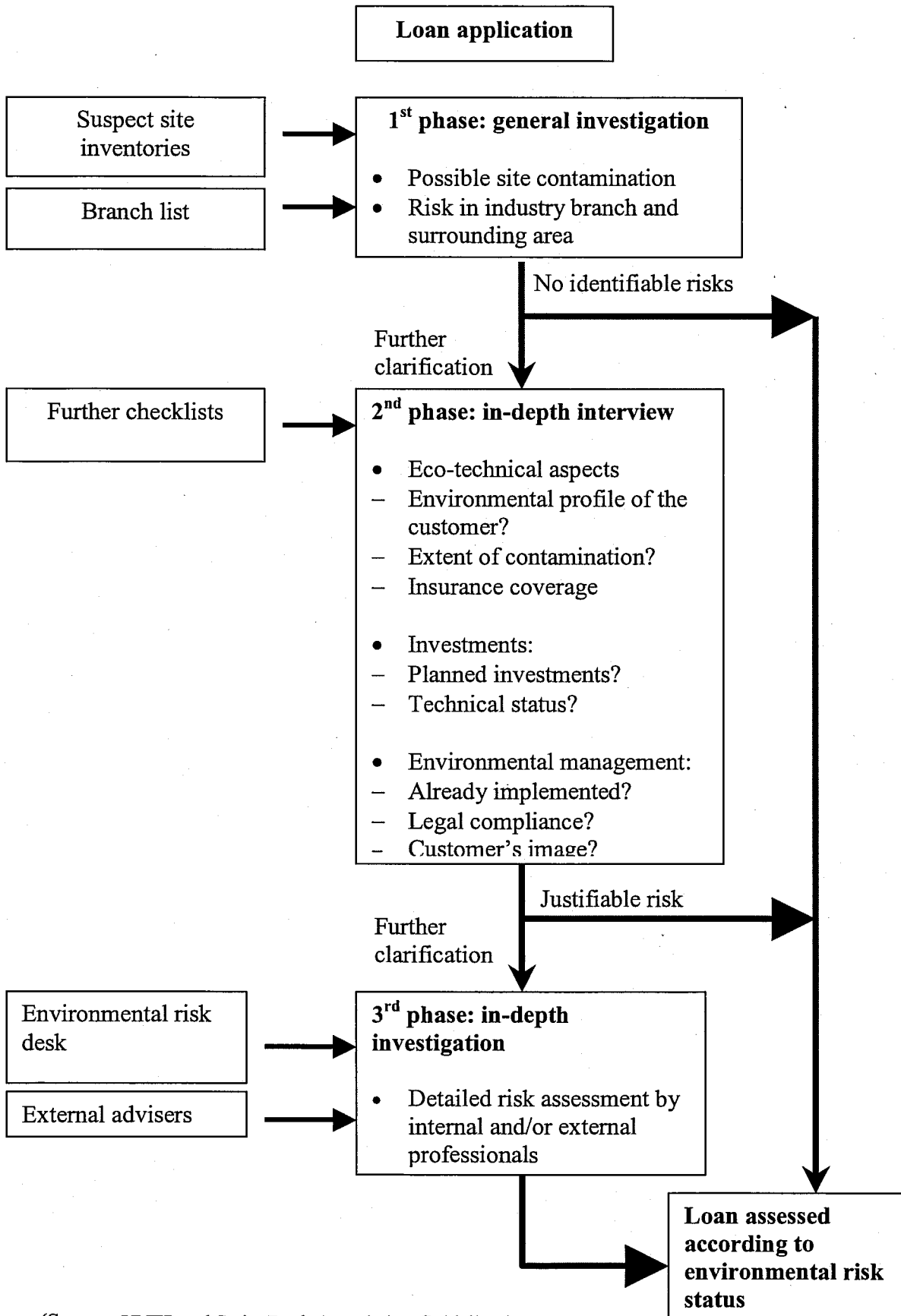


Exhibit 6: Environmental Corporate Analysis

Source: *Assessing Creditworthiness: Baseline Survey of Environmental Information Required by Lending Institutions in Atlantic Canada*, Environment Canada, March 1998.

Environmental strategy

- Environmental policy statement formulated?
- Environmental program prepared?
- Environmental organization established?
- Environmental communications plan available?
- Environmental report published?

Production processes

- Criteria for suppliers?
- Risk management
 - Investment to reduce environmental risk
 - Financial reserves for risks
- Investment in eco-friendly technologies
- Energy management?
- Environmental data?
 - Pollutant emissions
 - Energy consumption
 - Amount of waste products and waste water

Source: Environment Canada

Exhibit 7: Example of an Environmental Risk 'Checklist'

Elements of an environmental checklist to identify borrowers' potential environmental risk include:

- 1. Sector**
 - Environmentally sensitive?
 - Specific market circumstances?
 - Potential changes to environmental regulations?
 - Environmental issues in the past?
- 2. Strategic Aspects**
 - Product life cycle?
 - Pressure from the supply chain?
- 3. Environmental Policy**
 - Is an environmental policy in place?
 - Environmental Management System?
 - Environmental audit?
- 4. Management**
 - Executive involvement?
 - Stance with respect to the environment/sustainability?
 - Employee involvement?
- 5. Legal requirements**
 - Permits required?
 - Other government requirements?
- 6. Legal Position**
 - Administrative law proceedings currently or in the past?
 - Private law proceedings or requirements?
 - Soil decontamination order?
- 7. Collateral**
 - Rate of depreciation
- 8. Insurances**
 - Environmental damage insurance present?
 - Other relevant insurances?
- 9. Public Opinion**
 - Risk of consumer backlash?

10. Environmental Information

- General sources (newspaper, magazines, internet)?
- Legal and /r government sources?
- Annual environmental report?

(Source: Jeucken, 2004, p 379)

Exhibit 8: Environmental Risk Assessment at the World Bank

An Environmental assessment involves five stages:

Stage 1: During the screening process of the project, the nature and magnitude of potential environmental impacts involved are determined on a case by case basis. The project is then assigned a category between A and C, where in descending order, category A requires an EA and category C does not.

Stage 2: In the scoping process, key issues revolving around the potential environmental impacts of the project and its impacts on the local communities are identified along with preparing the Terms of reference to conduct the EA. Information dissemination on the project is also required.

Stage 3: An EA report is rigorously prepared for a category A project as compared to a category B project. A comprehensive EA report consists of an executive summary, a policy, legal and administrative framework, a project description, baseline data, an impact assessment, an analysis of alternatives, a mitigation plan, an environmental monitoring plan, and public consultation.

Stage 4: The borrower submits the EA report to the *World Bank* for review by environmental experts. Following a satisfactory project appraisal, the project can be implemented.

Stage 5: The project is implemented by the borrower but is subject to agreements following the conclusions of the EA process. The *World Bank* carefully monitors the environmental quality of the project and the agreed mitigation measures in case of potential adverse environmental impacts.

(Source: Jeucken 2004, p 174-175)

Exhibit 9: Context of Case Studies

The four surveys discussed are based on mainstream banks located in Europe and North America and Oceania. The objectives of the various surveys were to seek how environmental risk factors are addressed in the lending process and credit risk assessment procedures as well as survey the attitude of banks with regards to environmental risks and the operationalization of the ECRA.

STUDY 1: "Sustainability in Finance" (Jeucken 2004)

This study conducted from 1996 to 2003³⁸, is built upon two main blocks namely a broad sector-wide survey of mainstream banks in the world and case studies of six Dutch banks and desk and literature research. The survey among 34 mainstream international banks from North America, Europe and Oceania, inquires about how they integrate environmental aspects in their decision-making process to extend credit. The two main questions framed include firstly an overview of the sustainability issues (threats and opportunities) faced by banks and secondly, the banks response in respect of financing and credit risk assessment.

STUDY 2: Benchmarking study ECRA in the Pan European banking sector (ISIS September 2002)

³⁸ This period is considered important, as the financial sector has witnessed several important developments on the sustainability front. Broadly, the sustainability in banking concept developed over a timeframe of less than ten years, starting in early 1990s (Jeucken, 2004, p352)

The objective of the study was to benchmark the credit risk assessment procedures of a sample of ten banks³⁹ held in ISIS' Pan-European portfolios, with regard to how environmental risk factors are addressed and the operationalization of the ECRA. The ultimate goal of this study is to evaluate the potential impact of such practices on banks' profitability and shareholder value. Given that the banks surveyed also conduct significant overseas operations, the study covers credit risk assessment procedures both at their respective national and international levels.

Study 3: The Impact of environmental risk on the UK banking sector, (McKenzie & Wolfe, 2004)

The objective of the McKenzie & Wolfe survey (2004) is to examine the tensions faced by the UK banks in their assessment and management of credit risks associated with current or potential environmental damage generated by borrowers' activities. The survey was conducted among fifty-five leading UK banks.

Study 4: Banks lending and the environment policies and opportunities (Thompson, 1998)

The sample of the twelve surveyed UK banks provide a cross-section of sizes and countries of origin ranging from UK to Japan, Germany, The Netherlands, Finland, South Africa and Canada. Most of the banks are retail banks, some are also located overseas and one of the banks is a British merchant bank.

³⁹ The ten banks surveyed include Lloyds TSB, HSBC, ING Group, Barclays, Credit Suisse Group, Royal Bank of Scotland, Standard Chartered, Societe Generale, Santander Central Hispano and UniCredito Italiano. Their headquarters are located in France, Italy, Netherland.s, Spain, UK and Switzerland.