Green Financial Products and Services

Current Trends and Future Opportunities in North America

A report of the North American Task Force (NATF) of the United Nations Environment Programme Finance Initiative

UNEP **Finance Initiative**
Innovative financing for sustainability

Green Financial Products and Services

Current Trends and Future Opportunities in North America

A report of the North American Task Force (NATF) of the United Nations Environment Programme Finance Initiative

August 2007

Prepared by:
ICF Consulting Canada, Inc.
277 Wellington St. W.
Suite 808
Toronto, ON M5V 3E4

Designed by Rebus, Paris.

Table of contents

Acronyms & Abbreviations

APR	Annual Percentage Rate
CAC	Criteria Air Contaminant
CBOT	Chicago Board of Trade
CDC	Caisse des Dépôts et Consignation
CDM	Clean Development Mechanism
CDP	Carbon Disclosure Project
CEC	Commission for Environmental Cooperation
CER	Certified Emission Reduction
CFC	Chlorofluorocarbon
CFS	Cooperative Financial Services
CO_2	Carbon Dioxide
CSR	Corporate Social Responsibility
DSR	Dutch Sustainability Research
ECX	European Carbon Exchange
EEM	Energy Efficiency Mortgage
EPC	Energy Performance Certificate
EPA	US Environment Protection Agency
ERU	Emission Reduction Unit
ESG	Environmental, Social and Corporate Governance
ETA	Environmental Transport Association (UK)
EUA	European Union Allowances
EU ETS	European Union Emissions Trading Scheme
GEMS	Global Environmental Management Systems
GHG	Greenhouse Gas
GMOs	Genetically Modified Organisms
Green EQ2	Green Equity Equivalent Investments
IIED	International Institute for Environment and Development
IFC	International Finance Corporation
IPO	Initial Public Offering
ISO	International Standard Organization
JI	Joint Implementation
JULI	JPMorgan US Liquid Index
LEED	Leadership in Energy and Environmental Design
LEM	Location Efficient Mortgage
MA	Millennium Ecosystem Assessment
MD&A	Management, Discussion & Analysis

MW	Megawatt
NCAR	National Centre for Atmospheric Research (US)
NFFO	Non-Fossil Fuel Obligation (UK)
NGO	Non-Governmental Organization
NRB	New Resource Bank
RPS	Renewable Portfolio Standards
RSPB	Royal Society for the Protection of Birds (UK)
S&P500	Standard and Poor 500
SAM	Sustainable Asset Management
SME	Small-Medium Enterprise
SPC	Special Purpose Corporation
SRI	Socially Responsible Investing
TAF	Toronto Atmospheric Fund
US-CAP	US-Climate Action Partnership
VER	Verified Emission Reductions
WRI	World Resources Institute
WWF	World Wildlife Fund

1 Overview

1.1 Introduction

Green car loans, energy efficiency mortgages, alternative energy venture capital, eco-savings deposits, and "green" credit cards; these items represent merely a handful of innovative, "green" financial products that are currently offered around the globe[1]. In an age where environmental risks and opportunities abound, so too have the options for reconciling environmental matters with lending and financing arrangements.

The purpose of this report is to examine the currently available "green" financial products and services, with a focus on lesson learning opportunities, the nature and transferability of best practices, and how key designs can potentially increase market share and generate profits, while improving brand recognition and enhancing reputation. Following an overview of "green" banking's current state of play, both in North America and abroad, this report discusses potential options for future environmental banking products and services for the North American financial sector.

Steering the direction of this report are several key questions, focused on existing and potential issues related to the demand and supply of "green" financial products and services:

- What are the main drivers and trends behind "green" financial product and service development?
- What is the current and potential demand for "green" financial products and services?
- What "green" financial products and services are currently being offered by different financial institutions?
- What best practices and lessons learned can be identified in terms of experience with "green" financial products and services?
- What are the key opportunities for North American financial institutions to consider in terms of the development and marketing of "green" financial product and services?

1.2 Context

UNEP FI carries out its activities in North America through the North American Task Force. The task force is working to incorporate the principles of sustainable development as normal business practice throughout the North American financial sector. More specifically, it aims to create a forum for North American signatories to the UNEP FI Statements to exchange ideas and best practice in the area of finance and sustainability; to explore and raise awareness on specific environmental and social issues, and its impact on the North American financial sector; and to identify and disseminate risks and opportunities related to social and environmental issues. As part of its 2007 work programme, the taskforce decided to produce a report on green financial products and services, to identify best practice around the globe and key opportunities in North America. The result is this study.

1 The term "green" is commonly used to define a broad range of social, ethical and environmental practices and products; however, for the purpose of this report, "green" is solely in reference to environmentally-oriented financial products and services.

Until a few years ago, most traditional banks did not practice "green" banking or actively seek investment opportunities in environmentally-friendly sectors or businesses. Only recently have "green" financial products and services become more prevalent; and not only among smaller alternative and cooperative banks, but also among diversified financial service providers, asset management firms and insurance companies[2]. Although these companies may differ with regard to their stated motivations for increasing environmental products (e.g. to enhance long-term growth prospects, or sustainability principles on which a firm is based), the growth, variation and innovation behind such developments indicate that we are in the midst of a promising drive towards "green" financial product development into mainstream banking.

The shift in banks' strategies and actions towards sustainability is already underway. An increasing number of financial institutions have started to direct their resources and lending power to curb ecological degradation, and also to promote sustainable consumer practices and decision-making. The liability of lenders, borrowers' ability to meet financial obligations, ecological deficits, and business opportunities are some of the main factors currently driving this marriage between banking and sustainability[3]. Further, this relationship continues to be strengthened through an array of developments, which are both internal and external to the operations of financial institutions.

The wide range of internal opportunities to address sustainability in a bank's operations, from corporate policy to energy reduction measures, shows that alleviating environmental problems can be a logical extension of general business in the sector. Potential organizational areas and practices that may feature sustainability issues include: organizational policy, practice and services; supply chain choices and demands; business development; reporting; public policy outreach; stakeholder engagement; research collaboration with other governmental and non-governmental entities; and institutional donations or other philanthropic efforts. In 1997, a study found that, on top of environmental risk assessment services, a number of European UNEP-FI banks had established environmental departments and started designing environmentally-oriented products[4]. It can be assumed that as environmental risks and opportunities become established elements in internal banking policies and practices, these types of sustainability initiatives are likely to expand[5].

A principal challenge for banks will be to create effective and far-reaching market-based solutions to address a range of environmental problems, including climate change, deforestation, air quality issues and biodiversity loss, while at the same time identifying and securing new business opportunities that benefit customers. By shedding light on best practices and lessons learned in the world of "green" financial products, this report endeavors to help financial institutions further this quest towards true and profitable sustainability.

1.3 Scope

1.3.1 Regions Studied

Along with the North American market, the scope of this study includes international markets, with a predominant focus on the evolution of, and experiences related to, "green" financial product and service development in Europe and, to a lesser degree, Australia and Japan. Relative to their North American counterparts, banks in other developed regions have traditionally been more proactive and innovative with respect to "green" product and service development. Several factors can be identified as leading to this divergence between regional financial communities, particularly with respect to Europe and North America.

2 Strandberg, 2005.
3 IISD, 2007.
4 Ganzi et al, 1997.
5 Jeucken, 2004.

Geography & Regional Competition: North American banks tend to dominate large geographic regions, with an ongoing strategy of mergers and acquisitions[6]. Since larger banks acquire smaller banks at a fairly rapid rate, it becomes more challenging to integrate innovative banking products, including "green" products and services, into their respective portfolios. In a less competitive environment, banks are not given a high incentive to innovate and thus differentiate themselves from peers with state-of-the-art offerings, such as "green" financial products and services.

Heterogeneity: The European banking market, which includes 27 Member States, represents not only a customer potential 60% greater than the American one, but it is also a less homogeneous customer base. Private clients of European banks are characterized by different cultures, consumption patterns, social habits and regulatory constraints. Therefore, such a diversified client base has driven a more diversified supply of banking products, especially in the retail sector.

Transparency: Though some North American banks are required to outline their contribution to the economy and society to clients and stakeholders. Most European banking operations have faced higher degrees of environmental scrutiny from the public and government, compared to North American banks. For several years, most European banks have been required, by law, to publish an annual sustainability report[7]. Because there is reputational risk associated with being exposed as an "unsustainable bank" to an environmentally conscious public, a growing amount of time and resources has been directed into the design and development of corporate environmental policies, products and services. This peer pressure has played a significant role in expediting "green" product and service development and innovation in the increasingly competitive European financial sector[8].

Shift in Risk Perspective: Where European banks have historically focused on the tangible (e.g. financial) and intangible (e.g. reputational) benefits to going "green", these types of environmental banking opportunities have traditionally been overlooked by North American banks. Focusing mostly on environmental risk avoidance, rather than environmental product and service opportunities, has arisen due to the region's largely defensive approach towards environmental affairs[9]. This is a natural development, given that North American banks, unlike European financial institutions, are both legally and financially responsible for environmental degradation caused by clients; a burden that has fuelled the incorporation of environmental risk into their credit risk policies[10].

Community Development: Driven predominantly by the US Community Development Act, American banks have traditionally veered towards community economic development and engagement over environmental action. Popular project candidates for these types of community-based loans include finance tailored to non-profits and low-income customers, employment generation projects through Small Medium Enterprise (SME) lending, and urban revitalization projects. Although this focus on community development has resulted in high levels of social impact investment, across both the US and Canada, many of these achievements have occurred in isolation from environmental matters. However, looking ahead, experience with community sponsorship activities may well prepare North American banks to capitalize on "green" financial product and service opportunities, particularly in retail banking.[11]

---

6 Marlin, 2007.

7 Though not focused on environmental sustainability, since 2001, Canadian banks have been required to publish Public Accountability Statements (PAS) for clients and other interested stakeholders. These statements outline a bank's overall contribution to the society and Canadian economy.

8 For example, after HSBC was given the Financial Times 2005 Sustainable Bank of the Year Award, other UK, Swiss and French banks decided to follow HSBC's lead in actively pursuing corporate carbon neutrality.

9 In 1989-90, North America's commercial real estate market was severely impacted by banks' environmental liabilities, which resulted from the institutions attempting to recover loan losses via foreclosure. At this time, "…every financial institution engaged in commercial lending based on real estate security has its own horror stories to tell….This, combined with 'joint, several and retroactive' liability provisions of environmental laws in Canada, and court rulings in the US affirming the potential exposure of banks to the environmental liabilities of their clients, served as a wake-up call to (North American) financial institutions." (B. Christmas, 2003)

10 Jeucken, 2001.

11 Strandberg, 2005.

NGO and Shareholder Activism: NGOs and shareholders are increasingly demanding that financial institutions put in place sustainable banking policies and practices. Networks of NGOs and individuals regularly track the operations of financial institutions, worldwide, and their impact on environmental sustainability. These groups focus on influencing the activities of banks through research, international campaigns, outreach social and environmental monitoring, strategy development and partnerships with banks. Some of these networks, such as BankTrack, go further and provide advice on improving bank sustainability policies. For example, in 2006, BankTrack engaged with a number of European banks to review existing or new environmental initiatives, including ABN AMRO, Rabobank, HSBC, Calyon and Citigroup. In addition, banks are increasingly driven to satisfy vocal shareholders who demand the integration of sustainable development into lending practices, in order to protect them from future credit and legal risks. For more information on shareholder activism, see Appendix 3.

Approaches to Environmental Action & Product Development: Typically, the introduction of environmental financial products and services are either "board-driven" or "client-driven". In the first case, the bank's board recognizes the opportunities and/or risks of an environmental issue, and then responds by defining one or more optimal "green" products or services. In the second case, the bank recognizes a considerable demand for a certain product or service, and responds by filling the niche. For example, in the area of emissions trading, the Board of BNP Paribas took an executive decision to enter the climate change market long before clients expressed the need for a specific service. Conversely, the Italian Banca Intesa waited to establish an emissions trading desk until a considerable number of corporate clients put forth a request for the service, which over time became highly profitable[12]. A further observation is that environmental action by US banks tends to start at the policy level (top-down), whereas for many progressive European banks environmental action begins at the product level (bottom-up)[13].

12 This resulted in a situation whereby several Italian industries covered by the EU ETS turned to other European banks for market access and risk management services.

13 Evidence of this is uncovered in *Climate Change and the Role of Banks*, a 2006 Dutch Sustainability Research study that compares various financial institutions' policies and approaches to climate change. They found that, compared to Dutch banks, US financial institutions have been slower in developing climate-friendly financial products and services, particularly those that "enable clients to choose to which extent they want to decrease their carbon footprint". However, when it comes to corporate climate policies and targets, the study found US banks to typically take more aggressive, board-led approaches than those in the Netherlands. DSR, 2006.

2 Drivers & Trends of "Green" Product Demand

In general, three broad, related drivers and trends are behind the emergence and growth in "green" product and service demand: environmental knowledge and media coverage; environmental awareness and public opinion; and environmental regulation and legislation. To gauge where the North American demand and market for these items may be headed, it is important to explore the past and present state of such developments on both sides of the Atlantic.

2.1.1 Environmental Knowledge & Coverage

The information age has enabled an unprecedented awareness about the severity, sources and implications of various environmental challenges, such as air quality, water scarcity and soil erosion. As history shows, widespread media coverage on environmental challenges can lead consumer behaviour to change, sometimes rapidly, towards far-reaching environmental action[14]. The broad consensus on the science and effects of climate change, for example, is no longer discussed only by select members of the scientific community, ,but is reaching all segments of society. In response, consumer and shareholders are beginning to shift towards climate-friendly actions and behaviour, and heightening demand for the implementation of climate regulations. Depending on the region, however, the rate of this societal transformation differs.

2.1.2 Environmental Awareness & Public Opinion

In Europe, the relatively high degree of environmental awareness and government support is reflected in the ever-growing consumer demand for "eco-friendly" products and services[15]. While still behind Europe, recent opinion polls and corporate/ shareholder actions suggest a rapid environmental awakening is currently building momentum in North America.

- In the US, a 2007 poll conducted by the Yale Center of Environmental Law and Policy's Environmental Attitudes and Behavior Project found that 83% of Americans consider global warming a "serious" problem. The study also found that, more than ever before, Americans claim to have "serious concerns about environmental threats"[16]. Other environmental issues causing concern include: toxic soil and water (92%, up from 85% in 2004); deforestation (89%, up from 78%); air pollution (93%, up from 87%); and the extinction of wildlife (83%, up from 72% in 2005). The nationwide survey also showed 63% of Americans believe the US "is in as much danger from environmental hazards, such as air pollution and global warming, as it is from terrorists."[17]

14 An example of this phenomenon is the boycotting of Chlorofluorocarbons (CFCs) in the 1970-80s, spurred by far-reaching and frequent media coverage on their destruction of the ozone layer. In response, the Montreal Protocol entered into force in 1989, and, seven years later, the manufacturing of CFCs had largely ceased. Other cases illustrating similar series of events include consumer boycotts against non-dolphin safe tuna (1990), old growth timber products (1999) and various products containing Genetically Modified Organisms (GMOs). Innes, 2006.

15 According to a 2006 CFS study, 54% of UK citizens would opt for an environmentally-friendly product, if there was no difference in cost for an alternative, and 82% would choose to purchase an environmentally-friendly product to make a personal contribution to the fight against global warming. (CFS, 2006)

16 Yale Daily News, 2007.

17 ibid

- With respect to climate change, the above study found: 75% of respondents acknowledge their own behaviour can help reduce global warming; 81% feel it is their responsibility to take action against environmental challenge; and, these results "suggest that many Americans want greener products and are prepared to spend money to try new technologies that will help reduce GHG emissions"[18]. Specifically, the poll found that 75% of the public is willing to purchase solar panels, and 67% would consider buying a hybrid vehicle.
- In Canada, recent public opinion regarding the importance of environmental issues has climbed to extraordinary levels, during a very short period of time. Historically, polls on the Canadian public's top priority saw "the environment" issue fluctuate between 4% and 12% for more than a decade. However, today, the Strategic Council Poll places this issue at 26%, and the Environics Poll at 31%[19]. This radical shift in popular opinion has simply never been seen before.

Findings from other recent polls on North American public and managerial environmental attitudes, as well as information on "green" related shareholder and investment trends, can be found in Appendix 3.

2.0.1 Environmental Regulation and Legislation

Legislative and regulatory actions, particularly with regard to the price/market certainty they provide environmental markets and constraints they induce on unsustainable practices and operations, can significantly stimulate demand for "green" products and services among all types of stakeholders.

In Europe, proactive governmental policy, such as the European CO_2 Emissions Trading Scheme, German feed-in-tariffs for renewable energy and Dutch Green Funds, has helped trigger both demand for, and development of, "greener" consumer options. At the same time, this policy support has reinforced environmental attitudes and behavior among the general public, while establishing high degrees of market certainty for environmental commodities and services. In contrast – and specific to climate change – the US' refusal to ratify the Kyoto Protocol and Canada's wavering on meeting its Kyoto targets, likely slowed North America's momentum in tackling climate change.

Over the past couple of years, the American political scene has undergone a major shift with respect to environmental issues, in which the mid-term US elections created a circumstance where the question is not if carbon regulatory constraints will be enacted, but how soon will these be implemented? Currently, there are a range of climate change bills being proposed in both the Senate and the House, Similarly, Canada is also on the brink of enacting nationwide GHG legislation, as well as limits on other air pollutants (CACs).

2.1.3 Summary

The above drivers and trends indicate that demand for environmental products and services in general, and "green" financial products and services in particular, is on the rise in North America. In comparing this "green" evolution of North America's behaviours and attitudes against that which occurred – and continues to occur – in Europe, it becomes apparent why North America's financial institutions have been slower in offering "green" banking products and services. At the same time, however, this comparison also lends itself to posit the eco-direction in which they are headed.

18 ibid
19 Strategic Council Poll, 2007.

3 Review of "Green" Financial Products and Services

This section reviews the deployment of "green" products and services among financial institutions, both in North America and internationally. To qualify, the product must provide the consumer a transparent option to reduce the indirect impacts of their banking activities. It must reduce negative environmental impacts or provide environmental benefits. The report includes financial products with environmental attributes that may not be readily assessed or measured, such as products or services that are linked to a charitable donation to an environmental cause.

The following review focuses on "green" financial offerings that have been designed and/or offered by European banks and, to a lesser extent, Japanese and Australian banks. This discussion also includes novel "green" financing arrangements, proposed and implemented, by the International Finance Corporation (IFC), the private sector arm of the World Bank Group. The review and inventory of products, leads to the identification of best practices, lessons learned and, as often as possible, factors that contributed to the success or failure of "green" financial products and services. The review divides the financial services sector into the following sub-sectors: 1) Retail Banking; 2) Corporate and Investment Banking; 3) Asset Management; and 4) Insurance. For full descriptions of these banking sub-sectors, please refer to the glossary.

3.1 Retail Banking

Retail banking covers personal and business banking products and services designed for individuals, households and SMEs, rather than large corporate or institutional clients. Products and services in the retail space include loans and mortgages, debit and credit card services, travelers' cheques, money orders, overdraft protection, cash management services and insurance, among others. Depository institutions also engage in retail banking, such as mutual savings and loans banks and credit unions. A mutual savings and loans bank, an institution owned by its depositors, mainly provides long-term mortgage loans using funds obtained through deposits. Alternatively, a credit union, also owned and controlled by its members, functions as a small cooperative deposit institution, structured around a firm or union. Credit unions obtain funds through deposits, which are then used to provide consumer loans.

Table 1: Retail Product & Service Summary Chart

Product	Key Product Designs and Results/Potential	Bank	Region
Home Mortgage	Government led 'green' mortgage initiative. 1% reduction on interest for loans that meet environmental criteria.	Dutch Banks	Europe
	Offers free home energy rating and offsets carbon emissions for every year of loan. Will soon launch added features into portfolio.	CFS	Europe (UK)
	Green mortgages have only been announced by these banks, some of which are the largest mortgage providers in the country.	Abbey, HBOS, Halifax and others	Europe (UK)
	Generation Green™ Home Loan. Offered to both new and old homes, so those with existing mortgages can take advantage of discounted rates. All projects must exceed state requirements.	Bendigo Bank	Australia
	Green Power Oriented Mortgage. Provides an incentive for homeowners to use renewable power. Design focuses on sustainable behaviour or customer, rather than on physical infrastructure of their residence.	N/A	N/A
	MyCommunityMortgage™ and Smart Commute Initiative Mortgage. Available to help borrowers buy energy efficient homes and use public transportation. Products feature a variety of options and flexible terms.	Fannie Mae (Citigroup)	US
	CMHC offers a 10% premium refund on its mortgage loan insurance premiums and extended amortization to a maximum of 35 years (subject to lender availability) to purchase energy efficient homes or make energy efficient renovations. Refund is a one-time payment.	CMHC (CIBC, BMO)	Canada
Commercial Building Loan	Green Loans for new condos. Developer (Tridel®) repays loan with funds that would otherwise be spent on operating costs using conventional equipment and material. Buildings must demonstrate 25%+ energy savings over conventional designs.	TAF/Tridel®	Canada
	Provides first mortgage loans for building and refinancing LEED-certified commercial buildings. Developers do not have to pay an initial premium for "green" commercial buildings, due to features such as: lower operating costs and higher performance.	Wells Fargo	US
	Provides 1/8 of 1% discount on loans to green leadership projects in the commercial or multi-unit residential sectors.	NRB	US
Home Equity Loan	One-Step Solar Financing. Takes place over a 25-year term, equal to the same period of time as the solar panel warranty.	NRB	US
	Environmental Home Equity Program. For customers using line of Visa Access Credit, bank will donate to an environmental NGO.	Bank of America	US
	Bank signed a joint marketing agreement with Sharp Electronics Corporation to offer customers easily accessible and convenient financing options to purchase and install residential solar technologies. Enables users to take out a home equity loan or line of credit rather than access savings or take out a general loan.	Citigroup	US

Auto Loan	Clean Air Auto Loan with preferential rates for hybrids. Product recently redesigned to cover all low-emitting vehicle types.	VanCity	Canada
	goGreen® Auto Loan product has achieved worldwide recognition as a successful "green" product. Since launch, the bank's number of car loans has increased by 45%.	mecu	Australia
Fleet Loan	Small Business Administration Express loans, with rapid approval process, no collateral and flexible terms, are offered to truck companies to finance fuel efficient technologies. Helps to purchase SmartWay Upgrade kits that can improve fuel efficiency by up to 15%.	Bank of America	US
Credit Card	Affinity Cards. Bank partners with ENGO, which accepts future royalties in exchange for the use of its name and logo. APR 15-22%, many with annual fees.	Various	Various
	Climate Credit Card. Bank will donate to WWF. Sum of donation depends on the energy-intensity of the product or service purchased with the card.	Rabobank	Europe
	GreenCard Visa is the world's first credit card to offer an emissions offset program. Cards will soon be made available in Germany and parts of Scandinavia. Product developers are now working bring this type of product to US customers, in 2007	Tendris Holding B.V.	Europe (NL)
	BarclayBreathe Card to include discounts and low borrowing rates to users when buying "green" products and services. 50% of card profits will go to fund emissions reduction projects, worldwide.	Barclays	UK
	Existing cardholders can donate Visa WorldPoints rewards to organizations that invest in GHG reductions or redeem them for "green" merchandise.	Bank of America	US
	Bank donates £1.25 per £100 spent by personal (Co-op debit and credit cards) and business customers (Co-op Business Visa) to the bank's "Customers Who Care" Campaigns[1].	CFS	UK
Deposit	Landcare Term Deposit. Australia's first environmental deposit product. For every dollar spent, bank lends equivalent to support sustainable agriculture practices.	Westpac	Australia
	EcoDeposits®. Fully-insured deposits earmarked for lending to local energy-efficient companies aiming to reduce waste/pollution, or conserve natural resources. EcoCash™ Checking Account allows for 5 free paper checks a month, with US$3 per check fee applied. A portion of this fee goes to The Climate Trust.	Shorebank Pacific	US
Sales	Consumers can offset CO_2 emissions associated with air travel, with no funds being channeled to the bank. This new initiative is in partnership with the offsetting organization Climate Care.	Barclays, HSBC	Europe

3.1.1 Home Mortgages

In general, green mortgages, or energy efficient mortgages (EEMs), provide retail customers with considerably lower interest rates than market level for clients who purchase new energy efficient homes and/or invest in retrofits, energy efficient appliances or green power. Similarly, banks can also choose to provide green mortgages by covering the cost of switching a house from conventional to green power, and include this consumer benefit when marketing the product. These retail products come in different designs, some of which have met more success than others. In North America, Citigroup/

Fannie Mae (MyCommunityMortgage™), Wells Fargo, CIBC (Enviro-$aver Rebate), VanCity Credit Union (Climate Change Mortgage), and Citizens Bank of Canada provide green mortgage products to customers. For details on some of these products, refer to Appendix 5.

Government Actions Driving Product Development

A novel development in the promotion of green mortgages is currently underway in the UK. Announced in January 2007, the country's All Party Parliamentary Climate Change Group submitted letters to the country's top 100 mortgage lenders requesting each to "detail their plans, if any, for the launch of environmentally friendly products"[20]. The purpose of this request is to prompt mortgage providers to facilitate homeowners towards improving the energy efficiency rating of their properties, in order to complement the June 2007 launch of the Government's Energy Performance Certificates (EPCs)[21]. According to the government group, UK home loan providers must soon offer financial incentives that include one or more of the following features: competitive interest rate, compared to traditional products; cashback; no fees; or a higher loan to value. As for the loan recipients, they must either have a home "that has an energy performance above that of the minimum building regulations standard"[22], or use the loans to undertake retrofit measures to improve the home's energy efficiency rating. Quickly responding to the public request, HBOS and Abbey, the UK's largest mortgage lenders, and other key lenders (e.g. Halifax) and building societies have committed to bring either green mortgage or energy efficient financial products online over the coming year. At present, only three lenders, nationwide, offer green mortgages: CFS, the Ecology Building Society and the Norwich and Peterborough Building Society[23].

Tying Mortgage Product to Carbon Offsets

An innovative green mortgage design is that which incorporates a contribution to climate change mitigation. CFS, which pioneered the concept of green mortgages seven years ago, offers all mortgage customers a free home energy rating on home purchases, and every year that a customer holds a mortgage, the bank pays Climate Care to offset one-fifth of the household's CO_2 emissions. Since 2000, the program's climate change donations have amounted to £1.5 million[24]. This type of "green" product, tying climate to mortgages, could path the way for similar, yet more advanced, products in the future. For example, banks could structure schemes for which mortgages are linked to Verified Emission Reductions (VERs) generated by domestic energy efficiency measures introduced by consumers.

Attractive Terms Offered to New and Old Homes

In Australia, under the family brand of Generation Green™ products, Bendigo Bank offers a Generation Green™ Home Loan, with a 0.5% per annum (pa) reduction on the current residential variable rate and no monthly service fees. This preferential rate, combined with no fees, could see a loan recipient save a significant amount of money by going green[25]. Moreover, the product can be offered to both new and old homes, so those with existing mortgages have an opportunity to take advantage of discounted interest rates. More recently, Bendigo Bank has tied this product – and other Generation Green™ Carbon Offset products – to CO_2 offset sequestration projects, where the bank arranges native species to be planted on the customer's behalf, during the lifetime of their loan. Each participating client will receive a Generation Green™ Carbon Offset Certificate to recognize the environmental benefits associated with their product choice. [26]

---

20 The Guardian. 2007.

21 EPCs become mandatory in June 2007, along with home information packs; homes are given an energy efficiency rating to show their impact on the environment in terms of CO_2. (MyFinances.co.uk, 2007)

22 MyFinances.co.uk, 2007.

23 BBR, 2007.

24 ibid

25 For example, consider a US$200,000 loan with monthly repayments of just under $1,500. Under this scenario, if one were to compare a Generation Green™ Home Loan, with an interest rate of 6.85%pa and no monthly fee, to a conventional mortgage rate of 7.35%pa, with an $8 monthly fee, a green mortgage – provided all criteria are met – could theoretically save a homeowner up to $48,000 over the lifetime of the loan. (Bendigo Bank, 2007)

26 Bendigo Bank, 2007.

■ Mortgage Reduction Amount & Selection Criteria

There have been mixed reviews over the Dutch Government's green mortgage scheme, which allows domestic banks to offer a 1% reduction on mortgage interest rates when new houses or renovation projects meet a set of environmental criteria. In this case, not all homeowners and banks have found the program particularly attractive, because the reduction amount is limited to only €4,000, and the selection criteria is considered overly restrictive[27].

3.1.2 Commercial Building Loans

In North America, attractive loan designs and arrangements have started to emerge for "green" commercial buildings, characterized by lower energy consumption (~15-25%), reduced waste and less pollution than traditional buildings. Due to these "green" functions and features, some appraisers are now giving credit for reduced operating expenses, improved performance and longer lifetimes. As such, lower project costs improve net operating income, a key factor when evaluating property using the "income approach"[28].

■ Loan Repayment through "Green" Savings

Through a pilot Green Loan initiative, the City of Toronto, through its Toronto Atmospheric Fund (TAF), and Tridel®, Canada's largest condominium developer, are collaborating to make "green" commercial building loans a success through the generation of cost savings during the lifetime of energy-efficient condo equipment and material. After the building project has been completed, and energy performance measured by third-party verifiers, the lender's loan is advanced. The Condominium Corporation repays the loan through funds that would otherwise be spent on heating, cooling and electricity, using conventional, less efficient equipment and materials.[29] To be eligible for the TAF/Tridel® Green Loan, the building being erected or refurbished must demonstrate a "25% energy savings compared to an identical building designed to meet requirements of Canada's Model National Energy Code"[30]. The emissions and energy savings generated must be quantified through integrated computer models, developed and run by third party consultants.

■ Gaining Experience & Enhancing Reputation

To date, Wells Fargo has dedicated US$720 million to "green" commercial building projects in the US. In 2006, the bank completed its 12th LEED® certified building financing project, a $225 million first mortgage loan to affiliates of The JBG Companies for building and refinancing a 460,000 square-foot office complex, consisting of both new and existing facilities[31]. The new and renovated "green" commercial buildings are expected to feature some, if not all, of the following: green roof and storm water management; water efficient landscaping; increased ventilation effectiveness; use of low-emitting materials; and built-in recycling areas within building.

3.1.3 Home Equity Loans

Reduced rate home equity loans, sometimes referred to as 'second mortgages', can help motivate households to install residential renewable energy (power or thermal) technologies. In designing and offering these incentive-based products, a number of banks have also partnered with technology providers and environmental NGOs.

27 DSR, 2006.
28 Wells Fargo, 2005.
29 Tridel®, 2006.
30 ibid
31 Wells Fargo's other LEED-certified projects range in financing from $11 million to $130 million. (CSR Wire, 2006).

One-Step Financing and Partnering with Manufactures

One-step financing, introduced by New Resource Bank (NRB) in 2006, was developed to help US customers finance residential solar power installations. In partnership with SunPower Corporation, a manufacturer of high-efficiency solar technologies, the long-term financing program customizes home-equity lending products, aimed at providing clients with cost-effective options to own renewable solar power. Under the solar financing scheme, NRB customers complete a one-step application process, and then make monthly loan repayments while generating their own electricity using SunPower's solar technology. NRB's financing occurs over a 25-year loan term, equaling the same period of time as SunPower's long-term solar panel warranty. In general, after rebates offered by California's million solar roofs program, NRB's solar financing can provide solar power to a home for as little as US$100 per month. This cost is lowered even more given that the interest expense on a solar loan is tax-deductible.[32]

3.1.4 Auto & Fleet Loans

With below market interest rates, many green car loans aim to incent the uptake of cars that demonstrate low GHG intensity and/or high fuel efficiency ratings. The number of these products has increased in recent years, with the majority being offered in Australia and Europe. As shown below, most green car loans are being offered by credits unions, such as mecu[33]. Vehicle lending has proven to be an ideal way for smaller financial institutions to achieve differentiation through innovation, whereby they can offer "a total auto-buying experience for their members,"[34] through specialized products and services.

GHG Ratings Considered for All Vehicle Types

In 2003, Australia's mecu, the first credit union in the world to become a member of UNEP-FI, took the lead in creating an innovative product package for its goGreen® auto loan, a decision that quickly paid off. The mecu product does not provide "green" car loans for a niche market segment. Instead, for each loan, the bank considers a GHG rating associated with the vehicle type, and provides a low interest rate accordingly. In addition, for the term of the customer's loan, the bank also commits to offsetting 100% of the car's CO_2 emissions. Since the inception of its goGreen® auto product, mecu has seen a 45% climb in car loans.[35]

Educational Services & Complimentary Offset Programs

In Europe, those offering "green" car loans tend to link the product to educational services that underline the transportation sector's high contribution to global GHG emissions. For example, each car loan offered by CFS Bank includes a welcome package that provides information on greener motoring and fuel-efficient driving tips. CFS Bank also commits to offsetting a fifth of the vehicle's CO_2 emissions for the lifetime of the loan. Fortis Bank offers substantial discounts, up to 10%, on loans for energy-efficient cars and advises customers on how to qualify for the Belgian government's tax incentive clean auto scheme.

Responding to Hybrid Loan Challenges

In 2003, Canada's VanCity introduced a hybrid car consumer lending product, which was later revamped to include other clean car options. Although the initial hybrid-focused product was successful in achieving "member acquisition and loyalty" and "good environmental results," with 353 tonnes of annual CO_2 emissions reductions, loan sales were unexpectedly low. This weak product result, according to the bank in 2005, was largely due to the limited supply of hybrids in the market, as

32 Enivronmental Finance, 2007; and in interview with Peter Lieu, CEO of NRB.
33 The reason for this, it has been assumed, is that smaller financial institutions are increasingly challenged by larger banks for lending dollars; therefore, smaller lenders must regularly differentiate themselves through innovative product and service offerings (CUNA Mutual Group, 2006).
34 ibid
35 Banksia, 2005.

well as low key marketing factors[36]. The credit union's new suite of Clean Air Auto Loans, introduced in 2006, covers a wide range of low-emitting vehicles. The product is based on different vehicle categories or tiers, where Tier 1 vehicles (e.g. Prius, Honda's Insight, Civic Hybrid etc.) are considered "specifically designed for superior environmental performance"[37]. The bank provides owners of Tier 1 vehicles a prime rate (6%) that is typically 3-4 percentage points less than an average car loan.[38] According to VanCity's senior sustainability programs manager, the bank has acquired new customers since launching its modified Clean Air Auto Loan[39].

■ Fleet Loans Offered in Partnership with Federal Government

A variety of technologies are available to help trucking companies save on fuel costs and reduce environmental impacts. However, many North American freight companies lack the required upfront investment capital to procure these items[40]. In response, Bank of America partnered with the US Environment Protection Agency (EPA) and national freight sector to offer Small Business Administration Express loans, which require no collateral and provide flexible terms to truck companies for the purchase of fuel efficient technologies. They are also used to acquire US EPA SmartWay Upgrade Kits, which contain "highly fuel efficient technologies bundled with emissions control devices"[41], capable of improving vehicle fuel efficiency by up to 15%[42]. Since its launch in November 2006, the transport loan program has helped freight companies save fuel and money, while also reducing truck emissions that lead to poor air quality and climate change. Further, because the majority of loan recipients will save more money each month than the costs associated with repaying the loan, they increase their profit[43].

3.1.5 Credit & Debit Cards

A broad family of green products includes debit and credit cards linked to environmental activities. "Green" credit cards offered by most large credit card companies, typically offer NGO donations equal to approximately half a percentage point on every purchase, balance transfer or cash advance made by the card owner. Annual Percentage Rates (APR) for affinity cards normally range between 15-22%, and many of these include annual user fees. Over the past year, tying credit cards to an offset program has become increasingly popular among European financial institutions. As with other product offset schemes, this supplementary service can be implemented at little cost to the lender, while both tangible and non-tangible returns are potentially sizeable.

In North America, only a handful of "green" cards have been developed, such as MBNA's Sierra Club affinity card, Shorebank Pacific's Salmon Nation Platinum Visa, Royal Bank of Canada's WWF Visa affinity card and Citigroup's Environmental Defense Platinum Master Card[44]. For details on some of these products, refer to Appendix 5.

---

36 Harris, 2005.
37 ibid
38 In marketing their "green" auto product, VanCity highlights these potential maximum savings/reductions, over a 5-year period, based on a C$35,000 loan with a 3% interest discount: savings of $3,000 in interest; a gas bill reduction of $1,500; and a CO_2 emissions reduction of 18 tonnes. (Harris, 2005)
39 ibid
40 US EPA, 2007(b).
41 US EPA. 2007(a).
42 According to the EPA site: "The kit typically ends up saving truckers more money than it costs, even during a loan-repayment period. For example, an upgrade kit consisting of an auxiliary power unit, single-wide tires, and trailer aerodynamics could be purchased for about $16,500. With a five-year loan at 12 percent annual interest, the cost would be about $367 per month while producing an estimated $636 in monthly fuel savings. That represents a gain of $269 per month, or $16,140 over the five-year period." US EPA, 2007(b)
43 ibid
44 Interviews and Questionnaires with banks; and Jeucken, 2004.

Card linked to Global Offsets

The GreenCard Visa claims to be the world's first credit card to offer a unique emissions offset program. This product, currently only available in the Netherlands, aims to offset all GHG emissions released through the manufacturing and use of products or services, purchased using the GreenCard Visa. Customers do not pay additional fees to fund clean projects to offset purchases made. Instead, only one initial payment of 75 Euros is required to obtain and use the product, provided it is used at least once a year[45]. Since 2004, GreenCard Visa has acquired over 20,000 customers in the Netherlands, and the cards will soon be made available in Germany and parts of Scandinavia. Tendris Holding B.V., the group that launched GreenCard Visa, is now working with Bank of America to bring this type of product to US customers, in 2007[46].

NGO Pledges linked to Energy-Intensity of Card Purchases

In September 2006, Rabobank launched an innovative 'climate credit card'. The bank pledges to pay a proportionate sum to support WWF projects, depending on the energy intensity of the product or service bought with the card. Since this product will require a thorough evaluation of the energy intensity of the basket of goods acquired by each card holder, product results have yet to be announced.

Cards' Physical Environmental Attributes

Regarding the physical characteristics of a "green" card, Barclays has been a leader in producing the UK's first carbon neutral debit and credit cards. Under this initiative, emissions associated with both the manufacturing and personalization of Barclays' cards are offset via the Carbon Neutral Company. To date, nearly 11 million carbon neutral cards have been issued by the bank[47]. Recently, Barclays announced that it will be releasing another ambitious "green" credit card scheme, in summer 2007. The Barclaycard Breathe, to be marketed and operated online, will be made of PETG, an environmentally-friendly alternative to conventional plastic.

Discounts & Low Rates for "Green" Card Purchases

Barclaycard Breathe, noted above, is associated with the bank's "We're in this together" campaign, an initiative aiming to "help every UK household cut their carbon emissions by one tonne" between 2007 and 2010[48]. Central features of the "green" credit card include the discounts and low borrowing rates provided to users when purchasing environmentally-friendly products and services, such as energy efficient appliances or public transport passes. In addition, Barclaycard will donate half of Breathe's after-tax profits to fund carbon emissions reduction projects, worldwide.[49]

3.1.6 Personal Accounts

Linking Volume of Deposit Accounts to Sum of Annual Donations

In Australia, an innovative "green" deposit account is generating significant support and attention. Westpac clients are encouraged to directly support domestic farmers and sustainable agriculture by signing up for a Landcare Term Deposit Account. Under this program, the bank makes an annual donation to Landcare based on the customer's average balance of

45 According to GreenVisa, this initial payment is, on average, 35€ higher than traditional credit card fees in the Netherlands. (GreenCard Visa, 2007)
46 Sustainable Industries, 2007.
47 MoneyNews, 2006.
48 Barclays, 2007. Other UK-based companies involved in the campaign include B&Q, British Gas, Marks & Spencer, Sky, Tesco, Royal & Sun Alliance and O2.
49 Barclays, 2007.

deposits. According to Westpac's 2006 CDP response, this product, which gives customers the same features and rates as the bank's regular Term Deposit, is Australia's first bank term deposit that provides customers the choice to invest their funds in a manner which helps the environment[50]. As of September 2006, the Landcare Term Deposit held US$1.4 million in balances[51].

■ Linking Deposit Accounts to Local Environmental Lending

Shorebank, the first regulated institution in North America dedicated to sustainability-based economic revitalization, offers its customers EcoDeposits® that are earmarked for lending to local energy-efficient companies, aiming to reduce waste/pollution, or conserve natural resources. In 2002, EcoDeposits® attracted US$57 million in deposits, and by 2004 this amount had climbed to nearly US$82 million, representing over 2,000 investors with an average investment of US$40,000[52].

■ Environmental Donations Based on Personal Management of Accounts

Until September 30, 2006, Bank of America was offering clients an opportunity to support The Nature Conservancy's reforestation efforts based on the way in which they managed their checking or savings account. The bank offered to give US$1 (up to $500,000) to the NGO for each virtual banking subscriber who "elected to stop delivery of the paper checking or savings account statements"[53]. This product offering, associated with the bank's "Save a Tree, Conserve a Forest" campaign, was particularly significant because it not only reduced the amount of paper used for bank statements, but also generated support and awareness about worldwide deforestation. The success of this initiative has not yet been made public.

3.1.7 Green Sale & Travel Money Products

■ Environmental Donations Tied to Traditional Sale Transactions

In January 2007, HSBC contributed £2 to various environmental NGOs, including Earthwatch, Botanic Gardens Conservation International, The Climate Group and Encams, when customers opted for a selection of traditional bank products. Under this initiative, HSBC products tied to "green" sale transactions included mortgages, bank accounts, travel money, and credit cards, among others.

■ Environmental Awareness & Partnerships Tied to Travel Products

Recently, Barclays' launched a Currency and Carbon initiative to encourage consumers to offset CO_2 emissions associated with air travel. In partnership with the offsetting organization Climate Care, Barclays established a co-branded website for the product, with funds being used to invest in energy efficiency, forest restoration and/or renewable energy projects in developing countries. According to the site, "all climate care customers' money will go straight to Climate Care" with no funds being channeled to Barclays[54]. The goal of this initiative, whose slogan reads "Before you set off – offset," is to raise customer awareness of offsetting practices through statement inserts, travel services brochures and educational material on all travel money wallets accompanying travel currency.[55]

50 CDP, 2006.
51 Westpac, 2006.
52 NRTEE. 2004.
53 BoA, 2006.
54 Climate Care and Barclays, 2007.
55 CDP4, 2006. (Barclays Response to Questionnaire)

3.1.8 Other Products & Services

Technology Leasing

One of the main "green" financial product areas to be capitalized on by European banks is environmental leasing, where they provide environmentally-friendly technologies at preferential rates to commercial customers. Some European governments have played a large role in promoting "green" leasing through public awareness campaigns and business incentive programs. For example, the Netherlands' government has, for several years, motivated domestic banks to offer these products to domestic firms keen to invest in environmentally-friendly equipment. Under the government initiative, costs associated with these investments can be deducted from their taxable profits, and have also involved accelerated depreciation arrangements on environmental investments, an energy-saving investment allowance program, and an environmental investment allowance scheme. Rabobank is a global leader in the field of "green" technology leasing, channeling €03 million into "green" lease arrangements, in 2005[56].[57]

Microfinance

At present, a number of banks are considering the opportunity to provide micro loans to individuals and SMEs who are generally denied credit (public or private), in order to finance small environmental projects, such as small solar installations. In Europe, Credit Suisse, Société Générale and Santander have recently entered this area by refinancing local lenders, while Barclays is planning to provide green microfinance services in developing countries, including South Africa and Ghana. In a survey of 34 selected banks, between 1998 and 2000, it was found that four banks in North America, and three in three in Europe offer microfinance[58]. Four of these banks offer microfinance to developing countries, including: Rabobank; Deutsche; Citigroup; and Royal Bank of Canada[59].

3.2 Corporate and Investment Banking

Corporate and investment banking, or "wholesale banking", sees banks provide banking solutions to large corporations, institutions, governments and other public entities with complex financial needs, typically international in scope. Financial institutions offering corporate and investment banking can underwrite debt issues, both on their own behalf and for corporate and public sector clients, as well as supply equity, manage funds and offer advice to corporate mergers and acquisitions. These banks act as financial intermediaries, raising capital (equity and debt) by trading foreign exchange, commodities and equity securities on the primary market. This space regularly involves sophisticated money management instruments, such as derivative products and trade in foreign exchange. Asset securitization, a process where assets (e.g. corporate loans, credit card receivables etc.) are converted into marketable securities to be traded among investors, is another growing activity in among corporate and investment banks.

56 RaboBank, 2006.
57 Other European banks that provide technology leasing include: Deutsche Bank, ABN AMRO, and ING Group. (Jeucken, 2004)
58 Jeucken, 2004.
59 ibid

Table 2: Corporate & Investment Product & Service Summary Chart

Product	Key Product Designs and Results/Potential	Financial Institution(s)	Region
Project Finance	Specialized service divisions are dedicated to long-term financing of clean energy projects. Some banks also specialize in one (or several) renewable technology type and/or place a premium on working with states where regulatory framework and government policy encourages the early adoption of clean technologies.	BNP Paribas (Wind), Rabobank, Barclays, Fortis, Standard Chartered Bank, WestLB (Biofuels and Wind)	Global
	Led the effort to raise $1.5 billion of equity for the wind power market in 2006, with approximately $650 million allocated to its own portfolio. The firm's renewable energy portfolio now comprises approximately $1 billion of equity investments in 26 wind farms since its inception in 2003. The firm is also actively pursuing investments in biomass, geothermal, and solar power.	JPMorgan	US
	Portfolio financing technique. Combines the financing of a portfolio of renewable energy projects to the construction risks associated with project development.	Dexia (Wind)	US
	Lead arranger on energy-from-waste project financing that includes a 25-year loan supported by waste contracts with local authorities and corporate backing on non-contracted waste.	Bank of Ireland	Europe
Partial Credit Guarantee	Financial institution provides a bond issued by a municipality to finance environmental projects.	IFC	Global
Securitization	A risk sharing arrangement for environmental projects. Financial institution represents a guarantor (or structuring investor) at the mezzanine level of risk, allowing client to transfer risk to bank.	IFC	Global
	Eco-Securitization scheme will test the feasibility of financing "natural infrastructure" by linking sustainable management of resources with the funding capacity and requirements of asset-backed securitization.	IFC and DFID	Global
	Green Mortgage-Backed Securities (Proposed). Designed to package mortgages on buildings that meet specific energy-use and environmental benchmarks. Products would be rated higher and worth more as a result of the operational benefits associated with "green" buildings.	Not yet implemented.	US
Bonds	Forest Bond designed to fund large-scale reforestation in Panama. Re-insurers underwrite a 25-yr bond, while investors and frequent users of Panama Canal will purchase the bond.	Various	Latin America
	Cat Bonds provide ancillary capital for risks from natural catastrophes. Can pay higher than average yield, while diversifying investors' portfolios and improving industry reserves.	BNP Paribas, Goldman Sachs, Lehman Brothers	Global

Technology Leasing	Provides environmentally-friendly technologies at preferential rates	Deutsche Bank, ABN AMRO, and ING Group	Europe
Private Equity	Private equity investments in wind, solar and biofuels through Alternative Investments' Sustainable Development Investment Program	Citigroup	US
	Private equity focused on forest conservation and preserving biodiversity. Provides 100% financing, with a discounted rate on the loan, to a non-profit organization to acquire biologically sensitive land and implement sustainable forestry practices and management.	Bank of America	US
Indices	Series of environmental private investor eco-market products includes a biofuels commodity basket, total returns solar energy index, clean renewable energy index and total returns water index (e.g., enables interested parties to invest in water as a commodity).	ABN AMRO, JPMorgan	Europe, US
Carbon Finance & Emissions Trading	Banks provide equity, loans and/or upfront or upon delivery payments to acquire carbon credits from CDM and JI projects. Most acquire carbon credits in order to serve their corporate clients' compliance needs, supply a tradable product to the banks' trading desks, or develop lending products backed by emission allowances and carbon credits.	Barclays Capital, HSBC, Fortis, ABN AMRO, BNP Paribas, JPMorgan, Goldman Sachs, Citigroup, among others.	Global (Mainly Europe)
	Allowance trading products can include, but are not limited to: discreet placement of physical orders; fixed-or-floating swaps and indexed sales or purchases; options; allowances repurchase structures; market-making for spot and forward trades; and price hedging based on cross-commodities.	Various	Europe

3.2.1 Project Finance

Comprised of a mix of equity and debt, project finance – also known as non-recourse finance – refers to loans offered in wholesale banking to fund large infrastructure projects. These targeted projects, typically found in sectors such as telecommunications, petrochemicals and natural resources, obtain loans that are repaid to the bank, or a banking syndicate, through the project revenue generated. Under a project financing arrangement, 30-40% is generally funded through equity contributions, and the other 60-70% through debt.[60]

■ Resource-Use Intensity & Emissions Liabilities Linked to Investment Considerations

In North America, JPMorgan and Citigroup measure the GHG emissions of investments in the power sector (Citigroup only with regard to new investments). The former encourages alternative energy development by quantifying the financial costs of emissions, and then internalizes them into the financial analyses associated with transaction. Bank of America has committed to cut carbon dioxide emissions associated with its financing to power sector stakeholders, including equity holdings, by 7% by 2008.

Dedicated Renewable Energy Teams and Portfolios

A number of banks have created service divisions, or teams, dedicated to large-scale renewable energy project financing schemes, such as Rabobank International's Project Financing Department and Barclays Natural Resources Team. In some cases, banks specialize in one or more renewable energy technology types, such as WestLB and BNP Paribas; the latter of which is the top wind financier in the world, providing 13.4% of all world financing to wind farms in 2005; a total of 1,550 MW and €31 million. By 2005, the majority of leading European banks had debt portfolios containing committed lines to finance renewable energy assets. On average, each line equaled approximately €50-300 million[61].

JPMorgan has also become a major investor in wind power. The firm led the effort to raise $1.5 billion of equity for the wind power market in 2006, with approximately $650 million allocated to its own portfolio. The firm's renewable energy portfolio now comprises approximately $1 billion of equity investments in 26 wind farms since its inception in 2003. The firm is also actively pursuing investments in biomass, geothermal, and solar power.

Alternative Fuel Financing

WestLB has played a pivotal role in the biofuels space over the past two years by successfully arranging and syndicating over US$1.5 billion of financings towards the construction and development of a variety of Ethanol plants in the US. In its most recent transaction, WestLB raised US$325 million for a high-profile company, Pacific Ethanol Inc, to develop and construct five plants on the West Coast. Once completed, Pacific Ethanol will be one of the largest producers of clean-burning alternative fuels in the country. According to Tom Murray, the bank's Global Head of Energy, "WestLB is committed to bringing innovative financial structures to the market in order to achieve the most optimal terms for our clients. Pacific Ethanol is just one of many examples of a structure that has been tailored to attract both commercial banks and institutional investors".[62] WestLB's efforts in this sector continue to prove that they are a leader in this industry. In 2006, the bank was awarded Deal of the Year for ASAlliances Biofuels by Project Finance International.

Wind Portfolio Financing

In 2005, Dexia launched a US-based project called "Invenergy," a first-of-its-kind initiative that combines the financing of a portfolio of wind energy projects with the construction risks associated with wind farm development. Awarded Project Finance Magazine's "2005 Deal of the Year", Dexia's Invenergy Wind Finance Company represents the "world's first fully greenfield construction financing for a wind portfolio"[63] and the largest bank financing for a wind portfolio in North America. Though challenged by time constraints (to be eligible for US production tax credits) and a limited supply of high-quality wind turbines (resulting in suppliers demanding up to 50% of upfront costs), Dexia closed a US$77 million turbine acquisition loan with Invenergy; a deal secured on the equipment and project company equity. The portfolio's large scale and geographic diversity, which includes three wind projects (135 MW in Montana, 64 MW in Idaho, and 60 MW in Colorado) that have each signed twenty year power purchase agreements, complemented the use of a portfolio financing technique. This "portfolio effect" allows for stronger schemes to enhance the credit of those deemed riskier, in this case the Montana wind project, and thereby bolster lenders' confidence that that future cashflows will manage to service senior debt.[64]

61 Examples include: Standard Chartered Bank (financed 1,000 MW of renewables at a cost of €153 million); Barclays (long-term financing to build 2,500 MW of new renewables-based capacity); Fortis (loan portfolio contains roughly €300 million dedicated to 20 wind projects); Rabobank (lent €230 million to renewable energy and sustainable projects, constituting over half of the bank's total project lending volume); and Bank of Ireland.

62 Information obtained through correspondence with WestLB in May 2007.

63 Euromoney Institutional Investor PLC, 2005.

64 Apart from this initial financing stage, Dexia and two other lead arrangers later closed a construction and equity bridge loan, totaling $390.4 million, to be refinanced upon project completion. The success of this clean energy project finance scheme has generated interest and set the stage for portfolio deals to become an increasingly popular approach to environmental project finance, with the type of renewable energy source – in Dexia's case, intermittent wind – being the biggest variable throughout the process.

3.2.2 Securitization

Large-scale infrastructure can be financed using asset-backed securities (a type of bond) associated with environmental infrastructure or projects. Through underwriting, investment banks purchase new bonds at a guaranteed price, which are then resold to institutional investors.

■ Matching Long-Term Nature of Bond with Investor Needs: Forest Bond

A forest bond has recently been designed to fund large-scale reforestation in Panama, in order to alleviate transport problems along the Panama Canal. Reforestation along the canal's watershed will aim to improve water flow management by trapping sediment and nutrients along the banks. The project, called Beyond Timber, will see re-insurers underwrite a 25-year bond, while frequent users of the waterway, such as Walmart, and investors will purchase the bond. According to Forest Re, the project broker, "40% of the US products pass through the Panama Canal, and the cost of insuring against losses is huge"[65]. Moreover, the Panama Canal Authority, claims that "two-thirds of the project risk is environment related, thus Beyond Timber will work to significantly reduce risk exposure to insurers, while canal users pay a lower premium when purchasing the forest bond". With these observations in mind, it is likely that the long-term nature of the forest bond effectively matches the need for long-term assets by traditional investors[66]. Beyond Timber Corporation is currently managing the initial phase of the project and, upon completion, funds will be raised in a Special Purpose Corporation (SPC), which will be used to procure infrastructure, land and equipment[67]. Cash flow from the reforestation project will be used to service coupons held by the bondholders.

■ Packaging Natural Catastrophe Risk: Cat Bond

To help insurers finance catastrophe risk, options have been developed to securitize that risk. This means that insurers and investors are capable of trading securities that package natural catastrophe risk. According to International Standard Organization (ISO), over the long-term, securitizing catastrophe risk will provide substantial insurance capacity provided: 1) insurers perceive securitization as a cost-effective means of spreading risk; and 2) investors perceive securitizing catastrophe risk as enhancing their performance or portfolios[68]. Cat bonds are a "customized approach to securitizing risk"[69], where the bonds act as "corporate bonds with special language, requiring holders to forgive or defer some or all payments of principal or interest, if actual catastrophe losses exceed a specific amount, or trigger"[70]. In effect, forgiving this repayment will result in the insurer or re-insurer writing down the bond-related liability; thereby increasing surplus while preventing insolvency. Since 1995, investors have committed about US$4.7 billion to various vehicles for securitizing catastrophe risk, a sum which includes exchange-traded catastrophe options (see Appendix 5 for more details).

■ Higher Access to Capital & Credit Ratings: "Green" Mortgage-Backed Securities

A mortgage-backed security is a bond for which the value is derived from hundreds of mortgages that are securitized together and then rated and sold to investors. There has recently been a dramatic surge in mortgage-backed securities, which have come to penetrate 25-30% of the US mortgage market. A "green" mortgage-backed security would package mortgages on buildings that meet specific energy-use and environmental benchmarks. "Green" Mortgage-Backed Securities, currently in the early stages of product design and discussion, would hold energy efficient and environmentally-friendly commercial buildings. These "green" products could be rated higher and worth more than traditional mortgage-backed securities as a result of the operational savings and marketability, as well as other tangible and intangible benefits associated with "green" facilities; added value features that could result in better and cheaper access to capital for potential owners and investor

65 The Banker, 2007.
66 ibid
67 The arrangement will eventually see all funding used to finance the SPC's operations and maintenance, and "on maturity, the SPC will pay back the bondholders – in cash or equity – using the ForestRe proceeds from the realization of the assets purchased (e.g. timber, carbon credits, water rights, etc.) from the bond issue"(The Banker, 2007).
68 ISO, 1999.
69 ibid
70 ibid

in green building projects[71]. However, like other lending scenarios related to "green" buildings, this scenario is highly dependent on the financial community being able to accurately measure and value savings and reductions associated with building "green".[72]

■ EcoSecuritization & Partial Credit Guarantees

To help finance priority environmental infrastructure, the World Bank Group's International Finance Corporation (IFC) provides credit enhancement structures for debt instruments (e.g. bonds and loans) through partial credit guarantees, risk sharing facilities and securitizations[73]. Partial credit guarantees work to provide a bond issued by a municipality attempting to finance environmental projects, where the diversification of funding sources and extension of maturities, this guarantee can help enhance the rating level to a point that attracts institutional investors. EcoSecuritization techniques are being used to alleviate rainforest deforestation in South America, with the potential to be extended to resolve other environmental challenges. In 2006, the EcoSecuritization Project was launched by IFC and the United Kingdom's Department of International Development. This initiative tests the feasibility of financing 'natural infrastructure,' such as forestry, fisheries and water supply, by "linking their sustainable management with the funding capacity and requirements of asset-backed securitization"[74]. Eco-securitization is thereby differentiated from conventional securitization in its focus on environmental, as well as financial, returns. The long-term aim, under the EcoSecuritization project, is to introduce a new debt instrument into the global financial mix that employs the full asset range of a sustainable forestry business as security, including carbon sequestration, biodiversity and water management credits[75]. A potential EcoSecuritization model is illustrated in Appendix 6.

3.2.3 Venture Capital & Private Equity

Increasing consideration is being paid to environmental issues when financing companies through capital markets (IPOs and bond issues). In particular, banks can play a pivotal – and profitable - role in assisting with IPOs for clean technology providers, carbon credit developers and other firms marketing environmental products and services.

■ IPO Support to Environmental Firms & Carbon Credit Developers

Venture capital is needed by early stage businesses that seek profitable ways to meet environmental needs, prior to being traded publicly. Venture capital can help firms secure the funding required to grow, and ultimately lead to healthy returns for shareholders. Investment banks can then help growing firms to go public. For instance, in 2005, ABN AMRO Rothschild supported the Initial Public Offering (IPO) of EcoSecurities, which originates and trades carbon credits. Though it has only been public a short time, over the past year, Ecosecurities' shares climbed 88%. This approach will be transferred to the Canadian context, in 2007, with CIBC World Markets leading the $100 million IPO for GHG Emission Credit Participation Corp, a company that will purchase and sell carbon emissions credits, as well as "assets that provide direct and indirect exposure to these credits"[76].

71 Institute for Market Transformation to Sustainability, 2005.
72 Tridel®, 2006. Institute for Market Transformation to Sustainability, 2005.
73 In securitization transactions, IFC represents a guarantor, or structuring investor, at the mezzanine level of risk; a risk-sharing arrangement that sees "a client transfer credit risk to IFC from their own portfolio, or from a new portfolio they originate." For instance, in addressing water scarcity, IFC can finance some capital costs to help fund a portion of a private water company's capital expenditure program, dedicated to improving Unaccounted for Water (UfW) reduction (IFC, 2006).
74 The Banker, 2007.
75 ibid
76 Wills, 2007. GHG, to be run by First Asset Funds, plans to both buy exchange-traded credits and securities created in private transactions.

Establishing a Capital Base for Climate Mitigation Projects

Working as a private equity unit within Citigroup Alternative Investments, Citigroup Venture Capital International (CVCI) focuses on alternate energy growth markets around the world and is responsible for the bank's Sustainable Development Investment Program (SDIP). SDIP makes private equity investments in renewable energy, sustainable forestry, water resource management, waste management, clean technologies, energy efficiency, and carbon markets. In February 2007, Sindicatum Carbon Capital Limited (SCC), a specialist in climate change mitigation that uses capital and technology to convert GHG emissions into long-term sources of revenue, closed an equity private placement with CVCI and Black River Asset Management to provide SCC with a strong capital base to enhance climate mitigation projects worldwide via the implementation of best of class pollution abatement technology[77]. The pool of new capital, provided by CVCI and Black River Asset Management, is expected to expedite the development of GHG reduction projects, investment in new and emerging technologies, as well as the acquisition of infrastructure assets[78].

3.2.4 Indices

Certain banks, including ABN AMRO and JPMorgan, provide investors with broad exposure combined with continually-evolving indices that fluctuate as future environmental opportunities and challenges emerge.

Series of Eco-Market Indices

In February 2007, ABN AMRO launched an equity index consisting of firms whose businesses are connected to global warming and the environment. This builds on a series of indices that ABN AMRO created in 2006, and is based on individual industries, including carbon abatement technologies, water, solar, ethanol, renewable energy and natural gas. Until now, more than "€ billion of the bank's eco-market products have been bought by investors[79]; an amount representing only the retail sector. According to interviews, if volumes from corporate and institutional spaces were added to this sum, then a significantly "sizeable market" would take shape[80]. For more information on this index, see Appendix 5.

Corporate Bond Index that Favours Climate-Friendly Companies

In February 2007, JPMorgan unveiled what is believed to be the first US climate corporate bond index that favours debt issuers who pursue and implement climate-friendly policies. The new vehicle, JENI-Carbon Beta index, includes the same bonds as those in JPMorgan's benchmark JULI corporate bond index, but weighted according to the ranking of a firm's carbon emissions[81]. Today, the US market accounts for approximately one-sixth of the global US$30 trillion bond market. With this massive amount of money invested in bonds, JPMorgan's new climate corporate bond index may effectively align investors' climate change concerns with their desire to maximize corporate profits[82].

77 CVCI, 2007.
78 ibid
79 Environmental Finance, 2007.
80 ABN AMRO has a range of individual Eco-sector indices, with the climate change index being a market capitalization-weighted index composed of up to 32 stocks independently selected by S&P. According to the bank, "the index has many potential applications such as a platform for investments that are linked to the performance of the index, including tracking certificates or structured notes. Other potential developments include a collateralized debt obligation based on the credit ratings of the index constituents." (ABN Amro, 2007)
81 To create the index and ranking scheme, the bank partnered with Innovest Strategic Value Advisors, a group responsible for calculating a 'carbon beta score' for every issuer on the index. This score is then used to 'tilt' the JULI accordingly. (Social Fund, 2007)
82 SocialFund, 2007.

3.2.5 Carbon Commodity Products and Services

Financial products and services related to the carbon market are largely specific to the European context. This regional divergence is mainly due to the start-up of the EU Emissions Trading Scheme (EU ETS), in January 2005; a scheme that has put over 12,000 European industrial sites, including some US subsidiaries, under a carbon constraint. The advent of this regulatory constraint has driven the creation of a new range of climate-related banking financial instruments and services. In North America, only a few banks have actively taken steps towards engaging in the growing carbon market, including: Goldman Sachs, Merrill Lynch, JPMorgan, Morgan Stanley and Citigroup[83]. However, recent claims suggest that a number of other North American financial institutions intend to pursue products and services opportunities in the carbon market space, such as products trading, hedging and brokering the sale of GHG emission credits[84].

Carbon finance centers on the provision of equity, loans and/or upfront or upon delivery payments to acquire carbon credits from CDM and JI projects. Most banks acquire carbon credits in order to serve their corporate clients' compliance needs, or to supply a tradable product to the banks' trading desks. Several banks, namely HSBC, JPMorgan, Barclays Capital, Fortis, and ABN AMRO, are significantly active in this field, employing a range of financing approaches to improve portfolio diversification, secure opportunities and hedge risks.

■ Acquiring Expertise in the Carbon Finance Space

BNP Paribas has developed a wide expertise in carbon financing and has already a significant carbon credits portfolio, exceeding 25 million tonnes until 2012. Different types of carbon finance services are provided by BNP Paribas at different stages of the project and Kyoto cycle: equity or off-take contracts at early project idea stage; project finance and export finance solutions at project implementation phase; pre-financing solutions (i.e. financial loan based on the future proceeds from sale of carbon credits) for registered CDM/JI projects; and, at any stage of the project, off-take and derivatives solutions, allowing project developers to manage the price risk of their carbon assets. BNP Paribas has climate experts in each of its four regional offices, thus assuring that opportunities for emission reductions projects are identified across all BNP Paribas' financing operations.

■ Establishing Emissions Trading Desks

The creation of GHG emissions trading desks was the first step taken by proactive European banks to fulfill the needs of companies, covered under the EU ETS. Emissions were often added to existing traded products, such as power, gas and other commodities. Two types of services are typically offered to corporate clients by emissions trading desks: 1) provision of market access, as well as brokerage and intermediation services in return for a commission fee; and 2) provision of risk management services and access to speculative operations in emissions markets, in return for a margin.

■ Allowance Trading Product Development

Some banks, such as Barclays Capital, BNP Paribas, Fortis and JPMorgan, trade in European allowances (EUAs), CERs and ERUs, as well as their derivatives. Between 2003 and 2004, trades in EUAs were mainly bilateral (i.e. "over the counter"), but now specialized exchanges like the European Carbon Exchange (ECX), Nord Pool and Powernext Carbon experience the majority of EUA trades, with CERs and ERUs trades remaining bilateral. Barclays Capital was the first UK bank to develop an emissions trading desk and is currently the largest and most active emissions trader in the EU ETS, with a recorded trading volume of over 300 million tCO_2, since January 2005[85]. The desk provides: market access and intermediation for customers needing to trade in EUAs, CERs and ERUs; risk management through forwards, swaps, options; allowances lending; and

83 In October 2006, Morgan Stanley earmarked US$3 billion to be invested in the global carbon market; Morgan Stanley has been active in the market since January 2005; and Citi entered the European carbon market, in April 2007, to trade permits on the European Climate Exchange.

84 For example, as part of its US$20 billion commitment to environmental banking initiatives, Bank of America has stated that it "will soon launch capability to trade carbon emissions credits, with the aim of helping clients achieve carbon neutrality." In achieving this goal, the bank will focus on financing and advisory services to clients participating in emissions offsets markets. (CDP4, 2006)

85 Barclays, 2007.

the monetization of allowances (i.e. using EUAs as collateral against short-term lending). BNP Paribas also serves a number of commercial clients (+100) in this market, acting as principal or exchange clearer on behalf of mainly small and medium industrial companies. To date, the desk has traded 5% of total EUAs. Innovative products developed by BNP Paribas include: discreet placement of physical orders; fixed-or-floating swaps and indexed sales or purchases; options; allowances repurchase structures; market-making for spot and forward trades; price hedging based on cross-commodities.

Providing Carbon Custodian Services

Some banks also act as custodians for their clients, safekeeping carbon credits, managing their registry accounts and clearing trades with other parties. Caisse des Dépôts et Consignation (CDC), a French public financial institution, is a remarkable example. CDC and the trading platform Powernext launched a uniquely organized carbon spot market named "Powernext Carbon" in 2005. Powernext provides a continuous trading platform, while CDC manages both the registry and the bank account on behalf of clients and guarantees the delivery versus payment mechanism. FortisTrust Services offers administration agreements to manage multiple registry accounts under the EU ETS and/or to allow the sellers of CERs and ERUs their safe keeping in a registry of choice.

3.2.6 Other Products & Services

Weather Derivatives

A range of derivative products have also been created to help companies whose activities are highly dependent on weather-related conditions to cope with variability in their revenues. Weather derivatives, currently offered by Goldman Sachs, are financial instruments that can be used to reduce risk associated with adverse or unpredictable weather conditions[86]. Wind power derivatives are similar instruments, which enable wind power producers to hedge against unfavourable wind conditions. Payments are eventually made to either the wind producer if revenues fall below a pre-determined level, or the derivative providers if performance exceeds expectations. ABN AMRO, Rabobank and Goldman Sachs are all active in these markets.

Exchange-Traded Catastrophe Options

Catastrophe options are standardized contracts that are purchased and sold through a market[87]. These provide the buyer with the "right to a cash payment if a specific index of catastrophe losses reaches a strike price"[88]. In sum, hedging catastrophe risk can be achieved by insurers purchasing these options through an exchange or commodities market, then selling them to earn profit. In the context of this exchange, if catastrophe losses cause the index to equal or exceed the strike price for an option, the investor must pay the insurer an amount based on the terms of the contract. However, should the index fall below the strike price, this results in the option's expiry, and investors retain what was paid by the insurer for the catastrophe option. The Chicago Board of Trade (CBOT) currently lists PCS Catastrophe Insurance Options.

Debt-for-Nature Swaps

Based on the concept of debt-equity swaps in the financial sector, debt-for-nature swaps enable debtor countries to free up resources to implement environmental conservation activities. In general, a debt-for-nature swap (bilateral/commercial) involves "purchasing foreign debt at a discount, converting the debt into local currency, and using the proceeds to finance local conservation activities"[89]. From the debtor's perspective, the benefit of a swap is reduced repayment of scarce foreign

86 These products differ from conventional derivatives in that their underlying asset (e.g. precipitation or temperature) has "no direct value to price the weather derivative". According to a Weather Risk Management Association (WRMA) survey, in 2005 there was an 80% upturn in volumes of weather derivatives over the previous three years. That year, this global market reached US$8.4bn

87 Options can be defined as "securities that give the purchaser the right – but not the obligation – to buy something from or sell something to the seller of the option at a predetermined price for a specified period of time." (ISO, 1999)

88 ISO, 1999.

89 WWF, 2002.

currency on its debt, as well as heightened national conservation efforts. From the creditor's perspective, the benefit is curbing uncertainty associated with future repayment (even at reduced debt price). The original debt-for-nature swap occurred in 1987, with Citibank selling Conservation International US$650,000 worth of Bolivia's debt at a discounted rate[90]. The value of the original debt was then set aside by the debtor country to protect millions of acres of tropical forest.

■ Real Estate & Brownfield Redevelopment

Some financial institutions have started to introduce energy efficiency practices or environmental/smart growth requirements into their real estate portfolios. For instance, Real Estate Mizuho carries out environmental risk assessments and manages environmental risks for all real estate and trust real estate activities, and ING has achieved a 75% reduction in CO_2 emissions from buildings in its Australian real estate funds. Complementing ING's initiative is the implementation of special monitoring systems and ad-hoc emissions abatement programs. Financing the redevelopment of brownfields which are typically "urban commercial or industrial sites that are abandoned, vacant or otherwise underutilized"[91]. Elements and services associated with these transactions normally include risk management, preferential financing arrangements, remediation partnerships, public involvement and community improvements plans and support. Banks active in this space include RBC Financial, CIBC, and Citigroup.

3.3 Asset Management

Asset Management has become one of the fastest growing segments in the financial industry and represents a core business unit of current banks[92]. This space focuses on providing financial advice to clients on estate planning, mutual funds, managed asset programs, taxes, trust services, international financial planning, global private banking and full-service and discount brokerages. Asset managers are likely to specialize in the areas of advisory or discretionary management on behalf of investors, services which normally require rigorous financial analyses, combined with asset and stock selection, plan implementation, and regular monitoring and reporting of investment activity. The principal sectors of the asset management industry include mutual funds, pension funds and private-client assets.

Table 3: Asset Management Product & Service Summary Chart

Product	Key Product Designs and Results/Potential	Financial Institution(s)	Region
Fiscal Green Funds	By purchasing shares or investing in Dutch Green Funds, customers receive an income tax discount, and thus accept a lower interest rate on investment. Banks can offer loans at lower cost to finance environmental projects related to five eligible categories.	Dutch Banks	Europe
Fund	UBS (Lux) Equity Fund – Eco Performance is the world's largest "green" fund. 80% of assets are channeled towards eco and social leaders, with 20% going to "eco-innovators". The UBS (Lux) Equity Fund - Future Energy, focuses on clean energy sector investments in clean four energy-related business segments.	UBS	Europe

90 Roughly 15 cents to the US dollar. Jeucken, 2001.
91 Christmas, 2003.
92 Deloitte, 2006.

Cat Bond Fund	Leu Prima Cat Bond Fund. World's first public fund for catastrophe bonds, a portion of which is aimed at climate-related natural disasters (or climate adaptation). Vehicle designed to hedge climate risks typically difficult to cover in the traditional insurance market.	Credit Suisse	Europe

3.3.1 Fiscal Funds

Dutch banks currently benefit from a governmental-led Green Fund initiative, launched in 1995. By purchasing shares in a green fund, or investing money in a green bank, citizens are exempted from paying capital gain tax and receive a discount on income tax[93]. Investors can therefore accept a lower interest rate on their investment, while banks can offer green loans at a lower cost to finance environmental projects. Banks operating these funds, such as Rabobank, ABN AMRO, ING and Triodos, can offer below market interest rates, and thus make the vehicle attractive to investors. Key benefits associated with this government-led approach to investment and lending are three-fold: 1) SMEs obtain cheaper loans; 2) private investors can invest at attractive rates; and 3) real environmental benefits can be achieved through a variety of eligible projects (e.g. green label glasshouses, wind turbines, organic farming, agriculture conservation projects, district heating and sustainable housing construction)[94]. To date, Rabobank has established one of the more successful "green" funds; in 2005, its fund had acquired 63,000 investors and provided € billion in "green" loans[95].

Fiscal Green Funds in the Netherlands (Year End 2000)96

Bank	Type	Marketability	Return	Volume
ABN AMRO	Closed-end equity fund	Stock Exchange	Average 8.6%	€467 million
ING/Postbank	Fixed interest certificates	No	2.1-3%	€530 million
ASN Bank	Open end equity fund	Limited	Average 4.3%	€95 million
Triodos Bank	Semi open-ended equity fund	Limited	Average 4.4%	€124 million

3.3.2 Investment Funds

The evolution of sustainable investment funds has corresponded to increasing complexity in the assessment of investment eligibility. First generation funds solely employ exclusionary social and/or environmental criteria; second generation funds use positive criteria that concentrate on progressive social and/or environmental policies and practices; and third generation funds apply both exclusionary and positive criteria to assess and select potential investments, and "attention is paid to relative performance within a sector (best-in-class method)"[97].

93 2.5% tax advantage
94 SenterNovem, 2007.
95 Rabobank, 2006.
96 Jeucken, 2004.
97 ibid

Linking Emerging Environmental Leaders to Conventional Investment Strategies

Since its launch in 1997, UBS (Lux) Equity Fund – Eco Performance – has demonstrated solid performance. Within four years, total assets had reached nearly US$250 million[98], at which time it became one of the world's largest "green" investment funds, with 80% of assets being directed to eco/social-leaders and 20% to eco-innovators[99]. According to UBS, this fund was driven by an understanding that "higher eco-efficiency leads to cost savings, and this in turn leads to greater profit, making for attractive returns"[100]. Also, by adding emerging environmental leaders to conventional investment strategies, the bank has realized new and promising investment opportunities in the areas of fuel cell technology, organic supermarket operations, improving water quality, and others. Before investment decisions are made, the growth potential, corporate strategy and management quality of a candidate firm are also analyzed by UBS, in collaboration with an independent network of environmental support specialists.

Clean Energy Targeted Fund

Building on the success and experience with its Eco Performance Equity Fund, UBS' Asset Management group launched a related investment vehicle in mid-2005: The UBS (Lux) Equity Fund - Future Energy. Similar to Eco Performance, this fund's investments are earmarked for companies that meet pre-defined, energy-related criteria, have high potential returns, and possess top quality products and services. According to UBS, driving this product's development was a set of interrelated forces, such as: the need to invest in low-cost solutions to cover future energy demand; global warming; energy market deregulation; and high energy prices. This product also grew out of the bank's understanding that innovative energy technology and service providers, energy suppliers and manufacturers in the energy sector are "set to gain substantial market share… (and) those companies which develop the best solutions and strategies have a promising future ahead of them"[101]. The fund's target areas, all of which are directly related to clean energy, include: renewable energy and energy efficient production; services; applications; and components.[102]

3.3.3 Carbon Funds

Through recent collaboration between multilateral development banks and private financial institutions, a variety of carbon funds have emerged to help finance GHG emission reduction projects. Acting as a collective investment scheme, a carbon fund receives money from investors to purchase CERs/ERUs from existing emissions reduction projects, or invest in new climate-friendly opportunities. Generally, such projects are sourced from a variety of developers, countries and technologies. Where government-led carbon funds offer a compliance tool for governments to meet their Kyoto objectives, private carbon funds offer regulated companies a cost-effective compliance instrument, and also provide traditional investors with cash returns and/or marketing and CSR opportunities.

First Movers in Carbon Funds

One of the first private players to enter the carbon fund space was Rabobank, which invested in the world's first carbon fund, the World Bank Prototype Carbon Fund, and signed a framework agreement with the Dutch Government for the purchase of 10 Mt CERs. Caisse des Depots and Fortis Bank co-sponsored the European Carbon Fund with a respective contribution

98 Converted from 2001 ~$400m Swiss Francs. UBS Global Asset Management, 2006.
99 ibid
100 UBS Global Asset Management, 2006.
101 ibid
102 In marketing the investment vehicle to current and potential clients, the bank highlights five areas that an investor should expect to achieve through the UBS (Lux) Equity Fund – Future Energy. These stakeholder objectives are to: support forward-looking and efficient technologies; participate, early on, in a growth market; make a lasting contribution to improving the efficiency of energy systems; make an active contribution to solving environmental problems; and experience a good chance of achieving attractive returns.

of €5 million and €5 million. Credit Suisse, HSBC, Société Générale and JPMorgan have put a total of €00 million in Trading Emissions plc, an innovative carbon vehicle listed on the London Stock Exchange, which acquires carbon credits and provides equity and loans to emission reduction projects.

3.3.4 Cat Bond Funds

Few products are currently offered by commercial banks in the area of adaptation to climate change impacts; however, in the future, this will likely change, as agriculture, tourism, construction and other sectors require higher levels of investment to tackle the effects of climate change.

■ Hedging Climate-Related Physical Risks

As one of the only banks to offer a product geared towards coping with natural disasters linked to climate change, Credit Suisse Group offers the Leu Prima Cat Bond Fund. This vehicle allows for the hedging of climate-related physical risks, such as flooding or drought, which are difficult to insure in the traditional insurance market. Launched in 2002, this first-ever global public fund to invest solely in cat bonds became instantly popular among investors, initially attracting over US$240 million. The demand was so high that the first fund was required to close several months post-launch, with another similar vehicle being introduced in 2003 [103]. At a size of US$535 million, in 2005, the Leu Prima Cat Bond Fund continues to show a strong ranking performance[104] [105].

3.4 Insurance

The insurance sector can generally be divided into two categories: Life Insurance; and General (Non-Life) Insurance[106]. "Green" insurance falls under the latter and typically encompasses two product areas: 1) those which allow an insurance premium differentiation on the basis of environmentally relevant characteristics; and 2) Insurance products specifically tailored for clean technologies and emissions reducing activities.

Table 4: Insurance Product & Service Summary Chart

Product	Key Product Designs and Results/Potential	Bank	Region
Auto Insurance	Pay As You Drive™ Insurance. Mileage-based Insurance.	Aviva, GMAC Insurance	Europe and North America
	10% discount for hybrid and fuel efficient vehicles. Bank can also choose to offset vehicle's annual emissions (e.g. 20% emissions offset by CFS through Climate Care).[2]	CFS, Aviva	Europe and North America
	Recycling Insurance. Customer pays less for car insurance, by up to 20%, if recycled parts are used when vehicle is damaged and requires service.	Credit Suisse	Europe

103 Environmental Finance. 2003.
104 Clariden Leu: The Platform for Growth. Media Conference. April 27 2006.
105 Since 2003, Credit Suisse Group has launched another similar fund; this one targeting "man-made risks" (e.g. catastrophes that are triggered by human actions, such as those associated with terrorism).
106 In 2004, insurance premiums grew by 9.7% to reach US$3.3 trillion, with life insurance premiums growing by 9.8% that year, and general insurance premiums grew by 9.4% as premium rates increased.

Building/ Home Insurance	Green Building Replacement and Upgrade Coverage. Product covers unique type of "green" risks related to the sustainable building industry.	California's Firemen Fund	US
	"Climate Neutral" Home Insurance Policy. First home insurance product to carry out GHG offsetting based on customer usage.	UK ETA	Europe
Business Insurance	Environmental Damage Insurance.	Rabobank	Europe
Carbon Insurance	Contingent Cap Forward for emission reduction trades.	Swiss Re	Europe
	Carbon emission credit guarantees.	AIG, Marsh	Europe

3.4.1 Auto Insurance

■ Linking Insurance Premium to Vehicle Usage

Pay As You Drive™ insurance, offered by several European and North American insurance firms, acts as an incentive for vehicle owners to drive less by tying the insurance premium to actual vehicle usage. UK-based Aviva and Germany's Versicherungen and Gerling insurance companies currently offer this product. In 2007, Aviva reported on Norwich Union UK's Pay As You Drive™ insurance product that employs telematics technology to assess where, when and how far customers drive. According to the company, this feature is to provide clients with additional "control, choice and flexibility over their premiums"[107]. Using 1,500 young drivers, Aviva piloted this program, and found that it helped reduce night-time driving, while resulting in a 20% reduction in car accidents and premiums dropping by approximately 30%. These finding led to the September 2006 launch of the Pay As You Drive™ product aimed at both young drivers and lower mileage drivers (under 8,000 miles per year). In North America, these packages are offered by several Aviva subsidiaries and GMAC Insurance, the latter of which also provides mileage-based insurance discounts, up to 40%, for customers using OnStar global positioning systems.

3.4.2 Home & Business Insurance

■ Green Building Coverage

Conventional insurance products largely fail to support the unique coverage associated with green building projects, resulting from "complex requirements and regulations, specialized materials, and systems"[108]. In response, the California Fireman's Fund has launched a "first of its kind" Green-Gard Certified Green Building Replacement and Upgrade Coverage. This specialized product insures customers' investments in new, energy/water-efficient homes and green renovations for existing buildings. The scheme is also designed to offer property upgrades, with options to rebuild with green alternatives, including: EnergyStar® rated electrical systems; interior lighting systems that meet LEED or Green Globe requirements; water efficient interior plumping; and energy EnergyStar® qualified roof and insulation materials. In the case of property loss, Green-Gard clients are visited by a LEED accredited professional, responsible for overseeing the repairs. The cost of this supplementary service is covered entirely by the Fireman's Fund. Further, in the case of income loss due to the use of alternative power generating equipment, this coverage provides income reimbursement.

107 Aviva. 2007.
108 Fireman's Fund, 2007.

Carbon Neutral Home Insurance

In 2007, the UK Environmental Transport Association (ETA) designed a home insurance product that offsets global GHG emissions. ETA's "climate neutral" home insurance policy aims to offset all emissions from a user's home, as well as their vehicle, and in doing so achieve carbon neutrality. This ambitious offsetting scheme is believed to be the first "green" home insurance product of its kind, with the ETA undertaking international carbon offset opportunities based on customer usage.[109]

Covering Environmentally Vulnerable SMEs

In 2006, UK's AXA Insurance conducted a study that found approximately 70% of the country's small businesses, located in high-risk areas, are currently unconcerned about flooding, with 90% failing to insure adequately against climate risks. The report also revealed: only 8% of UK small businesses in flooded areas received any form of flood risk warning; and only 1 in 4 perceived climate change to be an actual threat to their business[110]. These findings are surprising given that the average claim for UK business interruptions soared by nearly 60%, between 2001 and 2004[111]. In response to findings like AXA's, the design and introduction of "green" business insurance products are growing rapidly.

3.4.3 Carbon Insurance

Covering Price Volatility and Kyoto Project Risks

Many risks are inherent in CDM and JI transactions, as well as low-carbon project assessment and development activities. Swiss Re offers an insurance product to manage carbon credit price volatility and collaborated with the Austrian insurer Garant to develop a carbon-delivery insurance product based on Emission Reduction Purchase Agreements contracts. AIG, the world's largest insurance firm, and Marsh, the world's largest insurance broker, cover all the traditional and Kyoto specific risks associated with CDM and JI projects. Swiss-Re also created the "Contingent Cap Forward for Emissions Reduction Trades," an insurance product that covers counter-party and delivery risks faced by buyers of EU allowances to ensure that carbon transactions are completed within a certain cost range.

Covering Credit Guarantees and Launching Ad-Hoc Eco-Insurance Products

In late 2006, AIG partnered with Marsh to launch carbon emissions credit guarantees as well as other new renewable energy-related insurance products, focused on enabling private entities to participate in offset projects and emissions trading. These, among other related initiatives, have resulted in AIG being ranked by Ceres as a "thought-leader on climate issues"[112]. Several European insurance companies have also designed ad-hoc products for renewable and energy efficient technology users. For instance, Lloyds of London offers insurance that protects the installer or owner of an energy efficiency project or technology from not meeting the scheme's predicted energy savings, and Munich-Re provides ad-hoc insurance to cover the risks associated with geothermal exploration.

109 ETA, 2007.
110 AXA
111 ibid
112 Ceres, 2006.

4 Product and Opportunity Assessment

Given that most "green" financial products and services have only recently been launched, it is challenging to gauge, with any level of certainty, their current or potential success in the financial services sector. However, a high-level overview of best practices and lessons learned was performed (see Appendix 1), and opportunities can be grouped as follows: 1) Emerging Opportunities; 2) "First Mover" Opportunities; 3) Partnership and Product Alignment Opportunities; and 4) Marketing and Strategy Opportunities.

4.1 Emerging Opportunities

4.1.1 Green Commercial Real Estate

Develop products and services aimed at the green commercial building sector. In North America, the green commercial building sector is growing at a phenomenal pace. By the end of 2006, over 6% of the US' non-residential construction, equivalent to approximately US$15 billion, was considered 'green', whereas six years ago this segment was less than 1%. In 2007, according to a McGraw-Hill Construction survey, it is estimated that nearly two-thirds of US builders will opt for green over conventional designs.

Today, the US federal government, 15 states and 46 cities require new public buildings to meet the US Green Building Council's LEED standards, and 4 of the 15 states offer incentives to develop certified green buildings. Expedited permit procedures for these projects, such as those taking place in Chicago and Pasadena, have driven demand for builders committed to building green. With these observations in mind, private financial institutions that begin to invest today - both internally (employee knowledge) and externally (building finance) – in North America's green buildings sector will likely see significant benefits down the road.

As in most potential growth markets, players that enter this space early on can build the credibility, reputation and expertise required to enjoy a competitive edge as the market flourishes. The faster this growth occurs, the better positioned and experienced a firm will be to effectively supply growing demand, prompting further credibility and enhanced reputation in the market. Keeping an eye open for "green" product blueprints (e.g. TAF/Tridel®), as well as the quantitative and qualitative data (economic, environmental and energy-related) emerging from novel pilots, will prepare some banks to emerge as leaders in the growing "green" commercial building market.

4.1.2 Carbon Market

Capitalize on growing carbon markets. Carbon market products and services are developing at an extraordinary pace, particularly among European and Japanese banks. Many banks consider climate change as the most important environmental issue they face. Setting up emissions trading desks; offering cutting-edge derivatives products based on carbon assets; investing and buying credits from CDM and JI projects; minimizing and offsetting the bank's own GHG emissions are all

likely to become mainstream in one or two years among all major banks in Europe. For North American financial institutions, an opportunity exists to capitalize on emissions trading markets by becoming a "risk taker and market maker"[113] in these rapidly expanding regional and global areas.

With North American carbon regulation still in limbo, the cap and trade framework utilised by the EU ETS provides opportunities for North American banks to learn from the practices and experiences of European financial institutions before carbon regulations are implemented in the US and Canada. Most importantly, learning how to identify and quantify forward revenue streams associated with emissions trading will better position North American banks to exploit clean project finance opportunities. A bank that familiarizes its stakeholders, in general, and employees, in particular, with the complexities of the carbon market may improve its reputation, while ensuring that future carbon market opportunities are accurately identified and pursued

4.1.3 Clean Technology

Support the clean technology sector. Over the coming decades, tapping into clean energy and environmental technology opportunities will continue to require innovative financing packages, developed through a long-term lens. Along with the market valuation of the environmental sector, global investment in clean technology companies expanded rapidly in 2006. The Impax ET50 index, which tracks the largest 50 environmental businesses based on market capitalization (the amount of issued shares multiplied by the share price), rose to just over US$120 billion in 2006, up from $47.5 billion in 2005, and global venture capital and private equity investment in clean technology firms and projects reached over $US7.1 billion, a US$4.4 billion increase over 2005. By 2010, New Energy Finance predicts that the growing environmental industry will see approximately US$100 billion in private equity deals around the world[114].

4.2 "First Mover" Opportunity

4.2.1 Carbon Neutrality

Market the benefits of going carbon neutral, while selling products and services required for customers to reach this ideal. Going carbon neutral, on a product or corporate level, is becoming an accepted practice for many organizations and individuals, while representing unparallel opportunities for product development in the retail banking space. Generally speaking, no other sector has the capacity to reach such a diverse audience with this type of packaged emissions offset deal, nor is there another sector as well connected to provide the real reductions necessary to make a significant dent in global emissions. North America's first banks to pursue corporate-wide or product-focused carbon neutrality will likely achieve reputational benefits and positive, widespread media exposure. Providing products or services that help consumers and business entities reach carbon neutrality is a market in itself, which has yet to be truly capitalized on. With these observations in mind, it is safe to assume that financial pioneers behind innovative offset-related packages will see both reputational and financial gains over inactive competitors.

113 Goldman Sachs.

114 In light of the 2-3% forecasted growth in global energy consumption, over the coming decades, the world's energy needs are likely to double by 2040. In this expanding market, the main winners are expected to be those offering innovative energy solutions (e.g. service providers, suppliers, manufacturers etc.), with limited environmental impacts.

Carbon Neutrality: Product Options

Banking Sector	General Products & Services	Banks	Potential Benefits
Retail Banking	Home Mortgage Auto Loans Credit Cards	CFS mecu Rabobank Barclays	Reputational benefits Customer acquisition and loyalty Environmental awareness Positive Attention from media and stakeholders Strengthen partnership with NGOs
Insurance	Home Insurance Auto Insurance	CIS ETA	

4.3 Stakeholder Alignment Opportunities

4.3.1 Manufacturers

Partner with contractors and manufacturers to offer green financial products, banks become familiar with the entire product value chain; from beginning to end. This enables the bank to tailor its product offerings to meet the long-term needs and goals of its clients, while at the same time strengthening the client-institution relationship. A perfect example of this approach is NRB's Solar Power one-step residential financing product; a collaborative initiative between the bank and a Californian solar installation manufacturing firm.

4.3.2 Government

Align green financial product and service development with federal/state-led environmental or energy policies, targets or incentives. For instance, NRB's Solar Power Loan complements California's million solar roofs program, in which loan holders further benefit from the state-led incentive solar incentive program. The collective public/private environmental and economic goals will help share risk and resources between the state, bank, and solar power manufacturers and contractors. At the same time, these different groups, in partnership, will help deliver key environmental messages and products to a wider range of audiences.

4.3.3 Non-Governmental Organizations

Collaborate with reputable environmentally-oriented NGO organizations or academic groups that focus on environmental issues to develop "green" financial products and services. This approach can be through affinity relationships, supplementary items in product packages, client seminars and workshops, or the development of environmentally-friendly lending criteria. Banks currently pursuing this approach include NRB and CFS.

4.4 Marketing and Strategy Opportunities

4.4.1 "Green" Branding

Establish a structured branding approach to "green" financial products and services. Historically, a number of financial institutions have undermined the power of their brand; however, this is changing as top managers are uncovering its intangible value[115]. According to the CEO of UniCredit, "Branding is crucial and able to inspire internal and external attitude and behaviour towards stakeholders: employees, customers, shareholders, suppliers and local communities"[116]. A structured "green" branding approach, in which global business lines and brands are on one end and local branding strategy are on the other, will play pivotal role in achieving customer loyalty and acquisition, as well as ensure that such products are tailored to the specific needs and demands of local communities. In addition, North American financial institutions could consider family branding or co-branding a suite of "green" financial products and services to strengthen stakeholder relationships and loyalty, such as Bendigo Bank's GreenGeneration™ or mecu's goGreen banking product lines. The proper and consistent branding of innovative products and services can play a powerful role in overcoming knowledge and perception barriers sometimes faced by "green" offerings.

4.4.2 Employing Traditionally Successful Product Features

Understand and design "green" banking products like traditional banking products. Why do customers opt for certain products over others? Reasons may include: flexibility; user-friendliness; virtual access; ease of personal management; bundled package options; or low-risk. These types of attractive product features should rest at the core of any "green" financial design, in order to appeal to the widest group of stakeholders possible.

4.4.3 Dismantling Barriers

Identify and address barriers (e.g., lack of product information, inflexibility, or uncertainty on costs versus returns) to "green" financial product or service uptake. To accomplish this, all business units and bank employees should be fully educated and well-versed on all environmental instruments and packages. This understanding should include the potential savings and benefits (environment, energy and economic) associated with each product and service, as well as which client types are best suited to exploit these opportunities. Moreover, proactively engaging bank customers and employees will play an important role in overcoming barriers to the uptake of "green" banking product and service. Potential engagement techniques may include inviting traditional consumer and business clients to participate in "green" seminars, workshops and/or industry discussion forums. In terms of going beyond the traditional banker-client relationship to break down perceptions/knowledge barriers, consider the case of NRB. Besides opening its doors to 200+ customers to learn about its LEED-certified facility, NRB also invited some 20-25 conventional developers to a green building seminar to learn about environmentally-friendly building materials, practices and potential cost savings[117].

115 The Banker, 2007.
116 ibid
117 NRB, 2007.

4.4.4 Stakeholder Research

Undertake market research and analyses on the environmentally-related needs and desires of individual customer segments. This information can be used to ascertain which customer segments are most likely to consider eco-products complementary to their lifestyles, interests and financial goals. This data can also be complied into a database, which is capable of generating timely green options/recommendations (based on a client profile) for customers seeking various financial solutions.

4.4.5 Stakeholder Outreach and Marketing

Overcome perception barriers and stimulate demand for "green" products through creative, educational marketing campaigns. Examples of notable initiatives, all of which having been launched in recent months, include campaigns designed by VanCity and Bendigo Bank. In marketing its Clean Air Auto Loans for hybrid vehicles, VanCity currently runs billboard ads that present a car driving through a mountain range, accompanies by the phrase: "No reason why a car loan can't change more than just your car"[118]. And, in their television commercial for green home and car loans marketed under their GreenGeneration™ family brand, Australia's Bendigo Bank refers to the annual tonnes of carbon an average car emits. Following this message is an announcement that Bendigo now offsets those carbon emissions by planting native forests, once customers choose the GreenGeneration™ Auto Loan. The commercial's closing line reads: "Giving you a clearer conscience and a cleaner environment"[119].

4.5 Summary of Lessons Learned

Retail Banking

- There continues to be minimal environmental leadership, or at least awareness, in North America's retail banking sector. The popular perception is that the consumer and SME banking space remains relatively neutral in terms of environmental impact; a stance that overlooks the formidable influence, positive and negative, that clients wield over the use and management of natural resources[120].
- Opportunities in the retail banking sector are the most diverse. A variety of "green" retail financial products and services have been introduced, mostly appearing in Europe, meeting the needs of more environmentally-oriented customers. However, the real innovation in the area of retail banking is not simply the introduction of new niche "green" products for retail clients, but the integration of environmental incentives into mainstream offerings. These should be aimed at encouraging private consumers and SMEs to pursue more sustainable choices and practices, without requiring them to dramatically alter their lifestyles or business approaches. This challenge can arguably be met through innovative designs, strategic marketing or outreach initiatives, and building on lessons learned by others.
- Though experience with "green" mortgage products has made the process of valuing energy savings clearer and more verifiable, these financial products have, perhaps surprisingly, fallen short of industry expectations. According to some industry experts, this reality is at least partially due to the lack of consumer awareness about the financial products. In the words of Bruce Everly, a General Manger of EIM, a US energy services firm, "This is the ultimate niche market…

118 VanCity Clean Car Loan Ad.
119 Bendigo Website.
120 For example, home mortgages are an area of significant environmental impact, because accessibility to credit can essentially shape "structure, density and quality of residential developments, with implications for transport, waste management and related areas" (ACF, 2004).

You've got something better than kryptonite here, and nobody knows about it"[121]. In his experience, Everly observes that the majority of customers who are offered a green mortgage will likely see an additional US$10,000 automatically tagged to the loan; therefore, to avoid scaring off potential customers, brokers have been reluctant to actively push these products.[122]

Corporate & Investment Banking

- Though to a lesser extent than what is occurring in Europe, North American banks are becoming increasingly involved in securing and contributing to "green" project financing arrangements. The emergence of innovative project finance instruments for large renewable energy projects is being driven by increased public attention to environmental sustainability and national energy security, and the expansion of regional "green" power markets, supported through government initiatives, such as Renewable Portfolio Standards (RPS) and production tax credits.
- Valuable designs and lesson learning opportunities are also emerging outside the traditional private banking space with respect to financing priority environmental infrastructure. In particular, EcoSecuritization techniques are now being employed to gauge the feasibility of financing this 'natural infrastructure,' which may enable the introduction of a new debt instrument that uses the entire spectrum of natural assets as security.
- In interviews, most banks currently consider climate change as the most important environmental issue they face. In response, carbon commodity products and services are developing at an extraordinary pace, particularly among European and Japanese banks. The innovation displayed by the front runners in carbon finance is based on their capacity to identify opportunities for carbon asset generation across all types of financing activities (e.g. BNP Paribas). Setting up emissions trading desks; offering cutting-edge derivatives products based on carbon assets; investing and buying credits from CDM and JI projects; minimizing and offsetting the bank's own GHG emissions are all likely to become mainstream in one or two years among all major banks in Europe. North American banks, the majority of which have not yet begun activities related to carbon finance and emissions trading, are likely to follow suit, especially once GHG emissions regulations are implemented across Canada and the US. Similar to what has already occurred in Europe, once under a carbon constrained regime, North American banks will be driven to provide products and services to help clients meet compliance, while also participating in market speculation.
- In the corporate and investment banking space, "green" best practices can also be associated with the measurement, disclosure and setting of reduction targets for GHG and water use intensity of loans and equity investments in projects and companies. Therefore, banks are being recognized as innovative not simply if they finance renewable energy projects, but if renewables contribute to a significant percentage of their total energy portfolio. The introduction and adherence to strict exclusion criteria in sector-specific lending policies can lead to reputational and environmental benefits, as well as reductions in both credit and regulatory risks.

Asset Management

- In Asset Management, the scope of risk management practices is expanding, whereby the extent to which these institutions are concerned with managing operational and compliance risk now equals their concern for managing market and credit risk123. Here, challenges and opportunities exist for those who incorporate the entire spectrum of risk-related issues into their business practices. Risk aside, the most forward-looking firms are also likely to provide broad consideration to environmental issues when financing companies through the capital market, as well as when providing IPO support to companies in the sectors of clean technology and carbon credit development services.

121 SustainableBusiness.com, 2006.
122 ibid
123 ibid

- In terms of product development, innovative North American Asset Management practices are likely to direct efforts into the management and growth of "green" funds. As shown in Europe, funds aimed at supporting "green" business models can become mainstream and result in financial gain. In some cases, government policy has played a critical factor in the success of certain "green" funds, such as the Dutch Green Fund experience. In other cases, state initiatives were unnecessary for these products to emerge or achieve success. For example, the UBS (Lux) Equity Fund – Eco Performance experience provides a perfect example of how privately-led environmental vision can be wed with wealth management to achieve attractive returns. This investment vehicle's successor, the UBS (Lux) Equity Fund – Future Energy has also achieved impressive returns, since being launched in 2005.

Insurance

- Similar to investment funds, insurance is a space where "green" versions are likely to grow significantly, over the coming years. Currently available products include some of the following features: insurance premiums linked to vehicle usage; coverage for LEED-certified buildings; carbon neutral home/auto insurance; coverage for environmentally vulnerable SMEs; coverage for price volatility and Kyoto project risks; coverage for emission reduction credit guarantees; and ad-hoc insurance products for renewable/clean energy projects.
- Other insurance product ideas, not explored above, may soon be available to cover climate-related losses to companies. Specific proposals include: portfolios of comprehensive general liability (CGL) policies that provide coverage for paying settlements (or defending against) lawsuits brought against firms for causing property damage associated with climate change; errors and omissions (E&O) insurance may provide firm coverage for claims by public entities or citizens that corporate management engaged in wrongful acts by failing to mitigate the release of GHG emissions into the atmosphere; and business interruption insurance may be tweaked to cover the loss of company profits resulting from climate-related events, such as flooding.

5 Conclusion

Many "green" financial products and services, reviewed above, either remain in the nascent stage of development/ implementation or data related to their success/failure has not yet been generated or reported. Due to this lack of experience and data, any rigorous measurement or ranking of these designs would be overly speculative and risk misrepresenting some designs over others. Looking ahead, however, as more quantitative and qualitative track records emerge for these products, the following questions should be considered when gauging product performance or promise:

- Does it achieve high levels of financial performance?
- Does it attract a particularly large number of customers?
- Does it last over time, and is re-launched year by year?
- Does it raise the environmental awareness among all stakeholders, including clients and employees?
- Does it receive positive attention from the media and environmental NGOs?
- Does it prompt the introduction of other environmental products and services?
- Does it improve brand recognition and corporate image among stakeholders?

As environmental understanding and awareness grows in North America, so too will the demand for products and services aimed at facilitating the advancement of environmentally sustainable lives, livelihoods and communities. At the same time, this demand will also expose new business opportunities, while leading to an increased diversification of products and services found in multiple sectors. Consequently, organizations that have the foresight and capacity to tap into this desire by consumers to affect positive environmental change will likely experience widespread benefits; from improved corporate image to increased growth and competitiveness in the marketplace. Given their intermediary role in the economy and far-reaching customer base, financial institutions will be well-positioned to reap financial and non-financial rewards, while furthering their contribution toward sustainable development.

Glossary

Asset Management	Also known as Wealth Management, this space focuses on providing financial advice to clients on estate planning, mutual funds, managed asset programs, taxes, trust services, international financial planning, global private banking and full-service and discount brokerages.
Bonds	A tradable (securitized) form of debt. Normally bonds pay a fixed amount of interest each year and are issued for a fixed amount of time, after which they are repaid by the organization that issued them. They normally form part of the general long-term liabilities of the organization that issued them.
Capitalization	The market's valuation of a company; the number of shares in issue multiplied by the share price.
Cat Bonds	(Catastrophe Bonds) are securities whose payments depend on the probability that a catastrophe will occur, such as an earthquake or flooding. Cat Bonds are traditionally issued by large insurance or reinsurance companies.
Eco-Securitization	Using securitization techniques (widely used to repackage and sell on portfolios of mortgages, car loans etc.) to extract value from, and therefore protect, natural resources. Properly structured, eco-securitization assets, with appropriate levels of risk, could be attractive to corporate pension funds and other long-term investors averse to risk. Today, IFC and DFID are undertaking a program to examine the feasibility of this technique to finance sustainable forestry.
Environmental Attribute Financing	A portion of a project debt service is paid through the sale of environmental attributes generated by the project.
Equities	A form of security issued by companies. An equity holder owns a share of the company and has a vote in the company, with the right (but no guarantee) of payment of a dividend. Only entitled to pay out after all other creditors, including banks and bonds, have been satisfied.
Green Construction	Provide lending at favourable terms for environmentally-sound construction activities
Green Leasing	Provide business leases for sustainable technologies
Futures	Agreements to buy or sell a fixed quantity of products for delivery at a specified date. Futures contracts are based on a definite purchase or sale and therefore contain risk equal to the underlying product. They can be used as a hedge against changes in the price of goods, or for speculation. Financial futures include: currencies, interest rates, bond markets, and stock market indices.
Non-Recourse	Used particularly in project finance to refer to financing where there is no potential of financial claims against any other parties in a project (other than contractual obligations), thus the project must be viable on its own terms. Similarly, limited recourse means that with some risks investors can make recourse to other parties, but other risks will have to be borne by investors.
Options	A derivative instrument. The buyer of an option gets the right to buy or sell at a fixed price. Not an obligation, therefore you are buying the right, which you only take up if it is profitable to do so. The right can either expire on a fixed date (can only be exercised on that date) or at any point leading up to the expiry date. Traded options can be bought or sold ay any time, and are therefore a market in themselves.
Project Finance	Financing of a specific project, normally on a non-recourse basis. This largely has a specific location and must last for a fixed period of time. Typically used for financing private sector infrastructure projects. Normally the revenue streams are reasonably predictable and this enables finance to be obtained at a reasonable cost.

Retail Banking	Covers personal and business banking products and services designed for individuals, households and SMEs, rather than large corporate or institutional clients. Personal and business customers can choose from a wide range of account packages, including online, telephone, Automated Banking Machine and branch banking. Products and services in the retail space include loans and mortgages, debit and credit card services, travelers' cheques, money orders, overdraft protection, cash management services and insurance, among others.
Securities	Usually used to refer to any form of tradable investment instrument, such as bonds and equities.
Securitization	Involves isolating an asset or pool of assets, against which bonds are issued. The yield from those assets is pays the bond coupons.
Securities	Usually used to refer to any form of tradable investment instrument, such as bonds and equities.

Bibliography

ABN AMRO. 2007. ABN AMRO Creates World's First Climate Change and Environment Index. Press Release. March 27. Sydney. http://www.abnamro.com.au/content/media/articles/323.asp

ACF (Australian Conservation Foundation Inc). 2006. False Profits: How Australia's Finance Sector Undervalues the Environment. www.acfonline.org.au

ACT (Australian Conservation Foundation Inc). 2004. Submission to UNEP-FI GRI Working Group on Performance Indicators (Environment) for the International Finance Sector. Prepared by Charles Berger. January. www.acfonline.org

Asia Finance. 2007. A Convenient Truth: ABN Amro Develops Eco-Index. February 23 2007. Prepared by Nick Ferguson. www.financeasia.com

BoA (Bank of America). 2006. Bank of America and Its Customers Support Forest Conservation Programs with Pledge of up to $500,000 to the Nature Conservancy. Press Release. March 29. http://newsroom.bankofamerica.com/index.php?s=press_releases&item=7356

BBR (Banking Business Review). 2007. More UK Banks Offer Green Mortgages. March 22. www.banking-business-review.com

Banksia, 2005. Banksia Environmental Awards 2005. http://www.banksiafdn.com/page_assets/mecu.pdf

BankTrack and WWF (World Wildlife Fund). 2006. Shaping the Future of Sustainable Finance: Moving From Paper Promises to Performance. United Kingdom.

Barclays. 2007a. Barclays Breathe More Easily. Press Release. UK. April 23. http://www.newsroom.barclays.co.uk/content/Detail.asp?ReleaseID=1029&NewsAreaID=2

Barclays. 2007b. Barclays PLC Corporate Responsibility Report 2006.

Bendigo Bank. 2007. Generation Green™. http://www.bendigobank.com.au/generationgreen/

Builder News Magazine, 2004. Green Mortgage. July. http://www.buildernewsmag.com/viewnews.pl?id=4

Calvert, 2007. World Values International Equity Fund Profile. http://www.calvert.com/funds_profile.html?fund=926&keepleftnav=Fund%20Profiles

CBA (Canadian Bankers Association). www.cba.ca

CBC (Canadian Broadcasting Association). 2007. Poll Finds US Consumer Awakening on the Environment. April 20. http://www.cbc.ca/consumer/story/2007/04/20/earth-day.html?ref=rss

CDP (Carbon Disclosure Project). 2006. CDP 4 Project Report 2006: Global FT500. Prepared by Innovest Strategic Value Advisors.

CEC (North American Commission on Environmental Cooperation). 2002. The North American Mosaic: A State of the Environment Report. www.cec.org/soe

Ceres (Coalition for Environmentally Responsible Economies). 2006. From Risk to Opportunity: How Insurers Can Proactively and Profitably Manage Climate Change. Prepared by Evan Mills and Eugene Lecomte. August.

CFS (Cooperative Financial Services), 2006. The Ethical Consumerism Report. Produced in association with NEF and Future Foundation. July. www.cfs.co.uk

CFS (Cooperative Financial Services), 2004. Co-op Campaigns: The Environment (1998-2004) http://www.cooponline.coop/about_campaigns_environment.html

Christmas, B. 2003. A Lender's Perspective on "Brownfields" Financing in Ontario. CIBC Environmental Risk Management. Presented to 11th Annual Environmental Management Compliance & Engineering Conference. May 15. Toronto.

Citigroup Global Markets. 2007. Climatic Consequences: Investment Implications of a Changing Climate. January 19.

Climate Care and Barclays. Collaborative Air Travel Site. http://www.climatecare.org/barclays

CNN Money. 2006. Green Building Goes Big. June 1. www.cnnmoney.com

Credit Suisse. 2006. Global Trends: Speculating on a Worst Case Scenario. Online Publications. October. http://emagazine.credit-suisse.com

CSRwire, 2006. Wells Fargo Finances 12th LEED® Certified Building. August 17. www.csrwire.com

CUNA Mutual Group,. 2006. Innovation Key to Credit Unions Lending Success. November 14. http://www.cunamutual.com/cmg/newsReleaseDetail/0,1252,16798,00.html

CVCI (Citigroup Venture Capital International). 2007. Overview and Recent News. https://www.citigroupai.com/cvci_overview.htm

DCAP (Chicago Department of Construction and Permits). 2007. Green Permit Program.

Deloitte. 2006. Global Asset Management Industry Outlook: Integrating Strategy with Experience in a Changing World. www.deloitte.com

DSR (Dutch Sustainability Research). 2006. Climate Change and the Role of Banks: A Best Practice Study of Selected International and Dutch Banks. June. www.dsresearch.nl

EC (European Commission). 1997. The Role of Financial Institutions in Achieving Sustainable Development. Report prepared by Delphi International Ltd in association with Ecologic GMBH.

Environmental Finance. 2007(a). In Brief: FTSE4Good Sets Out Climate Criteria. March.

Environmental Finance. 2007(b). Corporate Profile: New Resource Bank (NRB) - Making Their Green, Greener. February.

Environmental Finance. 2007 (c). ABN Amro Launches Climate Change Index. March 29. http://www.environmental-finance.com/onlinews/0329abn.htm

Environmental Finance. 2003. Are Cat Bonds Changing Course? http://www.environmental-finance.com/2003/0304apr/catbonds.htm

Esty, D. and A. Winston. 2006. Green to Gold: How Companies Use Environmental Strategy to Innovate, Create Value and Build Competitive Advantage. New Haven.

ETA (Environmental Transportation Agency). 2007. Britain's First Climate Neutral Home Insurance to Offset Customers' Usage. Press Release. February 1. www.eta.co.uk

EuroMoney Institutional Investor, 2005. http://www.invenergyllc.com/

Fireman's Fund. 2007. Green-Gard Coverages. www.firemansfund.com

Funding Universe. Corporation History: MBNA. http://www.fundinguniverse.com

GreenBiz.com. 2006(a). New Resource Bank Announces Plan to Finance Residential Solar Systems. October 24. San Francisco. www.greenbiz.com

GreenBiz.com. 2006(b). Survey: Majority of Investment Managers Link Corporate Responsibility to Asset Performance. March 17. http://www.greenbiz.com/news/news_third.cfm?NewsID=30617

GreenBiz.com. 2004. Builders Break Ground on World's Most Environmentally Responsible High Rise Office Building. August 4. www.greenbiz.com

Greener Buildings. 2007. New Bank Aims to Make It Easier to Build Green. Produced by GreenBiz.com. February 1. http://www.greenbiz.com/sites/greenerbuildings/news_detail.cfm?NewsID=34525

GreenCard Visa. 2007. Netherlands. http://www.greencardvisa.nl/

Green Car Congress. 2007. Reported US Sales of Hybrids Up 26% in April. May 3. http://www.greencarcongress.com/2007/05/reported_us_sal.html

Grundon. 2005. Financial Close for Slough Energy from Waste Facility Announced by Lakeside Energy from Waste Ltd. News Bulletin. October 3. http://www.grundon.com

Harris, A. 2005. Supporting Climate Change Solutions. VanCity Presentation for Pollution Probe on Complementary Mechanisms. June 28. www.pollutionprobe.org/Happening/pdfs/complementarymeasJune28/harris.pdf

IISD (International Institute for Sustainable Development). 2007. Business and Sustainable Development: A Global Guide. www.bsdglobal.com

Innis, R. 2006. A Theory of Consumer Boycotts under Symmetric Information and Imperfect Competition. Economic Journal. Vol. 116, issue 511, pg 355-381.

Institute for Market Transformation to Sustainability. 2005. Special Report: Green Mortgage-Backed Securities One Step Closer to Reality. Building Operating Management Magazine. December. http://www.facilitiesnet.com/bom/article.asp?id=3623

ISO (International Standards Organization). 1999. Financing Catastrophe Risk: Capital Market Solutions.. Studies and Analyses. http://www.iso.com/studies_analyses/hurricane_experience/financingrisk.html#14

Labatt, S. and R.W. White. 2007. Carbon Finance: The Financial Implications of Climate Change. John Wiley & Sons Inc.

Liu, Peter. Founder and CEO of New Resource Bank (NRB). Interview conducted in February 2007.

Jeucken, M. 2004. Sustainability in Finance: Banking on the Planet.

Jeucken, M. 2001. Sustainable Finance and Banking – Slow starters are gaining pace. Based on Jeucken's book Sustainable Finance and Banking. 2001. www.sustainability-in-finance.com

MoneyNews. 2006. Barclays Blue Debt Card is Really Green. General Finance. November 1. UK. http://www.moneynews.co.uk/2595/barclays-blue-debit-card-is-really-green/

MyFinances.co.uk. 2007. Green Mortgages Arrive. Mortgage News. March 22. www.myfinances.co.uk

New Resource Institute (NRB). 2007. Interview with Peter Liu (CEO).

NRTEE (National Roundtable on the Environment and Economy). 2004. Scan of the Community Investment Sector in Canada. Prepared by Coro Strandberg and Brenda Plant. September. www.nrtee-trnee.ca

PR NewsWire Europe. 2006. EcoSecurities Group

PWC (PriceWaterhouseCoopers). 2007. 10th Annual Global CEO Survey. www.pwc.com

Rabobank, 2006. Annual Sustainability Report (2005).

SAM (Sustainable Asset Management) Group and PWC (PricewaterhouseCoopers). 2007. The Sustainability Yearbook 2007: Insights from SAM's Sustainability Research and PwC's Approach to Supply Chain Risks. Executive Summary. http://www.sam-group.com/downloads/publications/sustainability_yearbook2007_short.pdf

SenterNovem. 2007. Green Dutch Scheme. www.senternovem.nl

Shorebank Pacific. 2005. Salmon Nation Visa Application Site. http://www.eco-bank.com/salmon_nation.html

Social Funds. 2007. New Bond Index Focuses on Climate Change. March 6. http://www.socialfunds.com/news/article.cgi/2244.html

Stern, N. 2006. Stern Review on the Economics of Climate Change. October 30. www.hm-treasury.gov.uk

Strandberg, C. 2005. Best Practices in Sustainable Finance. Strandberg Consulting.

Starogiannis, D. 2007. UNEP-FI Presentation: Greening Financial Products. EuroBank EFG. January.

Strategic Counsel Poll. 2007. State of Canadian Public Opinion: The Greening of Canada. Globe & Mail and CTV. Toronto, Ottawa.

Sustainable Industries. 2007. Bank of America Combats Climate Change. March 7. http://www.sijournal.com/breakingnews/6359587.html

The Banker. 2007. The New Eco-Warriors. January.

The Guardian. 2007. Small is Beautiful. March. http://environment.guardian.co.uk

Tridel®. 2006. Naturally Better (Marketing Material). www.naturallybetter.ca

UBS Wealth Management Research. 2007. Climate Change: Beyond Weather. www.ubs.com

US-CAP (United States Climate Action Partnership). 2007. General Press Release. January 22. www.us-cap.org

UBS Global Asset Management, 2006. Fund Spotlight: Eco Lux Equity Fund. (Swiss Edition). April. www.ubs.com/2/e/files/0638135se.pdf

US EPA (US Environment Protection Agency). 2007(a). Innovative Financing for Fuel Efficient Technologies. www.epa.gov/smartway/financing.htm

US EPA (US Environment Protection Agency). 2007(b). TV Truck Designers Partner with EPA to Help Truckers Save Money, Reduce Emissions – Keep on Truckin' While Cutting Fuel Costs, Protecting the Environment. March 20. Washington DC. www.epa.gov/smartway/financing.htm

VanCity. 2007. Climate Change Mortgage Website. http://climatechangemortgage.com

VanCity. 2006. Annual Report. www.vancity.com

Wells Fargo & Co. 2006. Wells Fargo Unveils Green Equity Equivalent Investments. Press Release. January 23. https://www.wellsfargo.com/about/csr/ea/news/2006/01-23-06_Green_EQ2

Wells Fargo & Co. 2005. Wells Fargo Finances Development of Green Buildings. June 3. http://www.greenbiz.com/sites/greenerbuildings/news_detail.cfm?NewsID=34525

WestLB. 2006. WestLB Arranges the Largest Project Financing in the Ethanol Space for ASAlliances BioFuels. April 27. www.westlb.de

Westpac. 2006. Stakeholder Impact Report. www.westpac.com.au

Winslow (Winslow Management Company). 2007. Winslow Green Growth Fund. http://www.winslowgreen.com

Williams, Dave. CEO of ShoreBank Pacific. Interview conducted in February 2007.

Willis, A. 2007. Carbon Credit Fund Coming to Canada in CIBC World Markets-Led IPO. June 7. Globe and Mail.

WWF (World Wildlife Fund). 2002. Conservation Finance: Debt-for-Nature Swaps. www.wwf.org

Yale Daily News. 2007. Climate is now a Major Concern. March 27. http://www.yaledailynews.com/articles/view/20389

Appendix 1: Summary Chart on "Green" Financial Products & Services

Retail Banking						
Product or Service Model	Banks Studied	Type of Institution	Region	Status	Key Product(s) and Results or Potential	Lesson Learned
Home Mortgage	Dutch banks	Various	NL	1995	Government led 'green mortgage' initiative. Homeowners and banks have not found the scheme particularly attractive. Product does demonstrate longevity, and has increased demand for green mortgages in the country.	Banks and customers consider the maximum mortgage amount too low (€34,000) and selection criteria too stringent.
Home Mortgage	CFS	Diversified	UK	Pioneered design in 2000	Offers free home energy rating and offsets carbon emissions for every year of loan. During 2005, offset over 50,000 tonnes of CO_2 emissions. Will soon launch added features into portfolio. Success.	Significant environmental benefits. Customer loyalty and acquisition. First Mover Advantage. Potential to improve brand and reputation. CFS believes "eco home loans will become the norm in the future."
Home Mortgage	Abbey, HBOS, Halifax and others	Various	UK	To launch in 2007-2008.	Green mortgages have only been announced by these banks, some of which are the largest mortgage providers in the country.	UK Government announcement stimulated recent surge of interest in 'green' mortgages. Align product design with state-led initiatives and commitments.
Home Mortgage	Bendigo Bank	Credit Union	AU	2004	Generation Green™ Home Loan. Success.	Offered to both new and old homes, so those with existing mortgages can take advantage of discounted rates. Notable savings. All projects must exceed state requirements.

Home Mortgage	VanCity	Credit Union	CD	Introduced in 2007.	Climate Change Mortgage. High Potential for environmental benefits.	Innovative. All funds that would have been directed into marketing materials and practices are channeled into a fund to fight climate change. Too soon to measure success or draw lessons learned.
Energy Efficient Mortgage	Citigroup	Diversified	US	2004	Product developed by Fannie Mae and targeted to low and middle-income consumers. Structured so electricity savings from energy efficiency are counted as income for the purpose of the borrower's qualifying ratio. Citi plans to enhance product and increase distribution outlets if increase demand is realized.	Growing consumer demand for the product, but low product uptake since being introduced. Expectation is that newer products, such as the solar home equity loan, will stimulate future demand for EEMs.
Power-Oriented Home Mortgage	N/A	N/A	N/A	Proposed design.	Mortgage design provides an incentive for homeowners to use renewable power. Design focuses on sustainable behaviour or customer, rather than on physical infrastructure of their residence.	Growing opportunity to design green power-oriented loans for consumers, particularly due to high environmental benefits, high cost savings, and increased accessibility to green power generation.
Commercial Building Loan	NRB, Wells Fargo, TAF/ Tridel®	Various	North America	Introduced in 2006-2007	Green loans for new condominium construction. These projects encompass innovations in water, air, energy and waste management, as well as smart building technologies. Buildings must demonstrate 25%+ energy savings over conventional design.	Green building development is a new area and, without a track record, emissions and energy savings generated must be quantified through integrated computer models. Banks should keep abreast of loan programs, as well as the quantification methods used to measure benefits.

Home Equity Loan	Citigroup, NRB, Bendigo, Wainwright Bank & Trust, CFS, VanCity	Various	Various	2005-2007	NRB's One-Step Solar Financing. Takes place over a 25-year term, equal to the same period of time as the solar panel warranty. High potential. Citigroup unveiled its solar home equity loan in 2006, with the goal of driving consumer adoption of home solar electric systems.	Product is low-cost, flexible, with potentially high environmental benefits. Other strengths: partnership with manufacturer; and alignment with state-led solar initiative.
Home Equity Loan	Bank of America	Diversified	US	Announced in 2007	Environmental Home Equity Program. For customers using line of Visa Access Credit, bank will donate to an ENGO.	Too soon to measure success or draw lessons leaned.
Auto Loan	VanCity	Credit Union	CD	2004 (Hybrid Loan) 2006 (Redesigned)	Due to poor results, Clean Air Auto Loan for hybrids was redesigned to cover all low-emitting vehicle types. Though the hybrid loan option found "member acquisition and loyalty" and achieved good environmental results, the product experienced low sales.	Poor result of initial design due to limited supply of hybrids in the market, as well as minimal – or altered – public perception/ knowledge and factors associated with marketing. VanCity's updated loan design is expected to fare better.
Auto Loan	mecu	Credit Union	AU	Introduced in 2002	goGreen® Auto Loan product has achieved worldwide recognition as a successful "green" product. Since launch, the bank's number of car loans has increased by 45%. Success.	Bank does not provide "green" car loans for a niche market segment, but considers a GHG rating associated with each vehicle type, and provides an interest rate accordingly. Bank also offsets emissions for each vehicle, during the lifetime of the loan.

Fleet Loan	Bank of America	Diversified	US	Introduced in 2006	Small Business Administration Express loans, with rapid approval process, no collateral and flexible terms, are offered to truck companies to finance fuel efficient technologies. Helps to purchase SmartWay Upgrade kits that can improve fuel efficiency by up to 15%.	Product offered in partnership with US EPA and freight sector. Potential environmental benefits in terms of reducing air pollution and GHG emissions are significant. Substantial cost savings for companies.
Credit Card	CFS, MBNA (BoA), and Shorebank Pacific	Various.	Various.	1994-2006	Affinity Cards. APR 15-22%, many with annual fees. MBNA's Sierra Club Card has been particularly successful. Since 1994, 45,000 members signed up for a Sierra Club Visa, resulting in some US$400,000 being directed to the environmental NGO.	Potential to generate environmental awareness and action among clients. High potential levels of customer acquisition and loyalty. Environmental benefits through third party stakeholders.
Credit Card	Rabobank	Diversified	Europe	Introduced in 2006	Climate Credit Card. Bank will donate to WWF a sum that depends on the energy-intensity of the product or service purchased with the card.	Ambitious and innovative design. Too soon to measure success or draw lessons learned.
Credit Card	Tendris Holding B.V.	N/A	NL	Introduced in 2004. Expected to arrive in the US by 2007.	GreenCard Visa is the world's first credit card to offer an emissions offset program. Since 2004, GreenCard Visa has acquired over 20,000 customers. Cards will soon be made available in Germany and parts of Scandinavia. Product developers are now working bring this type of product to US customers, in 2007	High environmental benefits, as it is designed to offset all GHG emissions associated with the manufacturing and use of products or services, purchased using the card. High, one-time upfront cost.

Credit Card	Barclays	Diversified	UK	Announced in April 2007.	BarclayBreathe Card to include discounts and low borrowing rates to users when buying "green" products and services. 50% of card profits will go to fund emissions reduction projects, worldwide. Product development is associated with the "We're in this together" campaign, a climate change initiative involving 8 other large UK companies. Too soon to measure success or draw lessons learned.	Ambitious and innovative design. Successful approach is based on complementing existing products, like credit cards, with environmentally friendly features.
Credit Card	Bank of America	Diversified	US	Announced in 2007.	Existing cardholders can donate Visa WorldPoints rewards to organizations that invest in GHG reductions or redeem them for "green" merchandise.	Innovative and flexible design. Too soon to measure success or draw lessons learned.
Deposit	Westpac	Bank	AU	Introduced in 2006	Landcare Term Deposit. Australia's first environmental deposit product. For every dollar spent, bank lends equivalent to support sustainable agriculture practices.	In 2006, the Landcare Term Deposit held $1.4m in balances and $2.9m in lending was provided to LandCare farmers.
Deposit	Shorebank	Alternative	US	1995 EcoDeposits® 2005 EcoCash™	EcoDeposits® that are fully-insured deposits earmarked for lending to local energy-efficient companies aiming to reduce waste/pollution, or conserve natural resources. EcoCash™ Checking Account allows for 5 free paper checks a month, with US$3 per check fee applied. A portion of this fee goes to The Climate Trust.	Product growth and longevity. In 2002, EcoDeposits® attracted US$57 million in deposits. By the end of 2004, this amount had climbed to nearly US$82 million, representing over 2,000 investors with an average investment of US$40,000.

Sales	Barclays, HSBC	Diversified	Europe	2006	Barclays' consumers able to offset CO_2 emissions associated with air travel, with no funds being channeled to the bank. This new initiative is in partnership with the offsetting organization Climate Care.	Generates environmental awareness among clients. Strengthens partnerships with community and NGO stakeholders. No financial gains, but may improve customer loyalty and acquisition.

Corporate & Investment Banking						
Product or Service Model	Banks Studied	Type of Institution	Region	Status	Key Product(s) and Results or Potential	Lesson Learned
Project Finance	Rabo-Bank, Barclays, BNP Paribas, Fortis, Standard Chartered Bank, Citigroup, WestLB	Diversified	Global	Various	Specialized service divisions or task forces are dedicated to large renewable energy financing projects. Some banks also specialize in one or more type of renewable technology, such as BNP Paribas (Wind) and WestLB (Biofuels and Wind).	As number of environmentally-focused transactions (in areas such as wind, solar, biofuels and fuel cells etc.) increases, specialized groups ensure the timely dissemination of experiences and information, in order to be better positioned to address customers' needs and identify future related opportunities. A number of new environmental project areas (e.g. green power, alternative fuels, hydrogen) can benefit from this type of multifaceted financing arrangement.
Project Finance	Dexia	Diversified	US	2006	Portfolio financing technique. Combined the financing of a portfolio of wind energy projects to the construction risks associated with the wind farm development.	"Portfolio effect" allowed for stronger wind power projects to enhance the credit of those considered weaker. This increased lenders' confidence that future cashflows could service senior debt.

Partial Credit Guarantees	IFC	Multilateral Bank	Global	Various	IFC provides a bond issued by a municipality to finance environmental projects.	Through a diversification of funding sources and extension of maturities, guarantees can increase rating level to a point that attracts institutional investors.
Securitization	IFC	Multilateral Bank	Global	Various	Securitization transactions for environmental projects. IFC represents a guarantor, or structuring investor, at the mezzanine level of risk. Risk sharing arrangement allows client to transfer risk to IFC.	Can be used for a range of large-scale environmental projects, including those addressing water quality/ scarcity, waste, energy efficiency and sustainable agriculture.
Securitization	IFC and DFID.	Multilateral Bank	Global	Pilot	Eco-Securitization scheme will test the feasibility of financing "natural infrastructure" by linking sustainable management of resources with the funding capacity and requirements of asset-backed securitization.	Goal is to introduce a new debt instrument into global financial markets that uses a full asset range of a sustainable forestry business as security.
Securitization	N/A	N/A	N/A	Proposal	Green Mortgage-Backed Security would package mortgages on buildings that meet specific energy-use and environmental benchmarks. These products would likely be rated higher and worth more as a result of the operational benefits associated with green buildings.	In theory, these products would result in better and cheaper access to capital for borrowers and owners interested in green building investments.
Bond	Various	Diversified and Insurance	Panama	2007	Forest Bond designed to fund large-scale reforestation in Panama. Re-insurers underwrite a 25-yr bond, while investors and frequent users of Panama Canal will purchase the bond. The "long-term nature of the forest bond matches the need for long-term assets by investors."	Reduces risk exposure to insurers, while users of the natural infrastructure pay a reduced premium when purchasing the forest bond. Similar financing arrangements could be used to combat other environmental challenges, such as desertification and water scarcity.

Bond	BNP Paribas, Goldman Sachs, Lehman Brothers	Diversified and Insurance	Global	1995	Cat Bonds provide ancillary capital for risks from natural catastrophes. More than a decade after the first bond was issued, not one has been triggered. They have paid higher than average yield, while diversifying investors' portfolios and improving industry reserves.	Cat Bonds serve as an important example of adaptation to climate change by the financial sector, given their ability to transfer climate-related risk to a wide range of investors.
Technology Leasing	Rabobank	Diversified	Europe	2005	During 2005, Rabobank channeled €103m into green lease arrangements.	Governments can play a significant role in promoting the uptake of this product through public awareness campaigns, business incentive programs, accelerated depreciation arrangements etc.
Product or Service Model	Banks Studied	Type of Institution	Region	Status	Key Product(s) and Results or Potential	Lesson Learned
IPO Support	ABN AMRO, Citigroup, CIBC	Diversified	Global	Various	Citigroup was underwriter of Brasil Ecodiesel's US$177m IPO in the Brazilian and international markets. Company was established in 2003 and is now the largest producer of biodiesel in South America.	Can transcend a wide range of clean energy and environmental sectors. High potential returns.
Private Equity	Bank of America	Diversified	North America	2007	First private equity forest conservation deal. US$65m private equity deal focused on forest conservation, preserving biodiversity and sequestering CO_2. Provides 100% financing, with a discounted rate on the loan, to a non-profit organization to acquire biologically sensitive land and implement sustainable forestry practices and management. Non-profit will purchase land from a US timber company and sell a conservation easement to ensure the forest remains intact, while paying down its BOA debt. Flexible financing allows for sustainable logging operations, in which logging will be limited to a maximum of 3% of the forest, annually. Profits from timber sales will be reinvested to the local economy.	Transaction is aimed to stop fragmentation of coastal redwoods to grow and provide carbon sequestration. Bank will make profits, even though it is providing a discounted rate on the loan. Considered a "commercially-viable rate of return….as growing forests absorb carbon dioxide and thus generate marketable carbon credits."

SRI Equity Research	WestLB	Diversified	Global	Introduced in 2001	WestLB's SRI Equity Research product was a bottom up initiative launched by analysts of the equity strategy team who are still responsible for the product today. WestLB was a true pioneer (in sell side research) in 2001 and, having built up expert knowledge and reputation with respect to the topics dealt with in their research notes, remains ahead of the curve today. It is not easy for competitors to replicate WestLB's expertise. Today, only a few brokers offer a standalone SRI product.	Over time it became evident that there is a business case for the product because of positive client feedback, the increase in the client base and positive reputation effects for the bank overall.
	JPMorgan			2007	JPMorgan provides its clients investment research that explores business risks and opportunities related to climate change. JPMorgan featured climate change investment research looks across sectors and asset classes to examine topics such as potential liabilities of carbon emissions, developments in sustainable and clean fuels, carbon capture, and cap and trading schemes. In particular, the firm concentrates on macro-economic, legislative and business developments and company valuations in light of current and proposed carbon operating constraints. This research has been made publicly available on its website: www.jpmorgan.com/climatechange, in an effort to heighten the awareness and understanding of climate change as it relates to financial markets. In 2007 JPMorgan launched JENI Bond Index – the first corporate bond index that allows investors to account for the risks arising from climate change in a systematic way.	

Eco-Indices	ABN AMRO	Diversified	Europe	2005	ABN AMRO's Private Investor Products business develops innovative eco-products across multiple asset classes. Bank has achieved considerable success in developing structures around commodities such as water and renewable energy. The bank has more than €1 billion in retail client assets under management in this area. Products have shown strong returns. For example, ABN AMRO's water index increased in value by 50% within its first 18 months, well above the average market rise of 10-12%. The solar energy index grew by around 30% in the past year and by 300% over the last three years.)	Eco-Indices have the potential to be "a bonanza to investors who correctly pick the companies most likely to reverse the environmental damage" (Asia Finance, 2007). Water Index - Unlike most other commodities, water cannot be traded on futures and options exchanges. However, private Investors can participate in the growth potential of selected companies by investing in their stock. ABN AMRO has developed an index that enables interested parties to invest in water as a commodity.
Carbon Commodity Products	Barclays Capital, HSBC, Fortis, ABN AMRO, BNP Paribas, JP-Morgan, Goldman Sachs, Citigroup, among others.	Diversified	Europe (some in North America)	2005	Banks provide equity, loans and/or upfront or upon delivery payments to acquire carbon credits from CDM and JI projects. Most acquire carbon credits in order to serve their corporate clients' compliance needs, supply a tradable product to the banks' trading desks, or develop lending products backed by emission allowances and carbon credits.	

Allowance Trading Products	See Previous.	Diversified	Europe	2005	Allowance trading products can include, but are not limited to: discreet placement of physical orders; fixed-or-floating swaps and indexed sales or purchases; options; allowances repurchase structures; market-making for spot and forward trades; and price hedging based on cross-commodities.	

Asset Management						
Product or Service Model	Banks Studied	Type of Institution	Region	Status	Key Product(s) and Results or Potential	Lesson Learned
Green Fund	Dutch Banks	Various	Europe (NL)	Introduced in 1995	In purchasing shares or investing money in Dutch Green Funds, customers receive an income tax discount, and therefore accept a lower interest rate on investment. Banks can offer loans at lower cost to finance "green" projects. A wide range of "green" projects are eligible. In 2005, Rabobank's Green Fund had €2 billion in outstanding loans, with 63,000 investors. Success.	
Green Fund	UBS	Diversified	Europe	1997; and 2005	UBS (Lux) Equity Fund – Eco Performance is the world's largest "green" fund. Within 4 years of launch, total assets had reached US$250m, with 80% of assets going towards eco/social leaders, and 20% to "eco-innovators". Product successor, UBS (Lux) Equity Fund - Future Energy focuses on clean energy sector investments in 4 key business segments that are set "to gain substantial market value." Success.	Intended – and achieved – goals of Eco Performance funds: penetrate growth markets; contribute to solving environmental problems; and achieve attractive returns. Broad diversification of funds reduces risk.
Cat Bond Fund	Credit Suisse	Diversified	Europe	2002	Leu Prima Cat Bond Fund. World's first public fund for catastrophe bonds, a portion of which is aimed at climate-related natural disasters. Initial demand was so high it was forced to close at the end of 2002, and a new fund was launched in 2003. The first fund attracted US$243m. Success.	High potential demand for asset class. Vehicle allows for the hedging of climate risks that are difficult to cover in the traditional insurance market. Consequently, potential for product success remains high as physical risks associated with climate change continue to escalate.

Insurance						
Product or Service Model	Banks Studied	Type of Institution	Region	Status	Key Product(s) and Results or Potential	Lesson Learned
Auto Insurance	Aviva, GMAC Insurance	Insurance	UK, Germany, Canada	2006	Pay As You Drive™ Insurance; Mileage-based Insurance	Using 1,500 young drivers, Aviva piloted this program, and found that it helped reduce night-time driving, while resulting in a 20% reduction in car accidents and premiums dropping by approximately 30%.
Auto Insurance	Cooperative Insurance Services	Diversified	UK	2006	10% discount for hybrid and fuel efficient vehicles. Bank makes a contribution of ~£25 ($47) to Climate Care to offset 20% of the vehicle's annual emissions.	Combines offset services with discount rates.
Building Insurance	California's Firemen Fund	Alternative	US	2006	Green Building Replacement and Upgrade Coverage. Product covers unique type of "green" risks related to the sustainable building industry.	Innovative. Looking ahead, the growing number of green buildings and home appliances will likely see demand for this type of coverage to increase dramatically.
Home Insurance	ETA	Alternative	UK	2007	"Climate Neutral" Home Insurance Policy	First "green" home insurance product to carry out offsetting based on customer usage.
Commodity Insurance	Swiss Re	Global Reinsurer	Europe	2006	Contingent Cap Forward for ER Trades	Covers counterparty and delivery risks faced by buyers of EU allowances and ensures carbon transaction is completed within a cost range. Product has the flexibility to pay out in kind, in cash, or a combination of the two.
Commodity Insurance	AIG and Marsh	Insurance	Europe	2006	Carbon emissions credit guarantees	AIG ranked by CERES as "though leader on climate issues"

Appendix 2: Environmental Trends in North America

Eco-Area	Environmental Trend	Potential Costs & Implications	Potential Opportunities
Climate Change	IPCC predicts that world-wide surface temperatures will increase 1.4-5.8% Celsius between 1990 to 2100 EIA predicts CO_2 emissions from US energy-use alone will increase by 1.2% per year through 2030, with China's emissions expecting to exceed the US' as early as 2009 NCAR projects that global warming caused by GHG emissions is contributing to the accelerated melting of Arctic sea ice	Post-2050, without proper investment, environmental costs associated with climate change are expected to equal 5-20% of global GDP Eco-Refugees: Left unchecked, global warming could result in 200 million refugees from drought or flood. (Stern) Failure to act quickly could result in a global recession (Stern) Impact on food production; Damage to infrastructure; Implications of sea-level rise Altered transmission of contagious diseases	By 2020, global renewable energy, climate change and clean technology markets are anticipated to offer US$2 trillion plus markets. Carbon emission reduction technologies (e.g. fuel switching, efficiency, sequestration etc.); Non-emitting power generation (e.g. renewables, clean coal and nuclear); CHP Micro-generation; Fuel efficient vehicles (e.g. VFFs, hybrids); and alternative fuels Green Buildings (Commercial & Res.); Today, there are only 500 buildings in the US that qualify for LEED status, but over 4,000 under construction that will qualify; By 2010, between US$29-57 billion annually are estimated to be spent on green building developments in the US Carbon Market 1-3% of global GDP will have to be invested before 2050 to effectively reduce GHGs US$125 billion in US capital expenditures on new power generation facilities through 2015

Biodiversity	According to the WWP-UNEP Living Planet Index, there was a 40% decline in the world's species between 1970 and 2000, with the number of terrestrial species declining by 30%, freshwater species by 50%, and marine species by 30% over the same period. Deforestation: Between 2000 and 2005, some 28,000 sq. miles of forest cover worldwide disappeared. MA reports that 54 countries have lost 90% or more of forest cover. The main drivers are agricultural expansion, infrastructure expansion and wood extraction, including for the purposes of fuel (WRI). Over-fishing is severely depleting wild ocean fish stock. A recent study projects the world's commercially harvest fish population will collapse by 2048; widespread illegal and unregulated fishing has nearly destroyed tuna stocks, with the global tuna haul peaking in 2003 at 4.3 million tonnes. Since that time, stocks of tuna have fallen 80-90% worldwide. Invasive species. Bio-invasions or the spread of non-native species are becoming one of the biggest threats to biological diversity. Increased trade and travel provides ample opportunity for the introduction of invasive species.	Results in biodiversity and habitat loss, increased soil erosion and reduced water quality Adds to global warming; 1/5 of current greenhouse gas emissions are from deforestation Overfishing threatens the US$158 billion commercial fish industry No-fishing zones are soon to be enforced by the US North America's freshwater fish, mussels, crayfish and amphibians are under assault from invasives, such as the zebra mussel.	Best practices in Sustainable Forestry Management (SFM) can help protect eco-sensitive areas, while ensuring long-term profits in harvesting & providing forestry products and services. Forestry certification forces eco-considerations to enter consumer choices. Today, nearly 7% of the world's forest cover is certified; nearly a 5-fold increase since 2000. Carbon Sequestration and Offset Projects through reforestation and afforestation; globally, more than US$30 billion is invested in forest assets, mostly through funds. IIED found that global deforestation could be halved through as little as US$5 billion in incentives to forest owners. Curbing deforestation is the most cost-effective way to address global warming (Stern Review) Aquaculture is a US$70 billion global industry, with demand for ocean-farmed fish expected to rise Mangrove reforestation Sustainable management where biodiversity is integrated in agriculture, forestry and fishery sectors Direct payments for ecosystem services, or the transfer of ownership rights to individuals can help conserve biodiversity Identification and early prevention required to address invasive species

Soil & Agriculture	Agricultural lands are increasingly subject to degradation due to erosion, desertification and salinization. These result from growing and harvesting techniques that reduce the amount of organic matter in the soil, increase the water content and help expose soil to wind and water At least 19.4 million ha of cropland and pasture in the US are affected by increased soil salinity Increases in population will lead to a doubling in demand for environmental services, particularly those that support food production. Agriculture must deliver more food and environmental services to more people using less water, land and energy.	By 2060, approximately 25% of US residences located within 500 feet of the coast will be affected by soil erosion Increasing pressure on land availability, particularly due to urban sprawl and development, is leading to higher costs of land and transportation	Sustainable agriculture management and techniques; (e.g. crop rotation, improved residue management, reduced tillage, control buffers) Brownfields revitalization Biotechnology
Water	Scarcity: Between 2004 and 2005, prolonged drought conditions continued to affect parts of Africa, Australia and the western US In 2005, parts of Western Europe were also hit by severe drought. Quality: More than one billion people lack access to drinkable water	Floods, droughts Competing interests in fresh water allocation (scarcity)	Multi-stakeholder water management projects Water is becoming a business issue; companies (e.g. Dow, GE, Dupont) are designing units focused on the science of desalination, water purification, containment removal, and water recycling
Air	Quality: Between 1995 and 2003, total releases of industrial release into the air (e.g. VOCs, NOx, SO2) decreased by 20%. (CEC) In North America, 5 industries – primary metals, chemical manufacturing, electric utilities, metals production, and hazardous waste management/solvent recovery – accounted for nearly three-quarters of total pollutants in 2003	Smog and Acid Rain Thinning of the ozone layer Poor health	Alternative fuels Fuel efficient vehicles Non-emitting sources CAC Emissions Trading Markets (SO2 and NOx)

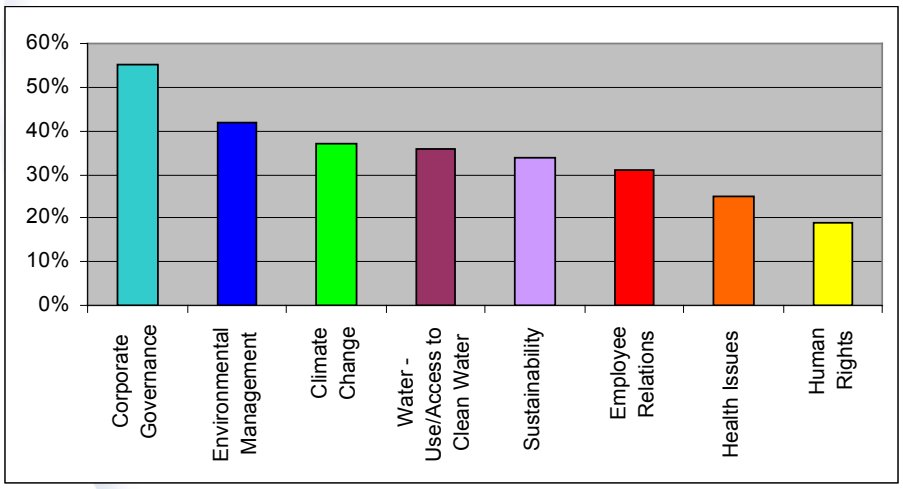
Waste	North Americans are the world's largest producers of municipal solid waste. The US alone produces 1.4 billion tons of waste annually, most of which ends up in landfills North America produces over 227 million tons of hazardous waste annually. These are wastes that are ignitable, corrosive, reactive, or toxic as defined by the Basel Convention.	Landfill gas (methane) Groundwater pollution	In America, an estimated US$40 billion is spent annually on waste transport, incineration, recycling and storage Integrated and alternative waste management systems; Composting and anaerobic digestion; Pyrolisis and gasification Mechanical biological treatment
Natural Disasters	Weather-related, including water-damage, insurance claims are soaring in North America, part of a worldwide trend Hurricanes Rita and Katrina in the US and Caribbean pushed worldwide weather-related insurance claims to a new level	Insurers' weather-related losses increased 20-fold in the past three decades, with claims topping US$83 billion in 2005 As weather worsens coastal areas will continue to be the worst affected, and high risks loom in low-lying, flood prone areas	Spending on reinsurance and models that predict weather and potential damage continue to increase[3] Demand for natural catastrophic risk insurance will continue to grow Weather derivatives

Appendix 3: Recent Polls on Environmental Attitudes in North America

In the US, GfK Custom Research North American released results of a 2007 poll, showing that 48% of Americans surveyed view US citizens as lagging behind the rest of the world when it comes to being "green". The study also found that 38% of US corporations, participating in the survey, consider themselves "behind their foreign counterparts" with respect to environmentalism[124]. According to GfK's branch that focuses on consumer trends, these findings reflect the "overall consumer awakening trend we are seeing today, in which action is historically preceded by acknowledgement of an issue, resulting in a need for change"[125].

- With respect to public attitudes towards specific environmental challenges, in a nationwide 2007 poll, The Washington Post, ABC News and Stanford University found that 7 in 10, or a third of, Americans rank global warming as "the world's largest environmental problem, double the number who gave it top ranking last year." Those surveyed said that "climate change is real and want the federal government to do more"[126] in addressing the issues. This poll also found that 52% of respondents consider global warming an issue that is "extremely" or "very" personally important to them.
- Along with the general public, corporate investment managers are also taking stock of the current and future materiality of environmental challenges on business. Consider the results of a 2006 poll conducted by Mercer Investment Consulting on ESG issues. Researchers asked 157 investment management firms, located around the world, which ESG issues "will become or remain important in 5 years"[127]. The results, in average percent, saw climate change ranked third (37%), just behind environmental management (42%) and corporate governance (55%). Sustainability and water-use/access also scored high, with results showing 34% and 36%, respectively[128]. The surveyed group manages assets in excess of US$20 trillion.

Global Management Poll: Key Issues in Five Years Time[129]



124 CBC. 2007
125 Quote from Kathy Sheehan, Senior Vice President of GfK's business unit focusing consumer trends. (CBC, 2007)
126 CBC, 2007.
127 Mercer Investment Consulting, 2006.
128 GreenBiz.com, 2006(b).
129 Mercer Investment Consulting, 2006.

Opinion polls aside, other active developments also indicate the increasing environmental awareness and concern shared by North American consumers and shareholders. With regard to investors, these stakeholders are responding to environmental challenges in a variety of ways, such as heightened corporate disclosure, shareholder resolutions, SRI fund development and capitalizing on "green" venture capital flows[130].

- Shareholder Resolutions: In 2005, US shareholder resolutions concerning climate change exceeded all other social issues, such as equality in the workplace, labor standards, and animal welfare. Specifically, between 2004 and 2005, the number of US shareholder resolutions that requested heightened disclosure from companies related to climate risk increased three-fold, over the number of similar requests submitted between 2000 and 2001.
- SRI Funds: According to the Social Investment Forum, America's SRI assets "rose from US$639 billion in 1995 to US$2.29 trillion in 2005,"[131] a trend that shows no indication of slowing down over the coming years. Globally, nearly 1 in 10 US dollars are currently found in SRI Screening, Shareholder Advocacy and Community Investing. And, in Europe, a CSR regional survey found that 86% of financial experts consider SRI investments to provide "long-term benefit towards a company's value,"[132] while one-third of those surveyed currently offer clients SRI funds.
- "Green" Venture Capital Flows: Similar to SRI investments, venture capital flows in clean technology enterprises continue to escalate, with this North American investment in this space "ranked third in size and industry segment (behind software and biotech),"[133] in Q3 of 2006.
- Reflecting growing consumer interest in environmental issues, a number of voluntary corporate measures are currently being undertaken or considered to manage/reduce corporate-wide ecological footprints. These steps help to increase stakeholder accountability and transparency, and can also result in high levels of energy/cost savings, increased competitiveness, improved reputation and lower ecological impacts[134]. Various voluntary environmental corporate measures include, but are not limited to:
- Measuring internal GHG emissions and/or those associated with a client portfolio;
- Conducting or commissioning environmental audits that disclose compliance with environmental regulatory requirements and environmental liabilities;
- Establishing corporate GHG or water/energy-use targets to reduce emissions or increase recycling;
- Committing to environmental sets of principles or "codes of conduct" to guide daily company-wide practices and behaviour;
- Voluntarily purchasing GHG emission offset credits.

130 Citigroup Global Markets, 2007.
131 ibid
132 Starogiannis. D. 2007.
133 Citigroup Global Markets, 2007.
134 For a comprehensive list of case studies, visit The Climate Group site at www.theclimategroup.org.

Appendix 4: Corporate North America & Climate Change Regulations

In addition to constituents and special interest groups demanding GHG legislation, another stakeholder group behind this push is the North America's business community. Less than five years ago, corporate America was adamantly against GHG regulatory controls; however, the threat of fragmented State carbon constraints gradually changed business attitudes. As noted by The Economist, this corporate movement "has gained momentum, because companies that saw competitors espouse carbon controls began to fear that, once the government got down to designing regulations, they would be left out of the discussion if they did not jump on the bandwagon…So now the loudest voices are not resisting change, but arguing for it"[135]. This shift is also being driven by the corporate realization that business opportunities and profits can be realized by going "green".

A recent example of this collaborative corporate push to address climate change is the US Climate Action Partnership (USCAP) team. Prior to the President's 2007 State of the Union Address, this coalition of industry and NGO leaders formed an alliance, calling on the President to take action on climate change. In the group's Plan of Action, USCAP members urged the creation of federal legislation to reduce US emissions and proposed a "mandatory emission reduction pathway"[136]. This proposal argues for the following ambitious reduction targets to be established by Congress: "between 100-105% of 2007 levels within 5 years of rapid enactment; between 90-100% of 2007 levels within 10 years of rapid enactment; and between 70-90% of 2007 levels within 15 year of rapid enactment"[137].

The key principles used to guide USCAP's actions include:

1. Account for the global dimensions of climate change;
2. Create incentives for technology innovation;
3. Be environmentally effective;
4. Create economic opportunity and advantage;
5. Be fair to sectors disproportionately impacted; and
6. Reward early action.

Further information on USCAP can be found at www.us-cap.org

135 The Economist.
136 US-CAP
137 ibid

Appendix 5: Additional "Green" Financial Product & Services

Citigroup/Fannie Mae: MyCommunityMortgage™

To date, the US Federal National Mortgage Association, more commonly known as Fannie Mae, has developed one of the more rewarding EEM designs. Fannie Mae's product, provided by Citigroup, rewards buyers of energy efficient homes and encourages energy efficiency measures, particularly from low- and medium-income borrowers. The product, marketed as MyCommunityMortgage™, accounts the value of energy savings as income and establishes low mortgage insurance requirements to reflect that added income. Also designed by Fannie Mae is the Location Efficient Mortgage (LEM), as well as the Smart Commute Initiative Mortgage, both of which are geared to homeowners living near urban centers and/or taking advantage of public transportation. These products work to address urban sprawl and encourage customers to reduce their ecological footprints.[138]

CIBC: Enviro-$aver Rebate

With CIBC's Enviro-$aver Rebate, eligible recipients can obtain discounts on high-ratio mortgage insurance premiums, provided they purchase energy efficient houses, or make energy saving improvements to existing homes. To qualify for the rebate, a home must be highly efficient, as measured by either: 1) a rating of 80+ on Natural Resources Canada EnerGuide for Houses rating system or be R-2000 certified; or 2) renovations that increase the house's EnerGuide for Houses rating by at least five points.[139]

VanCity: Climate Change Mortgage

VanCity, Canada's largest credit union[140], has recently taken an innovative approach to the design and marketing of its green mortgage product. Typically, when banks or credit unions offer new mortgage products, the amount spent on marketing material (e.g., print and television ads, bulletins, brochures etc.) is significant. However, Vancity, through its online national Citizens Bank, is taking a radically different approach, with the goal of achieving environmental benefits. Today, the bank is making the following deal with their customers seeking their Climate Change Mortgage: "If you don't make us lift a finger to sell you this mortgage product – if you just pick up the phone and ask for it – (VanCity) will take the money that would have been spent into promoting it, and invest it in a fund to fight climate change"[141]. As explained by the bank, this product's potential is significant. For example, over a five year term, if one-tenth of a percent (ten basis points) of the Climate Change Mortgage is taken annually, C$1,250 will go into the climate change fund. This is based on a $250,000 mortgage, the current Canadian average. Therefore, if 10,000 households sign up for VanCity Climate Change Mortgage, $12 million will be earmarked to fight climate change[142]. What is particularly innovative about this retail banking product (and its pitch) is that it avoids appealing to the customer's desire to save money. Instead, VanCity is attempting appealing to the customer's inherent desire to make a difference by taking action on climate change.

Citizen's Bank of Canada: Green Mortgage & Green$saver Gift Kit

In April 2007, Citizens Bank of Canada, the nation's first "branchless" bank and a wholly owned subsidiary of VanCity, set a new standard for green mortgages internationally. Under the newly launched product, the bank is coupling consumer conservation initiatives with a competitive mortgage rate. The initiative, currently offered to Ontario citizens, will provide

138 Builder News Magazine, 2004.
139 CDP, 2006.
140 According to VanCity's 2006 Annual Report, the credit union has C$12.3bn in assets and more than 355,000 members at 50 branches.
141 As per 2007 (free) marketing announcement by VanCity CEO, David Mowat (http://climatechangemortgage.com)
142 VanCity, 2007(b).

each mortgage holder with a conservation package that holds a curbside blue box (recycling bin), containing a registration rebate for a Green$aver home energy audit, ten energy efficient lightbulbs and a variety of other products and services worth more than C$800.[143]

Wainwright Bank & Trust: Home Loan for Solar Power

Wainwright Bank & Trust provides clients a 1% rate reduction, with an additional 0.25% reduction, if homeowners choose for automatic loan payments to be made through a Wainwright checking account. To apply for a green loan, the customer must first contact MassEnergy of Solar Boston to acquire information on local solar contractors. For a fixed term of 5, 10 or 20 years, a Wainwright's green loan can be provided for US$5,000-100,000.

CFS: Home Loan for Solar Power

CFS collaborates with both the NGO Royal Society for the Protection of Birds (RSBP) and SolarCentury, a solar technology manufacturer and provider, to provide a low-interest loan product to purchase domestic solar hot water and electricity systems[144].

MBNA (Bank of America): Sierra Club Affinity Card

In the 1990s, MBNA, an original leader in the design and marketing of affinity cards, partnered with Sierra Club to launch the product. This partnership was based on the NGO accepting future royalties from the credit card company, in exchange for the use of Sierra Club's name and logo. Under the arrangement, Sierra Club agreed to accept 0.5% of every charge made by its 'group members'. By 1994, after only a couple of years in circulation, MBNA had successfully signed up 45,000 members for a Sierra Club affinity card, which resulted in US$400,000 worth of additional revenue for the organization, annually.[145]

Shorebank Pacific: Salmon Nation Credit Card

A community-based "green" North American credit card is the Salmon Nation Platinum Visa Card, launched by Shorebank Pacific. Salmon Nation is a bioregional citizenship program, promoted by EcoTrust. This product, provided by Shorebank Pacific in alliance with EcoTrust, directs 50% of the income generated to Salmon Nation, an "economic, cultural and ecological community collective in the bioregion that contains Pacific salmon spawning grounds"[146]. Making it easy for customers to make an environmental difference, the card features regular Platinum Visa features, with no annual fee, low variable APR and auto/travel insurance. According to the bank, the goal of this product is to "create a citizenry that makes behavioural choices that contribute to enhancing the health of the whole watersheds and the economies of the people that live in them"[147].

Shorebank Pacific: EcoCash™ Checking Account

The goal of Shorebank's EcoCash™ Checking Account is to encourage a reduction in paper consumption by its users. To achieve this, the EcoCash™ Account is check-free and includes a Visa check card and free online banking. The account is also free to customers with direct deposit and, while the bank encourages paperless transactions, the account allows for five, free paper checks a month. A US$3 per check fee applies thereafter, with a portion going to offset environmental impacts through the The Climate Trust.

143 Citizens Bank of Canada, 2007. https://www.citizensbank.ca/Personal/GreenMortgage/
144 CFS, 2004.
145 Funding Universe.
146 Shorebank Pacific, 2005.
147 ibid

Bank of Ireland: Energy-from-Waste Project Financing

In 2005, Bank of Ireland financed a US$273 million, 33 MW energy-from-waste project that includes a 25-year loan supported by waste contracts with local authorities and corporate backing on non-contracted waste. This green power is to be sold to the national grid or covered by the UK's Non-Fossil Fuel Obligation (NFFO) contracts. Bank of Ireland acted as lead arranger for the deal, a project owned 50/50 by Grundon, UK's largest privately owned waste management company, and Viridor. Following the 2005 closure of this deal, the bank observed that "in the UK, as well as Ireland and elsewhere, huge investment is required to establish more environmentally-sound disposal routes to landfill for domestic and industrial waste".[148]

Calvert: "Green" Private Equity Investments

Calvert provides venture capital investments in eco-innovative, forward-thinking companies. This approach sees a small portion of assets, typically from balanced and equity portfolios and Calvert's World Value International Equity Fund, become direct investments in companies that are led by "visionary entrepreneurs who have identified profitable ways to address environmental challenges." Moreover, Calvert's special equities program actively invests in higher-risk, eco-friendly firms that provide market-based solutions. A current holding in Calvert's Special Equities Portfolio is PowerSpan Corporation, the developers and manufacturers of Snubber® filters for coal-fired power plants.[149]

Wells Fargo: "Green" Equity Equivalent Investments

With a view towards sustainable communities, in 2006, Wells Fargo launched a new environmentally-focused community development initiative, Green Equity Equivalent Investments (Green EQ2), to be offered through its Community Development Corporation. Green EQ2s provide capital, between US$150,000-500,000, to non-profit organizations that engage in environmentally-responsible practices in low-to-moderate income communities[150]. Green EQ2s support practices that result in conservation of energy and water, and reduction of waste and pollution.

Winslow's Green Growth Fund: "Green" Mutual Fund

The objective of Winslow's Green Growth Fund is capital appreciation through environmentally responsible investing in small-capitalization companies. The fund is a no-load, environmentally responsible mutual fund that invests in small and mid-sized companies, with a focus on investing in firms that have positive or neutral impact on the environment. The financial vehicle's portfolio companies are environmentally-responsible and often focus on "new green growth markets,"[151] such as renewable energy, organic food and energy efficiency, while the investment style used is small-cap growth, purchasing companies with market capitalization of $2 billion and below. To help in their investment decision-making process, Winslow divides candidate companies into four categories (best in class, environmentally proactive, environmentally responsible, and environmentally benign), then carries out a financial analysis, evaluating this assessment criteria on profitability, financial position, revenue, earnings and unit growth.

RBC Financial: Clean Technology Venture Fund

In Canada, RBC Ventures Inc.'s Clean Technology Venture Fund is considered the only fund of its type, which is both funded and managed by a major Canadian bank. The purpose of the investment fund, established in 2004, is to "identify and finance" firms that develop technologies to enable conventional industrial firms to reduce their ecological footprints. Until now, technologies benefiting from the Clean Technology Venture Fund have focused on reducing energy consumption, material waste, and air/water pollutants. Adopting the fund positioned RBC Financial to become the lead corporate investor in the United Nation's Global Environment Fund (GEF) Clean Technology Fund.

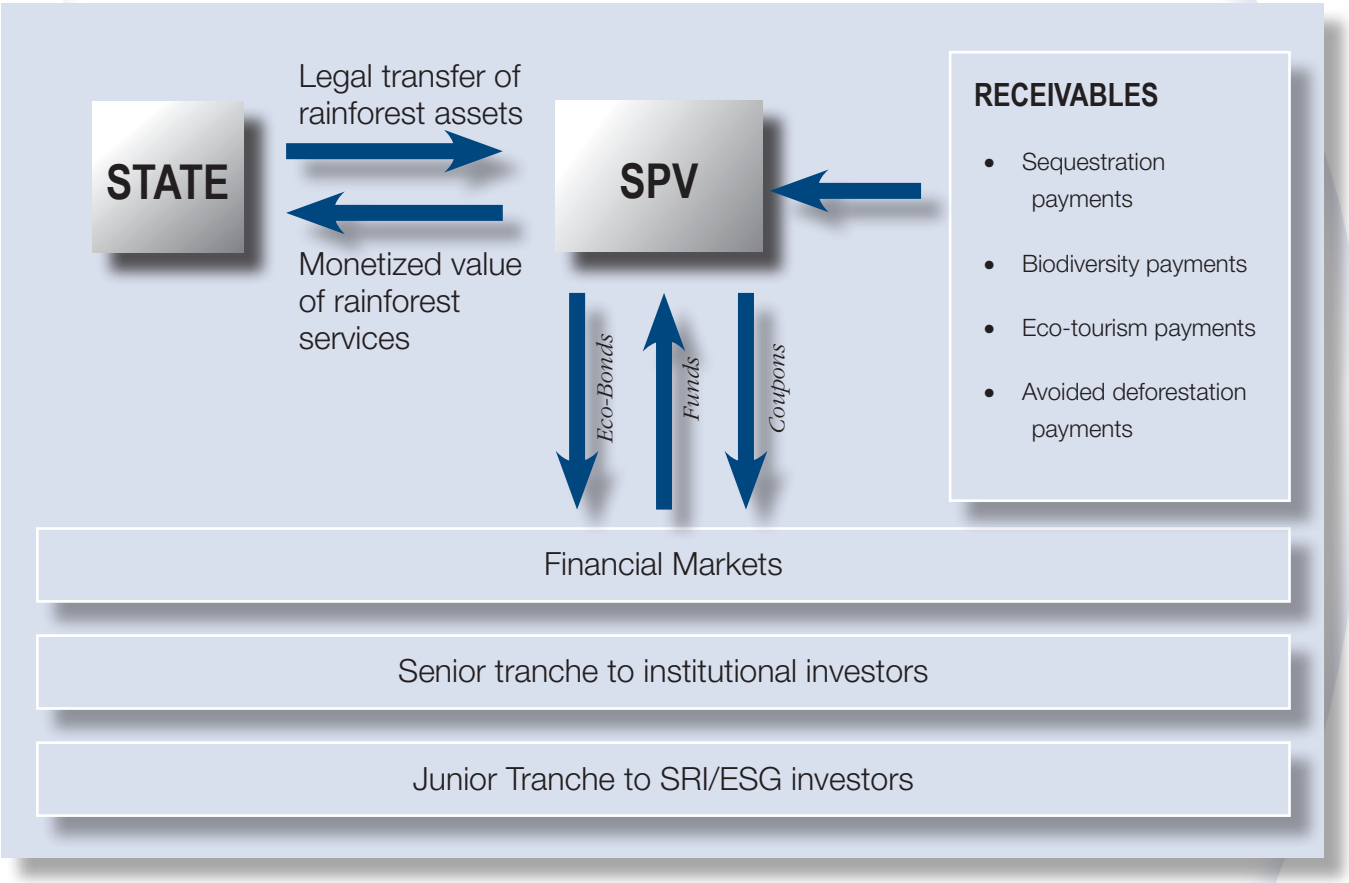
148 Grundon, 2005.
149 Calvert, 2007.
150 Wells Fargo & Co, 2006.
151 Winslow, 2007.

ABN AMRO: Climate Change Index

This benchmarking reference instrument is divided into three overarching environmental areas (renewable energy; water and waste management; and catalytic conversion), with each weighted according to its overall size and growth potential. The biggest and most actively traded companies within each sub-sector are then invested in accordingly. Today, renewables make up 45% of the total index, water companies 25%, and waste management 20%[152]. The remainder includes sectors such as platinum and palladium mining, as well as geothermal. At this time, the only product available to investors will be the bank's "straight-forward index tracker," with more complex products expected to come online in late-2007.[153]

152 Environmental Finanace, 2007.
153 ibid

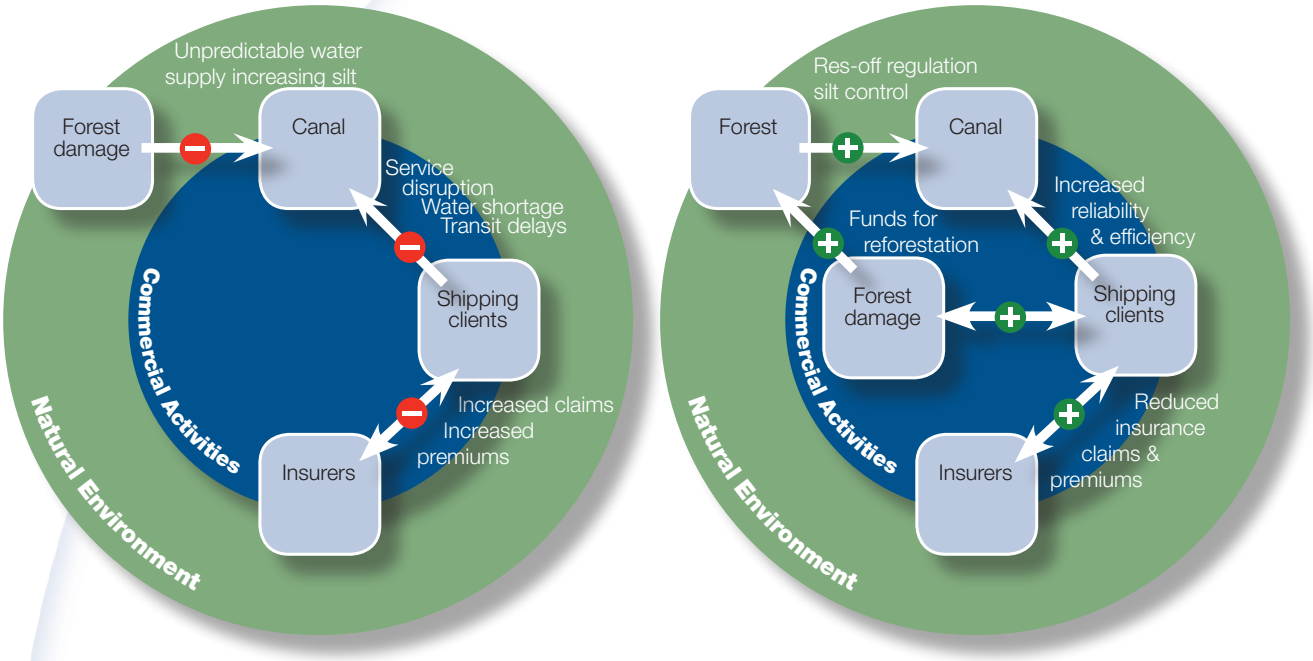
Appendix 6: Potential Model for Eco-Securitization



Original diagram was developed and published by The Banker in January 2007 (p. 37)154

154 The Banker, 2007.

Appendix 7: Forest Bond Model: Panama Canal Project[155]



Before (deforestation cost flow) **After (reforestation value cycle)**

Original diagram was developed and published by The Banker in January 2007 (p. 37)

155 The Banker, 2007.

Appendix 8: State of the Carbon Market

Excerpt from The Banker article, "The New EcoWarriors", published in January 2007[156]:

"The most obvious manifestation of the influence that markets can exert is the emergence of carbon emissions trading markets. The US has a voluntary market, the Chicago Climate Exchange, which aims to drive down emissions without government regulation. Europe, as a signatory to the Kyoto Protocol, operates the EU-mandated ETS, which imposes caps on emissions but also allows firms to trade their allocated pollutant rights to meet targets: the 'compliance' market.

To acquire additional trading rights, polluting companies can fund projects in the developed world to earn tradable emissions reduction units (ERUs), or fund clean development mechanisms (CDMs) in developing countries to earn certified emissions reductions (CERs).

Many believe that this 'cap and trade' framework is achieving results where green-inspired government exhortation or penalisation did not, and banks are driving the market as risk takers and market makers.

Morgan Stanley, for example, announced last October that it will invest $3bn over the next five years in carbon credits and other initiatives. It says the majority of the investment will purchase carbon credits from projects as its commodities trading department expands its existing carbon and emissions platform. The remaining investments will be in emission reduction projects, such as those certified under the CDM.

By committing risk capital to CERs, says Kevin Rogers, global head of currency and commodity complex risk at Deutsche Bank, investment banks are brokering a market in CERs in the same way as in FX or derivatives. "Six months ago, this market didn't exist, now million-tonne trades are pretty commonplace," says Mr Rogers. "The liquidity available in the CER market is approaching, if not exceeding, that in the ETS."

The emergence of a cash market – made up of hedge funds and traditional institutional investors – is deepening the compliance market. Financial participants provide additional liquidity and drive the creation of more sophisticated and structured products to suit their investment needs. That liquidity is helping compliance traders to hedge their exposures more efficiently, thereby encouraging greater use of the system.

For example, in the CDM space, banks are structuring projects with credit wraps that encourage greater participation by institutional investors and greater uptake by the compliance market. In September 2006, Deutsche Bank worked with specialist investment bank Climate Change Capital (CCC) on the largest ever private sector syndication of a CDM project in China for Chinese chemical company Zhejiang Juhua, which will generate the equivalent of 29.5 million tonnes in CERs over six years. CCC syndicated the funding out to a group of investors, including hedge funds, and Deutsche guaranteed the underlying payment structure."We ensure that each portion of funding is handed over as the CERs are generated, thereby credit wrapping the syndicate and eliminating the Chinese company's exposure to each syndicate member," says Mr Rogers."

156 The Banker, 2007.

Appendix 9: Preliminary Scan of Financial Institutions

Financial Institution	Country
ABN AMRO Bank	Netherlands
AIG	Global
Bank of Tokyo-Mitsubishi	US
Barclays	UK
Bendigo Bank	Australia
BNP Paribas	France
Bank of America	US
Calyon	France
CIBC	Canada
Citigroup	US
Credit Suisse Group	Switzerland
Deutsche Bank	Germany
Dexia	France
Goldman Sachs	US
Fortis	Netherlands
HBOS	UK
HSBC Group	UK
ING Group	Netherlands
JPMorgan	US
mecu	Australia
Morgan Stanley	US
New Resource Bank	US
Rabobank Group	Netherlands
Royal Bank of Canada Financial	Canada
Royal Bank of Scotland	Scotland
Scotia Bank	Canada
Shorebank Pacific	US
Societe General	France
Standard Chartered Bank	UK
UBS	Switzerland
Wells Fargo	US
WestLB	Germany
Westpac	Australia
Triodos Bank	Netherlands
VanCity (Citizens Bank)	Canada

Disclaimer Notice

The information contained in the report is meant for informational purposes only and is subject to change without notice. The content of the report is provided with the understanding that the authors and publishers are not herein engaged to render advice on legal, economic, or other professional issues and services.

Subsequently, UNEP FI is also not responsible for the content of web sites and information resources that may be referenced in the report. The access provided to these sites does not constitute an endorsement by UNEP FI of the sponsors of the sites or the information contained therein. Unless expressly stated otherwise, the opinions, findings, interpretations and conclusions expressed in the report are those of the various contributors to the report and do not necessarily represent the views of UNEP FI or the member institutions of the UNEP FI partnership, UNEP, the United Nations or its Member States.

While we have made every attempt to ensure that the information contained in the report has been obtained from reliable and up-to-date sources, the changing nature of statistics, laws, rules and regulations may result in delays, omissions or inaccuracies in information contained in this report. As such, UNEP FI makes no representations as to the accuracy or any other aspect of information contained in this report.

UNEP FI is not responsible for any errors or omissions, or for any decision made or action taken based on information contained in this report or for any consequential, special or similar damages, even if advised of the possibility of such damages.

All information in this report is provided 'as is', with no guarantee of completeness, accuracy, timeliness or of the results obtained from the use of this information, and without warranty of any kind, expressed or implied, including, but not limited to warranties of performance, merchantability and fitness for a particular purpose. The information and opinions contained in the report are provided without any warranty of any kind, either expressed or implied.

Copyright Notice

UNEP **Finance Initiative**
Innovative financing for sustainability

United Nations Environment Programme
UNEP Finance Initiative
International Environment House
15, Chemin des Anémones
CH-1219 Châtelaine, Genève
Switzerland
Tel: (41) 22 917 8178 Fax: (41) 22 796 9240
email: fi@unep.ch website: www.unepfi.org

About the UNEP Finance Initiative

The United Nations Environment Programme Finance Initiative (UNEP FI) is a strategic public-private partnership between UNEP and the global financial sector. UNEP FI works with over 160 financial institutions that are signatories to the UNEP FI Statements, and a range of partner organisations, to develop and promote linkages between the environment, sustainability and financial performance. Through a comprehensive work programme, regional activities, training and research, UNEP FI carries out its mission to identify, promote and realise the adoption of best environmental and sustainability practice at all levels of financial institution operations.

UNEP **Finance Initiative**
Innovative financing for sustainability