



UNITED NATIONS ENVIRONMENT PROGRAMME  
PROGRAMME DES NATIONS UNIES POUR  
L'ENVIRONNEMENT



## **Third International Conference of the UNEP Insurance Initiative**

**“Environmental Tools for the Insurance and Financial  
Industries”**

Cologne, Tuesday, 9 June 1998  
Wednesday, 10 June 1998



## Third International Conference of the UNEP Insurance Initiative

### “Environmental Tools for the Insurance and Financial Industries”

Date: 9-10 June 1998

Venue: Gerling Global Re - Hildeboldplatz - Cologne/Germany

Chairperson: Norbert Strohschen and Dr. Walter Jakobi, Gerling Global Re

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**Tuesday, 9 June 1998**

**8:30 Registration**

**9:00-10:30 Plenary Session**

*Opening*

*Prof. Dr. Klaus Töpfer, Executive Director, UNEP*

*Keynote Speakers*

*Dr. Angela Merkel, Minister of the Environment, Germany*

*Ms. Joan Bavaria, President of Franklin Research  
and Development Corporation, USA*

10.30 Coffee Break

**11:00-13:00 Breakout Sessions**

**Session I: *Developing the Tools for the Post-Kyoto Markets***

Moderator: *Dr. Andrew Dlugolecki, General Manager, General Accident*

The Kyoto Protocol is a milestone in the Climate Change negotiations but many aspects of it are open to interpretations. The aim of this session is to get a clearer idea of the possible impacts of the Protocol on the financial services sector. The session will focus in particular on issues related to emissions trading and the development of a corporate global warming indicator.

**Speakers:**

**Introducing the Greenhouse Gas Emissions Market and the Kyoto Protocol**

*Dr. Michael Grubb, Director, Royal Institute of International Affairs*

**Lessons from Previous Multilateral Environmental Agreements**

**- An Environmentalist's View -**

*Dr. Bill Hare, Policy Director, Greenpeace International*



**Implementing the Emissions Trading Market**

*Mr. Frank Joshua, Director, UNCTAD*

**A Practitioner's View on Emissions Trading**

*Mr. Richard Sandor, Vice Chairman, Chicago Board of Trade & CEO, Centre Financial Products Ltd.*

**Developing Indicators for Global Warming**

*Mr. Charles Thomas, British Petroleum*

**Session II: Standardized Environmental Reporting:  
Meeting Corporate and Financial Sector Needs**  
Moderator: *Dr. Jan-Olaf Willums, Senior Vice President, Storebrand*

*A joint session between the UNEP Insurance Initiative and the  
World Business Council for Sustainable Development*

Environmental performance evaluation is increasingly relevant for both corporate management and financial analysts. The objective of this session is to review the recent trends towards standardizing the collection and reporting of data, and to discuss opportunities to streamline the information process so that it achieves both the requirements of the financial community and the objectives of efficient corporate management.

**Speakers:**

**A review of recent trends in standardizing environmental data collecting and reporting**

*Prof. Dr. Terje Synnestvedt, Norwegian School of Management*

**The usefulness of standardized environmental data evaluation for benchmarking**

*Dr. Markus Lehni, Project Manager, WBCSD*

**The need for standardized data gathering as seen from the financial industry**

*Mr. Franz Knecht, Director, Swiss Bank Corporation*

**Session III: Data Needs and Formats for Insurance Business  
- Synergies with Investment**  
Moderator: *Dr. Ivo Knoepfel, Environment Advisor, Swiss Reinsurance*

The aim of this session is to assess environmental information required in the insurance business, with a special focus on liability insurance for firms and products. Possible synergies in information gathering and exchange with the investment community will be identified. The state-of-the-art in the field of environmental risk management (methods, tools and data requirements) will be presented by insurance speakers followed by an investment management perspective on environmental rating approaches used in investment.

**Speakers:**

**Information Needs and Formats: An Underwriting Point of View**

*Mr. Alfred Hennebühl, Gerling Allgemeine*

**Methods, Tools and Information Requirements in Environmental Risk Management**

*Dr. Bea Capaul, Dr. Thomas Streiff, Swiss Re*

**Environmental Rating Approaches in Investment Management**

*Dr. Alois Flaz, Sustainable Asset Management*

**Industry's Approach to Environmental Risk Management and Reporting**

*Dr. Frank Annighöfer, Gerling Consulting Group*

**Session IV: *Maximising Investment Performance in Stock Markets and  
Venture Finance***

*Moderator: Ms. Tessa Tennant, Advisor, NPI Global Care*

This session will examine mechanisms for increasing shareholder value through environmental investment strategies. Stock market equity investment and venture capital portfolios will be examined in turn with leading experts from these fields.

**Speakers:**

**Effects of Environmental Performance on Stock Prices**

*Dr. Matthew Kiernan, Director, Innovest Group International, Canada*

**Venture Financing & the Environment**

*Ms. Joan Bavaria, President of Franklin Research and Development Corporation, USA*

*Dr. Jeffrey Leonard, Global Environmental Fund, USA*

**13:00 Lunch**

**14:30 -17:00 cont. Breakout Sessions**

***17:30 Meeting of the Working Group on Climate Change***

**19:30 Dinner hosted by Gerling at Marienburg**



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**Wednesday, 10 June 1998**

- 08:30-10:00 Breakout Sessions - Preparation of Recommendations and Conclusions in the Four Sessions**
- 10:00 Coffee Break
- 10.30-12:30 Plenary session  
- Presentation of Conclusions from Parallel Sessions -**
- 13:00 Lunch
- 14:30 Annual General Meeting of the “Insurance Industry Initiative for the Environment, in Association with UNEP”**
- 16:30 End of Conference**

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*Conference language: English only*

**A fee of DM 200 will be charged to cover for conference material (including the final report)**



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**Lessons from Previous Multilateral Environmental  
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# **Third International Conference of the Insurance Initiative**

**9-10 June 1998, Cologne**

## **Lessons from Previous Multilateral Environmental Agreements -An Environmentalist's view-**

### **Implications for the Kyoto Protocol**

#### **Common Rules and Principles for the Flexibility Mechanisms**

Because of the interactions between the flexibility mechanisms of the Kyoto Protocol (trading, joint implementation and the clean development mechanism) there need to some common rules and/or principles which apply to the operation of all of these instruments.

- Domestic action must be the priority in the overall implementation of the Protocol.
- Agreement to market rules for the exchange of emission units. The COP/MOP needs to ensure that if a market is to be permitted in all of the emission units that can be transferred under the Kyoto Protocol (assigned amounts, emission reduction units(ERUs)from Joint Implementation projects and certified emission reductions (CERs) from the CDM) that this operates under rules which guarantee transparency, compliance with obligations, has buyer and seller liability, and reinforces the environmental objectives of the Protocol. There needs to be an agreed legal framework for the flexibility mechanisms *before* emission units from JI and CDM projects and assigned amounts are traded. The effectiveness of each of the flexibility provisions must be reviewed after the first commitment period, a report sent to the COP/MOP and problems rectified.
- Compliance with reporting obligations for emissions and transfers of assigned amounts is a pre-requisite for transfers of ERUs, CERs, or assigned amounts.
- A compliance regime including a ban on transfers of emission reduction units from any Party exceeding its emissions commitment (as laid out in Annex B) or in breach of reporting requirements, until that Party returns to compliance.
- National accounting systems for transfers of assigned amounts should be established that includes registration of acquisitions and transfers of assigned amounts with double entry bookkeeping. Details should include country of origin of the transfer or acquisition, the date the amounts were acquired or transferred, the price and so on should be required in order to trace acquisitions back to the individual projects or Parties from which they were generated or originated.
- Establishment of an in depth review process conducted by expert independent teams is essential.

## **Trading and Joint Implementation**

The rules for trading should include:

- Prior agreement on trading rules before trading begins.
- Exclusion of sinks from the trading system.
- Application of trading rules to the transfer of ERUs from Joint Implementation projects.
- A selling limit on Parties to curtail the size of the “hot air” problem. A 3% limit on the sale or transfer of assigned amounts would limit the hot air problem to less than 1% of the 1990 Annex B emissions in the first commitment period.
- A buying limit to ensure that Parties do most their action at home. A buying limit of 10% of a Party’s assigned amount would ensure the domestic action has the major priority. A buying limit would apply to the total amount a Party could acquire during a commitment period via transfers under Article 6 and Article 17.
- A joint buyer and seller liability system, that operates during a commitment period and is based on annual inventories, to provide a signal as to whether or not a sellers assigned amounts or ERUs should be discounted.

## **Clean Development Mechanism**

Rules covering operation of the CDM should address the following issues:

- A quantitative limit must be placed on the use of the CDM to meet emission limits. CDM credits inflate emission budgets. The use of CDM credits should be limited to about 1% of a Party’s assigned amount.
- Project emissions reductions should be discounted by an agreed fraction to create the CERs available to add to assigned amounts. Discounting will help ensure that the global emissions are at least as low as they would have been in the absence of the CDM project.
- CDM projects should be limited to renewable energy systems or highly energy efficient projects that are unequivocally at the top end of efficiency practice in the world.
- Clean coal and nuclear power projects should not be eligible for CDM credits.
- No Land Use Change and Forestry projects should be allowed for credit.

## **Land Use Change and Forestry in the Kyoto Protocol**

Implementation of the Land Use Change and Forestry provisions need to be guided by several general principles:

- The use of LUCF emission credits must not lead to adverse environmental effects on other values, such as biological diversity.
- Land Use Change and Forestry definitions, methodologies and policies must not create perverse incentives that would, for example, encourage clearing or



harvesting of old growth forest for the purpose of claiming reforestation credits. Credit should be prohibited for any activity that has involved the harvesting of old growth forests.

- All parties must be required to use common definitions and methodologies. The definitions and methodologies should be driven by an IPCC assessment of the treatment of Land Use Change and Forestry provisions in the Kyoto Protocol.
- A permanence requirement should be established for any changes in carbon stocks used to meet emission commitments. Reductions in the stocks of carbon, whose previous increments have been added to the assigned amount of a Party, should be deducted from the assigned amount.
- No use of LUCF activities beyond the categories defined in Article 3.3 should be permitted until a special assessment of the IPCC considers the entire issue of the Land Use Change and Forestry sector and the results of this considered by SBSTA and the COP/MOP. Specifically there should be no expansion under Article 3.4, Article 6 JI projects should be limited to the those categories under Article 3.3 and there should be no CDM sink projects.

There is a need for early clarification of the terms afforestation, reforestation, deforestation and “since 1990” used in Article 3.3. In common with other NGOs, Greenpeace believes that the following should be adopted:

- Reforestation credit can be claimed for activities that re-establish a forest by 2012 on lands which had, historically, previously contained forests but which had been converted to some other use as of 1990.
- Afforestation credit can be claimed for activities that establish a new forest by 2012 on lands that have, historically, not contained forests and did not in 1990.
- Deforestation emissions must be reported for activities that converted lands that in 1990 contained forests to some other use in 2012.

“Since 1990” should be defined as referring to activities begun on or after 1 January 1991.

The mandate of an IPCC Special Assessment of the Land Use Change and Forestry issue should include the scientific, environmental, technical, economic, social, institutional and policy issues relating to:

- The likely future role of the terrestrial biosphere in relation in the carbon cycle and the climate system over the next century.
- The implications of the LUCF activities if used to offset emissions from fossil sources of greenhouse gases, taking into account a range of possible stabilisation objectives for atmospheric concentrations of CO<sub>2</sub> and other greenhouse gases
- Potential for positive or negative synergies in relation to other environmental objectives such as biodiversity conservation, arising from the use (or not) of Land Use Change and Forestry activities to offset emissions from fossil fuels.

- Appropriate definitions of anthropogenically induced changes to biotic reservoirs of greenhouse gases that can be used on an equivalent and comparable basis by all Parties.
- The basis for quantifying and verifying changes in biotic reservoirs (stocks) of greenhouse gases, including an assessment of scientific uncertainties relevant to assessing the use of anthropogenic changes in relation to the attainment of assigned amounts by Parties to the Kyoto Protocol.
- An assessment of the potential short and long-term effects on biodiversity conservation and on ecosystem and agro-ecosystem stability, persistence, health and resilience of proposed and potential Land Use Change and Forestry intervention activities and credits, with particular attention to determining the potential for Land Use Change and Forestry incentives to lead to unintended adverse environmental impacts which degrade natural ecosystems, such as accelerated clearing or harvesting of old growth, primary or highly natural forests.



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**Implementing the Emissions Trading Market**

*Mr. Frank Joshua, Director, UNCTAD*



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Table 1: Volume of Economically Significant SO<sub>2</sub> Allowance Trades

Table 2: SO<sub>2</sub> Allowance Prices

Diagram 1: Total combined allowed emissions of Annex 1 Parties

Diagram 2: Model Trading System: Emissions Trading Among Countries With and/or Without Domestic Emissions Markets

Diagram 3: Emissions Trading: Model Transactions Flow Chart - Process and Procedures for Certification, Approvals, Registration and Notification of International Transactions

## **A. Introduction**

In 1991, as preparations for the Rio Earth Summit intensified and negotiations on a United Nations Framework Convention on Climate Change progressed, the UNCTAD secretariat launched a programme of research into how to design and implement an international greenhouse gas emissions trading system. Between 1992 and 1996, UNCTAD's Greenhouse Gas Emissions Trading Project published seven technical reports covering a wide range of fundamental design elements such as cost-efficiency, equity, domestic and international allocation, distributional impacts, the gains from trading, monitoring, certification, enforcement, legal and institutional aspects, and market architecture. These studies provided a timely examination of some of the principal issues relevant to the design and implementation of an initial-phase international greenhouse gas emissions market.

In June 1997, in anticipation of the adoption of the Kyoto Protocol, UNCTAD and the Earth Council established the Greenhouse Gas Emissions Trading Policy Forum. The Policy Forum is dedicated to facilitating a dialogue among interested governments, corporations, and non-governmental organizations for the purpose of identifying feasible steps to implement the emissions trading system. This includes: (a) assisting the Parties to the Kyoto Protocol in their efforts to establish a comprehensive regulatory and supervisory framework for emissions trading; and (b) assisting national authorities and market makers in their efforts to develop efficient emissions trading rules, trading instruments and supporting institutions.

The purpose of this paper is to explore the organizational aspects of an initial-phase international emissions market, in accordance with the Kyoto Protocol, and their implications for the eventual participation of developing countries in a fully-fledged emissions market.

## **B. The Kyoto Protocol - A recap of definitions**

In adopting the Kyoto Protocol on 11 December 1997, Annex 1 Parties (industrialised countries) agreed to collectively reduce their emissions of six greenhouse gases by an average of



5.2 per cent below 1990 levels in the commitment period 2008 to 2012. The Protocol provides for differentiated legally-binding targets for Annex 1 Parties, and the use of various flexibility mechanisms involving the transfer and acquisition of “assigned amounts”, “emission reduction units”, and “certified emission reductions”.

## **I. Relevant Protocol provisions**

### *- Article 3*

This article of the Kyoto Protocol establishes “assigned amounts” (AAs) for all Annex 1 Parties, and the transfer and acquisition of assigned amounts among Parties.

For an Annex 1 Party, its assigned amount for the first commitment period, 2008-2012, is calculated as the percentage inscribed in Annex B of its 1990 emissions of CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>, multiplied by five.

A Party is allowed to transfer to or acquire from another Party any part of an assigned amount (in accordance with the provisions of Articles 6 and 17).

Assigned amounts (AAs) therefore constitute the basis for the “cap and trade” mechanism for Annex 1 Parties.

### *- Article 4*

This article allows Annex 1 Parties to jointly fulfil their commitments. To do so, Parties must set out their respective emission level in an agreement. The terms of this agreement must be notified to the secretariat at the time of ratification of the Protocol.

This provision is valid for both *ad hoc* groupings of Annex 1 Parties, as well as for members of regional economic integration organizations, such as the European Union. It amounts

to the establishment of “administrative bubbles” within which transfers and acquisitions of assigned amounts are pre-determined among the Parties concerned.

*- Article 6*

This article provides that an Annex 1 Party may transfer to, or acquire from, another Annex 1 Party, emission reduction units (ERUs) resulting from projects that reduced emissions by sources or enhanced absorption by sinks in any sector of the economy.

Projects must be approved by the Parties involved and must result in reductions in emissions or absorptions by sinks that are “additional” to any that would otherwise occur.

Annex 1 Parties can authorize “legal entities” to participate, under their responsibility, in the generation, transfer or acquisition of ERUs.

It should be noted that the “commodity” to be transferred or acquired as a result of the project activity will be part of the “assigned amount” of the Party concerned.

*ERUs are not additional to AAs.*

Guidelines, including for verification and reporting under this article, are to be elaborated by the Conference of the Parties serving as the meeting of the Parties to the Protocol (COP/MOP) at its first session, or as soon as practicable thereafter.

*- Article 12*

This article provides for a Clean Development Mechanism (CDM) under which non-Annex 1 Parties (developing countries) will benefit from project activities resulting in certified emission reductions (CERs).

Annex 1 Parties may acquire CERs and use them to comply with part of their quantified emission limitation and reduction commitments (QELRCs).

*CERs are additional to AAs.*

Participation in the CDM is voluntary, and projects must result in emission reductions that are “additional” to any that would occur in the absence of the certified project activity.

Participation in the CDM, in project activities and the acquisition of CERs, may involve private/public entities, subject to guidance by the executive board of the CDM.

No reference is made in this article to CERs from project activity resulting in enhanced absorption by sinks (as in Article 6).

*- Article 17*

This article provides that the Parties included in Annex B to the Protocol may participate in emissions trading for the purpose of fulfilling their commitments under Article 3 of the Protocol. It also specifies that trading shall be supplemental to domestic actions.

The Conference of the Parties (COP) is required to define the relevant principles, modalities, rules and guidelines, in particular for verification, reporting and accountability for emissions trading.

## **II. Accounting for transfers & acquisitions**

In a market sense, the provisions of Articles 3, 6, 12, and 17 can be considered to provide the mechanisms for greenhouse gas emissions trading.

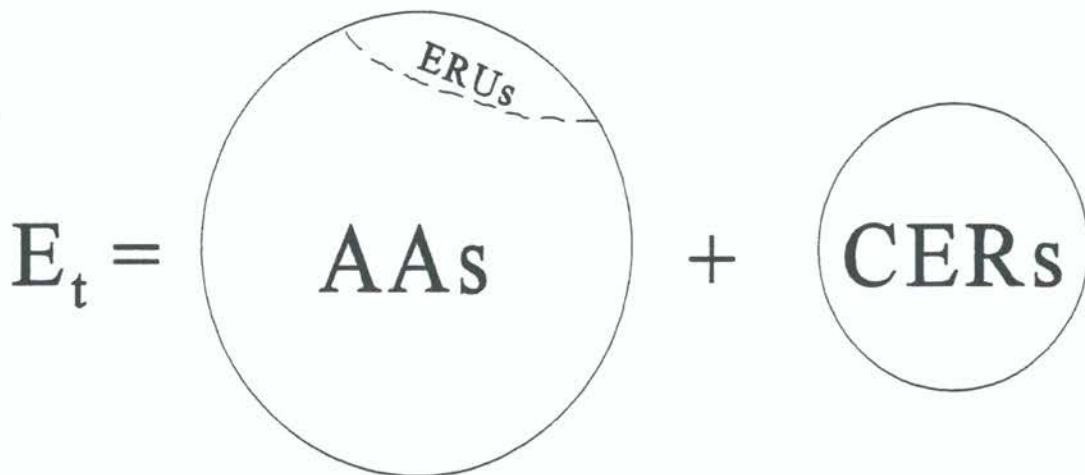
Whereas the generation, transfer and acquisition of CERs represent an increase in the combined total allowed emissions of Annex 1 Parties, the generation, transfer and acquisition of



ERUs merely result in the reallocation of the initial distribution of assigned amounts among Annex 1 Parties. Consequently, total combined allowed emissions of Annex 1 Parties can be defined as:

- a) The initial allocation of assigned amounts (AAs), plus
- b) Certified emission reductions (CERs) acquired from non-Annex 1 Parties.  
(See Article 3, (10-12)).

This can be represented by the following diagram:



**Diagram 1. Total combined allowed emissions of Annex 1 Parties**

In order to be in compliance, an Annex 1 Party must demonstrate, at the end of the commitment period, that its total emissions for that period were equal to or less than its inscribed assigned amount (calculated in accordance with Article 3 and Annex B), plus any assigned

amounts and certified emission reductions acquired, minus any assigned amounts transferred to other Parties.

It will be noted that this calculation does not include emission reduction units (ERUs). The reason is that the inclusion of ERUs would result in double-counting as ERUs are a part of a Party's assigned amount; they therefore are not "additional". Also, assigned amounts would appear to be the exclusive "trading unit" as both ERUs and CERs are required to enter the trading system in the form of assigned amounts (Article 3, (10-12)).

### **C. Structure and organization of the international market for trading assigned amounts**

#### **I. Lessons from the US SO<sub>2</sub> allowance trading programme**

Practical experience in designing and implementing emissions trading programmes on a national scale is limited. The United States' sulphur dioxide (SO<sub>2</sub>) allowance trading programme, created by the U.S. Congress through the passage of Title IV of the 1990 Clean Air Act Amendments, represents the largest and most successful effort to establish an organized market in the trading of environmental quasi-property rights.

The programme aims to reduce SO<sub>2</sub> emissions from electric utilities and is being implemented in two phases. Phase I (1995-1999) covers 263 boilers (out of more than 2000 fossil fuel-fired boilers and combustion turbines in the United States) from 110 of the most heavily polluting electricity generating plants. In 1996, 161 other utility units not initially required to participate until Phase II elected to join the programme early as part of multi-units compliance plants. Phase II will begin in 2000.

Trading in SO<sub>2</sub> allowances began in 1993. The programme, by most accounts, has been an unqualified success. This is exemplified by: (a) a large number of utilities, more than 50 per cent of the affected units, have participated in trading between unrelated plants; (b) the volume of transactions among firms has more than doubled annually since 1994; (c) SO<sub>2</sub> emissions have

fallen faster than required by law; (d) the cost of reducing emissions has been substantially lower than predicted; and (e) transaction costs have been kept low and well under control.

In 1995, the first year of the programme, 8.7 million allowances were issued to the affected Phase I utility units, which reduced their SO<sub>2</sub> emissions to 5.3 million tons (from 10 million tons in 1990); 3.4 million tons (40 per cent) below their allowable emission level for that year. And despite an increase in emissions in 1996, large overcompliance in 1995 enabled Phase I units to remain 35 per cent below their 1996 allocations, and 45 per cent below the 11.7 million allowances available that year.

The expected cost of the programme has fallen dramatically. In 1990 the US Environmental Protection Agency (US EPA), which administers the programme, estimated the programme would cost US\$5 billion annually by the year 2010 if no trading were permitted, and US\$4 billion per year with unrestricted trading. In 1994, the US General Accounting Office estimated that the programme without trading would cost US\$4.9 billion per year by 2010, but only US\$2 billion per year with full trading; less than half the cost of a programme without trading.

The lower than expected compliance cost goes to the core of the success of the SO<sub>2</sub> emissions trading programme and has generated considerable discussion, both to try to understand better the SO<sub>2</sub> programme and to understand the implications of applying this approach to international environmental problems, in particular greenhouse gas emissions. Among the reasons for the low compliance costs are:

- The allowance trading system facilitates competition across all emission reduction options.
- The cost of factor inputs has fallen faster than expected. The drop in rail freight rates made low-sulphur coal from the Powder River Basin of Wyoming more competitive with locally-mined high-sulphur coal in the Midwestern markets. At the same time, the cost of fuel gas desulphurisation (scrubbing) has been falling

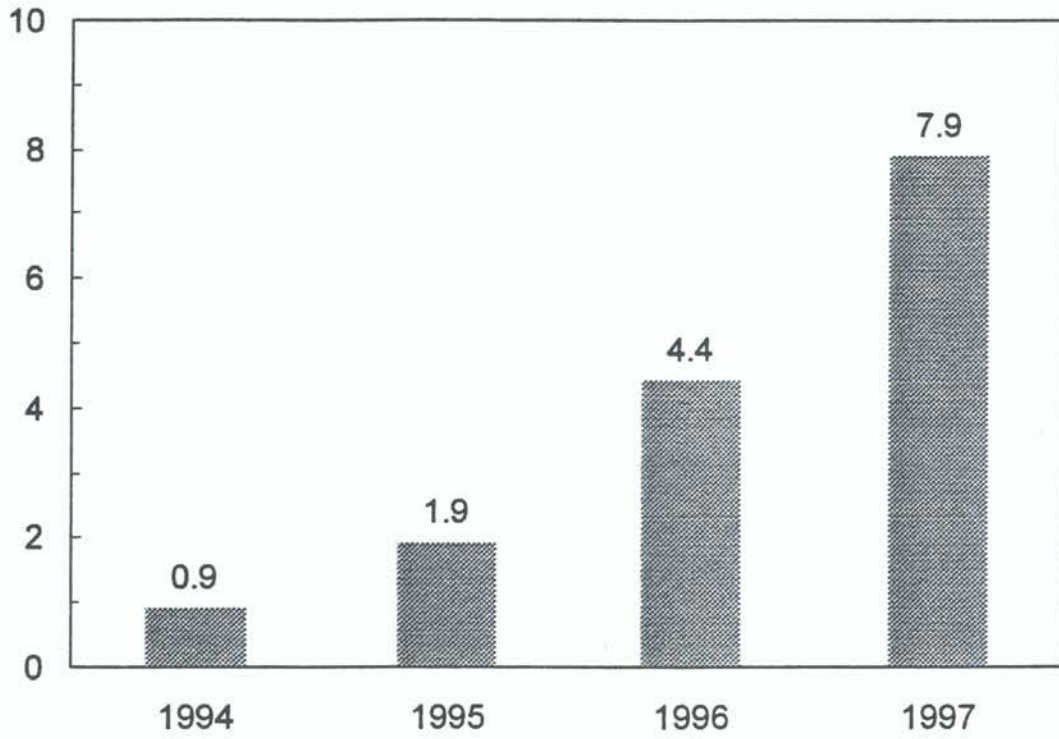


while removal efficiency rates have improved from 90 to 95 per cent or more. The average cost of reducing SO<sub>2</sub> emissions using scrubbers was about US\$270 per ton in 1995, well below earlier estimates of US\$450-500 per ton.

- The programme has stimulated technological and managerial innovation. Companies have experimented with new fuels and have blended fuels to minimize SO<sub>2</sub> emissions. Load shifting between low-emitting and high-emitting plants has been increasingly utilised. Coal suppliers have also resorted to “bundling” allowances with coal sales to increase their attractiveness. And market instruments including options and swaps are being used to reduce risk.
- The programme allows firms to bank unused allowances for future use. Early over-investment in scrubbers enabled firms to over-comply and to bank unused allowances. Banked allowances are likely to become attractive in 2000 when more stringent Phase II limits come into effect. Banking reduces compliance costs by allowing more flexibility in the timing of emission control investments.
- The volume of trades reflects a measure of the gains from trading. Each year since 1994, as utilities gained more experience, the volume of trades has more than doubled, increasing from 900,000 allowances in 1994, the second year of the programme, to 7.9 million allowances in 1997. (See Table 1). Allowance prices have fallen steadily from about US\$150 per ton in 1994 to about US\$100 in early 1998. (See Table 2). This compares with industry estimates in 1990 of US\$700-1000 per ton, and US EPAs own estimates of US\$400 per ton.
- Besides being less expensive for emission sources to comply with their emission reduction obligations, the programme has proven less expensive for the government to administer. Because the allowance programme is heavily computerised and automated, a great deal of up-front effort is needed to design and implement the programme (front-loading). The US Federal implementation mechanism requires a workforce of less than 100 persons to fully implement the

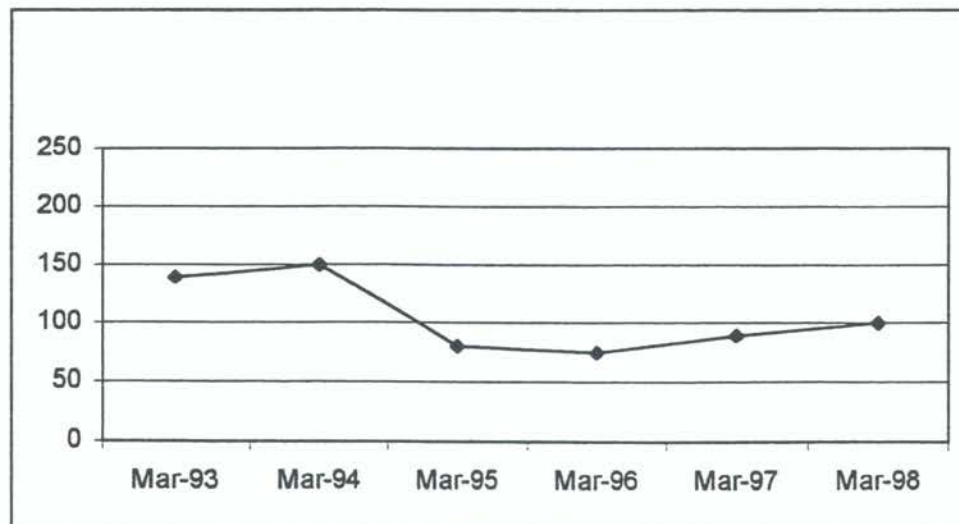
**Table 1. Volume of Economically Significant Allowance Trade  
(Between unrelated parties)**

Million tons traded



Source: US/EPA

**Table 2. SO<sub>2</sub> Allowance Prices (US\$)**



Source:US/EPA

programme. Three-quarters of this workforce focus on auditing the performance of emissions monitors and quality assuring data reports. The remainder handle all other functions including permitting, allowance transfers, auctions, data system operations, end-of-year allowance reconciliation, programme evaluation; and general administration. It is expected that less than 150 workyears per year (persons annually) will be required to operate the programme when it enters Phase II.

- Penalties for non-compliance are stringent and automatic. Should annual SO<sub>2</sub> emissions exceed the number of allowances a firm holds at the end of the year, statutory penalties of US\$ 2,000 per ton exceeded (indexed to inflation) and an offset of one allowance per excess ton are imposed automatically.
- Finally, the combination of falling allowance prices, unexpected advances in emissions control technology, and stringent automatic penalties for non-compliance have ensured a 100 per cent compliance performance.

## **II. Organizing the international emissions market for trading assigned amounts and certified emission reductions**

Two features are essential to the organization and development of an international greenhouse gas emissions market. These are:

- a) the establishment of a comprehensive regulatory framework for emissions trading;  
and
- b) the establishment of an efficient market infrastructure for emissions trading.



## **(a) The regulatory framework**

### *1. Legally-binding emission limits and the tradeable commodity*

Emissions trading is a market-based *regulatory* instrument. The cornerstone of any emissions trading system is the establishment of legally-binding emission limitation and reduction commitments. Such limits provide the legal basis for the creation of the commodity, and the regulatory incentive for the transfer and acquisition of tradeable units, (i.e. assigned amounts and certified emission reductions).

Once legally-binding emission limits have been established, it is important to provide a precise definition of the tradeable commodity. The commodity may be defined as either (a) emissions allowed, or (b) emissions reduced. In the case of the Kyoto Protocol, both emissions allowed and emissions reduced have been agreed. Parties may transfer or acquire assigned amounts (i.e. emissions allowed); as well as acquire certified emission reductions (i.e. emissions reduced). An important distinction between trading emissions allowed and emissions reduced is that the latter must be measured before the commodity can be created and traded. Emissions allowed (i.e. assigned amounts) are determined on the basis of quantitative limits established in the Protocol and are tradeable throughout their lifetime.

The creation of a tradeable commodity which can be purchased and owned often leads to assertions about property rights. It should be noted that in the United States, SO<sub>2</sub> allowances are deemed “authorizations to emit” in accordance with stipulated laws. Rights are therefore limited to ownership and transferability (quasi-property rights).

### *2. Monitoring and certification of emissions*

The ultimate accountability and credibility of any international regime for limiting or reducing greenhouse gas emissions rest on the integrity of its monitoring, verification and certification provisions. This applies equally to all emission control systems, with or without trading. However, the establishment of accurate inventories is an essential pre-requisite for

emissions trading, especially where domestic trading markets are seen as complementary to the international emissions market.

Much has been made of the issue of trading uncertainties and the potential for an international emissions trading market to result in increased net emissions due to trading between Parties with high uncertainties (transfers) and those with low uncertainties (acquisitions) in the preparation of their national inventories. Fortunately, the provisions of Articles 5 and 7 of the Kyoto Protocol make such trading of uncertainties unlikely, if not impossible. The Protocol establishes common methodologies for estimating national anthropogenic emissions by sources and removals by sinks (for Annex 1 Parties) for the six greenhouse gases. Inventories, including the necessary supplementary information required for ensuring compliance with Article 3, are to be included in national communications and submitted annually for review by the COP/MOP. As each Annex 1 Party's national emissions inventory must be approved by the same international authority (the COP/MOP), uncertainties, if they exist, must therefore be universal. Emissions trading can in no way affect the overall predetermined emission limits established by the Protocol.

Acceptable monitoring methodologies are available to governments and emitters. The most accurate, but also the most expensive to operate, is the continuous emissions monitoring system (CEMS) utilising state-of-the-art emissions measuring equipment and computer technology. Acceptable methodologies also exist for estimating emissions on the basis of fossil fuel consumption; or indeed the production and net importation of fossil fuels. In practice, emissions measuring and monitoring should present few problems for the majority of Annex 1 Parties, as these countries are well equipped to estimate emissions, in particular carbon dioxide and methane from energy sources.

### *3. Domestic allocation issues*

The question of domestic allocation is linked to issues of equity, competitiveness, distributional efficiency, and transaction costs. The Kyoto Protocol is an intergovernmental instrument which authorises trading among "Parties". This raises the question of the role of private entities in



emissions trading. While in principle an exclusive government-to-government trading system should generate efficiency gains larger than those of a non-trading system, the participation of the emitting entities and other market makers in the trading system will represent the best assurance that system optimization will be achieved *via* increased competition, the exploitation of least-cost emission reduction opportunities, and the mobilization of private capital, finance, technology, and the profit motive in cutting emissions. Consistent with provisions in Articles 6 and 12, it is expected that Parties will agree to authorize legal entities, under their responsibility, to participate in actions leading to the transfer and acquisition of assigned amounts.

It is widely accepted that as long as transaction costs are low and markets are competitive, the choice of allocation method will not affect the efficiency with which the trading system achieves its environmental objectives. However, allocation choices will carry distributional and equity implications for fossil-fuel producers, importers, emitting sources, consumers, and governments. Indeed, the ability to separate efficiency concerns from equity and distributional objectives provides a useful policy tool for decision makers.

Several allocation methods are available to governments. These range from the traditional method of free allocation in proportion to a firm's historical emissions ("grandfathering"), to auctions, and allocations based on equity considerations. The latter includes providing additional allowances to sources that have already undertaken efforts to reduce emissions, granting allowances to new non-fossil fuel energy sources (eg. wind and solar energy), or to regions with relatively high population growth. Providing additional allowances to some sectors will invariably lead to a reduction in the number of allowances available to other sectors. Allocations may also distinguish between upstream entities, such as fossil-fuel producers and importers, and downstream emitters. While the upstream option is attractive by its simplicity, the downstream alternative offers not only greater assurance of fossil-fuels consumed but, more importantly, the prospect of greater competition as well, since a much larger number of market players will be involved.

Once allowances have been allocated, trading will minimize the cost of emission reduction. But the allocation method has implications for: (a) the distribution of the emission reduction



burdens (who bears the cost of monitoring and reducing emissions); (b) the extent to which firms can pass on the cost of abatement to consumers (depending on the degree of market competition and price elasticities, among other things); (c) the capacity of governments to raise revenue (where the allocation is not free of charge); and (d) the opportunities for windfall profits (where the allocation method leaves entities better off than before the system was introduced).

#### 4. *Enforcement*

A strong, credible and effective enforcement regime provides one of the essential pillars of an emissions trading system. The compliance mechanism should ensure the integrity and fairness of the system. For enforcement to function effectively, it must be coupled with strict monitoring and reporting mechanisms.

In designing enforcement regimes it is important to determine not only the nature of the enforcement provisions but also the level, national or international, at which the provisions are to be applied. Enforcement regimes, like monitoring, are generally more effective at the national level, not at the international level. Achieving international consensus on a legally-binding regime of stringent penalties for non-compliance, including large automatic financial penalties (as in the case of the US SO<sub>2</sub> allowance trading programme) seems unrealistic, in view of the opposition to such measures by several major Parties.

However, it should be remembered that at the international level, the issue is not compliance and enforcement of emissions trading; rather it is compliance with and enforcement of legally-binding commitments under the Protocol. Emissions trading is a policy option among several available to all Annex 1 Parties. Those Parties that choose to use trading might be well advised (and inclined) to institute stringent financial penalties as part of their *domestic* trading systems, where such measures actually matter most. If compliance can be assured at the national level, then international compliance itself will be assured. But such measures cannot be simply and automatically transposed to the international level. Indeed, excluding certain regional economic groupings, notably the European Union, there is no multilateral agreement, with or

without emissions trading provisions, which provides for automatic financial penalties as part of its international enforcement regime.

Nevertheless, international agreements must be, and must be *seen* to be, credible. A number of provisions could achieve this objective, including the graduated toughening of sanctions ranging from public rebuke for minor violations by “first offenders”, to the application of an interest rate charge to any excess tons emitted, to the loss of trading (transfer) rights, and the eventual suspension of the offender from further participation in the trading mechanism. Non-governmental organizations have an important role to play in mobilizing public opinion in favour of effective national and international compliance.

#### **(b). Market architecture**

Developing efficient market institutions and instilling confidence in them is a slow and patient process. Even though commodity markets have seen rapid and profound changes over the last 30 years, successful markets are difficult to duplicate. In designing and developing market infrastructure for an initial-phase international greenhouse gas emissions trading system it would be prudent to follow a few guiding principles:

##### *a) Simplicity*

Market design should be kept as simple as possible. Even though the Kyoto Protocol provides for trading of assigned amounts among all Annex 1 Parties, the acquisition by Parties of CERs from non-Annex 1 Parties, trading in all six gases, etc., the fact is trading is not mandatory. It is unlikely that the emissions market will begin in such a comprehensive form and with such complex structures. Rather, the market is likely to develop gradually and in stages.

A number of Parties may prefer to wait-and-see, relying instead on proven policy instruments (command-and-control, taxes, etc.). And Parties that choose to trade will find that there are many practical options to choose from, including which gases to trade;



which industrial sectors to include in the trading programme; which legal entities to authorize for participation in the market; alternative opt-in and other provisions for system enlargement. In practice, the most likely outcome will be a wide variety of national implementation regimes, with hybrid mixes of emissions trading and traditional methods of pollution control co-existing in a number of Annex 1 countries.

In the initial phase, Parties with corresponding domestic trading systems (or wishing to develop such systems) would find it attractive to coordinate their efforts in order to facilitate the emergence of a workable, coherent, stable, international trading system. Quantitative authorizations to trade (allowances) should be assigned to major stationary emitting entities that are easy to measure and monitor accurately, and for which accurate emissions inventories have been established.

For practical reasons, the gases to be traded initially may be restricted to CO<sub>2</sub> and CH<sub>4</sub> from the energy sector.

Appropriate provisions for the enlargement of the trading system should be provided.

#### *b) Flexibility*

Market design should seek to utilise as far as practicable the elements of flexibility contained in the Kyoto Protocol. These include, but are not limited to, averaging emissions over a 5-year commitment period; inter-gas trading (eg. CO<sub>2</sub> and CH<sub>4</sub>); banking of allowances for future use; carrying forward unused allowances from one commitment period to another; encouraging investments by firms in emission reduction activities in other Annex 1 countries and non-Annex 1 countries in order to acquire ERUs and CERs respectively; and giving credits or additional allowances for early reduction actions.



*c) Stability*

Confidence is an important ingredient in ensuring market stability and development. A number of measures could be taken that would help to strengthen public confidence in the emissions market. These include:

- ensuring that competition among the main market players is adequate;
- allocating allowances to domestic entities in a way that is transparent, with minimum transaction costs, and leaves no one better off or worse off than before the system was introduced;
- establishing adequate mechanisms and regulations to deal with possible market failures such as the risks of cartelization, hoarding, fraud, and other anti-market practices. Governments themselves should refrain from anti-market behaviour such as arbitrary intervention or manipulation of the market, or the confiscation of allowances.

*d) Accountability*

Market institutions must facilitate transparency and accountability in their operations, including *via* public access to information regarding not only the movement of quantities traded between Parties, but also prices, the identities of buyers and sellers, etc. To ensure transparency and accountability, a national system of certification, notification, registration and accounting (bookkeeping) of trades will be required. This should be linked to an international data collection and registration mechanism, possibly within the Climate Change secretariat, to ensure timely comparability of trade and trade-related data at both the domestic and international levels.

**(C) The mechanics of emissions trading - Organizational options**

Based on the features described above, the question that arises is how would international emissions trading work in practice? Since emissions trading is optional, three distinct trading models are likely to emerge:

1. Trading among countries with domestic emissions trading systems;
2. Trading among countries without domestic emissions trading systems; and
3. Trading among countries with and without domestic emissions trading systems.

**Model I: Trading among countries with domestic emissions markets**

*(See Model Trading System, and Model Transactions Flow Chart)*

In this model, two countries (Country A and Country B), both Annex 1 Parties, have established domestic emissions trading markets.

The national authorities of both countries have allocated a part of their respective assigned amounts to emitting entities (electric utilities, refineries, heavy industries, etc.) within their territorial jurisdiction.

Country A's emitters have effectively introduced measures to reduce emissions (e.g., fuel switching, new energy-efficient technologies, etc.) and now find that their actual emissions are well below the levels allowed. These emitters choose to sell their extra tons of allowances to other emitters; either on the domestic market or the international emissions market.

All traders, whether companies or individuals, should be required to register with the "Central Domestic Agency", i.e. the central governmental body responsible for approving and recording all transactions, (such as the Environmental Protection Agency or Department of Environment), which will establish an account in the trader's name.

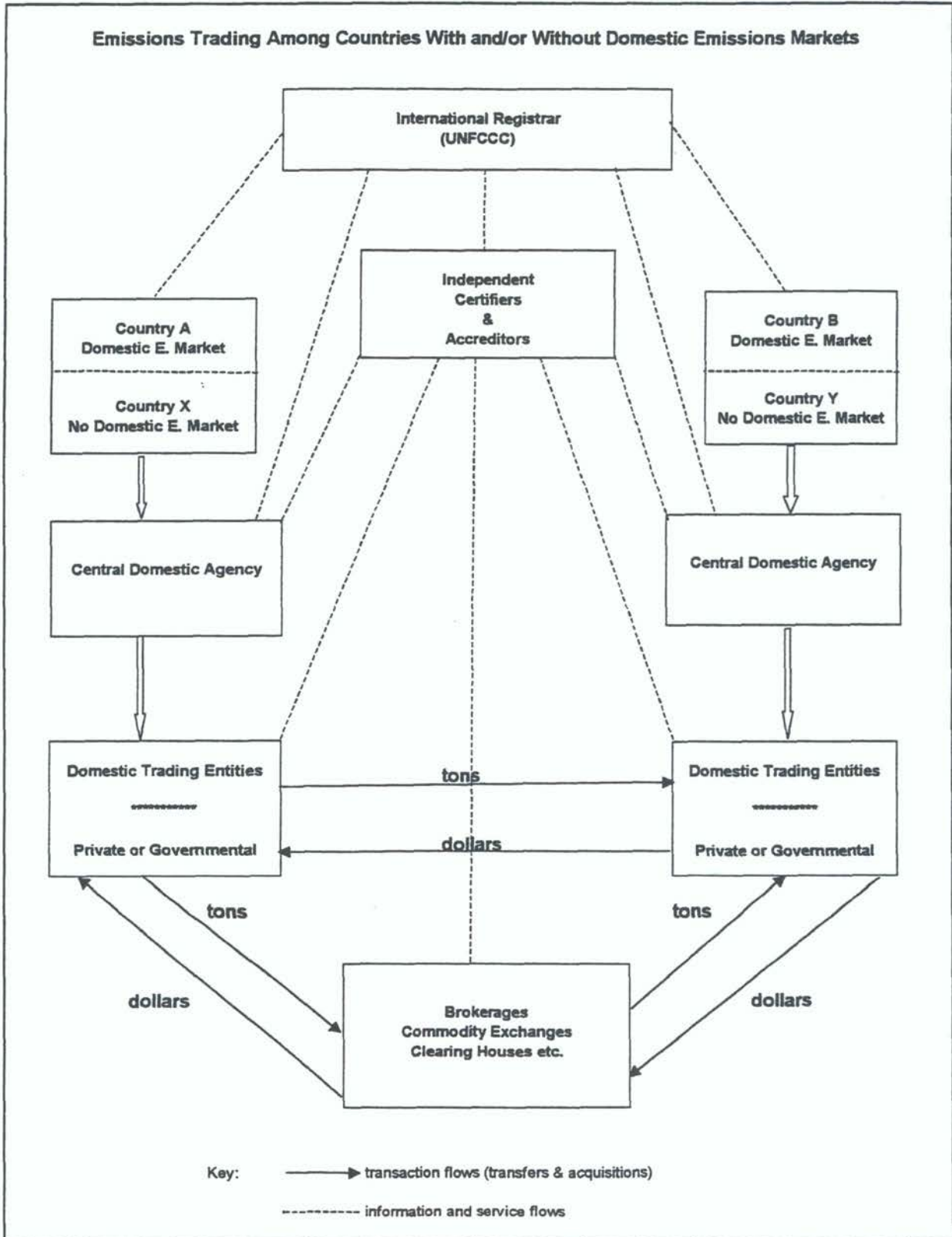
In order to sell extra allowances internationally, an emitter should be required to have its emissions verified and certified by an approved independent certification body.

Once that is done, the seller can transfer any part of the extra allowances to a foreign buyer. The seller should report the transaction to the Central Domestic Agency (CDA). The CDA records the transaction and adjusts the account of the seller.

The CDA in turn sends confirmation to all parties concerned (seller, broker, buyer, etc.) that the transaction has been recorded and accounts have been adjusted. The CDA also informs the “International Registrar” (UNFCCC Secretariat) of the transaction. The International Registrar records the transaction, adjusts each Party’s account accordingly, and sends confirmation back to the Parties concerned.

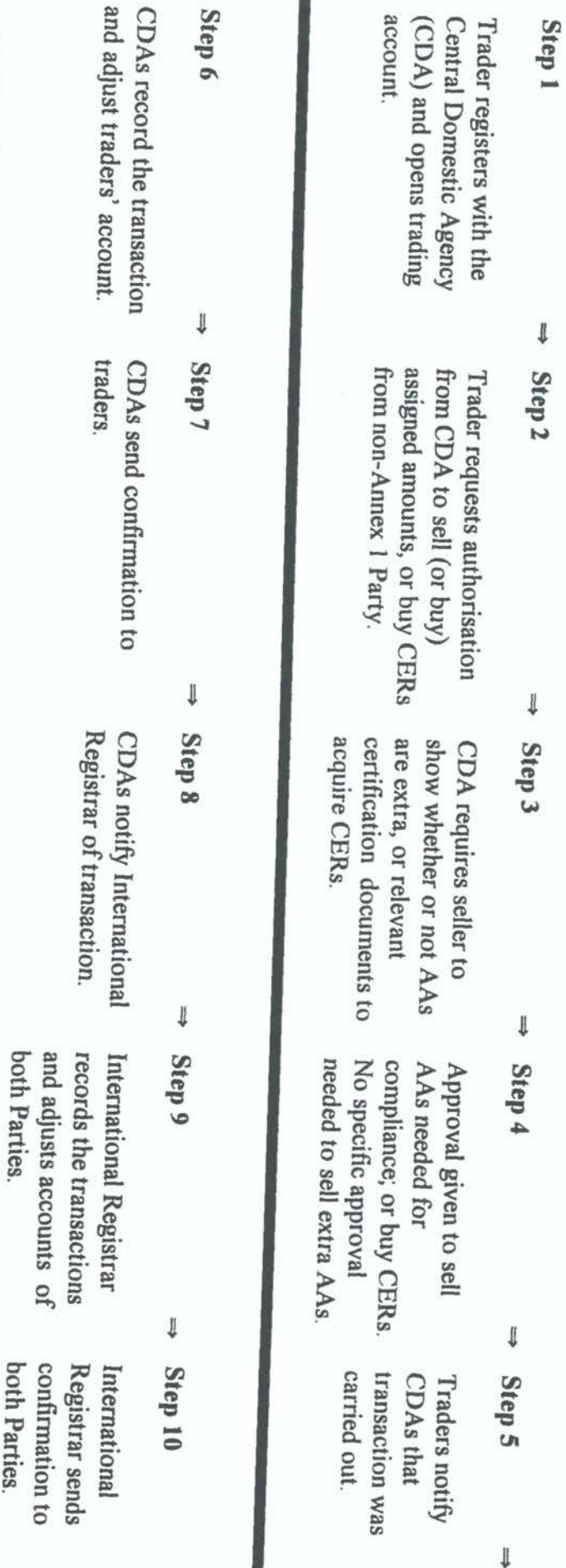


Model Trading System



## Emissions Trading: Model Transactions Flow Chart

### Process and Procedures for Certification, Approvals, Registration and Notification of International Transactions



In the importing country (Country B) the transaction should be notified to the Central Domestic Agency by the buyer. The Agency will record the transaction, adjust the trader's account, send confirmation of the acquisition back to the buyer, and notification to the International Registrar.

In the case of an emitter wishing to sell a part of its assigned amount that is needed for compliance with its obligations (i.e. no excess allowances have been certified), the seller should be required to obtain the CDA's approval prior to proceeding with the transaction.

**Model II: Trading among countries without domestic emissions markets**

*(See Model Trading System, and Model Transactions Flow Chart)*

In this model, two countries, (Country X and Country Y), both Annex 1 Parties, decide to engage in the transfer and acquisition of assigned amounts. Neither country operates a domestic emissions market. Country X, through the application of an efficient tax was able to reduce its emissions substantially; (or had acquired CER from non-Annex I Parties) resulting in an excess of assigned amounts relative to actual emissions. Country Y, on the other hand, has been relatively unsuccessful in reducing its emissions to meet its international obligations, in spite of an impressive record with the use of various policies and measures.

As emitting entities in both countries have not been allocated specific quantified emission limits, international emissions trading would most likely be handled on a government-to-government basis.

However, in order to trade, both countries should be required to establish independent government-owned trading units.

The selling country (Country X) is required to verify and certify its emissions by an approved independent agency. Country X's trading unit then transfers the excess amount to Country Y's trading unit.



The seller reports the transaction to its Central Domestic Agency. The CDA records the transaction, adjusts the account of the seller, sends confirmation of the transaction back to the seller, and notification of the transaction to the International Registrar.

The buyer also informs its Central Domestic Agency of the acquisition. The CDA records the acquisition, adjusts the account of the buyer, sends confirmation back to the buyer, and notification of the transaction to the International Registrar.

The Registrar records the transactions, adjusts each Party's account accordingly, and sends confirmations back to the Parties concerned.

If either country wishes to sell a part of its assigned amount needed for compliance with its international obligations, the transaction should first be approved by their respective Central Domestic Agency.

**Model III: Trading among countries with and without domestic emissions markets**  
*(See Model Trading System, and Model Transactions Flow Chart)*

In this model, two countries, (Country A and Country Y), both Annex 1 Parties, decide to engage in the transfer and acquisition of assigned amounts.

Country A has in place a domestic emissions trading system, with allocations to specified emitting entities. Country Y has in place various policies and measures. Country A's entities wish to sell a part of their extra allowances to Country Y's governmental trading unit.

After verification and certification of their emissions by approved independent certifiers, Country A's emitters are cleared to transfer their extra allowances to Country Y.

As in previous models, the seller reports the transaction to its Central Domestic Agency. The CDA records the transaction, adjusts the account of the seller, sends confirmation of the transaction back to the seller, and notification of the transaction to the International Registrar.

The buying country's governmental trading unit also informs its Central Domestic Agency of the acquisition. The CDA records the acquisition, adjusts the account of the buyer, sends confirmation back to the buyer, and notification of the transaction to the International Registrar.

The Registrar records the transactions, adjusts each Party's account accordingly, and sends confirmations back to the Parties concerned.

If either country wishes to sell a part of its assigned amount needed for compliance with its international obligations, the transaction should first be approved by their respective Central Domestic Agency.

Alternatively, Country Y's government might wish to sell part of its assigned amount (excess or not) to Country A's authorized entities or other registered traders. Once again, the process of verification and certification of emissions by authorized independent auditors should be completed, the transaction should be reported by Country Y's trading unit (and by Country A's buyers) to their respective Central Domestic Agency, for approval (if relevant), registration, adjustment of accounts, and confirmation of registration, as appropriate. The Central Domestic Agencies in both countries should also notify the International Registrar of the transaction, and the International Registrar should register the transaction, adjust each country's account and provide confirmation back to the Parties concerned that the registration and bookkeeping procedures have been carried out.

#### **(d) Summary of main trading institutions**

##### **1. The Central Domestic Agency (CDA)**

###### *Responsibilities:*

- Domestic allowance allocation.
- Appoint (and supervise) independent accreditors, verifiers, certifiers and auditors.
- Establish and maintain emissions inventories.

- Establish and maintain emissions trading accounts.
- Establish and maintain system for approvals and certification of trades.
- Establish and maintain system for registration and tracking of trades
- Establish and maintain system for confirmation of transactions.
- Establish and maintain system for notification of all transactions to the International Registrar.
- Establish and maintain a public data base.

## **2. The International Registrar**

### *Responsibilities:*

- To establish and maintain a record of all transactions notified to it by the Central Domestic Agencies and all authorized trading bodies.
- To establish and maintain Parties' trading accounts.
- To establish and maintain a system of confirmation of notification of transactions.
- To provide data on transactions to the COP/MOP and its Subsidiary Bodies.
- To assist Parties in their review and evaluation of national compliance.
- To establish and maintain a public data base on emissions transactions.

## **3. The Accreditors and Certifiers**

### *Responsibilities of Accreditation Authorities:*

- Advise governments on the process and procedures for verification and certification of emissions and trades.
- Monitor data records of countries wishing to participate in emissions trading.
- Operate centralized accounts on emissions, allocations, CERs, etc.
- Verify the validity of CERs and ERUs.
- Monitor the evaluations carried out by Certifying Authorities.
- Audit each authorized/accredited body and evaluate changes in operating systems.



*Responsibilities of Certifying/Auditing Authorities:*

- To audit emission records of entities participating or wishing to participate in the emissions trading system.
- To validate through the certification process the assigned amounts, ERUs, and CERs participants wish to trade.

**4. The Traders**

Including: Brokers, commodity exchanges, emitting entities, non-governmental organizations, governments, individuals, other legal entities.

*Responsibilities:*

- To facilitate transactions.
- To report transactions to Central Domestic Agency.
- To report transactions to International Registrar (optional).
- To maintain client accounts.

**(e) Summary of the main steps in international emissions trading**

1. Registration of all traders and the opening of trading accounts with the Central Domestic Agency (CDA).
2. Transfers of any part of a certified excess assigned amount should require only notification by the seller to its CDA, and confirmation by the CDA back to the seller. The certification should be carried out by authorized independent bodies.
3. Transfer of any part of an assigned amount that is required for compliance should be approved by the CDA before transfer can be effectuated by the seller.
4. Acquisition of any part of an assigned amount should be registered with the CDA.
5. All acquisitions of certified emissions reductions from non-Annex 1 Parties should be certified by authorized independent certifiers, and approved and registered with the Central Domestic Agency.
6. All transfers and acquisitions should be notified to the International Registrar by the respective CDA.
7. The International Registrar should provide confirmation that transactions have been recorded and accounts adjusted. (The confirmation by the International Registrar is without prejudice to the authority of the COP/MOP to confirm or deny the validity of the transaction).

**(f) Transparency and accountability in the emissions market**

Ensuring transparency and accountability in the functioning of the emissions market will require the establishment of key regulatory and supervisory institutions on the one hand, and market institutions on the other. The roles and responsibilities of the various institutions must be clearly defined to avoid ambiguity and possible conflicts of interest. For example, the responsibility to regulate and approve trades should not be in the hands of those who conduct trades. Independent auditing and certification of all trading activities should be required. Common procedures for tracking and reporting transactions both at the national and international levels should be agreed.

**(g) Transaction costs**

Both the “trading system model” and the “flow chart model” presented above would be amenable to relatively straightforward computerization and automation. However, such trading systems do require substantial up-front investments in modern operating systems, which are then amortized over many years. Computerization and automation are critical factors in producing efficiency gains and in keeping management and operating costs, and overall transaction costs, low.

**D. The Greenhouse Gas Emissions Market - Some Lessons for Developing Countries****I. Lessons from the Kyoto process**

For some observers, the outcome of the Kyoto negotiations was a major success:

- Firstly, the Kyoto negotiations were arguably one of the most complex “economic” negotiations ever conducted under United Nations auspices. While numerous practical and implementation details remain to be worked out, the Kyoto agreement gives new momentum to the negotiating process. Had



governments failed to reach agreement at Kyoto, the process would likely have stalled.

- Secondly, while some Parties and interest groups would have preferred an agreement with deeper emission reductions and less flexibility in the way reductions can be achieved, there were also powerful interests pulling in the opposite direction. Indeed, making the transition from a Framework Convention with “soft targets” to a legally-binding instrument with quantified emission limitation and reduction commitments was a major challenge and therefore a major achievement. It has established the negotiating process on a solid long-term basis.
- Thirdly, compared to 1990 emission levels, the agreed average emission reductions by Annex 1 Parties (5.2 per cent in the period 2008-2012) seem rather modest. In reality, some Annex 1 countries will have to make enormous efforts to turn their emissions trajectories around, and achieve quite large reductions compared with their business-as-usual forecasts; well over 30 per cent in some cases.
- Fourthly, the inclusion of emissions trading and other flexibility mechanisms enabled political compromise to be reached.
- Finally, transparency and accountability have been assured. Provisions for the preparation of inventories, monitoring and reporting, will help to ensure that reductions are real and measurable.

But a great deal more remains to be done. Complementary measures in a number of important areas including the basic rules for emissions trading, non-compliance and enforcement measures, remain to be agreed. The role of developing countries in the global emissions market is far from clear, and will require creativity, innovation and compromise. How these issues are approached in the post-Kyoto period could have a lasting impact on the viability of the Kyoto Protocol.

## **II. Elements of a “Buenos Aires Mandate”**

The issue of “meaningful participation by key developing countries” will no doubt loom large in the post-Kyoto period. Much attention will focus on efforts to (a) further define and operationalize the Clean Development Mechanism, and to (b) agree possible criteria for the participation of developing countries in international emissions trading. Drawing on the Kyoto experience, some possible elements for a mandate regarding participation of developing countries in emissions trading could include the following:

1. Participation in emissions trading should be on a voluntary basis. (While the trading system can be designed to benefit all developing countries, it seems that the larger, industrially-advanced, fast-growing developing countries might be the primary beneficiaries of the system).
2. Legally-binding limits (for countries that wish to join the emissions trading system) should be based on emissions growth, not emission reductions. This principle was recognised during the Kyoto negotiations. Growth limits would enable developing countries to continue to pursue their industrialization but on a more environmentally sustainable basis. (In principle, emissions growth in non-Annex 1 countries should be compensated for by deeper reductions by Annex 1 Parties, leading to “contraction and convergence” of per capita emissions between both sides).
3. Negotiations could be based on national offers from developing country Parties. Offers by regional groupings such as ASEAN and MERCOSUR should also be considered.
4. In addition to existing flexibility mechanisms, developing countries should be allowed to introduce “partial caps” which, for example, could be based on industrial sector limits, and coupled with joint implementation in the uncapped sectors, as a form of progressive restriction towards the imposition of a national

cap. This approach would help to lower the risk and consequences for developing countries of policy errors, and help to build confidence in the credibility and long-term stability of the trading system.

5. Countries operating industrial sector growth limits would continue to have access to the Clean Development Mechanism for investment and trading in CERs.
6. Developing countries should be allowed to choose different base years for each greenhouse gas they propose to bring under a sectoral or national cap.
7. Trading, banking and carrying-forward from one commitment period to another should be allowed. No attempts should be made to circumscribe the trading of duly agreed assigned amounts in the name of “hot air” or “paper credits”, etc..
8. Other flexibility mechanisms, including the possibility of organizing developing country bubbles, should be given due consideration.
9. Commitment periods should be based on multi-year averaging and should not exceed those periods for Annex 1 Parties.
10. The legally-binding nature of any commitment should apply only for the duration of the commitment period in question; and should not automatically apply to subsequent commitment periods.



#### **D. Conclusion**

- The Kyoto Protocol provides a clear and compelling basis for the development of a truly global emissions market; one in which developing countries should participate fully on the basis of clearly defined principles and guidelines. Fortunately, the Kyoto process provides a number of useful insights into how this could be done. However, many developing countries will require timely technical assistance to help to improve their understanding of the main issues, identify constructive and coherent options for negotiations, and bring about a convergence of views between all Parties.
  
- Market architecture, trading rules and procedures should be simple. In order to avoid a two-speed trading system, the institutional infrastructure required for trading should be applicable equally to both public and private sector trading, and should be designed to accommodate full participation by developing countries.
  
- Concerns about transparency, verification and accountability of the trading system can be assured via the use of key institutions and procedures, including the implementation of strict provisions for monitoring and certification of emissions and emission reductions, the regulatory and supervisory role of governments, stringent enforcement of the trading system at the national level, and a carefully designed process of certification, approvals, notification, registration, and reporting of transactions.

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L'ENVIRONNEMENT



**Third International Conference of the UNEP Insurance Initiative**

**“Environmental Tools for the Insurance and Financial Industries”**

*Session I: Developing the Tools for the Post-Kyoto Markets*

**Developing Indicators for Global Warming**

*Mr. Charles Thomas, British Petroleum*

# UNEP Insurance Initiative

3<sup>rd</sup> International Conference 9<sup>th</sup> June, 1998

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## DRAFT VERSION

### Speech: Developing Indicators for Global Warming

#### *Introduction*

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Thank you very much for giving me the opportunity to speak at this conference on Developing the Tools for the post Kyoto markets. Global warming is not an obtuse theory but a fact of our lives and industrial activity plays a major role in the release of greenhouse gases. There is an increasingly movement at International, European and National levels concerning the potential anthropogenic influenced global warming, culminating at Kyoto last year. Kyoto without doubt proved to be a hugely important agreement on attempts to curb global greenhouse gas emissions. It is now time to start the preparation for the implementation of the variety of new policies agreed in the Kyoto protocol.

The talk has been broken down in to key subject areas namely:

1. The context and why the there is a need for indicators for global warming.
2. The state of play in global warming reporting by companies
3. A presentation of a actual global warming indicator
4. The future for global warming indicators

#### ***The context: Why is there a need for indicators for global warming?***

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1. Firstly it is necessary to clarify the title of the talk "Developing Indicators for global warming". This can essential taken at two distinctive levels. Firstly national reporting on greenhouse gas and secondly corporate reporting. The former is an issue both well research and internationally agreed the latter is the inverse (corporate reporting) and consequently what I shall concentrate my discussion on.



2. The Kyoto protocol by many observers produced of one of the most significant international agreement. Within the array of national commitments (Annex 1) as already discussed important allow mechanisms which maybe be employed by nation states. In particular Art 9, 12 and 17 these are three important 'flexible mechanisms', namely Joint Implementation (JI), the Clean Development mechanism (CDM) and emission trading. These mechanisms permit companies to actively engage in the abatement of greenhouse gases as part of national commitments to the Kyoto Protocol. In particular many companies based in Annexe 1 countries will be integral to the reduction process.

At the very heart of these mechanisms is the need of companies to actively employ a **measure** to calculate the extent to which they are emitting greenhouse gases, in short an **institutional reporting mechanism** is required.

3. Risk Management in the context of Kyoto is not immediately apparent, therefore it is important clarify this. To take an example; the UK government committed itself to a 20% reduction by 2012 using a 1990 base year, not small by any means. Policies available to the government other than the 'flexible mechanisms' potentially include the use of carbon taxes. Indeed in this point the government's own advisory committee has recognised the possible need for such a tax. Without doubt any such potential taxes would have an impact on the financial bottom line of a company. For Financial institutions it is imperative to have reliable and credible information regarding the extent to which may or may not exposed to such taxes with the use of a CO<sub>2</sub> or carbon indicator. Any modus operandi will unavoidably have an impact on industry both fiscally and strategically.

Proof of a positive correlation between better environmental performance and share price, would be a compelling reason for companies to invest in environmental improvements. For their part, investors would also look more carefully at companies' environmental performance. A growing body of work suggests that companies that rate highly on environmental criteria also provide better-than-average returns to shareholders, and that financial analysts and investors can improve their investment performance by analysing environmental value drivers.

While these studies are building a case, they do so by assessing a range of environmental issues not simply measures to abate possible global warming. A direct correlation between global warming abatement and financial performance has not been made although it should

be noted that companies frequently cite energy saving measures as good for the environment and the bottom line. The Investor Responsibility Research Centre (IRRC) noted with its emissions efficiency index that it may have identified instances in which some firms achieved some competitive advantage to certain competitors. Similarly European Federation of Financial Analysts Societies (EFFAS) reported that energy efficiency measures can be regarded as a valuable indicator for the overall efficiency of a company. Further to this is the potential of global warming indicators to denote efficiencies of companies. Since for many industries the major contribution of greenhouse gases as CO<sub>2</sub> resulting from combustion. Year on year reporting might help infer to Financial institutions the energy efficiency of companies in the production of goods and services issues clearly affecting the financial bottom-line.

4. For companies tackling environmental related issues the following quote still applies, this is simply “No management without measurement”. How can a company be expected to tackle the issue without knowing its baseline?
  
5. Government have and will increasingly expect companies to publicly report on the level of companies, an example of this is what the UK Minister for the Environment, Michael Meacher said recently when he called for certain “indicators to have a high profile - to be reported on the 6 o’clock news for instance, as are the key economic indicators”. These sorts of calls augment the need to produce and use indicators including greenhouse gas indicators.

### ***State of play***

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By the “state of play” I infer what is currently being reported by companies on global warming and related issues and how companies have started to introduce such indicators. Many people have the impression that business is united in its view that policy on climate change is moving too quickly and the problem is not nearly as serious as environmentalists and many climatologists would have us believe.

Recent research carried out on a large number of environment reports, environment reports being the most common medium through which to report environment data, highlighted some interest results.

The results suggested that for the majority of companies (77%) climate change is an important issue that has bearing on the company's activities.

## Energy

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Energy consumption results from the suggested that 73% of companies made a particular reference to energy consumption as an issue for their company

## Transport

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The results contrasted significantly with those of energy usage. The mean reporting of transport issues by all companies was only 21%.

## Process Related Emissions related

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Process-related emissions, although industry specific, were also poorly reported.

## Companies producing global warming indicators.

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Results indicated that 37% reported some form of indicator associated with global warming or energy usage. This is both credible and significant. On one hand it is important that companies are both thinking about the issue and clearly companies are putting in place the channels in which to report. The significant question is how these companies are actually reporting in the face of any standardised reporting protocol. Further still financial institutions cannot reliable benchmark the efforts of companies and with still many companies still not reporting more needs to be done.



## ***Example of an indicator***

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I will now present an example of research that I and others have undertaken in an attempt to take the first steps forward in realising a more standardised approach to reporting on greenhouse gases emissions.

The indicator in question started as collaboration between Imperial College Centre of Environment Technology and NPI. The report entitled “Developing a Standardised CO2 indicator” took a bottom up approach by learning what are currently companies report and incorporating the relevant issues in a structured scientific matter.

An extensive peer review of the report was undertaken and responses received from a wide range of interested parties including; academics, accountants, companies, consultants, government agencies, financial institutions and non-governmental organisations. This review process is an essential mechanism to ensure that the indicator offers a 'true and fair' view of corporate impacts.

## **Structure of the indicator**

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Two contributions areas were identified as having the most significant impacts on global warming from a company's perspective;

- energy-related emissions and
- process-related emissions.

These areas represent a very high proportion of the global warming contribution of normal direct business activities. Each issue is required to be assessed and calculated **separately**.

## Methodology

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The methodology used was based on fundamental research by the IPCC for calculating the global warming potential of chemical species. The key to the model is the conversion of all relevant emissions to a gas (carbon dioxide), emissions also referred to as carbon dioxide equivalents. In essence the indicator is a four stage procedure:

**Assimilation;**

**Conversion;**

**Aggregation;**

**Normalisation**

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This stage primarily involved in the relavent information and presenting the data in a usable form.

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As the title suggests the CO<sub>2</sub> emissions are devrived from energy. This is split in to two distinct contribution areas namely:

- 1. Energy**
- 2. Transport**

Energy, itself is divided again into two areas:

- Direct, which are emissions from the combustion of primary fuels such as coal etc;
- Indirect emissions as a consequence of the consumption of electricity.

The direct emission are calculated by multiplying obtaining a calorific value from a mass/ volume consumption. Indirect emissions are calculated at a national state level where the emissions derived from electricity usage reflects the energy mix used to the produce the electricity.

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Emissions from transport are calculated either from attributing a fuel consumption level from for example of a company vehicle fleet or knowing passenger/tonnage mileage carried by a particular transport mode for example emissions values from distance travelled on a business trip.

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Process-related emissions are those greenhouse gases emitted from non energy-related sources. The main emission sources are industrial production processes which chemically or physically transform materials such as cement production.

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In order to permit correct procedural comparison between environmental data and financial data the boundaries of a company's impact must be aligned to those already defined by reporting requirements of internationally accepted accounting practices (IAP).

The company boundaries of the global warming indicator are defined by financial reporting requirements of Group accounts including where a company owns a controlling interest in a subsidiary (where more than 50 percent of the shares are owned or where control is excised);

Issues such as associates companies or "other investments" where a holding companies i.e. where the degree of influence is less than significant usually because the participating interest is too small should not be included within a company boundaries since commonly the holding company excises insufficient influence to demand such reporting.

Consolidation of the global warming data may be excluded when the associated subsidiary is excluded from consolidation agreed again in internationally accepted accounting standards.



By defining such boundaries it is believed that parent companies should encourage subsidiaries, associate companies and “other company investments” to follow the same reporting procedures.

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The rationale was that to date the IPCC work is the most scientifically and politically acceptable, it also allows for the combination of energy-related emissions and process-related emissions into a single metric.

Conversion values represent a crucial issue of in the CO<sub>2</sub> indicator. The qualitative and quantitative characteristics are paramount to wider acceptance. Considerable effort was made to source and calculate conversion values that were both reasonable and fair. The indicator presented conversion values currently available and that are in current usage at a company, regional, national and international level. This was possible using the ‘References Approach’ defined by the IPCC. The approach is simple that requires relatively little data and lends itself to widespread application as a ‘common denominator’. Such a common denominator predicts a quantity amount of greenhouse gases produced based on an activity statistic.

The indicator uses conversions on three different planes:

1. Conversion energy usage, both direct consumption of primary fuels and indirect energy such as electricity
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Aggregation involves the summation of the energy and transport related carbon dioxide emissions and the process-related emissions carbon dioxide equivalents. In the case of the indicator this is straightforward because of the common denominator of carbon dioxide equivalents. Therefore simple addition of all the areas can be made to produce the aggregated CO<sub>2</sub> equivalents for a company.

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The most common form of normalised measure is one that relates an environmental measure (e.g. aggregated emissions and energy usage) to a measure of business activity (e.g. production, value added or turnover). Normalised measures are critical in the production of environmental indicators since they screen out noise from factors such as changing levels of output and focus on the critical. They also allow industry comparisons.

Three denominators were selected as most appropriate for measuring company activity with reference to global warming. The reason for this was that normalisation is a critical aspect of any indicator since produces a value which indicative of a company's relative performance. No single normalisier can be reasonable used in all actuary sectors.

The three denominators chosen were felt to best represent the real needs of companies.

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Turnover represents the total value of goods and services sold by the company to third parties in the normal course of trade. Turnover as a denominator is a summation of whole value of a product or a service up to the point of sale. Unit turnover has the advantage of being an obligatory requirement for annual accounts. Thus, for widespread application to companies unit turnover is an attractive denominator. Although turnover does not permit inter-sector benchmarking since the level of turnover does not correlate to global warming contribution, turnover may allow intra-sector comparison of companies with similar profiles and production processes.

### **Added value**

Effectively this considers the increase in the value of goods after production. Added value in effect only considers the life cycle of a product or service within the boundary of a company, since costs of production reflects an individual company's resource usage. Added value is calculated using direct costs, there may be indirect costs that arise from activities contributing to the global warming impact of a company.

## **Employees**

Employees is quite simply the number of employees under contract and directly employed by a company. Employees is included because of its current usage but also its applicability to industry sectors in which added value and unit turnover would have limited value such as the banking sector.

## *Problem areas*

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It is important to recognise that an indicator such as the framework I have explained does have problems. The major issues include:

### **Outsourcing**

In the case of outsourcing, significant discrepancies can arise because the global warming impacts of the outsourced activity will not be accounted for while the financial costs and benefits will be included in the consolidated accounts. Until clearer rules are established, companies have a duty to indicate the extent of outsourced activities.

### **Waste**

The generation of waste by companies can lead to the production of highly potent greenhouse gases (in particular CH<sub>4</sub>). The major reason why waste has not been included is because of the complexity and error potential arising from attempts to create simple default values. Further research into the potential global warming contribution of waste would make the indicator more accurate especially.



## **Greenhouse gases from energy use**

Greenhouse gases resulting from energy usage were not included. This is for two main reasons. Firstly the data is inaccurate and secondly is expected role of such gases relative to the amount of CO<sub>2</sub> produced was deemed to be significantly small to be excluded.

## **Summary of Indicator**

As you can make out producing any greenhouse gases indicator can be highly contentious. There is no perfect model yet, however, by openly producing a disaggregated, transparent indicator the discussion can but be furthered.

## ***What the future holds?***

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What does the future hold? Perhaps first and foremost there must be proper attempts to standardised the reporting using widely accepted indicators. We are now starting to see these come about. In particular from two important forums namely:

- UNEP/ UNCTAD
- World Business Council for Sustainable Development

These institutions have the capability to really 'flesh out', influence standardisation and the use of indicators by companies

Financial institutions should be more engaged in both the formulations of these indicators both as stakeholders in companies and secondly to ensure they are not 'left out' of approaching possible legislation or commitments evolving from Kyoto. The follow up a COP4 later this year will be critical in the concreting the Kyoto Protocol

## **Further research**

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To complete a true picture of an indicator more research is required. Namely how issues such as:

- Sinks and offsets can be incorporated into an indicators;
- Help define the realistic boundaries that a company should report within;
- How waste can be included

- The life cycle of products can have significant effects on emissions of greenhouse gases. How can this issue be realistically included in future research.

## ***Summary***

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To sum up. My talk has tried to show the importance and need of companies and financial institutions to start investing time in an issue that strikes at the very core of reducing greenhouse gases emissions. The impact of emerging international policies will undoubtedly stimulate corporate responsibility however companies and financial institutions adopting a more proactive role are more realise the market initiative.

## ***Conclusion***

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A particular aim of this conference, and the streams within, is to have real tangible outcomes. Consequently what I have spoken about must try and emulate this cause. My contribution to this end is to openly hand out this report for all those who may want the report. To **review**, **assess** and even **use**. Greater dialogue can help to add substance to the discussion of using greenhouse gases indicators.

My final comment is that be it for reasons of the 'carrot or the stick', companies can not escape the need to measure their global warming impacts in order to manage them. Forward-thinking companies will take an active interest in the development of measurement standards to ensure they do represent a fair view.

**Prepared by Charles L.W. Thomas, 25/05/98**

# UNEP Insurance Initiative

3<sup>rd</sup> International Conference 9<sup>th</sup> June, 1998

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## DRAFT VERSION

### Speech: Developing Indicators for Global Warming

#### *Introduction*

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Thank you very much for giving me the opportunity to speak at this conference on Developing the Tools for the post Kyoto markets. Global warming is not an obtuse theory but a fact of our lives and industrial activity plays a major role in the release of greenhouse gases. There is an increasingly movement at International, European and National levels concerning the potential anthropogenic influenced global warming, culminating at Kyoto last year. Kyoto without doubt proved to be a hugely important agreement on attempts to curb global greenhouse gas emissions. It is now time to start the preparation for the implementation of the variety of new policies agreed in the Kyoto protocol.

The talk has been broken down in to key subject areas namely:

1. The context and why there is a need for indicators for global warming.
2. The state of play in global warming reporting by companies
3. A presentation of a actual global warming indicator
4. The future for global warming indicators

#### *The context: Why is there a need for indicators for global warming?*

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1. Firstly it is necessary to clarify the title of the talk "Developing Indicators for global warming". This can essential taken at two distinctive levels. Firstly national reporting on greenhouse gas and secondly corporate reporting. The former is an issue both well research and internationally agreed the latter is the inverse (corporate reporting) and consequently what I shall concentrate my discussion on.



2. The Kyoto protocol by many observers produced one of the most significant international agreements. Within the array of national commitments (Annex 1) as already discussed, important mechanisms which may be employed by nation states. In particular Art 9, 12 and 17 these are three important 'flexible mechanisms', namely Joint Implementation (JI), the Clean Development mechanism (CDM) and emission trading. These mechanisms permit companies to actively engage in the abatement of greenhouse gases as part of national commitments to the Kyoto Protocol. In particular many companies based in Annex 1 countries will be integral to the reduction process.

At the very heart of these mechanisms is the need of companies to actively employ a **measure** to calculate the extent to which they are emitting greenhouse gases, in short an **institutional reporting mechanism** is required.

3. Risk Management in the context of Kyoto is not immediately apparent, therefore it is important to clarify this. To take an example; the UK government committed itself to a 20% reduction by 2012 using a 1990 base year, not small by any means. Policies available to the government other than the 'flexible mechanisms' potentially include the use of carbon taxes. Indeed in this point the government's own advisory committee has recognised the possible need for such a tax. Without doubt any such potential taxes would have an impact on the financial bottom line of a company. For financial institutions it is imperative to have reliable and credible information regarding the extent to which they may or may not be exposed to such taxes with the use of a CO<sub>2</sub> or carbon indicator. Any modus operandi will unavoidably have an impact on industry both fiscally and strategically.

Proof of a positive correlation between better environmental performance and share price, would be a compelling reason for companies to invest in environmental improvements. For their part, investors would also look more carefully at companies' environmental performance. A growing body of work suggests that companies that rate highly on environmental criteria also provide better-than-average returns to shareholders, and that financial analysts and investors can improve their investment performance by analysing environmental value drivers.

While these studies are building a case, they do so by assessing a range of environmental issues not simply measures to abate possible global warming. A direct correlation between global warming abatement and financial performance has not been made although it should

be noted that companies frequently cite energy saving measures as good for the environment and the bottom line. The Investor Responsibility Research Centre (IRRC) noted with its emissions efficiency index that it may have identified instances in which some firms achieved some competitive advantage to certain competitors. Similarly European Federation of Financial Analysts Societies (EFFAS) reported that energy efficiency measures can be regarded as a valuable indicator for the overall efficiency of a company. Further to this is the potential of global warming indicators to denote efficiencies of companies. Since for many industries the major contribution of greenhouse gases as CO<sub>2</sub> resulting from combustion. Year on year reporting might help infer to Financial institutions the energy efficiency of companies in the production of goods and services issues clearly affecting the financial bottom-line.

4. For companies tackling environmental related issues the following quote still applies, this is simply "No management without measurement". How can a company be expected to tackle the issue without knowing its baseline?
5. Government have and will increasingly expect companies to publicly report on the level of companies, an example of this is what the UK Minister for the Environment, Michael Meacher said recently when he called for certain "indicators to have a high profile - to be reported on the 6 o'clock news for instance, as are the key economic indicators". These sorts of calls augment the need to produce and use indicators including greenhouse gas indicators.

### ***State of play***

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By the "state of play" I infer what is currently being reported by companies on global warming and related issues and how companies have started to introduce such indicators. Many people have the impression that business is united in its view that policy on climate change is moving too quickly and the problem is not nearly as serious as environmentalists and many climatologists would have us believe.

Recent research carried out on a large number of environment reports, environment reports being the most common medium through which to report environment data, highlighted some interest results.



The results suggested that for the majority of companies (77%) climate change is an important issue that has bearing on the company's activities.

## Energy

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Energy consumption results from the suggested that 73% of companies made a particular reference to energy consumption as an issue for their company

## Transport

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The results contrasted significantly with those of energy usage. The mean reporting of transport issues by all companies was only 21%.

## Process Related Emissions related

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Process-related emissions, although industry specific, were also poorly reported.

## Companies producing global warming indicators.

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Results indicated that 37% reported some form of indicator associated with global warming or energy usage. This is both credible and significant. On one hand it is important that companies are both thinking about the issue and clearly companies are putting in place the channels in which to report. The significant question is how these companies are actually reporting in the face of any standardised reporting protocol. Further still financial institutions cannot reliable benchmark the efforts of companies and with still many companies still not reporting more needs to be done.



## ***Example of an indicator***

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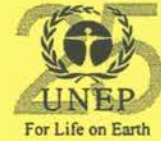
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UNITED NATIONS ENVIRONMENT PROGRAMME  
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**Third International Conference of the UNEP Insurance Initiative**

**“Environmental Tools for the Insurance and Financial  
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***Session II: Standardized Environmental Reporting:  
Meeting Corporate and Financial Sector Needs***

***Moderator: Dr. Jan-Olaf Willums, Senior Vice President, Storebrand***





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**A review of recent trends in standardizing  
environmental data collecting and reporting**

*Prof. Dr. Terje Synnestvedt, Norwegian School of Management*

**United Nations Environment Programme Third International Conference on  
Insurance and the Environment, Gologne 9-10 June 1998**

## **Recent trends in Corporate Environmental Reporting**

By

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Comments are very welcome

## **Introduction**

Through the nineties environmental reporting has become a new “art” within the business community. The first environmental reports were published in the late eighties and through the nineties we have seen a gradually increase in the number and quality of environmental reports so this seems definitely not like a temporary phenomena.

This paper will focus on corporate environmental reporting (CER) defined as *voluntary or mandatory disclosure of corporate environmental information materialized in a separate report or as a part of the firms annual report/periodical reports.*

CER represent an information stream the company can control and thereby use as a strategic tool. From the companies view CER can serve different purposes; a marketing tool, a tool for informing and motivating employees, a tool for informing top management a response to stakeholder pressure etc. The purpose of the CER will affect the content and form. The “first generation” CER’s was characterised by nice pictures and statements with little substantial information.

Seen from a business point of view a nice environmental report may be a target itself while it ideally should be a catalysator for better environmental performance. Nevertheless producing a CER may actually improve the knowledge about environmental impacts of own activities and improve the environmental performance initially as a “spin of”. Producing an environmental report may then create a focus- and motivation effect within the firm - shift attitudes thinking making environmental improvements the target and the report takes the place of a tool in communicating the environmental profile.

In the Sustainability & UNEP report “Engaging Stakeholders”(1996) its stated that: “What becomes clear is that companies are still treating the CER as a public relations vehicle - for reassurance and “feel-good” image-building - whereas stakeholders are increasingly using CER as a means of comparing and differentiating between companies on the basis of hard performance data.”

The marketing element will probably always be there creating some disturbances in the information, but the recent focus from “hard” stakeholders (the financial community) on substantial information and verification have in many cases, together with a stronger corporate commitment, created CER’s with a higher information value but there is still a long way to go. A basic rule for communication is to respect the receiver of the information. This imply that you should know the receivers information needs and not underestimate the receivers intelligence. Disregarding this principle may easily weaken a company’s credibility.

## **Recent trends in corporate environmental reporting**



There are many reasons behind the development of CER's; An increased focus on environmental issues after the first Rio conference with the introduction of the sustainability concept, some severe crisis, the second Rio conference, stronger environmental regulations internalising environmental cost, a shift in thinking in the direction of looking at corporate environmental performance as a tool for gaining competitive advantages. Some regulatory initiatives, like the Toxic Release Inventory, and Denmark's "Green Accounting", have also pushed forward some structured disclosure of corporate environmental performance

Simultaneously many initiatives have been taken in constructing guidelines for CER (PERI, UNEP, SustainAbility, CERES - GRI, EMAS and many more). A common feature of many of these initiatives is a focus on corporate environmental policy and management, compliance, liabilities, resource efficiency, releases, stakeholder relation and environmental costs.

There have been several surveys concerning environmental reporting with different samples and a great variation in thoroughness.

KPMG's international survey of environmental reporting 1996 did a study on 900 reports in 13 countries as a follow-up to their 1993 study. Their results stated that three out of four companies are now including environmental information in their annual reports, compared to 58 percent in 1993. 24 percent of companies in the survey published a separate environmental report, compared with 15 percent of companies in the 1993 survey. Industry sectors with a high reliance on the environment for the supply of raw materials, or those sectors seen to have large negative potential impacts on the environment were more likely to refer to the environment. Overall the KPMG survey found that reporting of environmental information is now expected by the marketplace. There were also found major variations between countries. Companies in the US and Europe are more likely to supply environmental information in the annual report than companies in the Asia Pacific region. Norwegian companies were found to be the frontrunners when it came to reporting environmental information, 95 percent of the companies traced made reference to it. This is probably due to the requirements by law.

This can also be said to be true for the 1995 Deloitte & Touche Management Consulting study of environmental reporting in the 1994 annual reports of 100 Norwegian companies. The main finding is that 96% of the companies mention the environment in their annual reports, but this can most likely be because of the law requirements. 41% adopted the easiest solution and account for pollution of the external environment using only one sentence. 27% of the companies give information beyond the annual settlement, either in the annual report or in a separate publication. Only 10% of the companies give quantitative information in both quantities and monetary measures. The study shows that the environmental information presented in the annual reports is generally scanty. The choice of subjects seems to be arbitrary when it comes to reporting the company's environmental condition and influence. Only 14% of the companies give information comparable with earlier years, and 19% mention their environmental liabilities. This makes it difficult for investors to assess the extent of the company's environmental liabilities. The need for further directions or a standard for environmental information in the annual settlement is large.



UNEP/SustainAbility are doing a benchmark survey where they analyse 100 company environmental reports from 16 sectors and 18 countries. The purpose of the survey is to identify areas of strength and weakness in company environmental reporting and to highlight examples of best practice. This is an evaluation where each of the companies get scores for their CERs and are classified into a 5-stage model. The benchmark surveys overall conclusion is that there is a clear improvement among the CERs. There are reasons for being sceptical about "objective" benchmarking like this, there is only one point that separates each of the stages which are named "Pressing hard" and the next "State-of-the-art". Also the fact that DuPonts environmental report dropped 30 points due to a scaling down from 25 to 8 pages CER (with further information available on the web) creates some scepticism.

The 1994 UNEP-report (United Nations Environmental Programme) evaluated 100 environmental reports from companies in Europe, North America and Japan, and placed them in the five-stage model. Their findings were that 39% of the companies was on stage 1 or 2 (printed matters with a green subject and short environmental reports in annual reports/ environmental brochures), 25% was on stage 3 (annual reporting, connected with an environmental management system, but with more words than numbers), 11% was on their way to and 5% had reached stage 4 (complete reporting of annual incoming and outgoing data; environmental report referred to in annual report). No companies had reached stage 5 - reporting based on sustainable development, with the connection between the company's operations, environmental, economic and social aspects supported using indicators.

In 1994, Fortune Magazine examined the environmental reporting of the world's 100 largest firms, and found that 65% of the companies gave environmental information in their annual reports. Further, this number had not changed during the 2-3 last years, and the way information was presented varied substantially. The number of companies that published separate environmental reports had grown, and was 34% in 1994. 6% of the reports were verified externally. The environmental reports had changed during the last few years, from typical information material to reports on how the company's activities affect the environment and what goals they have for improvements.

Reviewing the literature in the field and reading annual reports gives some impressions about the development. I will just sum up some of the characteristics of this development.

- Reporting to a broader audience
- Pressure towards mandatory reporting
- The leaders within the art of CER is mainly large companies
- The quality has improved
- A trend towards normalised indicators - adjusting for activity level
- More information about environmental policy and targets
- A growing focus on verification
- Increasing volume of the reports

Further there is still little information suited for risk assessment and only a few trying to say something about social responsibility

The first generation CER addressed to a large degree the local community and local regulators while the firms now have felt a pressure for disclosure from new stakeholder-groups like the financial community. The result of this is an increase in volume and a lack of focus. The volume of the reports have increased from a few sentences in the annual report to "massive" separate reports (just an example SAS's CER for 1996 counts about 50 A4 pages). This development may be a problem and is partly a result of trying to address a larger audience than before.

In "Company Environmental Reporting: a Measure of the Progress of Business and the Industry towards sustainable development" UNEP/SustainableAbility (1994) characterised two models for reporting: The "Anglo-Saxon" model focusing on environmental policy, management systems and inventories and adopted by companies in the UK and North America. The other, the "Rhine" model focusing on eco-balance of inputs and outputs was adopted by Scandinavian and German companies. My impression is that this distinction is not so valid any longer as firms disclose more information.

### ***Reporting for the financial community***

Lober (1998) states that: "Not much evidence exists that banks are concerned with environmental performance other than quantifying environmental liabilities during the due diligence process"

Nevertheless there seems to be a growing interest in the financial community for corporate environmental information. This in turn have affected the way CER's have developed. In a Norwegian survey among banks, insurance companies and brokers/analysts (Synnøstvedt 1998) there were differences between the groups with respect to what kind of information they perceived as relevant. Banks and insurance perceived qualitative information (environmental policy, environmental management etc) than quantitative information (releases, fines etc), while brokers/analysts expressed the opposite.

At the current state there is generally not enough information in the CER's for financial stakeholders to make an environmentally related risk/return assessment. Nevertheless CER's are probably the most used information source among financial stakeholders (Synnøstvedt 1998). There are a lot of conditions that has to be satisfied for the CER's to be perceived as a valuable source for risk/return assessment. Some of the important conditions can be summarised in the concepts *relevance, reliability and comparability*.

#### ***Relevance***

The question of relevance relates strongly to the question of who you want to address and knowing the needs of the audience. It requires that the company not just release positive information but also negative. Actually releasing negative information may



be perceived positive with respect to credibility and to a degree outweigh the reaction to the negative substance of the information.

Based on a number of case-studies UNEP/SustainAbility found that the companies thought that their stakeholders used the CER's as: "a source of reassurance, to identify best practice examples and as a decision-making aid". The same study found that the stakeholders emphasised elements like "measuring, monitoring, screening, comparing and benchmarking". This mismatch may be a result of changes in stakeholders actually being interested in the corporate environmental profile. It underlines the need for dialogue with important stakeholders and actually providing the kind of information they need.

For financial oriented stakeholders, information which give an impression about the firms ability to identify and adjust to changes in stakeholder preferences would be valuable information. Some desired elements would be policy statements, management systems, whether former targets are reached and why if not reached, new targets and the strategy for reaching them, resource-efficiency, stakeholder relations, normalised quantitative data, link to financial figures whenever possible.

#### *Reliability*

The reliability of the information provided in CER's is hard to assess due to huge measurement problems, different measurement methods and the incentives for strategic reporting. This have created a focus on third party verification on CER's which is reflected in growing involvement of consultants in the reporting process.

The study done by IRRC (Investor Responsibility Research Center) in 1995 had the main focus to test whether third party attestation statements contained in voluntary corporate environmental reports added value in the eyes of external stakeholders. They also examined which report elements contributed the most to communicating credibility. Their findings concluded that voluntary environmental reports had low credibility compared to other sources. The presence of a third party statement did not appear to make an appreciable difference, but a balanced tone, defined as coverage of both positive and negative aspects of environmental programs, was the single highest rated credibility enhancing feature. This can be viewed in coherence with Thomas and Dennys findings in 1997 that there is considerable variation in the nature and scope of environmental reporting and a marked tendency toward self praise combined with a failure to fully disclose negative information. Their results point in the direction that neither firms nor the popular press are reporting firm specific negative environmental news.

#### *Comparability*

A need for adjusting for activity level is very often expressed as a condition for comparisons in time and space. Reporting reductions in releases at one page and reporting on reduced production due to the sale of a site on another is obviously not good practice. There is obviously a need for some international standardisation regarding both the methods for collecting the data and ways to present them.



### ***Voluntary or mandatory***

Mandatory reporting is still the exception rather than the rule but the issue is given more attention by regulators lately.

There are arguments for and against whether CER should remain voluntary. Sticking to the voluntary approach may result in a slow movement and a “unacceptable” spread in content and quality. On the other hand there may be a point that the CER’s should evolve “generically” from the market. If stakeholder pressure remains, more firms will report and the quality will increase. They will also take a form suited stakeholder requirements. If stakeholder pressure gets weaker the demand for reports will decrease and the firms will probably over time use less resources on producing CER’s. In the last situation mandatory reporting will result in waste of resources.

Given the assumption that pressure for disclosure of corporate environmental information remains a mandatory approach may be preferred to push forward some degree of standardisation faster than a voluntary approach may give. Actually I think its a avsporing to talk about voluntary or mandatory. Some mandatory elements, if not being to detailed, may still leave much to the market to decide.

In the “UK Business and the Environment Trends Survey” (Green Alliance and Entec) 58% of the respondents supported mandatory reporting. Further, 72% of 50 “opinion formers” supported the mandatory approach

### ***Realistic Requirements***

There have been expressed a need for information about environmental impacts not just releases (fx Lober 1998). Said in another way there is a demand for information about both doses and responses. A crucial point here is wether the firm should, or even can in a sensible way, say something about the actual effects on the state of the environment from their own activities? It’s here important to distinguish between different kinds of environmental problems. Regarding pollutants where the place of release is likegyldig for the response, like CO<sub>2</sub>, there is obviously no need for other information than the dose. In cases where the environmental problem has a local character, there may be a need for including some imfomation that gives the reader some impression about the effects/responses. Releases to lakes may be linked to changes in Ph-value or fish stocks, noise may be linked to the number of people exposed to it etc. In many cases dose-response knowledge do not exist and represents a challenge for scientists not a company producing . This thouch upon the issue of realistic/sensible expectations and division of labour. If the dose- response connection is known it should be used by the companies. If it doesn’t exist it is not generally a task for the firm to try to sort it out.

Another request regarding the content of CER’s is the link to financial figures/financial implications. In some cases a quite clear link can be made between environmental performance and financial performance if the costs are internalised through green taxes. In other cases where the firm perceive an increase in sales due to better image it’s obviously not easy to assess the financial impacts. The same goes for different kinds of environmental cost which is hard to separate from other costs.



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*Session II: Standardized Environmental Reporting:  
Meeting Corporate and Financial Sector*

**The need for standardized data gathering as seen  
from the financial industry**

*Mr. Franz Knecht, Director, Swiss Bank Corporation*



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# Environmental Reporting

Meeting Needs for Asset Management

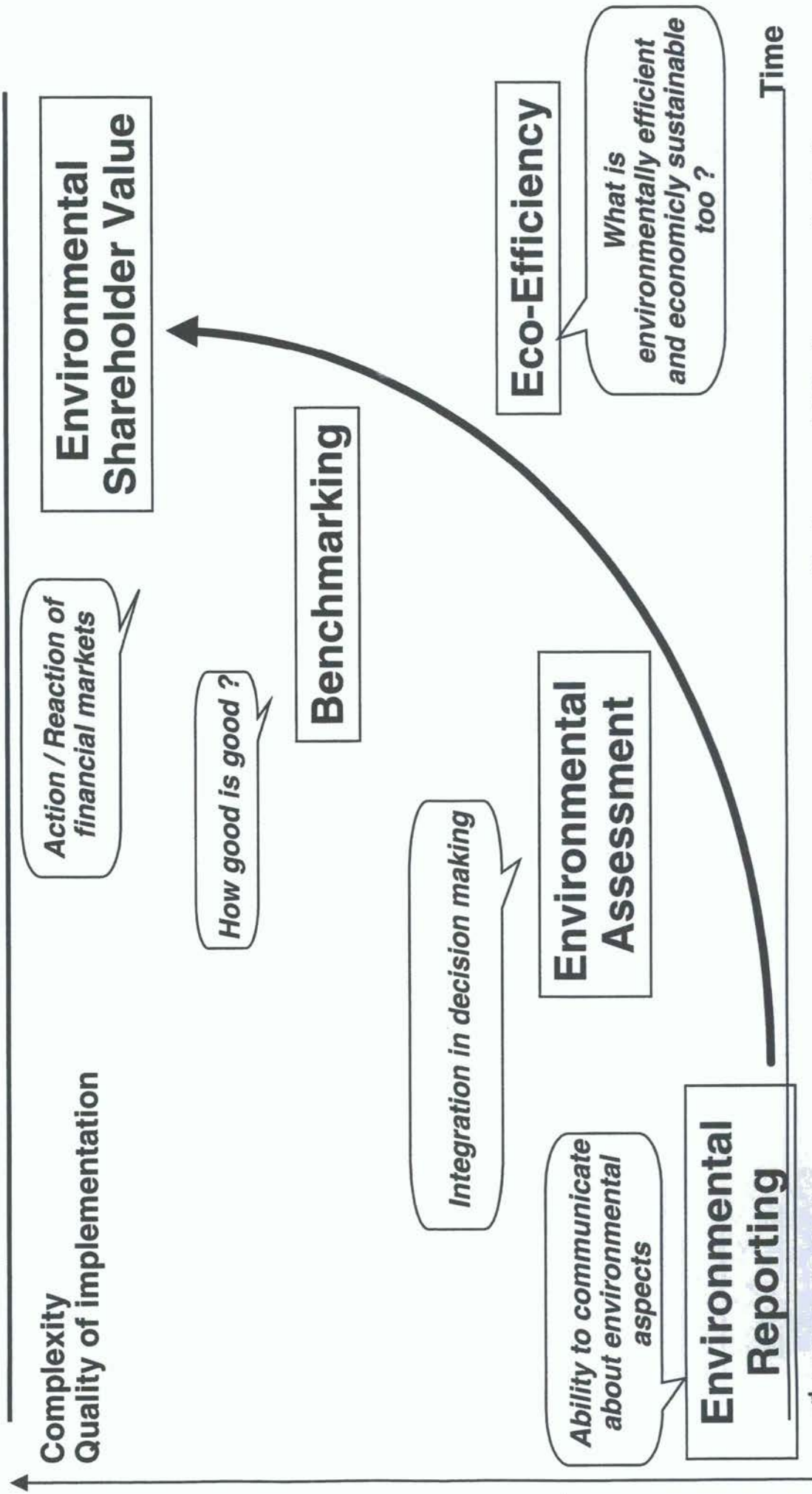
SBC Environmental Performance Analysis

UNEP Insurer Meeting

Cologne, 9-10 June 1998

Inge Schumacher, SBC Brinson Switzerland

# Implementation of the environment into business



# Environmental Reporting guidelines

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- CEFIC
- PERI
- IÖW
- UNEP
- ACCA
- SustainAbility



# Qualitative Criteria of SBA standard

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## Core Indicators:

- Energy Consumption
- CO<sub>2</sub>-Equivalents
- NO<sub>x</sub>
- SO<sub>2</sub>
- CFC-11-Equivalents
- VOC
- Waste

## Industry Specific Figures:

- Z1/ Z2/ Z<sub>n</sub>

# Financial figures of SBA standard

---

## **Balancesheet/ Cash flow statement:**

- Environmental Investments.
- Environmentally motivated provisions (e.g. Product liability)

## **Income Statement:**

- Write-offs for Environmental Investments
- Environmentally-motivated Write-offs
- Quality assurance cost
- Energy cost
- Waste disposal cost
- Raw material cost

# Qualitative Criteria of SBA standard

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## Strategy/ Communication:

- Environmental Policy
- Most important (3) environmental issues affecting the company's bottom line in the next 5-10 years
- Dialogue with Stakeholders

## Environmental Management System

- Which system? (ISO/EMAS certified)
- Risk Management?
- Legal Compliance
- Targets/ Fulfilment

## Production/ Process

- Strategy for Process improvements and implemented measures
- Demands for Suppliers

## Products

- Strategy for Product improvements and achieved success



# Investment Strategy

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Best in class in each sector

Products/Services with high environmental benefit

➔ *Investment security, performance*

➔ *High potential for innovations*

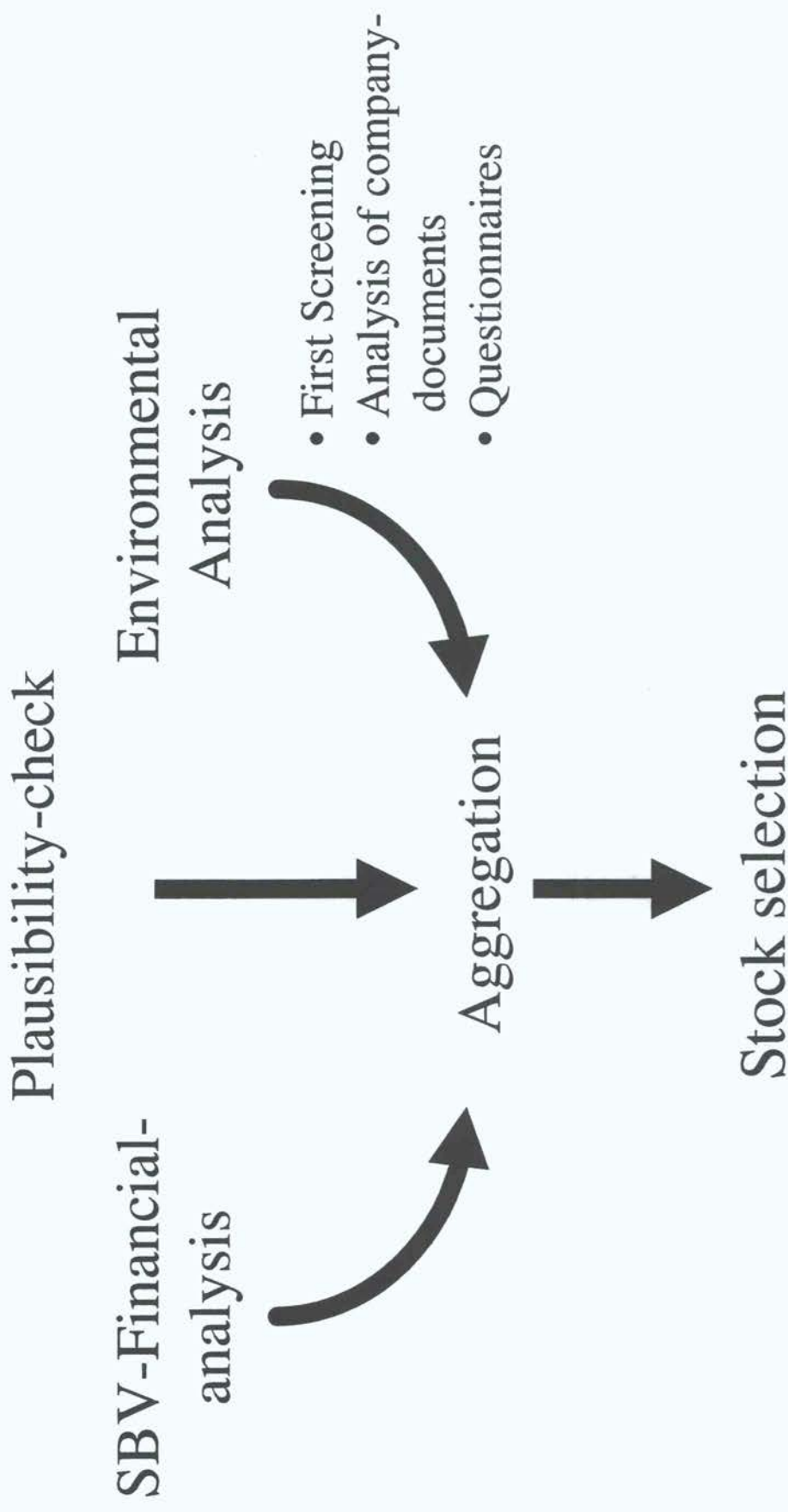


**Diversification across all sectors**



# Stock selection process

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# Criteria of Environmental Analysis

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- I. Environmental policy and -strategy
- II. Environmental management
- III. Environmental costs and savings
- IV. Environmental communication
- V. Process strategies
- VI. Quantitative environmental data (input and output)
- VII. Product strategies



# Ecological Sector Performance-Indicators

---

## *Banks / Insurers:*

Reduction of energy- and paper consumption, integration of environmental criteria into the loan approval process and asset management

## *Electronic companies:*

Reduction of energy consumption, increase of product life, return policies and recycling systems

## *Car industry:*

Reduction of vehicle fleet, development of ZEV-/ LEV (3l-, hybrid-, H2-car) and alternative concepts of mobility

# Environmental Performance Achievement

	Banks	Electronics	Chemical
I. POLICY and STRATEGY	68 %	71 %	53 %
II. EMS	50 %	61 %	60 %
III. COSTS / SAVINGS	44 %	37 %	39 %
IV. COMMUNICATION	66 %	66 %	54 %
V. PROCESS STRATEGY	56 %	71 %	55 %
VI. PERFORMANCE DATA	40 %	27 %	-
VII. PRODUCT STRATEGY	50 %	53 %	38 %
Total	47 %	56 %	49 %

# Future Challenges for Env. Performance Analysis

---

- Efficient Information Exchange( reporting language)
- Information Availability from Industry
  - ⇒ Development of Sector-EPI's and Benchmarks
  - Information Demand of Financial Sector
    - ⇒ Development of Rating Standards
    - ⇒ Efficient Mix of Qualitative and Quantitative Criteria
  - Links of Environmental and Financial Performance:  
Convincing Stories for Analysts
- Multi-diversified Companies: Sector Benchmark by Division
- Merger-, Outsourcing-, Disinvestment-Activities: Problems of  
Responsibility Transfer and Performance-Comparison



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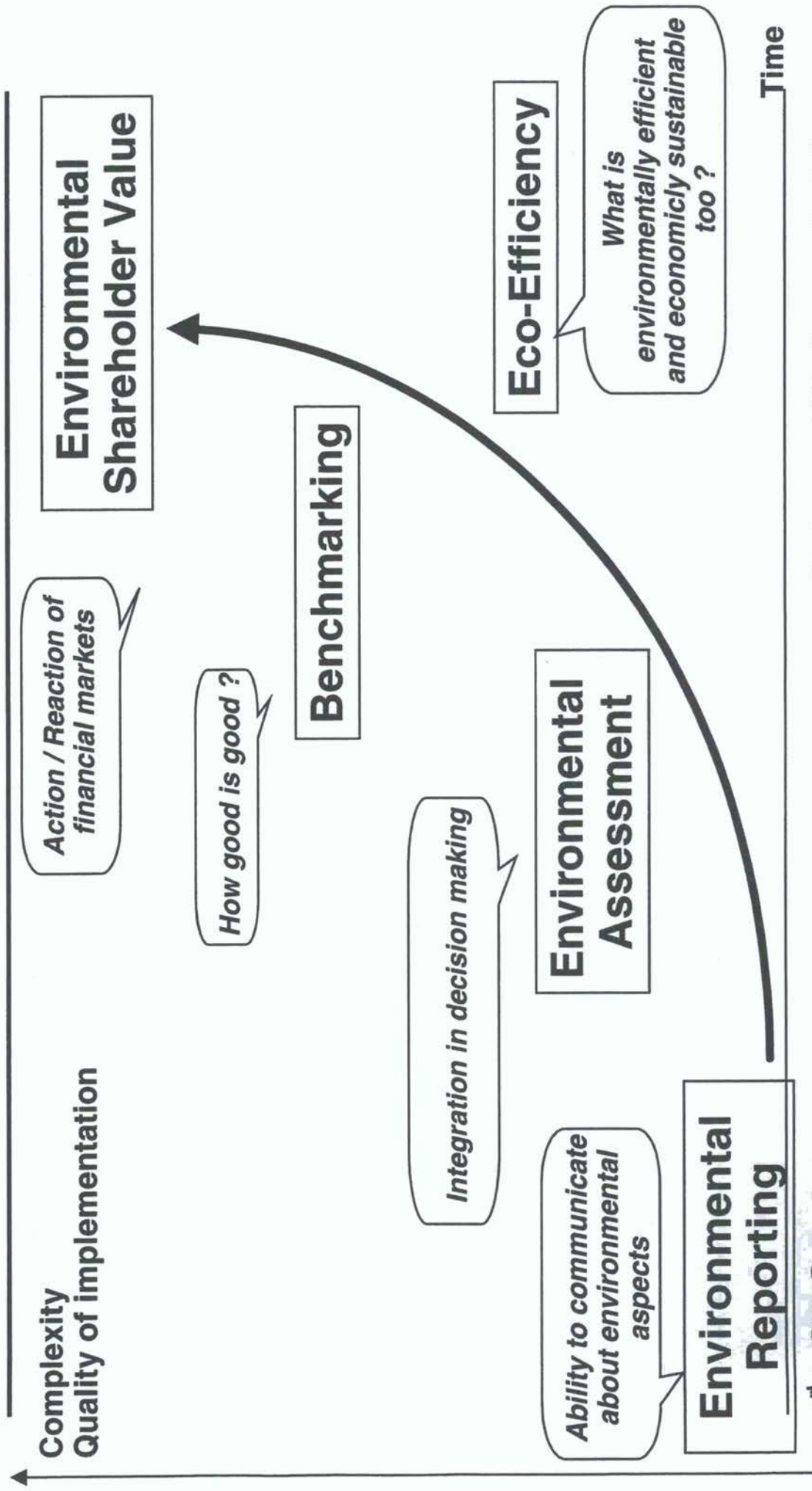
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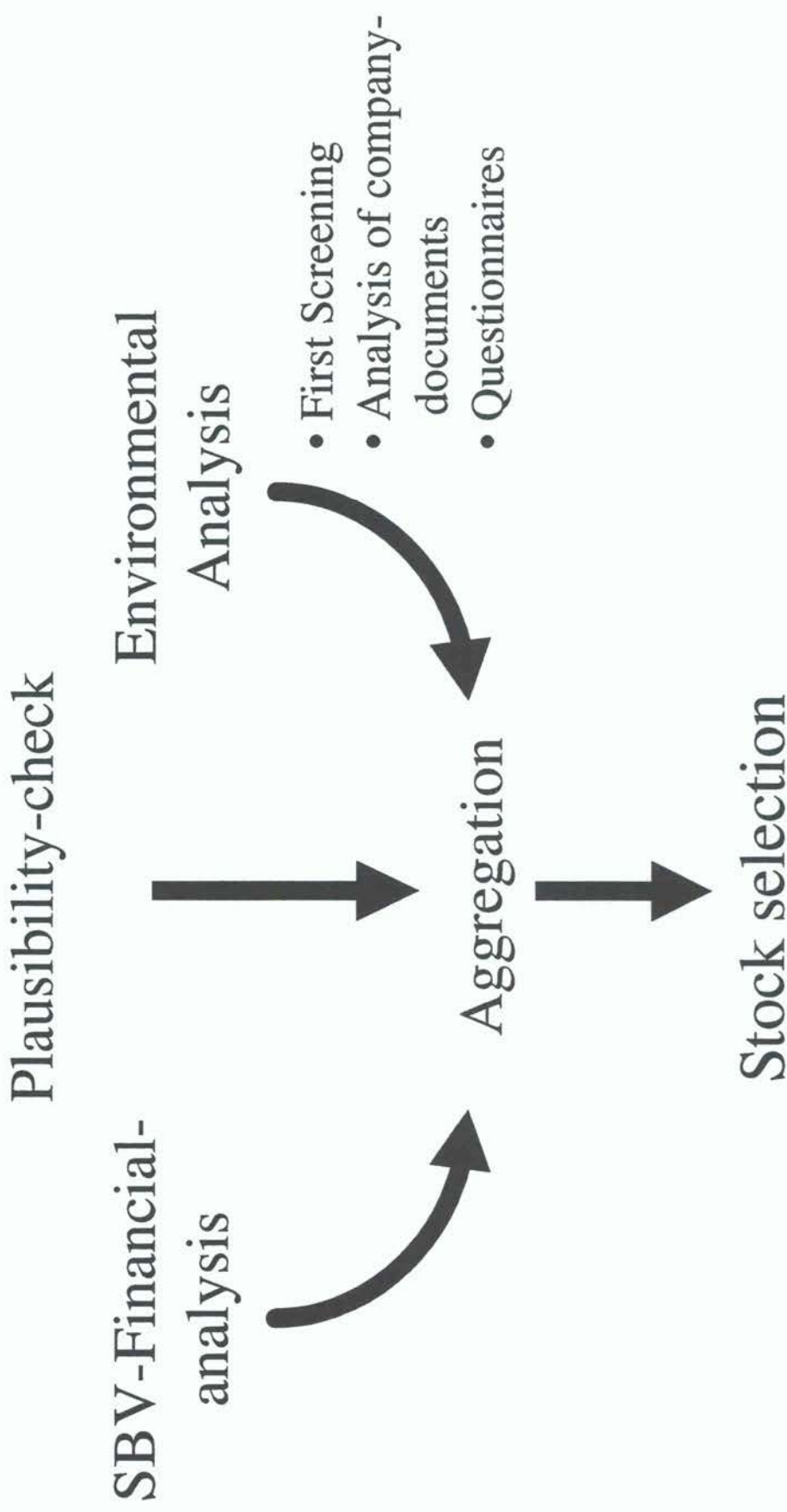


**Diversification across all sectors**



# Stock selection process

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Responsibility Transfer and Performance-Comparison



## STRUCTURE OF SBC's ENVIRONMENTAL QUESTIONNAIRE:

I POLICY and STRATEGY	<ul style="list-style-type: none"> <li>• Policy</li> <li>• Strategy</li> </ul>
II ENVIRONMENTAL MANAGEMENT SYSTEM	<ul style="list-style-type: none"> <li>• Environmental Management System</li> <li>• Controlling System</li> <li>• Audit System</li> <li>• Environmental Programms</li> <li>• Internal measures and training</li> <li>• Screening system for environmental information</li> <li>• Risk Management</li> </ul>
III COSTS / SAVINGS	Costs and Savings
IV COMMUNICATION	Communication
V PROCESS STRATEGY	Process Strategy
VI PERFORMANCE DATA	Performance Data (Input, Output) Energy, Water, GWP, ODP., Waste data
VII PRODUCT STRATEGY	<ul style="list-style-type: none"> <li>• Supplier relations</li> <li>• Product assesment methodology.</li> <li>• Life Cycle View</li> <li>• Take Back, Recycling</li> <li>• Customer Service</li> </ul>

## Translating environmental drivers into financial information

### **Relevant questions for analysts related to environmental performance evaluation**

*WBCSD: Environmental Performance and Shareholder Value*

#### **Strategy and Vision**

- Global environmental standards (including worldwide H&S standards)
- Environmental program with objectives and measures
- Progress against main environmental problems and opportunities
- Impact on environmental strategy on shareholder value
- Implementation into line responsibility/ Compensation link?
- Awareness of environmental risks and opportunities: Risk management

#### **Operational Fitness**

- Organisation (chart); EMS (certification)
- HS&E audits
- Screening of future regulation
- Liabilities (current, contingent and unreported)
- Toxic waste sites and managements
- Expenditures and investments for remediation, waste, energy
- Energy use (energy mix)
- GHG, ODP (per t of output)
- Other critical emissions to air and water
- Waste and waste management
- Transportation

#### **Products and Markets**

- Environmental criteria in product stewardship
- Assessment of env. Effects during life-cycle
- Information about HS&E effects (labels)
- Environmental benefit of product

#### **Stakeholder Satisfaction**

- Reporting (frequency, content and stakeholders)
- Investor information
- Communication about env. performance and its drivers
- Employee sensibilisation



## Draft discussion paper regarding the voluntary disclosure of environmental information\*

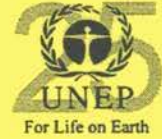
Possible indicators for the chemicals/pharmaceuticals, electronics, food and engineering sectors

Key environmental figures (production)	Financial figures	Qualitative Criteria
<p><b><u>Core Indicators:</u></b></p> <ul style="list-style-type: none"> <li>• Energy Consumption</li> <li>• CO2-Equivalents</li> <li>• NOx</li> <li>• SO2</li> <li>• CFC-11-Equivalents</li> <li>• VOC</li> <li>• Waste</li> </ul> <p><b><u>Industry Specific Figures:</u></b> Z1/ Z2/ Zn</p>	<p><b><u>Balancesheet/ Cash flow statement:</u></b></p> <ul style="list-style-type: none"> <li>• Environmental Investments</li> <li>• Environmentally motivated provisions (e.g. Product liability)</li> </ul> <p><b><u>Income Statement:</u></b></p> <ul style="list-style-type: none"> <li>• Write-offs for Environmental Investments</li> <li>• Environmentally-motivated Write-offs</li> <li>• Quality assurance cost</li> <li>• Energy cost</li> <li>• Waste disposal cost</li> <li>• Raw material cost</li> </ul>	<p><b><u>Strategy/ Communication:</u></b></p> <ul style="list-style-type: none"> <li>• Environmental Policy</li> <li>• Most important (3) environmental issues affecting the company's bottom line in the next 5-10 years</li> <li>• Dialogue with Stakeholders</li> </ul> <p><b><u>Environmental Management System</u></b></p> <ul style="list-style-type: none"> <li>• Which system? (ISO/EMAS certified)</li> <li>• Risk Management?</li> <li>• Legal Compliance</li> <li>• Targets/ Fulfilment</li> </ul> <p><b><u>Production/ Process</u></b></p> <ul style="list-style-type: none"> <li>• Strategy for Process improvements and implemented measures</li> <li>• Demands for Suppliers</li> </ul> <p><b><u>Products</u></b></p> <ul style="list-style-type: none"> <li>• Strategy for Product improvements and achieved success</li> </ul>





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**Third International Conference of the UNEP Insurance Initiative**

**“Environmental Tools for the Insurance and Financial  
Industries”**

***Session III: Data Needs and Formats for Insurance  
Business  
- Synergies with Investment***

***Moderator: Dr. Ivo Knoepfel, Environment Advisor,  
Swiss Reinsurance***



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**Information Needs and Formats: An Underwriting  
Point of View**

*Mr. Alfred Hennebühl, Gerling Allgemeine*

# **Environmental Risk Management in Insurance**

**- View of the Liability Insurance -**

**3rd International UNEP Conference 9th to 10th June 1998,  
Cologne**

**Dipl.-Ing., Dipl.-Wirt.-Ing. Alfred Hennebühl  
Gerling Allgemeine Versicherungs-AG**



# **Environmental Risk Management in Insurance**

## **- View of the Liability Insurance -**

### Short Summary

The insurance area is facing the environmental risk in respect of nearly each insurance branch. But especially for the liability insurance it's a typical risk. The insurer is facing the risk here in respect of product liability insurance (for example in the area of the agro-chemical industry) and also in the environmental impairment liability (EIL coverage). Here, we are referring to the EIL coverage which is subject to the risk of the site and the industrial handling on the site.

In the worldwide insurance markets different solutions were found for the EIL scenario. We can identify various triggers like occurrence, manifestation or the claims made principle, but on the other hand we recognise that the insurance cover for EIL usually is subject to a sudden and accidental basis and coverage for a gradual scenario is only offered in particular solutions.

The environmental risk regarding the EIL coverage also depends on the legal situation in the different countries. There is a different and normally unstructured system of environmental liability law in any country. The basic rules sometimes depend on negligence but you can also face a strict liability situation in many countries. In addition to the basic law further legal regulations may exist which impose strict liability for specific risks like the situation in Germany regarding the Environmental Liability Act of December 1990 which concerns particular facilities which are mentioned in Endorsement 1 to this law.

Besides knowledge of the insurance system and the legal situation, the underwriter needs information in respect of the individual risk. Necessary are information regarding the nature of the business, business premises particular installation and operations on the site and also information in respect of the environmental management and the neighbourhood situation. We can not only regard the insured risks themselves, but also have to look which damages of a third party in respect of property damages and personal injuries are possible.

To obtain the necessary information, the underwriter can use different tools. Besides his education and a special training there are basic tools like using a questionnaire which includes the basic data for the particular coverage. Another tool is the inspection of the site/factory by the sales organisation of the industrial insurer, the broker or the underwriter himself. Depending on knowledge and experience of those people, you will be able to get a feeling about the quality situation of a particular risk. Especially for serious risks like a chemical or waste treatment factory, it will be necessary to get a report of well trained specialists which are able to check all the items mentioned in the questionnaire but with a much deeper view into the technical and organisational situation.

To which extent the underwriter applies the different methods and tools depends on many points like the particular kind of coverage, the loss experience, the official regulations in the different countries, the neighbourhood situation etc. It's also a question of costs- and risk management how often you can decide to invest the money to get a specialist's report. It is also a different question whether you want to release an offer to insure a new risk or in respect of an existing risk.

---

## **ENVIRONMENTAL LIABILITY INSURANCE**

### **- Coverage Solutions Worldwide -**

- **normally on a sudden and accidental basis**
- **coverage for gradual pollution only in particular solutions (e.g. in a fund system)**
- **various triggers in different countries (occurrence, manifestation, claims-made)**
- **particular regulations and exclusions**

---

## **ENVIRONMENTAL LIABILITY INSURANCE**

### **- Law Situation Worldwide -**

- **normally not one single environmental law but unstructured regulations in different laws**
- **different situations in various countries from negligence to strict liability**
- **often strict liability for particular facilities, processes etc.**

**In addition to coded law and case law, the claims awareness in different societies is an important factor.**



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## **ENVIRONMENTAL LIABILITY INSURANCE**

**- Necessary knowledge and information for the Underwriter-**

- **kind of coverage**
- **particular environmental liability law**
- **risk information in respect of the site/factory/security- and management system**
- **risk information in respect of the neighbourhood situation**

---

# **ENVIRONMENTAL LIABILITY INSURANCE**

## **- Content of a Questionnaire -**

- **Size and nature of business**
- **Neighbourhood situation**
- **Type of the site (history, underground groundwater ...)**
- **Environmental management**
- **Security systems (fire protection, third party protection ...)**
- **Detailed information about the risk (amount of fluids, particular facilities ...)**
- **Information about the current insurance coverage**
- **Other information (losses, ...)**

---

# **ENVIRONMENTAL LIABILITY INSURANCE**

## **- Methods and Tools of the Underwriter-**

- **Education and training**
- **Study of basic information (newspapers, magazines, internet, company information ...)**
- **Use of a questionnaire**
- **Site visits by the sales organisation**
- **Personal site visits**
- **Specialists report**





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**Methods, Tools and Information Requirements in  
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*Dr. Bea Capaul, Dr. Thomas Streiff, Swiss Re*

# **Third International Conference of the UNEP Insurance Initiative “Environmental Tools for the Insurance and Financial Industry”**

Session 3:

**“Information needs and formats for insurance business - Synergies with investment”**

Dr. Beatrice Capaul, Dr. Thomas Streiff, Swiss Re

**“Methods, Tools and Information Requirements in Environmental Risk Management”**

## **Executive Summary**

Identification and estimation of potential environmental impairments, which might be caused by business activities of a corporation, are not sufficient to assess its integrated environmental risk. The analysis of a corporation's long term behaviour, reflected by its own risk philosophy, is an important element of an integrated risk assessment. The assessment of a company's sustainability behaviour might be an extension of our approach to assess casualty risks: the analysis of inherent and individual risks, of the litigation environment and the corporate risk philosophy (Fig. 5).

## **Sustainability and Corporate Risk Management**

Any enterprise, providing services or products, uses, deals with or converts resources. These are basically of human, natural, financial or technical origin. The quality of a company's resource management is therefore a key factor for its long-term business success. An enterprise with a corporate sustainable philosophy develops and maintains visions and behaviours that allow to run its operations successfully - in the economic sense - and at the same time reflects its commitment to contribute to a responsible and precautionary use of its own and globally limited resources. The main elements of a sustainability philosophy cover economic, ecological, social and ethical objectives and commitments (Fig. 1)

Such a corporation, oriented towards sustainability, does know or, at least, is aware of its interactions with the resources, between the resources and with external factors (or environments), e.g. market forces, social rules and acceptance, ethics etc.. Those interactions, likewise exchange of goods and information, take place with suppliers, generators and converters of resources, with the users of services and products, the neighbourhood etc.. The minimisation of conflicts (claims) and damages (losses) caused by uncontrolled interactions is one crucial element of a company's risk philosophy. The corporate risk philosophy is expressed by the quality of the safety culture, the public image and the environmental performance (Fig. 2)

In principle, a company's internal interactions can be condensed to three major interfaces (Fig. 3) which are between

- software and socialware (procedures and staff)
- socialware and hardware (staff and technology)
- hardware and software (technology and procedures)



The continuous process of assessing and controlling the critical interfaces in presence of defined safety goals and the evaluation of measures we call integrated risk management, which is embedded in the company's corporate risk philosophy (Fig. 4).

### **Integrated Risk Assessment**

In order to get a more objective picture of an corporation's risk landscape, e.g. of its casualty risk, an integrated assessment encloses the identification and analysis of the inherent risk (determined by the processes in use), the individual risk (interface and site specific), the legal environment and the company's risk philosophy (Fig. 5). It is very obvious that a corporation cannot be analysed in its entirety. The individual and inherent risk is closely linked to the business lines or activities, the risk philosophy, as mentioned earlier, is integrated part of the corporate business or sustainability philosophy. In the proposed assessment procedure we have a critical look in a) the risk relevant activities and b) in the risk philosophy of a corporation (Fig. 6).

#### **a) Analysis of business activities, e.g. environmental risk assessment**

One approach for assessing liability risks, e.g. the environmental risks of an enterprise, is to look in the different business lines and further in the single processes (Fig 7). For each risk relevant process line, of which the consequences on environment(s) can be estimated, the probability of an unexpected change of reaction parameters, process conditions, interfaces etc. is estimated and scored. The result of each risk analysis, related to a process or a business line, is entered in a probability-consequence matrix which produces finally the risk profile of a company's activities.

#### **b) Assessment of Corporate Risk Philosophy**

The development of an incident can be compared with an insufficient filter process (Fig. 8). Even in a sophisticated multi layer filter system, an undesired particle (=triggering event), which has to be eliminated from the medium (activities), can pass through because of

- inappropriate filter quality, what we know as latent failures at the interfaces (procedures/rules, workforce, safety and security measures) and/or
- construction error of the filter system, which is in our case the risk philosophy

Which are the key components of that filter system, of the corporate risk philosophy? From where we can extract the relevant information and in what context they can be assessed accurately. We identified following components of a corporation, which seems for us suitable to assess its liability propensity, which are also markers for its long-term risk behaviour:

- Market approach
- Policy
- Corporate performance
- Social and Human Responses
- Organisational Structure
- Capital Structure
- Corporate Risk Management
- Losses and Claims Management

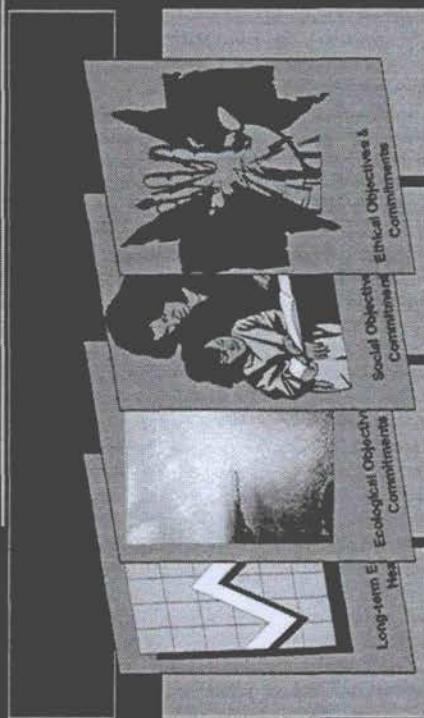


For each of this eight elements relevant criteria were determined that allows to do a qualitative factor analysis (scores for excellent, average and critical fulfilment) and which can be presented in a profile (Fig. 9) or as a total company score. The latter will be used to adjust the result of the company's activity risk assessment with the long term risk behaviour and the industrial mean (Fig. 10). In case of a critical (negative) score, the corporate risk can be even worse in comparison with the assessed activity risk; if the casualty propensity is scored as excellent, the corporate risk will be lower.

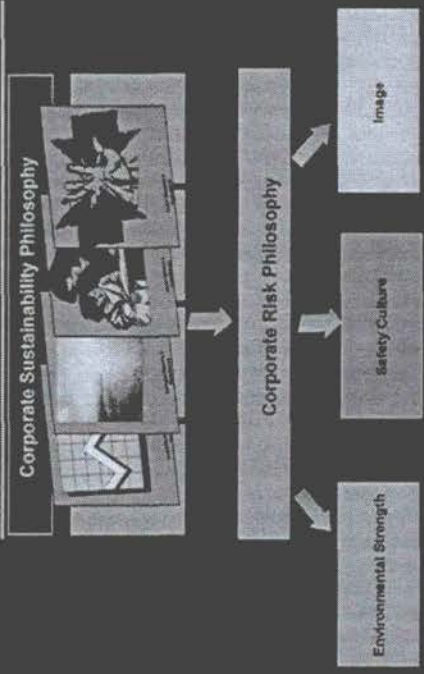
## **Outlook**

The presented approach of assessing the integrated risk of a corporation can be adopted for a sustainability assessment. The elements of a matrix-based assessment tool (Fig. 11) are economical, ecological, social and ethical objectives and commitments (= corner stones of sustainability) and the critical interactions or processes, towards which the elements are assessed, are operational performance, procedures (software), human interactions (socialware) and communication (netware). The relevant indicators might be identified in the course of this workshop and following discussions.

## Corporate Sustainability Philosophy



## The Sustainability Connection

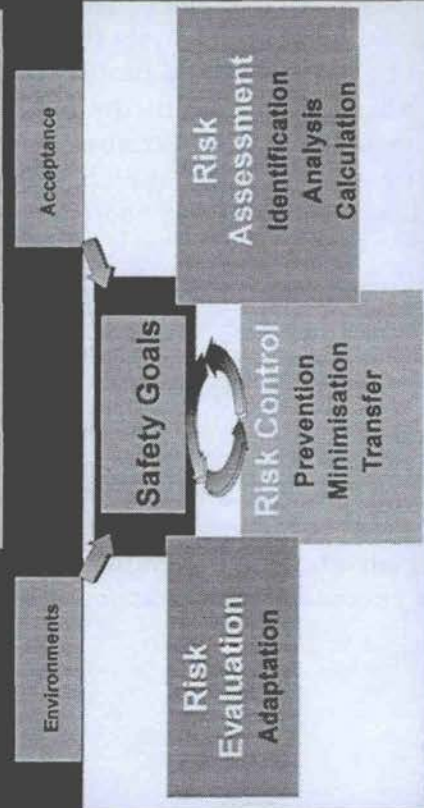


## Triangle of Interfaces

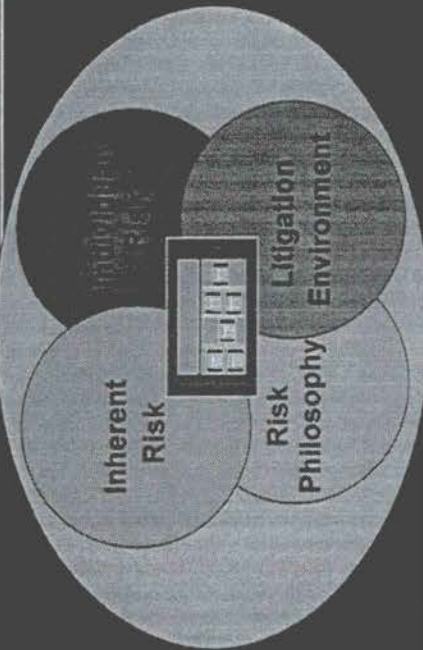
Adapted from ISO 15400



## Risk Philosophy Determines the Quality of Risk Management Process



## The Components of Casualty Risk

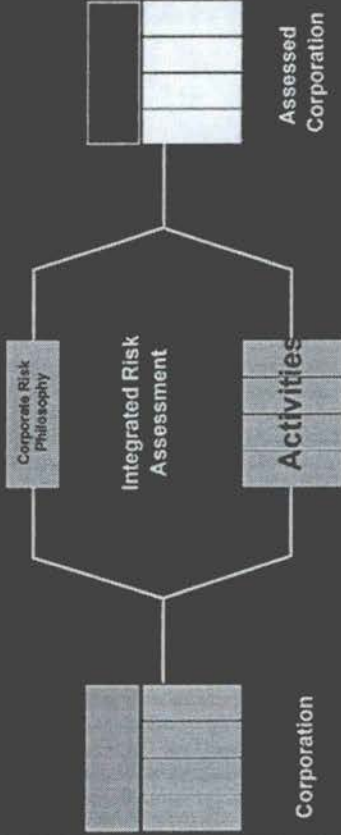


Swiss Re, Risk Management Services

UNEP-Cologne-5, June 1998



## Assessment Procedure

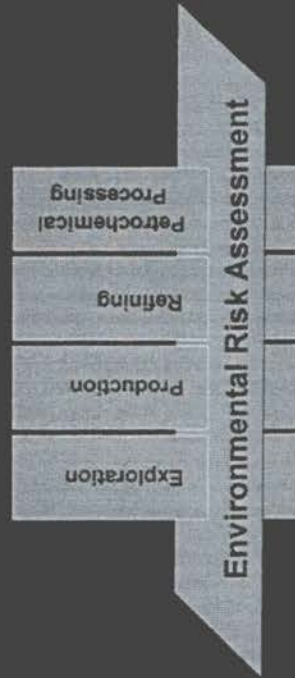


Swiss Re, Risk Management Services

UNEP-Cologne-4, June 1998



## Environmental Risk Assessment



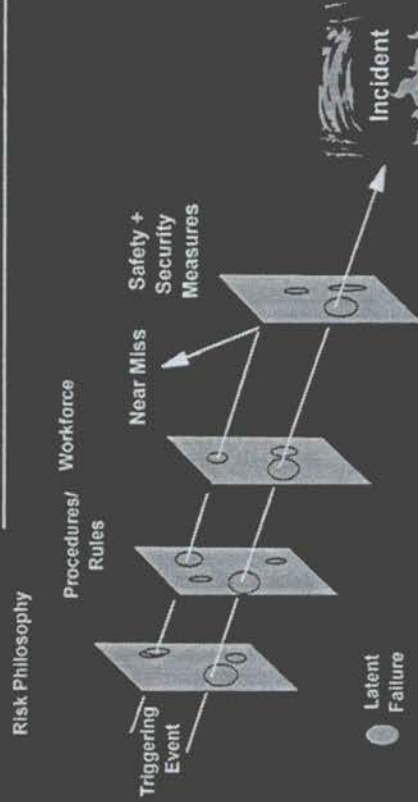
Swiss Re, Risk Management Services

UNEP-Cologne-7, June 1998



## Development of an Incident

Adapted from Reason 1990



Swiss Re, Risk Management Services

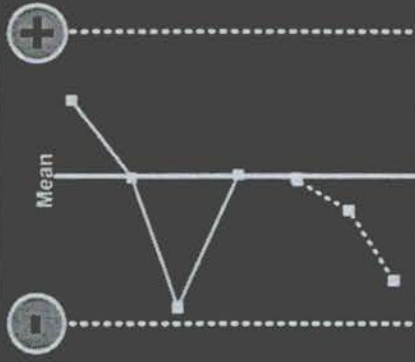
UNEP-Cologne-8, June 1998



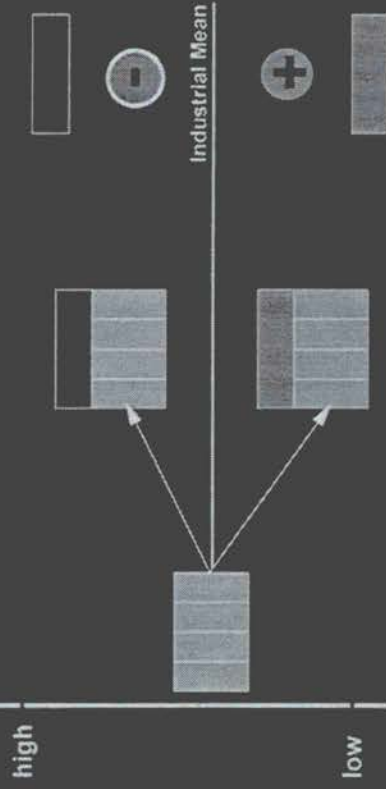


## Corporate Risk Philosophy: Soft Factor Profile

- Loss & Claims Management
- Corp. Performance
- Corporate Risk Management
- Market Approach
- Org. Structure
- .....



## Final Assessment



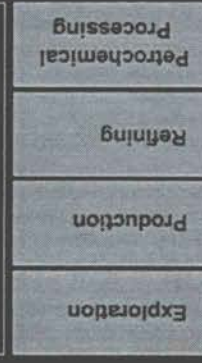
## Sustainability: Assessment

Process Elements	Operational Performance	Procedures	Human Interactions	Communication
Long-term Economic Objectives & Commitments				
Ecological Objectives & Commitments				
Social Objectives & Commitments				
Ethical Objectives & Commitments				

## The Company LOGO Meaning

Corporate Structure,  
Corporate Management,  
Risk Philosophy

OIL Company Inc.



Different Activities



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Third International Conference of the UNEP Insurance Initiative

**“Environmental Tools for the Insurance and Financial Industries”**

*Session III: Data Needs and Formats for Insurance Business  
- Synergies with Investment*

## **Environmental Rating Approaches in Investment Management**

*Dr. Alois Flaz, Sustainable Asset Management*

## **Third International Conference of the UNEP Insurance Initiative “Environmental Tools for the Insurance and Financial Industry”**

Session 3:

**“Information needs and formats for the insurance industry – synergies with investment”**

Dr. Alois Flatz, Sustainable Asset Management

**Environmental rating approaches in investment management**

### *Executive Summary*

Sustainability is a megatrend which is fast gaining in importance, bringing with it rapid changes in the social, legal and technological environment in which investment managers operate. As a result, sustainability-related issues are increasingly being taken into consideration when evaluating potential investments. In line with the main goals of any investment – a high degree of security and capital growth – SAM’s sustainability ratings focus on identifying risks and opportunities arising from these sustainability-related issues.

The insurance industry too is affected by the same sustainability-driven developments. Since these two branches of the financial services industry have so much in common when it comes to analysing sustainability issues and setting sustainability-based criteria and targets, there is substantial potential for synergies. The greatest difference lies in the way investors in these two sectors carry out detailed analyses of the potential opportunities arising from sustainability-related issues.

This paper outlines sustainability as an investment approach and describes the way this approach, in the form of sustainability ratings, shapes the analysis process used by Sustainable Asset Management. The aim of the paper is to make an initial contribution to the debate on synergy effects from the point of view of the investment manager.

### *Sustainable Asset Management*

Sustainable Asset Management (SAM) is an independent investment manager based in Zurich. SAM concentrates exclusively on sustainable asset management, systematically integrating the value-adding aspects of sustainability in its investment strategy.

SAM employs ten people. At the heart of the team are four sustainability analysts, along with asset and portfolio managers with many years’ experience at respected banks (Bank J. Vontobel, Credit Suisse and Deutsche Bank).

SAM’s core business is managing mandates on behalf of institutional and private investors.



SAM also manages Sustainable Performance Group (SPG), an investment company founded by Swiss Re, the Volkart Group and SAM which has been listed on the Swiss Exchange since the beginning of August 1997. SPG has assets under management of just over CHF 100 million. SAM also acts as investment advisor to the Credit Suisse Group's Equity Fund Eco-Efficiency as well as to major Swiss pension funds.

### ***Sustainability: An Investment Approach***

Sustainability-driven investors focus on companies whose strategy allows them to generate added value by harnessing economic, environmental and social growth potential.

Increasingly, sustainability is shaping the factors which will determine future success in many different industries. This change is creating extremely interesting opportunities for investors. SAM's approach is based on integrating sustainable growth potential into a professional investment strategy. By enhancing traditional financial analysis with an examination of sustainability issues, we aim to increase our customers' returns while boosting the security of their investments (Fig. 1).

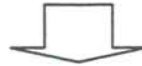
SAM invests in sustainability pioneers – innovative companies offering new sustainable technological solutions and posting above-average growth – and sustainability leaders, large-cap industry leaders which have generated lasting competitive advantages by making sustainability a key element of their strategy.

### ***SAM's Process of Analysis***

We identify world leaders in the field of sustainability using a research process consisting of several stages:

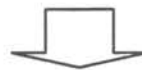
#### **How relevant is the industry in sustainability terms?**

The first and fundamental step in our analysis is to determine how relevant the industry is in terms of sustainability. We do this by identifying sustainability-related issues along the value chain of a typical company operating in that industry. An analysis of a car's CO<sub>2</sub> balance sheet, for example, reveals that any attempts to develop new, sustainable technologies will have to focus on product development and not on other links in the value chain (see Figure 2). The sustainability issues thus identified form the pivot of our analysis of new technologies, determining the criteria used in subsequent stages of the process as well as how these criteria are weighted.



### **Sustainability scenarios**

The first step in identifying and assessing attractive sustainability-driven companies is to draw up sustainability scenarios. These help us to identify key aspects of sustainability which have a major impact on the markets. In order to generate these scenarios, we analyse the social, political, technological and economic trends which have an influence on sustainability-related developments in a particular industry. When doing this, SAM draws on the expertise of an external network of sustainability experts (Figs 3 and 4).



### **Benchmarking using sustainability criteria**

On the basis of our sustainability scenarios, we determine the sustainability-related criteria to be used for analysing the industry. The sustainability leaders and pioneers which emerge as winners from this benchmarking process are added to SAM's qualifier list (Fig. 5).



### **Financial analysis**

The companies on our qualifier list are subjected to rigorous financial analysis. SAM works together with the world's leading financial analysts for each industry, which it chooses according to objective criteria (Fig. 1).



### **Sustainability portfolio**

On the basis of this sustainability and financial research, SAM invests in those companies which emerge as being the most attractive in terms of sustainability. The portfolio consists of both sustainability pioneers and sustainability leaders.



### ***SAM Sustainability Ratings***

The information which SAM's sustainability ratings give investors on a company's sustainability is geared specifically to the needs of the financial markets. The SAM rating – explained in detail in SAM's company fact sheet – thus enhances the basis on which investors make their decisions by providing information on risks and opportunities which had previously either been given too little attention or completely ignored.

Since most investors are pursuing financial goals, our sustainability ratings focus on the combined aims of high performance (achieved in this case by exploiting sustainability-related opportunities) and high security (achieved by reducing sustainability-related risks).

### ***Sustainability-Related Opportunities***

Companies can exploit sustainability-related opportunities by gearing their strategy at an early stage to harnessing the market's sustainability potential. SAM's rating indicates the edge the company has within its industry in terms of the following:

- The quality of its sustainability management on both strategic and operational levels  
Does the company have a clear sustainability-related strategy? To what extent does it contribute to creating conditions in line with our sustainability market scenario?
- The company's ability to bring sustainable products and services to the market  
How does the company create products and services? Quality of its technology and stage of development? Production costs, etc?
- The company's corporate governance  
How does it motivate its staff and help them further their knowledge and expertise? How is capital allocated internally? How is the board of directors structured? How does it manage its stakeholders?

The sustainability-related opportunities which we derive from our sustainability scenarios depend to a very large extent on the individual nature of the industry in question. For the automotive industry, for example, SAM has used the following criteria for analysing sustainability-related opportunities:

- Corporate sustainability
  - Sustainability strategy**
  - Corporate governance**
    - Shareholder structure
    - Board of directors
    - Human capital
    - Organizational structure
    - Internal allocation of capital
- New engine technologies
  - Hybrid technologies
  - Fuel cells
- Lightweight construction



- Efforts to boost efficiency of conventional engine technologies

### *Sustainability-Related risks*

Sustainability-related risks are connected with the defensive component of sustainability management. We look at those areas of a company's business where actual or potential sustainability-related costs or other sustainability-related disadvantages may arise or, conversely, be avoided.

The most important criteria used in identifying these risks are:

- The quality and efficiency of the sustainability management system (information systems and audits)
- Strategic risk (i.e. reduced competitiveness resulting from strategic sustainability-related risks)
- Environmental damage (use of resources and creation of emissions)
- Sustainability-related costs (costs of cleaning up the environment, environmental fines, product and environmental liability)

The relevance of the different risk parameters varies according to the industry we are examining. The way we adjust or weight the risk factors will therefore depend on the degree to which the industry is subject to the relevant legal, social and economic demands (i.e. its stakeholder exposure).

### *Synergies with Insurance Companies*

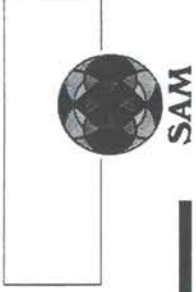
As far as sustainability analysis is concerned, synergies exist primarily in the area of **sustainability-related risks**. Risk analysis is actually the core business of insurance companies. Other synergies exist in the areas of corporate sustainability and in technology assessment.

### *Outlook*

Sustainable Asset Management's approach has been lent credence by the performance of Sustainable Performance Group (SPG). This investment company, which invests in sustainability leaders and pioneers in line with the approach outlined in this paper, has been listed on the Swiss Exchange since the beginning of August 1997. Over this period the company's share has not only outstripped the most important benchmark, the SPI, by more than 10 percentage points (SPG had gained 17% by 30 April, the MSCI 6.6%), but has also outperformed the most important worldwide equity funds run by the Swiss banks.

# SAM Analysis Method:

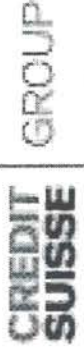
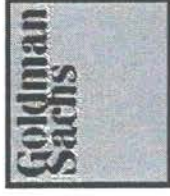
## Expansion of the company evaluation by Sustainability



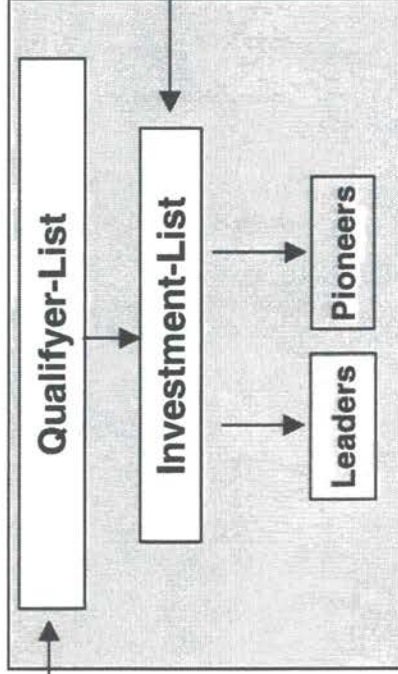
### Sustainability



### Financials



### SAM-Research



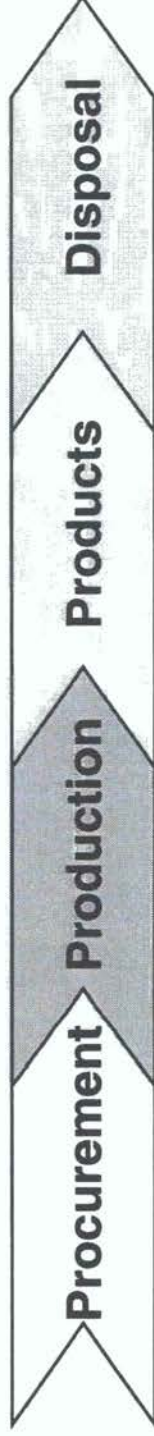
- Methodology
- Sector evaluation
- Sustainability
- Scenarios

- Macro analysis
- Asset Allocation
- Sector analysis
- Financial analysis

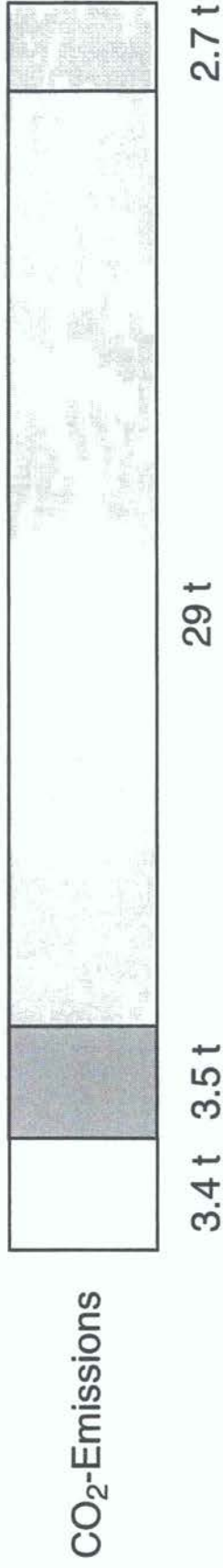
Figure 1



# Analysis Example Automotive industry: Sustainability analysis of the value added chain (Ex. CO<sub>2</sub>)



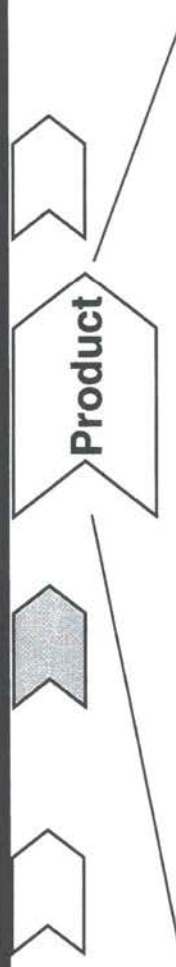
**VW Golf**



**Emissions of tons of CO<sub>2</sub> per VW Golf, km 150'000**  
(Source: Volkswagen)

Figure 2

# Analysis Example Automotive industry: Economical Potential in the chain of value creation



	Ecological Efficiency	Market-attractiveness	Sustainability-contribution
<b>Weight reduction of the car</b> New materials (e.g. carbon fibres)	4	4	
<b>New propulsion systems</b> Natural gas engine Electric + gasoline (Hybrid) Electric (battery) Electric fuel cells	2 3 2 5	2 2 2 4	4 5 4
<b>Improvement of conventional propulsion</b> Direct injection Electronic control Emission treatment	2 2 2	5 3 2	
<b>Improvement of aerodynamic</b>	2	3	5
<b>Improvement of rolling resistance</b>	1	2	3

Figure 3

# Sustainability Potential: Market penetration of sustainability technologies

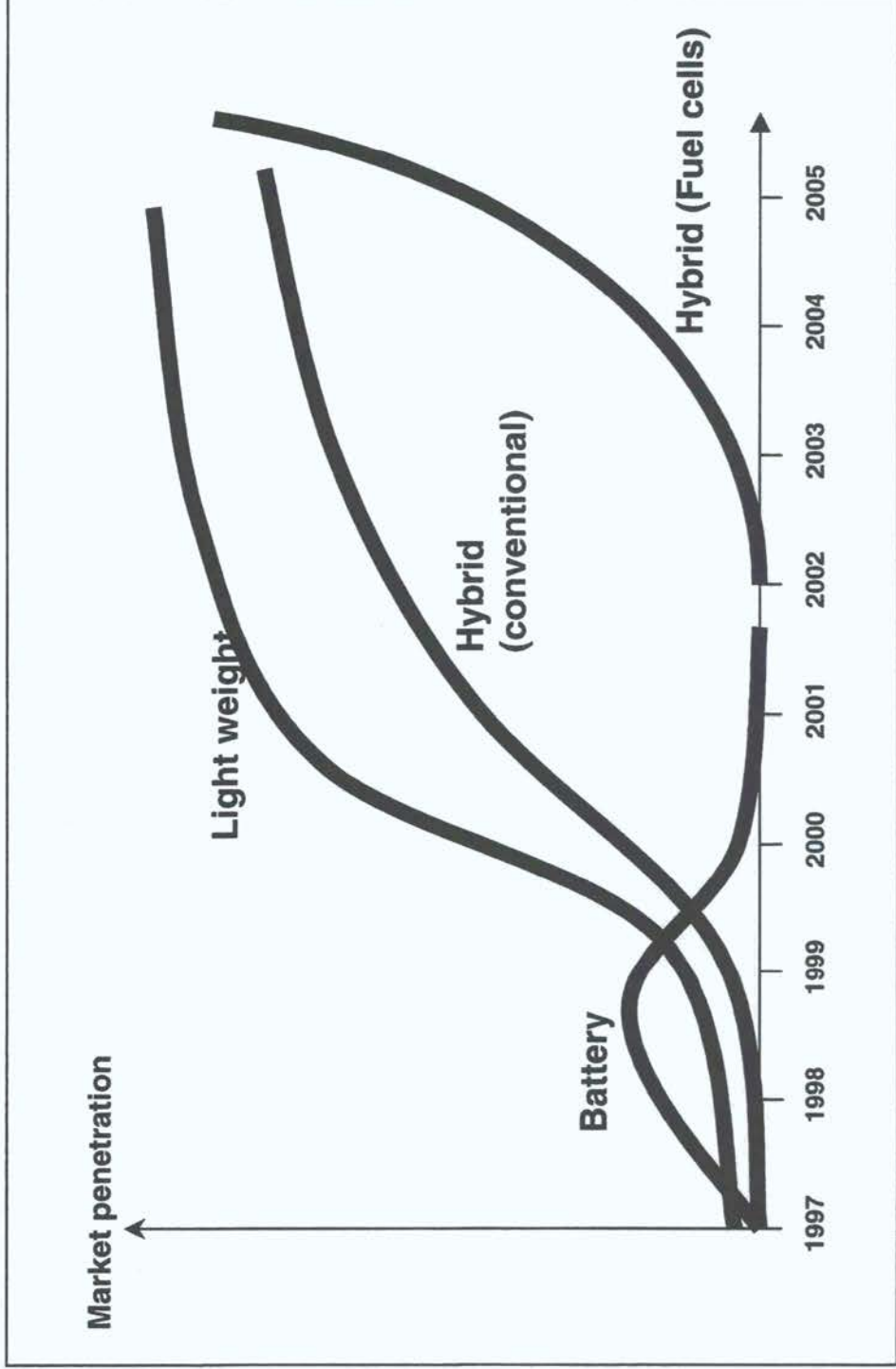


Figure 4



# Automotive industry: Sustainability Ranking

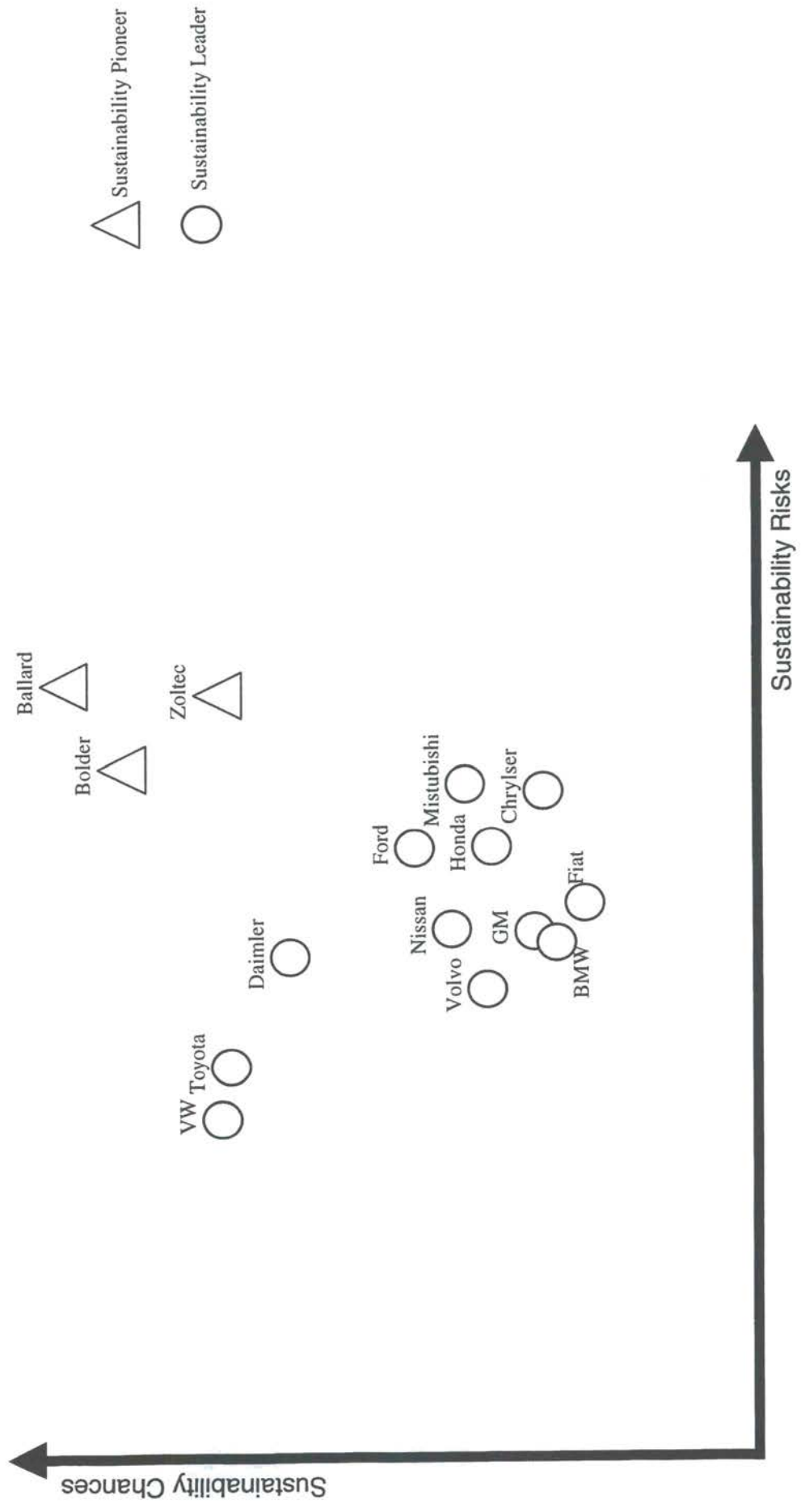
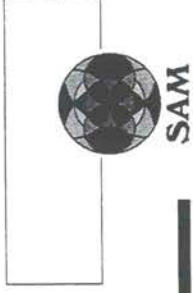


Figure 5



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*Session III: Data Needs and Formats for Insurance Business  
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**Industry’s Approach to Environmental Risk  
Management and Reporting**

*Dr. Frank Annighöfer, Gerling Consulting Group*

## **Industry's Approach to Environmental Risk Management and Reporting**

*by Frank Annighöfer, Gerling Consulting Group*

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Risk management is not only a field of interest for insurance companies. Appropriate risk management is an important function for every enterprise. Risk management is primarily geared at avoiding losses and liabilities. This holds also true for environmental risk management which is often combined with safety and health risk management. Key components of Environmental, Safety and Health (ESH) managements are compliance with legislation and with corporate standards derived from own and others bad experiences.

On top of this basis companies started to develop systems that allowed to monitor and management environmental cost, material in- and outputs, energy and water consumption, and emissions. They began viewing risks not only in their factories but all the way from raw material production to dumping or recycling the product they manufacture. Gaining competitive edge is the driving force behind these activities. Even further developed risk management systems combine all described elements in integrated management systems trying to create a corporate culture that is aimed at continuous improvement of both risk exposure and competitiveness.

ESH management systems are typically documented in a series of handbooks describing the general corporate policy, responsibilities and procedures, technical standards as well as action programs and targets. Nearly every industrial company checks performance regularly by in- and/or external audits.

Typical risk information generated during the course of the described risk management activities include risk details (i.e. descriptive information of sites, plants, safety analyses, permit information, compliance, improvement action plans, accident/loss history, ...), management system information (environmental policy, procedures, programs, targets, ...), and consumption/emission data.

Despite the fact that there is a huge amount of risk information available at nearly every plant site management is usually reluctant to share this information with insurances, banks, or even the public. And it has good reasons not to share it as it is. Audit reports focus on de-



facts/findings only and would give a wrong impression on the overall situation. Most reports contain confidential process or product details which have to be kept secret to not lose competitive edge. Finally every company has its own measuring system of what is acceptable or not acceptable and a comparison of different companies by third parties has a good chance of being unfair for the one releasing more details.

To overcome these obstacles a common understanding has to be developed between industry and financial community what information actually is asked for by insurances, banks and institutional investors on the one hand side and what information is available and can be shared by industry on the other hand side.

To assure objectivity and comparability of risk data it will be necessary to develop accepted rules and standards on environmental (risk) reporting as they are existent for a long time on financial (risk) reporting.

sgd. Frank Annighöfer  
- dictated but not read -

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# Industry's Approach to Environmental Risk Management and Reporting

*presented by Frank Annighöfer*

at the  
3rd International Conference of the  
UNEP Insurance Initiative

Cologne, 9-10 June 1998

 **GERLING**  
CONSULTING GROUP

## Contents

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### Industry's approach to environmental risk management and reporting

1

Industrial companies' view of environmental risk management

2

Typical environmental risk management systems of industrial corporations

3

Risk information and performance data currently generated

4

Obstacles to public information sharing



## Driving forces behind corporate environmental risk management developed over time

Stage 1:

avoiding  
losses and  
liabilities

prime driving  
force of the past

Stage 2:

improving  
efficiency and  
cut cost

implemented  
by growing  
number of corporations

Stage 3:

improving  
shareholder  
value

conducted  
by leaders in  
managing sustainability



## Compliance: The MUST for all companies' environmental risk management systems

Stage 1:



avoiding  
losses and  
liabilities

prime driving  
force of the past

- Securing compliance with legislation and permits (safety, environmental, health)
- Developing corporate (industry) standard and procedures
- Implementing experiences from own (and others) accidents/losses



## Eco-efficiency: Competitive edge through active environmental management

Stage 2:



Monitoring and managing environmental cost  
(operating cost and investments)

Monitoring and managing material in- and  
outputs  
(raw materials, energy, water, wastes and  
other emissions)

implemented  
by growing  
number of corporations

Viewing risks cradle to grave

Realizing gains in market share with green  
product features





## Continuous improvement to create stakeholder value

Stage 3:



conducted  
by leaders in  
managing sustainability

- Combining Stage 1 and 2 features into management system geared at continuous improvement
- Creating corporate culture to live environmental risk management
- Communicate performance openly and to all stakeholders



## Environmental risk management systems include various elements

<b>Environmental policy statement</b>	showing board level commitment
<b>Environmental manual</b>	describing responsibilities and procedures
<b>Environmental standards handbook</b>	setting corporate standards
<b>Environmental programs and targets</b>	managing and documenting progress
<b>Auditing system</b>	checking performance of the above



## Internal audits measure performance against set targets

### Technical audits

examples:

- SHE audits**
  - ⇒ compliance with corporate standards and legislation
- Safety inspections**
  - ⇒ compliance with German VBG's

.....

### System audits

examples:

- Management system audit**
  - ⇒ effectiveness of management systems (i.e. ISO 14000)
- EMAS primary audit**
  - ⇒ compliance and management systems

.....





## Information is generated around 3 axes ...

### Risk details

- general technical description of site, plant, process, ...
- safety analyses and permit information
- audit findings and improvement action plans
- compliance and accident/loss history

### Management systems

- environmental policy
- environmental responsibilities, procedures
- environmental standards, programs, targets
- management system performance





### Consumption / emission data

- quantification of
  - environmental cost
  - raw material, energy, water consumption
  - waste and emission quantities
- development of the above over time

... some companies have location, plant rating schemes



## Especially heavy industry is still reluctant to share information

- Information generated by audits focusses on defects (findings) only  gives wrong picture
- Reports include confidential product/process Know-how  loss of Know-how
- Comparability between companies not given  open communication disadvantageous
- Comparability between industries not given  heavy industry always the bad boy

## Financial communities information needs vary

<b>Insurance</b>	<b>property:</b>	technical details with focus on fire protection, security, process safety
	<b>liability:</b>	details on type of operation, substances, quantities
	<b>workers compensation:</b>	detailed info on occupational, health and safety management
<b>Banks</b>	<b>credit risk:</b>	less detailed than insurance focus on balance sheet affecting risks
<b>Investment</b>	<b>green funds:</b>	less detailed than bank focus on comparable rating scheme
	<b>general:</b>	less detailed rating





**Corporations would be able to generate needed information ...**

**Detailed information  
for insurance purposes**

**Could become modul(s) of  
corporate auditing schemes**

**Banks' credit risk  
information**

**Could be subset of the above**

**General rating infor-  
mation for investors**

**Could be drawn from standard  
environmental/social reports**

**... however, information should be generated, supervised or certified  
by a third party.**





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**Third International Conference of the UNEP Insurance Initiative**

**“Environmental Tools for the Insurance and Financial  
Industries”**

***Session IV: Maximising Investment Performance in  
Stock Markets and Venture Finance***

***Moderator: Ms. Tessa Tennant, Advisor, NPI Global Care***



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PROGRAMME DES NATIONS UNIES POUR  
L'ENVIRONNEMENT



Third International Conference of the UNEP Insurance Initiative

**“Environmental Tools for the Insurance and Financial Industries”**

*Session IV: Maximising Investment Performance in Stock Markets and  
Venture Finance*

**Effects of Environmental Performance on Stock  
Prices**

*Dr. Matthew Kiernan, Director, Innovest Group International, Canada*



***Environmental Out-Performance  
Drives Shareholder Value***

***UNEP Insurance Initiative***

***Cologne, Germany***

***June 9, 1998***

***Dr. Matthew J. Kiernan  
Chairman and CEO***

***Innovest Group International***



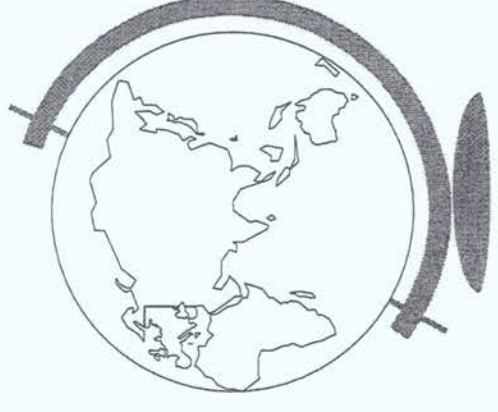
## **EcoVALUE'21™**

*“Environmental costs have reached staggering proportions in recent years, and are one of the critical issues facing business today. The aggregate numbers concerning potential environmental costs are staggering. Environmental liability, if it isn’t already, will soon become a prominent concern for virtually all securities marketplace participants.”*

*Commissioner Richard Y. Roberts  
U.S. Securities and Exchange Commission*

*“The capital markets will soon come to reward eco-efficiency much more systematically; far-sighted investors and company leaders will position themselves accordingly.”*

*Stephan Schmidheiny and  
The World Business Council for Sustainable Development*



### 3 Major Wall Street Fallacies:

- ◆ *EH&S is a pure cost center, not a value generator.*
- ◆ *EH&S Performance is irrelevant to overall corporate financial performance.*
- ◆ *Environmental analysis is imprecise compared with Wall Street's.*





## ***Environmental Risk IS Financial Risk:***

- ◆ ***Balance sheet risk*** (historic liabilities, impairment of real property values, underwriting losses).
- ◆ ***Market risk*** (corporate reputation and image, reduced customer acceptance, potential loss of “social license to do business.” )
- ◆ ***Operating risk*** (emissions and discharge risk, product liability risk, required process changes)
- ◆ ***Capital cost risk*** (pollution control expenditures, product redesign costs).
- ◆ ***Transaction risk*** (potential cost of time, money, and delayed or canceled acquisitions or divestitures).
- ◆ ***Business sustainability and eco-efficiency risk*** (potential competitive risk from lack of efficiency/ sustainability in energy, materials, and resource use).



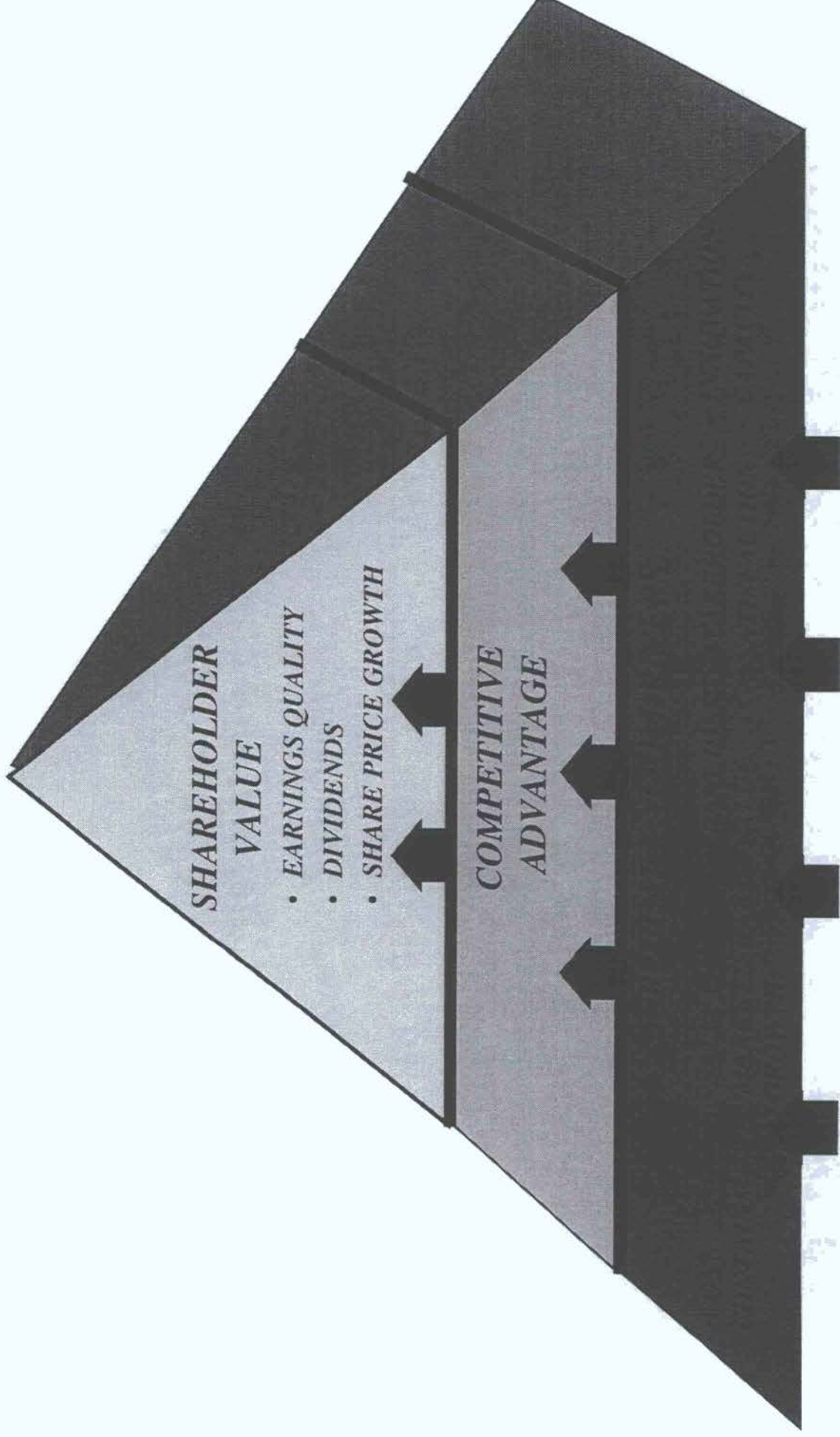
*EcoVALUE '21™*

## *New Sources of Hidden Value Potential:*

- ◆ *Superior “eco-efficiency” is a leading indicator for sustainable earnings quality and shareholder value-creation.*
- ◆ *Current out-performance gap: 230+ b.p. for diversified portfolios, greater for high-risk concentrated ones.*
- ◆ *Hidden value potential not currently captured by conventional Wall Street analytics.*
- ◆ *Future gap will be even greater.*



# ENVIRONMENTAL SHAREHOLDER VALUE



ENVIRONMENTAL OUT-PERFORMANCE



## Summary of Previous Research:

<u>DATE</u>	<u>AUTHOR</u>	<u>RESULT</u>
◆ June 1997	Duke University (470)	400 b.p.; 5 yrs.
◆ May 1997	U.S. EPA (330)	270 b.p.; 5 yrs.
◆ Nov. 1996	ICF Kaiser (330)	500 b.p. (hypothesized)
◆ mid-1996	Scudder/Storebrand (100)	500 b.p.; 5 yrs.
◆ 1994	Winslow/Eaton Vance (500)	230 b.p.; 10 yrs.



*EcoVALUE '21™*

**EcoVALUE '21: Out-Performing the S&P**

- ◆ *200+ basis points for diversified portfolios*
- ◆ *500+ basis points for concentrated, high-risk sectors*
- ◆ *Portfolio risk reduction and performance enhancement*



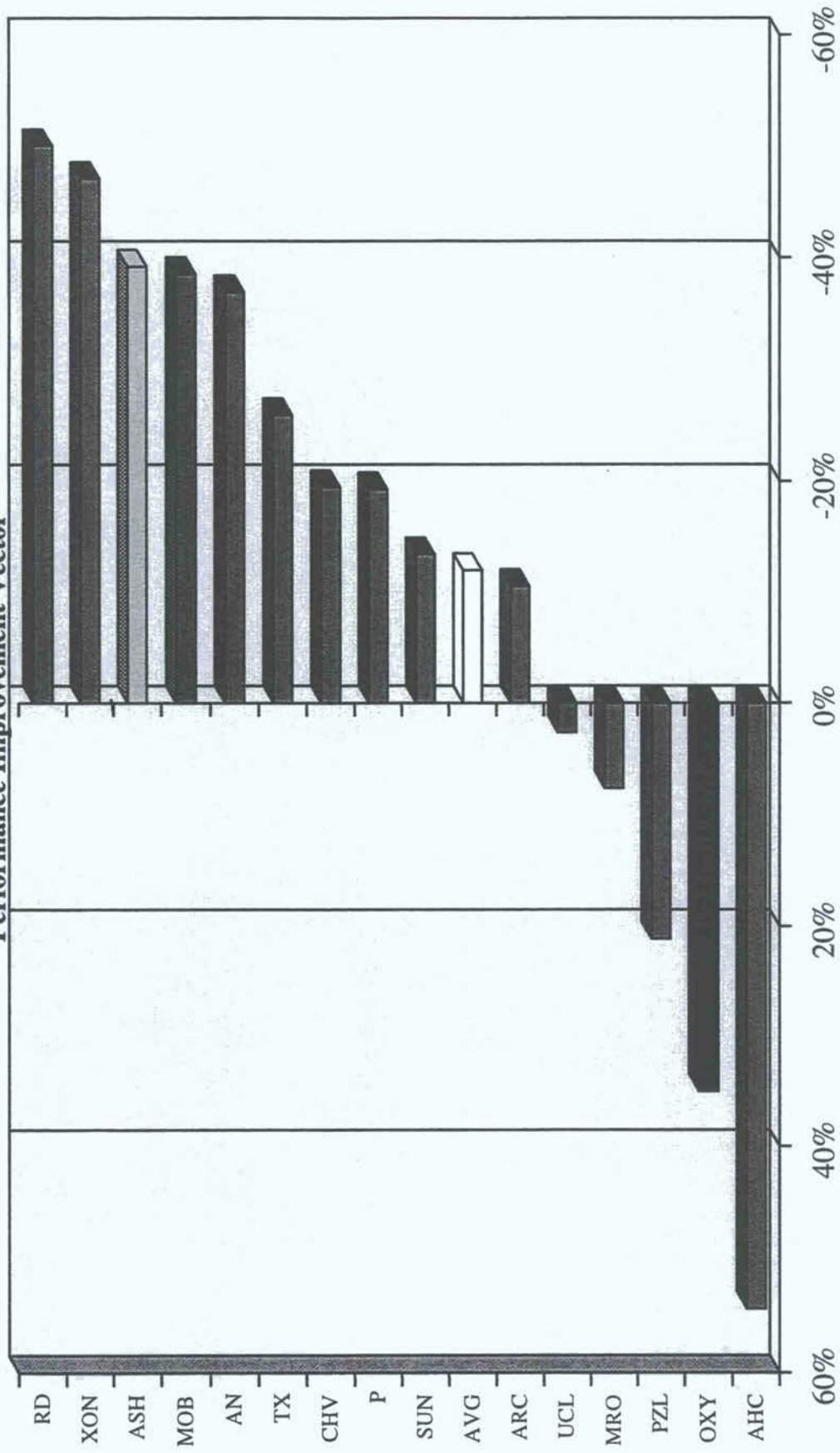
**Future Out-Performance Drivers:**

- ◆ *Tightening domestic and international regulations*
- ◆ *New international performance standards and protocols, e.g. ISO 14000, climate change*
- ◆ *Tightening SEC disclosure requirements*
  
- ◆ *Growing awareness among financiers and investors*
- ◆ *Growing competitive imperatives of “eco-efficiency”*
- ◆ *Financial out-performance premium: 230 b.p. +*

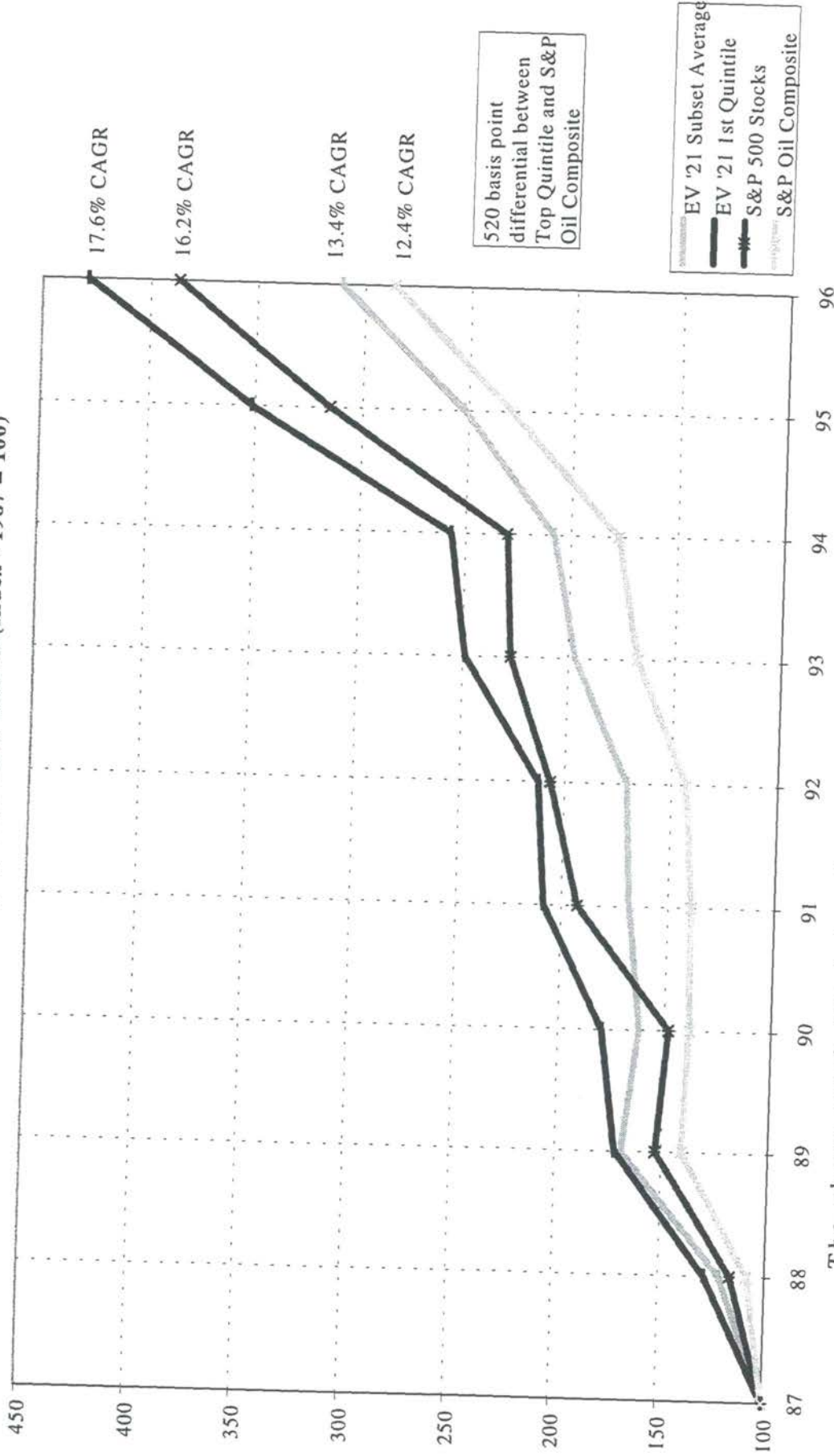




**ECOVALUE '21 - Petroleum Industry Subset  
Performance Improvement Vector**

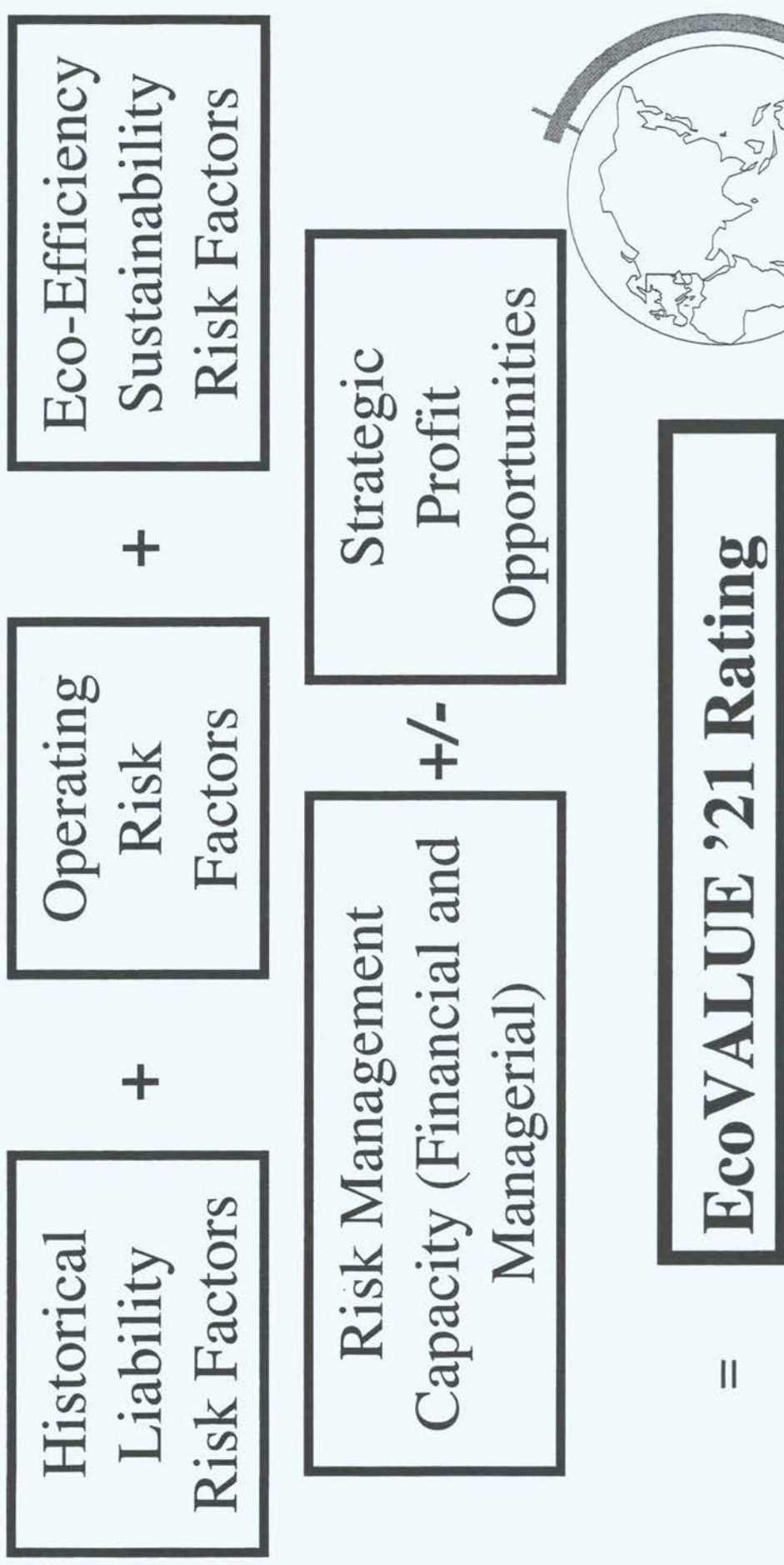


**EcoVALUE '21 Petroleum Industry  
EV '21 Top Quintile Total Return (Index - 1987 = 100)**

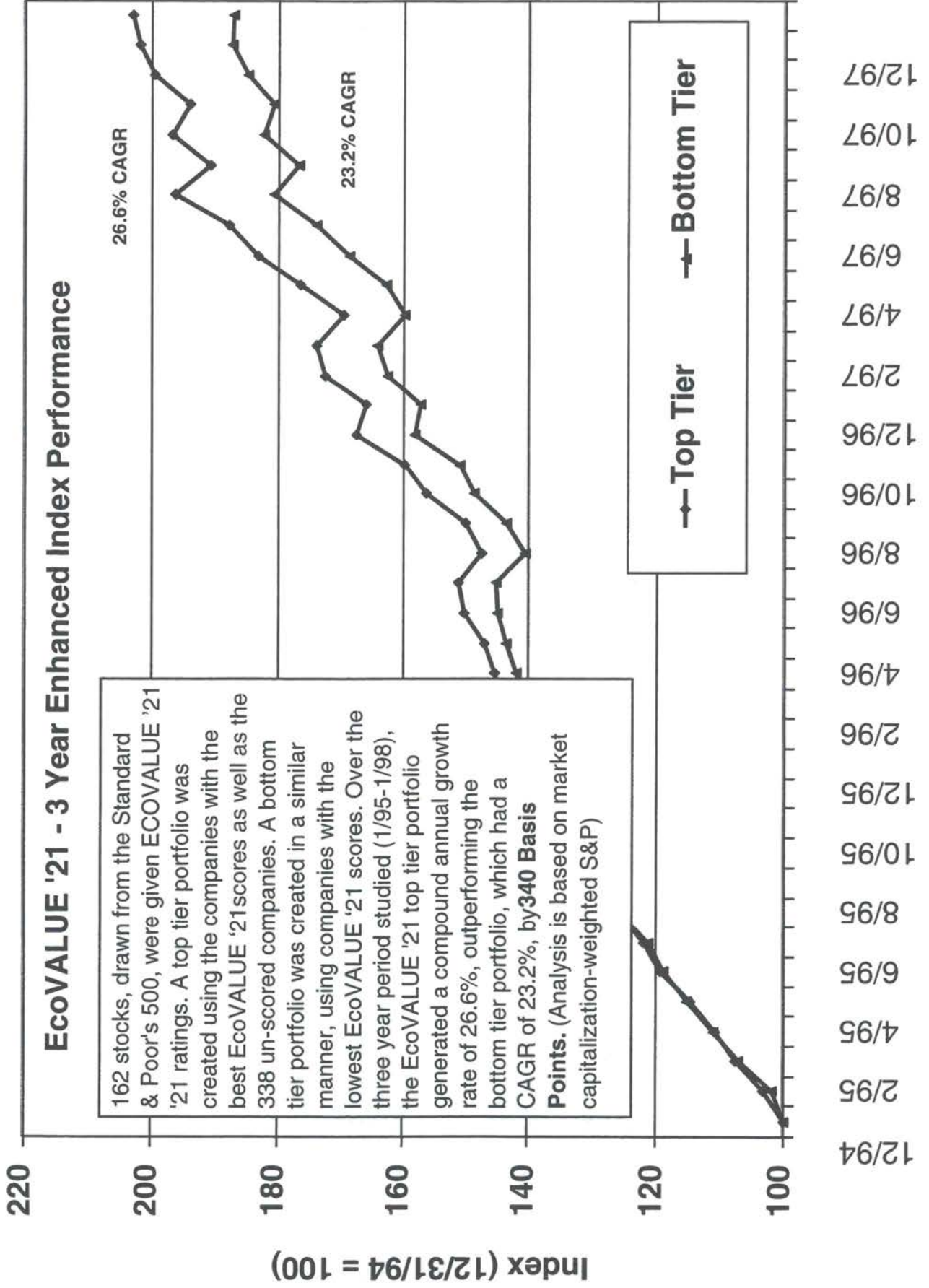


The above graph illustrates the power of environmental performance to serve as a proxy or predictor for financial performance and shareholder value-creation. Over the past 10 years, the companies ranking in the top quintile of EcoVALUE '21 scores out-performed the Standard & Poor's 500 index by 140 basis points, the competitive set of 15 companies examined in this study by 420 basis points, and the principal industry benchmark, the S&P oil composite, by 520 basis points.

***EcoVALUE '21 Rating Model:***

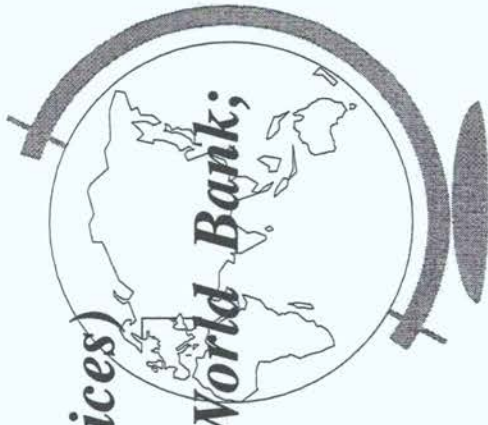






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- ◆ ***Mr. James Martin (former Chief Investment Officer, TIAA-CREF)***
- ◆ ***Lord Michael Sandberg (former World Chairman, Hong Kong and Shanghai Bank)***
- ◆ ***Rt. Hon. Lord Nigel Lawson (former U.K. Chancellor of the Exchequer)***
- ◆ ***Mr. Arthur Lipper (founder, Lipper Analytical Services)***
- ◆ ***Mr. Frank Potter (former Executive Director, The World Bank; Senior V.P., Bank of Montreal)***



***Who Are Our Analysts?***

***Senior Alumni of:***

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- ◆ ***Morgan Stanley***
- ◆ ***BZW***
- ◆ ***James Capel***
- ◆ ***Kleinwort Benson***
- ◆ ***Chase Manhattan Bank***
- ◆ ***Arthur Andersen***
- ◆ ***McKinsey & Co.***





# *EcoVALUE '21*™

## *What Wall Street's saying...*

*“EcoVALUE '21 is an investment tool whose time has clearly come. It is both unique and robust, and provides an entirely new, valuable, and compelling set of insights for investors.”*

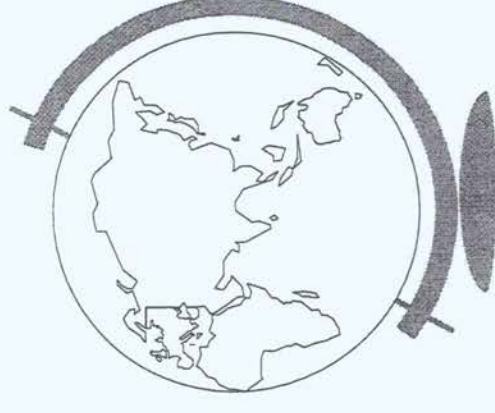
**Barton Biggs, Chairman**  
Morgan Stanley Asset Management

*“EcoVALUE '21 is the first serious analytic tool which allows investors to combine financial out-performance with environmental excellence. It broadens the investment horizon dramatically, and brings powerful - and financially relevant - new insights to the mainstream.”*

**Judith Woodard, Managing Director**  
Bear, Stearns & Co.

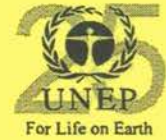
*“EcoVALUE '21 represents an important breakthrough in investment analysis. It has the very real potential of establishing a new industry standard within the financial information world. It will find ready acceptance within the institutional investor community.”*

**Alan Stewart**  
Institutional Investor Institute





**UNITED NATIONS ENVIRONMENT PROGRAMME  
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List of Participants

**Third International Conference of the UNEP  
Insurance Initiative**

**Cologne, 9-10 June 1998**

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