

# PIK Report

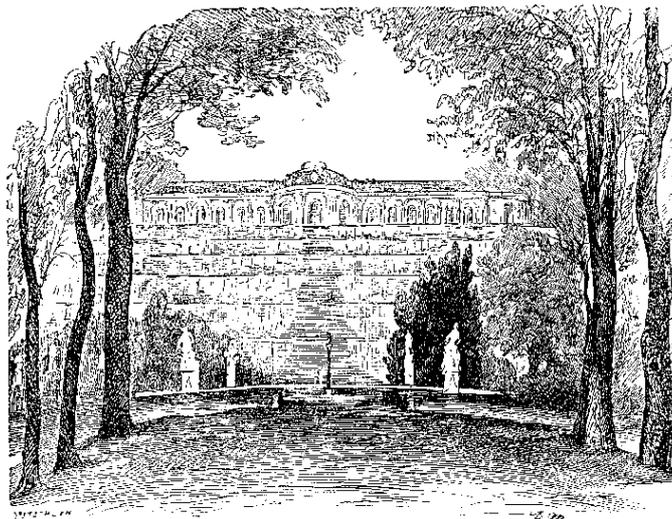
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**No. 70**

STAKEHOLDER SUCCESSES IN  
GLOBAL ENVIRONMENTAL MANAGEMENT

REPORT OF WORKSHOP

Martin Welp (ed.)



POTSDAM, 8 DECEMBER 2000



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POTSDAM INSTITUTE  
FOR  
CLIMATE IMPACT RESEARCH (PIK)

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Cover:

*Sanssouci palace and the Weinberg terraces (etching by A. Menzel)*

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## Abstract

The workshop “*Stakeholder Successes in Global Environmental Management*” took place in Potsdam on 8 December 2000 and it was organised by the Potsdam Institute for Climate Impact Research (PIK). A wide range of decision-makers from different sectors took part in the workshop, ranging from energy to forestry and from water to coastal management. They represented global firms, NGOs and government agencies mainly, but not exclusively, from Europe. The workshop was the kick-off for a stakeholder dialogue within the research project “*Europe in the Context of Global Change*”. The project aims to foster the possible pioneering role of Europe in innovation and diffusion of policies and business strategies for global sustainability.

The workshop had two main objectives: (a) to identify stakeholders who have perspectives and knowledge needed to develop good solutions to global change problems and to create long lasting, stable relationships with them and (b) to learn about the participants’ perceptions of global change problems, future expectations and their views on global change research. For this purpose the workshop was organised around ‘success stories’, which provided a stimulus for discussion. Presentations were given by people from organisations that have a pioneering role, for example in emission trading, in linking paper consumption with forest management by forest certification and in creating sustainable investment mechanisms.

The presentations and discussions highlighted the new role of firms and NGOs in global environmental management. Corporate global environmental standards, international and national criteria for forest certificates, sustainability criteria for investments and emission trading mechanisms within global companies were all part of what was understood as global environmental management. The decisive role of NGOs in building coalitions and alliances, in promoting technology transfer and in acting as pressure groups was recognised. There was a common agreement that global environmental management is increasingly based on an interplay between business searching first-mover advantages, NGO lobbying and campaigning and consumers expecting increased satisfaction from products. National policy-making, the negotiation of international agreements and science are key elements in this interplay but remain rather ineffective if pursued in isolation. The importance of firms and NGOs seems to grow and pro-active policies need to respond to the new constellations by searching for new policy instruments, often based on judicious combination of an array of different measures.

The process of *reflexive modelling*, which is the core of the research project “*Europe in the Context of Global Change*”, benefited from the kick-off workshop in various ways. First, many participants – from business, NGOs and German government – explicitly indicated their interest to work with PIK on issues of global change. Second, a number of lessons were learned that are highly valuable for modellers at PIK. These included, for example, the necessity of translating case studies into a modelling language and back, explicitly taking into consideration the role of the mass media and opinion formation and also the need of modelling economic processes along sectors and product chains.



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## Programme



# Stakeholder Successes in Global Environmental Management

Potsdam, 8 December 2000

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### **Part 1**      **Plenary session** (*Chairperson: Fritz Reusswig*)

- 08.30-08.40 Welcome, objectives and programme.  
*Martin Welp (PIK)*
- 08.40-08.50 PIK research and global environmental management.  
*Carlo Jaeger (PIK)*
- 08.50-09.05 The oil industry and sustainable development.  
*Richard Sykes (Shell International, UK)*
- 09.05-09.20 Microcredits for the poor people and the environment.  
*Dipal Chandra Barua (Grameen Bank, Bangladesh)*
- 09.20-09.35 Contribution of the telecommunication industry to climate protection.  
*Ignacio Campino (Deutsche Telekom AG, Germany)*
- 09.35-10.00 Discussion

10.00-10.30	<i>Coffee and tea break</i>
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### **Part 2**      **Parallel break-out groups**

- 10.30-11.30 a) Sustainable investment and financing mechanisms.  
*Chairperson and introduction: Andreas Knörzer (Bank Sarasin & Co, Switzerland)*
- b) Emissions trading.  
*Chairperson and introduction: Helmuth-M. Groscurth (Hamburgische Electricitäts-Werke AG, Germany); additional presentations: Robert Dornau (Deutsche Börsen AG, Germany), Barbara Wieler (PricewaterhouseCoopers, Germany)*
- c) North-South issues and technology transfer.  
*Chairperson and introduction: Saleemul Huq (Bangladesh Centre for Advanced Studies, Bangladesh); additional presentation: Manfred Treber (Germanwatch, Germany)*
- d) Renewable energy sources.  
*Chairperson and introduction: Ludwig Karg (B.A.U.M. Consult, Germany); additional presentation: Jörg Baur (GTZ, Deutsche Gesellschaft für Technische Zusammenarbeit, Germany)*
- 11.30-12.30 Plenary presentation of results and discussion. (*Chairperson: Fritz Reusswig*)

12.30-13.30 *Lunch and walk*

**Part 3 Plenary Session** (*Chairperson: Richard Klein*)

- 13.30-13.45 Who are the relevant global players for the environment?  
*Ernst Ulrich von Weizsäcker (MP, Chairman of the Enquete Commission on Globalisation, Germany)*
- 13.45-14.00 The role of the private sector in global water management.  
*Jean Pierre Tardieu (Vivendi Environment, France)*
- 14.00-14.15 Stakeholder involvement in forest management in Russia.  
*Andrei Laletin (Friends of the Siberian Forests, Russian Federation)*
- 14.15-14.40 Discussion

14.40-15.00 *Coffee and tea break*

**Part 4 Parallel break-out groups**

- 15.00-16.00 a) Sustainable natural resources management.  
*Chairperson and introduction: Lutz Fähser (Hansestadt Lübeck Bereich Stadtwald, Germany); additional presentation: Florian Nehm (Axel Springer Verlag, Germany)*
- b) Tourism and sustainable coastal management.  
*Chairperson and introduction: Gabor Vereczi (World Tourism Organization, Spain)*
- c) International climate policy beyond COP-6.  
*Chairperson and introduction: Matthijs Hisschemöller (Vrije Universiteit Amsterdam, The Netherlands); additional presentation: Enno Harders (Federal Environment Ministry, Germany)*
- d) Natural hazards, vulnerability and human health.  
*Chairperson and introduction: Bettina Menne (World Health Organization, Italy)*
- 16.00-17.00 Plenary presentation of results and discussion. (*Chairperson: Ottmar Edenhofer*)

**Part 5 Conclusions** (*Chairperson: Carlo Jaeger*)

- 17.00-17.30 *Lessons learnt and discussion on future collaboration.*  
Martin Welp (PIK)
- 17.30 Closure.
- 17.30-18.30 Drinks in the lounge.

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# 1 The kick-off workshop

## 1.1 Background and objectives

Science on Global Environmental Change has left the ivory tower and is increasingly evolving in a dialogue with policy-makers, citizens and other stakeholders (Jaeger 2000). Researchers must follow and take part in societal debates, in order to avoid the danger of losing touch with reality. But researchers can also give a scientific forum for a structured dialogue. This means organising and facilitating workshops and other events, which provide the opportunity to develop and exchange new ideas, which can be tested by interdisciplinary science at a later stage.

The Potsdam Institute for Climate Impact Research (PIK) intends to establish long-term relationships with various stakeholders, including private enterprises, government agencies and non-governmental organisations. The kick-off-workshop ‘Stakeholder Successes in Global Environmental Management’, which took place on 8 December in Potsdam, was a first step in a *stakeholder dialogue*. It was an effort to bring together various actors having a ‘stake’ or interest in global environmental issues. One main objective of the workshop was to identify stakeholders who have perspectives and knowledge needed to develop good solutions to global change problems and to create long lasting, stable relationships with them.

One of main research activities of PIK is the development of Global Environmental Change (GEC) models. PIK recognises the need and opportunity to make these models (and the insights obtained from them) available for decision-makers in policy and business and for lay public. In this kick-off workshop, however, the motto was “You talk, we listen”. We were interested in the stakeholders’ perception of global change problems, future expectations and views on global change research. A dialogue with stakeholders at an early phase where research questions are defined seemed to be in line with this objective.

The workshop was organised around ‘Success Stories’, which came from four important fields relevant to global environmental management: energy, forestry, water resources and coasts. Energy production and use is the key issue in climate change. In the three latter fields vulnerability to climate change is likely to be significant. But global change includes not only climate. It is a broader phenomenon caused by an increasing population and consumption and includes issues such as biodiversity, land degradation and water stress.

“Success” was defined as a significant contribution to global sustainability (economic, social and environmental). Success stories brought along some interesting research questions such as: What did the success stories have in common. Why were they so successful? What contributed to their success? Are the successes unique or can they be replicated elsewhere? On the basis of the storylines PIK outlined “*Lessons Learned*”. Our intention is to apply these success stories (see Section 2.3) in modelling economic and social aspects of Global Environmental Change and also in modelling possible solutions.

The workshop was organised within the framework of the research project “Europe in the Context of Global Change”, which explicitly focuses on modelling economic developments and innovations. It is initiated by PIK and a number of other research institutes in Berlin and Potsdam. This network is a long-term research initiative aiming to improve the social science knowledge base needed to deal with global environmental change. It recognises the leadership role of Europe in solving global equity and environmental problems. Research issues include, among others, dynamics in trade and investment, environmental governance and the diffusion of policy innovations.

## **1.2 Providing a scientific arena for stakeholder collaboration**

Global Environmental Change is a very unstructured policy issue, or rather set of issues, characterised by high *complexity* and obviously by a *global* scope. How can relevant stakeholders in this field be identified? Referring to the definitions in Box 1, “stakeholder is somebody affected by a problem”, the number of stakeholders is enormous. Similarly, the number of “those being responsible for a problem” is of a magnitude which is hard to grasp. Basically everybody is a stakeholder (and a ‘global subject’) in global environmental change having a greater or lesser impact on earth’s climate, biodiversity, water resources etc. In our exercise we were first and foremost interested in stakeholders who have the perspective and knowledge needed to develop solutions and those who have the power to implement solutions. These include, among others, firms, NGOs and governments.

### **Box 1. Who is a stakeholder?**

The term stakeholder has evolved over time and changed its meaning from an impartial person to somebody having a vested interest in an issue. According to Merriam Webster’s Collegiate Dictionary, the earliest use of the term “stakeholder” goes back 300 years to refer to persons entrusted with “stakes” of bettors. In 19th century America, settlers in the West “staked” a claim, literally driving stakes into the ground to mark out the extent of land claims. They became “stakeholders”. In more recent times, the use of the term has expanded to include anyone who makes a claim upon, or has an interest in, an issue or the work of an organisation, such as a firm.

Stakeholders are seldom individual persons -- they are most often organisations or institutions that may be represented by an individual person. A stakeholder can be defined broadly as one who: (a) is affected by or affects a particular problem or issue and/or (b) is responsible for problems or issues and/or (c) has perspectives or knowledge needed to develop good solutions or strategies, and/or (d) has the power and resources to block or implement solutions or strategies.

Firms, NGOs and governments already co-operate in global environmental issues. They collaborate for mutual benefit and build, often at first glance, unexpected strategic alliances to promote their interests. Two examples are the Climate Alliance of European Cities with Indigenous Rainforest Peoples and the co-operation between WWF and business for the reduction of energy consumption in firms.

Some of the collaborations are more formalised, some are less so. PIK wants to provide a forum for a continued stakeholder dialogue and wants to support this with scientific insights. The dialogue can be characterised as a collaborative effort to model global environmental change and to find approaches that help to solve some of the pressing sustainability problems. In this dialogue PIK intends to act as a “Argumenteprüfanstalt” - a research institute testing arguments - in global environmental change issues. The modelling approach can be called “reflexive modelling”. Stakeholder involvement is one of the three guiding principles of this approach. The other two include the validation of computer models against data and structured evidence from “real” trends and creating better and more “realistic” models by co-evolution of different types of models.

### ***1.3 Description of the participants and workshop’s events***

A wide range of decision-makers from different sectors took part in the workshop, ranging from energy to forestry and from water to coastal management. They represented global firms, NGOs and government agencies mainly, but not exclusively, from Europe (see Annex 1. List of Participants). Most participants found this mixture interesting, since many of the global environmental issues on the agenda were highly interrelated. For example, the COP-6 showed what importance forests can suddenly get in issues relating to climate and energy. In addition, the set-up was also challenging: language had to be used which was understandable to experts in other fields too.

The workshop started with an introduction by Martin Welp about the objectives and programme for the workshop (see Programme). After that Carlo Jaeger gave a brief presentation about the Europe project – “Europe in the Context of Global Change”, which this workshop was part of. It was more than fair to introduce our objectives to the guests but according to the motto “You talk, we listen”, PIKs introduction was kept rather brief.

The dialogue began with a storytelling phase (see Section 2.3). In the morning plenary session presentations were held about the oil industry and sustainable development (Richard Sykes, Shell), micro-credits in Bangladesh (Dipal Chandra Barua, Grameen Bank) and the role of telecommunication in mitigating global climate change (Ignacio Campino, Deutsche Telekom AG). A member of the department Climate Change and Social Systems chaired the plenary sessions, introducing the speakers and moderating the discussions. After the coffee and tea break the group split into four parallel break-out groups. The participants were free to choose which one to attend. Each parallel session had one or more introductory presentations. The groups were given two questions to focus their discussion on: (a) “What factors contributed to this success?” and (b) “To what extent is this success transferable to other sectors or other regions?”. The groups reported back about the discussions in the plenary session. The short description of each break-out group can be found in Section 2.4.

After the lunch break in the afternoon plenary session, presentations were given on players in global environmental issues (Ernst Ulrich von Weizsäcker, Member of Parliament), water management (Jean Pierre Tardieu, Vivendi Environment) and forest management in Russia

(Andrei Laletin, Friends of Siberian Forests). A lively discussion took place after which the participants again split into four parallel break-out groups, now on different topics. A volunteer from each group reported back to the plenary session. The concluding part was "lessons learned" and prospects for future collaboration. All presentations and discussions in the plenary sessions were recorded on tape. After the official end of the workshop those who were able to stay longer met in the hotel bar for the informal part of the day.

During the day the participants were given the opportunity to think about research questions and models that they considered interesting and helpful and to write them down on a pin board. Another wall was reserved for comments on the workshop itself.

A press conference was organised by PIK to present the idea of the dialogue for interested journalists. The press conference was separate from the workshop, where we only wanted to have stakeholders, researchers from PIK and our research partners from the Universities in Potsdam and Berlin.

## **2 The success stories**

### ***2.1 What is global environmental management?***

Global environmental management, as understood in this paper, includes public environmental management as well as management carried out by private companies (e.g. internal CO<sub>2</sub> emission trading, management guidelines for water management). Although, for example, forest, land or water management takes place mainly on regional and local level, it is global in the sense that: (a) management can take place within a global management framework such as the management criteria for forests developed by the Forest Stewardship council or (b) management is carried out by a global player following own generic guidelines and adopting them to local circumstances. For example, private water companies are managing urban water resources in many countries. Also NGOs are in various ways involved in environmental management.

Studies on "Global Governance" and "International Environmental Policy" are highly relevant to the concept of Global Environmental Management. For example, studies on the diffusion of environmental policy innovations (Jänicke 2000) suggest that environmental policy is not necessarily a loser in globalisation. Policy innovations even in small pioneering countries can have a model character. For example, California or countries such as the Netherlands or Sweden have created new markets for more environmentally friendly products. Jänicke has analysed the diffusion of these policy innovations to other countries and concludes that innovations are an interplay of policy innovations, creating new markets and technological (product) innovations. By fulfilling strict environmental regulations in certain markets firms gain "first mover advantages".

Environmental management carried out by global players poses some interesting research questions. Are there differences between a company managing water resources in Mexico

City and in Berlin or do the same management principles apply? Does global environmental management mean standardisation, less variation, less diversity? The level on which global management takes place is a further research question. Mitigating and adapting to Global Environmental Change requires action both on global and on local level. On local level, one way forward is through the development of Local Agenda 21. However, according to Jordan and O'Riordan (2000) Local Agenda 21 processes are almost worldwide in a dilemma of citizen action dashing against public sector financial restrictions and politically motivated curtailment of local democracy. It is proving to be a tortuous process as it is locked up in central-local government relations, policy responsibilities and political controls over local spending.

## ***2.2 Objectives and definition of a success story***

Success stories presented by the invited stakeholders provided stimulus for discussions and a basis for follow-up collaboration. The success stories came from four important fields relevant to global environmental management: energy transition, forestry, water management and coastal management. Some of the success stories include technological innovations, some organisational innovations, and some financial innovations. These stakeholder successes, almost one decade after the Rio Summit, give rise to evaluating the speed of ecological modernisation.

The 'Success Story' approach applied in the workshop was an effort to identify innovative projects, approaches and products. Success was, for purposes of the workshop, defined as a significant contribution to global sustainability in economic, social and environmental terms. Thus, a success story included a novel idea or innovation, which has contributed to the environment and/or poverty alleviation. Ideally a success story should represent a win-win solution on the global level for both the North and the South.

Success stories were useful as an introduction to a stakeholder dialogue. However the criteria, quantification and success factor search is more difficult the closer you look. Success in one respect may fail in another and the degree of success depends on one's world view, values, goals and interests. There is also need to analyse success stories on different time scales. In the short term and over the longer term successes give a different record. In a changing world especially, institutional innovations and successes can be regarded as having a useful life span (Agrawala 1999). But in this exercise they were useful as elements and building blocks.

Earlier success stories in global environmental management include, for example, the Montreal Protocol and the effort to close the ozone hole. By most accounts the protocol and its amendments constitute a success for the global community. Other success stories usually have often been on local or national level: projects in small communities or regions. A global approach has seldom been selected and there is lack of rigorous analysis of success stories on global level.

The stakeholder successes in Global Environmental Management presented in the workshop were innovations of companies, NGOs or administrative bodies with a global relevance. Often the keys to success are technological, organisational, financial or knowledge innovations or combinations of them. Management of innovations increases the capacity of an organisation to face changes in future. Stakeholders are in the process of adapting to changing conditions, such as changing consumer preferences, changing resource base and legislation in different countries. Firms especially seek first mover advantages.

Success stories may be successes first in a specific sector or a success in the context of a country or region. Ideally they should have the potential to be adopted elsewhere too. Some innovations, such as CO<sub>2</sub> emission trading, may also have the potential to be adopted in a Global Environmental Management framework. The diffusion of novel ideas takes place at a greater and greater pace due to faster communication.

### **2.3 Selected success stories**

The selected success stories of companies, NGOs or administrative bodies are briefly presented in this section. All stories were presented orally in the workshop. Some were presented in the plenary sessions and some as an introduction in the break-out groups. The summaries were written by the representative of each organisation and have only been edited concerning the formatting.

The storytelling phase with the motto “You talk we listen”, started with energy sector stakeholder successes. These included presentations of following organisations: Shell International (Oil industry and sustainable development), GTZ (Renewable energy in Morocco) and B.A.U.M. (Experiences with nationwide and regional approaches to renewable energy dissemination). Closely related to energy issues was emission trading. Hamburgische Electricitäts-Werke AG (HEW) was the first European firm involved in bilateral CO<sub>2</sub> trading (Pilot Trade in Carbon Dioxide Reductions between). Deutsche Börsen AG has been involved in initiating a German expert group on emission trading together with PriceWaterhouseCoopers (Simulation of Emission Trading).

Stakeholder successes in natural resources management included water resources and forest resources management. A water sector success story was presented by Vivendi (Privatization of water management). Forestry stakeholder successes were presented by Axel Springer Verlag (Linking forests to the end consumer – certification), Stadtwald Lübeck (Ecologically oriented forest management) and Friends of Siberian Forests (Stakeholder involvement in defining Russian forest policy). Closely linked with natural resources management was the issue of coastal management. The presentation was given by the World Tourism Organization (Agenda 21 – the case of Calvia Mallorca).

Success stories with focus on poverty alleviation and North-South dimensions of global change were given by Grameen Bank (Fighting poverty with Micro-loans) and Bangladesh Centre for Advanced Studies (North-South NGO co-operation within the Climate Action

Network). Successful NGO collaboration with industry was demonstrated by Germanwatch (Organising business support for the UN climate process). Germanwatch as a North-South initiative had a significant role in creating the *European Business Council for a Sustainable Energy Future*. New technologies, particularly in the field of telecommunication, were presented by Deutsche Telekom. The presentation focused on the contribution of the telecommunication industry to climate protection.

### **2.3.1 The Oil Industry and Sustainable Development**

*Richard Sykes (Shell International)*

#### *Background*

Relationships in the tri-polar world of government, industry and civil society are changing. Government is in retreat, business is expected to fill the gap and take greater responsibility for environmental and social issues, whilst increasingly vocal NGOs are not accountable for their activities. Concerns are voiced with respect to people (increasing inequality with half the world earning under USD2 per day), planet (threats to nature's diversity from development and climate change) and profit (globalisation and the increasing power of big business).

#### *Shell's experience*

In 1995, Shell had two experiences - the proposed deepwater disposal of the Brent Spar oil production facility and events surrounding the execution of the Ogoni activist Ken Saro-Wiwa in Nigeria - which fundamentally affected top management and accelerated the companies transformation.

The three main lessons learnt were:

- Business may have to take more responsibility but it is not trusted. Trust can only be built through greater openness and transparency and engagement with stakeholders;
- reputation is a vital asset which is determined by the extent to which a company meets societal expectations;
- say what you stand for and do what you say you will do.

As a result, the Group's Business Principles were revised to include human rights and a commitment to contribute to sustainable development.

#### *The what and why of sustainable development*

Many people use the well-known Brundtland definition of sustainable development but there is a tension between the North's ecological approach - living within the earth's carrying capacity - and the South's focus on poverty alleviation. Shell's starting point is what we stand for - our values. For us, it is about integrating economic, environmental and social considerations into our decision-making and balancing short and long term priorities. New behaviours are necessary to seek out the views of others. Multinational companies operating

around the globe come face to face with poverty and environmental degradation. They have the ability to make a difference and the incentive to act because stable societies are in their own best self-interest.

The business case for sustainable development is clear:

- reducing costs by being more eco-efficient, doing more with less;
- creating options by anticipating new markets driven by people who want a more sustainable world;
- gaining customers by providing services and products built on sustainability thinking;
- reducing risk by understanding what represents responsible behaviour.

We believe the pursuit of these levers will enhance our reputation and in turn attract financial and human resources to allow us to create wealth for the company and our society at large.

### *Sustainable development in practice*

Sustainable development in practice for the oil and gas industry means increasing our efficiency and reducing the impact of our operations. It also means generating new energy products and services, which includes expanding our natural gas portfolio, commercialising renewable energy sources and developing fuel cells which form the basis for a potential hydrogen economy.

Shell also contributes to sustainable development by taking action on climate change:

- our aim is to reduce our own CO<sub>2</sub> emissions to 10% below 1990 levels by 2002;
- measuring and reporting our greenhouse gas inventory;
- helping our customers to reduce their own emissions by offering lower carbon choices;
- making better business decisions by including the future cost of carbon;
- being active in the public policy debate to raise awareness;
- helping develop market mechanisms such as emissions trading.

Shell is the first oil and gas company to publish a policy on biodiversity. Our aim is to operate responsibly, revising our Environmental Impact Assessments to take potential impacts on biodiversity into account and establishing early dialogue with key stakeholders for new projects in sensitive environments. In addition, we have agreed a 5 year USD2.8 million partnership with the Smithsonian Institution to establish biodiversity baselines and monitor the impact of our operations.

We are also addressing some of the major issues on corporate social responsibility, including human rights, bribery and corruption and child labour.

## *Conclusion*

Shell believes that environmental protection and social equity are inextricably linked to responsible wealth creation. Our commitment to contribute to sustainable development holds the key for our long-term business success.

### **2.3.2 Grameen Bank**

#### *Dipal Chandra Barua (Grameen Bank)*

Grameen Bank (GB) has reversed conventional banking practice by eliminating the need for collateral. The Grameen banking system is based on mutual trust, accountability, participation and creativity. GB provides credit to the poorest of the poor in rural Bangladesh, without any collateral. At GB, credit is the entry point for breaking the vicious cycle of poverty and it serves as a catalyst in the overall development process. GB sees credit as an empowering agent of the poor who have been kept outside the banking orbit on the ground that they are poor and hence not bankable. Professor Muhammad Yunus, the founder and Managing Director of Grameen Bank, reasoned that if financial resources can be made available to the poor people on terms and conditions that are appropriate and reasonable, “these millions of small people with their millions of small pursuits can add up to create the biggest development wonder”.

The origin of Grameen Bank can be traced back to 1976 when Professor Muhammad Yunus, Head of Rural Economics Program at the University of Chittagong, launched an action research program in one village-Jobra, close to the campus to develop a credit delivery system to provide banking services targeted at the rural poor. The “Grameen Bank Project” (Grameen means “rural” or “village” in Bangla) came into operation with the following objectives:

- extend banking facilities to poor men and women in the village;
- eliminate the exploitation of the poor by money lenders;
- create opportunities for self-employment for the vast number of unemployed people in rural Bangladesh;
- bring the disadvantaged, mostly the women from the poorest households, within the fold of an organisational format which they can understand and operate;
- reverse the age-old vicious circle of “low income, low savings, low investment” into an expanding system of “low income, credit, investment, more income, more investment, more income”.

The Project demonstrated its success in Jobra and some of the neighbouring villages during 1976-1979. With the sponsorship of the Central Bank and support of the nationalised commercial banks, the project was extended to Tangail district (a district north of Dhaka, the capital of Bangladesh) in 1979. With the success in Tangail, the project was extended to several other districts in the country. In October 1983, the Grameen Bank project was transformed into an independent bank by a government ordinance. Today Grameen Bank is owned by the poor themselves. Borrowers of the Bank own 93% of the shares of the bank, while the remaining 7% is owned by the government.

Currently, GB is the largest rural credit institution in the country. It has 2.4 million borrowers, 95 percent of whom are women. With 1,158 branches, GB provides services in 40,123 villages, covering more than half of the total villages in Bangladesh. The cumulative repayment rate of its loans is above 94%. A summary of Grameen's lending as of September 2000 is given in the table below:

Item	Number	Item	Million US\$
1. Number of Branches	1158	6. Cumulative Amount Disbursed	3213.40
2. Number of Villages	40123	7. Amount Disbursed During this Month	25.00
3. Number of Centres	68267	8. Cumulative Amount of Housing Loans Disbursed	186.51
4. Number of Members	2370521	9. Housing Loans Disbursed During this Month	0.13
Female	2247866	10. Cumulative Amount of Savings in Group Fund	249.14
Male	122655		
5. Cumulative number of houses Built with GB housing loans	530559	11. Balance of Total Savings (Excluding Group Fund)	26.19

Grameen Bank's positive impact on its poor and formerly poor borrowers has been documented in many independent studies carried out by agencies such as the World Bank, The International Food Research Policy Institute (IFPRI) and the Bangladesh Institute of Development Studies (BIDS).

Grameen Bank has inspired people and institutions throughout the world with its success in poverty alleviation. More than 5800 people from some 105 countries have gone through Grameen's training/exposure program over the last ten years. Some of those visitors have returned to their countries and replicated the Grameen Bank model to benefit their country's poor people. A total of 300 GB replication programs in 60 countries have been established during the last decade. Taken together, they have reached several hundred thousand poor borrowers with credit around the world.

Grameen Bank has the plan to reach up to 3 million families by 2005. GB has the vision to encourage and provide technical assistance to the micro credit institutions and NGO's throughout the world.

**2.3.3 Telecommunication Services Open Chances For More Resources Efficiency**  
*Ignacio Campino (Deutsche Telekom)*

Recent studies about the environmental relevance of telecommunication services carried out at Deutsche Telekom show that video conferencing and the electronic answering machine integrated in the network contribute to reduce the energy consumption and therefore the CO<sub>2</sub>

emissions compared with travelling and with the conventional service with an answering machine on the desk.

E-commerce may contribute to a reduction of energy consumption when used in a proper form. We balanced the book trading by online-booking and by ordinary shopping and found that the results of the balance depend very much on the distance between the home and the book store, on the kind of travelling (going by public transport or by car) and on how the supplier delivers the book to the customers home. The following example will explain that more in detail: when the trips into the city for ordering the book and for picking it up later are avoided by online-booking and by getting it delivered by an ordinary postal service, the environmental impact is positive. But if the customer orders the book by the electronic way and then travels into the city for purchasing other things the environmental balance would be negative.

The Öko-Institut Freiburg balanced tele-working in a former study. The results also vary with the distance between the home and the office, with the days per week which the telecommuter spends at home and with the fact if there is a duplicity of the equipment at home and at the office or if there is just one piece of equipment (e.g. a notebook) that is used everywhere.

Telecommunication services are not per se environmentally friendly but they open a chance for more resource efficiency in the society if they are used under the right conditions. It is necessary for Deutsche Telekom to analyse and to communicate all these conditions to let the telecommunication services help increase the energy efficiency.

In principle we are interested in modelling of cities or quarters of cities with an intensive use of tele-services for having better information of the effects of those services in our society.

#### **2.3.4 Pilot Trade in Carbon Dioxide Reductions between HEW and TransAlta** *Helmuth-M. Groscurth (Hamburgische Electricitäts-Werke AG)*

As the first company in Europe, the Hamburgische Electricitäts-Werke AG (HEW) has sold reductions of their carbon-dioxide emissions, which are achieved by renewable energy installations in Hamburg. The revenues from this sale will help to finance these installations. The buyer is the Canadian utility TransAlta. The greenhouse-gas emission reductions traded amount to 3 000 tons per year over the period 2000-2007. The transaction has been brokered by the New York based company NatSource, which is specialised in emission trading.

The background for this transaction is the Kyoto-Protocol on Climate Change and the Green Paper on Emission Trading of the European Commission. In the Kyoto-Protocol, almost 40 industrialised countries have agreed to cap their greenhouse-gas emissions for the period from 2008 to 2012. On average, the reductions (compared to the 1990 levels) amount to just above 5%. For the European Union, reductions amount to 8%; Germany alone is facing a reduction of 21%. To support these targets, the protocol lists several so called “flexible mechanisms”,

among them “emission trading”. The EU-Commission has suggested in its Green Paper, to implement emission trading as early as 2005 in order to facilitate achieving the EU target.

In the future, emission trading could work in the following way: the legislature will fix the total amount of emissions permitted and will issue an according amount of emission certificates. The amount of certificates will be reduced every year. Anyone who wants to emit greenhouse gases will have to have the respective amount of certificates. Since the number of certificates available decreases, there are two choices: to invest into equipment, which reduces the emissions or to buy additional certificates. In this way, the market for certificates directs emission reduction investments towards those projects that realize the highest reduction per dollar.

HEW and TransAlta both hold emission trading for a suitable instrument to pursue environmental targets in a liberalised energy market. It helps to achieve these targets without disturbing competition and in a way that keeps the overall cost as low as possible. The trading mechanism ensures that greenhouse-gas reduction projects are carried out where they are most cost-effective. At the same time, emission trading is an interesting new field of business for HEW. It may very well complement HEW's newly developed energy trading activities. Both HEW and TransAlta are currently intensively preparing themselves for this new market. Their pilot trade is part of these activities. Though involving only a small amount of emissions, it helped to gain valuable experience in this field. Further transactions of this kind are planned.

Both companies have agreed that the emission reductions traded will be verified by an independent monitoring organisation. They demand that future negotiations on the implementation of the Kyoto-Protocol define transparent and comprehensible procedures, which guarantee that the emission reductions aspired will actually be realized and that manipulations are impossible.

### **2.3.5 North-South co-operation on Climate Change: A Case study from the NGO sector**

*Saleemul Huq (Bangladesh Centre for Advanced Studies)*

The traditional (and still widely prevalent) paradigm of technology transfer assumes that appropriate technologies already exist in some countries (usually meaning the North or developed countries) and needs to be transferred to those who do not have it (usually meaning the South or developing countries). While this paradigm may have been useful (and accurate) in the past, it is increasingly becoming outdated and no longer describes the needs of the current situation. This is particularly true with respect to the need to combat global problems such as climate change. What is now needed is for all countries of the world (including both North and South or developed and developing countries) to develop new attitudes, ways of behaviour and use of appropriate technologies which help all their citizens attain a quality of life which is fulfilling without increasing the pressure on the planet's resources and ability to absorb waste (including greenhouse gases). In this venture the countries of the South need to

address primarily the issue of bringing their citizens out of poverty while those of the North need to address the issue of enhancing (or maintaining) quality of life with lowering the pressure on natural resources and the planet's waste absorption capacity. These will require not only appropriate technologies but also (and perhaps more importantly) changing attitudes and ways of behaviour in which co-operation between North and South should become the new paradigm of development (rather than the old one of simply transferring existing technologies from North to South).

The climate change issue provides all countries of the world with a problem of truly global dimensions in that no single country (however powerful) can hope to isolate itself from the damage that may be caused and at the same time no one country (or even group of countries) can solve the problem on their own. Global action by all countries is the only solution. The UNFCCC and the Kyoto protocol are steps in the direction of trying to develop such a global consensus for action to reduce GHG emissions to tolerable levels over time. With all their failures and problems this effort is nevertheless a truly global one and is charting unknown territory which will challenge old notions of co-operation and indeed technology transfer.

Although the primary actors in the climate change debate and action have necessarily been the governments of all the countries of the world, there have been significant roles played in moving the debate forward by different actors including the scientific community, NGOs the media as well as others. Although the lines between these actors sometimes seem somewhat blurred, nevertheless all of them (as well as others) have played (and continue to play) a significant role in moving the world towards undertaking concerted global action to solve this global problem.

This short paper will describe one particular aspect of this journey towards promotion of global action on climate change undertaken by a group of NGOs from the North and South over the years and show the potential for a new emerging paradigm of North-South co-operation for mutual benefit and learning which might challenge (and perhaps replace) the traditional notion of uni-directional "Technology Transfer" from North to South.

### *Climate Action Network*

The Climate Action Network is a group of NGOs concerned about the climate change problem that came together during the preparation of the UN Framework Convention on Climate Change (UNFCCC). They would attend all the preparatory Committee (PrepCom) meetings of the International Negotiating Committee (INC) which led up to the signing of the UNFCCC at Rio de Janeiro in 1992. Since then they have continued their activities and continue to meet at each Conference of Parties (COP) as well as Subsidiary Body (SB) meetings and lobby for their positions with the negotiators. Over the years the CAN members have gained a great deal of knowledge about all the major issues relating to the climate change debate and have become a significant player in affecting negotiations through their lobbying and advocacy efforts. CAN is recognised by the UNFCCC and given a chance to give a presentation to each of the plenary meetings of the COP. All the CAN members meet

together and agree on the presentation and issues for advocacy and not only present them at the plenary but also actively lobby with country delegates to persuade them. Over the course of time a number of CAN members have been co-opted into their respective country negotiating teams and hence have been able to influence things from there.

Although the global CAN has been quite effective in its lobbying and advocacy activities over time, there has also been an interesting internal dynamic at play within CAN itself over this period. The global CAN is actually a conglomerate of a number of geographically distinct regional CANs including CAN-Europe, CAN-UK, CAN-North America, CAN-Latin America, CAN-Africa, CAN-South Asia and CAN-South East Asia (with some others also under development). Thus, the global CAN network contains a large number (well over a hundred) of NGOs from both North and South and their activities also present a North-South dynamic which has played out over time.

In the early days of the climate change negotiations, the CAN members from the North far outnumbered those from the South. One reason for this was the relatively low awareness in the South in general about issues such as climate change. Another reason was, of course, the relatively poor access to funding to attend such meetings that NGOs from the South had access to.

The Northern CAN members were also much more knowledgeable about all the difficult technical issues regarding GHG emissions etc. that were being discussed. However, the CAN members from the South, although less well versed in the technicalities of climate change, were very concerned about issues such as poverty alleviation as being an integral part of any environmental agenda. The subsequent years of working together on this issue resulted in a two-way exchange and enhancement of knowledge and understanding whereby the Southern members became much more knowledgeable about the technical issues (with assistance from the northern members) and the Northern members in turn became much more knowledgeable and appreciative of the development and poverty alleviation concerns of the South. This mutual learning and enhancement of knowledge and understanding has worked itself through the years so that all CAN members from around the globe are able to come together at the COP meetings and very rapidly agree on common positions and statements for advocacy and lobbying purposes.

It would be wrong to portray this process of mutual learning as being without difficulties and debates, even fights. However, all debates are done with a great deal of respect for each other's positions and by trying to understand each other's points of view. In this way the traditional notion of the North merely transferring technology (or know-how) to the South was replaced with a much more healthy and mutually respectful relationship, which recognised that all participants had much to gain and learn from each other and that this learning is necessary if we are to agree on collective action for the common good of the planet.

### **2.3.6 'Success Stories' of Germanwatch**

*Manfred Treber (Germanwatch)*

Germanwatch as North-South-Initiative is a relatively small association and therefore has not much power to influence institutions directly. Our powers are the arguments of science and the implementation of the conclusions we draw from our analysis on how modern society works. This analysis is partly based on systems theory as the underlying sociological theory. Systems theory tells us that society consists of many systems (e.g. the economic or the political system), which develop following different rationales: we learn from it to make use of the different rationales to amplify the efforts we undertake.

#### *Success Story 1: Organising Business Support for the UN Climate Process*

The rationale in the economic system is based on profit as code in this system. The institutions, i.e. mainly business, are oriented towards making profit. The implementation of climate protection measures is only possible if they make it possible to earn profits or at least do not avoid profit making (but not necessarily to maximise short term profit).

From our experiences in the early negotiations for the United Nations Framework Convention on Climate Change (UN FCCC) we had to notice that the business (associations') representatives present there were mainly those from the fossil fuel sector (oil and coal industry) who for obvious reasons object to most climate protection measures. In opposing most mitigation efforts and thus sending a negative signal to governments the view of the business associations was very biased and not representative for the whole sector.

The approach of Germanwatch - we found this as intolerable and obstructive to the international climate protection efforts - was to initiate the foundation of a business association, which was in favour of climate protection. More precisely: one which was in favour of regulatory conditions that make climate protection profitable. An association with similar aims - the US Business Council for a Sustainable Energy Future - had already existed in the USA.

The initiation process in Europe was quite lengthy because business which profits from climate protection was not organised or was very fragmented and often they had not been aware of the potential economic chances coming from this new challenge. Moreover, the goal of the new association was to intervene in the (international) political arena - a field which is strange to most business representatives in Europe.

Germanwatch identified companies in Europe and - also important - persons from these companies which shared this view. It was necessary to act on the European level because this was necessary to intervene at the UN FCCC.

The first public event was a call at the First Conference of the Parties (COP) of UN FCCC in March 1995 in Berlin for the foundation of an "European Business Council for a Sustainable

Energy Future” (e<sup>5</sup>) which was well attended, among others by the German environment minister Angela Merkel and the media (e.g. ZDF). In February 1996, the foundation of e<sup>5</sup> finally took place.

Since then, the business constituency has spoken with two voices at the level of the UN FCCC. At all formal interventions there was the “conventional business view” (strongly influenced by fossil fuel industry) on one side, who in the beginning even questioned the problem of climate change and on the other side the view of e<sup>5</sup> and the US Business Council who asked for proactive climate policy.

In 1993, in its dialogue with the insurance industry, Germanwatch also suggested establishing a UNEP insurance initiative. We were delighted to see that this emerged in 1995. Also this initiative had a very positive impact on the UN climate negotiations.

### *Success Story 2: “Sustainability-Reporting” for Investors in the Financial Sector*

The financial sector is the “communication device” of modern democratic societies. Most of the important decisions with physical implications in these societies result from decision processes in the financial sector. Therefore, it is vital for an effective climate protection to change some rules in the financial sector so that climate friendly decisions are taken.

Huge capital amounts are reigned by pension funds, which are located mainly in the US and in the UK. The discussion in Germany on introducing private insurance and pension funds as second pillar for income of older people who stopped working should be used to introduce an element of sustainability in the practises of old pension and insurance funds.

The underlying idea is to create incentives for asset managers to accept ecological and social criteria additional to the usual financial criteria for their investments. Vast amounts of resources could be shifted away into a more positive direction. Therefore, for the companies which are selected because of their good sustainability performance (usually “best in class”) it would be easier to receive money from the capital markets. When this happens, the companies that have not received the positive rating would enter into a competition with the others to show better sustainability indicators in future.

In the first step to implement this, it is necessary that the relevant financial and insurance companies have to report their sustainability insurance criteria to the public. Germanwatch made intense lobbying and organised events with decision-makers so that in the new pensions law a mandatory reporting of the used sustainability indicators might be contained.

### **2.3.7 Initiating and Promoting the Dissemination of Renewable Energies in Developing Countries**

*Jörg Baur (Deutsche Gesellschaft für Technische Zusammenarbeit, GTZ GmbH)*

The GTZ is Germany's public corporation for development, owned by the German Government. It operates within the scope of the German Federal government's development policy. Development Assistance is practised through official bilateral German development co-operation in the two areas of Technical Co-operation and Financial Co-operation. Technical Co-operation aims to enhance manpower and organisational efficiency in developing countries and is prepared, planned and implemented by GTZ in accordance with the development policy guidelines of the German Federal Ministry for Economic Co-operation and Development (BMZ). The GTZ performs its tasks on a public-benefit basis. The individual projects are governed by agreements under international law between the German Federal Government and governments of the partner countries. The GTZ objectives are:

- to improve the fundamentals of human existence in partner countries and preserve the natural environment;
- to encourage individual initiative, enabling people to improve their living conditions through their own efforts;
- to enhance manpower and organisational efficiency by developing or mobilising skills or improving the conditions for their use.

In the energy sector the goals of the German development co-operation are:

- Meeting the basic energy demand to improve the conditions of living;
- Contributing to an ecologically, economically and socially sustainable development of the economies in developing countries;
- Improvement of the technological know how in developing countries;
- Reduction of the dependencies of imported energy carriers;
- Support of developing countries in the implementation of the decisions of the UN conference for Environment and Development, in particular the Frame Convention on Climate Change.

To achieve these goals the promotion and initiation of the dissemination of renewable energies is an important strategy, which is supplemented by consulting on energy policy and the promotion of energy efficiency both on the supply and demand side. Two kinds of promotion schemes for renewable energies are supported by the GTZ:

- national dissemination programmes to improve the social infrastructure and the conditions of living. Of particular interest are electricity supplies for Schools and Health stations as well as solar pumping.
- Market based approaches, where economically viable projects are identified and independent actors on the market are formed or fostered, like production companies, financial and energy service provider.

To illustrate our activities two examples are presented: the International Wind Energy Programme (TERN) and the Solar Cooker Field Test in South Africa.

The objective of the International Wind Energy Programme is to identify wind energy sites with an economic potential for electricity generation in developing countries, as well as to prepare the way for their exploitation. The main services provided under this programme are wind monitoring, site selection, the transfer of know-how, the technical and economic analysis of wind farms and the preparation of financing plans, project documentation for fund raising, wind park maintenance and operation. Governments, utilities and private investors are project partners in Brazil, Bolivia, Morocco, Bangladesh, Jordan, Cap Verde and Namibia. A 10-MW wind park under this programme has typically generation costs between 3 - 6 cents/kWh and an annual production of 25000 MWh/a. It uses local energy resources and reduces pollutants as well as GHG emissions. If the wind park replaces a coal power plant it reduces the CO<sub>2</sub> emissions of electricity production by 25 000 – 30 000 t CO<sub>2</sub>/a.

The Solar Cooker Field Test in South Africa has a duration of 6 years and programme costs of about 3.7 m US \$. Seven selected European solar cookers were compared in a field test. The end user acceptance was tested and the most adapted cookers were chosen for production. A joint venture between a South African manufacturer and European designers was established and South African production and commercial dissemination was triggered. The partner is the Department of Minerals and Energy (DME), as well as manufacturers and distributors.

Experience with our projects shows that successful projects in the energy field require a favourable policy and legal framework and economic conditions. Increasing attention is paid to soft skills in management, engineering and communication. Demand-driven approaches based on expectation, participation and capability of users are essential for good projects. If renewable energy projects are well designed they can contribute to a limitation of the global CO<sub>2</sub> emissions and at the same time increase the efficiency of the national economies in developing countries. The latter effect has shown particularly after the recent increases in global energy prices.

### **2.3.8 The Role of Private Sector in the Global Water Management**

*Jean Pierre Tardieu (Vivendi Environment)*

Vivendi Water (Générale des Eaux) is the main line of activity of the Vivendi Environnement Group. Number one in the world for water activities, our company is present in more than 100 countries and employs 65.0000 people. Its activities are:

- Municipal services; outsourcing of services (production and distribution of drinking water, collection and treatment of waste waters, design-build, equipment and systems;
- Industrial services; supply of equipment, systems and outsourcing services to industry, with a specially strong position in North America.

These activities will reach in 2000 a total turnover of sales of about 12 billion Euro.

How can we define the role of such a private company? What are the main areas where our actions affect the global water management and the environment? What result can we draw from it?

### *The private sector's role*

First, it should be stressed that, whatever the country, the water resource is never ours. We are given mandate by a local authority or an industrial company to manage all or part of the water cycle on its behalf. But the authorisation to take water from the natural resources and reject it after use is always given by the government or the local authorities. We pledge to our partners, local authorities or industrial companies, to achieve performance and quality targets. In some countries like France or Britain, the arbitration on the use of water is decided at the regional level, by specific bodies such as the water agencies.

In some countries, political decisions have led to the creation of private companies that own the assets: we are shareholders of such companies in the UK and in Berlin. In most cases, the relationship is based on a public private partnership: the local collectivity owns the assets and our role is mainly to operate the services and sometimes also to invest capital in new equipment.

### *How does our company contribute to the good management and preservation of water resources?*

The water cycle worldwide ensures the renewal of the water resources. However, it appears that some regions are insufficiently provided (the Middle East, California, etc.). Even in the countries, including Europe, where there is generally no quantity problem, it is necessary to ensure an optimal management of the resources in quantity as in quality. When the quality decreases the operator must either increase its treatment expenses in order to make water drinkable, or give up this resource and go further and deeper to get water. In all cases, the result on the environment is negative, particularly in terms of energy consumption. Therefore, we concentrate our efforts on the following targets:

- reduce waste in the networks by reducing the leaks in distribution;
- improve the collection and treatment of waste water, in order to protect the natural resources.

Regarding the first target, our company has taken a strong commitment - which is part of its 1999 Environmental Report - to maintain its average output rate of networks in Europe between 80 and 90% (i.e. to reduce the leaks under 20%, although they are generally higher than 30%). As an example, I can tell that when our company started its work in the city of Paris in 1985, the leaks reached 25%; ten years later they were reduced to 9%. A comparable experience comes from the U.K., where we supply 3 million inhabitants with water: the rate of leakage has been reduced to 16% after 10 years and we are committed to putting it down to 10%.

The good quality of sanitation (wastewater collection and treatment) is the other essential lever needed in order to protect the quality of the natural resources. For example, on the Garonne river we can state that, at the time of low water level, most of the water that flows downstream of the city of Toulouse comes from that city's wastewater treatment plant, whereas this same water will be used as the main resource further downstream to produce drinking water. When Générale des Eaux was put in charge of this service by the city of Toulouse about 10 years ago, it pledged to achieve results targets and to set a heavy investment program. These activities have considerably improved the water quality of that river.

The ultimate step in the cycle of our intervention consists in the wastewater recycling in order to make it a directly distributed resource, for agricultural, watering or industrial purposes. The plant presently under construction in Durban (South Africa) is an excellent example of a unit that will recycle part of the wastewater of the city to supply the industry and in doing so will allow for an important increase in the resources to be supplied for the consumption of the people, especially in poor areas.

*How to estimate the impact of such actions?*

We try to set indicators, through our environmental report, to estimate the efficiency of these actions:

- output rate of the networks;
- level of purification of waste water;
- energy consumption;
- production of greenhouse effect gases.

So, as a first analysis, we can consider that any energy saving directly produces a decrease in the production of greenhouses effect gases, even if such an estimate should be modulated according to the source of electrical power. The French project of a new energy tax (considered as a tool to reduce our greenhouse effects gas production) urges us to optimise our energy consumption. Moreover, on a global scale, our group (Vivendi Environnement) has pledged to reduce its production of CO<sub>2</sub> by 10% in the next 5 years for all of its activities on a comparable basis.

### **2.3.9 Priority Issues in the Forest Sector of Russia**

*Andrei Laletin (Friends of the Siberian Forests)*

Russia's forest sector is of global importance because of its size, carbon storage capacity, biodiversity and extent of its timber and non-timber forest products. It is equally important nationally for its contribution to the gross domestic product, export earnings and employment and for its vital role in the lives of local and indigenous people. A long history of forest management has made Russia a recognised leader in the forest conservation, research and development. The centralised planning policies and the recent transition to a market might have aggravated the situation.

Despite vast resources and the global demand for forest products, the Russian forest sector has been experiencing severe management problems that threaten the socio-economic stability and the ecological integrity of the forests. These problems are further compounded by insufficient public access to information and by the lack of mechanisms for public participation in decision-making. These issues are a severe impediment to the conservation and sustainable development of Russia's forests and need to be addressed urgently.

Russia is too large and the forest sector is too diverse to be adequately considered solely at the national level. In 1998-1999 when I worked as the programme officer for the IUCN Temperate and Boreal Forest Programme, a series of four participatory workshops were conducted across the country. Separate workshops examined the Russian Far East, Siberia and European Russia. These regional workshops were followed by a national level synthesis meeting. All regional workshops and the national workshop brought together a unique group of local and regional NGOs, private sector, government officials and scientists from different territories of Russia, as well as representatives from the donors and international NGOs active in this country.

The specific objectives of these workshops were to facilitate regional stakeholders to:

- articulate their own definitions of the problems and opportunities they faced in conserving forest ecosystems and achieving sustainable forest management;
- assess what issues could be addressed at the local and regional levels versus the national or trans-national levels;
- prioritise issues;
- develop strategies to address these issues;
- identify interested partners.

The following issues were ranked as top priorities by participants in the Russian Far East:

1. Lack of efficient methods for preventing and extinguishing forest fires.
2. The need to incorporate ecological values into forest inventory systems.
3. The need to diversify forest product use, especially non-timber forest products.
4. Lack of financing for forest management and conservation.
5. Lessening the biodiversity impacts of logging in forest ecosystems.
6. The elaboration and introduction of regional criteria and indicators for sustainable forest management.

In Siberia workshop participants identified the following issues as priorities for forest conservation and sustainable management:

1. The need to reduce ecological and economic damage from forest fires.
2. The necessity to inventory and protect old-growth forests.
3. The need to adapt criteria and indicators of sustainable forest management to Siberian conditions.
4. The lack of public awareness about ecological values.
5. The need to determine impacts of rocket fuel on forest health.

In the region of the European Russia participants ranked the following 6 issues as top priorities:

1. Problems with development of regional forest legislation and its co-ordination with the federal forest legislation.
2. Need to extend the network of specially protected natural areas and to develop the ECONET forest programme.
3. Need to find workable solutions to the problem of forest fires.
4. Restoration of radioactively polluted forests and modification of its traditional use to safeguard health of local communities.
5. Development of partnerships between state bodies and public organisations.
6. Necessity to balance ecological, economical, social and cultural aspects of sustainable development and find solutions to the problems of the forest sector at the political level.

The final of the workshops was a national one on “Challenges Facing Russian Forests and Strategies for their Solution”.

After discussion, the workshop organisers clustered all regional priority issues for the following four large topics and formed four corresponding working groups:

1. Environmental assessment of forest benefits.
2. Lessening the damage from forest fires and pollution.
3. Ecosystem approach to the forest management.
4. Old-growth forests and ECONET.

These working groups developed national and regional strategies and techniques to deal with the priority issues in the Russian forest sector. The recent abolishment of the Federal Forest Service by the Russian President Vladimir Putin in May 2000 severely influenced on the prepared programme that is currently under correction. Different stakeholders are involved into this correction process and development of new national and regional strategies for the Russian forest sector.

### **2.3.10 Successful Introduction of Nature-oriented Forestry in Lübeck/Germany**

#### ***Lutz Fähser (Forest District Lübeck)***

Professional forestry in Germany has a history of three centuries mainly characterised by the principles of Mercantilism and Militarism. State forest services became powerful administrations of woodlands for the sake of profit and protection from private use of the forests. Forestry used to be performed as a technical engineering discipline, an everlasting struggle against the “chaotic” forces of nature.

Modern science, especially research in ecosystems, resulted in an opposite approach: nature and forests are highly complex and vulnerable subjects. The primary sector of economics (forestry, agriculture, fishery) can hardly be run economically if the inherent natural processes

- which are for free - are suppressed and replaced by cost intensive and destructive technical measures like clear-cut, introduction of exotic tree species and application of pesticides etc.

The 1992 Earth Summit in Rio confirmed the ideas of the small group of advanced German foresters on nature oriented forestry. Sustainable Development, the Convention on Biodiversity and the Declaration of Forests, gave support to forest programs which fit into natural processes instead of suppressing and substituting the dynamics of forest nature.

Consequently, in 1994, the forest district manager of the city of Lübeck/Germany published a nature-oriented concept for forest use. The forest services of the states, the established forest organisations, most of the faculties of forestry and the forest press answered with unanimous and indignant protests. Applause and support came from most of the NGOs such as GREENPEACE, Friends of the Earth and WWF. The Lübeck-Concept gave birth to the "Naturland"-certificate, the first national certification of forest enterprises. Many of its principles and indicators became part of the German version of the international certificate from Forest Stewardship Council (FSC), such as obligatory unmanaged reference areas, orientation towards the natural succession of forests and the ban of pesticides.

The Lübeck-Concept received awards from the international paper industry, the Federal Ministry of Environment and several NGOs. Many community forests joined this concept, e.g. the forests of Göttingen, Wiesbaden, Düsseldorf, Bonn and Saarbrücken. The similar FSC-Certification is now in progress, even with state forests like Schleswig-Holstein, Hamburg and Saarland.

The conception of a decisive nature-oriented forestry is being successfully introduced into German forestry against the protest of conservative, well-established and, in former times, rather dominant institutions and organisations.

The reasons behind this ongoing movement are presumably manifold. Some of those are an intensive long lasting discussion (ca. 10 years), close co-operation with NGOs, support from the local citizens and politicians, conformity with Rio 92 and Agenda 21, good ecological and economic reasons, intensive public relations and international attention.

### **2.3.11 How to link the Forest to the End Consumer?**

*Florian Nehm (Axel Springer Verlag AG)*

In a pilot project (1997 -1999), the media group Axel Springer Verlag, in co-operation with 8900 Norwegian forest-families, the paper-group Norske Skog and the mail-order-group Otto Versand, developed the first traceability-system for paper-fibres. The certifier Det Norske Veritas and the NGO World Wide Fund for Nature checked environmental improvements in the forests. The views of the various stakeholders are documented in a 30-minute video (available in English and German).

The project had three goals:

- to improve the environmental performance in key areas of the paper chain;
- to gain experience in co-operations with all stakeholders along the paper chain;
- to strengthen the acceptance of publication paper in critical target groups.

The magazine FAMILIE&CO published by Axel Springer Verlag, as well as a special catalogue of Otto Versand (printed by Axel Springer Verlag) benefited from these improvements. But what changed along the production chain?

#### *Certification*

The participating forest owners were motivated to engage in the certification of their forests. This was based on the Norwegian 'Levende Skog' Standards, agreed in long negotiations by forest owners, environmental interest groups and other stakeholders. Checks were realised by the certifier Det Norske Veritas and the NGO World Wide Fund for Nature (WWF-Norway).

#### *Traceability*

The paper fibres were traced back to the forest owners. This made communication of green standards more credible. Weaknesses and errors in harvesting can now be identified more easily. In February 2000, the case of a large forest owners association (Viken) losing its environmental certificate was debated at length in the Norwegian media. This exposure sharpened the sensitivity among stakeholders.

#### *Reducing pulp*

The amount of chemical pulp used for the paper production was reduced from approx. 15 percent to around 9 percent.

#### *Reducing emissions*

The recovery of the rotogravure solvent toluene was increased from 95 percent to approx. 97 percent by introducing a new ink that reduces the solvent remaining in the printed product by 50 percent.

The experience gained in this pilot project is pivotal for Axel Springer Verlag's efforts regarding the development of improved paper-production in Russia.

## **2.4 The break-out groups**

Interesting introductions and discussions took place in the break-out groups of the workshop. There were four parallel break-out groups in the morning session and four in the afternoon. Each group had 4-10 participants. The following short descriptions have been condensed from the detailed minutes of each group.

## **a ) Sustainable investment and financing mechanisms**

The break-out group starts with a presentation by Andreas Knörzer from Bank Sarasin. The bank has been engaged in sustainability research and asset management for ten years now. An impressive fact is that sustainably managed companies yield a higher return on assets compared with ordinary companies. The market for green investment funds grows about 30 per cent p.a. A diversification into a broad range of industries is performed with a strict strategy: in an industry pick, for example, the 10 per cent of companies which are best in terms of sustainability and in terms of an integrated approach towards social and ecological questions. This method can be improved when the industries themselves are evaluated according to their sustainability. Another approach is to evaluate countries according to the level of absolute use of environmental and social resources and to the level of the structure and efficiency of resources, respectively. Two crucial success factors are the spectrum of products and the pension funds. In the field of sustainability, a large range of products offered by financial institutions serves to satisfy the various preferences of different investors. Pension funds with their high volume of capital to be placed in the market should be redirected to sustainable investments. As such, the volume of the market could be substantially increased which, in turn, would be a signal for companies to go for sustainable management in order to be attractive for capital supply.

After the presentation, a discussion takes place. The customer profile has today a broader spectrum than previously. They are usually medium to highly educated and there is a substantial share of female investors. Although there is a high share of capital invested in sustainability funds in the US, it is noted that there are different definitions of sustainability applied in the US-funds and in e.g. the funds of Sarasin, the latter being stricter. The tools which have been developed for evaluating sustainability are discussed. There are positive experiences with rating companies according to sustainability indicators, which include industry specific aspects. A mix of indicators has to be applied encompassing social, ecological and economic criteria. It is important that the criteria are consistent and comprehensible to help people stick to their guidelines. As the pension systems are becoming more privately organised it redirects consciousness towards the issue of how their capital is invested. Companies with a high environmental rating perform better than other companies. The less obvious observation is that public pressure on companies with environmental problems is helpful to improve their economic performance. Differences between European countries are discussed. For example, in Denmark an ecological tax scheme in combination with the requirements of environmental accounting resulted in companies being best in class for wind turbines but also in other more traditional industries.

## **b) Emissions trading**

Groscurth starts by presenting how Hamburgische Electricitäts-Werke AG (HEW) has already started a project on emission trading. HEW sold reductions of their carbon dioxide emissions (3000 tons per year over the period from 2000-2007) as the first company in Europe to a

Canadian company TransAlta via NatSource (New York based broker specialised on emission trading). This example shows that emission trading is possible and practicable.

In the following presentation Dornau (Deutsche Börsen AG) lists four criteria for a high efficiency of an emission market. International accounting standards and rules for certification are necessary because of the high number of participants and the complexity of the regulations. International markets are needed: Installation of a number (as small as possible) of international markets, which are real existing trading places. Insertion of broker: One efficient possibility to fill the gap between the different trading participants are specialised broker. The fourth criteria is price transparency.

Wieler presents a project of PriceWaterhouseCoopers in which greenhouse gas emission and energy trading objectives were simulated. The simulation has shown that even with forty virtual companies with different strategies emission trading was possible. It led to increasing energy prices and “grand-fathering” as an allocation method (which touched on the discussion on baseline definition). Exchanges via auctions although involving uncertainties were successful.

A discussion takes place, in which it is concluded that with the implementation of CO<sub>2</sub> emission trading, environmental goals can become a factor of price calculations and therefore private industries can handle these issues much better within their traditional economic thinking. Thus, environmental considerations can be integrated in economic interests. There is overall agreement that it makes sense to experiment with small projects with business involvement to get more experience.

### **c) North-South issues and technology transfer**

After a round of introductions Huq gives a presentation on the changing characteristics and needs for technology transfer and on the role of non-governmental organisations (NGOs) in promoting technology transfer and other issues in the negotiations on the United Nations Framework Convention on Climate Change and its Kyoto Protocol. In his presentation, Huq highlights the role of the Climate Action Network, a group of NGOs from both the North and the South that acts collectively in the negotiations. According to Huq, NGOs are now increasingly recognised as relevant and well-informed by the negotiators, even to the extent that some countries invite NGO members to become part of their delegations. This shows the success of NGOs in their efforts to integrate with the negotiating system.

Next, Treber presents a number of success stories of Germanwatch, a German NGO that attaches a high priority to promoting North-South relationships. A first success story has been the inclusion of sustainability criteria into the investment decisions of insurance companies. The second example is the legal requirement (as of February 2001) for pension schemes to report on the ecological and social sustainability of their investments using standardised reporting criteria. This would allow consumers to compare between companies. A second step would be to standardise reporting formats. The third example concerns the role of CAN in the

UNFCCC negotiating sessions. CAN is officially recognised by the UNFCCC Secretariat, which means they are entitled to make statements in plenary sessions. A fourth potential success story relates to reducing vulnerability to climate change in Southern countries. At a Germanwatch workshop in February 2000, possible approaches to increase the coping ability of Southern countries were identified. Some of the ideas included the introduction of an insurance scheme against catastrophes, the introduction of taxes on emissions, thus creating a fund for adaptation and a moral tribunal.

The remaining part of the session is devoted to a lively discussion. Barriers and opportunities for technology transfer and collaboration between North and South are discussed. It is noted that not every country and every community has access to the global market (especially least developed countries). NGOs can enter in a dialogue with the private sector to convince emerging opportunities. The role of science in supporting CAN activities is discussed. Science has a major role to play for CAN. Developing countries need to have equal capacity with their Northern counterparts, in order to be able to engage in a productive dialogue. There is also a need in developing countries for capacity building, particularly in the areas of vulnerability and adaptation. On the other hand, local people have a better knowledge of the particular problems than modellers from the North. Therefore the exchange of knowledge could and should go both ways.

#### **d) Renewable energy sources**

Ludwig Karg gives a presentation about the activities of B.A.U.M. that are related to renewable energy sources (the main business area of B.A.U.M. is communication and multimedia). B.A.U.M. has launched a German-wide campaign "Solar Naklar", which is financed by the German government (BMU), Deutsche Bundesstiftung Umwelt, Umweltminister der Länder and Ruhrgas AG. The objective is to rise awareness and support craftsmen in renewable energy business. This is done through PR, media, advertising and regional groups, such as associations and chambers of handicraft. Another project is called "Brucher Land" (a region with 200.000 inhabitants). The objective is to have 100% renewable energy supply in 2030, by changing the entire consumption of the region and exploiting local energy sources by starting from the local Agenda 21 process. Rising awareness on the consumers' demand side and convincing the supply-side of the benefits of renewable energy sources are important success factors. Measurable results include a broad line of supporters, a considerably high amount of craftsmen who have committed themselves to install solar energy items and a fairly high amount of potential users that direct inquiries to B.A.U.M. to get information about solar energy.

Baur gives a presentation about GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit GmbH) activities in the field of renewable energies. GTZ promotes products that are ready for the market and, thus, commercially viable by giving advice and doing integrated analysis. For example, the International Wind Energy Programme provides services such as wind monitoring, site selection, transfer of know-how, technical and economic analysis of wind farms, preparation of financing plans, wind park maintenance and operation. Governments,

utilities and private investors are project partners. Another example is the Solar Cooker Field Test in South Africa. In this project the end user acceptance was tested. Experience has shown that successful projects need to look at business models and address the question of how to disseminate the product. Also the national policy needs to be assessed.

It is argued that the success of B.A.U.M. is partly attributed to the cultural preparedness of Germans. Doubt was expressed that the same project would be as successful in some other countries. The conclusion was that the social environment has to be ready for such products. Successful products need to have a certain appeal and be part of a trend. There is consensus on the fact that technology is not the problem but the demand and supply side: both sides need to recognise the relevant benefits. Discussion takes place on factors of success and transferability. Main keys to success include an integrated analysis approach (government, law, market and business models), cultural preparedness, social environment has to be ready, demand and supply side marketing and awareness rising.

#### **e) Sustainable natural resources management**

The break-out group starts with a presentation by Fährser from the Forest District Lübeck. He describes the background of the strict nature-oriented concept for forest-use that he and the participating forest district managers of the city of Lübeck published in 1994. Support of NGOs such as Greenpeace, Friends of the Earth and WWF was crucial making the approach public and accepted. Some of the concrete successes include that the Lübeck concept gave birth to the “Naturland”-certificate and became part of the German version of the international certificate from Forest Stewardship Council (FSC). It also received awards from the international paper industry, the Federal Ministry of Environment and several NGOs.

Nehm (Axel Springer Verlag AG) presents his success story: in a pilot project the media group Axel Springer Verlag, in co-operation with 8900 Norwegian forest-families, the paper group Norske Skog and the mail-ordergroup Otto Versand, developed the first traceability-system for paper-fibres. WWF Norway monitored the environmental improvements in the forest. The project had the goals to improve the environmental performance in key areas of the paper chain, to gain experience in co-operations with all stakeholders along the paper chain and to strengthen the acceptance of publication paper in critical target groups. It was remarkable to observe how the different participating groups (forest owners, NGOs, paper engineers) interacted with each other in a creative way.

After the presentations, a discussion takes place. The participants agree on following success factors of these two particular success stories. First, it is essential to gain public awareness. Second, commitment to local participation which has to take place early in a comprehensive and serious manner. Third, economic incentives are important. The question of transferability is discussed and doubts are voiced whether the principles of nature-oriented forestry can be transferred to large forested states (Bundesländer). So far the concept has been adopted mainly by city forests.

## **f) Tourism and sustainable coastal management**

Vereczi gives an overview of the importance of coastal tourism worldwide. He presents the Agenda 21 process on the island of Calvia Mallorca as a special case and draws conclusions from this case as well as compilation of good practices produced by the World Tourism Organisation.

Four major factors seem to have contributed to the success or sustainability of the projects. First, local community involvement in the planning, development and management of the projects. Second, co-operation among different partners in the pursuit of the project's or initiatives objectives. Third, environmental commitment of the project's promoters. Fourth, continuous monitoring of the project's performance.

## **g) International climate policy beyond COP-6**

Within the introductory presentation, Hisschemöller from the Vrije Universiteit Amsterdam informs about the COOL project, which aims at answering the question of how the Netherlands could reach a reduction of greenhouse emissions in the order of 80% by 2050. This project involves stakeholder dialogues at three levels (global, European and national level). Different groups take responsibility for the stakeholder dialogue process at the different levels. Within the COOL project, three stages are distinguished: first, the development of future visions for different sectors. Second, the application of back-casting methods. Third, answering the question of what should be done by whom? The project is now in stage 3.

The second speaker, Harders (Federal Environmental Ministry, Germany), reports from his impressions from the negotiation process at COP-6. He underlines the transparency of the negotiation process which certainly is a necessary condition of success (but not a sufficient). In his view, the Kyoto protocol is not dead; however, it is in the hospital. The European and, in particular, the German position of getting the Kyoto protocol ratified very soon relies on the plan to enforce actions in 2002 (Rio+10). However, CDM activities could start in 2000 without entry into force of the protocol. But Harders also makes clear that the German government is going to continue with national efforts regardless of whether the Kyoto process may fail.

In the discussion an analogy of the climate change negotiations and the disarmament process is drawn. The building of trust and competence might at least on the level of the negotiators be a prerequisite of success. A second success factor mentioned is scientific consensus. There is some discussion on the reasons of not having scientists more extensively integrated into the European delegation. A critical amount of committed persons is also essential for the success of negotiation. The final part of the discussion was subject to a controversy of the relative importance of short-term versus long-term climate policy. The danger that the Kyoto process may be destroyed unless there is a success in the negotiation process by 2002 at the latest is brought up. At least losing momentum and the shifting of strategy from mitigation to

adaptation could take place. Some argue that the Kyoto Protocol as such is of rather low importance. The climate change issue will become more urgent for politicians if more pressure is exerted by ordinary citizen.

#### **h) Natural hazards, vulnerability and human health**

First, Bettina Menne from the World Health Organisation (WHO) gives a presentation about successes in the fighting of diseases. One of the biggest successes in the history of the WHO is the eradication of smallpox. The last case of smallpox was reported nearly 20 years ago. Although the eradication of polio could not be claimed in the year 2000, it probably can in the near future. There are also new threats to human health: The number of persons being infected by the HIV virus is increasing dramatically. Threats also arise from re-emerging diseases, like malaria. Malaria becomes increasingly resistant to antimalarial drugs. Moreover, malaria spreads due to conflicts, migration and possibly climate change. Another health hazard is recognised in air pollutants. The enormous increase of traffic and transport will lift health risks on the short (air quality) as well as on the long term (climate change).

A second presentation is given by Dipal Chandra Barua from the Grameen Bank in Bangladesh. The prospect of increased flood risks and sea level rise as a consequence of climate change, may have disastrous consequences for Bangladesh. The adaptive capacity of Bangladesh is low. Barua list some impacts of a severe flood, which took place in 1998. Drowning was not the major cause of death. Most people died because of snakebites, diarrhoea, dehydration and electrocution. An intensive educational campaign about flood risks was started and it has made people more aware about these risks. In particular, people learned that clean drinking water is of high importance. The number of indirect flood victims, caused by diarrhoea, decreased substantially. Moreover, Grameen bank established successfully a fund for flood victims. In general it appeared that people in flood-prone areas were more prepared to the floods than people living in areas that have not been flooded for a long time. By way of precaution, people in flood prone areas had a boat and had stored, for example, water purification tablets and dehydration salts.

After the two presentations the factors for success are discussed. The participants of the group agree upon that a hands-on approach contributed to the success of the Grameen Bank projects. Moreover, the successes in Bangladesh are also due to long-term educational programmes. By these long-term programmes people know how to respond appropriately in case of floods. Although the successes of the WHO are less concrete, the WHO contributes on a different level to the prevention and control of health hazards. It assists governments in providing information about health issues and giving technical assistance.

## 3 Discussion

### 3.1 Lessons learned

The lessons in this section are based on the success stories above, discussions in the plenary session (recorded on tape), break-out groups (see Section 2.4) and evaluation of the workshop carried out in the form of a group discussion among PIK participants after the workshop. The minutes of the break-out groups have been cross-checked by sending the minutes to the respective chairperson for commenting.

The presentations and discussions highlighted the new role of firms and NGOs in global environmental management. Corporate global environmental standards, international and national criteria for forest certificates, sustainability criteria for investments and emission trading mechanisms within global companies were all part of what was understood as global environmental management. The decisive role of NGOs in building coalitions and alliances, in promoting technology transfer and in acting as pressure groups was recognised. There was a common agreement that global environmental management is increasingly based on an interplay between business searching first-mover advantages, NGO lobbying and campaigning and consumers expecting increased satisfaction from products. National policy-making, negotiating international agreements and science are key elements in this interplay but remain rather ineffective if pursued in isolation. The importance of firms and NGOs is growing and pro-active policies need to respond to the new constellations by searching for new policy instruments, often based on a judicious combination of an array of different measures.

The process of reflexive modelling, which is the core of the project “Europe in the Context of Global Change”, benefited from the kick-off workshop in at least two ways. First, the workshop was a first step in the creation of continuous and stable relationships with stakeholders who we believe have perspectives and knowledge needed to develop solutions to global change problems. Many participants – from German government, business and NGOs – explicitly indicated their interest to work with PIK on issues of global change. Second, a number of lessons have been learned that are highly valuable for modellers. These include:

- The notion that economic processes have to be modelled along product chains and/or sectors rather than in an aggregated way.
- Many European firms are serious about sustainability issues for reasons of profit, which obviously remains the main motivation of companies’ action. Being in line with society’s expectations is crucial for global players. In modelling, the role of mass media and opinion formation has to be taken explicitly into consideration.
- The problem of developing countries has to be dealt with in a somewhat different way from how it was envisaged at the beginning of the project, taking into account endogenous development potentials in combination with transfer mechanisms.
- It is essential to find a mode of research in which case studies are translated into a modelling language and backwards.

- The criteria for “success” have to be elaborated and the cases must be scrutinised in terms of their social, economic and environmental dimensions. Success stories as an approach is useful, since it shows how certain instruments and approaches have the potential to capture innovation and creativity and motivate staff of organisations.

One task that was given to the participants in the break-out groups was to try to identify factors that contributed to success. Identifying generic success factors is a difficult, if not impossible, task since success factors are often complex and depended on the sector and country (Fichter 1998). However, a number of context specific success factors were identified. The success stories included typically one or more innovations. Four types of innovations can be distinguished: technological, institutional, financial or policy innovations. Technological innovations were dominant in the story of Deutsche Telekom AG and in many of the renewable energy examples. Institutional innovations had an important role for example in the case of e<sup>5</sup>: Germanwatch identified companies, whose interests were not to conform with “conventional business view”. Good examples for the diffusion of innovations were given by B.A.U.M and Grameen Shakti, both of which have put great effort into making renewable energy sources available. Financial innovations had a prominent role in Grameen Banks activities and also in efforts to introduce emission trading, within and between firms. Forest certification is market-based innovation aiming to link forest practices with end consumers. The participants also heard about the limits of certifications. In Siberia illegal cutting and the lack of appropriate legislation makes sustainable forest management difficult. Policy innovations: Successful strategies are an interplay of policy innovations, creating new markets and technological (product) innovations. By fulfilling strict environmental regulations in certain markets, firms gain “first mover advantages”.

The driving forces behind many innovations and successes were different. The key event for Shell to rethink its business goals were two negative stakeholder experiences: the proposed deepwater disposal of Brent Spar and the events surrounding the execution of Ken Saro-Wiwa. As a response and after intense stakeholder consultations Shell Group changed its Business Principles. Human rights (equity) and sustainable development were included as new elements in the business principles.

To what extent did the success stories give ground for optimism as we face increasing global environmental problems such as rapid loss of biodiversity or accelerating climate change? In other words, what positive lessons can we learn from these experiences? The effort of initiating the stakeholder dialogue served the purpose of developing models that show possible routes to sustainability transition. Each success story alone would not give ground to much optimism. However, embedded in a broader sustainability policy, the success stories and the financial, organisational and technological innovations behind them can make a difference. The next step is to enter modelling and to study under what circumstances the success stories can make the leap *from disjointed successes towards big success*.

### **3.2 Research questions**

“Scientists provide the facts and other stakeholders provide the values for the facts.” This may hold true to some extent for natural sciences. However, research questions in global environmental change research are defined in a process, which Jäger (1998) characterises as a mutual construction of policy and science. The society has certain expectations about problems that need to be solved. One objective of the workshop was to encourage the participants to think about research questions that they consider interesting and relevant for their work. In this context, the success stories provided stimulus also for defining research questions.

The presentations and discussions in the workshop strengthened our belief that the general research question “Under what condition can Europe have a pioneering role in producing innovations and pushing the diffusion of these innovations?” is of interest both for the science community, stakeholders and policy-makers. An interesting research question in this context is: “Under what conditions can partial and disjointed success stories benefit from each other and lead to a significant change towards sustainability on global level?” Linking successes can be interesting for firms and NGOs as well – because especially the “white spaces” between sectors and businesses are becoming increasingly important.

One hypothesis that can be defined is that the key to ‘big success’ – broad diffusion and action in the order of magnitude that is appropriate in the face of global environmental and poverty problems – is that all four types of innovations mentioned above have to be represented and support each other. For example, technological innovations without financial component is not enough to generate an alternative to present energy systems. The Grameen experience showed how the link between technological innovations in the field of solar energy and financial innovations (microcredits) can make a difference. The combination of instruments with which technical change can be induced includes, besides policy (taxes, subsidies), voluntary agreements and public debate.

Two research questions were written down on the pin board during the day: First, “Is it possible to model the free movement of people globally along with goods and capital?” and second, “Is it possible to calculate the likely number of people who will be displaced due to climate change impacts (floods, sea level rise, etc.) per ton of GHG emitted?” A further question, which was raised among PIK researchers during the day was “How to model actors’ visions and expectations concerning technological development?” An explicit understanding of expectation formation is important and modelling efforts are made to formulate expectation formation in a mathematical way.

One idea presented in the workshop was to start a book project describing and analysing the success stories – this received support in the workshop. This publication shall be published in 2002, ten years after the Earth Summit in Rio, which is a timely moment to review past successes and look forward into the future.

### **3.3 Future prospects for reflexive modelling within the Europe project**

Identifying the relevant global stakeholders and learning from their decision-making situations is a key step for our further modelling activity. A next step in the Europe project is further development of the tools and data sets that are currently available at PIK and the development of an endogenous growth model with different sectors. Further steps include modelling of interactions between endogenous growth and capital markets and the inclusion of different actors into the models, at first in highly aggregated form.

The stories can serve as a basis for follow-up collaboration within the research project Europe in the Context of Global Change (Europe), where PIK researchers study the pioneering role of European firms, NGOs and policy makers in sustainability transition. Each presented success story has already contributed to this pioneering role and they can thus be seen as building blocks in the reflexive modelling process.

The Europe project has officially started at PIK and first steps have been taken to build an endogenous growth model. The modelling process has generated a number of ideas and criteria for innovative strategies, products and policies. In order to reflect on these preliminary ideas the kick-off workshop concentrated on “success stories” and two main questions, which were addressed to the stakeholders: “What factors contributed to this success?” and “To what extent is this success transferable to other sectors or other regions?” The purpose of such a reflexive modelling process is not simply to work out what the future might be like but also to help participants learn to respond to unexpected and complex possibilities and to produce innovative strategies.

A key feature of reflexive modelling is close collaboration between modellers and stakeholders. Elements in such a reflexive modelling effort are: (a) defining research questions and relevant parameters with stakeholders, (b) quantitative data analysis, (c) modelling, (d) evaluating usefulness and extended peer review. Reflexive modelling integrates different research methods (qualitative case studies, quantitative studies) and different kinds of models. Finally, it integrates research with stakeholder processes.

Agrawala (1999) has called for early involvement in science-policy interaction and in making models of global environmental change. Stakeholder dialogues enable new ideas to be produced and put under scrutiny in an early phase. In such a process, possible solutions and management strategies can be reviewed by practitioners and decision-makers.

Argent et al. (1999) argue that many stakeholders have reservations about certain aspects of model formulation and use. Because many sceptical voices believe that models are irrelevant for stakeholders, it is not obvious that models are a relevant tool for Earth System Management. An open modelling process can help to overcome prejudices and help to create models, which are relevant to decision-makers. Potential users gain ‘ownership’ of the model (Argent et al. 1999).

Modelling global environmental change and possible solutions problems is expected to play an essential role both in environmental management. But what participatory methods are suited to supporting modelling? There are various technical options for reflexive modelling such as “open-source research collaboration via a web-system“, video-conferencing etc. Depending on the objectives of stakeholder involvement, different techniques have to be used and developed.

### **3.4 *Increasing the effectiveness of stakeholder dialogues***

How can global modellers better connect with various stakeholders, including environmental and financial managers of firms? In order to be able to make models of how the real world works researchers need to broaden the range to include other relevant stakeholder groups, such as global companies (cf. Alcamo et al. 1996). One aim is to increase the relevance of GEC models in policy issues (policy makers and their advisors). This is what PIK did in the kick-off workshop. The second step in the stakeholder dialogue will be to define manageable steps in an ongoing dialogue and to build on good working relations with stakeholders. Since the stakeholder process provides a neutral ground for dialogue, interesting outcomes are expected in future exercises, especially in conjunction with computer models, scenarios and simulations. An increasingly important way to communicate with stakeholders is via the Internet. The development of a web portal allows the efficient interaction with stakeholders as well as other researchers. An Internet-based modelling platform should make extensive use of the opportunities offered by the Internet, including data exchange, model testing, video-conferencing for the project partners and information exchange.

Stakeholder processes are an important field of activity for many organisations, including private enterprises, international agencies, national agencies, NGOs and increasingly also research institutes. Stakeholder processes can have different objectives including, for example, testing new products or programmes, identifying issues and future policies or settling conflicts in a management situation. What can be considered as the distinctive characteristics of stakeholder participation in research?

In environmental management a distinction can be made between public participation and conflict management. Priscoli (1997) notes that while both fields employ similar techniques, they are often driven by different values. Public participation is driven by values of empowerment and democracy, while conflict management is driven by values of efficiency, timeliness and cost/effectiveness of decisions. Stakeholder dialogues in research can employ similar techniques as in public participation or conflict management but the underlying values and objectives are different. It can thus be regarded as a distinct area of stakeholder participation, which is driven mainly by the values of increasing the quality and relevance of science. The objectives are broadening perspectives and bringing in different views. Having access to stakeholder knowledge is a further important objective. The importance of not neglecting “local knowledge” has been highlighted by Wynne (1996). Analogous to local knowledge international firms have “global knowledge”, for example on global economic

processes. Similarly, as it is wise to involve local fishermen in fisheries management studies, it is wise to consult global players in research on global environmental management.

Stakeholder involvement planning and policy making is expected to improve the quality of decision-making. Good decisions have two components: they can be implemented (there is enough support and consensus) and the decisions are based on good knowledge of the decision-making situation and the alternatives. However, evaluating the effectiveness of stakeholder participation in research can not apply the same criteria as in evaluating participatory policy making. A set of evaluation criteria for stakeholder participation in research still has to be developed.

Does early stakeholder involvement undermine the objectivity of research? Does it cause that facts and values get blurred? Are GEC models, which are a product of an early stakeholder process and interdisciplinary scientific work, biased? Although the distinction between policy making and research has, in recent years, become less clear – especially in those fields of scientific inquiry which are influenced by great risks and uncertainties, such as gene-technology or global climate change – a distinction can and should be made. Improving scientific insights on how complex natural and social systems interact is essential for increasing the quality of decisions. Stakeholder future expectations and perceptions of risk are of great importance, for example in assessing the role of induced technological change in the sustainability transition. In participatory (reflexive) modelling positions and interests of stakeholders are relevant but they are not negotiable as they are in participatory policy making.

Future prospects for the stakeholder dialogue process include the organisation of additional stakeholder workshops and the continuous maintenance of bilateral dialogues focusing on specific issues relevant to the modelling process. The main objective of following workshops will be to define the relevant features of models as well as the criteria for models that might serve as decision-support systems, both largely from the perspective of stakeholders. Analysing the success stories (case studies) and translating them into modelling language is an important activity within the project. Further policy exercises will be carried out with stakeholders with the help of more elaborate models. These exercises will allow stakeholders to use the models in an interactive way, to make scenarios and to change parameters. Thus, in later stakeholder processes the main focus will be on using the modules and models for simulation (“what if”) purposes.

The dissemination of model and research results to an audience larger than the stakeholders who were involved in the project, will include a further workshop and policy exercise. Here the focus will be on decision and negotiation support: activities that are best served by models that can support decision-makers in policy and business. A proper documentation and analysis of the entire process of reflexive modelling, including books, articles in scientific journals and other media, is carried out.

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