Sustainable Germany - A View from the South 10 Years After Rio

An assessment by

Meena Menon, Bernardo Reyes, Jane Ngige, Batir Wardam, Ute Sprenger (Co-ordinator)

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This report has been written as carefully as possible on the basis of existing data and material from various sources. These are our views. Though we have tried to be accurate in reporting information, due to mass of data, some of which is not always up to date, there may be discrepancies. Please excuse any errors and understand that we made every effort to be factually correct, and honest with our views. If any errors have occurred here, they are within our responsibility and are unintentional.

The Southern Perspective Team

Brief biographies of the authors can be found in the annex.

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FOREWORD BY THE HEINRICH BÖLL FOUNDATION

Imagine you lived somewhere in the southern hemisphere on this planet – somewhere between Agadez and Zanzibar, between La Paz and Ouagadougou, Dhaka and Jakarta – regions which "normal Germans" only experience from within well-protected tourist enclaves. Your country has been heavily in debt for years, without the slightest chance of escaping from the debt spiral in the foreseeable future, even if it did everything possible to do so. At more or less regular intervals, delegations from the International Monetary Fund (IMF) gather in your capital city to assess the country's progress in implementing so-called "structural adjustments". This often means serious cuts in spending on social welfare, education and health – fields which hit the poor hardest. At the end of such missions, the IMF produces a report which decides upon the country's credit-worthiness, and thus its well-being or woe.

Did you know that Germany also has a major debt towards "developing countries"? No, not in terms of federal bonds, but in terms of the environment. Germany consumes far more than its fair share of global environment's materials and resources. It uses an environmental space which, if shared out fairly on a per-capita basis, the countries of the South also deserve and are increasingly claiming for their own development. The "penalty interest" for such debt is not paid by us, however, but by those who suffer most from climate change, over-fished oceans, degraded forests etc., namely poor people in the South1.

As with every debt overload situation, this also entails structural adjustment – a fundamental transformation of the economy and society. This challenge was recognised by government leaders and heads of state in Rio in 1992 and is known as "sustainable development". It subsequently became more tangible in the case of Germany with the study called "Zukunftsfähiges Deutschland"2, which was commissioned by BUND(FoE Germany)/Misereor and produced by the Wuppertal Institute. 10 years after Rio, Germany finally has a national sustainability strategy, albeit one which is still incomplete.

In this context, we thought it was about time to turn the tables for once: It was time for people from the South to take a critical look at the status of our ecological structural adjustment and our sustainable development; to hold the mirror up to our own faces and give us feedback, even if they do not have the power to provide us with or deny us a further "ecological overdraft" facility.

For pragmatic reasons, the task was limited to three central themes which have an important place in Germany's national sustainability strategy: 1) Energy and climate protection 2) Mobility and transport 3) Agriculture and nature conservation.

Sustainability is also a global searching process. In this sense, every kind of feedback is urgently needed and welcome, especially if it is as well-informed, critical and supportive as the report presented here. Our sincere thanks therefore go to the authors and the co-ordinator Ute Sprenger. They have all enthusiastically ensured that this experiment

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[1] For further information on the concept of "ecological debt", see http://www.cosmovisiones.com/DeudaEcologica/

[2] Available in English as "Greening the North" (W. Sachs et al., Zed Books 1998)

ended in success. In their own foreword, they describe themselves as "non-experts", and yet they have displayed great expertise in this report. The report presents a discerning image tinged with neither uncritical admiration nor indiscriminate accusations: It is the image of a country that is addressing the challenge of sustainability, sometimes half-heartedly and often in the face of great resistance by powerful groups.

We hope you find the report interesting. It does not contain the last word on Germany's sustainability, but instead offers a rather different, southern, perspective.

Jörg Haas
Senior Officer Ecology

Barbara Unmüssig
Executive Director

Heinrich Böll Foundation

FOREWORD BY THE AUTHORS

Rarely do people from the so-called southern or developing countries get a chance to look at sustainability in the North. It was the idea of the Heinrich Böll Foundation to gather a small team of people, not necessarily experts, from developing countries such as Kenya, Jordan, Chile and India to carry out a study of how sustainable Germany is ten years after Rio. This provided us with an opportunity to visit the country for a month, split into two visits (September 2001 and April 2002), and allowed the team to assess the contributions Germany has made towards its commitments at the Rio Earth summit of 1992 from a southern perspective.

The idea was not to report in exhaustive detail on what is happening in the country, but to provide an overview of what is going right or wrong. We all come from countries which are in some way affected by the consumption patterns of the North, creating small islands of lavish lifestyles amid all the "poverty" and underdevelopment.

There are several research reports and analyses of what is happening in Germany - including what must be done, but these are not being implemented with the necessary conviction. So what is going wrong and how can we as a group with diverse backgrounds connect to what is happening in Germany?

The approach taken by the team was to get an impression of things at first hand by talking to people, making field visits wherever possible, looking at existing reports and recommendations, aside from the plethora of information available on the Internet. Most of our observations are based on whom we spoke to and what we saw. This is an account based on impressions, but in most cases, it is backed by facts. We found many situations that were very similar to the conditions in our countries; notably, the quality of decision making and public participation. Though the policies and frameworks are in place, they are almost meaningless unless they connect with people's interests.

We saw patterns of consumption which are also reflected in our countries, in the excessive importance attached to highways, flyovers, pre-cooked food or fast food, and luxurious lifestyles which only a few can afford. This does not mean blaming Germany for our excesses, but definitely to regard it as a part of a world where consumption is fast outstripping resources and our countries are attempting to catch up, i.e. behaving the same way, whether right or wrong.

So how is our perspective different? We see the same things that everyone else does and had access to the same material that is available to everyone. Yet our conclusions may be different due to cultural and political perspectives. We saw the growth in the number of cars exceeding population growth in developed countries and we have mixed feelings, exactly the way the developed countries react when they see our so-called burgeoning populations. Yet, can we advocate birth control for cars? That is not in keeping with the democratic spirit we believe in. Yet, the situation is in many ways deplorable in the North, more so because developing countries see this as the model for growth and progress.

At the end of the visit, we see many similarities and differences in our approaches to tackling the question of sustainability. We already come from sustainable societies which made a drastic turn towards industrialisation and energy consumption. Now the

challenges imposed by the social as well as the environmental upheavals demand limits and constrains in consumption patterns. But as long as countries like Germany continue to consume more materials and energy and set a trend in this direction, the countries of the South will emulate them. If there is going to be an imperative for the reduction of global resource consumption, the signals must be very clear. The North must to provide a clear example and act as a role model for sustainable livelihoods.

It was interesting to observe that amid all this energy consumption and fast cars, there was still room to discuss a more equitable lifestyle. We saw at least in the cities, some good public transport networks, commitments to using bicycles, walking or sharing cars. We also noticed the drive towards renewable energy, energy saving, resistance to genetically modified organisms and increasing organic food consumption, however slow it may be.

These examples show what is possible to attain if there is commitment and an understanding of issues at a global level, whilst linking them with local ones. But it represents a dramatic shift in lifestyles and thought - and cannot be enforced by law, technology or taxes. It is a change in attitudes that is the most important thing, and unless there is a very good reason, no one will sacrifice his or her present patterns of consumption. This in a sense is the global dilemma: How much is enough and where does one stop?

We hope that we have not added to more confusion on the sustainability debate in Germany.

Meena Menon (India), Bernardo Reyes (Chile), Batir Wardam (Jordan), Jane Ngige (Kenya)

1 PURPOSE AND METHODOLOGY

1.1 Purpose of this report

The purpose was to review Germany's commitment to sustainable development policies from a Southern perspective 10 years after the Rio Summit. The report is divided into three sections: Agriculture and nature protection, Energy and climate change, and Transport and mobility.

1.2 Methodology

The assessment took place between 15 and 30 September 2001, and 06 and 21 April 2002. In general, it was a mixture of theory and excursions with seminars, interviews and visits.

The team mainly used public transport for travelling to cities and rural areas. The findings of the report are based on the information collected in meetings and interviews with stakeholders of the German sustainability debate from many walks of life, from the private sector and the civil society to administration and politics. The team also made extensive use of books and publications, grey literature, newspaper clippings, as well as the Internet to complete the picture. Towards the end of the first part of the project, the team attended the upbeat-conference of the National Sustainability Council in September 2001 in Berlin. During the second phase, a workshop with German representatives of School and Youth, Industry, Gender, Church, Environment, Labour, Agriculture was conducted in Düsseldorf in order to give first insights into the study and scrutinise some of the findings.

1.3 Understanding of sustainability by the Southern Perspective Team

Sustainability in development processes is multidimensional and aims at meeting the needs of generations without compromising the future. Sustainable development aims at:

a) Strengthening democratic institutions and the accountability of government and business

b) Enhancing and promoting citizens' participation in decision-making processes and policies;

c) Actively engaging in the search for equity and accessibility to a fair share of nature's resources and services, with due consideration for intra- and intergenerational needs, while maintaining a gender and global perspective;

d) Developing a healthy, socially responsible economy in a globalised world.

Sustainability in development processes needs to integrate the ecological, social, economic and institutional dimensions to ensure due consideration of environmental and social impacts of production and consumption patterns. Sustainability aims at strength-

ening global ethics, social justice and responsibility, as well as the need to protect life-supporting ecosystems in recognising nature's limits. The principles formulated at Rio clearly stated the need for the eradication of poverty, and due consideration for the needs and situation of the least developed countries, which are also the most environmentally vulnerable, as part of the global responsibility by more industrialised and wealthy nations.

2 EXECUTIVE SUMMARY

This report presents the findings of the project "Sustainable Germany: A Southern Perspective 10 years after Rio" as initiated in September 2001.

In the first section of this report, there is an overview of all the sustainability policies and initiatives which emerged from the interviews, discussions and publications examined by the team.

The German transition towards sustainable development has taken on national and international challenges, particularly in relation to climate protection policy and energy production. Recommendations by the Enquete Commission on Climate, the study "Greening the North" (Sachs et al, 2000) as well as the "Sustainable Development in Germany" study (FEA/UBA, 1998) have identified the need to reduce the overall flow of material and energy consumption in the German economy. The steps leading to detaching economic growth from energy consumption have drawn heavily on concepts such as eco-efficiency, Factor 4 and Factor 10, Material Inputs Per Unit of Service (MIPS) and environmental space. The recent introduction of an ecological tax reform, a new energy law and a wide range of policies to promote a multifunctional approach to agricultural areas as well as a renewed law on nature protection are among the most significant achievements since the Rio Summit in 1992.

2.1 Energy and climate protection

The review of the energy sector shows the emerging trends on energy restructuring since the early 1990s and the impact of such policies and technological innovations on the country's future position on energy supply and technological development. Major changes have lead to an important reduction of CO2 (close to 18% by the year 2001) and Green House Gases (GHG) compared to 1990 levels, partially fulfilling German commitments to climate protection.

The initial steps to restructure the energy sector were driven by the social response to air pollution and safety concerns associated with installation and operation of coal-based and nuclear power plants. Social demands also led to increasing governmental regulation to improve air quality and reduce the impact of pollutants generated by the energy industry. New energy policies led to technical innovation and a new draft energy law in 1998, as well as the Law on Renewable Energy Sources in 1999. These and other government-led policy instruments helped to liberalise the energy sector and generate a renewable energy market in Germany.

The report highlights the country's efforts to transform the structure of energy supply and increase the energy consumption efficiency in the industrial and energy sector. As a result, technological innovations and a new productive infrastructure, such as hundreds of windmills, are in place, along with a promise to generate up to 200,000 new jobs by the year 2020. The reduction in other pollutant emissions and global warming gases also shows significant improvements since the late 1980s.

A dynamic growth in renewable energies has emerged in the late 1990s as a result of government-supported programmes and private sector involvement. Wind energy has been growing at a fast pace and Germany is the number one wind-energy producer in Europe and a leading country world-wide.

At present, the overall share of renewable energies is close to 2.5% of total electricity generation. However, the fast growth rate observed in this sector allows the projection of an optimistic target of over 6 % for the year 2010. The German government is projecting that up to 50% of electricity needs will be fulfilled by renewable energies by 2050. Meanwhile, Germany continues to rely heavily on coal, lignite, oil, gas and nuclear energy for power generation. A major shift will be forthcoming, as the nuclear phase-out will increase the demand on other energy sources such as lignite, gas, combined heat and power, renewable energies as well as greater energy efficiency.

The team noted positively that the regulatory framework and government-led policies for innovation would not have taken place on the basis of market-led signals and price competition alone. Nor could this trend be sustained simply in the interest of large energy companies, which tend to thrive best in unregulated markets with few environmental and social demands or government interventions.

As a result of energy restructuring policies, technological innovations and know-how has improved the country's position as a leading agent in the energy sector. It is expected that this may consolidate a trend to detach energy consumption from economic growth. In this context, the state of NRW is leading the way towards a new energy era with its innovation in solar and wind energy programmes. Yet, in this very state, lignite mining must still come to terms with the social and environmental implications of energy production.

The concluding remarks in this section deal with both the need to strengthen democratic processes with more public involvement to ensure that market signals and market forces do not overrule the progress made up to now, and the need to maintain government commitment to achieve even more ambitious climate protection targets.

Safe and secure energy supplies should entail democratic processes of participation at all social levels. Thus, it seems essential to maintain a high profile government-led energy regulation and sustainability policies when corporate mergers increase the economic, technological and political leverage of energy giants in Europe.

At a time of high global inequality and growing challenges for fair development opportunities, Germany, like most industrialised nations, needs to make further commitments and efforts to reduce the global impact of its high energy and resource use. German reductions in energy and material consumption could open the road for Southern countries to have a chance to build their own fair and sustainable future.

The greatest challenge ahead is to set targets to further detach the energy addiction of post-industrial societies and move from the paradigm of efficiency to one of sufficiency, which is one of the growing global demands on the industrialised world.

2.2 Transport and mobility

Transport, like energy, has become an increasing addiction for modern societies. The growth in the numbers of cars is outstripping that of populations in developed countries

(Spitzner, Wuppertal Institute). An increasing volume of faster, bigger, more diversified and more efficient transport is increasing the pressure to build and maintain a huge transport infrastructure. The team reviewed the social, environmental, economic and technological implications of recent trends on transport and mobility.

The team experienced and confirmed the availability of a very extensive public transport network, as a national endowment worth maintaining and improving. Yet, this system is considered expensive and people often prefer the car as a solution for medium to long distance travel. The lack of sufficient governmental support or subsidies for public transport is making the car a "viable" alternative for the public. This in turn, increases pollutant emissions, the demand for more roads, land fragmentation and land sealing.

The rate of car use has increased faster than the use of public transport in the past 10 years. Public funds to build more roads for cars on the one hand, and privatisation of public passenger and freight rail transport on the other, are creating conditions that could hardly be sustainable in the long run. Altogether, these trends may create employment and maintain the high rate of economic output in the car industry and associated enterprises, providing in the short run a sense of economic well being and security to Germans. In the long term however, these trends continue to increase present and future environmental and social costs to society as a whole.

While cities are well connected with public transportation, the situation shows marked inequalities in terms of accessibility for rural population that must rely on automobile transport.

The car industry has striven for cars with low emissions, and various technological innovations for improving the efficiency of automobiles, for instance the five, three and now, even the one litre car.

However, the industry says Germans are not buying the most economic or efficient cars and market trends show a definite preference for larger and heavier vehicles. Efficient cars will remain symbols of nature protection unless they are adopted on a mass scale and the full costs of overheads and infrastructure become an integral part of the costs of space and road use (including construction).

Urban planning and mobility are assuming crucial proportions in modern societies. High noise levels, congestion and air contamination among other problems, are driving people away from cities. This trend of people moving out of cities in search of better life styles unfortunately involves increased commuting, often by car, to access schools, workplaces and shopping areas. A broader approach to urban planning, providing alternatives to congestion caused by traffic and vehicles seemed absent.

It is the opinion of the team that still too few people make the connection between global warming and pollution from air or road transport. Traffic already accounts for over 20% of carbon dioxide emissions in Germany, and transport investments and innovations are still being driven by demand. This gave the team the feeling that Germans love their cars too much to be bothered with the environmental and social costs of car-intensive societies. The power attached to owning fast cars, new status symbols of freedom and glamour, is gaining ground faster than the need to conserve or use less polluting forms of transport.

The analysis led to a discussion on why Germans value fast cars, expensive lifestyles, air travel for holidays and extreme sports. The answer was found in the market-led me-

dia and advertisements with their role models of people driving fast cars. There seems to be very few people, organisations or agencies advocating alternatives like walking, cycling and using public transport. There is an overriding dependence on symbols of progress or modernity like fast cars, no speed limits for want of any other role model or objects of adulation.

Transport policies are still not addressing the special needs of a caring society and lack a gender perspective. The policies must move beyond assuming that mobility implies going from home to work. For women, specially, mobility involves short trips, which are part of their role as caregivers, professionals, mothers or wives. Despite the initiatives taken by researchers, gender and mobility concerns still need wider reflection in policy and planning, as well as more research support.

The bright side of transport is the secure, extensive and still publicly owned public transport system, and the spaces for bicycles and walking, especially in Munster and other cities.

2.3 Agriculture and nature protection

The environmental, social and economic challenges facing the agricultural sector were reviewed within the framework of the sustainability principles. Germany, with almost 15-30% of the total European agricultural land, has developed a high-energy and input intensive agriculture with national profit margins in the range of 13% for the 1999-2000 period, largely attributed to pig farming and higher proceeds from cereals cultivation. Internal food prices impose fierce competition among producers in an over supplied market. Today, expenditure on food accounts for no more than 12% of the household budget, down from about 50% in the late 50s. The tendencies to lower food prices seriously undermine the potential expansion of organic farming, while straining the opportunities for family farming.

Low food prices and a wide and growing supply of imported food characterise Germany's food market policies. Agricultural land is increasingly perceived solely as a means of food production and not as a way of life. Food quality and nature are hardly connected. In industrialised societies, food availability is taken for granted. Corporate catering and food retailers reflect the new trends in the food production of an increasingly integrated food production/food processing and retailing system. This also implies that large numbers of farmers are leaving agriculture due to the increased demand for efficiency and the growing price competition from big producers. According to official statistics, more than 13,000 farm owners with over 2 hectares left agriculture in the year 2000,. Between 1991 and 2001 almost 32% of farmers left farming altogether. Knowledge, culture and adaptive capacity are fast disappearing from the countryside as agro-industrial companies take on the task as food suppliers.

The recently announced ministerial goals of enhancing a process towards the structural transformation of agriculture are offering new challenges to Germany after the BSE crisis. The aim of new policies is to protect and assure consumers of the quality of food and to recover the balance between agriculture and natural habitats. The multifunctional role of agriculture is coming to the centre stage of this debate along with policies that should aim at making farming practices more socially and environmentally sustainable.

As long as these commitments become national policies with a long-term perspective, there is chance for sustainable approaches to rural society. But political manoeuvring by a powerful agro-industrial lobby and petty party politics are a lurking risk when there is no social mobilisation and pressure from below.

Food quality and safety targets, such as reaching 20% organic production in agriculture (presently 3%) by 2010 have been announced early in NRW. This trend is also due to a new proposal on a national level following the impetus by Ms. Künast as head of the Federal Ministry of Consumer Protection, Food and Agriculture. The BSE crisis and the foot and mouth disease have helped to speed up this process. Even though small organic farmers fear they may not compete under the present market conditions, government policies are aiming at providing more support to transform agriculture over the next 10 years: food quality and a multifunctional role for agriculture are the leading objectives.

The impact that agriculture is having on nature conservation, biodiversity and water quality is an important element in the discussion of sustainability policies for agriculture. The recent Federal Nature conservation Act has been revised for the first time in 25 years and has been put into effect in April 2002. This act intends to harmonise nature conservation with agricultural practices as well as land use, and provides for the needs of a modern national population of 80 million people. A new role and functionality is being sought for agriculture of the 21st Century.

Overall, a review of this sector shows that there is a strong need for substantial changes, including a revision of subsidies, practices and roles for rural areas. As in energy, sustainable agricultural practices and land management, this will require a deep structural transformation. The hope is that this will help revitalise consumer confidence and indeed to orient farmers and the industry towards a more responsible production process to guarantee the quality and safety of food. Hopefully, in the future, agriculture will also meet the demand for environmentally friendly and animal-sensitive production systems.

The expectations of NGO groups and organic producers are reviewed and linked to a broader debate on sustainability and democratic decision making. Today, the existing political structure does not seem to be conducive to a meaningful level of public participation, particularly when the partners involved are unequal in every sense. As environmental NGOs, women's groups, grassroots organisations and small producers are pitted against large economic interests and a powerful political lobby, there is increasing disillusionment with formalised political participation.

The use of world resources to feed livestock and inject copious amounts of energy into German agriculture has de facto expanded its agricultural frontiers to every continent. The impact of food transportation from distant countries, the use of the best agricultural lands overseas to supply the internal food demand, along with the global emissions associated with transportation, form part of a growing ecological debt. International pricing mechanisms barely take the overheads of the food and feed imports created by the developing nations into account. The expansion of globalised markets not only seeks customers but also a constant supply of input and imports for industrialised countries like Germany. Unless a drastic reduction in resource use is achieved in agriculture, Germany will not live within its "fair share" of environmental space. The excessive use of energy and material resources demanded by the present day industrial food production system is continuously denying access to earth's resources to a growing population of jobless, hungry and marginalized people in many parts of the world.

German society has been using a disproportionate share of world resources in order to attain a level of prosperity and wealth accumulation that could certainly not be achieved by most countries in the South. The food consumption pattern it promotes as part of the role model of a "developed society" could barely be sustained by the planet's ecosystem. Drastic reductions on fossil fuel use, less use of materials and more efficiency are needed in agriculture, food production and consumption.

In agriculture, as in the energy sector, it is also necessary to strengthen the North-South co-operation process. The integration of fair trade ethics into German foreign trade and investments as well as a sustained effort to democratise multilateral institutions could provide an opportunity to build a common, secure future for humanity.

3 GENERAL CONSIDERATIONS

"If the entire global population discharged as much CO2 as the Germans, humanity would need five planets for the environment to be able to process these emissions. In Germany, carbon dioxide accounts for as much as three quarters of the national greenhouse potential." ("Greening the North, A Post Industrial Blueprint for Ecology and Equity", Sachs, W. et al, 2000).

Invited to review Germany's progress towards sustainable development 10 years after Rio, the southern team took a close look at some critical issues in the energy, transport, agriculture and nature conservation sectors.

The team asked itself if sustainability had lost global relevance or if the rhetorics of sustainable development needed a few good examples here and there to remain politically relevant. Globally, development trends showed an increase in poverty, a growing gap between the North and South, and greater environmental deterioration and social upheavals in several regions of the world. At the same time as the breakthroughs in science unravelled the secrets of the human genome, economic development created worldwide networks of capital and material flows, along with an increasingly integrated global market which is dominated by multinational corporations. It was against this backdrop that we undertook this project.

"The world’s richest people more than doubled their net worth between 1995 and 1999: Their combined wealth now equals the total annual income of the world’s poorest 2.5 billion people. These gaps are going to grow – a recent WTO estimate suggests that income disparity will double in a century and a half at the current trend. And it is well understood now that without addressing the basic issues such as poverty alleviation in developing countries, talking about sustainable development would remain a distant dream." ("The Road to Johannesburg" - Ashok Khosla in the Millennium Paper Series, 2002; IIED Strategy paper, IISD site and The Road to Johannesburg)

Following the 1992 Earth Summit in Rio de Janeiro, many governments which agreed to the Agenda 21 action plan made little progress in implementing it, be it in protecting the climate, biodiversity or in measures to reduce poverty. Funding commitments to promote the global sustainability agenda agreed in Rio was far below the financial goal established. In the meantime, the intensive negotiations of conventions and international protocols have taken place in order to create a framework of action on previous commitments and to enhance sustainable development.

Meanwhile, the WTO returned trade to the central focus of international relations, rather than equity or social justice. The economic dimension replaced social and environmental priorities. Overall, the balance of the development equation has worsened for the poor and the environment. Yet the coming Johannesburg summit once again offers the opportunity to renew the debate on sustainable development, poverty alleviation and global costs sharing. There are fewer expectations of agreements to produce a genuine shift in development trends towards more sustainable development. Nonetheless, many

still expect the coming UN Summit of Johannesburg on the Environment and Development to be a forum which will highlight the critical issues confronting humankind.

Germany took active part in the Rio Summit and spelled out many targets, but not much initiative was taken until the mid- 90s. In 1995, Friends of the Earth Germany, and Misereor, the Catholic Aid Agency, presented the study "Greening the North", outlining the major challenges and the need for drastic reductions on material and energy consumption based on the concept of environmental space. The Parliament set up an Enquete Commission to address the goals and conditional framework for achieving sustainable development. The report on "Sustainable Development in Germany", 1998, prepared by the Federal Environmental Agency was not translated into policies by the cabinet. Until the late 1990s, there was debate on sustainable development among a number of organisations and institutions concerned, but no policy strategy. After the Social Democratic-Green coalition assumed office in 1998, the Green cabinet was installed in July 2000 and later some steps were taken to meet the challenges of Rio. The process has been rather lethargic, and Germany has only partially lived up to its 1992 commitments.

In Rio, Germany like many industrialised countries committed themselves to fulfilling their global responsibilities. For instance, OECD countries agreed to allocate 0.7% of GDP as overseas development assistance (ODA) to help the poor countries out of their mire of social, economic and environmental problems. Global equity was thus translated into aid for reducing poverty. This is one of the unfulfilled promises of the 1970s - and ODA has been shrinking continuously since then; the only European country that has fulfilled its commitment is Denmark, at around 1%. Germany, also under the recent government, has an ODA rate below the average European ODA rate of 0.33%.

In fact, over the past 10 years, German ODA has been steadily decreasing since 1992 - from 0.39% to 0.27% in 2001. Likewise, instead of mobilising $125 billion dollars per year over and above ODA for implementing Agenda 21, the international community, allocated "zero", according to an estimate by IISD. In order to confront the social and environmental challenges recognised in Rio 1992, the ODA was to reach a level of US$ 200 billion per year over a period of ten years. This amount was to help the world get on track with sustainable development, but the amount was reduced from US$ 80 billion to US$ 30-40 billion per year.

3.1 Energy restructuring for climate protection and clean production

Germany was the only country to undertake an early voluntary reduction of CO2 emissions even before it became an international issue. This bold step seemed to have paid back to the German economy through its leading role in the industrialised world. Nothing underlines the inequalities of development or consumption in the same way as CO2 emissions. They portray consumption patterns and lifestyle in one indicator, and by taking this initiative even before 1992, Germany has demonstrated that global commitments and responsibilities need not wait for international conferences. Climate protection has become a central issue in the national energy policy.

With per capita CO2 emissions of 10.8 tons, Germany is below the USA with 20.5 tons per capita and way above India with1.1 ton per capita or Africa with 0.9 tons per capita

(1999 figures). Almost four hectares of productive forests per capita are required to absorb the carbon dioxide emissions, that is over 5 times the average non-OECD consumer. This large ecological footprint will continue to impact the livelihood of millions of people in distant places. This is only a reminder that Germany, like other OECD countries, has to make even stronger commitments to reduce energy emissions in the near future.

Germany is close to achieving its early 25% reduction commitments on CO2 emissions, although overall energy consumption shows that much of the gains made through energy efficiency are overshadowed by increases in energy consumption. Optimism or foresight may have led Minister of Environment Jürgen Trittin to say that a 40% reduction target could be set for CO2 emissions by 2020, yet it is the bravest goal set by any industrialised country. This, still is not a national target.

3.2 The pending restructuring of agriculture and nature conservation

Agricultural development and food production are a reflection of a country's wisdom to secure safe and reliable food. Agricultural modernisation has reached every corner of Germany, transforming the natural setting and increasing yields. The highly industrialised mode of agricultural production has led to land concentration as reflected by the high numbers of family farms going out of business. The social, economic and environmental implications of this high migration from rural areas do not seem to be a high point on the agricultural agenda, according to small organic producers interviewed by the team.

The high-energy use for food transport and processing are closely linked to emissions of global warming gases. Food travelling hundreds and sometime thousands of miles from their farms of origin to processing plants and retail stores show precisely the distorting impact of subsidies to transport and agriculture. Yet, the team found little or no targets for emissions reduction in this sector. On the other hand, the potential for energy savings as well as energy production from biomass has become an agenda item for the present government. The reduction of subsidies and their acceptance of environmental necessities will demand complex negotiations and clear definitions for a long-term national strategy on sustainable agriculture. Until recently, Germany delayed both reforms at home and agenda decisions concerning EU agricultural policy reforms, as recognised by Minister Künast.

Conservative forces in the agricultural sector will resist government policies aimed at restructuring agriculture towards more sustainable and eco-friendly practices. The recently announced 10% goal for organic agriculture by the year 2010 has already brought dissent inside the National Sustainability Council. Germany still lags behind several EU norms on environmental performance in the agricultural sector.

Conserving natural biodiversity and the quality of the water and soil has been a difficult task in most states. The road infrastructure and urban expansion have created a highly fragmented territory where ecological continuity or biological corridors are hard to find. Improved varieties have replaced traditional and native crops, affecting agrobiodiversity. The intensive use of agrochemicals and fertilisers has contaminated soil and water, and agricultural land has been affected by the expansion of urban sprawling, mining op-

erations and road infrastructure. Today, Germany still does not have a national biodiversity strategy, although recently, after 25 years, it has improved its Nature Protection Law. This reform has set targets to increase the acreage of protected areas.

A manager of the Bioland association questioned the integrity of agribusiness and the lack of awareness of German food consumption habits. He said that there is complete alienation in society, which does not know where its food comes from and looks to fast cars and luxury holidays for its sustenance. In many cases, children believe that food comes from cans, as the decline in the concept of growing or cooking food at home continues. Highly processed foods have become a main stay for German households. A turning point in agricultural policies may be marked by the BSE crisis, the dioxin scare and foot and mouth disease.

The BSE crisis has provided a boost to organic agriculture and today, there is an annual growth rate of 25% in organic farming. Germany has just over 200,000 hectares of organic crops, as compared to over one million hectares in neighbouring Italy. The change from modern industrialised agriculture towards multifunctional agriculture, with less invasive farming methods, will demand a long period of sustained state support and reliable information to consumers. This has been well understood by the Ministry of Environment, Agriculture and Consumer Affairs in NRW. The active campaigning and information on quality food by the State Minister herself has made her some powerful enemies, while gaining much support from the public. The same applies to the Federal Minister - a harsh wind is blowing in her face, now that agribusiness and conservative representations of conventional farming are gradually recovering from the first shock after the crisis. Moreover, the recent public outcry over contaminated organic chicken meat has been used by conservative forces to attack the recently announced measures to increase organic production as a national target, in an effort to demonstrate that organic production is not cleaner nor safer than traditional farming methods. The heritage of accumulated toxic residues will haunt agricultural products for many years to come.

The German Farmers Association thus uses the argument of Third World food security to get the quantity discourse reinstalled against the recent demand for quality food following the BSE crisis. Moreover, the same forces are fighting now at a German and EU level for the acceptance of a high level of GMO-contaminated food, feed and even seeds. But in opinion polls, GMO-food is rejected by around 80% of the Germans – as well as in many EU countries. Now the industry wants to force the EU to permit European-wide cultivation of GM crops as well as forcing society to accept the contamination caused by already existing GMO crops. This aims at ending the debate on who really needs these manipulated organisms. GMO labelling is another contentious issue farmers and consumers associations are struggling with but which has not been resolved.

Recently and under the present government, a new generation of subsidies for the ecological transformation of agriculture has been implemented in an effort to initiate a transition towards more sustainable agricultural practices. They aim is to protect freshwater resources, enhance biodiversity, promote sustainable forestry practices and expand protected land and wildlife reserves. Overall, German agriculture still has many challenges to face in order to move towards more sustainable practices (like protecting its agrobiodiversity, the water quality and the safety of the food it produces). Maintaining family

farming should be an integral part of agricultural restructuring to ensure a real multi-functional role for agriculture.

3.3 The pending challenges in transport and mobility

The large road and rail network is complemented to some extent by waterways, port facilities and a huge air transport infrastructure. The extensive public transport system is quite efficient although Germans often complain about delayed train schedules. Bicyclists have carved a space for themselves in most German cities. In Mulheim and Freiburg, bicycles are prominent modes of transport with proper parking spaces. In many medium sized cities, non-motorised transport systems provide a healthy opportunity for people to get to work on foot or by bicycle.

However, Germany is also the home of leading car manufacturers which are part of its national pride and history. The car industry, employment strategy, technological development and economics have been walking hand in hand for many decades now. Policies favour road transport and the rising number of cars, as can be seen in the increase of lorry freight on autobahns.

The evaluation team used the public transport extensively and could find few good reasons to understand the preference for driving on crowded motorways. Still, many Germans, (about 50% according to a study conducted by VCD) have never travelled by train. Experts explained the difficulties in reducing the increased mobility (by car) which characterises modern German society. Urban planning, job mobility leading to intensive commuting, business demands and leisure trips all combine to create an automobile intensive society.

The high disposable incomes also provides plenty of opportunities for travel to continental Europe and overseas. Emissions reduction in the transport sector will remain a major task ahead. As long as the public image and role model portrayed in the media maintain a profile of glamour for fast cars, distant vacations and fast travel, it is unlikely that Germans will change their cultural pattern associated with mobility.

3.4 Public involvement and participation on sustainable development issues

Participation and public engagement is one of the weakest aspects is Germany's commitment to sustainability. It was on only in February 2001 that the 17 members of the National Sustainability Council was officially appointed. A broad range of representatives of German society is represented on this council. The appointment of this council was one of the commitments made at Rio Conference almost ten years earlier.

Another Rio commitment was the preparation of a National Sustainability Strategy. The Draft Strategy for Sustainable Development was presented nine years later, in December 2001, making Germany one of the last OECD countries to do so. The draft document was not widely distributed and a copy was placed on the Internet for Germans -- a rather futile attempt to practice e-mail democracy. This casual e-democracy by the government has been widely criticised by many German organisations and individuals who felt this was not the way for a society to engage in a proper debate on such an important

document. The evaluation team learnt that roughly 100 responses were received on the net (personal interview with BUND/Friends of the Earth Germany) and many of the suggestions were not incorporated in the final strategy document, which was announced on April 17, this year. The document itself provides a set of 21 indicators for target setting and monitoring of policies in different sectors and themes.

Through our interviews and discussions with institutions and researchers, the quality of consensus-building, decision-making and public participation emerged loud and clear. Present political structures are not conducive to a meaningful level of public participation, as the partners involved are unequal in every sense. Environmental NGOs, women's groups and grassroots organisations are pitted against big industries, the political lobbies of powerful parties. All too often, it is the political and industrial lobby which wins. There is increasing disillusionment with such interactions, which are undemocratic and lack transparency. Decisions are centralised and taken by governments without due consultation processes, undermining the legitimacy of decision-making bodies and weakening social structures.

Many of the organisations interviewed felt that large corporations are not accountable to any one and care little about what people have to say. The communities around the Garzweiler open cast mining operation felt abandoned and had little political or social support for their campaign. The company and society seemed to tell them to take their compensation and clear out. The visit to the mining region of the Ruhr was a revelation for the team. The team has seen a lot of development, which displaces people in their own countries. Developing countries are often taken to task by First World organisations and even governments for this. But the fact that this action was endorsed (by the mining company) in a highly industrialised federal country like Germany came as a shock to us.

Decisions on mega projects like NRW's investment via the West LB bank in the heavy crude oil pipeline in Ecuador seem to respond only to profitability indicators and have no relation to the declared sustainability aims of the energy sector in Germany. National policy issues such as the National Sustainability Strategy have been pointed out as examples of poor consultation and undervalued democracy. Therefore the quality of public participation needs to be improved especially in the overall process to set up sustainable development priorities, particularly in the energy and transport sector. Without concerted action on the part of all consumers of environmental resources, there is little chance of setting up an agenda to deal with the complexities of modern life. Nor will there be behavioural changes and rules without due discussions among different social agents on the priorities and need for radical change.

There is less participation in political and environmental organisations and a feeling that confrontation will not solve issues. Much like our countries in the South, political decisions do not have the backing of people (cf. the Transrapid in NRW or the financing of a pipeline in Ecuador, funded by a bank partly owned by NRW state). The team feels that before embarking on ambitious programmes for sustainability, it is important to set a more acceptable and meaningful agenda of communication, and increasing the quality and equity of participation in the decision-making processes. That could be one of the most important prerequisites to build a sustainable society, rather than technologically driven partial solutions - more cars, fuel efficiency, or merely reiterating the need for global responsibility when in actual fact, there is little local support for such actions.

As it is, sustainable development is not a very popular term with the media or the German people because they fail to see the local and global connection and the need for a more moderate lifestyle. Shifting consumption patterns is a slow and complex process, which every German has to reflect upon in his or her community setting.

Catastrophes like BSE, or Chernobyl have sparked off what the team feels is crisis-led policy making or fire fighting. There is, however, a big risk in waiting for a crisis to take place in order to move towards sustainability. The ecological tax for example, is a very useful measure to make people aware of the real costs of energy. But most people do not understand how it has helped to improve energy efficiency, such as the technological progress made through hundreds of research initiatives, or the new job opportunities emerging from renewable energies. It seems that the majority of Germans do not link their own day to day energy use with a better future for all.

3.5 The development role model of industrial economies

Efforts are being made to redress the impact of "progress". Germany has taken the lead in reducing carbon emissions with the combined force of the industry behind it. In the transport sector, the scenario is still far from acceptable. The power attached to owning fast cars and flying to distant places is a symbol of freedom, choice and glamour. This cultural value is gaining more ground than the need to conserve or use less polluting forms of transport.

Since this analysis is from a Southern perspective, we would like to say that the so-called developed nations have set a consumption pattern that is being emulated by developing countries. Countries like India, Mexico, etc. also have a car-dominated lifestyle in the urban areas, leading to massive traffic jams, and air pollution that is already damaging the health of millions. It is not entirely out of the blue that developing countries are adopting massive highway construction programmes in a race to be part of a developed world full of fast cars, intertwining highways and freeways.

The costs of this skewed "technology transfer" are not calculated and the poorer countries feel this is the way to develop: first the infrastructure they can ill afford and then the cars to fill them up.

Sustainable development also involves setting examples and widely disseminating the fact that some things were wrong to begin with and not worthy of emulating. While carbon dioxide reduction and steps for more fuel-efficient cars and better railways for transport and strict land use laws are being implemented in Germany, the other more difficult aspect of setting an example for developing countries needs to be planned as well. That will be central to North-South collaboration. Lessons learnt from the past need to be part of the North-South agenda. Increasingly in the South, people are looking for food that must be transported over long distances, driving to work and taking short holidays to far away places or going shopping by car. They think these are the signs of an affluent and developed world. The overheads caused by these consumption patterns are seldom discussed or tackled as long as the most vulnerable sector of society has to bear the costs.

A key issue that still needs to be confronted is the linkage of global and local agendas. Despite strong political movements in the 70s, the demands of which have translated

into a strong public transport system, better and cleaner air, the political representation of the Green party in power today, and even a nuclear phase-out programme, there is a lack of a holistic agenda for development. For many Germans, there is no clear connection between politics and social and environmental issues - and there is little agitation for social justice and improved living conditions. Today, the average German rests assured that the environmental quality in the country has improved, they can breathe better air, the water quality is better than it was 20 years ago, there are better and bigger roads, and they can drive bigger and faster cars, drive miles for a holiday or even fly.

But has social justice and sustainability prevailed? Income disparities may not be very high but the poor are getting poorer in this affluent society too. There is increased unemployment, about 10%, and women are disadvantaged in such a situation. Children increasingly require social security and the role of women as caretakers of society is rarely paid for or acknowledged by planners.

Germany has maintained its drive on imports and exports, as trade is the dominant economic factor. There is blinkered support for the car industry – the country's extensive road networks and autobahns are testimony to this. Nor are there any limits on the volume of imports or exports as long as the trade equation shows a favourable balance.

Germany faces the difficult task of changing the direction and pace of development in a global context of increasing competition. It is even more difficult to change the consumption patterns of a society which always demands more. This affects poorer nations trying to emulate this vision of prosperity, selling whatever resources they have to reach higher income levels.

There are no role models for a lifestyle that consumes less, uses more equitable forms of transport, consumes local produces and products instead of importing them from all parts of the world. Local and regional self-sufficiency is out of fashion on a globalised market. But this also entails a lack of connection with the resource base and nature that provides for human needs. Precisely because of this, there is a need to develop new role models based on a greater awareness of our dependence on the environment and the limits imposed by the life-sustaining ecosystems.

Approaches to what is defined as sustainable development are fragmented or weighted heavily in favour of sectors like energy, while transport, agriculture or nature protection remain on a lower political priority scale. Consumption patterns are barely a concern in a market-led society.

The whole approach to sustainability lacks gender sensitivity. Women's mobility needs are not taken into account while planning for transport despite path- breaking research in this area. There is a lack of role models for sustainable living. Fragmented sector policies and initiatives are not fully integrated into a whole development perspective despite theoretical concepts and visions that have been developed (i.e. "Greening the North" and the environmental space concept). The "environmental space" concept and the ecological footprint analysis are excellent tools for visualising exercises, yet these concepts are seldom mentioned in current literature and educational material.

Sustainability is not really attractive to Germans, as they cannot relate it to their day-to-day life. International protocols are still at an abstract level, rather than being introduced at a grassroots level. The idea of sustainable development encounters wide resonance among different sectors of German society, yet the term is widely unknown to most

Germans according to a study on Environmental Awareness 2000 by the Federal Environment Agency. Even eight years after the principle of Sustainable Development was declared to be the leading principle in international environmental policies, only 13% of Germans claim to have heard this term at least once before. However, 90% of those interviewed agree with the statement that, " equality should exist between generations," and about 83% agree with the statement, "we should not use more resources than what we can replace." Agenda 21 could hardly be familiar to most Germans, with the exception of a group of municipalities, schools and communities that engage in Agenda activities at a local level.

There seems to be a strong need to move away from concepts like sustainable development, as the term means very little to many people. It would be imperative to set priorities, which are socially just and equitable, so that people identify with the whole aim and understand its implications. Terminology does not matter but perception and identification does. Perhaps it is not a bad idea to reach out to more people rather than use a concept which means well, but is far removed from their daily concerns. Building healthy communities and establishing fair links with the South, as in the case of Fair Trade initiatives or the solar energy initiative among German schools, could do a lot for consensus-building and bringing in new inspiration and vitality to development.

4. ENERGY AND CLIMATE PROTECTION IN GERMANY

4.1 Efficiency vs. sufficiency: Sustainability challenges

For more than a decade now, scientific evidence has linked energy consumption with Global Warming and Climate Change, one of the greatest challenges for present and future generations of the whole world. At the same time, world-wide primary energy consumption has increased by more than five times since 1950 and the share of resources has become increasingly unequal. Today, less than 25% of the world population consumes almost 75% of the world energy resources, with industrial development as a major force in energy demand.

The high rate of the environmental deterioration of global and regional ecosystems demands a major shift towards more sustainable modes of production and consumption if life on the planet is to be maintained and the needs of present and future generations are to be met. Yet, today's global economic growth is driving an increasing demand for resources, goods and services for an ever-expanding global market. The expanding human population and the development model continue to put increasing pressure on the environment and life-supporting ecosystems, particularly in developing countries. These are major challenges that Germany, having a high ecological-footprint as a member of the most industrialised countries, can not avoid.

The accumulated effect of global warming gases has already induced global climate changes with multidimensional effects on ecosystems and human populations across the world. A large percentage of the accumulated gases have been generated by industrialised countries, responsible for close to 70% of the total share of annual emissions. Since the Earth Summit in Rio in 1992, governments have accepted a common but differentiated responsibility on climate change, undertaking effective measures to decrease the emissions of global warming gases. The Kyoto Protocol has established a binding framework to set limits on emissions for participating countries to ease the pressure on global climate systems.

Furthermore, it is widely accepted that developing nations also need to utilise their fair share of the earth's resources as they strive to develop their own productive base to tend to the needs of their growing populations. Attaining fair levels of services and quality of life for billions will require new and large amounts of energy and material resources. This demand will in turn increase the stress and deterioration of the resource base of regional and global ecosystems unless some drastic changes to development models are put in place. The development model of the rich North does not fit with the need to care for the planet and the billions of people still living under poverty and exclusion.

In this context, awareness is growing in most industrialised nations that for the sake of global equity, they have to make drastic reductions in resource consumption and energy use. Productive systems need to shift towards less polluting processes while reducing material consumption through changes in technology, new resource management schemes and less consumption. Thus, structural transformation towards sustainable development is challenging a broad array of social structures and policies and along with them new patterns of energy production and use. Only with broad social support and

democratic decision-making could government policies be successful at creating an environment for an effective transition towards more sustainable energy use. The challenge facing German society is complex, but unavoidable and although some of the basic building blocks are already underway in the energy sector, much still needs to be done.

4.2 Features of energy demand and climate protection in Germany

Today's world-wide energy demand is swelling. Current forecasts expect an annual energy growth rate of 3.5% for developing and emerging nations. By 2050, developing countries (with up to 80% of the world population) could be responsible for up to 50% of energy consumption. Is it possible for Germany and other industrialised nations to shift away from fossil fuel dependency and to set new patterns of economic growth with decreasing material consumption and cleaner, renewable energies? This is one of the central questions the evaluation team wanted to address when reviewing, from a Southern perspective, namely the transformation of energy use and production in Germany in the past 10 years.

In response to the challenges imposed by global warming and the need to reduce the environmental and social impacts of energy generation and consumption, Germany has initiated a long process to develop and establish a socially acceptable and economically viable legal and regulatory framework. In the past ten years, new policies, instruments, indicators and incentives intend to move towards more sustainable energy production and consumption patterns. Just how far and how much is this process delivering in terms of sustainability?

Tackling its global responsibility, Germany has undertaken measures to reduce its emissions of global warming gases while at the same time improving the energy efficiency of energy production and industrial output. Through different policy instruments and technological innovations, its 1990 CO2 emissions level of 986.8 million tons has decreased to 831 million tons in 2000, a 15,8% decrease for the ten year period (Federal Environmental Ministry, www.bmu.de). This is the second best achievement after Luxembourg, which has attained a 48.5% reduction in its CO2 emissions. Great Britain and Sweden, with their 7.3% and 3.8% reductions complete the list of European countries whose energy emissions have gone down in the past 10 year period. All other OECD member countries have increased their CO2 emissions during this period, particularly in the case of countries whose national incomes and industrial activities were low or below the European average in the early 90's.

Germany, along with Great Britain, France and Italy, account for more than 77% of total European emissions, while Germany alone is responsible for over 26% of those emissions (3.6% of global emissions with less than 1.2% of the world population). This is a differentiated responsibility which it has undertaken through major and often controversial measures.

The OECD countries, presently responsible for over 50% of the world emissions are expected to have an average annual increase in primary energy demand of 1%. This means no less than 110 million tons of CO per year or more, depending on economic growth rates. The growth rate of CO2 emissions in US and Japan is particularly con-

cerning, both of which show 16.7% and 12.3 % increases between 1990 and 2000 with a joint impact of 6,827 million tons of CO2 per year. The latter pattern ignores the global and intergenerational responsibility. Future generations faced with the impact of global climate change will hardly be proud of their record.

The above figures and the growing accumulation of global warming gases do not signal a shift towards the stabilisation of factors promoting climate change - quite the opposite. Greater vulnerability to the climate will hit the poor harder, and increase the overall vulnerability of humans and other living species. Thus, a responsible climate protection programme requires much more drastic measures and efforts to reduce CO2 and GHG emissions. Is Germany prepared to address its global responsibility while at the same time maintaining the quality of life of its people? Can Germany set the path towards a more sustainable future and play a leading role as a model for other nations? Climate protection is a true indicator of a country's willingness to pursue vigorous and holistic sustainability policies. Climate change is long-term and involves complex interactions between climatic, environmental, economic, political, institutional, social and technological processes and responses.

4.3 Driving factors for energy re-structuring in Germany

Traditionally, major concerns for energy policy were secure supply and low cost availability. However, in the late 1970s and in the 1980s the driving forces on energy policies were broad social demands to reduce the environmental impacts of energy generation, mainly pollution and emissions from power stations and the risks associated with atomic energy. Both, safety and air quality, along with secure supply, became central issues and demands for regulation and government control over the public and private energy production plants and industries. In response to political demands by environmental organisations and political movements such as the anti-nuclear movement, municipal, state and federal governments undertook a broad range of measures to reduce the environmental impacts of energy production. On many occasions, jobs and economic growth seemed to be at odds with demands for a clean environment. In such cases, often civil unrest demanded political action.

On the other hand, reducing energy consumption to an industrialised society is not an easy or popular task. The downward trends in primary energy consumption and emissions reduction since 1987 are closely related to the so called "wall-fall effect" after the reunification of Germany and the re-structuring of energy as well as industrial production in unified Germany. Almost 46% of the primary energy reduction between 1987 and 1994 was achieved in the former East German states, while at the same time, West Germany's primary energy consumption grew by 5% over the same period ("Sustainable Development in Germany", FEA, 1998). In this context, decoupling the growth of GDP with energy consumption has been portrayed as an outstanding achievement leading in the direction of sustainable energy use, but the former East German restructuring can not be underplayed.

Climate protection, reduction of environmental impacts, energy efficiency, decreasing fossil energy dependency and technological innovations have been at the centre of energy policy in the 1980s and 1990s ("Electricity Restructuring and the Environment. A

US-German Dialogue", HBF, 2000). Financial and market instruments were also used to carry out energy restructuring. The energy crisis of the 1970s and Middle Eastern political instability in the past decade has made western industrial society aware of the risks of oil dependency. Reducing oil dependency in Germany has also been a matter of national security. But as long as nuclear energy could reduce oil dependency, there was little need to set efficiency goals and develop renewable energies. Abundant coal and lignite resources complemented the "energy security" equation. The antinuclear mobilisations and the Chernobyl disaster drastically changed the energy scenario for the late 1980s and 1990s.

National energy resources, like coal and lignite have a long record of environmental contamination but they provided job opportunities and cultural roots to many communities, a challenge hard to tackle. Decreasing oil prices added further pressure on traditional coal-energy supply, demanding changes in the energy industry. Along with the demand for cleaner production, the coal industry was confronted with a demand for energy efficiency, while the high rate of subsidies became yet another great challenge. Among the major policy instruments established by the German Federal Government, it is important to highlight the New Energy Law passed in 1998 and the Renewable Energy Sources Law of 1999, with its broad implications for the energy sector.

The New Energy Law (1998) and the Renewable Energy Law (1999) were both timely responses to the challenges of regional electrical integration in Europe, promoting further commitments to emissions reductions and the search for cost reductions to maintain competitive prices for industries and households. Both laws seemed to have played an important role in consolidating the trend leading to a long-sought detachment of energy consumption from economic growth.

Thus, internalising environmental and social costs, technological innovations, better environmental performance and safety have been the leading criteria for energy policy. While ensuring cost effective measures to increase the efficiency in resource use, public policy mainly focused on the supply side management, promoting progressive deregulation of the energy sector in response to regional (European) as well as global trends of the energy markets.

In Europe, Germany has taken a leading role in promoting renewable energies as substitutes to both nuclear energies and fossil fuels. The law to promote renewable energies and the ecological tax are a major innovation in the EU.

As a result of a decade of market liberalisations and recent energy policies, less pollution, more efficiency and new technological innovations have created the basis for the emergence and expansion of a renewable energy supply. This has been central in supporting Germany's commitment to curb climate change and reduce greenhouse gas emissions.

Public and private investments along with solid government regulations and policies have guaranteed Germany's leading role. The restructuring of the energy sector has shown that is feasible to maintain competitiveness, generate new jobs, reduce the global impact of energy consumption and stimulate substantial technological innovations and business opportunities. The results clearly show the weakness of the critique of those in the political arena opposing the changes in the energy sector.

4.4 A decade of reduction in energy emissions

Germany has managed to reduce its total CO2 emissions from 987 million tons in 1990 to 831 million tons in 2000, achieving a 15.8% decrease. However big a cut this may seem, Germany's current total emissions are almost similar to those of the whole of Latin America, with a population close to 400 million inhabitants (currently 866 million tonnes of CO2 emissions)

As much as the reduction achieved so far is impressive, the continuing high level of energy and material consumption and use of environmental space demands further reduction commitments. There is a need for innovative measures to accomplish the ultimate target of a 25% reduction by 2005.

The share of non-fossil fuels in total primary energy consumption rose from 11.9% in 1990 to 14.7% in 2000, mainly due to the rise of outputs from the renewable energy sources and greater efficiency on energy use. A key indicator in the reduction of CO2 emissions was a significant decrease of the CO2-intensity of the economy (measured as the ratio of total CO2 emissions to real GDP), which decreased by about 28% between 1990 and 2000.

The latest official sustainability study published by the Federal Office for Environment Protection (UBA), which compiled the second future study "Sustainable Development in Germany" states that as result of, "...substantially increased efficiency and the detachment of economic growth from energy consumption... between 1990 and 2000, the gross domestic product grew by 11%, whilst energy consumption decreased by 5%, showing a clear detachment of energy from GDP" (Press release by UBA and BMU, 7 February 2002). However, detaching energy consumption from economic output needs to be more closely scrutinised with reference to specific energy intensity sectors such as industry and transport, and over several consecutive years. Air as well as freight transport, for example, shows little sign of moving towards detaching energy from economic growth.

Today it is evident that Germany has lowered emissions of the six greenhouse gases specified in the Kyoto protocol by over 18% – or more than 85% of the reduction obligation for a 21 % reduction between 2008 and 2012. Germany is getting closer to achieving its Kyoto Protocol targets.

The performance of the energy sector still has a gap to fulfil. A gap of 5-7% in CO2 emissions comprised mostly by a need to reduce 18-25 million tons of CO2 emissions in households, a gap of 20-25 million tons in industry and energy transformation and, finally a gap of 15-20 million tons from traffic.

According to a recent study by the German Institute for Economic Research (DIW), the country has been lowering the CO2 emissions-output in private households since end of the 90s. The decrease in 2000 compared to 1990 was approximately 11.5%.

In addition to its targets of reducing greenhouse gas emissions, Germany has committed itself to special other targets, including doubling the share of renewable energy by 2010 and increasing the share of co-generation in order to avoid the production of 23 million tons of CO2 by 2010. Here again, several ordinances and financial instruments have been set in place to ensure the creation of market conditions to promote and maintain developments in these areas.

Germany's total CO2 emissions

Years	1990	1992	1994	1996	1998	1999	2000	2005
(Million tons per year)	1014	932	904	926	839	832	831	701

Source: Federal Ministry of Environment Website

4.5 Germany's new climate change program

Very early on and by federal government resolution, the Inter-Ministerial Working Party (IMA) on "CO2 reduction" was formed in 1990. Its task was to formulate proposals for a 25% reduction in CO2 emissions by 2005, relative to 1987 levels. In addition, possibilities for a reduction of greenhouse gases such as CH4, N2O and NO2 were also to be considered. A Lower House (Bundestag) investigative commission on preventive measures for the protection of the Earth's atmosphere was summoned by the Bundestag President.

The government has also developed a comprehensive climate protection strategy that developed a complementary package of measures approved since 1990. More than 130 individual measures have been introduced, including the energy supply, transportation, buildings, new technologies, agriculture, forestry and renewable resources.

Since 1990, many German cities have developed and implemented climate protection programmes and more than 100 such programmes currently exist. Some active cities are Düsseldorf, Hannover, Frankfurt am Main, Freiburg, Münster and Saarbrücken. One example is the climate alliance or Alianza Del Clima with its headquarters in Frankfurt, which has the biggest urban network in the field of climate protection.

On October 18th, 2000 Germany unveiled its new climate protection program with goals that had been broadly discussed for several years before they were officially adopted and integrated into the National Climate Protection Programme:

- Reduction of CO2 emissions by 25% of 1990 levels by 2005

Reduction of the six greenhouse gases of the Kyoto Protocol by 21% between 2008 and 2012 within the context of EU burden-sharing.

In addition, the federal government has formulated goals related to technology and energy companies:

- A doubling in the proportion of renewable energy resources by 2010 compared to current levels.

Since these measures are not enough to reach national goals, an additional CO2 reduction program has been developed. This program includes the following:

- Expansion of co-generation

In April 2002, the Act on the Generation of Electricity from Co-generation was passed. It is expected that more than 10 million tons of CO2 emissions could be saved by the year 2005 as the plans to expand and develop co-generation progress.

- Approval of an Energy Saving Act

This act will increase the requirements and standards for thermal insulation in buildings, boilers, and warm water heaters by 30% above current standards for new buildings. Household efficiency in energy consumption and energy savings are both key targets of an ambitious programme funded by the government with more than DM 2 billion.

- Subsidy program to reduce CO2 in existing buildings.

Existing buildings offer substantial potential for reducing CO2 emissions. For the next three years, the federal government has earmarked DM 2 billion for a "Climate Protection Program for Existing Buildings". The program will draw in approximately DM 10 billion by 2005 and will reduce carbon dioxide by 5 to 7 million tons. According to the Environmental Officer of the German Trade Unions (DGB), Werner Schneider, Germany and the UK, France have among the lowest building energy efficiency standards. However, as of February this year, new standards (Boilers Ordinance) are in place on energy savings for the building sector and particularly heating. For example, the water heaters or boiler standards will require the replacement of all boilers built before 1973, which means changing between 10-20% of boilers in the coming 10 years, or about 3-4 million boilers. This will create more industrial jobs and more installation and maintenance labour along with energy savings and energy efficiency.

Jobs creation linked to an energy-saving tax is estimated at almost 60,000 current jobs and about 90,000 new jobs by 2005 according to a study carried out by Osnabrück University.

4.6 Declaration by the German industry on climate protection

Between 1990 and 1998, German industry (manufacturing) and the electricity industry reduced their CO2 emissions by 31% and 16%, respectively. Recently, the German industry and the government reached an agreement in which the industry pledged to reduce its CO2 emissions to 28% of 1990 levels by the year 2005. Furthermore, this agreement also commits industry to reducing all six greenhouse gases to 35% of 1990 levels by 2005. Through this agreement, 10 million tons of CO2 and an additional 10 million tons of CO2 equivalents will be reduced as compared to previous agreements. However, some large and influential industries, like the giant car manufacturers have not committed themselves to this agreement.

German Industry has made significant progress in reducing the energy consumption and CO2 emissions from industrial production and manufacturing, and the efficiency gains have led to absolute reductions, not only relative to GDP.

- The consumption of raw materials has decreased by 3.2% since 1991
- Energy consumption was down by 1.8% over the same period
- The discharge of CO2 was reduced by 15.8% between 1990 and 2000
- Emissions of acidification gases (SO2, NOx) decreased by 56% between 1991 and 1998.

- The 31% reduction in CO2 made by the manufacturing sector from 1990 to 1999 is impressive.

Large holdings like RWE have integrated technological and environmental concerns linked to clean energy productions as part of their policies, but they are sceptical about the time it would take to increase a fair and visible share of renewable energies in Germany. They feel that Government projections aiming at a 50% renewable energy production by 2050 seems overly optimistic.

The main social concerns for this sector are related to maintaining employment opportunities in areas particularly sensitive, like coal and lignite production areas. At the same time they say that the social and environmental impacts of energy production, for example in lignite areas, have, from their perspective, been taken care of. However, for the social agents involved, the picture is different. They have real concerns over the continued relocation of local communities as in the case of the Garzweiler area, and its impact on migration from the area. Complete neighbourhoods are disappearing and not even the remains of ancient Roman settlements have been spared from open pit mining. The dispersion of communities along with the deterioration in the quality of the environment (water and soil quality) have been underplayed by the corporate and governmental sector according to local sources and the evaluation team's on-site assessment. Clearly, social concerns are being placed second to energy interest in the area.

Overall, the review of the sector and the opportunity to have a dialogue with leading agents in the energy sectors has revealed the complexities of technological innovations and energy efficiency. However, the high level of energy consumption of German society requires still further efforts to reduce overall energy consumption while reducing as well the social, environmental and economic impacts of energy production.

4.7 Economic tools for restructuring the energy sector

A most significant event in terms of energy re-structuring was the new energy law passed in 1998. This law promoted a complete liberalisation of markets according to EU directives initiated some years earlier. Aside from legal guarantees for third party access to the energy markets, the electricity market has promoted competition among energy providers. This in turn has lead to price reductions of up to 30 to 50% for large industrial consumers and up to 20% for commercial and household consumers between 1998 and 2000 ("Electricity Restructuring and the Environment. A US-German dialogue", HFB-Washington, 2000).

Several market-based economic measures were also introduced for achieving Germany's ambitious climate programme. More than 130 measures have been introduced, including the following areas: the energy supply, transportation, buildings, new technologies, agriculture, forestry and renewable resources.

There has been a profound commitment to developing renewable energy sources, including a target for doubling the proportion of renewable energy sources by 2010 compared with current levels. According to government targets, by 2050, half of Germany's entire energy demand should be met by sun, hydro, wind, biomass, and geothermic en-

ergy production. Germany's landmark label on sustainability and global responsibility is based on its climate protection and energy policy.

4.8 The ecological tax reform

Celebrated by some, attacked by others, a breakthrough made by German economy in pursuing sustainability is the enactment of the ecological tax reform. Both controversial and a political risk, this measure was part of the election campaign promises of the Social Democrat and Green coalition.

The eco-tax introduced by the present government is an exceptional and unique fiscal instrument to internalise the environmental costs of energy that proved to be a highly appreciated economic breakthrough. Although the eco-tax has generated a diverse set of reactions, it has been greatly welcomed by environmentalists in Germany. The social context of this eco-tax is, however, questionable. The disproportionate taxation system, giving preferential treatment to industries over households, raises concerns over the need to reform this taxation system further, according to some of the institutions interviewed by the evaluation team. For some of them, the eco-tax needs to differentiate between industries based on their consumption rates.

This reform is designed to encourage savings of energy and promote the use of renewable energy - both key aspects of climate protection - and create jobs. The reform imposes gradual increases in the prices of energy, particularly oil-based energy. The tax provides Germany's economy with an incentive to develop and market conservation technologies, and to use energy efficiently. The enacting of the eco-tax was primarily mandated by the rise in CO2 emissions.

Dirk Wolters, senior research fellow at Energy Division of the Wuppertal Institute, says taxes are also seen as one of the most cost effective means to achieve environmental targets and that they are also a means of integrating environmental concerns into all other policy areas, including fiscal policy.

The Ecological Tax Reform adopted in April 1999 stated that:

- There will be an annual increase in electricity tax by 2 pfennigs in 1999, and 0.5 pfennigs per kilowatt/hour on January of each year from 2000 to 2003;
- Also an increase of mineral oil tax on motor fuel by 6 pfennigs per litre on January 1st each year until 2003; and
- Additional taxation on heavy heating oil of 0,5 pfennigs per kilogram.

The revenues arising from the ecological tax reform are being fully returned to Germany's taxpayers. Most of these funds are being used to reduce the 19% contribution of employers and employees to pension funds. This helps to reduce the costs of job creation and helps to deal with unemployment. The revenues are also being used to foster the development and use of renewable energies. This support currently amounts to DM 200 million a year for renewable energies generating electricity.

In spite of the widespread public discussion, admittedly still 22% of people in Germany have heard nothing of the term eco-tax reform. With respect to the acceptance of such a tax reform, the data shows an ambivalence, and to some extent, controversial picture. A

small majority of the people accepted the logic of the eco-tax reform, namely that a higher energy tax encourages rational, conservational energy consumption. However, people find the fairness principle of the implemented eco-tax reform to be poorly implemented, since two thirds claim the reform is socially unjust. Even with respect to the environmental effects of the eco-tax reform, a more negative than positive picture is established: 58% believe that this tax reform produces no contributions to solving environmental problems.

In January of this year, the eco-tax already entered its 4th phase since 1999. This means that the average German household will have to pay an average 6% increase for the electricity bill as of January this year. The share of taxes and fees will account for 41% of the bill (17% is due to the eco-tax), offsetting the cost of power which dropped by almost a third since 1998/99 as a result of market competition and liberalisation. However, the energy-tax is not very popular with politicians rallying to the coming elections in September. Even the Chancellor has said he will not approve further increases in the tax as previously planned.

New debates and proposals are being developed to restructure the heating sector, an important player in household energy consumption. The introduction of renewable energies in the heating sector is based on credits and subsidies for the installation of solar thermal, biomass and geothermal heating systems.

There are other incentives to reduce energy costs in several sectors. For instance, the government subsidies on housing insulation will have a large impact on construction and housing. Taxes and pricing mechanisms have also helped in making popular diverse forms of green energy production and consumption. Making various forms of renewable energy more popular and combining this with financial incentive is a way of encouraging more and more people to opt for such forms of energy.

4.9 Some effects of the ecological tax reform

Since the enactment of the eco-tax, some specific trends on petrol and fuel consumption have been observed. Diesel consumption decreased by 2% in the first half of 2001 compared to the first half of 1999. Fuel sales declined by a total of 5% in the first half of 2001 compared to the first half of 1999. Car-pool agencies reported a 25% growth in the first half of 2000. Yet, these figures could be affected by international oil prices and other economic and political factors influencing the markets.

- Despite the previous upward trend, fuel consumption in 2000 fell by over 1.3% compared to 1999. Provisional figures for 2001 indicate that this decrease will continue, with an even greater decline of 1.8% compared to 2000.
- The development of the one-litre car has progressed and the first prototype was recently presented at the VW annual meeting during April this year.
- Environmentally sound gas-powered cars, three/five-litre consuming cars (80/50 miles per gallon) and renewable energies are booming.
- The number of rail passengers increased by 2% in 2000.

- Transportation performance in rail transport increased in 2000 by 7.9%, contrary to declining trends.
- A study by the German Economics Research Institute (DIW) predicts a 2-3% reduction in CO2 as a result of the ecological tax reform by 2005.

Also, more Germans are willing to undertake car-pool schemes (25% growth on the demand) while rail passengers have seen an increase of 2% and of 7.9% on freight demand, away from previously declining trends.

Other effects linked to eco-tax exemption have been the upsurge of research initiatives linked to energy saving in the construction sector, more efficient water heating systems and an increased number of small-sized power plants which are expected to produce up to 30% of the electricity demand in Germany by 2015 (SCADA programme in: www.eus.de).

Through energy taxes, energy savings are being promoted instead of energy consumption being subsidised. The consequential costs of energy consumption are still much too high. Transport in particular produces greenhouse gases, air pollution, damage to the ozone layer, uncontrolled land development and traffic victims.

Insurance companies are asking for an even higher eco-tax in the sense of precautionary climate protection, since the consequences of climate change (e.g. flood and storm damage) are becoming increasingly expensive. The results could be that either the premiums will have to be raised, or that it will no longer be possible to get insurance, so that everybody will have to pay for climate damages themselves.

Tax concessions for local public transport, rail traffic, gas-powered vehicles and low-sulphur and sulphur-free fuels provide an incentive to switch to these environmentally sound alternatives. Particularly efficient power plants are exempt not only from the eco-tax, but also from the existing mineral oil tax. All ecologically motivated tax concessions can be considered as a use of revenues since the Finance Minister waives revenues for the benefit of the environment. In addition, a share of revenues (around Euro 500 million) is used directly for market incentive programme for renewable energies.

The distributional effect of the eco-tax is yet unclear and limited, since the impact on energy price increases in low income households and its relation to new employment opportunities are not clearly visible. Households pay more taxes and share a greater proportion of the burden than the energy industry.

4.10 Promoting renewable energies

Renewable energy sources accounted for about 4% of electricity power in Germany in the year 2000, showing an increase from 1.6% in 1990. However, this figure falls short of other EU countries' share of renewable energy (i.e. Austria has 72% and Sweden 49% consumption of renewable energy).

In Germany, renewables can be broken down to hydropower (60%), wind energy (27%), wastes (8%), biomass (5%) and photovoltaics (less than 1%). By far the most significant growth is taking place on wind energy sector.

Besides hydropower, solar energy and geothermal energy and the use of biomass is particularly important in this respect. In Germany, bio-energy is ascribed a similar potential as wind energy, although it will take about ten years to realise this potential which is closely linked to changes in agricultural policy. On the basis of the Renewable Energy Act, the Federal Government has initiated an ordinance regulating the use of biomass for electricity generation.

4.10.3 The Renewable Energy Act

In order to create a favourable economic environment, the government has enacted a progressive renewable energy act in 2001. The Renewable Energy Act guarantees that operators of small-size plants or special purpose facilities receive adequate compensation for their regenerative power which is produced and fed into the public grids. Energy companies have to pay a preferential fee for solar and wind energy fed into the grid. This law is the main reason for the recent boom in wind power and other renewable energies.

The share of renewable energy in the German electricity market is 8%, while nuclear energy provides around 30%. This development in renewable energy is extremely motivating for the team and for any one evaluating energy policies.

VDEW gave the following breakdown for estimated eco-power output totals:

PRODUCTION (in billion kWh)	**2001**	**2000**
Hydro-power	19.8	21.7
Wind power	11.5	9.5
Biomass power	4.9	4.3
Solar power	0.05	0.03
TOTAL	36.25	35.53

4.10.2 The "100,000 Roofs" programme

This act has joined with a program promoting the marketing of renewable energies and the "100,000 roofs" scheme in creating the vigorous development of renewable energy systems now spreading across Germany.

Also, in order to promote renewable energies, a scheme was developed to provide funding and subsidies to establish an energy supply market based on household energy generation. The so-called "100,000 solar roofs" scheme has stimulated both solar energy developments in technology and photovoltaic (PV) energy generation.

The "100,000 roofs" programme exhausted its budget in the first year of its inception, becoming one of the most successful programmes to promote renewables. With a total

budget of DM 1 billion, the "100,000 roofs" scheme subsidises up to 40% of the costs involved in putting a photovoltaic facility on top of buildings.

The integration of solar energy on public buildings along with other energy generating initiatives implemented by the municipality of Herne – the Academie Mt. Cenis – provides a model for local integrated resource management. However, the high input capital for PV will only decrease when the technology is implemented on a larger scale in Germany, thus decreasing production costs. In the long run, this might provide a perspective for an economically viable use of this technology in developing countries.

4.10.3 Wind power

Wind energy has taken the lead among the renewable energies. This is due to the Renewable Energy Act. With 7,800 Megawatts of installed capacity, it is already contributing over 3% of electricity generation in Germany and has created around 30,000 jobs. The leaders are Schleswig-Holstein, with around 21%, and Mecklenburg-Lower Pomerania with 14%, followed by Saxony-Anhalt (8%), Lower Saxony (7%) and Brandenburg (6%).

About 50% of the EU's total wind-generated electricity is produced in Germany, that is one third of the world total. Going by the figures alone, the electricity generated by wind is already enough to replace one nuclear power plant in Germany. With continued high-level development of wind energy, this would be the equivalent of three nuclear power plants by 2010. This rise was produced by 673 new windmills going on line during the first six months of 2001. Their capacity of 821 MW was up 50% above the figure recorded in the first half of 2001, itself a period of record rises. It is obvious that the new approach in energy policy is feasible and is being implemented

According to authoritative forecasts, the wind-power boom will continue in the years to come. By 2010, the sector is predicted to have an installed capacity of some 15,000 MW – and to be producing 6% of Germany’s electricity (compared to the 2000 figure of 2.5%).

The growth of the sector will help Germany realise two key environmental goals. The first is for regenerative sources to account for 12.5% of the country’s total energy consumption by 2010.

The second is that the operation of windmills will also result in an 18 million ton reduction in Germany’s total annual emissions of carbon dioxide. That, in turn, is a significant part of the reduction needed by the German government to reach one of its key climate protection objectives. Windmills have the potential to account for a 9 million ton reduction - or 1% of total - in the country’s emissions of CO2 in 2001, with all of the attendant benefits to the country’s climate. The mills are having an equally positive impact on the country’s labour market.

The wind-power boom was engineered by the German government. It has been boosted by a large-size influx of private sector investment. This support has joined with wind-power’s glowing economic and ecological prospects in convincing more than 100,000 private investors to invest DM 4.5 billion in these facilities, representing about 30% of the total capital flowing to the wind-power sector.

Impressive as these figures are, all of them pale in comparison to what is planned for the wind-power sector. By 2030, Germany's wind-power sector could have a total installed capacity of up to 42,000 MW, if the targets set by Germany's Environment Ministry are met.

The Federal Ministry of the Environment foresees 40% of the total wind energy to come from land-based facilities, with the rest – up to 25,000 MW of installed capacity – stemming from the "mega-wind parks" to be set up in Germany's coastal waters. Nevertheless, the environmental impact of this scenario is only beginning to be considered.

Should this scenario come true, wind-power would then account for up to 25% of Germany's total energy consumption , assuming that far-ranging conservation schemes have also been enacted and implemented in the interim. It is expected that the building and maintenance of these new facilities would result in the creation of further jobs. A number of key economic and technical factors make the scenario realistic. Prime among them: The abundance of unobstructed space to be found in the sea.

4.11 Electricity demand on the increase

Despite all efforts, demand for electricity continues to rise and the liberalisation of the market continues to provide cheap energy. Whereas energy efficiency has improved, consumption has not decreased, and a large proportion is due to the lack of conservation in households, poor insulation and increased household appliances. Primary energy requirements are still being met to a large extent by oil, coal and lignite, and there is no clear plan for replacing the shortfall if nuclear energy is phased out. Clearly the system will continue to rely on coal energy and the integrating EU energy suppliers.

The measures taken point to Germany not meeting its target of a 25% reduction of CO2 emissions by 2005. Privatisation of the energy sector coupled with the effect of traditional socio-economic forces in the mining industry have resulted in maintaining the environmentally damaging methods of lignite extraction. The energy sector is still riddled with socio-economic and environmental conflicts. Even though the energy sector has made important progress, there is still only a partial internalisation of costs in the energy sector and the average German does not realise the need to reduce his or her ecological energy footprint. There is a poor attempt at communicating the reason to conserve or reduce energy of the average person and there is no comprehensive approach to linking local initiatives to general policies and participation.

There is a big gap between policy initiatives at the regional and national level and the way these are implemented at local and household level. There is still a broad lack of effort to involve people in energy schemes at a community level. The exceptions are new school programmes involved with renewable energy projects. But by and large, there is little involvement at the grassroots level in planning and decision making on a local, regional or national level.

4.12 The Co-generation Act of April 2002

The Act of the Generation of Electricity from Co-generation, also known as Combined Heat Production Act (CHP) was passed recently in April 2002.

The act aims not only to keep the co-generation operators in business on a long-term basis at a time when cheap energy prices do not create adequate market incentives, but also to promote the further development of co-generation. The importance of this act was emphasised by expert assessments commissioned by the German government. The assessments found that co-generation has a major role to play in the fight to cut outputs of carbon dioxide. Acting on this, Germany's government has presented an outline of a plan to develop co-generation and reduce its CO2 output.

The target for co-generation is to achieve a reduction of 10 million tons in such emissions by 2005 - and 23 million tons by 2010. This scheme has a financial support of 4.4 billion Euros from the German government. Co-generation can save a high percentage of the 17 million tons of carbon that Germany has to cut annually, thus effectively contributing to Germany's climate protection programme.

4.13 Mining and energy: A pending challenge

Germany's primary energy supply is essentially based on oil (40%), coal and lignite (27%), gas (22%) and nuclear power (11%). Germany is the largest hard coal producer and consumer in the EU, and the largest producer and consumer of lignite in the world. Domestic hard coal is heavily subsidised in order to bring the price down to international coal price. Subsidies on domestic hard coal production amounts to DM 12 billion, or DM 100,000 per worker per year. A 1997 law progressively lowers the ceiling on hard coal subsidisation for the period of 1998-2005. In the New Länder, where lignite used to be the major source of energy, lignite power plants have been subsidised. However, between 1990 and 1997, coal and lignite consumption dropped by 33%, while the gas increased by 31%. Although the CO2 intensity of fossil primary energy decreased by 8% from 1999 to 2000 due to the gradual substitution of lignite with mainly oil and gas, it is a serious concern that the links between mining and energy have such a high priority over all other social and cultural dimensions. It is a well known principle that sustainability issues could not be seriously tackled without confronting the priorities assigned to mining by present laws.

The legal basis for mining was established during the period of national socialism. No serious reform of the mining law has taken place to integrate other sectors and citizens' interest. Mining companies seem to overrule any other interest based on the legal framework protecting their interests. However, this very legal framework seems to erode the basis for the participation of citizens and democratic processes. People in the Rhineland have questioned open cast mining, but they continue to be displaced by extensive mining operations.

Limiting lignite mining has become a difficult issue as Germany is moving forward in its attempts to phase out nuclear energy. Lignite already provides 27% of generated power, behind nuclear power. Construction plans for new lignite plants will increase the share of lignite power production. Correspondingly, data also showed that 175.7 million

tons of lignite were mined in Germany during 2001, nearly 5% more than in the previous year.

The expansion and modernisation of eastern German lignite companies, which can tap vast local lignite resources, is the main thrust behind the expansion of lignite mining. Politicians are committed to supporting the sector in order to safeguard jobs and the national energy supply as nuclear power is phased out by the early 2020s.

There seems to be a contradiction in discourse and action, for the goals to maintain a 30% brown coal power share in Germany clashes with national climate protection targets, due to the heavy CO2 emissions arising from lignite. Of the 834 million tons of CO2 emissions by German industry recorded in 2001, 174 million tons were caused by lignite production.

There are severe social implications in lignite production. Open casts, especially around Garzweiler, have resulted in the displacement of thousands of people, along with their local economies, culture, and memory. The environmental implications are very serious, especially with the pumping and polluting of groundwater aquifers in the areas of lignite mining. Health issues and pollution from dust, particulate matter and air borne chemicals are another severe implication of lignite mining threatening local people.

4.14 Phasing out nuclear energy

Germany has made a clear commitment towards gradually phasing out nuclear power generation. This objective is supported by massive public pressure to end the operation of such plants. The German nuclear phase-out plan is both affirmative and innovative, giving flexibility and financial security to current nuclear plants before decommissioning. After the Bundestag, the Bundesrat has also recently concluded its consultations on the draft amendment of the Atomic Energy Act, thus paving the way for the new law to come into force.

This amendment gives legal security to the agreement the German government and the utility companies signed last year on phasing out nuclear energy. There is a ban on building new commercial nuclear power plants and set limits for the operating life of existing plants up to 32 years from initial operations. Also, for the first time, regular safety checks have been made obligatory by law.

The media has reported that the environmental ministry emphasised that the risks attached to nuclear energy are only acceptable - if at all - for a limited period of time. He added that this was the reason why the unlimited operating life of nuclear power plants had to be limited by means of a new act on nuclear energy.

For every nuclear power plant, a maximum quantity for residual electricity generation is stipulated by the new law. However, the quantities allocated to older nuclear power plants can be transferred to newer plants if safety measures require them to close before the end of the 32-year life span.

Temporary waste disposal issues have also been dealt with but no final repository for nuclear waste has been built yet. Operators are responsible for intermediate waste repositories nearby their plant until final sites area built. The ban on transport of spent wastes as of July 2005 will decrease transport of hazardous nuclear substances. Also,

companies operating nuclear facilities will have to bear the full costs of decommissioning

The Federal Environment Ministry states that there will be no return to nuclear power policy. Germany should demonstrate that a large industrial nation can prosper without electricity generated from nuclear energy, especially if this nation aims at expanding its pioneering role in climate protection.

The popular discomfort with nuclear energy, and the huge steps German energy technology has taken recently suggest that, even with a potential modification of the political environment in the future, nuclear energy will never be an attractive option for energy companies. However, the privatisation of the energy market will open the chance for foreign energy companies with existing nuclear power plants to acquire shares in German firms and distribute electricity generated from nuclear power.

There is, however, criticism from an anti-nuclear perspective and amongst citizens groups that the phase-out is mainly for the benefit of the industry: They now have the guaranty to run their atomic power plants until the very technical end. And dangerous waste is being produced without any solution for it. It is a pollutant heritage for future generations.

4.15 Profitability of climate protection

The evidence found by the team suggest that climate protection and employment policy goals are not conflicting elements, but have a mutually beneficial impact. Such findings impressively refute repeated allegations that climate protection and energy reform have a harmful effect on the German economy and result in more unemployment. A study by Prognos, a consultancy firm, calculated that implementing the climate protection programme will give rise to about 155,000 new jobs by the year 2005, and by 2020 they expect to see a net increase of 194,000 fully employed people. Only permanent jobs are included in these figures. The threat of job losses in the coal sector and in the nuclear energy sector seem to be compensated quite well by new energy developments.

The positive effects primarily benefit industries such as mechanical engineering, the floundering building industry, public mass transit systems, the German railways and the services sector. They do not include any stimulation of exports of new technologies or any increase in combined heat and power generation. This, scientists stress, means that the calculated effects represent the lower end of the scale. However, the creation of new jobs in the renewable energy and climate protection programme will continue to demand more education, adequate training and new skills. Such investments in new technology and know-how is also building substantial human capital for future development.

There is an overall benefit to German society as whole, as the country shifts towards cleaner and safer energy sources. The global effects of emissions reductions will hardly modify the overall balance of global warming gases, but Germany is showing it can fulfil its international obligations and provide a leading role.

Contrary to predictions before the present German government took office, Germany has already achieved more than 18 points of its international climate protection target

(21% reduction in greenhouse gas emissions by 2012). The success of an ambitious climate protection policy has also brought a marked increase in export opportunities for the German industry.

An aspect frequently overlooked in connection with climate policy measures is the undeniable fact that investments in energy savings and energy supply restructuring yield returns. Every unburned ton of lignite and coal, every unburned barrel of oil and every unburned cubic metre of gas saves energy costs.

That is why relieving the burden on the environment, protecting the climate and saving energy costs are the central concerns of climate protection policy. At the same time it is important to appreciate that a policy of this kind plays a major role in increasing the reliability of energy supplies - now once again a central concern of German energy policy.

As business in the energy sector expands with new opportunities and market liberalisation, the trend towards new mergers increases the concentration of the energy production and supply under a small number of large corporations. Good business for the industry does not necessarily mean fairer distribution of the wealth generated, nor more democratic and transparent institutional frameworks. Complex holdings of enterprises and the integration of knowledge and research capacity can enhance extremely high political leverage on the hands of few energy industries. In turn, this may drive organised civil society and local communities away from playing an active role in energy decisions. It could also make it harder for the state and federal governments to maintain the required proactive role on energy policies in the future. Democratic processes demand a balance of power that needs to be sustained not just through regulation but through public participation.

4.16 Potential for emission trading

The recent Statement by German Business on the Proposal for a Directive Establishing a Framework for Greenhouse Gas Emissions Trading within the European Community has signalled a willingness of German industries to engage in emissions trading, a much disputed and controversial mechanism to meet a country's emissions reduction levels. The industries have stressed that emissions trading at a national level, as provided for in the Kyoto Protocol, is capable of minimising the adjustment costs of meeting the protocol's commitments. The German business community therefore regards it as an essentially sensible extension of the political tools of climate protection.

However, the industries have also expressed some reservations on the EU proposal. They have indicated that the introduction of emissions trading at industrial level throughout Europe can only succeed if the industries affected are given sufficient time to prepare, to take into account the already achieved successes by the German industries, and the need for existing national regulations. They also call for the implementation of the flexible mechanisms contained in the Kyoto Protocol, mainly CDM. Other demands from German industries include the need to include in the exceeding countries, expand the agreement to cover all greenhouse gases and include other sectors.

Moreover, the development of an approach to emissions trading in the EU has strong implications on the potential future use of this mechanism in the South. For many organisations in the South, the Northern approach to emissions trading is seen a "cheap

way out" to meet international commitments under the Kyoto Protocol. The willingness to pay for carbon dioxide is lowered as reductions in the South cost less than US $10 a tonne, while reduction costs in Europe are close to or more than US$ 100 a ton. If this is a sign of how cheap a deal could be made, great caution is needed if the trend for clean energy production is to be consolidated in Germany and Europe. Such a process, if implemented, should be equipped with effective regulations and guidelines to ensure that it produces the maximum possible fairness and transparency .

The accumulation of global warming gases in the past century has built up an ecological debt of the North to the South. As industrial processes in the North accumulated gaseous emissions in the atmosphere for over a century, their effects on global warming are being felt all over the world. The costs associated with adaptation to climate change or mitigating its effects will be born mainly by the affected countries of the South, with a high percentage of population even without access to electricity, while the Northern countries continue to maintain a high rate of energy use. The impact of climate change will continue to hit the poor and most vulnerable sectors of society harder. Those affected will be people that can not afford to pay for energy today, nor pay for the technological transfer to a full cost recovery approach. In the run towards presenting the best opportunities for nature protection and development opportunities for the South at the coming Johannesburg Summit on the Environment and Development, Germany has to provide a clear message with respect to its energy commitments. Further reduction targets on emissions beyond the 2012 period have not been clearly put forward. Nor are there clear signs on the priorities and instruments to be used to promote renewable energies in the South.

Coming to terms with a pending ecological debt on climate accrued by Northern countries through a century old energy consumption patterns demands more intensive and proactive negotiations between the North and the South. All present and future reductions of emissions in the industrialised countries will not deal with their accumulated effect on the planet. The social, environmental and economic costs associated with global warming form part of the accumulated debt of the North. Until those costs and losses are clearly identified and compensated for, the ecological debt will continue to hit local and national communities. Sustainable development could only be achieved if industrialised countries reduce their energy and material consumption drastically and reduce and compensate for the accumulated impacts of their emissions on the planet's ecosystems.

4.17 Findings and conclusions on energy and climate protection

1. Germany has been one of the earliest European countries to undertake a serious and long process to restructure its energy sector. As a result, it can show an enormous reduction in environmentally harmful emissions such as sulphur dioxide, nitrous oxide and other emissions.
2. There are four main elements in the new German energy policy that are paving the way for ecological modernisation of the energy sector and reducing the environmental targets of energy generation. They are: a) The New Energy Law (1988) to liberalise the electricity market and allow the emergence of new energy producers,

including home-based electricity generation b) The phase out of nuclear energy to reduce the acceptable risks of energy production as a social goal c) The development of the Renewable Energy Law (1999) to promote renewable energies d) The ecological tax reform to promote improvements on energy efficiency and energy savings. This has led to a process of restructuring in the energy sector that has taken special relevance under the present administration. These four elements are strongly supported by the government, by civil society and the industry as well. There is an overall public acceptance of the idea that Germany must do its share in climate protection and to reduce its energy consumption.

3. The New Energy Law paved the way for energy restructuring as a key instrument in enhancing the competitiveness of German industry. The liberalisation of the energy markets reduced the energy costs to industry by as much as 50%. Further gains in efficiency have been attained with new industrial processes and technological know-how. The focus on energy efficiency is based on the economic competitiveness or cost reduction measures in production and operation costs. It shows positive overheads in all industrial sectors, on energy production as well as on household level.
4. Germany has made a clear national commitment to protect the climate and to reduce its own contribution to the global warming affecting planet earth. The target it set itself is a reduction of the CO2 emissions by 25% by 2005. Different policy and legal instruments have been developed to attain this objective focussing on different sectors. At the moment, this target is already well within reach and it seems that it will be fulfilled since almost 19% of that reduction target has already been achieved.
5. Despite measures taken, Germany has to face the need for further reductions on greenhouse gas emissions for the 2012-2020 period. So far, there are no clear commitments, although by 2050 almost 50% of energy is expected to be supplied by renewables.
6. The demand for electricity continues to rise and the liberalisation of the market continues to provide cheap energy, countering the effect of the energy-tax. Primary energy requirements are still being met to a large extent by oil, coal and lignite and there is not much hope of replacing the shortfall of nuclear energy by renewable energies. Decommissioning at home could be replaced by nuclear energy from neighbouring countries in the integrated EU energy market.
7. Privatisation of the energy sector coupled with the effect of traditional socio-economic forces in the mining industry have resulted in maintaining the environmentally damaging methods of lignite/coal extraction in some areas. The energy sector is still riddled with socio-economic and environmental conflicts, with only partial internalisation of costs in the energy sector.
8. The average German still does not realise the need to reduce the ecological footprint of energy consumption. By contrast to major national and state policy efforts, there is a poor attempt at communicating the reasons for conserving or reducing energy to the average person and there is no comprehensive approach to linking local initiatives to general policies and participation.
9. There is political and economic reluctance to engage in genuine and effective structural reform plans on lignite and coal production. Classical modes of energy production are directly linked to political and economic strongholds that have a profound in-

fluence on the political decision-making process. The goal for coal energy still remains 30% of total energy production.

10. The diversification of energy sources has been led by technological research and innovative schemes that have introduced new players in the energy markets of renewable energies. A key instrument to achieve this has been the preferential prices for renewable energies feeding into the grid. Both wind and solar energy are expanding rapidly as a result.

11. While some of the climate protection measures applied in Germany have proved efficient and popular at the micro-economic level (such as the "100,000 roofs" programme and the adoption of renewable technologies), other macro-economic measures such as the eco-tax implementation, are under great political pressure by sectors that feel their particular short term interests are affected by the taxation of fossil fuels. The future and sustainability of the energy tax is unclear even though it has proven a valuable instrument to reduce fossil fuel consumption and enhance technological innovations, while helping to provide new job opportunities for thousands of Germans.

12. The renewable energy act has paved the way for an impressive surge in renewable technologies. Wind mill power generated can already replace one nuclear plant, and its projected growth will have the potential of replacing up to three nuclear plants by 2010.

13. As a result of the Renewable Energy Law and the impact of eco-tax, by 2010, regenerative energies will provide up to 12,5% of total energy consumption , while at the same time, this sector will help to substantially reduce CO2 emissions and generate more jobs than all nuclear plants.

14. After two years of performance, even sectors which are critical of the eco-tax, recognise that this has contributed substantially to CO2 reduction, and predict a reduction of up to 2-3% by 2005. Fuel and diesel demand is beginning to slow down and show a downward trend.

15. Climate protection and energy efficiency has had a differential impact on some sectors' responses. While the manufacturing industries have clearly reduced their carbon output, the transport sector's has increased, and is subject to further increases on energy use and CO2 emissions in the future. The transport sector has failed, mainly due to the predominance of consumption patterns and motorization demands due to preferences that have overtaken the efficiency gains generated by technological achievements in car production. Increased aviation travel and freight transportation continues to be a major emissions contributor.

16. The nuclear energy phase-out has been a major recent achievement on energy restructuring. According to the official information received by the team, setting up a schedule for decommissioning nuclear plants along with new directives to reduce atomic waste transport has increased ecological safety in Germany.

17. There is a big gap between policy initiatives at a regional and national level, and between the way it is implemented at local and household level. There is a lack of efforts to involve people at the grassroots level and in planning and decision making, not only at the local level but also at a regional and national level.

18. There is a political-economic reluctance to engage in genuine and effective structural reform plans on lignite and coal production. Classical modes of energy production are directly linked to political and economic strongholds that have a profound influence on the political decision-making process.

19. The theoretical and ethical considerations underlying Germany's sustainability policy objectives are based on the need to move towards dematerialization and reduction on energy and material use. This idea, present in all documents since 1992, as well as in the Sustainable Germany proposal developed during 1995, has not been accepted nor debated by the majority of the groups, organisations and institutions we visited. The need to reduce energy and material consumption in industrialised societies is a key issue if sustainability on a regional and global scale is to be attained. There will be decreasing opportunities for economic growth and material accumulation in developing countries if affluent societies do not decrease their own material and energy consumption in the shared space of an increasingly fragile planet.

20. Germany has the potential to become a global leader in sustainable development and ecological justice if it embraces the principles of equity and becomes a global role model to be emulated by other industrialised and developing countries. Its commitment to climate protection and energy efficiency in Germany should be supported with appropriate transfers of technology to the developing nations and the establishment of ethical guidelines for foreign investment and finance for industrial as well as energy projects.

21. Germany's anticipated ratification of the Kyoto protocol later in 2002 will greatly boost the implementation of this protocol. Germany may well be a global leader in this sector. However, the implementation of emissions trading should be viewed with caution. A deep analysis should focus on fairness and equity perspective rather than the cost-benefit analysis of neo-liberal economics being applied into the implementation of Kyoto mechanisms. The risks of involving German industries in "greenwash" practices in the South could create great environmental and social costs for developing countries.

5. TRANSPORT AND MOBILITY IN GERMANY

5.1 Features of transport in Germany - The problem: Germans drive too much

Transport and mobility is one of the key areas where the question of sustainability must be addressed in Germany. The Germans drive too much! Both cars and freight transport contribute substantially to the greenhouse effect as well as noise and air pollution. In a literal sense, mobility implies the ability to move physically. In Germany, the growth in passenger transport over the past decades is primarily represented by the replacement of pedestrian and cycle paths with roads for cars.

Research has shown that the rate of car ownership in developed countries in general has increased faster than population growth in developing countries (Meike Spitzner, Wuppertal Institute for Climate, Environment and Energy). Does that mean the West can be subjected to a form car birth control?

The network of trunk roads has a total length of about 231,000 km including more than 11,000 km of autobahns. In size, Germany's autobahn network ranks fourth, after the US, China and Canada. In relation to the area of the country, Germany is the world leader in autobahn networks (our calculation). The car today is the most popular mode of transport in the country. Approximately 62 million German citizens use the car in one way or another on a daily basis.

There are more cars on Germany's roads than ever before. The stock of motor vehicles in Germany has risen steadily since 1990. Germany, with over 470 (or over 510, according to some figures) cars per 1000 inhabitants, tops the European table, leaving even the UK behind it with 360 cars/1000 people. And according to some official estimates, passenger traffic will increase dramatically before 2020:

- Road traffic by 33.2%
- Rail by 77.6%
- Air by 101.6%
- Bus by 3.8%.

At the beginning of the year 2000, there were over 50.7 million registered vehicles, including 43.8 million private cars. (There are 65 million bicycles.) The increase in the number of cars since 1994 is 39.2 million (11.7%). The highest growth rate is in the new federal states (former East), while highly different growth rates can be witnessed among old federal states: i.e. NRW: +8,7% and Hamburg +16,2%. (Berliner Zeitung, 19 Jan 2002).

The transport sector in Germany is marked a by high dependency on cars, the shift of freight transport from rail to the road and increasing air travel, which is cheap since kerosene is subsidised. An OECD report on environmental performance reviews for Germany in 2001 stated that since 1991, numbers of registered passenger cars have grown by more than 15% while use of public transport has declined by over 10%. Fore-

casts providing the basis for the 1992 Federal Traffic Infrastructure Plan predict that a significant increase in road traffic will continue until 2010.

In the new states of Germany, despite the economic crisis, car ownership has increased rapidly from 31 to 45 per 100 people. This is putting pressure on the environment and creating the same demands for roads and highways as in the former west. The generally car friendly policies during the past 30 years have not changed considerably during the present German Federal Coalition Government (SPD - Bündnis 90/Die Grünen), which supports the growth of the car industry rather than encouraging public transport. Tax deductions encourage car use and there is free parking space at the expense of the mobility of pedestrians.

According to the Federal Environmental Agency (FEA/UBA), total CO2 (Carbon Dioxide) emissions from the transport sector developed differently from the overall CO2 emissions in Germany due to transport growth. While in 2000, Germany's CO2 emissions where 18% lower than in 1990, the transport sector emitted 11% more CO2 than ten years ago. Traffic accounts for over 20% of CO2 emissions. The trend of growing transport-related CO2 emissions was stopped in 2000, when they fell by 1.9%. The main factors were the rise in fuel prices due to increasing prices on international oil markets and the German Ecological Tax Reform (ETR) as well as improvements in automotive engineering (weight reduction, driving efficiency) and more effective driving style training.

5.2 Car use patterns

About 53% of all German holiday trips, 67% of all journeys to work and 42% of all shopping trips are made by car. 80% of all passenger traffic is made by individuals with private transport, and 50% of the trips are for leisure/holidays.

With more than 40 million cars, every German spends three days in a traffic jam per year, wasting 14 million litres of fuel. Private vehicles are the major source of air pollution. Sprawling natural habitats are disturbed to make new roads and noise pollution is increasing due to traffic. On average, a car is driven for 40 minutes a day and stands unused the rest of the time - 23 hours a day.

Mr. Rudolf Petersen, Head of Traffic Division at the Wuppertal Institute, who has also worked in several Asian countries, said the amount of passenger traffic was increasing whilst the number of those who were walking or cycling were declining. In the automobile-dominated world, the highway system was important for personal mobility. His research shows that the average citizen moves for one hour or 70 minutes and the means of mobility are different. Of all car trips, only 25% are business-related, about 30% are for leisure / holidays or shopping in Germany, he calculated.

As far as questions of equity or survival and sustainability are concerned, the distribution of justice and equity, as well as environmental solutions cannot be only technological. According to Mr. Petersen, there is a clear relationship between GNP and car ownership. Furthermore, there is an infrastructural reason for using cars since the government also built roads. Some exceptions are cities like Munich for instance, where 30% of the people use public transport. "Our aim in urban transport is to reduce car trips to one third of all trips. We want to tell people not to buy cars, but to invest that money

elsewhere, he said. Germany follows the model of the US/North America, which has created an automobile society, popularising it by creating a network of highways.

People are moving out of cities for a better lifestyle and changing spatial patterns of living, but unfortunately this involves commuting, often by car, to access schools or workplaces and shopping areas. Patterns of mobility have changed thanks to new shopping malls in open area outside the city, while more women drive their children to school and cars are increasingly used for holidays. It is not surprising that over the past 30 to 40 years, the average length of journeys has increased from about 2 km to between 10 and 15 km. .Between 1991 and 1999, the annual number of kilometres travelled per vehicle increased by about 6%.

Public transport is expensive with regional disparities and can be a deterrent to people, especially if they have families. The government has opted for privatisation: Since 1995 for example, parts of Deutsche Bahn (DB) have been privatised, which has led to a decrease in efficiency and lost jobs. The only good news is that the number of rail passengers increased by 2% in 2000. Transportation performance using rail freight increased in 2000 by 7.9%, contrary to declining trends.

While there is a lot of innovation for the energy sector, transport is being driven by demand. German autobahns do not even have speed restrictions, making it the only country in Western Europe without such limits, despite campaigns. A study on Environmental Awareness in Germany by the University of Marburg in 2000 found only a minority (13%) who would willingly drive 100 km/h on the autobahn or give money to environmental organizations.

The ADAC or the German motor drivers organisations which is in favour of more roads and cars, has 13 million members, while clubs such as the VCD or the German Traffic Club only have 70,000. The German Bicycle Club has about 100,000 members all over the country. These figures point out the overwhelming support for cars and gave the evaluation team a feeling that the Germans love their cars too much to be bothered with the environmental and social costs of car-intensive societies.

5.2.1 Economics of transport

The hidden costs of transport for 1993 - the sum of all external costs of transport - works out at DM 161.4 billion, with DM 21.5 billion in subsidies for public transport. Environmental costs – air and water pollution, land use and greenhouse gases - account for 28% of external costs. Motor and mineral oil tax and tax revenue from private use company cars account for DM 55.7 billion. The DM 105.7 billion deficit is the hidden cost of transport. Of this, 73% is attributed to road transport.

Moreover, there is no true internalisation and allocation of costs in the transport sector and no real cost assessment. The 1998FEA report on Sustainable Germany stated that a comparison of external costs and transport-related tax revenue shows that less than half the total overheads are recovered from those causing them.

5.3 Traffic, pollution and impact

In the last 50 years, 600,000 people have died in accidents and over 20 million have been injured in Germany. In 1999, private cars in Germany alone consumed 48 billion litres of fuel. The sudden rise in automobile traffic since the 1950s as well as dramatic freight traffic increase over the last 20 years has been damaging the environment. The expansion of the traffic infrastructure has been responsible for the loss of contiguous forests, adversely affecting wildlife. Vehicle related air pollution is partially responsible for the new variety of forest degradation which is appearing throughout Central Europe.

The FEA (2000) also reports that alarming symptoms of transport-induced damage at a global, regional and local level include climate change, forest damage, the destruction of biotopes and areas of unspoiled nature, health risks in urban agglomerations, and the loss of urbanity and quality of living in cities. Moreover, transport consumes huge amounts of materials and energy and causes enormous quantities of waste. Motor vehicle traffic remains among the largest sources of national emissions and air pollutants such as NOx (Nitrogen Oxide), Non-Methane Volatile Organic Compounds (NMVOCs), CO2, hydrocarbons and dust.

5.3.1 Land use/consumption

According to the FEA, in no other European country have so many roads have been constructed since the end of World War II as in Germany. The transport infrastructure covers over 5% of the land with 2 % covered by roads. Between 1993 and 1998, the total area of land built on for human settlement and the transport infrastructure grew by 5.4 %, which is equivalent to a daily increase of 120 ha. This trend is gathering pace and in 2000, the daily increase in the area of built upon land grew to 129 hectares, according to the report "Many Small steps are no great leap, An analysis of the German climate protection programme" by the German NGO Forum Environment and Development. According to latest statistics, the area of land built upon increased by 4.5 per cent between 1997 and 2001.

Usually, land use aspects in Germany are the responsibility of the federal states and the communities. The Regional Planning Act (Raumordnungsgesetz) however is a federal law. In its recent version, it contains an obligation to take aspects of sustainable development into account. Besides this, urban land use planning (kommunale Bauleitplanung) covers aspects of land allocation planning (Flaechennutzungsplanung) and local development plans (Bebauungsplanung).

Building on land entails foregoing utilization for other purposes. These areas are urgently needed for environmentally acceptable sources of food supplies, production of wood as a renewable raw material and the maintenance of biological diversity.

The Federal Ministry for Environment, the Conservation of Nature and Nuclear Safety (BMU) has made it a policy in the new Nature Protection Law to reduce the rate of land lost to settlement or transport by up to 30 hectares per day by 2020. But in the face of increasing numbers of car owners demanding more roads, this seems difficult.

However, all these policies have not ensured a reduction in cars. The FEA warns that despite a substantial fall in exhaust levels, the German urban environment will be dominated by cars, while the fragmentation of landscapes and ecosystems will increase still further. A broader approach to planning to provide alternatives does not seem to exist.

5.3.2 Air Traffic

Germany, with an average annual growth of 7.3% per year, is among the top five countries reporting the strongest growth in air traffic in the period 1985 – 1998. The United Kingdom will be the fastest growing market of the top five countries during the forecast period, with 143.9 million passengers in 1998 to 310.3 million in 2015. Germany will have the second fastest growing market, followed by Italy.

The 1998 FEA report states that air traffic is also increasing in significance. By 2005, the total number of passenger kilometres in air traffic is expected to increase by almost 175% relative to 1988. The growth of tourist travel plays a predominant role here. Air freight traffic is expected to increase by as much as 270%. The consumption of aviation fuel will rise from 4.6 million tons in 1990 to 9.1 million tons in 2005.

Mr. Petersen states that particularly air transport for goods was most damaging. Also from the point of view of climate protection, air transport is the greatest ecological sin, according to the German NGO Forum Environment and Development report, “Many Small Steps are no great leap, an Analysis of the German climate protection programme": "We must concede that switching short haul flights to the railways (in Europe it is assumed that 10% of flights can be switched), eases pressure mainly by reducing airport expansion and traffic noise."

The International Coalition for Sustainable Aviation (T&E ICSA Project), an international network of NGOs, was formed in 1998 to assume the role of environmental NGO observers in the International Civil Aviation Organization's (ICAO) Committee on Aviation Nature protection (CAEP). A position paper of the Coalition states the impacts of aviation on the environment, including

- Local air pollution (NOx, HC, toxics, etc.)
- Climate change (CO2, NOx, SO2), and
- Noise.

The impacts of aviation on climate change are mostly exempt from any regulation. In addition, aviation is largely exempt from kerosene taxation, thus contributing to inefficiencies in the transport system as a whole. The Chicago Convention agreements made international flights tax free. "We pay more taxes for diesel whereas airline fuel is tax-free, Mr. Petersen stated.

In order to combat climate change, the developed countries and economies in transition reached an agreement under the Kyoto Protocol to reduce their greenhouse gas emissions to about 5% below 1990 levels between 2008 and 2012. While domestic aviation emissions are accounted for in these countries' emissions totals, emissions from international aviation are not (see Kyoto Protocol, Decision 2/CP3).

According to the Federal Agency for the Conservation of Nature (BfN), in 1996, some 45.3 million Germans made a total of 61.2 million holiday trips lasting more than five days at home and abroad. The main concern in tourism is the environmental impacts of air travel, mainly in terms of travels abroad and automobiles as the main means of transport at home and to destinations in other European countries:

- 94 % use the aeroplanes for travel abroad
- 42% use the car for travel abroad
- At home, 70% of trips are made using a car.

Germans travelled a total of 188,000 million person km (pkm) by air, compared to 530,00 million pkm in vehicular traffic and 32,000 million by rail for tourist purposes. 50% of German travellers indicate nature as the motivation for their choice of destination, but what they do not realise is that air travel causes emissions of 110 kg of CO2 per person for every 1000 km and cars 79 kg/1000 km, while buses cause only 30/1000km and trains 33/1000 km. "Everybody wants to go back to nature, but nobody wants to go there on foot", is an apt slogan coined by the Federal Agency!

5.3.3 Freight transport

The rate of growth of road freight transport has exceeded that of the GDP since the early 1990s as it has taken a market share from rail and inland waterway shipping. In the mid-19th century, transport in Germany increasingly concentrated on railways (BfN, 1998). Roads were needed only for short distances and access to railways. Until about 1920, German transport policy was mostly railway policy. The railway network, which was the backbone of German transport for many years, has now been upstaged by roads. However, the Social Democrat-Green coalition has allotted a budget of DM 6 billion for the three years following 2000 for the railway infrastructure. The national Sustainability Strategy adopted by the German parliament on April 17, 2002 states that economic growth and the growth of mobility shall develop independently of each other, similar to energy, which is growing at a slower rate than the economy. The goal is to reduce the intensity of transport by 5% by 2020 in comparison to 1999 for goods transport, and to reduce personal transport by 20%. The strategy also aims at doubling the share of goods transported by rail by 2015 compared to 1997, which means increasing its share to 24.3% of the total goods transported.

In freight transport, trucks account for more than two-thirds of the traffic in Germany. Trucks can cover the same distance that a train can in a day, and the truck lobby is quite powerful. In 1999, more than 2/3 (68.9%) of all goods were transported by truck and the trend is towards using roads for freight movement. Shipping (13.3%) and railways (15.2%) accounted for the rest of freight traffic.

Over the past 40 years, German railways have lost 30% of their local network. A total of 4,500 stations and 4,000 freight depots have vanished during a period when road transportation of both people and goods has increased dramatically. A sustainable society cannot afford the loss of rail connections. Estimates of the total annual external costs involved in this way of running the economy fluctuate between DM 100 and 600 billion (Sachs et al., 2000).

The country has a network of 7,200 km of waterways on which about 20% of goods is transported. Though waterways seem to be a good alternative, the impact of intensive use of river ways has to be studied as it has definite environmental and ecological implications.

Mr. Petersen emphasised the need to support more sustainable modes of transport. It is not yet possible to make a global impact assessment of CO2 emissions, but the highest external costs is for light trucks distributing goods in cities - for example making a delivery of parcels which is a typical urban pattern of distribution. "Trucks have a high external cost and even if we look at taxes on truck traffic, they will not cover external costs. In Germany, it does not even cover the road construction cost."

In addition, most of the government subsidies are provided for the transport sector. Since 1990, there has been a 10% decrease in freight transport by railways. With a share of only 15% of the total passenger km, rail and public transport are making inadequate contributions to traffic performance.

5.3.4 Food transports

According to the FEA, between 1970 and 1991, alone the freight volume generated by food production and distribution rose from 97.1 million tons to 157.8 million tons, representing a growth rate of 67.2%. Between 1970 and 1991, radical changes took place in the modes of transport used. Whereas 41% of foodstuffs were transported by rail and only 38% by road in 1970, the figure for rail transport had dropped to 10% by 1991, while 76% of food shipments were made by truck.

Air freight traffic, particularly the transportation of foodstuffs and preliminary products, has grown in importance in recent years. Imports and exports by plane were around 35,000 tons and over 12,500 tons respectively in 1994. Although the percentage of total agricultural freight volumes accounted for by air freight is small, air freight is responsible for a much higher share of total emissions.

The modal shift to road transport from inland shipping and even more so from rail was much more pronounced in the case of food transport than for long-distance freight transport in general. Transport by truck significantly expanded its market share in all freight segments, thanks to a transport policy favouring road transport.

Werner Schneider of the managing board of the German umbrella union Deutscher Gewerkschaftsbund (DGB) said there is a lot of traffic related to the production of food. He gave the example of shrimps, which are caught in the North Sea, then travel 3,000 km to Morocco for processing and return for sale in Hamburg, near where they were caught. Mr. Schneider asked whether international trade decisions can be based on the transport and processing needs of the first world.. There are many unnecessary goods movements either for production or processing which can be totally avoided.

Production processes are scattered all over the world and this has increased road truck traffic - fleets of trucks have become moving warehouses, Mr. Schneider remarked. Thus looking at transport alone cannot be the only solution - other sectors such as production, storage, sales and marketing must also be addressed.

5.3.5 Noise pollution

About 8.5 million people in Germany can only sleep with road traffic if their windows are closed and double glazed. During the day, traffic is the most serious noise in Germany. The greatest noise emissions are caused by trucks and motorbikes, and though cars are much quieter, they are in large numbers. Engine noise has been controlled by a law since October 1996.

A number of countries have fixed standards for noise levels and the OECD suggests it is important to build such standards up to a limit of 55 decibels. Germany has legally binding legislation and (legally non- binding) standards and guidelines for noise pollution.

Transport-related noise emissions are legally regulated in the road traffic licensing ordinance (Straßenverkehrszulassungsordnung) concerning a noise limit for all types of vehicles. There is no legislation on noise from trains, boats and aircraft. A European directive limiting noise from tyres will have to be implemented.

5.4 Sustainability in urban, regional and traffic planning

5.4.1 Gender and transport

Urban and traffic planning are not gender-neutral. Meike Spitzner, a senior scientist working on Feminist Approaches to Structural Traffic Avoidance, at the Transport Division of the Wuppertal Institute, feels that planning or understanding transport is always done from a male perspective. While social aspects are forgotten, it is the construction aspect of transport that gets attention. Women are suffering in this male-dominated world of transport and their mobility needs are not taken into account. "Women in Motion", which was founded in 1991, has been active in gender perspectives with respect to traffic and it was their campaign, among others, that led to a conference on Gender Perspectives in Transport in January 2001.

A concrete example of gender mainstreaming in government policy-making was the German Cabinet decision of June 1999, on the integration of gender aspects and an internal rule of procedure in July 2000, on gender mainstreaming, aimed at ensuring active integration of gender aspects into all aspects of decision making ("Gender Perspectives for Earth Summit 2002", report on the International conference at Jagdschloss Jan 10-12, 2001 HBF).

Social relationships are forgotten in the race to reduce everything to materials or energy use. There is no understanding or acceptance of the growing transport expenditure in what is called the "caring economy". It is women as mothers or care givers who travel to care for their children, and also their own parents. The women who are part of this caring economy are not paid for their services and their work is perceived as unproductive in an economic sense, Ms. Spitzner said.

Women are perceived only as consumers and their caring work that needs specific transport requirements, is not catered to. There are investments in expensive, long-distance trains but not in improving short distance transport or day-to-day requirements.

The world of automobiles is dominated by men and mobility is often considered as moving from home to work and back, she added.

Research in the mobility patterns of women are not hot topics and rarely get funds. It is perceived as being irrelevant. Mobility for women has a different meaning - women who have to do so many things such as taking children to school, or day care, then going to work, then probably visiting relatives or parents, then work and back again to school, shopping etc. According to a poll, contrary to the perception that most people use mobility for work, caring turned out to be the topmost reason for mobility. Leisure time was also used to visit relatives, often to inquire about or care for their health.

In a paper on the "Evaluation of the involvement of women in transport science, traffic planning and mobility politics", Ms. Spitzer and Gabi Zauke said that women had proved the consequences of discrimination due to classic traffic planning and politics – though many male expert groups had not taken notice of this. Urban and traffic planning which focuses on the automobile discriminates against women in terms of the use of their time and their environment. While avoidance of traffic, providing for more eco friendly transport and changing values and behaviour are the official aims of the climate policy, women feel that improving mobility conditions, reducing the need for traffic and transportation and a more vital role for women in decision-making are more important.

Various initiatives starting from 1990 have led to a better acceptance of gender and mobility issues. However, the problem today is not the lack of competent women specialists but the expectation that women must work for little or no compensation to correct planning that has been neglecting women's needs in mobility for years, Ms. Spitzner stated in her paper.

According to a position paper by the Women's team of the NGO Forum Environment and Development, for the Earth Summit 2002, urban, regional and traffic planning treats care as if it were an unlimited resource. It is not aimed at what is achievable and what is, at the same time, compatible with the environment, the freedom to move in spite of structural male violence or meeting housing requirements and the provision of a decentralised infrastructure for everyday life. Instead, planners create the need to motorise, subject public areas to car traffic, necessitate an additional labour and back-up transport effort and hamper quality assurance in supplies. The requirements of women resulting from their structures of coping with day-to-day life and their work in two economic areas are ignored just as much as in rural areas and the urban periphery.

5.4.2 Car sharing

One of the solutions to the increasing numbers of cars is the concept of car sharing which began on a small scale in 1989. StattAuto, the biggest car sharing company in Germany, has a membership of 8,000 people who share 300 cars in the cities of Berlin, Hamburg and Rostock. There are 60 stations in Berlin where cars are parked for customers who sign a contract with the company. These cars can substitute private cars without the trouble of caring for them. Yet the annual increase in customers in Berlin is 16%.

Car sharing means the organised and professional sharing of cars in Europe. The concept is an alternative to individual car ownership which provides 24-hour access to the

car sharing fleet. It saves money since you pay a small monthly management fee and the actual costs are based on how long you drive the car. It creates more space as every car that is shared saves five parking places, and agencies like StattAuto have the "Blue Angel" label for the environment. Car sharing stations are located in residential areas, making it easy for people to access them and they are also close to public transport places.

With DB entering the fray of car sharing, a pilot project was begun in December 2001, in two cities (Berlin and Frankfurt/M.) which is being extended to 10 cities in 2002. After the ecological tax was introduced, there was an increase in people who wanted to know about car sharing but did not necessarily go in for it, according to Doris Johnsen of StattAuto. The car industry lobby is far stronger than the car sharing one. And car sharing users are about 50,000 in Germany, a very small number. Most people feel that, "car sharing is a good thing but I need my own car," Ms. Johnsen added.

Car sharing cannot do without a good public transport system and that is why it can work in a city. The government can support this by ensuring car sharing companies get preferences in parking areas and ensuring that it is integrated into the transport policy. The cash car is another concept. Here a car needed occasionally can be leased for a period and for the rest of the time it is used by others. Implemented in 1999, the concept works well and there is a demand for it from a special group of users, mostly travelling professionals. However, people can accept such new concepts only if they have an open mind for alternative forms of transport, said Sassa Franke, researcher at the WZB in Berlin.

The car has assumed too much importance, according to Gerd Lottsiepen of Verkehrsclub Deutschland (VCD). On the other hand, public transport has always had an image that it is for the poor, or the old. It was important to change the image of public transport to make it more popular, VCD felt. In a research conducted by VCD in 2000, it was found that more than 50% of the people interviewed did not use the train, many had not even seen the ICE train and did not know much about public transport.

5.4.3 Sustainable steps to combat transport-based pollution

In an effort to improve air quality, tighter pollution norms have been introduced and leaded gasoline was banned in 2000. The introduction of three way catalytic converters in the 1990s helped to curb pollution to some extent. However, catalytic converters are useless against carbon dioxide, a major greenhouse gas. Carbon dioxide emissions are rising due to the increase in traffic volumes, higher energy performance and heavier vehicles. Compared to 1973, 63% more CO2 was emitted in 1999, which is 12% more than in 1990.

Strict exhaust regulations for motor vehicles emissions introduced in the mid 80s have been responsible for declining emissions of CO, NOx, and hydrocarbons, and by 2025 the levels are expected to be 85 % lower than in 1995, despite rise in the volume of traffic. In 1999, low-pollution cars made up 71% of the total automobile transport.

The aims of reducing hydrocarbon pollution has resulted in a 93% reduction since 1990. However, petroleum still creates 30 mg /cubic meter and the goal is 2.5 mg/m3 (WHO standards are 5 mg/cubic meter). There has been a 75-80% reduction nitrogen oxide emissions.

EU-directive 98/70/EC restricts the sulphur content in fuels to less than 50 PPM (parts per million) from the year 2005. Consultation by the German government with the car industry, mineral oil industry, NGOs and consumer groups in 1998/1999 led to a commitment to the need for sulphur-free fuels and the use of tax incentives for their introduction.

In 1999, the car industry (Verband Deutscher Automobilhersteller, VDA), environmental NGOs and motoring organizations (Allgemeiner Deutscher Automobilclub, ADAC) jointly lobbied for sulphur-free fuels (with sulphur content less than 10 PPM) to simultaneously fulfil both the legal pollutant reduction requirements and the agreement on CO2 reduction. However, if no drastic steps are taken, CO2 will continue to rise until 2010. Traffic is the source of emissions with a mixture of initial substances from which ozone is formed in near-ground atmosphere layers.

The FEA report states that the 35th Conference of Environment Ministers (at federal and Länder level) held in Berlin in November 1990 adopted a comprehensive plan for reducing transport-related air pollution. According to the plan, transport-related CO2 emissions are to be reduced by 5% and 10% by the years 1998 and 2005 respectively, relative to 1987 levels (as explained on the above section on CO2 emissions)

In June 1990, the German Motor Industry Association (VDA) promised the Chancellor to reduce fuel consumption and hence CO2 emissions of car traffic by the 25% national reduction target. On 23 March 1995, the VDA agreed to reduce the specific fuel consumption of cars manufactured and sold in Germany by the German car industry by 25% by the year 2005, relative to the 1990 base year. According to the German Association of Automotive Industries, German manufacturers reduced specific fuel consumption by 12 per cent between 1990 and 1998. (OECD, 2001)

The government and the industry favours technological solutions which lack a holistic approach. Volkswagen (VW), which holds 25% of the German car market at present, developed the Lupo three litre car, the world's first car to achieve fuel efficiency of less than three litres per 100 km. However, compared to other small cars, it is expensive. By June 2001, VW had sold about 16,000 cars. These expensive but efficient cars can only remain symbols to nature protection unless they are adopted on a mass scale.

The car industry has come forward in 1995 with a voluntary commitment to improving the fuel efficiency of cars sold by 25% by 2005 (with 1990 as the base), which will result in an average fuel consumption of 5.971/100 km in 2005. In 1998, in response to the Kyoto Protocol, German automobile manufacturers who are part of the European Federation of Automobile Manufacturers, volunteered to reduce average CO2 emissions of new passenger vehicles by 25% by 2005 (relative to 1995 levels). However, the solutions are car-based. They do not move away from the car. Though people know more about environment issues today, there is little effect on personal behaviour or buying cars. Opinion polls and surveys show that Germans are less concerned about nature protection now than they were in the 90s, and their willingness to pay for nature protection measures has decreased substantially. In 1991, 30% of those interviewed supported the proposal to make car use more expensive, whilst only 17% did so in 1998.

The emissions-related motor car tax legislation introduced on July 1, 1997, was successful in introducing more cars which conformed to the norms of strict waste gas emissions.

However, fuel efficiency and the design of cars must also keep up with demands for higher levels of equipment and comfort in terms of ergonomic design and comfort, according to the automobile industry. VW stated that between 1995 and 2000, it had reduced corporate fuel consumption by 12%. The Lupo 3L TDI and FSI models have reduced fuel consumption to three and five litres per hundred km driven respectively. There has been an increase in sales of diesel vehicles and exhaust emissions have been reduced to Euro 4 standards (emission standards), which will become law by 2005. Life cycle inventories show that in its entire life cycle, the TDI Golf diesel emits three tons less CO2 than its petrol engine counterpart. The controversy remains over the health hazards of diesel fuel.

The development of the one-litre car has progressed and a model was presented at VW's annual general body meeting in April, 2002. Environmentally sound gas-powered cars, three/five-litre consuming cars (80/50 miles per gallon) and renewable energies are on the rise. However, as mentioned earlier, eco- friendly cars do not have too many takers.

Alternative plans to move away from cars have led to the new National Plan on Bicycle Traffic which has just been prepared in 2002. There are also proposals to strengthen the waterways at a cost of one billion Euro. On April 25, 2002, the Federal Government passed the "National Plan on Bicycle Traffic 2002-2012". This plan presents measures to improve the situation of bicycle traffic in Germany - the "most underrated means of transport" as the German Minister for Transport put it.

The National Plan on Bicycles has guidelines to broaden cycle tracks and make them better connected. The goal is to have a countrywide network of long distance cycle-tracks with the name "D-Netz" (D-net). In addition, the federal government, which wants to optimise the legal framework for cyclists, has set aside 100 million Euros for the program. Right now, only 12% of all distances - about 300 km per person - per year are covered by bicycles. If 30% of all car usage were transferred to the bicycle, something which experts feel is not only realistic, but even possible without loss of comfort, CO2-emissions in Germany could be diminished by 13,5 million tons annually. This amounts to almost 90% of the CO2-reductions target of 15-20 million tons that the national plan on climate-protection assigns to the traffic sector.

Wolfgang Große, President of the Allgemeine Deutsche Fahrradclub (ADFC - German bikers club), called the plan a "milestone". "But now the planned measures have to be implemented", he added.

5.4.4 Transport Energy Strategy (VES)

The "Transport Energy Strategy" (also referred to by its German initials VES) is a joint project undertaken by the motor vehicle manufacturers BMW, DaimlerChrysler, MAN and Volkswagen, as well as the energy supply companies ARAL, RWE and Shell together with the government of the Federal Republic of Germany, represented by the Ministry of Transport, Building and Housing (BMVBW).

The "Transport Energy Strategy" was established as an initiative where policy closely works together with car manufacturers and the energy industry.

According to the BMVBW, the project team pre-selected three fuels for further consideration from the 10 potential alternative fuels and more than 70 production possibilities: natural gas, methanol and hydrogen. In the overall analysis based on the available data, the internal combustion engine (ICE) received a more favourable evaluation compared to the vehicle with electric motor and fuel cell (PEMFC). However, it must be kept in mind that fuel cell development is still in its infancy.

In June 2001, an industry consortium and the German Ministry of Education and Research (BMBF) launched INVENT which stands for intelligent traffic and user friendly technology, a research initiative costing 80 million Euros to use the "intelligence" of vehicles to smoothen road traffic. The initiative, sponsored by the ministry will be for a period of four years.

5.4.5 Transport policy

Investments in the transport sector are expected to exceed 130 million Euros by 2015. Private traffic is expected to increase by 20% and commercial traffic by 64% by 2015. The objectives of the transport policy are to improve rail and road transport facilities to allow inter-modular transport or links to other forms of less polluting transport, such as public transport and cycling or car sharing.

The Federal Government supports the federal states and municipalities in the further development of local public transport with an annual amount of more than DM 15 billion.

There are several programmes for the transport infrastructure:

- The investment programme between 1999 and 2002 held DM 13.8 billion for roads, DM 14.7 billion for rail and DM 2.6 billion for waterways.
- The Federal Government's Anti-Congestion-Programme (Anti-Stau-Programm) is going to provide 1.89 billion Euros for federal highways, 1.43 billion Euros for railways and 0.46 billion Euros for federal waterways between 2003 and 2007 and is to be financed by a German heavy vehicle charge.
- The Federal Transport Route Plan of 1992 has guidelines which require a cost-benefit-ratio better than 1 for each transport project. The Federal Government is due to prepare the new Federal Transport Route Plan and has not yet decided which cost-benefit ratio must be fulfilled for each project recorded in the plan.

Two important measures were initiated in the German transport sector at an EU level. Under the terms of the agreement between the EC and the European, Japanese, Korean car producers, specific CO2 emissions of cars in 2008-09 will be approx. 25% lower than in 1995.The Regional Transportation Act, which assigns the responsibility for regional public transport to the federal states, is expected to boost the efficiency and customer orientation of transport services, which are intended to favour the model shift from private cars to public transport systems.

5.4.6 Integrated planning

The current focus is on an "integrated transport planning approach". This concept signals a move away from the traditional supply-oriented planning process that characterized transport policies in the past. According to Mr. Petersen (Wuppertal Institute), transport policy integration with other urban issues, such as health, industrial location and spatial planning is the need of the hour. The important thing is to take away transport planning from the Transport Ministry and give it to social scientists. Transport is a part of social life, so there must be public participation.

Mr Petersen said there is always a demand for more cars but there are limits to the supply of transport. "We have to see why people want to move in a particular mode. The transport sector policy has to be in harmony with policies in other sectors." However, as Mr Petersen, who has also worked on the exhaust emissions of cars with the FEA, stated: "The core problem is not the technology but increasing traffic. The Federal government is not thinking of alternatives to cars."

5.4.7 Highway toll

The German government has decided to introduce a highway toll for heavy goods vehicles (HGV) above 12 t in weight (heavy goods vehicle charge). The level charged is based on the infrastructure costs caused by the HGVs and will be 0.15 Euro per highway-km on average. HGVs above 18 t will have to pay more than smaller HGVs, and HGVs with low emissions (according to recent European emissions standards) will pay less than older HGVs. Details on the structure of the highway toll have not yet been finally decided upon. The charge is expected to lead to revenues of about 3.4 billion Euros per year, most of which is spent on the transport infrastructure. Next to Germany, Austria has also announced the implementation of such a charge in 2003.

However, the proposed highway toll for trucks has been postponed. Federal states demand further amendments and they want the tax to be clearly allocated for specific purposes. They demand compensation for transport businesses and warn that traffic should not be shifted from highways into roads and streets. The German Association of the Automobile Industry warns against a number of risks for the sector, including the eco tax reform, road tolls and reduced purchasing power.

5.4.8 Car reuse

The new EU-Parliament directive on car re-use states that new cars brought from 2002 have to be returned to the company for recycling. Every year, some 10 million tons of end of life vehicles (ELV) are disposed of in the EU. As of now, according to the Verkehrsclub Deutschland (VCD), 50% of the cars are recycled here and the rest dumped in other countries for sale as used cars. This EU directive puts the onus on the manufacturers to deal with the waste, something which is in keeping with basic environmental laws of the country. All new vehicles registered after July 1, 2002 will be taken back by companies free of charge. The use of heavy metals like cadmium, lead

and mercury will be banned from July 1, 2003. From 2006, a recycling rate of 85% is required for all vehicles and from 2007, all vehicles will be taken back free of charge.

5.4.9 The role of information technology in transport management

While experts like Mr. Petersen and Ms. Spitzner advocate more people's participation, the evaluation team witnessed a technology-driven solution to traffic management in Lower Saxony. MOVE is a computerised traffic management centre which manages traffic and transport in Hannover, and its role is becoming ever more prominent, especially during major fairs like the annual trade fair at Hannover. MOVE consists of a 51% partnership from the Hannover region and 49% from the ÜSTRA transport corporation (Hannoversche Verkehrsbetriebe AG), and was set up in 1997. While there has been no evaluation of its performance, it is claimed that there are fewer accidents, is less congestion and a very good response during the annual EXPO. It is a public-private partnership effort which aims at guaranteeing mobility through efficient traffic management.

According to Dr. Norbert Handke of MOVE, no one who drove a car wants to cause pollution: "We must work on reducing pollution by avoiding congestion. Some of the useless traffic is for finding a parking space." The initiative involves the police, traffic authorities, road control departments, airport staff and the media. If there is an accident, the centre receives information and informs the public to suggest alternative routes. They receive information on accidents from bus drivers and other sources - and also provide information to the public i.e. by radio on which route to take to avoid traffic, together with information on parking spaces and links to public transport.

There are 1,500 separate points in the city with cameras where MOVE can see how many cars are present, through a video observation system. There is a Law of Traffic Information and Guidance in Lower Saxony which provides for traffic warnings, information, guidance and incident management. Especially during the Hannover trade fair, effective management can create more parking spaces and provide information on reaching the city - for instance where to park. "About 700,000 people come to the fair in one week and the volume of visitors is more than 200,000 a day. "Traffic management is 90% advance traffic information , MOVE believes, so information is provided on all modes of transport."

5.4.10 Alternatives

"Non-motorized transport is the key to a sustainable transport plan", says Dr. Axel Friedrich, Head of the Transport Division at the Federal Environment Agency in Berlin. Dr. Friedrich has been involved in clean air city programmes in Chile and Asian countries. "We made an analysis of all Agenda 21 programmes in Germany and not a single city can be called a success. The transport sector is extremely unsustainable and there is a complete violation of all rules. It is depleting resources and killing people," he states. There are examples of people using more bicycles in Freiburg and Hamburg, but these are not general trends. Münster for example has a 40% share of bike traffic - but these

were the exceptions. For sustainable transport to work, it has to be made socially acceptable as well.

According to Mr. Friedrich, it does not need a major effort to adopt sustainable transport measures. "While Germany was undoing its mistakes to some extent, developing countries for example, India and Shanghai were making the same mistakes we made. We are transferring our own mistakes. We report our successes, not our failures. My focus is to demonstrate failures," he explained.

Alternatives also include plans for the increased use of public or alternative forms of transport. Dr. Friedrich said a project where three cities - Plauen, Lingen and Wittenberg - are promoted as models is underway. They were selected after a competition. "These cities with a population of 50-70,000 inhabitants, will be the focus of an alternative plan where we want to increase the share of cycling areas and pedestrian space," he said. The reason for a competition here was that people must take part and demonstrate the capacity of the city to get involved, in addition to a commitment from the political leadership to spending DM 80,000 at least.

5.5 Findings and conclusions on transport and mobility

1. A number of experts interviewed in the course of the evaluation felt that a transport policy aimed solely at the car is anti-social, because it excludes a large proportion of the population, including those voluntarily living without a car and those who cannot afford to own a car, as well as children, the elderly and handicapped people. So this is a major lacuna that needs to be addressed and is also tied up with issues concerning gender and transport. Transport policy must be consistent with policies in other sectors, especially with other urban/rural issues, health, and industrial locations, apart from spatial planning.
2. Researchers have been raising the gender aspect of transport planning and have found a voice occasionally. However, despite organisations focusing on traffic and mobility patterns, as well as the need to evolve a more user friendly system, planning and research development in this field is poor. Gender perspectives are crucial since transport policies in Germany, and indeed most of the world, are made by men to be implemented by men, and are based on an individual car-ownership principle. The crucial question in Germany is whether there will be more people's participation and awareness on this issue, or whether transport decisions will remain technology-driven and in the hands of a few experts, mostly male.
3. Changes in consumption cannot come about if disposable incomes are increasing. This increase in disposable income has been described as the starting point of the "Überflußgesellschaft", the over-consuming affluent society . In 1950, an employee earned an average DM 243 per month in the Federal Republic of Germany (territory at that time without the Saarland, Berlin and the new Länder). Of that amount, DM 11 and DM 19 were deducted for wage tax payments and employees' social contributions, respectively, so that DM 213 remained in the pay packet. Fifty years later, an employee in unified Germany earned on average DM 4,270 per month, i.e. almost 18 times as much as his colleague in 1950. The deductions from wages (DM 849 wage tax, DM 711 employees' social contributions per month) increased disproportionately

(from 12.3% of wages and salaries in 1950 to 36.5% in 1999) so that the average sum transferred to the current account of an employee amounted to DM 2,710 in 1999. While the prices of goods and services (except for a number of agricultural products) have quadrupled since the 50s, the rise in income definitely shows how much money is available for buying things. Disposable incomes - and we can see the patterns very clearly in developing countries too - are the starting point for over-consumption.

4. Environmental law in Germany is primarily based on the precautionary principle and the polluter-pays principle. Yet, is it being implemented? The large subsidies for the transport sector (along with coal for energy and agriculture) undermine the basic tenets of German law. Moreover, the costs of transport are not internalised and a prime example is the lack of duty on aircraft fuel and the difference between petrol and diesel pricing. Thus, is the polluter really paying?
5. The evaluation team also wishes to question the fact that taxes seem effective in curbing mineral oil use and consequent pollution. But does the policy and idea hold good from a sustainable point of view? Taxation to bring down excess consumption seems a very "First World"“ idea. Can we in the Third World emulate taxes on mineral oil? In fact, it is politically an impossible task. What implications does the eco tax reform have for the Third World, many countries of which are already reeling under taxation? So while people in Germany are unhappy with the eco tax, there are impacts which are positive. But is it really a long-term sustainable option? The taxes are not treating the root of the matter but using the fact that people will pay or rather have the ability to pay a penalty for using up the world’s resources.
6. The field visit to MOVE, the traffic management centre in Hannover, illustrated a typically expensive option to control traffic. Yes, there is an effort to encourage public transport but where is the involvement of people? The whole operation is carried out by computers and cameras. There has been no evaluation of the programme and its cost effectiveness. Yet, this is also in danger of becoming another project worthy of emulation in the developing southern countries!
7. The central issue is whether such instruments and projects are really targeting the root of the traffic problem and whether people are taking part in this process for change. On the one hand, there seems to be a lack of communication and a lack of people’s participation in government programmes, at a policy level and at a decision making level. There is a singular lack of people’s involvement in transport initiatives, unlike the 70s where there were mass demonstrations for free public transport. There is a complacent feeling among people that a fair amount of environmental quality has been achieved and there is no need to press for more changes.
8. Car manufacturers seem to have the upper hand in the battle in Germany as far as "sustainable" transport is concerned. One-litre cars/fuel-efficient vehicles, low pollution cars and low noise cars and three-way catalytic converters are among the innovations. It is technology, as usual, that is flaunted in this race for superiority. But weapons alone cannot win battles. Where are the alternatives to cars? The automobile industry is too influential and a powerful engine of the economy which makes it difficult to change the present pattern of mobility towards more sustainable modes.

9. Why do Germans value fast cars, expensive lifestyles, and extreme sports? Their role models are people who drive fast cars and there is no one who can advocate alternatives. There is an undue dependence on symbols of progress or modernity - fast cars, no speed limits - it is something that is admired - for want of any other role model or objects of adulation. There is a tremendous alienation in society which is being translated into this kind of expensive lifestyle, extreme sports, eating processed/instant food or travelling miles for a holiday.

10. The German society has become a role model for developing and transition countries which are adopting the large-scale construction of highways and promoting a car driven lifestyle. What should have been emulated is public transport network, but instead it is the more capital-intensive roadways which serve a few privileged car owners which get the benefit of so- called progress in our countries. On arrival in Germany, most of the team used the public transport system and we continued to use it for most of our trip - an experience very few countries outside Europe can offer. Taxi or private cabs are more common elsewhere. The array of trains, trams, buses, or the U-Bahn is impressive until one leaves the towns and cities. In the rural areas, the team drove in a private car and that is the story that is not often told - revealing the lack of a systematic public transport system in most of rural Germany. The ever-expanding autobahns strike you at once on entering the country, and the substantial investment that must have gone into it. The autobahns are the envy of many in the developing world. Not to be envied, however, is the impact on land use and the environment, which rarely gets across to the people in the South.

11. From a "southern perspective", it seems that Germany must act soon to establish efficient procedures for "car birth control". The ever-increasing number and diversity of cars, as well as paving new roads for them, is the basic ingredient of a non-sustainable transport system in Germany. There are no limits for growth in this section, and a new vision of "sustainable mobility" - which incorporates planning for actual mobility needs of the people, instead of cars - is strongly indicated.

12. Consumption patterns regarding car use have not changed over the years and there is a growing demand for improved cars, more speed, better engines and new designs. Heavier, better equipped vehicles also mean more combustion of gasoline and more emissions in the long run - a trend favoured by the market and not regulated by the government.

13. However, there is a lack of incentive to produce low consumption vehicles. While the prices of goods and services have quadrupled since the 50s, the cost of fuel has only doubled. Differential pricing of petrol and diesel is unacceptable, as from the point of emissions, diesel should be taxed more severely than petrol since CO2 emissions per litre of diesel are higher. Nor do consumers demand it much, can be seen by the example of the three litre Lupo.

14. Substantial growth in the volume of traffic is expected in forthcoming years if current trends continue. According to the predictions on which the Federal Transport Network Plan is based, the number of cars registered in Germany will increase to 46.5 million vehicles by the year 2005. In 2010, the number of vehicles will have reached 48 million. The main feature of the transport sector is the continuous increase in demand, which in turn is being met by technological innovations and the

expansion of the transport infrastructure. The transport policies are not integrating spatial planning or nature protection, although mitigating measures are in place.

15. In Germany there is a growing trend to switch to trucks for freight movement. This is partly due to the fact that the European Union has not yet developed a policy to reduce the environmental impact of freight transport, and neighbouring countries demand open access to German highways.

16. The good news is that still, in some medium sized cities, for example in NRW, cycling and walking maintain a healthy 25 to 30% proportion of all the daily trips. Some cities have extensive cycling routes and good public transport. There are indications in some cities that changes in mobility patterns are on the way where public transportation is linked with non- motorized transport. However, these are exceptions only and not enough to become a trend.

17. Though car-sharing initiatives have been around for over ten years, they get little political support. While the overall public transport in cities is very good and well connected with a diversity of modes of transport, the situation is not so good in the rural areas. Despite this excellent network of public transport, at least in the cities, the fact that people are favouring cars indicates the status symbol that cars have for Germans.

18. There seems to be concern about noise pollution from cars, increasing number of cars and traffic pollution, but there seem to be no initiatives or solutions in the offing. The concept of a car-free day is a good one. It shows you what is possible, but does it have the mass participation that is required? And few people can make the connection between global warming and pollution from traffic - be it air or road travel.

6. AGRICULTURE AND NATURE PROTECTION

6.1 Background information

At a glance, the North has achieved food security for the majority of people. In actual fact, supply has exceeded demand, creating excesses that are often referred to as "mountains of butter and lakes of milk". The extraction and conversion of resources have created environmental problems, compromising human and environmental health not only on a local and regional level, but also on a global level.

Conversely, the majority of developing countries are still grappling with food security, under harsh production and climate conditions, disempowering economies, diseases and conflicts.

By and large, the greatest challenge, facing the world, remains the ability to feed a population of over 6 billion (and this is expected to rise to 8.5 billion by 2050) with adequate, quality food. However, this formidable task lies with developing countries, in which 84% of the world's population resides (Center for Applied Studies in International Negotiations, 2000).

The appalling economic and trade conditions that have prevailed in developing countries for several decades, coupled with overabundance and waste in the affluent North, which have led to extreme polarization in the world. This has culminated in divergent challenges towards the generation of practical approaches to a global sustainability agenda.

As defined by the German Parliament Enquete Commission of the German Bundestag on the "Protection of Humanity and the Environment", "Sustainable agriculture operates largely in cycles, conserving and preserving the natural resources on which life depends i.e. soil, water, air, species diversity as well as scarce natural resources. Prerequisites in this regard include the integration and adaptation of farming practices into the natural balance. The aim of agriculture must be to supply the population with healthy food products and raw materials, primarily on a regional basis. Agriculture also serves to preserve and/or restore a varied, diversely structured cultivated landscape abundant in species and biotopes and to safeguard and develop rural areas. In the interest of achieving a circular flow economy, non-hazardous biogenic wastes and residual substances should be recycled wherever possible and reused within the agricultural sector." (Enquete Commission "Protection of Humanity and the Environment", 1994).

6.2 Features of the problems in German agriculture

Over the years, Germany's cultivation paradigms have involved into a highly mechanized tillage system with a high dependency on external inputs. These, coupled with the practices of monoculture, excessive use of synthetic agrochemicals and the massive load of nitrogen through the overuse of organic manure, the removal of hedgerows and original forests to maximize production, has in time created a myriad of problems. The

aftermath is manifested in the form of soil degradation, water contamination, biodiversity erosion, and the stripping of rural landscapes.

The recent crisis caused by the Bovine Spongiform Encephalopathy (BSE) scandal and dioxin scandals in Europe has escalated already existing sensitivities and concern from the western European public about the safety of food, as well as threats to plant and animal species and the environment due to modern agricultural and industrial food production systems in the developed world. Consumers no longer trust food producers and demand a say in the way their food ought to be produced. In their quest for safe food, the trend is directed to more natural foods. Increasingly, consumers are demanding food that is socially and environmentally friendly.

6.3 A history of German agriculture

The foundations for German agriculture were laid down in the 11th-13th Centuries, when Germany and the neighbouring countries experienced major expansion and development, characterized by an increase in population, advances in intensive agriculture and a rise in commerce and trade. Their ramifications lasted until the 19th Century.

During the 20th Century, agricultural production began to decline from 46% to 23% in acreage area. Most affected were the small to medium farmers. Policies were formulated to achieve food security. Production targets were predetermined by the state and farmers were encouraged to produce by providing access to fertilizers, machinery and technical advise services. They also defined family or subsistence farms as 7.5 to 125ha in size and succession was through inheritance. (Tangermann, 2000)

After World War II, in the second half of the 20th century, agricultural patterns differentiated to a certain extent in the former East and West Germany. For instance, in East Germany, nationalisation led to large farms which still exist after the unification in 1989.

Since the unification, there have been three legal forms of land holding in Germany:

- Individual sole or family proprietor farms
- Partnerships
- Registered cooperatives, limited liability companies, public limited companies, foundations and central, regional or local authorities. These are larger holdings which are obliged to provide employment for their working members.

Throughout Germany, the prevailing legal form among agricultural holdings is the individual farm enterprise, with a 97% share followed by partnerships and legal persons with shares of 2% and 1% respectively. The latter two forms play a major role in the new Länder as they are based on the large cooperatives of the former GDR.

6.4 Economic importance of agriculture in Germany

Of the 357,000 square kilometre area of Germany, 50% is used for agriculture. Yet, over time, German agriculture's economic importance has declined from 5.8 % in 1960 to less than 1.3% GDP, and its share of the GDP is expected to decline even further. If the whole agribusiness sector is considered, this figure improves slightly to 6.5% GDP in 1997. However, Germany is ranked 4th in global agricultural trade with an export value of DM 41.9 billion in the year 1997, accounting for 6% of agricultural and food commodities traded in the world. On the other hand, Germany is the largest net importer in agricultural trade, followed by Japan. Imports include vegetables, fruits and meat products, fish, cocoa, dairy products, coffee and tea. (Tangermann, 2000)

Agriculture is still an important economic sector. The 2002 annual agricultural report announced earnings in the agricultural sector – including both plants and animals - in 2000/2001 total 31.7 billion Euros. Around 20% is generated by from the sale of German agricultural and food products abroad (EU, USA, OPEC, Central and Eastern Europe and developing countries). Exports have steadily increased over the past decade. Imports amounted to 29,177 billion Euros in 2000/2001.

6.5 Strategies to safeguard agriculture in Germany

6.5.1 Agricultural policy

Agricultural policy falls under the jurisdiction of the federal states (Länder) and has been traditionally linked to strong farmers' lobby. The farmers' interests in the past have not been oriented towards changing production systems, but rather to gaining from extra income initiatives such as subsidies. However, the present coalition in power in the Federal German Government (Social Democratic-Green parties) has taken the opportunity provided by the consumer concerns, spurred by food scandals in Europe, to reorient agricultural policy towards more ecological ways of food production and safe guard against further environmental degradation. The main challenge for the government is to sustain the efforts leading to the structural transformation of agriculture to reduce the use of chemicals, fertilizers and consume less energy. Agriculture should provide safer and higher quality food, using sustainable food production processes, and be animal welfare-oriented. The transformation is also aimed at bringing back jobs and added value to agriculture and rural areas, increasing the offer of services and producing organic food. Agriculture should regain the trust and support of the German public according to the Federal Minister of Consumer Protection, Food and Agriculture, Renate Künast.

Agriculture must also face up to the challenge imposed by the rapid urban expansion and land sealing. Every day, 129 hectares of land are sealed for urban and road expansion, reducing the availability of agricultural land and increasing the rate of land fragmentation. The new National Sustainability Strategy has set a target for reducing land sealing to 30 hectares per day by the year 2020.

The governing coalition has also developed other specific policies to strengthen rural areas and promote a multifunctional role for agriculture under different structural condi-

tions. The newly formulated agricultural policy aims at producing high quality, safe and healthy food with the accompanying change in consumption patterns, advocating welfare-oriented animal husbandry and animal protection, supporting the creation of jobs and providing support in rural areas. According to this new approach, agriculture must provide renewable raw materials and renewable energy along with eco-friendly landscape management and nature protection, leisure activities, rural tourism and the restoration of biodiversity.

In response to pressure for safe food in the wake of the BSE and dioxin scandals, the Federal Government has formulated initiatives in an attempt to regain consumer confidence and indeed to regulate the industry towards a more responsible production profile. These include:

- The banning of antibiotic feed additives and growth hormones in livestock and livestock products industry
- Invoking customer sensitivity and interest in high quality and safe foodstuffs which are free from harmful residues
- Promoting organic farming, primarily through sales and marketing
- Upholding animal welfare through legislation as far as animal transport time is concerned, as well as ensuring that animal husbandry respects the particularities of species
- Managing federally owned government forests on the basis of an environmentally friendly ethos
- Promoting a non exploitative approach to natural resources, especially soil and water, but judicious utilization and conservation
- Formulating a clear definition of industrial livestock from conventional livestock and recognizing the difference by removing legal privileges (i.e. subsidies) from industrial livestock farming
- Formulating a BSE Control Act, aimed at providing guidelines on risk management on farms and in abattoirs in cooperation with researchers. This includes the banning of meat and bone meal for farm animals intended for food production.

Existing agricultural legislation has been reviewed in the light of new challenges and the objectives of centralized deregulation at a federal level, while at the same time, legislation has become more orientated towards current global market trends along the lines of WTO/GATS negotiations.

6.5.2 Cleaning up after agriculture

In Germany, over the last 40 to 50 years scientific and technological advances have resulted in energy and capital-intensive production that basically separated livestock and poultry from agriculture per se. Large farms and herds grew in line with enhanced efficiency and an increase in feed imports. The trend was set to continue with the entry of modern biotechnology and genetic engineering to spur further specialization in produc-

tion. However, today the key question is how to deal with the negative environmental impact created, not only for Germany, but also for most of Europe (Germany is home to half of the European vertebrates and today is among the OECD countries with highest percentage of threatened species, according to the Environmental Performance Review: Germany, published by OECD, 2001). This means identifying ways for land use management to ensure that land committed to agriculture and forestry is managed in an environmentally friendly manner.

Today, Germany has to exert better controls and limits to avoid pollution from the use of chemicals fertilizers and liquid manure. There is an excessive amount of nitrates that percolate to the surface and the ground water systems. The accumulated impact on agricultural areas is turning water reservoirs into a health risk. As it is, major ground water resources in Germany exceed the current EU nitrate limit of 50mg/l (FEA,1998). Consequently, water production in these areas have been closed down and relocated to virgin areas in the forests.

The environmental measures taken in agriculture are linked with environmentally sensitive farming practices recommended by EU directives for which DM 926 million were provided as part of EU, Federal and State Government funding. Today, almost 30% of all farmland have already adopted practices which go beyond usual good farming practices (i.e. extensive farming and low-intensity pasture systems, conservation of high-value natural farmed environments under threat, among others). Germany is responding to the challenge to protect the functioning ecosystems since it has approximately 500 biotopes of which two thirds are threatened to some degree (15% of all biotopes are endangered).

6.5.3 Managing agricultural productivity

According to the 2001agriculture report, the number of farms with over 2 ha of farmland is 421,100, representing a reduction of 13,000 since 1998. Profitability from forage, crop, and mixed farms has risen by 13.5% compared to the previous year. Most of Germany’s food and agricultural trade is mainly within the EU. For instance in 1997, 62% of imports and 67.9% of exports were achieved with EU member states (Tangermann, 2000).

As mentioned above, the Government only recently reviewed agricultural food production, with a focus on proactive consumer protection where quality, and not quantity, is the major impetus. Discussions held with the Minister for Environment, Food, Agriculture and Consumers indicated that the Government is committed to developing production systems that are transparent, from inputs, production/processing, to marketing and quality assurance, especially for food safety and nutritional value.

Germany has the largest share of land under cultivation in Europe with 15-30% of the arable land. As a result of high yields and the efficiency of agricultural production, and imports, much less land is required to meet the market demand. The government is therefore encouraging farmers to release part of their productive land for agricultural rural landscape developments, forests and to even leave land fallow in order to encourage biodiversity and nature's recovery. In return, the farmer is paid compensation for loss of income as an incentive to convert agricultural land to natural ecosystems.

Most farmers are members of their own associations and unions, like the huge Deutscher Bauernverband (German Farmers Association), or the Arbeitsgemeinschaft bäuerliche Landwirtschaft (family farmers association) (AbL) which organizes and advises family farmers. The German Farmers Association sees its role in representing farmers at the State and Federal Government level but also at other forums. According to its Economy and Regional Policy Officer, 95% of farmers hold membership in their organization. They very often form lobby groups to influence government support for their common interests, especially because of the continued threat of declining earnings from farms in the face of globalisation. WTO requirements to remove subsidies and price distortion is facing strong resistance in Germany and Europe. Farmers realize that it would mean their products would not be as competitive on the markets, yet they would like to retain the subsidies as long as possible. Subsidies are especially beneficial to farmers with larger farms as they can continue to produce on part of their land and still receive subsidies for leaving productive land fallow for nature conservation. As far as converting their production systems to organic farming, conventional farmers are not very optimistic about the targets set by the government, but are concerned about the application of differing standards, being higher for large scale farmers in comparison to small-scale producers.

Following German reunification, farm produce prices went down due to loss of exports to the Eastern European countries and other factors. This led to the mobilisation of public funding to keep enterprises afloat.

Profits improved in the 1990s especially for East Germany where farms were larger. Production concentrated on cash crops that earned farmers better returns on subsidies. In the West, with much less farmland per unit, farmers produced livestock and special crops that attracted minimal hectare-related subsidies.

However, when government instituted structural adjustment programs that directed production towards market demands where competition is rife, farming efficiency became important and was complemented by technology. Despite heavy public investment in both small and large farms, many farmers found themselves in dire financial straits. The forthcoming WTO round will probably lead to a further decline in export subsidies, import barriers and internal support.

As expected, farmers are very concerned about the number of farms going into receivership. As seen earlier, Germany is a main importer of agricultural commodities. Farmers feel that in addition to the government providing some sort of cushioning for enterprises losing money, the government should only open markets gradually in order to allow the necessary financial and social adjustments.

Farmers have also identified innovative ways of improving income from their farms, by co-operating on regional levels and planning production according to regional market demands. This has included the aspect of added value for their products through processing and product development.

6.5.4 Cleaning up: Some elements of soil and water quality improvement

The intensity of farming in Germany was reduced in the 90s, mainly due to German reunification and the 1992 reforms. It is expected that pollutant loads on soil and water,

emanating from agriculture will continue to decrease. Progress made by the improved integration of environmental concerns in agricultural policies following EU directives on integrated pollution prevention and control has contributed to the progress in this respect.

There have been significant improvements in the quality of the Rhine and Elbe rivers. The application of the "polluter-pays" policy, precautionary and co-operation principles guiding German environmental policy have been effective in setting a trend of reduction in the load of pollutants in the water and soil. Monitoring of water quality has been expanded to the New Länder, with the goal to have 100% of its river in quality II by 2010. However, diffused pollution to the rivers and ground water is still a problem, which closely related to agricultural practices.

Soil and water quality: Natural soil functions ought to be secured on a sustainable basis by reducing pollutant loads to a minimum, orienting nutrient input to plant requirements and the filter and buffer capacity of the soil. Protecting natural soil functions is ensured through water resource protection, by regulating the use of mineral and organic fertilisers.

A need to control the pollution of water and soil by reducing the use of fertilisers has been widely recognised, but German agriculture is still using fertilizers far above EU recommended levels. National regulation exists for the use of sewage sludge while regulations on the use of compost are being prepared. Use of liquid manure is also regulated, but there are no guidelines on the rules governing the pollutant loads.

6.5.5 Abating soil erosion and structural damage

Soil erosion is primarily caused by water and wind and enhanced by land use practices. To maintain soil fertility, soil degradation should not exceed the rate at which new soil is formed. The intensive farming methods, especially soil tillage and the use of heavy equipment, cause damage to the structure of both topsoil and subsoil through compaction.

From discussions held with farmers in NRW in the Garzweiler area, local farmers were very conversant and experienced in soil management techniques to deter erosion and compaction. They recognize moderate tillage and crop and field rotation practices according to the respective area. Linking compensation payments to compliance with minimum ecological standards could be a useful incentive for farmers. Yet this still seems to be a challenge for subsidies and government incentives.

6.5.6 Organic farming

Spurred by the recent food scandals in Europe, consumers have become more sensitised and aware of the magnitude of lurking dangers resulting from highly intensified farming. People are very sensitive to the negative effects of the massive use of fertilizers and pesticides. The disregard of animal welfare and rights in order to mass-produce food and maximize on profits has also become a social concern. Policy reviews are also aimed at educating the consumer, to enable them to make informed choices through the

shopping basket, for production methods that guarantee high quality, safety, ecological and animal welfare sensitivity. Some of the avenues proposed include marketing through product labels, campaigns, electronic and print media and even sensitising children through school curricula and other school-related activities.

According to the Ministry of Agriculture and Conservation of Nature, Germany intends to raise the organic or eco-friendly farming portfolio from the current 3% to 20% of agricultural land over the next 10 years by providing support to the sub sector through training and marketing programs. To achieve this aim, the Federal Government has established the Federal Agricultural Research Center (Agriculture Report 2001). Part of this effort will be achieved through creating awareness among retailers and consumers on the health benefits of organically grown food, which are free from potentially harmful chemical residues from fertilizers and chemical crop protection agents.

Although organic agriculture has been practiced in Europe since the 1920s, it was not until the 90s that it began to emerge as an important mode of production. In fact, although not much publicized, organic agriculture has been widely recognized in Europe since the early 90s, and names such as biological, ecological or organic and often designations such as bio and eco are used to identify such products. The EU regulation No. 20092/91 provides guidelines on all ecological agriculture products imported or grown in the region in a bid to protect consumers from fraud (FEA, 1998).

However, it is concerning that the bio regulation is not very stringent since it does not refer to the conversion of the of the whole operation. But this is an issue that the Minister of Consumer protection, Food and Agriculture, Renate Kuenast, intends to bring to the attention of the European Union Secretary at the Agriculture Council.

Eco-agriculture incorporates eco-landscapes where the government has introduced a policy where farmers are now paid to leave part of their land fallow and where natural landscapes are not interfered with. For instance ditches and trenches allow for natural biotopes and biodiversity to proliferate. About 40,000ha are currently under such bio management (Nature Data 1999). Farmers who release their productive land for this purpose are compensated for reduced yields and earnings.

6.5.7 Promotion of organic farming

Economic incentives for intensive agriculture are being redirected to support appropriate ecological activities that reward quality instead of quantity. Organic products are exempt from value added tax. It is not clear if organic products produced in and outside the EU also benefit from similar exemptions. However, present day economic incentives for organic agriculture still pose the danger of generating market price distortions or being best suited for large producers.

The government is actively supporting organic farming through the provision of relevant information, training, marketing and research. For instance in September 2001, an information campaign in the state of NRW was able to make direct contact with 250,000 people at first hand. The impact of this effort was translated to a 50% increase in organic food demand.

The European Union uniform bio label is used on a voluntary basis on products that comply with the regulations and carries a distinct insignia of green- blue and yellow and shows a cereal ear with the inscriptions for ecological agriculture or biological agriculture. In Germany, as in many European countries, a national ecological logo, BIO was developed in September 2001. Although the standard is less stringent than the private labels, it provides the consumers with the assurance that the government is monitoring the use of labels in order to ensure fairness and prevent fraud. This will promote government expectations of a market rise by 20% by the year 2010.

Organizations which have already supported eco-agriculture for many years in Germany have developed organic labels, guidelines and codes of practice with registered trademarks which guarantee monitoring for compliance in order to maintain consumer confidence. The various bio-labels in Germany include Demeter, Naturland, Naturkind, Biopark, Bioland, and Gäa.

FiBL Berlin, a research institute founded in 2001 together with the Swiss Research Institute for biological agriculture, hosts an Internet Web site on behalf of the North Rhine-Westphalia Ministry of Agriculture under the title "Expert information system for ecological agriculture" that provides a basis for exchange and services.

Bioland, the largest and best known German bio-label body, is a membership, non profit organization, that is championing organic food production in Germany. In 2001, it had a membership of 4,150 organic farmers and 727 producers, including bakeries and butchers. It is self-governing, but monitored by the regional European Union branch of the world-wide umbrella International Federation of Organic Agriculture Movements (IFOAM), which constantly reviews any developments taking place.

According to the manager of Bioland, in the state of NRW, 50% of organic farmers lease land as they can not afford to buy it. He alluded to the fact that although organic products fetch better prices than the conventional products, they still do not reflect the real cost of production. It is a major challenge to sustain organic production in the EU.

Basically, Bioland promotes its members' businesses through training and marketing. The principle on which they operate is that only exotic products should be imported. In other words, imports of temperate crops such as green beans from Spain or Ethiopia, referred to as "kerosene vegetables" should be discouraged (this is attributed to the air miles that these vegetables incur in travel from their source to destination and the inferred environmental impact from use of fossil fuels and the emissions that contribute to climate change).

As far as the acceptability of organic produce is concerned, according to a survey conducted by the Technical University in Berlin in 2000, income is not the major consideration to opt for organic products. The lower middle income group seems to adopt and sustain the demand. Considering that organic products are up to 40% more expensive than the conventional products, this group is willing to spend more. While the cost may be a factor of consideration in the choice for organic or conventional food, it is not the only determinant. People from different socio-economic backgrounds buy from open markets, nature shops as well as cooperatives and a number of regular supermarkets. (Schäfer, et al., 2001)

While the BSE crisis fuelled the public quest for more natural and safer food, no major revolution for change in agricultural practices is expected. The challenge is to contain

the conventional farmers' demands against the health benefits and ecological arguments in favour organic products. The gains made so far have not been consolidated and they might be threatened by possible policy changes after forthcoming elections.

At the moment, the market for organic produce constitutes 5-10% of the market share in Europe with Germany holding a major share worth approximately two billion Euros. According to a consulting firm, the Organic Monitor, this is due to government willingness to support organic food production with training and marketing for the produce.

The campaign to promote organic food (initiated in NRW) will be extended into the year 2002, where the creation of an consumption culture that is inclined towards organic food production amongst consumers will be the focus. The expected output is set to increase the applications from farmers who wish to join the program to switch from conventional to organic agriculture. On the other hand, direct marketing should garner one third of the food trade for organically produced food. Free-range livestock is being encouraged by the government.

6.5.8 Other instruments to promote multifunctional agriculture

The government is also encouraging sub sector programs that add value to organic products. For instance, there is growing interest for biomass production for fuel, wood chip production, and the use of solar power and windmills for energy. Transforming biomass into fuel translates into more income for farmers from a non-traditional product.

Many farmers are also finding that they can diversify the kind of products and packages they sell on their farms. Some of these include creative family options such as family parties on the farms, educational tours for children; hay hotels for travellers, cafes, bakeries to process baking flour as well as selling finished goods.

Farmers are adopting private forestry where owners not only gain from subsidies available for farmers for not producing, but where benefits also lie in the sale of wood chips for extra income. One of the initiatives under this program uses such wood chips to generate heat for some 60 flats in a settlement that has certified the strict use of forest products under the Forest Stewardship Council.

6.6 Supporting trade in the South

According to the Ministry of Agriculture, the government is also sensitive to the Third World countries' fears that under the WTO trading regime, issues of phytosanitary standards may become non-tariff barriers to trade. It is committed to assisting these countries through training and providing consultant technical assistance, regarding this as a possibility for rather than a hindrance to enhanced trade. This collaboration would however require openness in formulating such cooperation and would allow more integration for the developing countries, into international negotiations.

Germany will also support the integration of food safety into food security programs as well as strategies for sustainable development. In the recent past, development aid for

agriculture has been on the decline and the government hopes to reverse this trend. The government also intends to support the FAO initiative on a strategic framework for the year 2000-2015, which is aimed at reducing poverty in rural areas. This strategy will support and strengthen legal frameworks for agriculture and forestry towards increased access to food and agricultural products as a measure of promoting conservation and the sustainable use of natural resources.

6.7 Use of modern biotechnology

In Europe, there has been a strong resistance to genetically modified foods and crops by consumer and producer organisations as well as by environmental groups. Nevertheless, governments of a number of the EU member countries and the industry are still hesitant to implement the precautionary principle. There is high sensitivity in Germany on this issue. For many years, polls have revealed that 80% of Germans reject GMOs in their food. According to family farmers and organic farmers interviewed by the evaluation team, they are also quite aware of modern biotechnologies and the debate on their possible health, as well as the environmental and social effects. From interviews with farmers, and their representatives, it was very clear in their minds that they did not want to grow or consume GM foods.

The "Precautionary Principle with respect to GMO technology must continue to be considered in Europe and in the South in order to be well understood, since it as it could be a potent tool in protecting agriculture. It seems that there is awareness among citizens of the EU that no matter how much they avoid the genetically engineered products at a regional level, there are no boundaries in the environment. They will be exposed to these products as they travel around the world through business and trade. Therefore the extension of their objection campaigns to the Southern countries where the so-called "Life Sciences Companies" are proliferating under the guise of development, is a must. Southern farmers and native communities are all demanding a global moratorium on GMOs. The threat of biodiversity erosion and the fear of contaminated gene banks are a major threat to humanity and the future.

6.8 Nature conservation policy

The Federal Nature conservation Act has been revised for the first time in 25 years and came into effect in April 2002.

The key objectives are to make land use compatible with nature, the environment and the landscape. For example, recognizing that agriculture and forests account for over 80% of the land, the act provides sets guidelines on good practices. For instance grassland may no longer be ploughed up on slopes threatened by erosion, in flood plains and areas with high ground water levels. The agricultural law requirements for judicious use of fertilizers will complement these efforts.

Another example is non-interference with biotopes. In this respect, a biotope network will consist of existing protected areas like river courses, connecting elements like

churches towers as nests for kestrels. This element will be implemented at a state level, where at least 10% of the land should be dedicated for this initiative.

The law also provides for sports and recreation where nature conservation interests are integrated into the planning for such activities. What is of paramount importance, however, is that the public not only accepts this model, but also becomes part of the system both on an individual and a community and social level. This is why new legal instruments allow civil society to legally challenge the government on land use proposals.

The creation of well defined wind farms in the North and Baltic seas is a good example of planning for development. In this case, wind energy harvesting must safeguard the flora and fauna in that area.

In the forestry sector, semi natural forests will be developed while avoiding clearing. The idea is to retain some of the native forest species. In the fisheries sector, stocking water with non-native animal species is strictly prohibited.

The new nature protection law demands renewed thinking that favours encouragement, through economic incentives, for premium grassland milk production geared towards safeguarding grassland sites and in favour of the extension of agri-environmental measures. Moreover, the improvement in the agrarian structure through support for ecological production and marketing, whilst allowing nature conservation and organic farming, will be expected to include regional processing and marketing. Investment promotion will be graduated according to income levels made dependent on livestock farming with a minimum area per livestock unit and made available on equal terms to all farmers.

6.9 National forest program

Germany has a forest cover of 30% (Nature Data 1999). The forests provide a resource for wood raw materials, opportunities for recreation in nature, tourism and also contribute to the renewal of water in catchments, protect soils against erosion, clean up the air from noxious gases and dust and contribute to flood control along big rivers, ultimately influencing the quality of the environment in a broad sense. Forests are also crucial to the conservation of biodiversity.

On a global level, Germany is a signatory of the 1992 Convention on Biological Diversity . Germany has also realized the benefits of cooperation and its contribution to international debate on effective coordination, for instance the resolutions and declarations of the Ministerial Conferences on the Protection of Forests in Europe (1990, 1993 and 1998), as well as the forestry strategy of the EU.

The Federal Forest Act provides a framework to conserve forests due to their economic benefits. Forests receive public support in lieu of their diverse functions to improve the economic environment e.g. within the framework of the Joint Task for the Improvement of Agricultural Structures and Coastal Protection (GAK) for which DM 120 million is made available annually by the Federal Government and the states.

To sustain these forests, Germany has developed laws that allow access, but prohibit activities that strain on forests e.g. increased traffic and waste, precautions for the safety of roads and recreational activities, and the greater risk of forest fires.

6.10 Re-establishing the Elbe river banks

An example for a comprehensive and modern strategy to re-establish flood plain forests is currently being implemented on the river Elbe, in the Elbtalaue Nature Park in the North of Germany. The site is situated in the biosphere reserve at the lower middle Elbe, half way between Berlin and Hamburg.

From a presentation by the project researcher, the project aims at restoring the natural biodiversity of the flood plain through reforestation with the original species of trees. By returning the levees, natural flooding conditions will be recreated. It is expected that the typical living conditions of a lowland flood plain will be re-established along the lower Elbe with funding from the EU.

This project, the experience of "flood plain regeneration through returning levees" will demonstrate the potential of developing ecotopes as well as establishing animal and plant biodiversity following the clearance of the indigenous forests for agricultural purposes 200 years ago.

The project demonstrates that a combination of returning levees and establishing flood plain forests is a very effective strategy for protecting endangered ecotopes in western central Europe. And perhaps this is a lesson that can be learnt in other parts of the world.

6.11 Findings and conclusions on agriculture and nature protection

1. Liberalisation and globalisation processes have dominated development politics since Rio. Growth, efficiency and profit-raising have been turned into guiding principles of development, giving priority to free trade rather than social rights and ecological rules. The intensive production of goods and services threatens nature protection rules and ecological alternatives, thereby hindering social responsibilities. In this respect, globalisation has increased social divides between the North and the South, but has also created a North within the South and a South in the North, as seen in the proliferation of global poverty.
2. Germany seems to have realised the need to review their production and consumption patterns to accommodate economic and technological growth whilst subordinating to sustainability, nature protection and social balance. Prices have yet to reflect true costs by integrating ecological and social costs. For example, fair trade, "ethical" investments, socially and ecologically "clean" or resource-saving production and companies oriented to equity ought to enjoy support through different economic instruments.
3. Guiding policies in agriculture, environment and nature protection have provided a frame work aimed at providing sufficient, safe quality food, sporting and leisure grounds, rural landscapes and adequate clean water, regenerating soil and cleaning pollutants from the atmosphere. These goals are yet to be fulfilled. The sustainability challenges have been recognised and there are plenty of technological tools to increase efficiency. The question of sufficiency in agriculture also needs to be ad-

dressed for comprehensive policy and target setting. When setting a vision for agriculture, an international perspective must be adopted. This is particularly important when major multinational agricultural and food companies are the driving forces in food consumption habits and policy setting. The vision can not avoid the question of power between agri-business, food processing industry, chemical and seed corporations on the one hand, and consumers, organised civil society and sometimes the government on the other.

4. As expressed by critical experts on sustainable development in Germany, the idea of progress in agriculture is typically technology-driven. Therefore any future development or change can only be conceptualised in terms of technical fixes. The idea of attitudinal changes (such as eating habits or purchasing preferences), as a tool to realize any progress, is inherently, abstract. Yet, cultural changes are a prerequisite to achieving any change in production and consumption patterns in agriculture, towards sustainability. This is the dilemma Germany has yet to confront.

5. Germany, as a renowned economic and socio political pace setter at a global level, must fulfil its obligations and play a leading role in supporting a transition to sustainable agriculture and the conservation of rural life. This can not be done in Germany or the EU alone. Seeds and food products are transported globally. This means, there will be no safe food policies at home, if the agri-business and the chemical industry contaminate the South. A global perspective on agriculture demands a broader transition and the participation of Southern partners. This will not take place if Germany continues to reduce its ODA, or shift it to Foreign Direct Investment. The open dialogue between farmers should not be replaced by a dialogue of economic interest. Development co-operation should focus on improving access to land, water, forests and biodiversity as preconditions for securing the livelihoods of the majority of the population in the countries of the South. The value of ODA to Germans should be clarified and evaluated to ensure a global transition to sustainable agricultural practices North and South.

6. In the field of agriculture and natural resources, issues of gender have not been dealt with. But the whole debate of changing consumption habits is a gender issue, as the different demands and responsibilities dependant on gender have to be satisfied. The various roles and needs of working /non working, single or married parents, retired and aged citizens, growing children, vibrant youth and citizens with special needs have to be integrated into the implementation of policies geared towards change. They must therefore be part of decision-making through real and effective participation, by engaging people on their individual and collective level. Initiatives that require people's pressure need not be subordinate to the policies of the government of the day, as seems to be the case. For instance, much as the people realise that an ecological agricultural production system is an option for sustainability, it may remain a strategy only as long as the Green Party is in government. There is strong need to detach sustainability policies in agriculture from party politics.

7. If the new direction in agriculture is oriented by food and if consumers embrace ecological agriculture, as indicated by the trends and going by the rate at which the soil and water clean-up can take place, conversion from conventional production will take some time. Might this provide an opportunity to look towards developing coun-

tries as a source for organic products? This of course creates the question of "food miles" along with complementary opportunities for "fair trade".

8. The trends towards reducing agricultural subsidies in industrialised countries and the impact of opening up markets to agricultural products will still raise many issues. Fair trade is still a niche market, but has already shown an opportunity which must be developed and promoted on the grounds of objective reasoning. The risk associated with international competition for low food prices does not necessarily pave the way for more sustainable agriculture in the South. Large agribusiness could also be well positioned in the South to take advantage of emerging market opportunities. Sustainability in agriculture and nature protection requires a comprehensive set of criteria that should include social, economic, environmental and institutional aspects in Germany and around the world.

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APPENDIX II
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Other Publications related to the World Summit

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By Nika Greger. May 2001, available in German, English, Spanish at www.worldsummit2002.org

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