

P r o g r e s s R e p o r t 2 0 0 4

Perspectives for Germany

Our Strategy for Sustainable Development

Table of Contents

A.	Current Challenges of Sustainable Development	9
B.	Strategy as a Social Process	16
I.	Sustainability and society	16
II.	The Federal Government in dialogue	21
III.	Dialog Nachhaltigkeit (Dialogue on Sustainability)	23
1.	Internet	23
2.	Rounds of talks at the Federal Chancellery	25
3.	Consultation of the federal ministries	28
4.	Outcome of the dialogue: changes to the draft	29
IV.	The German Länder and sustainability	31
	Indicators and goals of the National Strategy for Sustainability – an overview	37
C.	Indicators and Goals	39
I.	Intergeneration equity	39
1.	Conservation of resources	39
2.	Climate protection	41
3.	Renewable energies	43
4.	Land use	44
5.	Biodiversity	45
6.	National debt	46
7.	Provision for future economic stability	47
8.	Innovation	48
9.	Education and training	49
II.	Quality of life	51
10.	Economic prosperity	51
11.	Mobility	52
12.	Nutrition	54
13.	Air quality	56
14.	Health	57
15.	Crime	59

III.	Social cohesion	59
16.	Employment	59
17.	Perspectives for families	62
18.	Equal opportunities	63
19.	Integration of foreign citizens	64
IV.	International responsibility	65
20.	Development cooperation	65
21.	Opening markets	66
D.	Progress: Implementation of the Strategy for Sustainability	68
I.	Using energy efficiently – protecting the climate effectively	68
1.	Initial situation	68
2.	Implementation of planned measures	69
3.	Summary and outlook	87
II.	Guaranteeing mobility – protecting the environment	88
1.	Freight transport - efficient and environmentally friendly	90
2.	Passenger transport: guaranteeing diversity in mobility	93
3.	Reducing emissions - preventing noise	98
4.	Summary and outlook	103
III.	Producing healthily – eating healthily Consumer policy for a changing society	105
1.	Forward-looking farming with consumer protection, animal husbandry appropriate to the species and environmentally friendly business methods	105
2.	Consumer policy in the interests of sustainable development	114
3.	The pilot project “Regionen aktiv – Land gestaltet Zukunft” (Regions in action – the countryside shapes the future)	120
IV.	Taking global responsibility	122
1.	Sustainable energy for development	124
2.	Water – a precious resource under threat	127
3.	Sustainable world trade	130
4.	Disaster prevention as an element of sustainable development	134
5.	Responsible corporate management	136
6.	Summary and outlook	138

E.	Additional focal points of sustainable development	140
	I. The potential of older people in the economy and society	140
	1. Current situation	140
	2. Concrete vision	142
	3. Fields of action	143
	4. Summary and outlook	158
	II. New energy supply structure incorporating renewable energies	161
	1. Current situation	161
	2. The challenge	161
	3. The task	163
	4. Conception and approach	165
	III. The fuel strategy	167
	1. Current situation	167
	2. Method of approach	168
	3. Status quo	168
	4. Assessment of alternatives	179
	5. Focussing on a small number of alternatives with high potential	187
	6. Planned measures	190
	7. Outlook	193
	IV. Reducing land use	194
	1. Status quo	194
	2. Concrete vision	195
	3. Assessment of Federal Government land utilisation projects	196
	4. Recommendations by the German Council for Sustainable Development (RNE)	203
	5. Conclusions of the Federal Government	206
F.	Outlook	214

Every generation must perform its duties and not burden the next generation with them – that is the basic idea of sustainable development, and this expressly includes the global perspective.

Sustainability not only relates to the policy of environmental protection. This basic idea also applies to the reform of social security systems and likewise to the restructuring of European and German agricultural policy. We also need a long-term strategy to reduce dependency on oil imports and do justice to the requirements of climate protection. An increase in efficiency in the use of energy and resources as well as the expansion of renewable energies is the right response to this.

The Progress Report translates the principles of sustainable development into concrete terms within important areas of action. For example, it presents a strategy on alternative fuels and engines. And it shows us how we can achieve better integration of older people in trade and industry and society. The Progress Report builds upon the National Strategy for Sustainability, which was adopted by the Federal Government at the time of the World Summit on Sustainable Development in Johannesburg in 2002. A sustainable policy involves a regular and transparent review of performance, as is presented here with the Progress Report 2004.

Sustainable development cannot simply be prescribed by the State. We can only succeed if all participants in trade and industry and society make this subject their cause. This is why we need broad discussion in our society on the goals of sustainable development. In this context, the social dialogue carried out by the German Council for Sustainable Development (RNE), which is documented in this Progress Report, is of great importance.

The Federal Government will consistently pursue its policy of sustainable development. In doing so, we are looking beyond the borders of our country. The action plan agreed at this year's International Conference on Renewable Energies in Bonn shows countries to the north and south how to further the expansion of renewable energies.



Gerhard Schröder

A. Current Challenges of Sustainable Development

The Federal Government adopted its Strategy for Sustainable Development under the title “Perspectives for Germany” in April 2002. In this document we introduced measures for the four areas of action Energy, Climate Protection, Transport, Farming, as well as Global Responsibility, to bring Germany forward on the path towards sustainable development. The course is set out in twenty-one ambitious goals.

Nearly two years have passed since then. In this Progress Report, the Federal Government relates for the first time what has been achieved. We describe where we have made progress and what we still need to do. This also forms part of a strategy for sustainability: a transparent and regular review of performance that shows us whether we are on the right course. We are aware that two years on the path towards sustainable development is a very short period of time. Many of the measures announced in the Strategy for Sustainability have been initiated, but not all of them have been implemented. Often their full effect is not felt until the medium to long term. For this reason, the yardsticks of sustainable development, the 21 indicators, are not yet expected to show any fundamental changes and so this first Progress Report on the Strategy for Sustainability is only a first interim report.

The World Summit on Sustainable Development, which was held in Johannesburg from 26 August to 4 September 2002, was an outstanding international event on matters of sustainability. The results of the summit are plain to see, even though the European Union and Germany have not been able to achieve all their goals. Nevertheless, the resolutions, especially those on fighting poverty, preserving biological diversity, safety of chemicals, supply of drinking water and basic sanitary provisions, were important steps forward. Among the main results of the world summit are:

- **Water and basic sanitary provisions:** The number of people living without access to drinking water and basic sanitary provisions should have halved by 2015.
- **Renewable energies:** The market share of renewable energies should have increased significantly worldwide. No agreement was reached on the laying down of quantifiable targets.
- **Trade and globalisation:** Subsidies that have a detrimental effect on the environment are to be cut back. It was also agreed that multilateral agreements on the environment will not be subject to regulations of the WTO.
- **Disaster relief:** Expansion of strategy to prevent natural disasters as well as to improve disaster management.
- **Sustainable patterns of production and consumption:** A 10-year supporting programme for sustainable patterns of production and consumption (e.g. eco-efficiency, life cycle analysis, eco-labelling) is to be launched.

- **Biological diversity:** Extinction is to be cut back significantly by 2010.
- **Chemicals:** The negative effects of chemicals on people and nature are to be minimised by 2020.
- **Natural resources:** The loss of natural resources like lakes and forests is to be stopped as soon as possible.
- **Fishing:** Over-fishing of fish stocks is not permitted. Damaged stocks should recover by 2015.

At the beginning of May 2003, the UN Commission on Sustainable Development (CSD) reached agreement on an ambitious working programme to implement the Johannesburg action plan in the period up to 2007. Firstly, it will focus on water/basic sanitary provisions (2004/2005) and then on issues relating to energy policy (2006/2007). Other subjects to be dealt with over the coming years are, agricultural policy (2008/2009), as well as sustainable patterns of production and consumption (2010/2011).

In his speech at the Johannesburg summit, Chancellor Gerhard Schröder announced an international conference on renewable energies in Germany. This conference – “renewables 2004” – was held from 1 to 4 June 2004 in Bonn. The main topic of the conference was: How can the market share of modern renewable energies be increased significantly with the aim of achieving sustainable and efficient energy supply in industrial and developing countries? How can obstacles be overcome and relevant markets developed worldwide? A policy statement and international action plan were adopted to this end. The plan contains 200 concrete actions and obligations for governments, international organisations, trade and industry and societies from across the globe, including several actions for the Federal Government. Guidelines for a “good” energy policy were also adopted. The conference has provided fresh impetus for the drive for worldwide development and expansion of renewable energies, which began in Johannesburg.

The flooding of the River Elbe shortly before the World Summit in Johannesburg dominated the headlines in Germany for weeks. People lost their lives and possessions in the floods. Direct material damage totalled more than 9,000 million euros. We took control of the disaster with community relief, solidarity and public spirit. The energy of the German people in the east and west at that time was magnificent. However, we cannot afford to just wait until the next flood causes devastation in five or ten years. If we want to minimise the damage caused by flooding in the future, we need to give our rivers more space. In planning, federal states and municipalities must be more serious about flood defence than they have been before. “Prevention rather than cure” is the motto of a sustainable policy on flood defence. It is also the central idea of the 5-point programme that the Federal Government adopted even before the flood waters subsided. Since then, we have been consistent in implementing the programme, most recently with the Flood Defence Act (*Hochwasserschutzgesetz*), which the German *Bundestag* adopted in July 2004. One of the most important measures of the programme is the ban on building in areas prone to flooding. It is obvious that there cannot be an absolute freeze on building in fluvial topography with its centuries-old housing structure, but new building sites in areas prone to flooding must not be allowed.

The floods in Germany are no singular occurrence. We are experiencing an increase in occurrences of extreme weather worldwide. This shows that climate change is not a sceptical prognosis – it is reality. This challenge requires decisive action. An important prerequisite for effective climate protection is sustainable energy supply, which takes into consideration the goals of safety of supply, economic efficiency and environmental sustainability. The Federal Government is expecting a more intensive expansion of renewable energies along with a clear increase in energy efficiency.

As regards energy efficiency, Germany is already leading among industrial countries. This is good, but there is still need for improvement. We will achieve this with the aid of measures directed at suppliers as well as at energy users, e.g. through energy production in highly efficient gas and steam turbine power stations, through combined heat and power generation, greater efficiency at lignite and hard coal power stations, as well as through investments in clean coal technologies. The German Council for Sustainable Development (RNE) also referred to these perspectives in October 2003 in its guidelines on a modern coal policy and innovation promotion. As lignite and hard coal power stations will continue to be a supporting pillar of energy supply for many years – in Germany as well as in many other countries of the world – we must succeed in making the high efficiency rates of modern coal technologies useable worldwide in the interest of a more sustainable energy supply. On the side of the users, considerable potential will be opened up in the building sector, environmentally friendly engines, in information and communication technology and many other areas. In this way, not only will we be contributing to innovation and competitive strength, but also doing a considerable amount for climate protection.

Since 2002 the use of renewable energies in Germany has continued to rise sharply. Their share of total electricity consumption was estimated at 10% in the first half of 2004, compared with just 7.9% in 2003. The share of total energy consumption exceeded the three percent threshold for the first time in 2003, at 3.1%. Thus, in 2003 alone, renewable energies prevented the production of 40 to 56 million tonnes of carbon dioxide. With the amendment of the Renewable Energy Sources Act EEG, this trend is expected to continue. It has meant that this sector now employs around 120,000 workers. The aim is to organise the expansion and promotion of renewable energies more efficiently so that, among other things, cost reduction potential can be better utilised and so electricity generated from renewable energies can become competitive even sooner.

Another important element of the policy on climate protection is emissions trading, which is to start throughout the EU in 2005. As regards the implementation of emissions trading in Germany, the Federal Government is concerned that it is formulated in an economically sustainable manner. Emissions trading makes an important contribution to the fulfilment of our climate protection obligations and allows trade and industry to reduce emissions that are harmful to the environment in an efficient and cost-effective way. Through trading in certificates, climate protection is carried out wherever it can be realised at the lowest costs. This facilitates ecologically effective and at the same time economically efficient action.

Finally, this year, the Federal Government plans to present the results and further development of the National Climate Protection Programme of October 2000. Yet, over the last two years, important stimuli for more sustainability have not been limited to climate protection and energy policy.

In June 2003 the European Ministers of Agriculture adopted a fundamental restructuring of European agricultural policy. In doing so, central elements of German agricultural reform have been secured at European level, too. In future, the most important criterion for direct payments by the European Union to farmers will no longer be the amount produced, but rather adherence to requirements of environmentally friendly production. This also gives farmers the scope to gear their production more towards sales potential and consumer requirements. Incentives for intensive farming will be cut back. Some of the funds previously earmarked for direct payments will be used to reinforce funding measures for rural areas, especially environmentally friendly and animal-friendly production methods, as well as production of high-quality food. With the course that has been set, European farming is provided with new and better basic conditions for sustainable development.

In transport policy, the Federal Government has created the necessary conditions for the introduction of a distance-based motorway toll for lorries. Despite all the difficulties and delays that have arisen in relation to this, the road costs for road freight traffic will in future be borne by those responsible for them. The lorry toll is also an economic incentive supporting a key issue of sustainable transport policy, namely, the shifting of freight transport onto the railways.

Economic policy, labour policy and social policy are also main focal points of public interest. On 14 March 2003, Chancellor Gerhard Schröder presented Agenda 2010, a comprehensive programme on labour market reform, restructuring of the social security systems, and economic growth, which has been implemented consistently ever since.

For example, the Federal Government has drafted four acts on modern services in the labour market. As a result of these, the former Federal Employment Services (*Bundesanstalt für Arbeit*) became the Federal Employment Agency (*Bundesagentur für Arbeit*), the new modern service provider. In future, unemployed people will receive more intensive assistance. Active labour market policy will be oriented consistently towards integration into regular work. At the same time, there are new development opportunities (e.g. the so-called *Ich-AGs* for the self-employed). This will mean an end to toing and froing between the employment agency and social welfare office. Rather, the focus is on integrated management of jobseekers and their integration in work. Former recipients of social welfare will gain access to the Federal Employment Agency's instruments of labour market policy, which were previously denied to them. Thus their chances of integration in work are strengthened in a sustainable manner.

The development measures take special account of the difficult labour market conditions in the East German *Länder*. According to an agreement between the Chancellor and the East German Minister-Presidents, regions with a disproportionately high unemployment rate will receive additional funds. Ultimately, this means

that 42 % of the development funds earmarked for Germany will go to the East German *Länder*.

The aim of Agenda 2010 is to strengthen economic dynamism in Germany for the short and medium term, create jobs and modernise the social security systems to safeguard them for the long term and reduce ancillary wage costs.

At the same time it is about a clear orientation towards innovation and investments in the future. This is why Agenda 2010 includes a Partnership for Innovation, which the Federal Government launched in January 2004 together with science, trade and industry. Its goal: to sustainably position Germany as the world leader of high technology and to inspire new confidence in the capabilities of Germany. The initiative aims at sustainable innovation, i.e. innovation with long-term value that actually represents a step forward for Germany too. It is about an integrated understanding of innovation policy, incorporating not only policy on research and technology, but also many other areas of politics (e.g. education).

The Federal Government is also taking this approach in the new supporting programme of the Federal Ministry of Education and Research: "Research for Sustainability". From 2004 to 2008 an average of € 160 million a year will be made available for research on sustainable development. Application of research results will, first and foremost, play a central part: just as research into the Lotus effect now forms the basis on which self-cleaning surfaces are produced, research results should be just as successful at finding their way from the laboratory into practice in the future.

The above examples show that policy on sustainable development is a high priority for the Federal Government. This may not always be sufficiently evident. For instance, some people may have wanted to see specific references to the Strategy for Sustainability in Agenda 2010. However, not everything that is sustainable has to be called "sustainable". The fact is that when we safeguard our social security systems for the future under Agenda 2010 or when we mobilise resources for education and innovation under the Initiative for Innovation, we are implementing the key elements of the Strategy for Sustainability at the same time.

In our Progress Report 2004 not only do we relate what has been achieved, we also further develop the strategy and establish new focal points. The State Secretary Committee for Sustainable Development (*Staatssekretärausschuss für nachhaltige Entwicklung*), the "Green Cabinet" of the Federal Government, has put four items on the agenda for this legislative period. Some of these are already outlined as programmes in the Strategy for Sustainability and are now supported with concrete measures in Chapter E of Progress Report 2004.

The first item is about exploiting the potential of older people in trade and industry and society. Here we take into account demographic change which is leading to an increase in the number of older people. How do we change basic conditions so that older people, with their knowledge and experience, are better integrated into trade and industry and public authorities? How can we ensure that, with their capabilities, they stay "at the height of the times"? By answering these questions, we are translating intergeneration equity as the main idea of sustainability into concrete

terms in an important area of policy-making. This subject is also dealt with by the Initiative for Innovation of the Federal Government, which underlines the close relation between sustainability and innovation.

The second item is the future structure of energy supply in Germany. The rising market share of renewable energies and the forthcoming modernisation of power stations call for a strategy for optimisation that intelligently combines climate protection with successful and competitive electricity generation in Germany as a centre for energy.

Above all, this is about a better integration of renewable energies in existing energy supply.

Another item are alternative fuels and drive technologies. Here we want to define criteria for sustainable development together with various parties from politics, science and trade and industry and by doing so, give research and development a clear perspective. This is to be used as the basis on which to develop a fuel strategy that combines safety of supply with climate protection.

The last item is that of cutting back land use. On the initiative of the Federal Government, the German Council for Sustainable Development (RNE) organised a broad dialogue on this subject, especially with the *Länder* and municipalities, and concrete measures were proposed on the basis of this.

The last two years have shown that Germany is taking action. The demographic development as well as continuing globalisation call for far-reaching changes – with a good balance between economic dynamism on the one side and social as well as ecological sustainability on the other. Germany has excellent potential to organise structural change in economic, in social and – equally important – in ecological terms in a pro-active manner. Innovative companies and a high level of research and development offer a good starting point. However, sustainability cannot simply be left up to the Federal Government alone. All social groups, each and every one of us, are called upon to contribute. This is why Chapter B ‘Strategy as a Social Process’ is given a central position in Progress Report 2004. For this chapter, the German Council for Sustainable Development (RNE) has prepared a report on the anchoring of sustainability in society.

The German *Bundestag* has also strengthened its active role in the debate on sustainability: In March 2004 the Parliamentary Advisory Committee for Sustainable Development (*Parlamentarischer Beirat für Nachhaltige Entwicklung*) was constituted. Its nine members come from all parties of the German Bundestag. Among other things, the Advisory Committee’s tasks are to assist in the implementation of the Strategy for Sustainability of the Federal Government, to draft proposals for further development, propose legislative initiatives and to promote parliamentary and public dialogue on sustainable development. It will present a report before the German *Bundestag* once every two years, starting in 2006.

If sustainable development is to become reality in Germany, we need many people to make this their cause. As previously during the drafting of the strategy, we

held another “Dialogue on Sustainability” (*Dialog Nachhaltigkeit*) for Progress Report 2004. German people and social groups participated by making their own proposals and suggestions. The first phase of the dialogue was held in January/February 2004 and dealt with the further development of the strategy. In a second round from June to August 2004 we presented the draft progress report for discussion and received numerous comments and suggestions that were taken into account in the final version. You can find further information about this as well as general information on the sustainability policy of the Federal Government online at www.bundesregierung.de and www.dialog-nachhaltigkeit.de

B. Strategy as a Social Process

I. Sustainability and society

The Strategy for Sustainability 2002 states that: "Sustainable development cannot simply be prescribed by the State. We can only succeed if all participants in trade and industry and society make this subject their cause." The implementation of measures by the State alone, however important they may be as a basic condition or initial impetus, cannot serve as the yardstick of sustainable development. Social commitment to matters of sustainability is just as important. Yet how does one measure and assess the wide variety of sustainability initiatives of foundations, citizens' groups, companies and industries, local Agenda groups, youth initiatives, the media, science, clubs and associations? How does one ascertain whether and to what extent the main idea of sustainability has been anchored in society?

The Federal Government has asked the German Council for Sustainable Development (RNE) to consider this matter and produce a report that summarises and assesses the contributions to sustainable development of the various social participants. To this end, the Council has held extensive talks with representatives of social institutions. Participants from municipalities, trade and industry, associations, citizens' groups, science, churches, foundations, etc. have discussed which topics are or should be at the top of the sustainability agenda. Furthermore, they have judged whether and to what extent the social institutions have contributed to the further development and implementation of sustainability and how innovative, convincing and clear their contributions are. The process also provided scope for participants to assess themselves ("Are we doing the right thing? And are we doing it correctly?").

**"Focus on Sustainability"
Society makes demands on politics – Report of the
German Council for Sustainable Development (RNE)**

Here we are presenting a snapshot of sustainability in society. Responsible individuals, experts, youths and interested participants from municipalities, trade and industry, associations and citizens' groups, from science, churches, and foundations have discussed which topics should be at the top of society's sustainability agenda. They have assessed the ability of social institutions to contribute to sustainability: Are we doing the right thing? And are we doing it correctly?

Our snapshot is optimistic, though not because we are already well on way towards sustainability, but because many creative and committed people have participated in it. Naturally, the snapshot also reflects crucial questions posed to the social participants. Through encouragement and criticism we have received many diverse and valuable suggestions for the sustainability policy which we will recommend the Federal Government and all those consulted to bear in mind. They are essential factors for confidence in the future.

Our snapshot 2004

- Successes and failures can often only be judged after an interval of several years. Knowledge as a point of reference is the scarcest resource in the discussion on sustainability. This is why it is important to us to add the personal views of figures that have been active in this field for many years. What are their conclusions after 30 years of policy on the environment and sustainability? They demonstrate the “central theme” running from the first environmental summits to today’s sustainability policy: the **sustainability story**.
- Often, in the many talks on opportunities and potential for sustainability, it is no longer obvious how very hard-pressed we are by problems relating to ecology, the economy and social issues. By highlighting **current problems and approaches to solutions**, contributions by the German National Ethics Council, the German Advisory Council on the Environment and the German Advisory Council on Global Change, the German television channel ZDF as well as the business initiative Pro Recyclingpapier and local Agenda groups, show us where we stand.
- Several hundred **experts, youths and managers** from trade and industry and society have given their views on the subject through making extensive contributions and participating in five **discussion** events. The discussions produced fruitful results. The critical recognition of what has been achieved was creative and showed innovative ways by which sustainability as a project can be recreated time and again through enthusiasm, solid calculation, responsible forecasting of future development and social commitment. The snapshot *Nachhaltigkeit und Gesellschaft* (Sustainability and Society) has been published in the German Council for Sustainable Development’s series called “texts”.

www.nachhaltigkeitsrat.de

We recommend that in future reporting on sustainability the Federal Government continues to integrate society in the conclusions with regard to the social impacts. The broad participation in our snapshot confirms the view that a public forum is required for this cooperation. The management of contradictions and conflicting goals in the concept of sustainability must be made more visible and understandable. Our observations demonstrate why:

- At some leading companies of trade and industry, sustainability as a business area is being built up through important sustainability initiatives, sustainability reports and integrated product development. As pioneers, they are making **trade and industry** a prominent factor of social opinion on sustainability. However, in trade and industry as a whole, sustainability is still often deemed as non-essential and is rarely dealt with actively. Sometimes, even in sustainability-oriented companies, it is evident that existing environmental activities are simply given a new label and sustainability has not yet entered the highest level of strategic corporate planning. Despite this, the trend is for cross-industry initiatives in which some companies go beyond the scope of their own market responsibility and organise sustainability with completely new alliances between the various active members of society.
- The **media** are virtually an unknown quantity when it comes to sustainability. Due to their long-term nature, subjects related to sustainability often have difficulty in competing with exciting up-to-the-minute news and the personalisation of news. The industry has not yet picked up on sustainability and corporate social responsibility. However: ZDF is the first media company to take part in the Sustainability

Experiment (*Experiment Nachhaltigkeit*). ZDF is looking for new ways to bring about a sustainable and responsible media industry.

- NGOs as well as associations and initiatives of **civil society** have a highly regarded capacity for dialogue and innovation and integrity. It is due to their thematic diversity and political plurality that associations and initiatives of civil society are rarely perceived as one group. What they all have in common, however, is that they introduce pioneering visions and far-reaching demands to social discussion and politics, which have made an invaluable contribution to development towards sustainability. A large number of projects and initiatives show what sustainability may look like. In many places they contribute to local sustainable development. NGOs are themselves subject to the same requirements of, for example, transparency that they demand from public institutions and businesses. Their potential to provide creative stimulus and promote an international perspective is nowhere near exhausted.
- Many people associate the rapid increase in the knowledge of **science** with gloomy visions of cloned beings, climatic disasters, new epidemics, nano robots that have become independent and the collapse of biodiversity. There is a lack of sustainability here. We observe that science and knowledge are often described as crucial resources for the future, but they are not yet used as an important standard by which to make political and social decisions on sustainability. Science itself still does not contribute enough to sustainability. Scientific disciplines are becoming increasingly interlinked through complex, future-oriented questions on the ecosystem, the evolution of life and the globalised economy. This fact is not exploited sufficiently in scientific policy and in the structures of universities, academies and other research institutes.
- The **municipalities** also have an important role in sustainability policy as places of direct participation in concrete decision-making and concrete initiatives and investments. We can, however, perceive a discrepancy between demand and reality. Alongside good examples and promising initiatives there are structural deficiencies and obstacles in the way of greater and more innovative forms of participation by German people in sustainability policy at local level. New strategies are needed to make municipal services sustainable.
- In the **political culture** of Germany we notice that sustainability is lacking and overlooked. The subject is often met with scepticism. The term 'sustainability' is used indiscriminately, while its actual meaning – intergeneration equity and sustainable use of natural resources – is all too often dismissed as moralising on the future. Far-reaching goals, for example on global energy supply, fighting poverty and equalisation between North and South, are often misunderstood as utopian hyperbole. Our snapshot shows that for many people thinking about the future is a positive activity and it can take on very practical and concrete forms. People want to know how things are likely to develop, from pensions, funding of healthcare, public finances and the environment, through to security policy. Sustainability policy does not follow the traditional lines of political competition.

Our conclusions may be summarised as follows: Sustainable thinking is not yet firmly rooted in our society. Despite all the good intentions of trade and industry and civil society, their influence is not yet sufficiently marked to bring sustainable thinking to the heart of society.

However, there is hope: We see that there is not just one, but a large number of networks, communities and initiatives for sustainability. Only a small number of the people active in these know the scope of the other networks. The result is that the self-awareness of those involved in sustainability is different from opinions held by persons outside the immediate circle of sustainability policy. While a self-critical view of

what has not yet been achieved, of obstacles and deficiencies often prevails "from inside", the view "from outside" is more aware of the great opportunities and the strength of the social participants.

We think: it is high time that the social forces for sustainability are highlighted in their entirety. Not only is the whole greater than the sum of its parts; its parts alone cannot offer a clear overall view. The participants could hardly be more different: with respect to profession, professional status, membership of institutions, age, forms of actions and political ideals. In trade and industry, foundations, environmental associations, consumer protec-

The discussion

1,100 people were invited to participate: Opinion leaders from trade and industry, society, culture and the media, young people ("Generation N") and public figures who have been influential in shaping environmental protection and sustainability in Germany over the last 30 years. The report was drafted by means of a discussion process presented over five events: In the "Leadership" forum, decision-makers from trade and industry and society painted a picture of the tension between globalisation, economic and social conditions, and environmental protection. The "Generation N" forum showed the specific views of the younger generation on subjects of sustainability and intergeneration equity. The "Experts" forum brought together sustainability experts active in a professional or voluntary capacity. The view of the sustainability scene from outside thus supplements the view from inside, i.e. that of the experts. Experiences, successes and disappointments, knowledge and opinions of various social groups, of participants from trade and industry and associations, initiatives and science, are all merged in the "snapshot". No other area of politics is so expressly oriented towards the long-term and global nature of social development.

tion agencies, churches, trade unions, in culture and politics, youth initiatives and development associations, they are active in so many different ways that – until now – they have barely produced a coherent force. They lack a common, concrete focus suitable to provide sustainable thinking with political contours. Action to improve matters would be possible, in many places. A particular example is that in parliamentary consultation the effects of new laws will no longer be assessed solely on the basis of cost, but also in future against the yardstick of sustainability.

The National Strategy for Sustainability has not yet been able to consolidate and clarify sustainability to the required extent. Although it is welcomed as important by the majority of participants, it has not yet clarified the social agenda of the sustainability policy. We believe an important reason for this is that the prevailing political culture lines up a large number of instruments and policies, without providing a context or linking these. The goals of sustainability, decisions and value judgements on sustainability are not clear enough: even though some approaches are good in terms of detail, the central theme is difficult to discern.

From the results of our snapshot:

- Germany is not well on its way towards sustainable development. The Strategy for Sustainability of the Federal Government – although uniformly welcomed as helpful – has so far had little influence on expert discussions.
- The model of sustainability is only relevant within a limited circle of experts. The groups of participants lack a common basic understanding of sustainability. The experts assess their own work more critically than is the case with external assessment.
- Sustainable behaviour offers companies better businesss. Sustainability requires new forms of cooperation for the searching and learning process.
- The potential for sustainability existing in society is utilised inadequately. NGOs and networks are the main institutions of sustainability.
- Politics is declared able to steer Germany in the direction of sustainable development. However, the prevailing view is that current reform initiatives in Germany are not following the compass of sustainability.
- The chapter on self-organisation, culture of recognition and participation could give sustainable policy in Germany a new character, conceived less on the basis of subjects of different departments, but rather on the basis of social need. Systems of incentives can have an important influence on sustainable development.

Environmental protection began over 30 years ago: as a so-called niche subject, accompanied by scepticism and the reproach that it was a non-essential subject. Today, protection of the environment is for many people a **constant factor in their life**. Today, we want sustainable solutions for everything. Sustainability is not identical to environmental protection but protection of the environment is an important part of it. The **sustainability story** of our snapshot shows us the roots of the idea of sustainability. Disputes about growth, values and ecological knowledge and culture run through current issues, too. However, beyond all disputes about eco-tax, other taxes and environmental laws, it is clear what it comes down to: the ability to make detours,

accept defeats, and remain capable of constructive argument, without losing the main thread. Today, the new networks can learn from what has been achieved, from humility before the enormous new tasks and confidence in ones own ability to act.

The **discussion with young people** shows that these represent public reason and common sense. It shows us the high value placed on responsibility for one's own actions and willingness for voluntary community action. The ideas that define the future are not developed within the formal structures of society, but at the edges, in niches, and by those who cross borders. Sensible perspectives are seen in transparent responsibility, in realistic utopias in technology and society, and in multi-cultural thinking. Here the role of the State is shifted. Freedom of the individual will no longer be seen as the top priority, what one wrests from the State, and what must be defended with laws and courts. The State is becoming more and more the target of demands for security and of a mechanism to eliminate risks. The greatest risks are seen as coming from the outside: climate problems, terrorism, and global inequality.

We are able to gather a **renaissance of values** from the snapshot: Every person learns by experience that his/her own “values” and attitudes change over the course of time and that often upheavals in family or professional life trigger and make one aware of such changes. Often short-term consumption is in conflict with long-term effect, and conflicts with the desire for sustainability become apparent. There is a great deal of dissatisfaction with the values of social life. Weakness in sustainable policy is also becoming apparent. However right this or that concrete measure is – wind turbines,

organic food production, recycling of paper, etc. – they remain within the sphere of technology. The fact that cultural and social values are associated with them, that such values can become the impetus for sustainable innovation, should be made more clear in future.

We attach great importance to **education** policy for sustainable development. This covers school education and vocational training as well as independent sponsors, the media, foundation projects and museums. Educational strategies are social strategies; this applies all the more so to the social understanding of sustainability. We expect a significant contribution from Germany for the UN Decade of Education for Sustainable Development.

The commitment of the German people is the formula that will define the functioning of society in the **future**. This is still in its infancy, however, especially as regards initiatives on sustainability. It is necessary to ease and encourage the everyday activities of initiatives and translate new ideas into reality, ranging from, for example, the volunteer pass (*Freiwilligenpass*), via compulsory insurance, through to the use of buildings and marketing support for fair trade and sustainability products. That which is to develop into a new culture of recognition must prove itself in everyday life. The fact that the term ‘sustainability’ is sometimes used as semantic gold dust, that it is used out of context and without thought, that it has become fashionable jargon, is irritating and needs to be corrected. However, the inappropriate use of the term ‘sustainability’ does not necessarily cause damage. The many and varied uses of the word, even where it is used improperly, create starting points for discussion of political issues and about the question what sustainability should actually be about. It is better to put up with semantic gold dust than work with rusty vocabulary.

II. The Federal Government in dialogue

The public discussion, cooperation with and between the social participants is a crucial element of the Strategy for Sustainability. Sustainability is brought about in dialogue. The Federal Government continued and promoted this dialogue intensively even after the Strategy for Sustainability was adopted in April 2002, as is demonstrated in the overview below:

2002	
15/16 May	Berlin: Conference: “ <i>Nachhaltiges Wirtschaften als unternehmerische Herausforderung</i> ” (Sustainable business as a corporate challenge), a joint event of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and the BDI
6 August	Bonn: Official opening of the nationwide service office for Local Agenda 21, funded by the Federal Ministry for the Environment
9 August	Berlin: “ <i>Nachhaltigkeit als Motor der Modernisierung</i> ” (Sustainability as the motor of modernisation) – Forum at the Press and Information Office of the Federal Government with experts from trade and industry, ecology and politics
16/17 August	Berlin: “ <i>Einladung zum Staatsbesuch</i> ” – Open day on the subject “Sustainability” at the federal ministries

2003	
6 August	Berlin: Dialogue forum "Sustainable Development" of the Press and Information Office of the Federal Government
6 August	Berlin: Dialogue forum of the Federal Ministry for the Environment and the Federal Ministry for Economic Cooperation and Development on the follow-up to the World Summit on Sustainable Development – interim appraisal of the implementation of the Chapter 'Global Responsibility' of the German Strategy for Sustainability and discussion of the Johannesburg follow-up process
16/17 August	Berlin: " <i>Einladung zum Staatsbesuch</i> " – Open day on the subject "Sustainability" at the federal ministries
2–4 September	Berlin: International conference of the Federal Ministry of Consumer Protection, Food and Agriculture "Food aid – contributions and risks for sustainable food safety" ("Nahrungsmittelhilfe – Beiträge und Risiken für die nachhaltige Ernährungssicherung")
29 September	Berlin: " <i>Deutschland verändert sich nachhaltig</i> " (Germany changes sustainably) – themed workshop on the Strategy for Sustainability organised by the Press and Information Office of the Federal Government
6 November	Berlin: " <i>Die Herausforderung von Johannesburg: Perspektiven und Prioritäten</i> " (The Johannesburg challenge: perspectives and priorities) – Joint event of the German Council for Sustainable Development (RNE), the Federal Foreign Office, the Federal Ministry for the Environment and the Federal Ministry for Economic Cooperation and Development
	Berlin: Event organised by the Federal Ministry of Consumer Protection, Food and Agriculture " <i>Vorbildliche Wirtschaft – Verbraucher auf dem Weg zu einem nachhaltigen Konsum</i> " (Model economy – consumers on the way to sustainable consumption)
4 December	Publication of the textbook " <i>Die Lokale Agenda 21 zeigt Profil</i> " (The Profile of Local Agenda 21), produced by the Federal Ministry for the Environment and the Federal Environmental Agency
2004	
16–25 January	Berlin: Special show " <i>Gesunde Ernährung – Kluger Konsum</i> " (Healthy food – clever consumption) of the Federal Ministry of Consumer Protection, Food and Agriculture at the occasion of the International Grüne Woche
13/14 February	Berlin: Dialogue event of the Federal Ministry for the Environment on sustainable energy supply
16/17 February	Berlin: Conference of the Federal Ministry for the Environment " <i>Nachhaltige Konsum- und Produktionsmuster – Nationaler Dialog zum Folgeprozess des Weltgipfel für Nachhaltige Entwicklung</i> " (Sustainable patterns of production and consumption – national dialogue on the follow-up process of the World Summit on Sustainable Development)
26 February	Berlin: Stakeholder consultations of the Federal Foreign Office on the Chapter 'Taking Global Responsibility' in Progress Report 2004 on the Strategy for Sustainability
3–5 March	Bonn: Dialogue conferences on the subject of globalisation, WTO and green genetic engineering, event organised by the Federal Ministry of Consumer Protection, Food and Agriculture in cooperation with the Andreas Hermes Academy at the training centre for German farmers (<i>Bildungswerk der Deutschen Landwirtschaft</i>) and the Heinrich Böll Foundation
18/19 March	Berlin: Conference of the Federal Ministry for the Environment " <i>Dialog zur Nationalen Nachhaltigkeitsstrategie: Wie lässt sich das umweltpolitische Profil schärfen?</i> " (Dialogue on the National Strategy for Sustainability: How can the image of environmental policy become more distinctive?)
29/30 April	Berlin: " <i>Gesellschaft mit Zukunft – Altern als Herausforderung für Prävention und Gesundheitsförderung</i> " (Society with a future – ageing as a challenge for prevention and health promotion), conference of the German Forum on Prevention and Health Promotion, funded by the Federal Government

16 June	Berlin: "Progress Report on the Strategy for Sustainability: Critical positions and perspectives", workshop of the environmental associations DNR, BUND and NABU as part of a project funded by the Federal Ministry for the Environment
20 September	Berlin: Conference " <i>Auf dem Weg zu einer internationalen Umweltorganisation</i> " (Towards an international environmental organisation) of the Federal Foreign Office, Federal Ministry for the Environment and the German Foundation for International and Security Affairs (<i>Stiftung Wissenschaft und Politik</i>)
20-22 October	Berlin: International Workshop of the Federal Ministry of Consumer Protection, Food and Agriculture "Politics against Hunger III: Liberalisation of Agricultural Trade – a Solution?"
30 November	Berlin: "Forum for Sustainability", event organised by the Federal Ministry of Education and Research for the new supporting programme "Research for Sustainability" with representatives from trade and industry, science and research, as well as social and international participants

III. Dialog Nachhaltigkeit (Dialogue on Sustainability)

The same applies to Progress Report 2004 as to the Strategy for Sustainability 2002: everyone can participate actively. In the course of the Dialog Nachhaltigkeit the Federal Government asked German people as well as social groups for their proposals and suggestions. The dialogue was split into two phases: the first phase (January to April 2004) was mainly concerned with the further development of the Strategy for Sustainability with four main items chosen for this legislative period. The basis for this was a consultation paper of the Federal Government published in December 2003. In the second phase from June to August 2004, the first complete draft of the Progress Report 2004 was put up for discussion. The results of both phases of the dialogue are included in this version of the Progress Report.

The German Council for Sustainable Development (RNE) had formulated its expectations of the Progress Report as early as autumn 2003, expressed its opinion on the consultation paper at the beginning of 2004, and submitted a detailed statement on the draft Progress Report to the Federal Government in July 2004 (details available at www.nachhaltigkeitsrat.de).

1. Internet

At the beginning of January 2004 the discussion on sustainability entered its next round on the Federal Government's newly designed website www.dialog-nachhaltigkeit.de. Interested Germans had until the end of April the opportunity to send in their comments and suggestions on the consultation paper of the Federal Government. In the summer of 2004 the draft Progress Report was at the centre of the discussion. In addition, members of the Federal Government as well as the German Council for Sustainable Development (RNE) participated in a total of eleven internet chats to answer questions on current topics of sustainability policy:

Date	Chat partner	Subject
20 January	Erich Stather , State Secretary at the Federal Ministry for Economic Cooperation and Development	Sustainability in development policy
27 January	Renate Schmidt , Federal Minister for Family Affairs, Senior Citizens, Women and Youth	Sustainable development: the contribution of older people in trade and industry and society
3 February	Dr. Volker Hauff , Chair of the German Council for Sustainable Development (RNE)	Sustainability as a compass for politics?
10 February	Kerstin Müller , State Secretary of the Federal Foreign Office	A global task: How does the Johannesburg summit affect the National Strategy for Sustainability?
11 February	Margareta Wolf , Parliamentary State Secretary at the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety	The role of renewable energies in energy supply of the future
24 February	Wolf-Michael Catenhusen , State Secretary at the Federal Ministry of Education and Research	Sustainability in education and research
25 May	Margareta Wolf , Parliamentary State Secretary at the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety	The role of renewable energies in energy supply of the future
1 June	Dr. Angelika Zahrnt , Chair of BUND and member of the German Council for Sustainable Development (RNE)	Recommendations of the German Council for Sustainable Development (RNE) to the Federal Government
8 June	Dr. Barbara Hendricks , Parliamentary State Secretary at the Federal Ministry of Finance	Retirement Income Act (<i>Alters-einkünftegesetz</i>) – one aspect of sustainable financial policy
15 June	Matthias Berninger , Parliamentary State Secretary at the Federal Ministry of Consumer Protection, Food and Agriculture	Sustainable consumer protection
22 June	Dr. Frank-Walter Steinmeier , Administrative Head of the Federal Chancellery	State of implementation of the National Strategy for Sustainability

2. Rounds of talks at the Federal Chancellery

In February 2004 the Federal Chancellery invited representatives of trade and industry, trade unions, environmental and consumer associations, churches and science to a total of four rounds of talks, the results of which are briefly summarised below:

“Reducing land use”

The Federal Government's goal to significantly reduce land use by 2020 is generally met with approval. There are differences of opinion, especially as regards what measures are appropriate here. Representatives of trade and industry point out the social and economic aspects of the subject. According to them, housing development can only be controlled to a limited extent. They also say that, above all, incentives are required for the development of fallow land, perhaps by releasing investors from liability for old debts, and that rural areas must not be cut off from economic development. Primarily, the trade unions see the development of attractive town centres and improvement of living conditions in towns as an important prerequisite for reduced land use. Representatives of central municipal associations welcome the development of a qualitative indicator for land use. They believe that the best potential for saving land is in recycling land; however, this would involve high decontamination costs, they said. Representatives of the consumer associations spoke out in favour of a reform of property tax. The environmental associations underlined the urgency of the problem and said that in order to solve it all regulatory, planning and economic incentives need to be oriented towards saving land. They added that the tax mileage allowance for journeys between home and work (*Entfernungs pauschale*) and the promotion of home ownership had to be abolished, and property tax and land transfer tax had to be redesigned in an ecological manner.

“Potential of older people in trade and industry and society”

There is agreement on the necessity of better incorporating older people into work in the future and of countering the trend of early retirement. Nonetheless, it is ascertained that this just forms part of the subject “Demographic Change”. The planned pilot projects are generally recognised as having a knock-on effect. However, they alone are not enough to introduce a process of rethinking at a broad social level. Representatives of trade and industry point out that intensive further training outside the workplace also requires corresponding initiative and willingness on the part of the employees. Also, they said, the businesses themselves should not have to bear all the costs of further training. The trade unions stress the necessity of expanding company healthcare and adjusting workplaces to suit older employees. The basic conditions for further training in the workplace should be improved. Networks and associations should provide small businesses with better access to further training in the workplace.

"New structure of energy supply incorporating renewable energies"

Many participants have demanded a broader approach in the Strategy for Sustainability, extending beyond the electricity sector and role of renewable energies. In particular, they believe that the heating market and increases in efficiency should also be taken into account. Expansion of the use of renewable energies and associated effects is a controversial issue. Representatives of trade and industry, and sometimes science too, criticise the fact that jobs created in the renewable energies sector could also be created elsewhere with the same level of subsidies. By contrast, the environmental associations as well as representatives of renewable energies are extremely positive in their assessment of the Renewable Energy Sources Act. The energy sector stresses the need to continue using a broad mix of energies. Opinion also varies on what expanding the use of renewable energies would mean for the electricity grid. Whereas the environmental associations and the Federal Association of Renewable Energies (*Bundesverband Erneuerbare Energie*) do not see any grave problems, the energy suppliers and the German Energy Agency (dena) point out the fact that due to the regional concentration of wind-powered electricity generation in the North as well as offshore, a considerable number of new power lines would be required. Planning to expand wind-powered energy must therefore be linked with the planning to expand the distribution network, they said. Representatives of the industry consider the increase in electricity prices through various political measures (Renewable Energy Sources Act, emissions trading, eco-tax) to be a massive burden on energy-intensive industry in Germany. They say it is necessary to prevent duplicate charges by combining several instruments with the same objective. The environmental associations are of the opinion that neither the Renewable Energy Sources Act nor the eco-tax are made redundant e.g. by emissions trading.

"Alternative fuels and drive technologies"

All participants agree that alternative fuels and drive technologies can only be part of an overall strategy for environmentally friendly mobility. The greatest potential for the short and medium term is deemed to be the optimisation of vehicle technology and improvement of Otto and diesel engines. For the long term, environmental associations believe that development will focus on petrol-like and diesel-like biofuels. They also consider that, in contrast to these, a hydrogen-powered fuel cell is only a sensible option if there were a surplus of renewable energies and, anyway, a means of storage is required. The automobile industry sees hydrogen as a fuel of the future, and it is only sustainable if it is generated using renewable energies. They also regard a comprehensive infrastructure (especially a network of filling stations) as important. The gas industry points out the potential for using natural gas filling stations for biogas and, in the long term, for hydrogen, too. The question of competitiveness of biomass is a crucial point of discussion. Renewable resources are considered for a large number of uses (e.g. heat generation, production of textiles, etc.), fuels being just one option.

Following publication of the draft Progress Report, four more rounds of talks were held at the Federal Chancellery at the beginning of July 2004. This time the talks focussed on conclusions about the four areas of action laid down in the Strategy for Sustainability:

“Taking global responsibility”

Whereas the environmental and development associations especially criticise the draft for being too growth-oriented, too competition-oriented and too efficiency-oriented, representatives of trade and industry thought that too much emphasis is put on ecological and social subjects, and not enough on the subject of competition. There is general agreement to deem the results of the International Conference on Renewable Energies in Bonn as reasonable. Representatives of environmental and development associations also proposed inclusion in a strategy for global energy reform. Frequently, references were made to Europe and the European Strategy for Sustainability. Representatives of the churches and development associations propose taking as themes the fight against poverty as well as the Action Programme 2015 (*Aktionsprogramm 2015*). The same applies to the subject of “Sustainable Education”. The trade unions support the demand for coherent global regulations. At the same time, they express considerable reservations about privatising the water sector. No agreement was reached on the relationship between international treaties on trading and the environment: the environmental associations demand that priority should be given to environmental interests, while representatives of trade and industry reject this and underline the positive role of world trade in global sustainable development. There is unanimous support for the Global Compact Initiative. However, while trade and industry insist on a voluntary approach to the fulfilment of corporate responsibility, environmental and development associations and trade unions consider binding regulations to be necessary.

“Producing healthily – providing healthy food”

The German Farmers' Union (*Bauernverband*) and the food industry criticised the report for being too “government-focussed” and propose the inclusion of examples from the numerous social activities in this area. Representatives of trade and industry also think the economic aspects have been neglected. They criticised the amendment to the Genetic Engineering Act (*Gentechnikgesetz*), which by contrast the environmental associations praised specifically. The German Farmers' Union proposes including the controversy in the report. Representatives of organic farming welcome the reform of agricultural policy, but see the need for further improvement and more concrete measures. Consumer associations and trade unions are emphatically in favour of a comprehensive Consumer Information Act. Consumer and environmental associations would like a whole chapter to be dedicated to the subject of sustainable consumption. The German Forest Stewardship Association (*Waldbesitzerverband*) proposes a detailed passage on sustainable forestry.

“Using energy efficiently – protecting the climate effectively”

As expected, the debate on conclusions about energy and climate protection policy is controversial. Representatives of environmental associations and the Federal Association of Renewable Energies welcome the amendment to the Renewable Energy Sources Act, but criticise the linking of the target for climate protection for 2020 to European guidelines. Representatives of trade and industry are against combining different instruments (emissions trading, Renewable Energy Sources Act, eco-tax, Act on Combined Heat and Power Generation (*KWK-Gesetz*)) and express their doubts about the positive effects of promoting renewable energies in the labour market. They suggest mentioning the Climate Protection Agreement between the Federal Government and German trade and industry. Environmental and consumer associations and trade unions are in favour of looking more closely at energy efficiency on the side of demand. In this context, they propose the establishment of an “energy efficiency fund” to increase the market share of energy-efficient appliances in private households. Representatives of science demand an increase in funds for energy research.

“Guaranteeing mobility – protecting the environment”

Representatives of trade and industry are against the basic goal of decoupling economic growth and traffic growth and are emphatically against preventing traffic growth, and instead see it as an opportunity for economic growth and employment. The environmental associations noticed the absence of a critical reflection on measures taken as well as a harmonious overall strategy to shape sustainable mobility. No comments were made about CO₂-related motor vehicle tax or kerosene tax. Representatives of transport companies as well as the trade unions describe investments in rail traffic as inadequate and call for greater commitment to the competitive strength of the railways. The trade unions also demand that social aspects and the subject ‘traffic safety’ are considered more thoroughly. The environmental associations propose linking the chapter with the subject of “reducing land use”. A science representative points out the expected effects of demographic change on transport in the future.

3. Consultation of the federal ministries

At the end of February 2004 the Federal Government invited environmental, development, business associations and trade unions to a consultation at the Federal Foreign Office in Berlin. The subject of the talks was the conclusion to be drawn on the field of action “Taking global responsibility” for Progress Report 2004.

Representatives of the Federal Government presented the structure and main themes of the conclusion. The discussion that followed produced concrete proposals for further work on the Progress Report. Among other things, it was proposed to stress the urgent need for a global energy policy under climate policy aspects and that sustainable energy policy should be understood as a contribution to security policy and crisis prevention. There was also the demand for the subjects of climate protection and disaster prevention to be more closely linked. On the subject of water,

emphasis was put on the State's responsibility to provide a safe water supply. How this is to be formed in concrete terms – by the State or by private companies – must be decided intelligently and in dialogue with those concerned. As regards the issue of the sustainable organisation of world trade, environmental and development associations described environmental aspects as guidelines for the system of international trade. No agreement was reached on the question of how far the performance of responsible company management requires internationally binding regulations alongside voluntary agreements. Reinforcing sustainability at a European level was regarded as an important matter, especially by environmental associations.

In March 2004 the Federal Ministry for the Environment organised a two-day conference on the conclusions about the Strategy for Sustainability. Around 120 participants in six moderated workshops discussed the central issues of sustainability, such as "What is our environmentally friendly mobility worth?" and "How does preserving biological diversity contribute to the development of rural areas?" The conference assisted in intensifying the dialogue between social groups. Interesting proposals and recommendations on the individual subject areas were also put to the Federal Government. The results of the conference and other related material can be found online at www.nachhaltigkeitsdiskurs.de

Since 2003, the Federal Ministry for the Environment has funded a project run by the environmental associations DNR, NABU and BUND in order to establish the dialogue on the Strategy for Sustainability in the field of the environment. These associations support the sustainability process and have already held a series of workshops on individual subjects of the strategy. More events are to follow. Details can be found online at www.nachhaltigkeits-check.de

4. Outcome of the dialogue: changes to the draft

We have carefully assessed all the talks, the online chats, as well as written statements that have been submitted and taken them into account in our thorough revision of the draft report. Of course, we have not been able to respond to all the proposals and suggestions. Not least because the opinions were often completely opposed: while some criticised the draft for being too growth-oriented, competition-oriented and efficiency-oriented, others thought the ecological and social subjects had been overstressed. In this and several other cases we have taken the criticism from the various camps as an indication that our proposal can easily be justifiable as the middle course between two extreme positions and so we have maintained it.

Some of the criticism during the rounds of talks proved to result from misunderstanding, which hopefully we have cleared up. So, for example, in the talks as well as in the revised text version, we have made it clear that the new areas of action "Alternative fuels and drive technologies" and "New structure of energy supply incorporating renewable energies" are not intended to replace the areas of action "Energy and climate protection" and "Environmentally friendly mobility", as developed in the Strategy for Sustainability. Rather they are an important part of this theme and will be considered in greater detail and further developed separately. The fact that we are continuing to look extensively at the subjects "Energy and climate protection" and

“Environmentally friendly mobility” alongside and in addition to this is demonstrated in Chapter D ‘Progress: Implementation of the Strategy for Sustainability’. We have also explained that in the field of action “The potential of older people in the economy and society” we are unable and do not wish to cover all aspects of the subject “Demographic change”. Here, too, we are concerned with selecting an individual, but in our opinion, crucial focal point that deserves to be considered separately.

Finally, there were a series of proposals and references that we have included in the present version of the report. These include e.g. the proposal made by various participants to pay more attention to the subject of the UN Decade of Education for Sustainable Development. National preparations on organising the decade are already underway. The action plan on this, which is to be drawn up by the beginning of 2005, will become part of the Strategy for Sustainability within the framework of the Progress Report 2006.

In addition, we have taken up the following proposals, among others:

- reference to the new supporting programme “Research for Sustainability”,
- distinction between genders for indicators No. 9 “Education and training”, No. 16 “Employment” and No. 19 “Integration of foreign citizens”,
- expansion on the subject “Increasing efficiency in energy use”,
- reference to further development of the National Climate Protection Programme,
- new section “Protection against noise pollution at airports”,
- stronger emphasis on the role of the consumer as buyer of products and services,
- reference to Action Programme 2015 on fighting poverty,
- reference to the European Strategy for Sustainability,
- stronger accentuation of the subject “World trade” (WTO, UNCTAD, customs procedures, responsible corporate management),
- updated examples of projects on the subjects of water and energy, new example of a project on the subject of world trade,
- more in-depth account of improved basic conditions for sustainability in consumption and production in the Progress Report 2006.

At this stage we would like to once again thank all those who participated in the Dialogue on Sustainability by offering their opinions, suggestions and proposals and who by doing so contributed significantly to the drafting of Progress Report 2004. The public discussion and cooperation with social groups will remain a crucial element of the Federal Government’s Strategy for Sustainability in the future, too. It is for this reason, we would like to ask you to continue to assist with the implementation and further development of the strategy through your dedication and constructive criticism.

IV. The German *Länder* and sustainability

The German federal states, called *Länder* in German, play an important role in formulating and enforcing policy on sustainability. They are responsible for many necessary measures. Meanwhile, nearly all the *Länder* have formulated strategies for sustainability or strategies for environmental policy that incorporate economic and social aspects. Documented below is the current state of affairs as communicated by the *Länder*.

Baden-Württemberg

In December 2000, the *Land* Government adopted a reference framework for society, trade and industry and politics on the sustainable – i.e. long-term, environmentally friendly and future-oriented – development of Baden-Württemberg with its Environment Plan Baden-Württemberg (*Umweltplan Baden-Württemberg*). This framework is for the period up to 2010. It contains an action programme that describes environmental goals in concrete, qualitative and quantitative terms and formulates implementation measures taking into account economic and social interaction. In April 2000, the Cabinet set up the independent, science-oriented Sustainability Council of Baden-Württemberg (*Nachhaltigkeitsrat Baden-Württemberg*) to assist with the implementation process (www.nachhaltigkeitsbeirat-bw.de).

www.uvm.baden-wuerttemberg.de/umweltplan

Bavaria

The State Government of Bavaria acted immediately upon the stimulus provided by the Rio Summit. With the government statement “*Umweltinitiative Bayern – Kooperativer Umweltschutz, nachhaltige Entwicklung, ökologischer Wohlstand*” (Environmental Initiative of Bavaria – Cooperative Environmental Protection, Sustainable Development, and Ecological Prosperity), the political foundations for implementation at federal state level were put in place as early as 1995.

Sustainability is a fundamental principle for all policies of the Bavarian State Government. The first steps in translating this policy into action were taken with the signing of the first Environmental Pact between the Bavarian State Government and the Bavarian business community in 1995, with the creation of the Environmental Forum of Bavaria (1996) and the establishment of three environmental funds. The Bavarian Agenda 21, which was adopted by the Cabinet in 1997, brings together for the first time the Bavarian State Government’s main ideas on the sustainable and future-oriented development of the Land. Even before the World Summit on Sustainable Development in Johannesburg, the Bavarian State Government had drawn its interim conclusions and in August 2002, with its action programme “Sustainable Development in Bavaria”, it presented its sustainability strategy for the next few years.

“*Bilanz zur Bayern-Agenda 21*” (Conclusions about the Bavarian Agenda 21), which was published together with the action plan, presents the public with the achievements of Bavarian sustainability policy to date. The Environment Department, the now Bavarian State Ministry for Environment, Health and Consumer Protection, was in charge of preparing and revising the Bavarian Strategy for Sustainability.

www.agenda21.bayern.de

The signing of the Bavarian Environmental Pact II on 23 October 2000 marked the continuation of the Pact of 1995 on a cooperative and voluntary basis. Around 95% of all agreed goals and measures have already been implemented. The Environmental

Pact is to be revised – supplemented by new subject areas – and readopted in 2005 as the Sustainability Pact (*Nachhaltigkeitspakt*).

www.umweltpakt.bayern.de

Berlin

In October 2000 the Berlin Senate decided to draw up a regional agenda. The discussion process lasted approximately three years and was accompanied by a series of public dialogue events at district as well as city level. The Berlin Agenda was finally adopted by the “Agenda Forum” on 15 March 2004 and is now with the Berlin Parliament for discussion and adoption.

www.agendaforum.de;

www.stadtentwicklung.berlin.de/agenda21

Brandenburg

The joint *Land* development programme of Berlin and Brandenburg puts into concrete terms the principles of spatial planning (of sustainability, among other things) of the Federal Spatial Planning Act (*Bundesraumordnungsgesetz*) through more suitable principles and planning objectives for the joint planning area Berlin-Brandenburg.

www.mlur.brandenburg.de/g/entwprog.htm

The Environmental Partnership of Brandenburg (*Umweltpartnerschaft Brandenburg*) of April 1999 is a voluntary agreement between trade associations and the *Land* Government on sustainable development and effective, future-oriented environmental protection in the *Land* Brandenburg.

www.mlur.brandenburg.de/cms/detail.php?id=122575&_siteid=35

There is a *Land* development programme for small projects of Local Agenda 21 – Campaign “Sustainable Development – Local Agenda 21 in Brandenburg” (more than 70 projects since 2001).

www.anu-brandenburg.de/aktionla21.htm and www.la21bb.de

There is also the plan to establish an advisory committee on sustainable development as the *Land* Government’s advisory body.

Bremen

Bremen has continued on its course of implementing the idea of sustainability in a project-oriented and logically consistent manner. The first thing to mention is the creation of the umbrella trademark *umwelt unternehmen* by the *partnerschaft umwelt unternehmen*, the Bremen Environmental Award both locally and internationally and the strategy to profile the *Land* as a competence centre for on- and offshore wind energy. Communication on sustainability subjects is right at the top of the Bremen agenda.

www.umwelt.bremen.de

Hamburg

The current government programme for 2004–2008 provides for the principle of sustainability to be anchored centrally and taken into account adequately in all areas of politics. Within the framework of the model “Metropolis of Hamburg – Growing City” (“Metropole Hamburg – Wachsende Stadt”), the Senate is concentrating on urban development that protects resources and has formulated a comprehensive and long-term strategic vision for the development of the city. The Senate will soon adopt a monitoring system for the model with goals and indicators, including indicators on the ecological, economic and social dimensions of sustainability aspects.

Since 2002 the “Conference on Sustainable Development in Hamburg” has been held each year, with many participants from civil society, associations, trade and industry, politics and administration. Together with participants, subjects relevant to sustainability are discussed and further developed. The intervals between conferences are organised as joint work phases for the participants. Sustainability indicators for the Urban Development and Environment Department are currently being developed, with subjects ranging from construction, housing, transport, urban development and environment.

In the interests of promoting sustainable economies, Hamburg is concentrating on cooperation between the Senate and trade and industry in the area of environmental protection. The Senate and trade and industry founded the *UmweltPartnerschaft Hamburg* on 7 March 2003 in order to systematically promote voluntary environmental protection at Hamburg-based companies.

The important elements of this strategy are concrete programmes to promote individual aspects of sustainable economies (including the programmes *Unternehmen für Ressourcenschutz* (Enterprises to Protect Resources), the *Initiative Arbeit und Klimaschutz* (Initiative for Work and Climate Protection), and ÖKOPROFIT), which have been received very positively by companies and are running successfully.

Within the framework of a cross-departmental task to support the UN Decade of Education for Sustainable Development 2005–2014 under the motto “*Hamburg lernt Nachhaltigkeit*” (Hamburg learns Sustainability), the responsible authorities are currently performing a stock-taking on the UN Decade of Education for Sustainable Development in Hamburg in all areas of education as well as preparing a proposal based on this to support the UN Decade of Education for Sustainable Development. The basic agreement “*Norddeutsche Partnerschaft zur Unterstützung der UN-Dekade Bildung für nachhaltige Entwicklung 2005–2014*” (North German Partnership to Support the UN Decade of Education for Sustainable Development 2005–2014) is scheduled to be signed at the joint cabinet meeting of Hamburg and Schleswig-Holstein in September 2004. The main goal here is to initiate cross-border learning processes and facilitate networks, e.g. for joint handling of subjects specific to Northern Germany, like marine protection. There is an express desire to expand the partnership to include other *Länder* in Northern Germany.

www.ffh.hamburg.de/stadt/Aktuell/behoerden/stadtentwicklung-umwelt/start

Hesse

In 2002 the Hesse Ministry for the Environment presented its *Aktionsprogramm Umwelt* (Environmental Action Programme) which set out goals, measures and indicators for the whole department. An interim report is planned for 2005. In addition to this, the ministry is consistently pushing ahead with project-oriented work in the various subject areas

(www.hmulv.hessen.de/umwelt/politik). Due to its great success, the *Umweltallianz Hessen* (Environmental Alliance of Hesse), which was established with trade and industry in the year 2000, is to be continued on a permanent basis from the year 2005. www.umweltallianz.de

Mecklenburg-Western Pomerania

In autumn 2002, at the beginning of the fourth legislative period, the partners of the government coalition had agreed to draw up a regional agenda under the management of the Ministry for the Environment. The regional agenda linked the *Land Gov-*

ernment's main ideas on sustainable and future-oriented development in Mecklenburg-Western Pomerania with the areas of action set out in Agenda 21, and these are translated into measures in a region-specific manner. This task is currently being performed by an inter-ministerial working group. This Strategy for Sustainability is flanked by a series of other activities, such as the Environmental Alliance of Mecklenburg-Western Pomerania (*Umweltallianz Mecklenburg-Vorpommern*) (www.umweltallianz-mv.de), the Environmental and Agricultural Alliance (*Allianz Umwelt und Landwirtschaft*), and the Strategy for Climate Protection, among others.

Lower Saxony

In 1996 an inter-ministerial working group and round table on "Agenda 21" (*Land* Government and social groups) were set up. In 1998 the Cabinet adopted the regional programme "Sustainable Development in Lower Saxony", and in 1999 the "Report on Implementing Agenda 21 in Lower Saxony". For the period 2001-2006 there is the development programme "Local Agenda 21" financed by funds of the European Fund for Regional Development and the European Social Fund for municipalities in structurally weak areas. A continuation of the programme from 2007 onwards is in preparation.

www.niedersachsen.de or www.mu.niedersachsen.de

North-Rhine/Westphalia

Since 2001 the *Land* Government has been conducting an Agenda 21 process at regional level under the leadership of the *Land* Ministry for the Environment, Nature Conservation, Agriculture and Consumer Protection. "Agenda 21 NRW" is managed by the "State Secretary Committee for Sustainable Development", which was set up in January 2001. Within the framework of Agenda 21 NRW, models, goals and indicators were developed, Agenda projects carried out, networks established, and examples of best practice documented for areas of politics relevant to sustainability. The *Land* Government drew its first interim conclusions at the conference on conclusions and perspectives (*Bilanz- und Perspektivkonferenz*) in November 2003. The *Land* Government set up a "Zukunftsrat NRW" (Future Council NRW) made up of 26 public figures, which presented its report "NRW 2015 – Ressourcen nutzen, Regionen stärken" (NRW 2015 – Using Resources, Strengthening Regions) in March 2004.

Currently, with the assistance of all its ministries, the *Land* Government is drawing up a report containing the foundations of a Strategy for Sustainability for North-Rhine/Westphalia, which also includes the results of the previous regional agenda process and the report by the Future Council. It will be put before the *Land* Parliament for adoption.

www.agenda21nrw.de

Rhineland-Palatinate

The second revision of the Agenda Programme of the *Land* Government is being prepared under the management of the Ministry for the Environment and Forests. The Ministry for the Environment and Forests has been required to report to the *Land* Parliament since the year 2000. The introduction of sustainability goals and indicators is planned for this next revision. In addition to the existing inter-ministerial agreement, a process of dialogue with the most important social groups will be launched and the results of this will be incorporated into the programme.

www.muf.rlp.de

Saarland

The Cabinet approved the drawing up of a “Saarland Agenda 21” in July 1999. On 3 July 2003 the Cabinet approved the “*Ressortprogramm Umwelt der Saarland-Agenda 21*” (Environment Programme of the Saarland Agenda 21) and decided that the principles of sustainability described therein should be the formal criteria for checking decisions submitted by the individual ministries to the Cabinet. On 19 March 2002 the *Land* Government and businesses in Saarland signed the *Umweltpakt Saar* (Environmental Pact Saar).

www.umwelt.saarland.de

Saxony

The Free State of Saxony does not yet have a regional Strategy for Sustainability, although the sustainability aspect is embodied in numerous regulations and guidelines for development. Likewise, a set of key indicators has been worked out. A regional Strategy for Sustainability is being prepared.

www.smul.sachsen.de

Saxony-Anhalt

Following the summit on environment and development in Johannesburg at the end of 2002, Saxony-Anhalt introduced a new phase to the debate on sustainability. In 2002 and 2003, the state of the Strategy for Sustainability was presented and discussed with participants within the framework of two conferences and accompanying events organised by representatives of various social groups.

Since the beginning of 2003, the regional cross-departmental and cross-sectoral Strategy for Sustainability has been drawn up, revised and implemented under the management of the Ministry for Agriculture and the Environment. Monitoring and assessment of the sustainability process, taking into account appropriate indicators, is also in preparation. From the end of 2004 onwards, the debate on sustainability is to be continued with specialist talks on subjects relevant to the debate on sustainability. The environmental alliance between the administration and trade and industry of Saxony-Anhalt was continued successfully and brought into its second round with a corresponding agreement in 2003. It has since been supplemented by an environmental seal of quality for the craft trade, the so-called *Umweltsiegel für das Handwerk* as well as an *Umweltbonus* (environmental bonus) that is granted from ERDF funds for the promotion of projects. In addition to the *Land*’s other projects on sustainable development, measures for a “sustainable population policy” for the region are being prepared on the basis of an action plan, designed to counter the population decline in Saxony-Anhalt or compensate for the effects of the population decline.

On 7 October 2004 the *Land* Government submitted a government statement on the continuation of the sustainability policy. Preparations for the UN Decade of Education for Sustainable Development are currently being agreed with the *Land* Ministry of Culture of the region.

www.mlu.sachsen-anhalt.de

Schleswig-Holstein

On 14 November 2000 the Schleswig-Holstein *Land* Government decided to draw up a regional strategy for a future-oriented Schleswig-Holstein on the principle that ecological innovation, increasing competitiveness, as well as safeguarding and creating jobs must go hand in hand.

In the first phase (2001) an inter-ministerial working group had developed a model “*Zukunftsähiges Schleswig-Holstein*” (Schleswig-Holstein: Fit for the future) under the management of the *Land* Chancellery. The development of this model included identifying the main cross-departmental subjects, putting together instruments for implementation as well as preparing a process of dialogue with the various relevant social groups.

In the second phase (2002/2003) the focus was on dialogue with the social groups of the region. The goal was to get parties from the municipalities, trade and industry, science, administration and associations to actively participate in the project and work jointly on perspectives for a future-oriented Schleswig-Holstein. The Ministry for the Environment, Nature Conservation and Agriculture was responsible for coordinating the process of dialogue. On this basis, in the third phase (2003/2004) a programme with concrete qualitative goals and indicators was developed under the management of the *Land* Chancellery. The three main themes of the Schleswig-Holstein strategy (“Working and producing”, “Living together”, “Using the land”) have been subdivided into 12 areas relating to the future. Taking into account the results of the process of dialogue, an inter-ministerial working group developed a programme “Future-oriented Schleswig-Holstein” under the management of the *Land* Chancellery in the third phase of the project and this was adopted by the Cabinet on 16 December 2003. This regional strategy contains 22 goals and 39 indicators, covering all areas of politics. The *Land* Government will present the first Progress Report in 2006 and then it will report once each legislative period on the state of implementation of the regional strategy with the aid of the agreed goals and indicators.

The *Land* Ministry for the Environment, Nature Conservation and Agriculture has set up a secretariat to implement the strategy. The other *Land* ministries are responsible for measures necessary to achieving the goals in the 12 areas relating to the future. The secretariat will set up a “*Forum Zukunftsähiges Schleswig-Holstein*” in the interests of incorporating external expertise.

www.landesregierung.schleswig-holstein.de

Thuringia

In February 2000 the *Land* Government adopted the “*10 Leitlinien zur Umsetzung der Agenda 21 in Thüringen*” (10 guidelines for implementing Agenda 21 in Thuringia). The aim of these guidelines is to initiate sustainable development and, in particular, to support the basic idea of local action with global responsibility. The *Land* Government supports the many and varied initiatives through a project-oriented and target group-oriented approach. In future, greater value will be attached to subject-oriented cooperation involving different target groups. The foundation stones for this cooperation have already been laid, for example, with the Thuringian climate protection process, in which all groups participate, or the project ÖKOPROFIT, in which companies and municipalities participate. The fact that the close cooperation existing between trade and industry and the *Land* Government since 1998 was developed into a sustainability agreement in March 2004 deserves special mention. Increasingly, voluntary agreements are to replace action based on statutory regulations. By taking up the idea of sustainability and the integration of social companies associated with it – in addition to economic and ecological aspects – a new standard of such agreements has been reached. Further information on sustainable development in Thuringia, as well as the annual Agenda 21 competitions and new image campaign can be found at **www.thueringen.de/de/tmlnu**

Indicators and goals of the National Strategy for Sustainability – an overview

The overview represents a simplified depiction of the development of indicators in summary form. The following symbols are used:

- ↗ = Positive trend, the goal is closer
- = Same trend, the goal is no closer
- ↘ = Negative trend, the goal is further away than before

The arrows indicate the trend towards achieving the goal between 1998 and 2003. This period was chosen because the very short period of time since the Strategy for Sustainability was presented in 2002 is still very limited as a measure for the achievement of the goal. The arrows are intended to provide information on whether the direction that we have taken is the right one. These are just the initial trends. Further development is not only dependent on the implementation of the strategy, but also on the basic political and economic conditions over the coming years.

	Indicator	Target	Trend towards achieving the target 1998–2003
	INTERGENERATION EQUITY		
1 Conservation of resources	Energy productivity Resource productivity	Doubling by 2020 Doubling by 2020	↗ ↗
2 Climate protection	Reduction of greenhouse gas emissions	Reduction by 21% by 2008/2010	↗
3 Renewable energies	The proportion of total energy consumption attributable to renewable energies	– 4.2% of primary energy consumption by 2010 – 12.5% of electricity consumption by 2010, 20% by 2020	↗ ↗
4 Land use	Increase in land use for housing and transport	Reduction in daily growth to 30 ha in 2020	
5 Biodiversity	Stock of selected bird species as indicator of biodiversity	Stabilisation at high level in 2015	→
6 National debt	National debt	Consolidation of the national budget	↘ ¹
7 Provision for future economic stability	Ratio of gross fixed capital formation to gross national product	Increase in innovative dynamism	↘
8 Innovation	Private and public spending on research and development	Increase in R&D spending to 3% of GDP in 2010	↗
9 Education and training	Education situation of 25 year olds Percentage of students starting degree courses	– Increase percentage of graduates from institutions of higher education: 10% in 2010, 20% in 2020 – Percentage of school leavers without secondary school qualifications: 9.3% in 2010 and 4.6% in 2020 – Increase to 40% in 2010	→ → ↗

¹ Positive development 1998–2000 with subsequent negative trend due to economic situation.

	Indicator	Target	Trend to- wards achiev- ing the target 1998–2003
QUALITY OF LIFE			
10 Economic prosperity	Gross domestic product per head	Economic growth	↗
11 Mobility	Intensity of passenger and freight traffic	<ul style="list-style-type: none"> - Passenger traffic: Compared with 1999, reduction to 90% by 2010, 80% by 2020 - Freight traffic: Compared with 1999, reduction to 98% by 2010, 95% by 2020 	↗
	Proportion of rail traffic and inland water transport in total output of freight traffic	<ul style="list-style-type: none"> - Proportion of rail traffic by 2015: 25% - Proportion of shipping by 2015: 14% 	↗
	Nitrogen surplus in farming	80 kg discharge/ha farming land by 2010	↗
12 Nutrition	Development of land for organic farming	Proportion of farming land: 20% by 2010	↗
	Air pollution	Reduction to 30% compared with 1990	↗
14 Health	Premature death (cases of death under 65 years)	Decline	↗
	Satisfaction with health (opinion poll)	Stabilisation at high level	↗
15 Crime	Burglaries	Decline in cases to 117,000	↗
SOCIAL COHESION ↗			
16 Employment	Employment rate	70% in 2010	→
17 Perspectives for families	All-day care provision for children in the West German <i>Länder</i>	30% in different age groups	
18 Equal opportunities	Women's average earnings as % of men's average earnings	85% in 2015 (West German <i>Länder</i>)	↗
19 Integration of foreign citizens	Foreign school leavers without finishing <i>Hauptschule</i>	Decline	↗
GLOBAL RESPONSIBILITY			
20 Development cooperation	Public development cooperation	Proportion of development cooperation in GDP: 0.33% in 2006	↗
21 Opening markets	Imports to the EU from developing countries	Rise	↘

C. Indicators and Goals

On the state of the 21 key indicators

The set of 21 key indicators forms a central part of the Strategy for Sustainability. With the aid of these, the Federal Government wants to show where we are on the road to sustainable development, what progress has been made towards achieving set goals and where further action is needed. They are an important tool for monitoring achievements and the continuous further development of the Strategy.

The indicators were updated using currently available data. Comments on the individual indicators in this Progress Report concentrate on development within the period under review. They are justified and described in detail in the Strategy for Sustainability 2002 (Chapter C 'Indicators and Goals').

It should be noted that the period under review spans less than two years. Achievements have already been made in this period, but naturally there have been no miracles. Many of the goals are oriented towards the medium to long term, since a strategy for sustainability should offer perspectives precisely for the longer term. This means that the goals cannot be realised in the short term and for this reason, the first review of the indicators focusses on the question: Is the trend right and are we moving in the right direction? The table on pages 37/38 offers an overview of all the key indicators.

Along with participants in government, members of society are equally responsible. In many cases the Federal Government can only alter the basic conditions and provide stimulus for different behaviour among investors, consumers and local authorities. In this sense, the goals mentioned below are to be understood as reference points for all governmental and social participants.

I. Intergeneration equity

1. Conservation of resources

Making prudent and efficient use of resources

The extraction and exploitation of useable raw materials characterises human endeavour. This is always accompanied by the use of land, materials and energy, the movement of materials, and emissions of harmful chemicals.

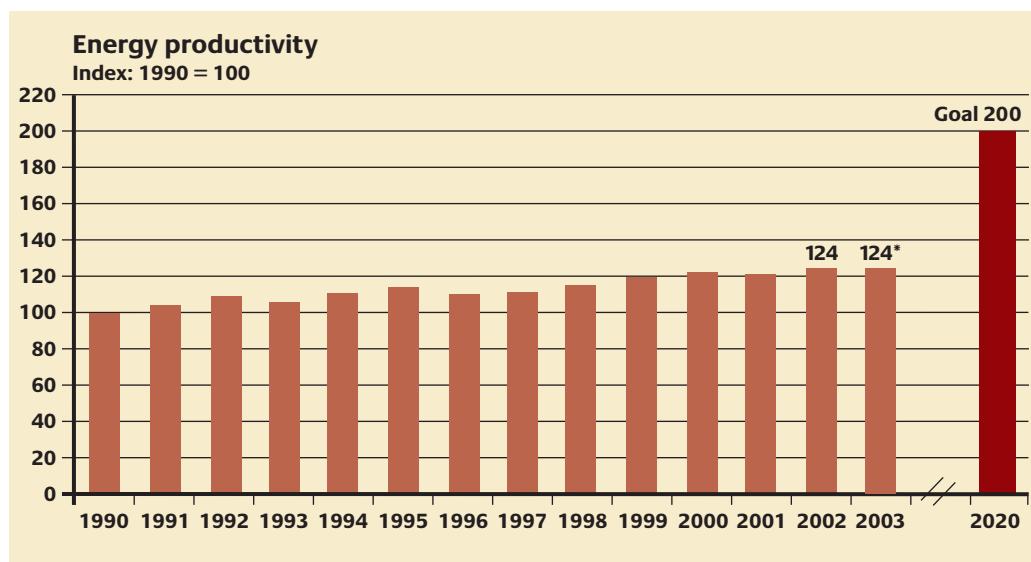
It is primarily the industrial countries that face the challenge of gradually scaling down their consumption of scarce and finite raw materials in relation to gross domestic product².

² The base year for GDP of 1990 is problematic because of the data situation. In the interests of comparability, however, changes have not been made to the systematics.

Increasingly efficient use of energy and other raw materials is a crucial basis for reducing absolute consumption. This efficiency is measured in the Strategy for Sustainability in terms of energy productivity and raw materials productivity: the goal set by the Federal Government is to approximately double energy productivity and raw materials productivity in Germany by 2020 compared with 1990 and 1994 respectively.

In the past few years energy productivity and raw materials productivity in Germany has increased almost continuously. Energy productivity rose by 24% from 1990 to 2003. Compared with the figures for 1999 published in the Strategy for Sustainability, a 3.8% rise in energy productivity was noted.

With consumption of primary energy tending to decline slightly, the gross domestic product (GDP) in Germany increased by 19% in the period from 1990 to 2002. This means that the decoupling of economic growth and energy consumption, which was initiated with the first oil price crisis, has continued.



* Provisional value for 2003

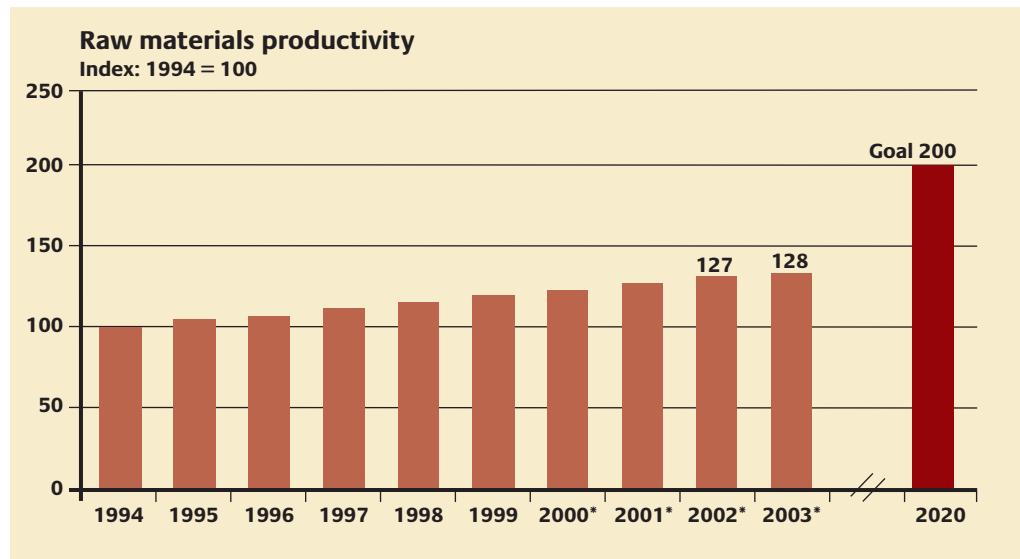
Source: GDP 1990: German Institute for Economic Research (DIW), GDP from 1991: Federal Statistical Office, primary energy consumption: AG Energiebilanzen, position as at 2004.

In the last few years productivity in this area has not developed as strongly as is necessary in order to achieve the goal. The rise in energy productivity was especially strong in the first half of the 1990s. Crucial factors for the improvement of energy productivity were restructuring processes in East Germany related to German reunification, increases in efficiency at power stations and the exploitation of energy saving potential in production in all areas of trade and industry. Stricter requirements for insulation on new buildings led to a reduction in the heating energy requirement. Energy demand in the transport sector (fuel consumption) has fallen noticeably since the year 2000. In contrast to this, extreme weather conditions experienced over the last few years have contributed to a slower rise in energy productivity.

Against this backdrop, achieving the goals by 2020 will be a challenge and will require greater efforts in all sectors (transport, private households and industry).

Raw materials productivity has developed very positively: in the period from 1999 to 2003 it rose by 12.3%, or compared with the base year of 1994, by more than 28%. Avoidance of waste and a stronger recycling industry for the recycling of raw materials as well as increased use of renewable resources have contributed to this rise. In the last few years reduced use of materials in the construction industry as a result of economic conditions and reduced output in hard coal and lignite mining have contributed to increased raw materials productivity.

Improvements in efficiency are to continue, taking into account ecological, economic and social factors.



* Provisional data

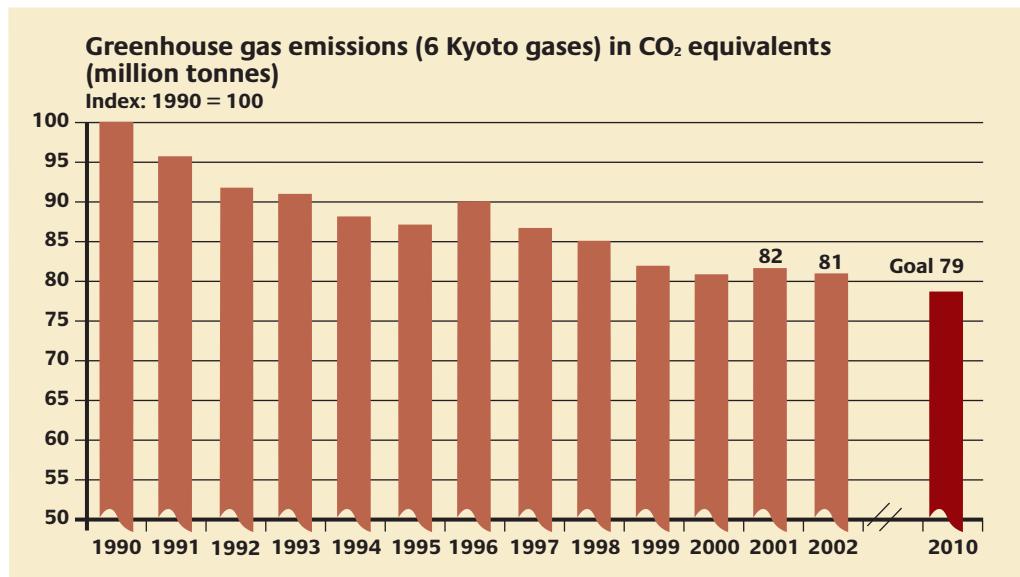
Source: Federal Statistical Office (Environmental-economic accounting).

2. Climate protection

Reducing greenhouse gases

The threat of climate change continues to pose an enormous challenge to humankind. Germany has undertaken to reduce its emissions of the six greenhouse gases named in the Kyoto Protocol by 21% by the period 2008–2012 compared to 1990.

By the year 2002, a reduction of 19% had already been achieved. CO₂ emissions, which meanwhile constitute more than 87% of greenhouse gases in Germany, were 15.3% lower in 2002 than they were in 1990. Germany has therefore almost reached the goal agreed at international level in the Kyoto Protocol.



Source: Federal Ministry for the Environment (2003): Third Report by the Government of the Federal Republic of Germany in accordance with the Framework Convention of the United Nations; also for 2002: National Inventory Report (NIR) 2004.

The development of energy-related CO₂ emissions of the individual sectors for the period 2000–2002 is as follows:

1. CO₂ emissions in the energy sector continued to increase slightly in the last few years. Compared with the base year 1990, a reduction of 18% was reported in the year 2000, followed by 15% in 2002.
2. CO₂ emissions in industry continued to fall in the period 2000–2002. In the year 2000 emissions fell by around 31%, in 2001 by around 33% and in 2002 by more than 35% compared with 1990.
3. Private households emitted around 7% less CO₂ in 2002 than in 1990. It is true that CO₂ emissions have not fallen continuously in this sector in the last few years, but this is due especially to the effects of weather conditions.
4. In the area of commerce, trade and services, emissions remained relatively constant in the period 2000–2002. In the year 2000 these dropped by roughly 34% in comparison with the base year 1990, and in 2001 by 30% and in 2002 by almost 35%. The effects of weather conditions are also noticeable here.
5. In the transport sector CO₂ emissions in 2002 were nearly 9% higher than in 1990. However, there are signs of a significant change in this trend, as since 2000 emissions in this sector have steadily declined. This is primarily due to developments in motor vehicle traffic.

3. Renewable energies

Extending sustainable systems of energy supply

The Federal Government is making further progress on extending renewable sources of energy, as our most important sources of energy – oil, gas and coal – are finite and their use is associated with the emission of greenhouse gases.

The goal of the Federal Government is to increase the proportion of renewable energies to 4.2% of primary energy consumption and to at least 12.5% of electricity consumption by 2010. By 2020 the proportion of electricity consumption attributed to renewable energies should be at least 20%.

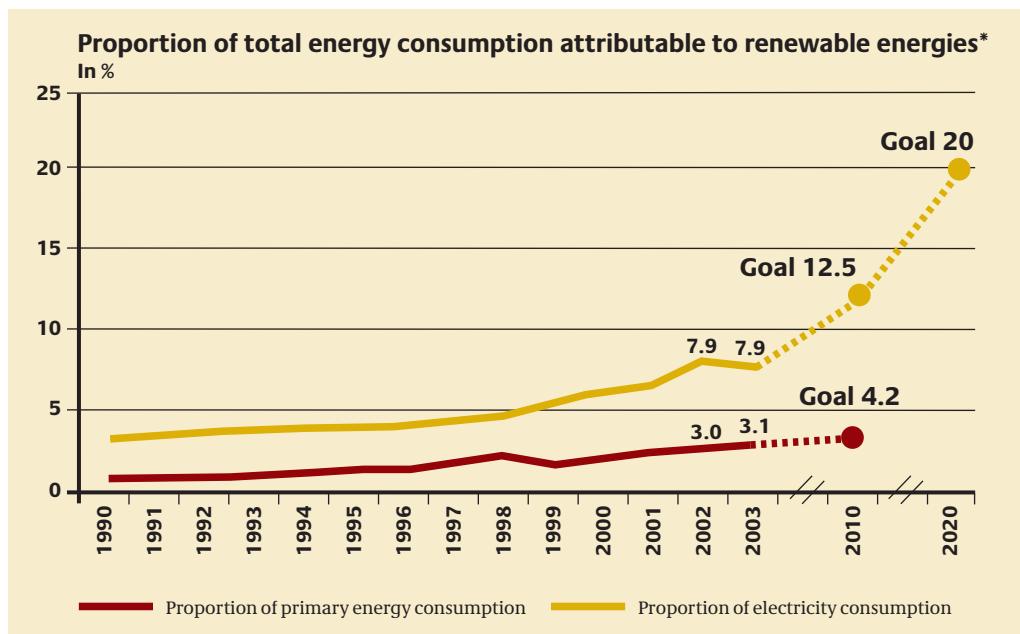
By the middle of the century, renewable energies should cover around half of energy consumption. In order to achieve this, however, renewable energies still require support. The aim is to make them competitive in the market so that they can survive for the long term. Overall energy consumption needs to be reduced at the same time.

The proportion of total electricity consumption attributable to renewable energies has increased from around 4.6% to 7.9% between 1990 and 2003. In the first half year of 2004 it had already risen to 10%. So in 2003 alone, renewable energies prevented the production of 40–56 million tonnes of CO₂. The proportion of renewable energies in primary energy consumption exceeded the three-percent-threshold for the first time in 2003, at 3.1%.

Use of wind energy contributed significantly to growth in the last few years; no other country promotes the extended use of wind energy as strongly as Germany. In mid 2004, more than 15,320 megawatts of energy on the German grid was generated by wind power. Wind energy, together with water power, is the most important renewable source of energy for electricity generation.

In relation to total energy production, solar energy in Germany is also experiencing a boom, although it is still at a low level (making up around 2% of renewable energies). In 2003 alone coverage of solar panels increased by around 846,000 m² to some 5.6 million m².

In terms of volume, bio-energy is Germany's most important source of regenerative energy. In 2003 around 62% of final energy from renewable sources was produced by biomass. Considerable growth has also been observed in this sector over the last few years.



Sources: AG Energiebilanzen, German Institute for Economic Research (DIW) 2001, Staß: Renewable Energies Yearbook 2001, German Electricity Association (VDEW) 2001, Federal Ministry for the Environment/environmental policy (Renewable energies in figures – March 2003); Working Group statistics on renewable energies.

4. Land use

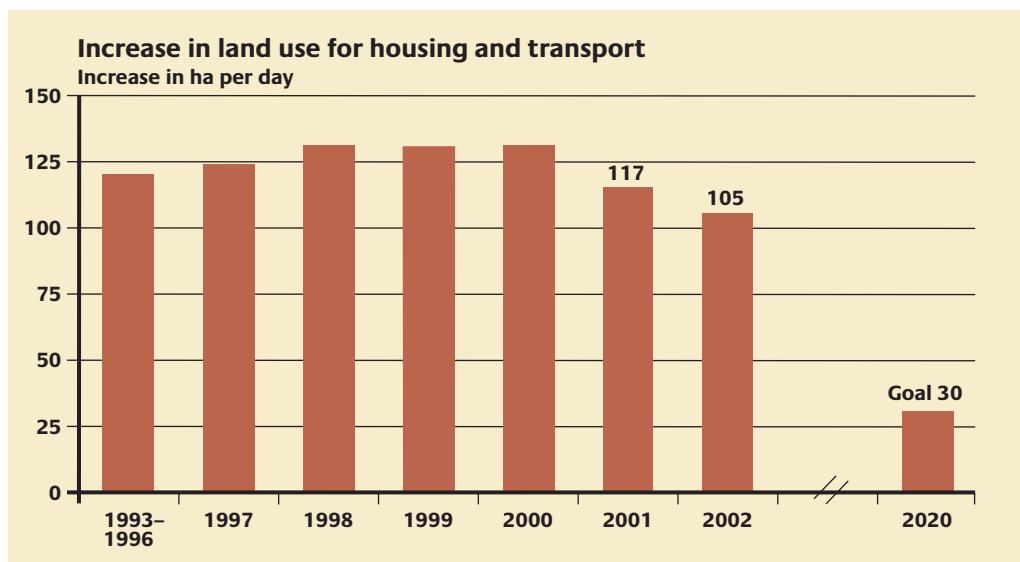
Sustainable land use

Undeveloped, intact land is a limited resource. The Federal Government has set itself ambitious guidelines, with the aim of reducing use of new land for housing and transport to a maximum of 30 ha per day by 2020. In 2001, as compared with 2000, use of new land for housing and transport fell from 131 ha to 117 ha per day, and in 2002 it dropped further to 105 ha per day.

This development is taking us in the right direction. However, the decline is mainly attributable to the reduced investment in construction in 2001 and 2002, which in turn was due to economic conditions. As a result, it does not guarantee a real change in today's trend of land-intensive housing development.

The goal can only be achieved by drawing up and implementing an overall strategy based on real instruments of planning, law and economics at national, regional, and municipal level.

The reduction of the tax allowance for journeys between home and work (*Entfernungspauschale*) and the subsidy for house owners (*Eigenheimzulage*) for new-builds of up to 2,556 euros per year to 1,250 euros per year from 2004 and the accompanying equal treatment of existing and new buildings is an important step in this direction.



Source: Federal Statistical Office: 1993–1996, from 2001;
Federal Office for Building and Regional Planning (BBR): 1997–2000.

5. Biodiversity

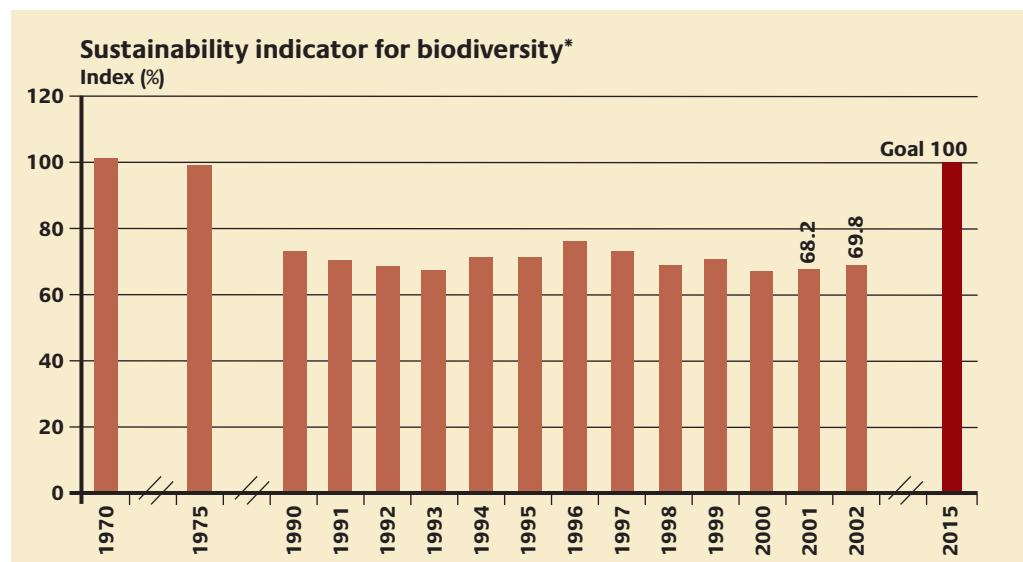
Conserving species – protecting habitats

Biological diversity includes the wide variety of plant and animal species, habitats, as well as genetic diversity. It forms the basis of human life and an effective and functioning ecosystem. Due to its complexity, biological diversity as a whole has not yet been mapped by a single index. So far only one indicator has been developed for biodiversity.

As planned, the indicator for biodiversity of 2002 (development of stocks of 11 animal species) was developed and fundamentally improved for Progress Report 2004. In 2002, in the Strategy for Sustainability, the Federal Government had set itself the goal of stabilising at a high level the condition of all species included in the indicator and the habitats they represent. This goal was now defined so it could be reviewed.

The indicator is now based on the development of stocks of 51 selected bird species that principally represent developments in the countryside as a whole. They are not granted any special protection. The bird species are allotted to the essential types of landscape and habitat in Germany (farming land, forests, urban areas, inland waters, coasts and seas). According to a method that has been tried and tested in the *Länder*, an expert body fixed target stock values for the year 2015 for each individual bird species, calculated the level of target achievement, and finally determined from this the overall indicator.

The sustainability indicator for biodiversity shows that the greatest decline in biodiversity occurred prior to 1990, but this negative trend was slowed down by the beginning of the 1990s. In the last 12 years, the course has been relatively steady at around 70% of target achievement. In order to achieve the target value in 2015, we need to consistently implement the Strategy for Sustainability and other relevant policies, e.g. reducing land use for housing and transport, extending organic farming and implementing the amended Federal Nature Conservation Act (*Bundesnaturschutzgesetz*).



* Development over time of the overall indicator for biodiversity with comparative figures of 1970 and 1975 (estimates). An expert body fixed the target values for 2015 for each individual bird species. If these stock figures are achieved, this is equivalent to a target achievement of 100%. The mean values of the target achievement rates of species from the particular types of main habitat form the sub-indicators. The overall indicator is then calculated from the mean value of the sub-indicators, which are also weighted based on their share of the total surface.

Source: Federal Agency for Nature Conservation 2003.

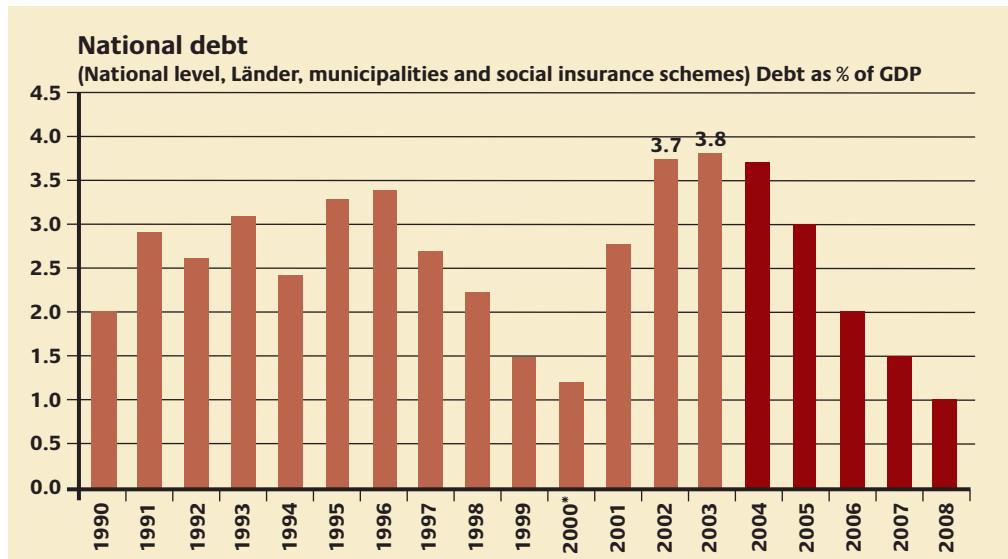
6. National debt

Continuing with consolidation – creating intergeneration equity

The core elements of the Federal Government's financial policy are the reduction of debts to ensure sound public finances for the long term and more inter-generation equity, as well as the promotion of growth and employment through a workable and just tax system.

This course is still valid, even though financial policy is currently in a difficult situation. There has not been a comparable three-year-period of weakness in growth and the economy since the founding of the Federal Republic of Germany. Economic stagnation and high unemployment have left their marks on public budgets. So, after significant achievements in consolidation from 1998 to 2000, the 3% deficit limit set by the Maastricht Treaty was exceeded for the first time in 2002. This exceeding of the limit was necessary in terms of economic policy, as otherwise the economic situation would have deteriorated even further. Also, in 2003, because economic conditions induced higher spending mainly in the labour market sector as well as a drop in tax revenue, new net debt was considerably higher than budgeted for.

The Federal Government has responded to this situation with a comprehensive strategy on financial and economic policy: the structural reforms of Agenda 2010, consolidation measures both in the federal budget – concentrating on cutting back subsidies – as well as in social security systems, and stimulus for the economy by bringing forward parts of the last stage of tax reform all assist in overcoming the weak growth, and on this basis, further reducing public debts. All levels in Germany – the Federal Government, Land Governments, municipalities as well as the social insurance systems – must contribute to safeguarding sustainable public finances.



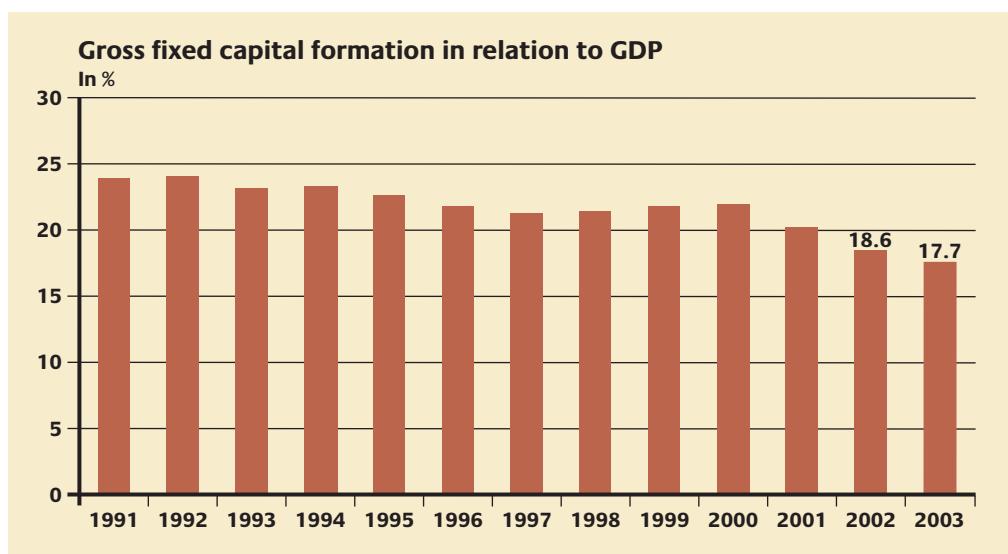
* Excluding revenue from the sale at auction of UMTS licenses

Sources: Federal Statistical Office (up to 2003), Federal Ministry of Finance (estimates 2004–2008, position as at: *Finanzplanungsrat* (Financial Planning Council) June 2004).

7. Provision for future economic stability

Creating positive investment conditions – securing long-term prosperity

The data series on gross fixed capital formation as a percentage of GDP from 1991 shows that while investments remained at a similar level with only a slight downward trend up to the year 2000, they declined significantly between 2000 and 2003. For the first time since then, positive stimulus is expected again from investments in plant and equipment and other investments in the year 2004. The Federal Government is forecasting a nominal and real increase in gross fixed capital formation each of around 2%, with prices remaining stable.



Source: Federal Statistical Office, National accounts.

Innovation and investments come from companies. The development of new products opens up new sales opportunities. The development of new procedures increases the productivity of companies and leads to new employment opportunities. A very crucial prerequisite for this is a reliable environment in terms of economic policy. Companies will make investments all the more readily, the more secure the return. Basic tax conditions, wage development and the development of costs and payments of the social security systems especially must be assessable for the medium term.

Public investments in education and research are in many ways a pre-condition of corporate R&D activities. The State must therefore provide high-quality school education as a public asset that specifically prepares pupils for vocational training or university education at a later stage. Training and study must be completed more quickly in a more practice-oriented manner. Companies are burdened with too much red tape when it comes to investment decisions. The Federal Government is countering this by means of its “Initiative to Reduce Bureaucracy” (“*Initiative Bürokratieabbau*”). The amendment of the German Crafts Code reinforces individual responsibility and initiative as the driving force behind economic dynamism. This is especially important for the founding of businesses as well as for small and medium-sized companies.

The State also offers support for private projects on innovation and investment through its public programmes. In the interests of increasing innovative dynamism, e.g. in the East German *Länder*, industry-wide networks and complex regional network systems are being promoted through various initiatives that fit into regional economic policy (including InnoNet, PRO INNO II, InnoRegio, INNO-WATT³, NEMO⁴, Innovative Regional Centres of Growth (*Innovative regionale Wachstumskerne*)).

8. Innovation

Shaping the future with new solutions

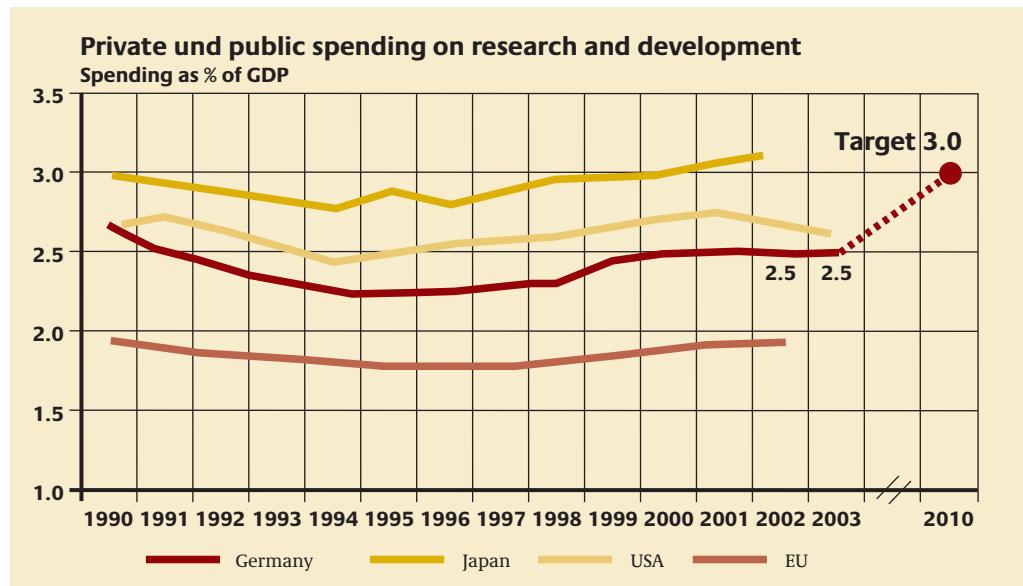
Innovation is the prerequisite for securing prosperity in the long term and with it the quality of human life. It safeguards competitiveness and ensure that our patterns of production and consumption continue to develop in the direction of sustainability. Spending on research and development by trade and industry and the public sector is the key yardstick in illustrating society's innovative efforts.

In March 2000, the European Council of Lisbon resolved to make the European Union the most competitive, most dynamic, knowledge-based economic region of the world in the next 10 years. The Council recognises that research and development play an important role in economic growth, employment and social cohesion. In order to achieve the target set by the Lisbon strategy, private and public spending on research and development needs to be increased to 3% of GDP. The Federal Govern-

³ Promoting research and development at growth companies in disadvantage regions.

⁴ Competition – Network Management East (*Netzwerkmanagement Ost*).

ment has also set itself this goal and is standing by it despite the difficult budgetary position. Total spending on R&D has increased markedly since 1998 and was 2.5% of GDP in the year 2003.



Source: OECD; Main Science and Technology Indicators 2004/1.

9. Education and training

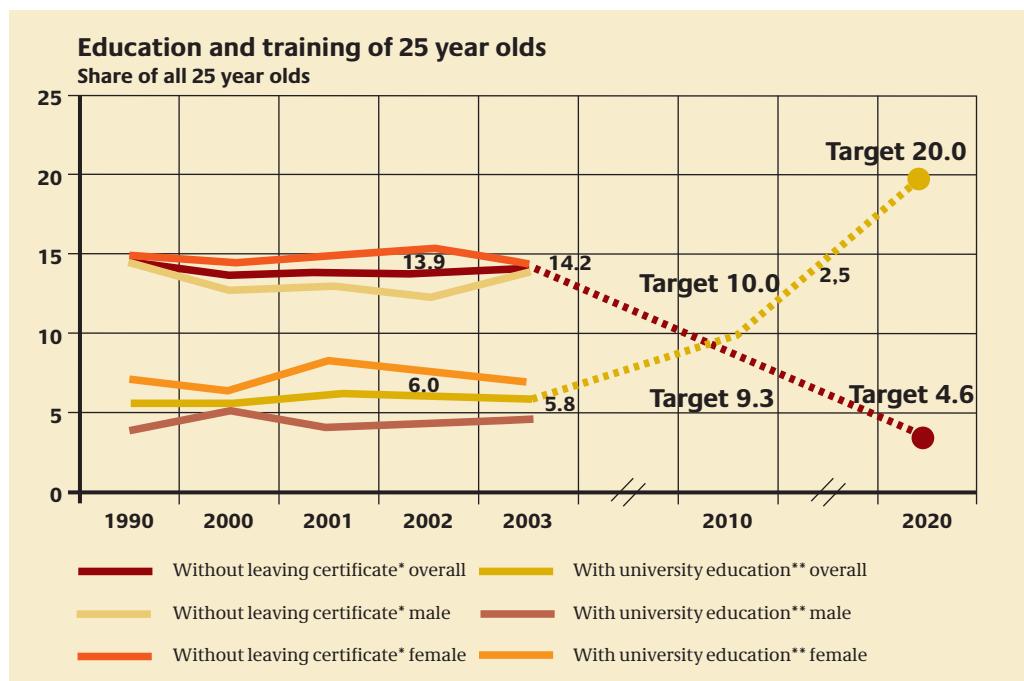
Continuously improving education and vocational training

The state education system and the dual system of vocational training are the corner-stones of future-oriented qualifications for young people in Germany. Comparison at an international level shows, however, that Germany has some catching up to do in certain areas. For this reason, the Federal Government's declared aim is to see, if possible, all young people leaving school with qualifications and going on to obtain an apprenticeship or take up a university degree course.

Current surveys show that between 1999 and 2003 the proportion of 25 year olds not in training and with no qualifications from post-16 education or from the dual system of vocational training fell from around 15% to 14.2%⁵. The proportion of 25-year-old women without qualifications was slightly higher than that of 25-year-old men in the years 2000–2002; in 2003 the gap was smaller. Together with the *Länder*, the Federal Government wants to reduce this rate to 9.3% by 2010 and to 4.6% by 2020.

Another goal is to significantly boost the number of young people who have completed a degree course by the age of 25. Between 1999 and 2003 the proportion of 25 year olds with university degrees rose from 5.4% to 5.8%. The slightly rising trend is attributable to relatively stable development in the number of male university graduates and positive development in the number of female university graduates. By calling for an increase in the number of bachelor and master degree courses on offer, the Federal Government is working towards increasing the proportion of 25 year olds with university degrees to 10% by 2010 and to 20% by 2020 in line with the Bologna

⁵ Older surveys give a rate of 10 to 12%.



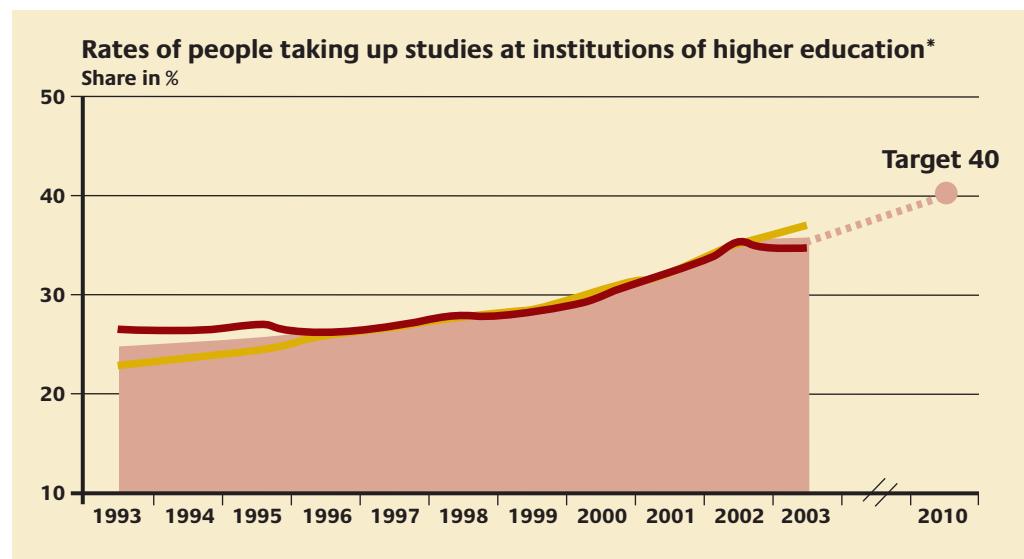
* Without a leaving certificate from post-16 education and not in training.

** International Standard Classification of Education (ISCED 5A).

Source: ZUMA Evaluation of Microcensus; Federal Statistical Office.

Declaration on the European space for higher education. Bachelor and master degree courses lead to earlier graduation and are more comparable at international level than Germany's previous equivalents to bachelor and master degrees, the *Diplom* and *Magister* degree courses. As early as 2003, 5% of students in their first semester opted for a bachelor and master degree course.

In comparison with other countries, Germany can draw positive conclusions from the data in this diagram: Germany's "student drop-out rate"⁶, at 12.5% for men



* Net rate of people taking up higher studies, ISCED 5A

Source: Federal Statistical Office, rates according to OECD procedure.

⁶ Proportion of 18–24 year olds with school leaving certificate (*Sekundarstufe I*), but no further academic or vocational training.

and women alike, is far below the EU average (18.5%). The only countries where this rate is lower are Sweden (11%) and Austria (8.8%).

In comparison with other countries, fewer young people take up studies at institutions of higher education in Germany. So, at 28.5%, the proportion of people taking up studies at university in 1999 was considerably below the OECD average (45%). The Federal Government has therefore set itself the goal of achieving a rate of around 40% in 2010. In 2003 the proportion of people taking up studies at institutions of higher education in Germany had already risen to 35.7%. This means that compared to the year 2000 the number of students who took up studies increased by 26,000. Among other things, the reform of the Federal Education and Training Assistance Act (BAföG) in 2001 was a significant factor in this development. The rise in the number of women taking up studies is especially pleasing. At the same time, the average age of students taking their first degree has dropped again and is now 24.4 years (1997: 25.1 years, 2000: 24.7 years).

II. Quality of life

10. Economic prosperity

Raising economic output by environmentally and socially compatible means

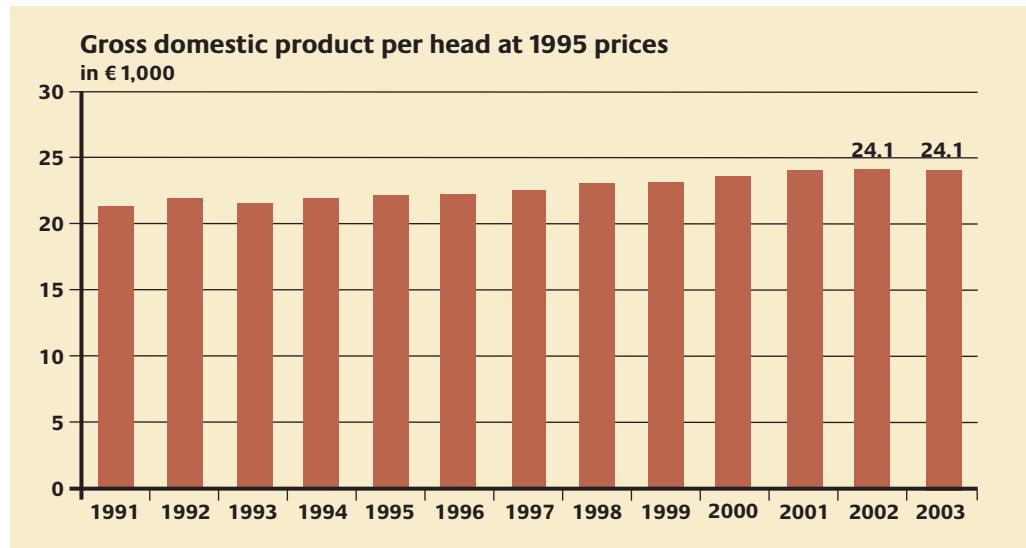
German economic growth was far slower than expected last year. The weakness of the economy experienced in the years 2001 to 2003 is, however, more than just a temporary economic problem. Average annual growth rates fell from 2.8% in the 1970s and 2.3% in the 1980s to just 1.6% in the 1990s. In order to break this trend, on the one hand all employment opportunities must be fully activated and utilised and on the other hand, productivity growth in Germany – which, alongside increased employment, is a crucial factor for economic growth and prosperity – must continue to rise. The programme for this is “Agenda 2010”. It will contribute to boosting the growth potential of the German economy and creating more employment by reducing ancillary wage costs, encouraging investments and spending, improved systems of incentives on the supply and demand side of the labour market, as well as promoting independence and individual initiative.

New dynamism in growth is the key to combining prosperity, jobs, social security and sustainable development in Germany. In a country with scarce raw materials and a population that is declining in the long term, economic prosperity must be created through investments in skills and knowledge.

Education, research and technology are major driving forces behind economic development. Germany as a business centre relies on the broad acceptance of and individual commitment to science, technology and innovation.

Together with the initiative “*Wissenschaft im Dialog*” (Science in Dialogue), the Federal Government has declared 2004 the “Year of Technology”. Within the framework of this, current research is to be communicated in a transparent manner, young people are to be fired with enthusiasm for science and research, young researchers are to be attracted and a lively dialogue between science and the public is

to be promoted. Technological progress is ultimately the prerequisite for a sustainable, growing economy that gives equal consideration to job creation, increasing prosperity and environmental interests.



Source: Federal Statistical Office, National accounts.

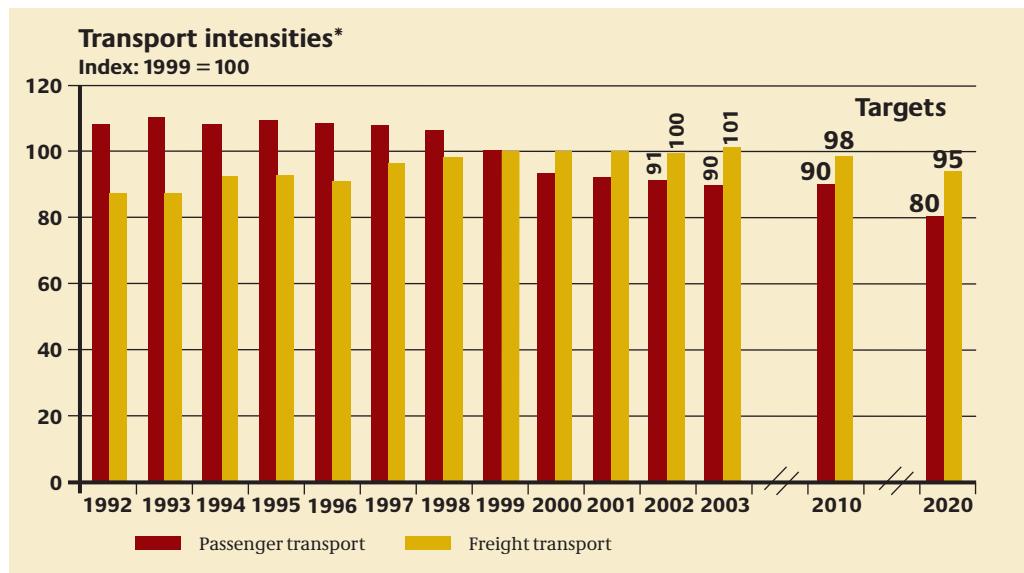
11. Mobility

Guaranteeing mobility – protecting the environment

The Federal Government has decided to assess the sustainability of transport development based on two central indicators: transport intensity (transport output in billion tonne kilometres and/or passenger kilometres per € 1,000 GDP) and modal split (the proportion of forms of transport in overall transport output). Here an increase in the proportion of rail freight transport is representative of sustainable development in transport – especially in view of the further considerable growth rates in freight transport. The longer term development of both indicators needs to be observed.

Between 1999 and 2003 transport intensity in passenger transport was reduced significantly by 10% and so, the goal for 2010 has already been achieved. Mobility requirements have been met with a lower transport output than in previous years. The introduction of eco-tax probably contributed to reducing individual transport output and more sparing use of energy. By contrast, transport intensity in freight transport increased – though only slightly – by 1% in the same period.

The positive signals to date should not, however, be linked to any unrealistic expectations. Both indicators are likely to have been affected not inconsiderably by the weak economic development especially in the last few years: With stagnating economic output, private journeys are increasingly avoided or switched for closer destinations. In freight transport competitive pressure and poor economic conditions lead to additional pressure for rationalisation. Using methods in line with market conditions, the Federal Government will work towards keeping up transport intensities in case of an economic upswing. For the medium term, it is also endeavouring to reduce transport intensity by around 5% in freight transport and 20% in passenger transport by the year 2020 (as compared with 1999).

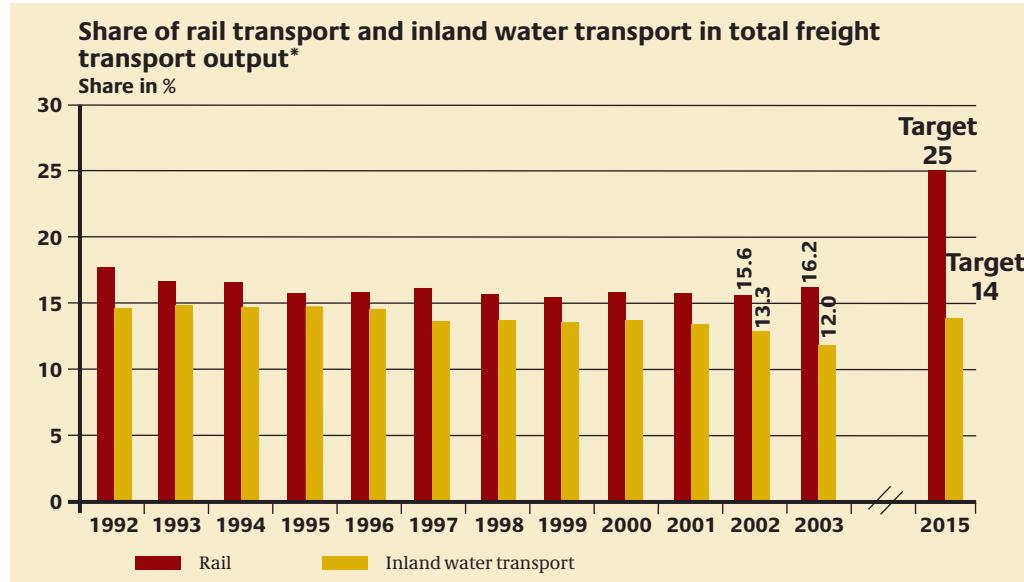


* Transport outputs in the Federal Republic of Germany incl. air transport; passenger transport in billions of passenger kilometres, freight transport in billions of tonne kilometres

Source: Federal Minister for Transport (ed.): Transport in Figures, Issue 2003/2004.

Since 1999 the modal split has developed slightly in favour of public passenger transport by bus and rail, its market share of passenger transport output rose from 15.7% in 1999 to 16.1% in 2002. Local public transport (ÖPNV) increased its market share from 9.5% to 10.0% in the same period.

This confirms among other things the success of regionalisation, the purpose of which was to make public passenger transport as a whole more attractive by reorganising ÖPNV in a customer-oriented manner at local level.



*From 1999 onwards data do not include local freight transport by road

Source: Federal Minister for Transport (ed.): Transport in Figures, Issue 2003/2004.

In freight transport the market shares of rail transport and inland water transport have not yet recorded any significant development in the right direction. Economic influences are likely to have been the main reason for this. The slight increase in the market share of rail transport in 2003 at the expense of that of inland water transport is due to the low water level that has been experienced for some time. The goal is to double freight transport by rail by 2015 as compared with 1997.

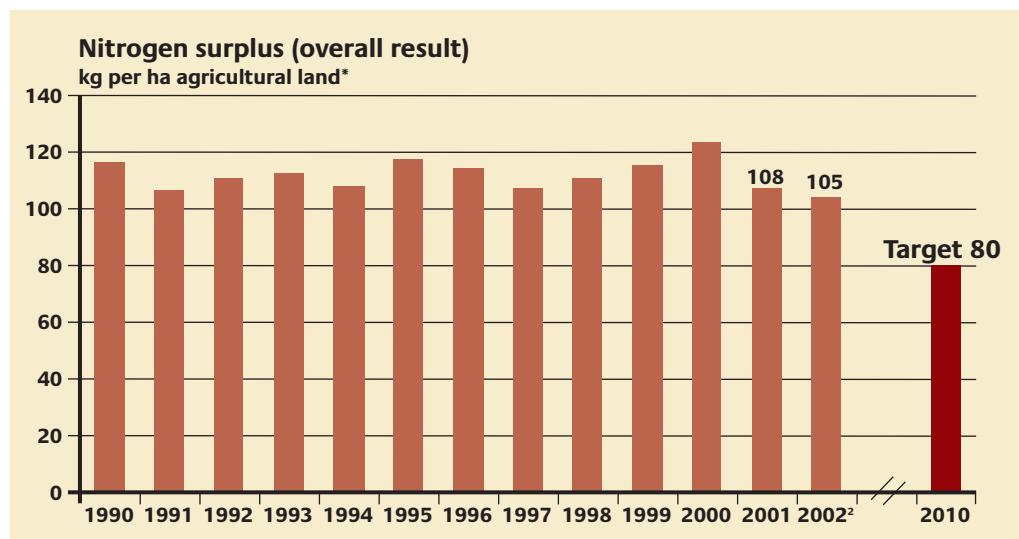
Considerable efforts by both the national rail company Deutsche Bahn AG as well as an increasing number of private rail companies are still required to improve the quality of service in rail transport. More initiatives are also needed to strengthen inland water transport so that with increasing economic activity, and especially with increasing traffic flows following EU enlargement, the market shares of both forms of transport can increase to the reference figures set down in the Strategy for Sustainability.

12. Nutrition

Environmentally sound production of healthy food

Germany introduced its agricultural reform in 2001 and since then it has implemented it consistently. With the Luxembourg resolutions on the reform of the Common Agricultural Policy of June 2003, the European Union has adopted crucial aspects of this agricultural reform to make funding more organically oriented. From the viewpoint of environmental policy, sustainable farming means preserving existing resources (soil, water, air and biological diversity).

Environmental pollution through nitrate discharges into soil and water and ammonia emissions into the air are to be avoided as far as possible, as they have far-reaching effects (including acidification and eutrophication).



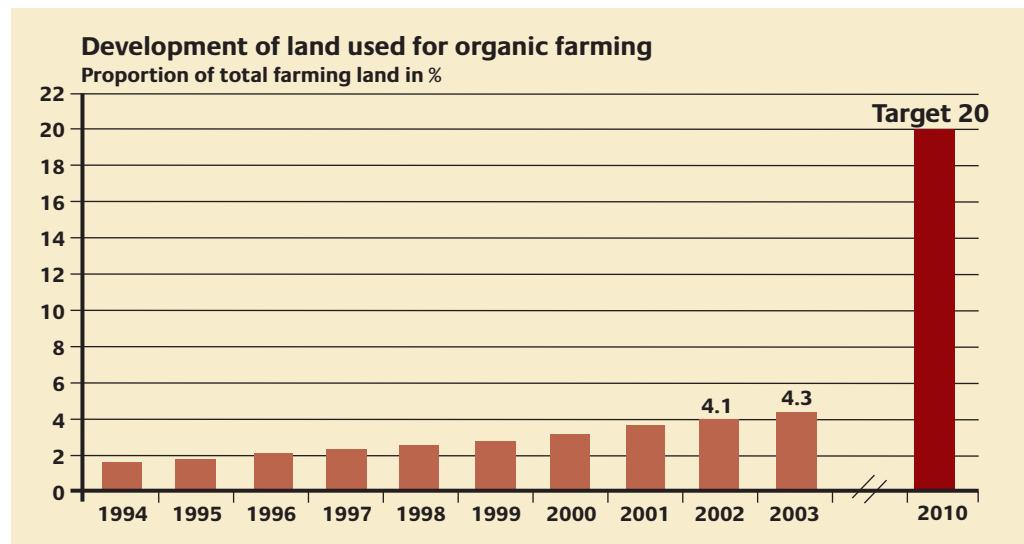
* Method adjustments led to revised figures in the back calculation for all years.

Source: Federal Environmental Agency.

The nitrogen surplus per hectare in 2002 fell significantly to 105 kg/ha from 114 kg/ha on average between the years 1996 and 2000. Nevertheless, in order to reach the goal of 80 kg per hectare in 2010, more efforts need to be made to use nitrogen more efficiently – e.g. through changes to feed, reduced-emission storage and application of industrially manufactured fertilisers – or reduction in the overall use of fertilisers.

In Germany, around 95% of ammonia emissions in the air come from farming and primarily from animal husbandry. Within the framework of Directive 2001/81/EC, the so-called NEC Directive, the Federal Government has set itself the goal of reducing ammonia emissions by 26% by 2010 as compared with 1990; a 16% reduction was achieved in the first half of the 1990s, mainly because of a decline in animal stocks as well as procedures to reduce emissions, but since then emissions have remained at almost the same level, totalling 34 kg/ha in 2001. Emissions should be reduced on the basis of an integrated strategy for sustainable farming, which takes into account “animal welfare” in technical measures to reduce emissions and by doing so gives equal consideration to animal welfare and environmental protection.

To a considerable extent, organic farming already meets the requirements of sustainable farming. The Federal Government has set itself the goal of increasing the proportion of agricultural land farmed organically to 20% within 10 years. Efforts are being made to achieve sustainable growth in the eco-sector, based on a balanced expansion of supply and demand. Existing funding measures will be supplemented by the federal programme on organic farming, which is designed to improve the basic conditions for expanding organic farming. The proportion of agricultural land that is farmed organically continued to rise from 3.2% in the year 2000 to 4.3% in the year 2003, which is a 34% increase.



Source: BMVEL based on data based on European Council Regulation EEC No. 2092/91 “Organic Agriculture”.

13. Air quality

Keeping the environment healthy

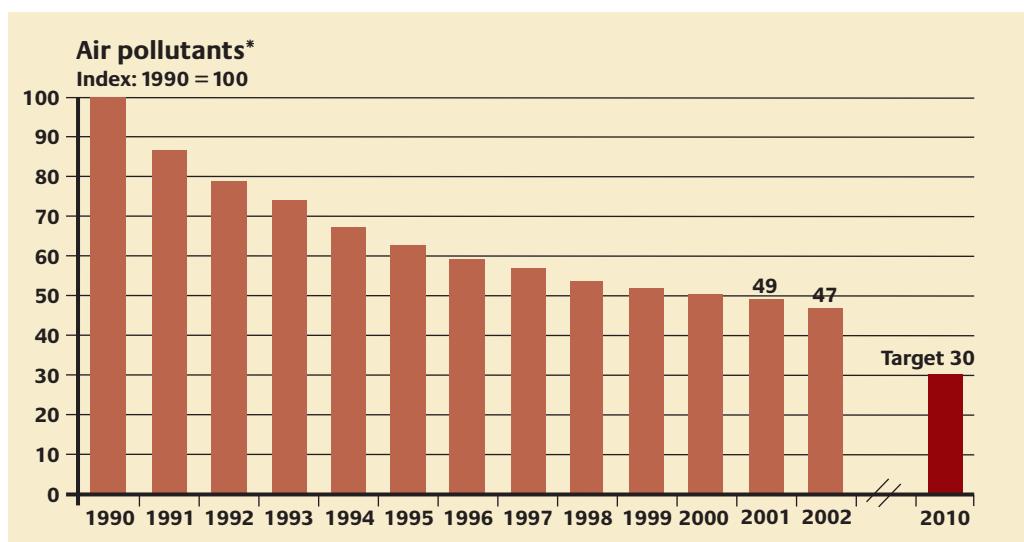
The harmful chemicals considered here include in particular sulphur dioxide, nitrogen oxide, volatile organic compounds (without methane) and ammonia. These substances are responsible for the over-fertilisation and acidification of the ecosystems and for the formation of summer smog.

By 2010 pollution of the air by chemicals that are particularly harmful to health and the environment is to be reduced by around 70% in total as compared with 1990. Here it should be noted that the potential for reducing ammonia emissions is limited for reasons of animal welfare, among other things.

As a whole, there is a positive trend in the improvement of air quality in Germany. Emissions of the gases under review fell on average by 53% between 1990 and 2002, and so 75% of the reduction target has already been achieved.

In detail, development since 1990 has been as follows: sulphur dioxide emissions have been reduced by 88% through the desulphurisation of power stations, fuel conversions as well as statutory restrictions on the sulphur content of liquid fuels. Hydrocarbon emissions have also been cut by more than 80%, primarily through use of catalytic converters in road traffic.

In addition, particle emissions by road traffic decreased by around 50% in this period, though this reduction is not enough by far. In cooperation with the *Länder*, the Federal Government wants to promote clean diesel under the tax system from 2005 onwards.



* The harmful chemicals SO₂, NO_x, VOC and NH₃ are recorded as percentage developments in emissions compared with 1990. The index shows the mean value of these four relative developments in emissions.

Source: Federal Environmental Agency.

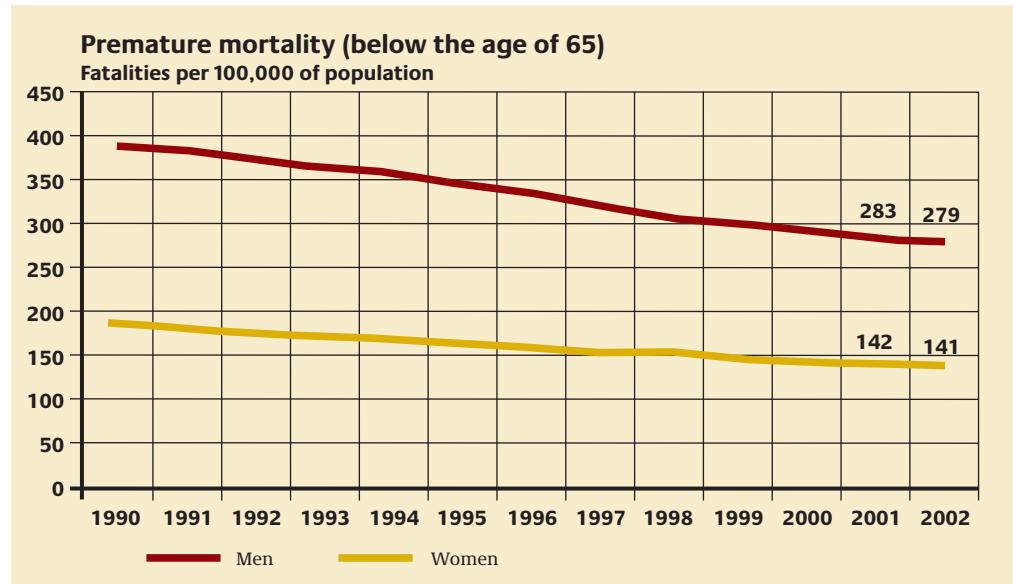
Also through use of catalytic converters as well as the use at power stations of equipment to remove nitrogen, nitrogen oxide emissions have been cut by 47% compared with 1990. Additional measures were taken at EU level: the Directive on National Emission Ceilings for certain air pollutants was adopted in October 2001 and the Ozone Directive in February 2002. These directives were transposed into German law in 2004.

14. Health

Living healthily for longer

With increasing life expectancy, people's desire for lasting health is also growing. The two indicators "Premature mortality" and "Satisfaction with health" provide, on the one hand, information on the population's state of health and the quality of health care provision, and on the other, information on people's own assessments of their health.

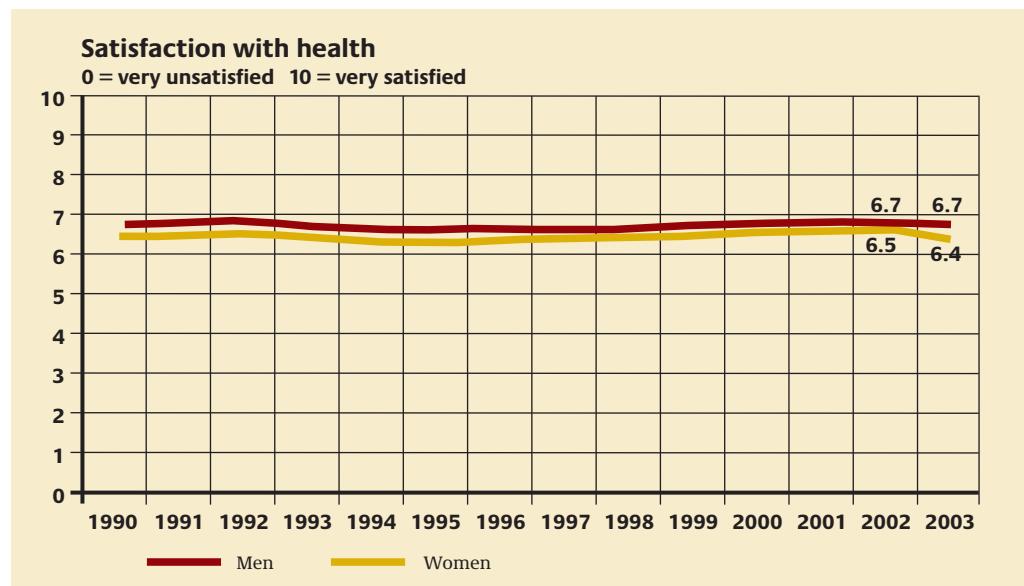
Premature mortality has dropped continuously over the last few years. The gap between the premature mortality rates for men and women has become smaller. So, in 2002, the statistics reveal that of every 100,000 inhabitants 141 women and 279 men die before the age of 65. In 2001 the figures were 142 women and 283 men. This positive development is at the same time an expression of advances in medicine, as well as of improvements in medical treatment, of the population's health awareness and of the effect of preventive measures.



Source: Federal Statistical Office, statistics on causes of death.

Personal satisfaction with one's health is of central importance to our quality of life. Indicators of satisfaction with health offer an overall picture of health and well-being which provides a considerably better basis for assessment than individual indicators on specific illnesses or health problems. Therefore, alongside health, medical care and the interlinking between the areas of prevention, treatment and rehabilitation, the activation of own resources, like self-help in health issues, also play a major part in satisfaction with health. Most people have been satisfied with their state

of health for years. In 2003, German people rated satisfaction with their health on a scale of 0 (very unsatisfied) to 10 (very satisfied) at 6.4 (women) and 6.7 (men).



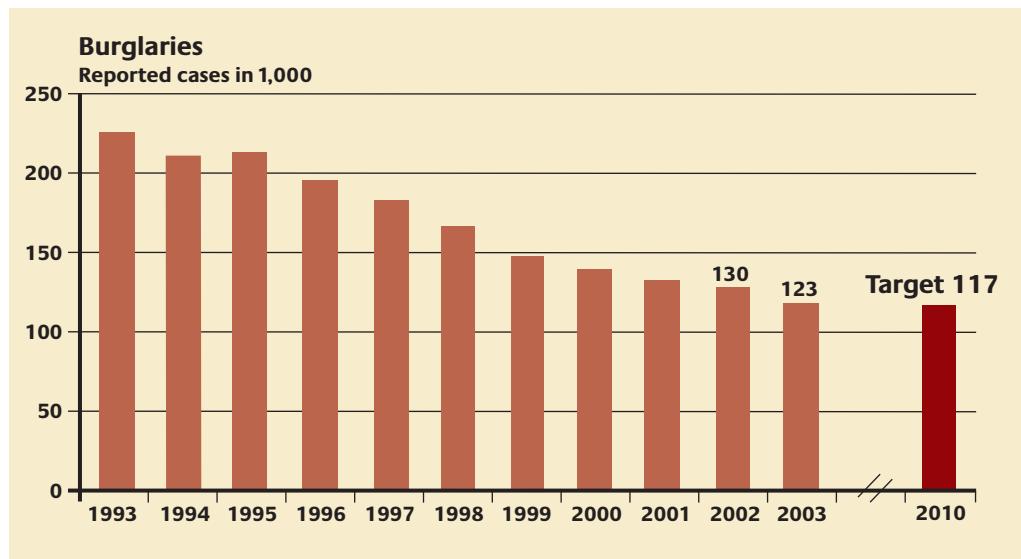
Source: German Institute for Economic Research (DIW), Socio-Economic Panel.

15. Crime

Further increasing personal security

In 2003 the number of home burglaries dropped by 5.2% on the previous year. Since 2002 there has been a 7.81% decline – based on Police Crime Statistics of 2001.

This shows that preventive measures, especially the efforts of security authorities to provide information and advice, are effective tools to safeguard private property. Evidence of the positive effect of preventive measures is, in addition to the declining number of cases since 1993, the rise in the proportion of failed attempts at home burglaries from 28.3% (1993) to 34.4%. The goal that the Federal Government set itself in 2002 was to cut the number of burglaries by 10% by 2010, and this target is now close at hand. Nevertheless, the opportunities have not been fully exhausted. Much depends on the commitment of the population to secure their own property, and there is still room for improvement. It is worth trying to increase awareness among the population and encourage them to better protect their property against burglaries with security devices like alarms or especially well-secured windows and doors.



Source: Police Crime Statistics.

III. Social cohesion

16. Employment

Boosting employment levels

In the last few years development in the labour market has been unsatisfactory. At present there are considerably more than 4 million people out of work. At the same time employment has been falling since the end of 2001. This unsatisfactory development is mainly the result of long prevailing economic weakness.

With the Hartz Acts and the Labour Market Reform Act (*Gesetz zu Reformen am Arbeitsmarkt*), the Federal Government has taken necessary steps to make the labour market more flexible. In addition, the Federal Government has merged unemployment benefit and social welfare to form an integrated, tax-funded national social security system. This new system manages all people capable of work, but in need of assistance, and their families. The new service will be carried out in future by the Federal Employment Agency (*Bundesagentur für Arbeit*) and the municipalities. The aim of the reforms is to place unemployed people in work more quickly and to create new employment opportunities. The reforms will make the labour market more flexible and increase the readiness of companies to create new jobs. At the same time there will be added incentives for unemployed people to take on existing jobs. This will lead to more employment as a whole.

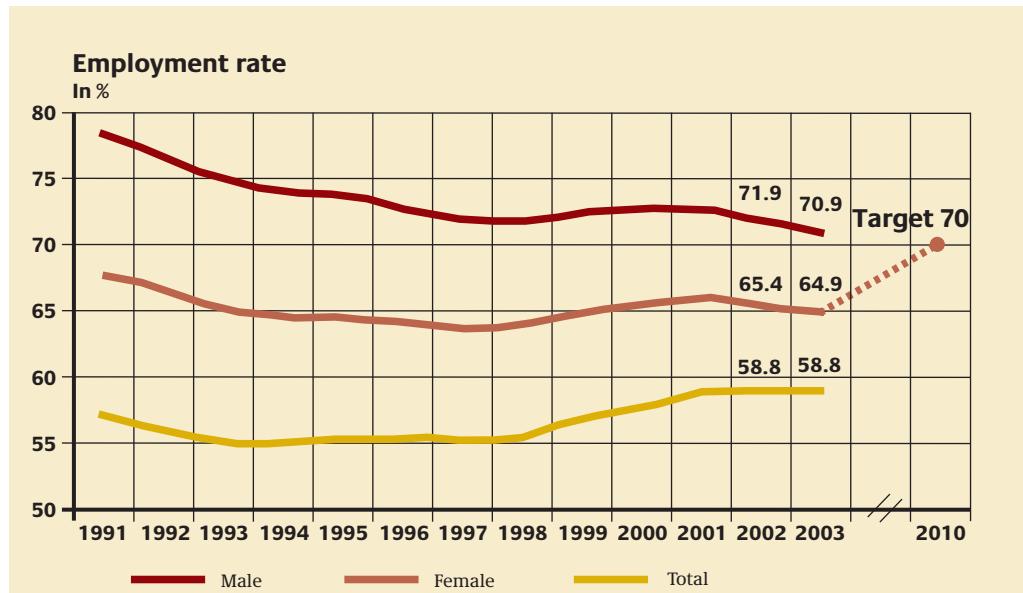
Due to the demographic change, there will be a shortage of qualified staff in Germany in the long term. This poses great challenges, as Germany will lose its appeal to investors as a business centre if companies do not have adequately qualified new recruits. In addition, financing social security systems funded by contributions will be even more difficult when the ratio of pensioners to contribution payers changes. For this reason, it is absolutely necessary to use existing employment potential more effectively, e.g. better child care provision can improve opportunities for mothers to take up work. Young people could start work sooner if training and study courses were shorter.

A particular challenge is posed by the promotion of work among older employees. While the employment rate among 55 to 59 year olds has risen from 49.6% in 1993 to 60% in 2003, which is still a low figure, the employment rate among 60 to 64 year olds rose despite a similarly considerable increase in the year 2003 from 17.8% in 1993 to only 23.4% in 2003. There is a particularly large gap between men and women in the employment rates of older employees. While the employment rate for men aged between 15 and 64 years as a whole was 70.9% in 2003 and that for women was 58.8%, the corresponding rate for 55 to 59 year old men was 68.9% and for women 51%. In the age group of 60 to 64 year olds, the employment rate for men is 31%, almost twice as high as that for women (15.9%).

In view of demographic change, the employment rate among older men as a whole is far too low. For this reason, the average retirement age needs to be raised – despite the still difficult situation in the labour market. By means of a whole bundle of measures, the Federal Government has endeavoured to improve employment among older people. This includes combating early retirement at the expense of social insurance systems. By abolishing extended periods of benefit receipt, e.g. unemployment benefit, there will be a noticeable reduction in the willingness of business partners and parties to employment contracts to terminate the employment of older employees prematurely. At the same time, within the framework of the Hartz legislation, the Federal Government has improved and created various instruments by which older unemployed people can be reintegrated into the labour market. The Federal Government will review its activities regularly in the interests of improved efficiency, though it is also of the opinion that social partners in this area have a particular responsibility. This responsibility is to do with adapting jobs, working arrangements and working hours to the different capabilities of older employees. Closely associated with this are preventive measures on standards of health and safety at work and promotion of health in the workplace.

Implementation of measures to promote employment among older people must not be delayed until the end of people's professional careers, as in such cases it is too late for them to be fully effective. Instead, it is necessary to focus on employment throughout all stages of working life: measures that serve the older people of today always serve the older people of tomorrow, too. In the case of jobs with high "burn-out effects" (school, social work), subsequent career opportunities for "drop-outs" should be scheduled and prepared for through further education. Perspectives must be developed for employees who cannot "grow old" in their normal jobs. Individual interests can trigger the desire for a "second job", too. These can relate to e.g. a change in career or job, becoming self-employed, or taking on roles in civil society outside or after actual paid employment.

The current political debate on the consequences of demographic change is still dominated by the question of the economic burden associated with it. Currently the discussion focusses on the problematic consequences of the ageing of society only. As a result, political recommendations related to this topic are mainly based on the question of how social security systems can remain effective under these conditions. However, this approach obscures the view that demographic change can also be taken up and moulded as an opportunity for growth, employment and social development. In order to provide stimulus here, the Federal Government has made



Source: Federal Statistical Office, Microcensus.

the subject “Potential of older people” a new focus of the Strategy for Sustainability and has underpinned it with concrete measures and projects for the three areas of action “Employment”, “Lifelong learning” and “Promotion of health in the workplace”.

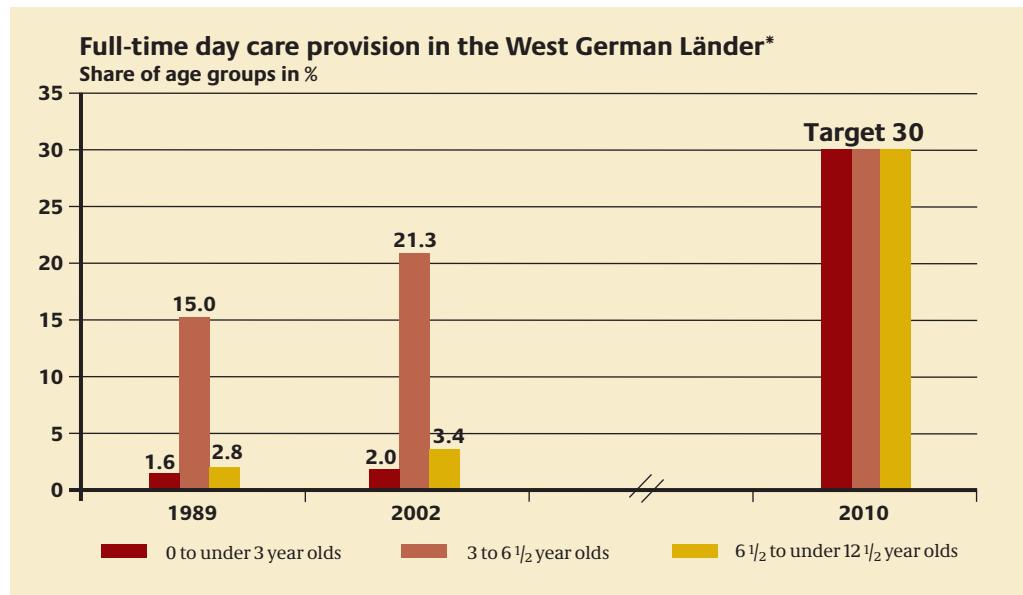
17. Perspectives for families

Improving the compatibility of work and family life

The provision of childcare facilities in line with demand is an essential element in improving the balance between family and work. Many women who would like to work are still prevented from doing so due to a lack of childcare facilities for their children. In the Federal Republic of Germany as a whole, it has been established that the East German *Länder* offer good day care facilities for children up to 12 years. By contrast, significant deficits are noticeable in the West German *Länder*. The provision of all-day schooling for children over 12 years is inadequate throughout Germany.

Improved day care provision is essential, especially in view of the foreseeable future workforce needs resulting from demographic change and problems associated with it. Full-time day care makes it easier for mothers and fathers to combine family and work obligations. Early support provided within the framework of day care is also a significant factor in promoting equal opportunities. Furthermore, a better balance between family and work could help to boost the birth rate in Germany, and this is urgently needed.

For these reasons, it is necessary to significantly expand childcare provision for the under three year olds in the West German *Länder* as well as full-time day care in day schools and day care facilities. Meanwhile, in the East German *Länder*, support is required for the existing facilities at elementary level. Alongside the Federal Government’s initiative, this is primarily a task for the *Länder* and municipalities as well as companies.



Source: * Excluding full-time day care, excluding all-day schooling; excluding Berlin
Federal Statistical Office (2003) as well as calculations by Dortmund Project Office for Child and Youth Assistance Statistics at the University of Dortmund (2004).

The Federal Government will spend 4,000 million euros on expanding all-day schooling up to 2007. In addition, as a result of the merger of unemployment benefit with social welfare, the municipalities will have up to 1,500 million euros a year to spend on improving childcare provision for under three year olds from 2005 onwards. In connection with this, in July 2004, the Federal Cabinet introduced before parliament a bill on the expansion of full-time day care for children.

18. Equal opportunities

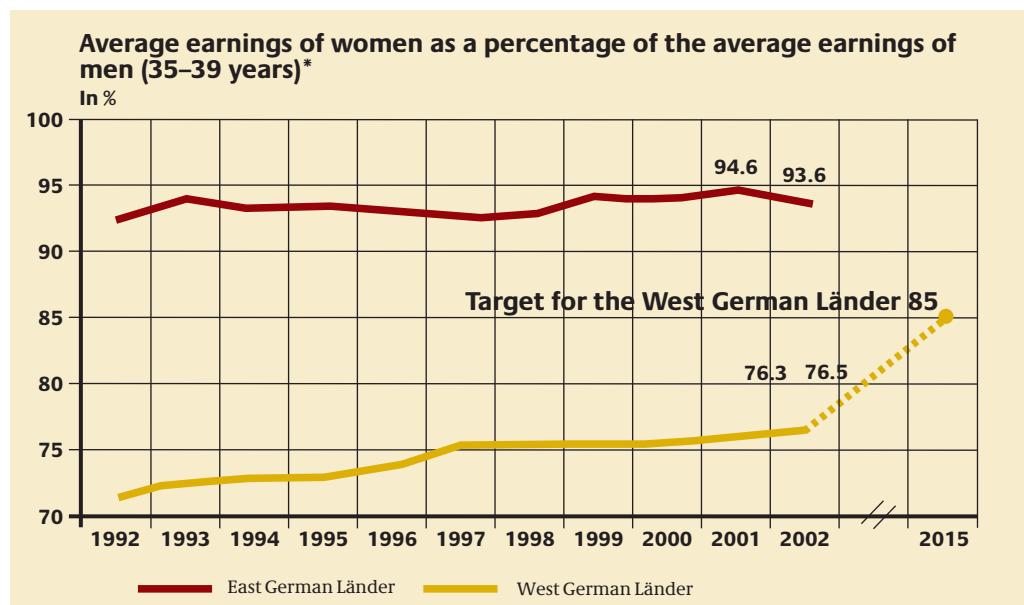
Promoting equal opportunities in society

In a sustainable society, women and men should have equal opportunities. This should also be reflected in their income. To this end, the framework must be altered so as to remove differences in income between women and men.

In Germany, differences are apparent between the East and West German *Länder*: Whereas in 2002 women's average earnings (all age groups) in the East German *Länder* were already around 95% of male earnings, they were only 75% of male earnings in the West German *Länder*. This gap increases with age: While differences in income as a whole are still minor at the start of working life (women aged 20–24 in full-time employment, East German *Länder*: 93.9%, West German *Länder*: 89.0%), the gap increases more and more in middle age: women aged 35–39 in full-time employment earn just 76.5% of male earnings in the West German *Länder*, compared with 93.6% in the East German *Länder*; women aged 55–59 earn just 68.8% (West German *Länder*) compared with 91.8% (East German *Länder*) of the earnings of their male counterparts. Breaks in employment for child rearing, part-time work and the different perspectives for career development resulting from training decisions are the main reasons why older women, especially in West Germany, do not earn as much. Important reasons for this are the prevailing circumstances, such as inadequate full-time day care provision in West Germany (cf. indicator 17).

The Federal Government is endeavouring to increase women's average earnings (35–39 years, West German *Länder*) to 85% of average male earnings by 2010. It will also be forceful in continuing to assert equal opportunities of women and men in the labour market. All the reasons that were developed in detail in the Federal Government's report on the working and income situation of women and men, which it presented in 2002, will be incorporated in this. The report on the equal opportunities situation of women and men, which the Federal Government will put before the German Bundestag for the first time in this legislative period, will be dealt with in a separate section on the subject of equal earnings, with analysis and evaluation of key data.

In order to further reduce gender-specific differences in earnings, the Federal Government is making active efforts to ensure the principle "Equal pay for equal work or work of equal value" (Article 141 EC Treaty) is applied. This concerns the development of appropriate earnings structures, which is the task of social partners. A series of initiatives and projects that aim to bring the subject of equal earnings to the attention of a broader public and make those responsible more aware of the matter, to spread positive examples and develop political perspectives and strategies, were carried out jointly by the Federal Government and trade unions, sometimes with EU funding; so, for example, a textbook on applying the principle of equal earnings was presented.



* Comparison of gross daily earnings of people in full-time employment (excluding apprentices) as at the reporting date 30 June of the particular year

Source: Institute for Employment Research of the Federal Employment Services: employment statistics.

19. Integration of foreign citizens

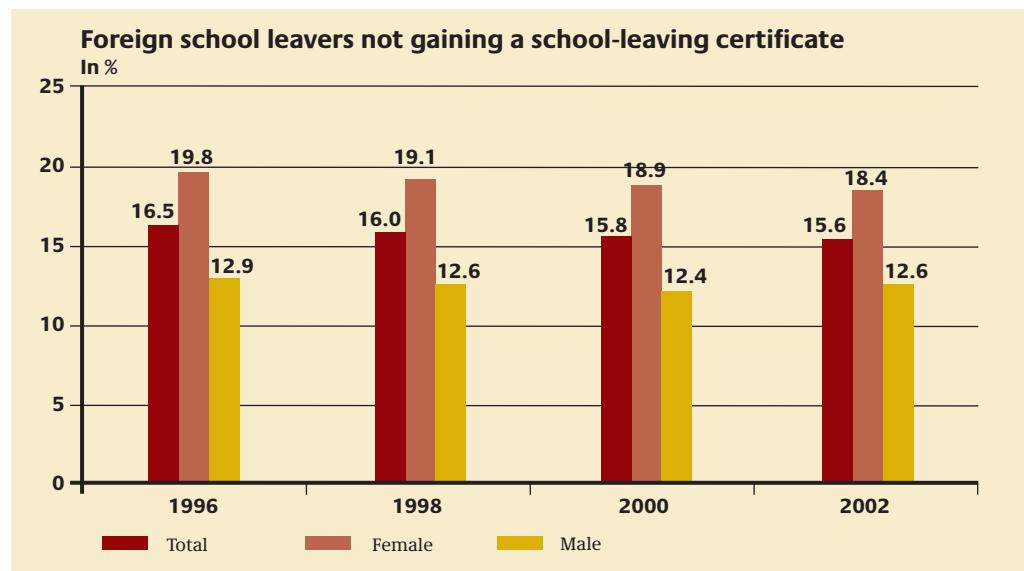
Integration instead of exclusion

The integration of foreign citizens is an important yardstick for the social cohesion of a society. In Germany, this concerns the more than 7 million foreigners living here. The adopting society must assist in their integration, but the immigrants must also do their bit for integration, for example, by being willing to learn the Ger-

man language – as a central pre-condition of academic and professional success. Inadequate language skills, poor academic qualifications and a lack of professional qualifications are obstacles to professional development and employment opportunities. For society and trade and industry they signify a waste of existing resources.

Positive progress has already been made in academic training. Whereas in the early 1980s nearly 50% of foreign youngsters left secondary school without qualifications, in 2002 this had dropped to just 15.6%⁷ (the rate was 6.5%⁸ among German school leavers (2002)). This positive trend – which has admittedly slowed down in the last few years – should be maintained. By 2020 the proportion of foreign school leavers without secondary school qualifications should be brought closer to the corresponding rate for German youngsters.

It shows that young women have a better school education both among German citizens and foreigners. While the proportion of young foreign men leaving school without any school-leaving certificate is 18.4%, this rate among foreign women is significantly lower at 12.6% (2002).



(Pupils visiting *Hauptschule* who have attained a leaving certificate from vocational schools were included from the year 2000 onwards.)

Source: Federal Statistical Office; calculations of the Federal Institute for Vocational Education and Training (BIBB) and the Federal Government Commissioner for Migration, Refugees and Integration.

Another important indicator for integration in society is vocational training. The proportion of young adults of foreign descent (20–29 years) without vocational qualifications was 38% in 2002 (comparative group of German descent 11%). Despite their better school education, the number of foreign women in vocational training is considerably lower than the number of foreign men. 41% of foreign women in this age group have no vocational qualifications, in comparison with 36% of foreign men. In the next few years efforts will be made to clearly reduce the number of foreigners without vocational qualifications.

⁷ From general secondary and vocational schools

⁸ From general secondary schools and vocational schools

IV. International responsibility

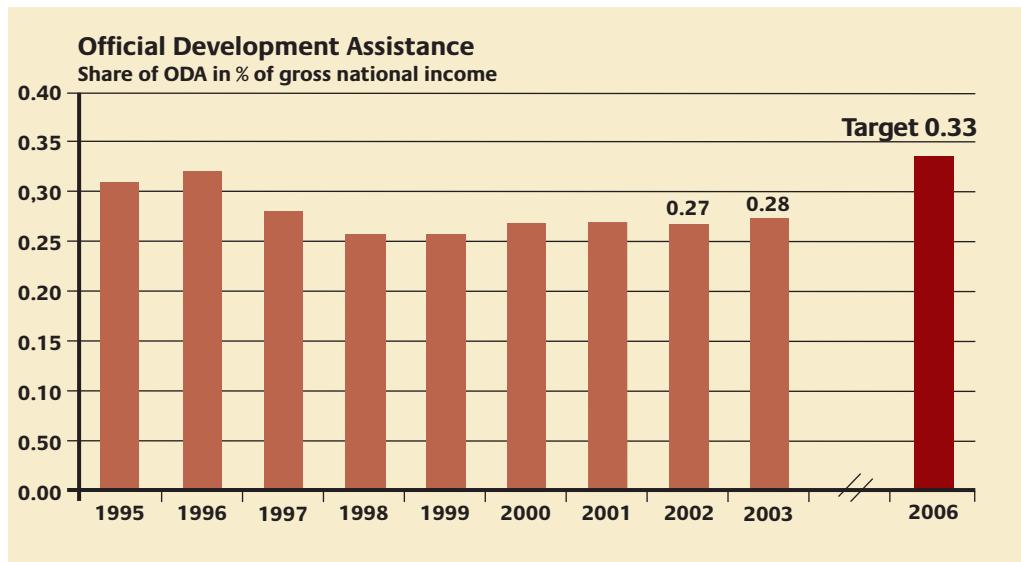
20. Development cooperation

Supporting sustainable development

Through development cooperation, Germany is contributing to the international community task of supporting sustainable development worldwide and implementing the international development goals that were agreed at the United Nations' Millennium Summit as well as the World Summit on Sustainable Development in Johannesburg.

In 2003, Germany was the world's fourth biggest provider of funds for public-sector development cooperation (Official Development Assistance/ODA), with funding of US\$ 6,690 million. The downward trend in ODA, which came about during the 1990s due to the huge funding requirement following German reunification, was halted in the year 2000. Currently at 0.28%, it is still far below the internationally agreed UN target of making 0.7% of the gross national income available for public-sector development cooperation.

The Federal Government is, however, maintaining this target as before. Together with the EU Member States, it has introduced steps to achieve the internationally agreed increase in funds for development cooperation. In this context, Chancellor Gerhard Schröder said in his government statement of 29 October 2002: "We have fixed the funding base for development and will achieve the target of 0.33% for development cooperation by the year 2006." Alongside the increase in the budget of the Federal Ministry for Economic Cooperation and Development, higher EU spending on development policy, greater use of mixed funding, and the effect of debt relief will contribute to this end.



Source: Federal Ministry for Economic Cooperation and Development

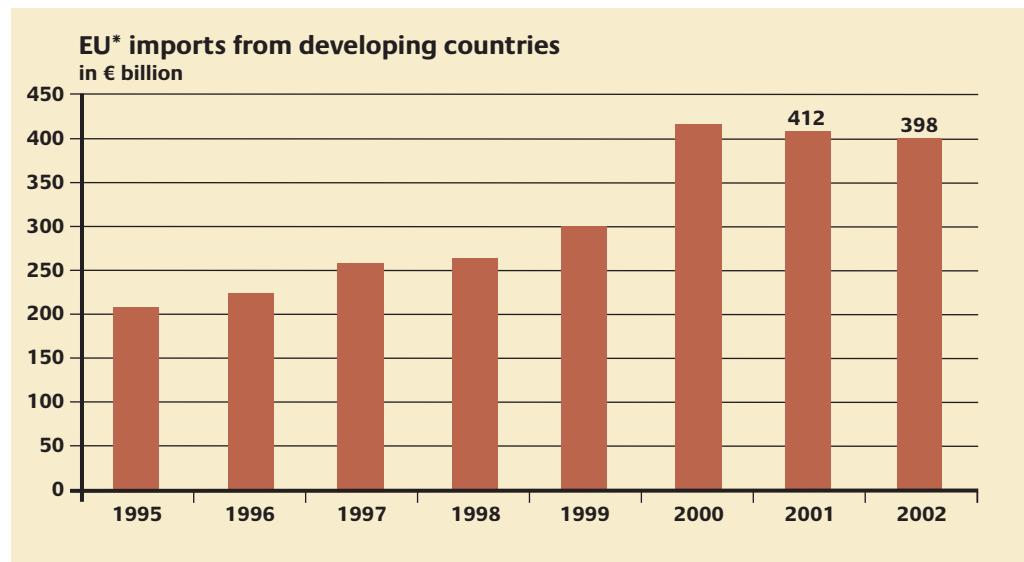
In addition to public funds, however, contributions by many organisations are also an expression of willingness for international solidarity. Private donations for development projects make up around 0.05% of the gross national income. Direct private investments, which sent funds of € 1,900 million net from Germany to developing countries in 2002, help broaden the resource base.

21. Opening markets

Improving trade opportunities for developing countries

For their economic and social development, developing countries rely on an open, fair, accountable and non-discriminatory system of multilateral trade and finance, which enables them to sell not only raw materials but also manufactured goods in the markets of industrial countries and emerging economies. The Federal Government supports this issue in the World Trade Organisation and in regular talks on world trade (so-called Doha development talks) and promotes the establishment of effective trading capacities in developing countries.

Figures for imports from developing countries to the EU serve as a quantitative indicator as to whether these goals are being achieved. Their marked increase especially in the second half of the 1990s demonstrates the improved trading opportunities of developing countries. Figures for imports to the EU not only depend on the trade policy of the EU. They are influenced by many other factors (like prevailing conditions in national and international economic policy). The slight decline in imports from developing countries to the EU after the year 2000 also shows that further political action is required.



* Trade flows into the EU are used as the indicator, as, due to the European single market and the related abolition of border controls, only estimates are available for trade flows into Germany.

Source: Eurostat.

D. Progress: Implementation of the Strategy for Sustainability

I. Using energy efficiently - protecting the climate effectively

1. Initial situation

The Federal Government's Strategy for Sustainability aims to merge energy policy and climate protection policy in the interests of an integrated approach. Of equal ranking, the goals of this approach are:

- Energy supply that is competitive economically and internationally,
- Conservation of the environment and protection of resources as well as protection of the climate,
- Sustainable and safe energy supply.

In order to achieve these goals, the Federal Government has focussed on two points of reference in its Strategy for Sustainability.

On the one hand, it is concerned with using energy more efficiently in all areas. The need to replace power stations over the next few decades offers considerable potential. This current revision of the Strategy for Sustainability deals with this challenge comprehensively as a separate subject (see Section E. II). The renovation of old buildings, more economical vehicles and – covering all sectors – the Ecological Tax Reform also make important contributions to increasing energy efficiency.

On the other hand, the expansion of renewable energies plays a crucial role. In the last few years exemplary achievements have been made in this area. Compared with other countries, Germany has taken on a pioneering role, and is generally recognised as doing so. The amendment of the Renewable Energy Sources Act, especially, should ensure that this trend continues.

Alongside economic (also in terms of the energy sector) and ecological goals, the Federal Government also attaches great importance to effects on employment policy and thus the “third pillar” of sustainable development when formulating its energy and climate protection policy. Measures to expand the use of renewable energies have safeguarded existing jobs and lead to the creation of new jobs in the relevant sectors. In the same way, investments to increase energy efficiency not only benefit climate protection, they also make sense in terms of employment policy. As with ever-growing demand for oil, gas and coal in the world markets, we have to expect ever-rising energy prices. Under these conditions, energy efficiency is becoming more and more important in terms of the competitiveness of power plant technologies, machines, vehicles and other industrial products.

2. Implementation of planned measures

a) Key indicators of energy and climate protection policy

Energy use becomes more and more efficient

Over the last few years Germany has made considerable progress on the route towards efficient use of energy. Primary energy consumption was lower in 2003 than it was at the beginning of the 1990s. Also energy consumption per head dropped noticeably against the backdrop of rising prosperity. If one includes growth in gross domestic products, there is a clear decoupling of energy consumption and economic development. Energy productivity, i.e. economic output per unit of energy used, was more than 24% higher in 2003 than in 1990 and 7.3% higher than in 1998.

However, the speed at which energy efficiency is rising has slowed down over the last few years. In the 1990s energy productivity was still increasing by 2%⁹ per year, on average. This was mainly attributable to substantial investments in the East German *Länder*. After this potential was to a large extent exhausted, energy productivity has increased on average by just under 1% each year for the last few years. The goal set out in the Strategy for Sustainability of doubling energy productivity by 2020 proves to be very ambitious against this backdrop and it requires greater efforts to be made in all areas.

Key indicators of energy consumption	1990	1998	2003
Primary energy consumption (PJ)	14,905	14,521	14,334
Primary energy consumption per € 1,000 of GDP (GJ)	8.9	7.7	7.2
Gross electricity consumption per € 1,000 of GDP (kWh)	329.6	296.8	292.5*
Final energy consumption in industry per € 1,000 gross value added (GJ)	5.9**	5.5	5.3*
Primary energy consumption per head (GJ)	188	177	174
Gross electricity consumption per head (kWh)	6,939	6,786	7,055*
Electricity consumption in industry per € 1,000 gross value added (kWh)	425**	455	471
Average consumption by motor vehicles (l per 100 km)	9.4	8.7	8.4*

* Data for 2002

** Data for 1991

As before, there is still enormous potential for increasing energy efficiency. For instance, in budgetary terms, an average household can significantly reduce its electricity consumption by using the best equipment on the market: for example, compared with standard appliances, energy-efficient fridge-freezer combinations use on average nearly 60% less electricity per year. The same applies to energy-efficient personal computers as opposed to standard ones. With the implementation of energy efficiency labelling programmes for electrical appliances, consumers will also be able to utilise this potential. In conjunction with other EU Member States, we are still looking for solutions to reduce energy loss when electrical equipment is in stand-by mode. The discussion on the introduction of additional efficiency standards is ongoing. There are various ways to proceed in this respect. One possible way is, for example, the top runner approach practised in Japan, according to which the stan-

⁹ The Federal Statistical Office has not yet calculated an official figure for GDP for the base year 1990. Data on the development of energy productivity compared with 1990 is thus based on the estimate by the German Institute for Economic Research (DIW) for GDP in 1990.

dard of the most efficient equipment on the market is fixed as compulsory. Other approaches do without regulatory provisions and rely on more market transparency.

Despite the rise in energy prices, there is still considerable potential for efficiency in industry, too. Forecasts signal a further decline in specific energy consumption of around a quarter by 2020. Electrical motors alone are attributable for around 70% of electricity consumption in industry. For example, the use of electronic revolution controls could reduce consumption by around a quarter. Of this technological potential around 70% could be exploited in industry as economic potential. Often the problem is that industry offers pre-assembled appliances. The energy efficiency of built-in electrical motors is of secondary importance in the investment decision – if at all. An economic savings potential of 20% was proven in a project run by the German Energy Agency (dena) in the field of compressed air supply. Projected to cover the entire manufacturing industry, this would mean savings of up to 2,800 million kWh of electricity per year. Compressed air is becoming more and more important in industry, because it is used, among other things, to operate robots.

In the political sphere there are proposals to encourage the market launch of such measures with the aid of an energy efficiency fund. However, the success of a strategy for efficiency in industry depends crucially on arousing the interest of participants in business – the engineers and the sales people. This can be done using energy prices, in particular. Obligations that German trade and industry imposes on itself voluntarily are also a significant factor in improving energy efficiency. In addition to this, however, new directions need to be set, especially with regard to industrial electricity consumption. For example, energy suppliers could strengthen their commitment to efficient electricity use in industry and the rest of the business world, as has already been achieved in the private sector by means of public-private-partnerships under the campaign "*EnergieEffizienz*". This would also make an important contribution to improving efficiency on the demand side. Here, the typical potential of the individual sectors for increasing efficiency could be identified and practical solutions developed for the companies. These results could be made accessible, especially to small and medium-sized companies, with the aid of qualified advisers.

Greenhouse gas emissions are falling

The rise in energy efficiency is also reflected in emissions of greenhouse gases. Between 1990 and 2002 emissions of the six most important greenhouse gases fell by 18.9%. Compared with 1998, they fell by 2.1%. CO₂ emissions declined by 15.4% compared with 1990 and by 2.6% compared with 1998. There has been a significant drop in CO₂ emissions also in relation to economic output and so a decoupling of these factors has been achieved. This is also true in relation to population.

Industry was the main contributor to the development, reducing its emissions by around a third in comparison with 1990. The energy industry also notched up considerable successes in the 1990s. Although the energy efficiency of power stations has risen markedly as a result of modernisation measures, the energy industry has reported a rise in emissions over the last few years through greater use of lignite in electricity production. In contrast, the steady rise in emissions from transport has been reversed.

Key indicators of climate protection policy	1990	1998	2003
Greenhouse gas emissions (million t of CO ₂ equivalents)	1,218	1,019	1,015
CO ₂ emissions (million t)	1,014	881	858
Of which from the energy industry	439	365	373
Industry	197	143	133
Commerce/Trade/Services	90	66	59
Transport	159	176	173
Households	129	131	120
CO ₂ emissions per head (t)	12.8	10.7	10.4
CO ₂ emissions per € 1,000 of GDP (kg)	593	470	432

On the whole, Germany is making good progress towards its goal of reducing emissions of the six most important greenhouse gases by 21% by 2008/2012. Before the end of this year, the Federal Government wants to review its climate protection programme and develop it further in line with the requirements of the Kyoto Protocol.

b) Development in important areas of action

aa) International climate protection policy

Global action is required

The fight against climate change is one of the key challenges for the 21st Century. International climate policy aims at limiting the rise in global concentrations of greenhouse gases in the atmosphere for the medium to long term to such an extent that people and nature remain able to endure the consequences of climate change. Our point of reference here is the scientific view that warming of the global climate by more than 2 °C on pre-industrial times must be prevented.

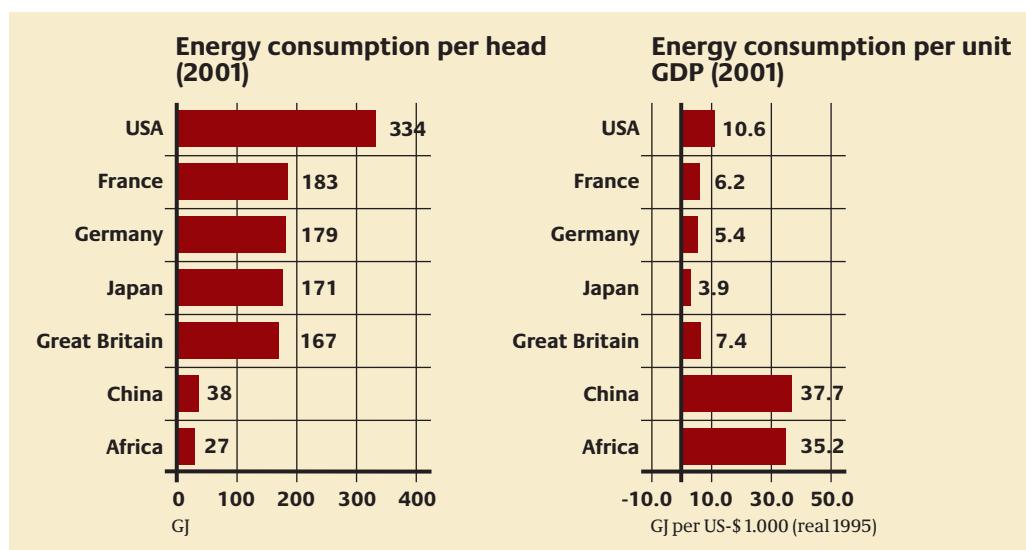
To date, despite intensive international efforts, it has not been possible to stop the rise in global emissions. From 1990 to 2002 CO₂ emissions increased worldwide by approximately 13%. Two thirds of this increase were attributable to China and the USA alone.

By contrast, the EU was able to reduce its greenhouse gas emissions by 2.9% between 1990 and 2001. This decline is due almost exclusively to positive results in Germany and Great Britain. Some of the other Member States are far behind on their obligations under the Kyoto Protocol. Without the significant reductions in Germany, the EU would report a 3.8% increase. The situation is even more drastic when it comes to CO₂ emissions: without Germany, the increase would be 8.6%.

Development of greenhouse gas emissions between 1990 and 2001		
Member State	Target for 2008 to 2012 in %	Changes from 1990 to 2002 in %
Austria	-13.0	8.5
Belgium	-7.5	2.1
Denmark	-21.0	-0.8
Finland	0.0	6.8
France	0.0	-1.9
Germany	-21.0	-18.9
Greece	25.0	26.5
Ireland	13.0	28.9
Italy	-6.5	9.0
Luxembourg	-28.0	15.1
The Netherlands	-6.0	0.6
Portugal	27.0	41.0
Spain	15.0	39.4
Sweden	4.0	-3.7
United Kingdom	-12.5	-12.5
EU 15	-8.0	-2.9
EU without Germany		+3.84

Source: European Environment Agency (EEA) "Annual European Community Greenhouse Gas Inventory 1990–2001 and Inventory Report 2003" of 15 April 2003.

All industrial countries are still especially responsible for climate protection. This is also expressed by a comparison of energy consumption. A US citizen uses almost nine times as much energy as a Chinese person - despite enormous growth in China in the last few years. In other industrial countries too, energy consumption is many times higher than it is in developing countries, even though it is still far below that of the USA. The USA uses twice as much energy per head as Germany.



Source: IEA.

Source: IEA.

However, developing countries also have to be incorporated gradually into international efforts on climate protection. Their share of global emissions is steadily increasing due to growth in trade and industry and population. Developing countries also have significantly better potential for increasing efficiency. For example, energy consumption per unit of gross domestic product in China is almost seven times as high as in Germany.

The Kyoto Protocol must come into force

It is crucial for international climate protection that the Kyoto Protocol is rapidly enforced and, as a result, effectively implemented. Only then will the agreed targets for reduction be binding under international law. Meanwhile, 120 contracting parties have already ratified the protocol. Following the withdrawal of the USA, which no longer considers itself bound by the obligations of the Kyoto Protocol, enforcement of the Kyoto Protocol depends on Russia. The Federal Government is working intensively together with EU partners to encourage rapid ratification by the Russian government.

The Federal Government regards the development of the Kyoto targets beyond 2012 as necessary. This will require further significant obligations on industrial countries to reduce emissions, including the USA, the first effective climate protection obligations on major developing and emerging countries, as well as policies and measures in the area of cross-border air traffic and shipping, which have not yet been covered. It will also require a balanced spread of climate protection efforts among all participating countries. In this context, the Federal Government is proposing that the EU declares itself ready to reduce its greenhouse gas emissions by 30% by 2020 compared with the base year 1990. Under these conditions, Germany will strive to cut its emissions by 40%. The European Council will deal with strategies – including guidelines on targets – for reducing emissions in the medium and long term at its 2005 Spring Summit. In preparation for these consultations, it has instructed the European Commission to prepare a cost-benefit analysis that takes into account both environmental factors as well as issues of competitiveness.

The project-related mechanisms (Clean Development Mechanism (CDM) and Joint Implementation (JI)) agreed in the Kyoto Protocol are important elements of international climate protection policy. These offer industrial countries the opportunity to fulfil their obligations to reduce emissions in part by investing in developing countries as well as in Central and Eastern Europe. This can significantly cut costs of reducing emissions incurred by industrial countries. For their part, the developing countries can benefit from a stronger inflow of foreign capital and expertise.

The JI and CDM projects are particularly important in relation to emissions trading in the EU (see below). At the beginning of April 2004, the European Parliament, the European Council and the European Commission adopted a directive that enables JI and CDM projects to be recognised within the framework of trading in emissions. In this way, companies can implement the minimum targets set out in the national allocation plans more flexibly and more cost-effectively. To this end, the KfW-Förderbank is currently preparing a climate protection fund that will offer mainly private investors the opportunity to acquire credit notes for emissions.

bb) Emissions trading

In the future, emissions trading will play a key role in climate protection in the EU. The trading system is intended to contribute to cost-effective fulfilment of the EU's climate protection goals under the Kyoto Protocol. Emissions trading combines an effective absolute restriction on greenhouse gas emissions with flexible enforcement of the necessary measures to reduce emissions. The basic principle is simple: plant operators will be allocated a certain level of emission rights free of charge. If the actual emissions produced by a plant are higher than the allocated level, the operator will have to acquire emission rights on the market, or if the reverse is true, the operator can sell its emission rights. It therefore puts in place incentives for saving energy and increasing energy efficiency.

According to the Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community (Emissions Trading Directive), all medium-sized and large plants operating in the fields of energy generation, refineries, coking plants, the steel, cement, ceramics and cellulose and paper industries will participate in the new scheme. Overall, trading in emissions in the first period 2005–2007 will cover around 58% of German CO₂ emissions. For the next period 2008–2012 it will be decided within the framework of a European review whether other areas should be incorporated into the trading system.

Germany passed two laws in order to implement the Emissions Trading Directive:

- Law on Greenhouse Gas Emission Allowance Trading (*Treibhausgas-Emissionshandelsgesetz – TEHG*),
- Law on the National Allocation Plan for Greenhouse Gas Emission Allowances in the Allocation Period 2005–2007 (*Zuteilungsgesetz 2007 – ZUG 2007*).

Essentially it depends on the Federal Government to ensure that emissions trading not only points the way forward in terms of climate protection policy, but that it is also economically sustainable. For this reason, the National Allocation Plan offers positive incentives for investing in the most modern and most efficient technology. Thus, emissions trading reinforces sustainable development in energy supply.

cc) Renewable energies**Growth continues**

On the basis of a consistent strategy to increase efficiency, environmentally friendly expansion of renewable energies forms a second corner-stone of sustainable energy supply. The goal of the Federal Government is to double the proportion of renewable energies to 4.2% of primary energy consumption and to at least 12.5% of electricity consumption by 2010, as compared with the year 2000. By 2020 the proportion of electricity consumption attributed to renewable energies should be at least 20%. By the middle of the century, renewable energies should cover around half of energy consumption. To this end, the Federal Government is taking into consideration the various issues of environmental protection and nature conservation.

Share of total energy consumption attributable to renewable energies in %

Proportion of	2000	2001	2002	2003
Primary energy consumption	2.6	2.7	3.0	3.1
Gross electricity generation	6.7	6.7	7.9	7.9
Heating	3.9	3.8	4.0	4.1
Fuel consumption	0.3	0.5	0.8	0.9

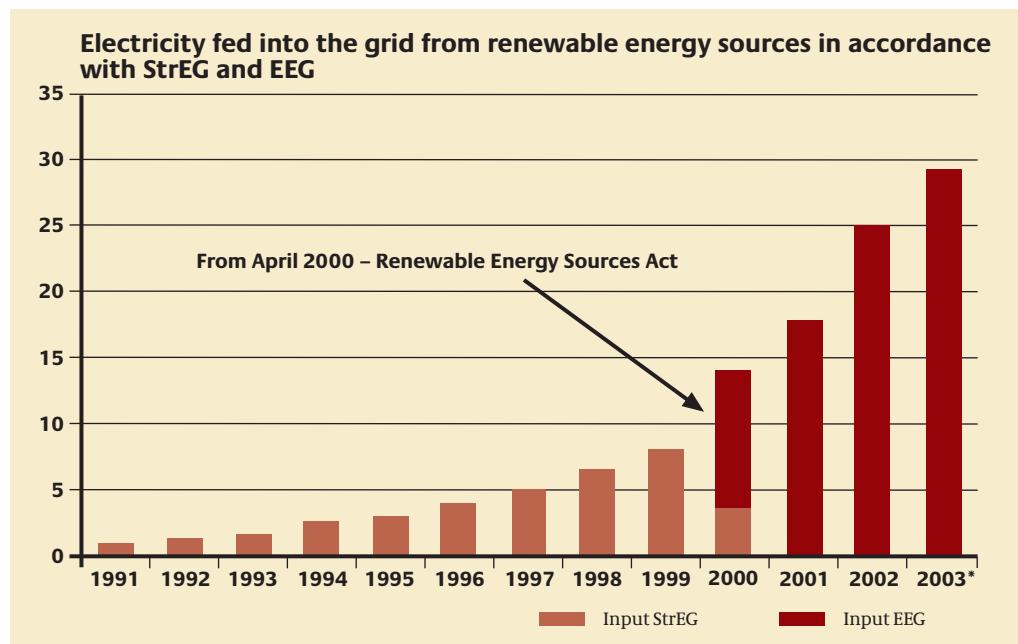
Source: BMU.

Germany has made significant progress towards achieving these goals over the last few years: in 2003 water, wind, sun, biomass and geothermics made up 3.1% of primary energy consumption and 7.9% of electricity consumption. There were two main reasons why renewable energies reported no further increase in the electricity sector in comparison with 2002 (see table):

- Firstly, electricity production using water power was noticeably lower than previous years due to the extremely dry summer. By contrast, the wind power plants recorded another significant increase in electricity production, but they were also unable to exploit their full potential due to the long period without wind in the summer of 2003.
- Secondly, electricity consumption as a whole increased by around 1.5%. This was also caused by the weather: the cool weather in the first quarter of 2003 was just as responsible for the rising electricity demand as the hot summer (cooling units, air conditioning equipment). In the first half of 2004 the proportion of total electricity generation attributed to renewable energies reached 10% for the first time.

Impacts of the Renewable Energy Sources Act

The Renewable Energy Sources Act (*Erneuerbare-Energien-Gesetz – EEG*), which replaced the Electricity Feed Act (*Stromeinspeisungsgesetz – StrEG*) on 1 April 2000, is crucial for the expansion of renewable energies in the electricity sector. Under it, plant operators will be granted fixed compensation normally over 20 years for electricity fed into the grid. The level of compensation will depend on the energy source as well as the year in which the plant started operation, as it is reduced each year for new plants (degression). This offers a continuous incentive to increase efficiency and reduce costs. Compensation for electricity fed into the grid – around € 2,600 million – can be shifted from the network operators onto the consumers. Since mid 2003 a hardship clause (special compensation rule) has ensured that costs incurred by electricity-intensive businesses are limited. This counteracts any restriction on the competitiveness of these companies.



Source: VDEW, VDN.
* Forecast

The amendment of the Renewable Energy Sources Act came into force on 1 August 2004. The aim of the revised Renewable Energy Sources Act is, on the one hand, to guarantee the expansion of renewable energies in the next few years too. For this purpose, improvements were made to framework conditions and, in particular, to compensation rates in certain areas (e.g. offshore wind farms, biomass). As the 100,000 Roofs Programme (*100.000-Dächer-Programm*) came to an end in 2003, the Federal Government improved basic conditions for the promotion of solar-powered electricity with its interim law on the amendment of the Renewable Energy Sources Act, introduced as early as 1 January 2004.

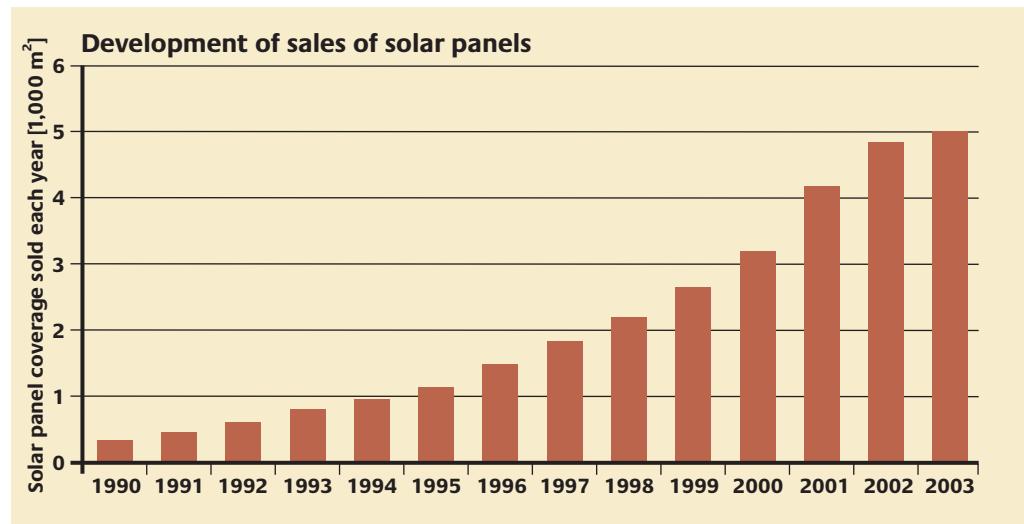
On the other hand, the amendment of the Renewable Energy Sources Act aims to strengthen incentives for improving efficiency. This is why degression was reinforced in some areas. Compensation for onshore wind farms was reduced and for areas not exposed to much wind it was abolished. The amendment of the Renewable Energy Sources Act also aims to make renewable energies competitive in the medium to long term. In this way, they will be able to survive in the market without financial aid and guaranteed rates of compensation and in the long term, they will play a major role in the energy market.

Another innovation is the hardship rule. This was extended and simplified. In future, this will not only benefit major companies, but also energy-intensive medium-sized companies as well as the railways. The additional burden placed on other electricity consumers resulting from this extended regulation will be clearly limited.

Market Incentive Programme causes boom in solar panels

The second key element for the expansion of renewable energies is the Market Incentive Programme, which was set up in connection with the Ecological Tax Reform. It mainly promotes solar panels and biomass heating equipment. Last year, the Federal Government increased its funding rates for solar panels and, by doing so, caused the number of approved applications to more than double from approximate-

ly 56,000 in 2002 to more than 145,000 in 2003. The investment volume behind this increase rose from around € 380 million (2002) to nearly € 1,000 million (2003). The new guideline for the Market Incentive Programme, which will come into force on 1 January 2004, provides improved funding conditions for solar panels and modern wood firing systems and a wider circle of eligible applicants.



Positive ecological and economic conclusions

With their rapid growth, renewable energies are contributing to progress towards reaching the Kyoto target. From year to year, water, wind, sun, biomass and geothermics reduce CO₂ emissions by a considerable extent. Estimates for 2003 are a reduction of 27–43 million tonnes of CO₂ for electricity generation, depending on what mix of energy sources is replaced by renewable energies¹⁰. There are also a reduction in the heating sector of around 14 million tonnes of CO₂ and around 1 million tonnes of CO₂ through biofuels (mainly biodiesel)¹¹.

At the same time the number of jobs with manufacturers of wind farms, photovoltaic equipment, solar panels and other companies, has risen. Around 120,000 are now employed in this sector. In 2003 the renewable energies sector generated turnover of around € 10,000 million, of which around € 6,000 million were investments. These figures underline the fact that a remarkable industry has emerged here.

The Federal Government is continuing to push ahead with the expansion of renewable energies. The greatest potential for this over the next few years can be found in the areas of wind energy and biomass. In the medium to long term, however, renewable energies must become competitive, as only then, when they are able to survive in the market without financial aid and guaranteed rates of compensation, will they be able to play a major role in the energy market in the long term. Due to demand induced within the framework of the Renewable Energy Sources Act, signifi-

¹⁰ The amount of CO₂ prevented by generating electricity using renewable energies depends on which energy source is replaced during electricity production. If one assumes that all energy sources (including nuclear energy) are replaced in proportion to their share of electricity production, this would produce a reduction of 27 million tonnes of CO₂ through renewable energies. If, on the other hand, one assumes that renewable energies will only replace fossil energy sources (coal, gas and oil), but not nuclear energy, this would result in a saving of 43 million tonnes of CO₂.

¹¹ The importance of biofuels is dealt with in greater detail in the chapter ‘The fuel strategy’.

cant technological progress has already been achieved, so that with modern, high-performance plants, for example, in the area of wind power, it has been possible to more than halve the cost of electricity generation since the beginning of the 1990s. This trend is expected to continue. The Federal Government's aim is for renewable energies to be competitive in the domestic energy market in the medium to long term.

Some people hold funding of renewable energies responsible for the increase in electricity prices observed over the last few years. In reality, only around 2% of the price of electricity is currently attributable to the Renewable Energy Sources Act. After renewable energies have become profitable, electricity consumers will no longer be burdened by sharing the cost of compensation for electricity fed into the grid. Funding, which makes sense from an economic perspective too, is of crucial importance to the necessary social legitimisation of the expansion of renewable energies: only when it is clear that electricity prices will not increase excessively as a result of funding, will this extremely important element of sustainable energy supply be accepted by private and commercial electricity users for the long term.

Research and development activities in this area are vital to the competitiveness of renewable energies. In connection with the Initiative for Innovation of the Chancellor, the Federal Government has increased by around a third funding for research in the area of renewable energies and renewable resources in its draft budget for 2005.

The position of renewable energies has also been strengthened considerably in the basic energy-related research of the major research institutes of the Helmholtz Association of National Research Centres (HGF). All of the additional funds earmarked for HGF's energy research in the years 2004 to 2008 will be concentrated on the areas of renewable energies and rational energy conversion. This means an increase of more than 15% in funds available to these areas of research.

Global expansion of renewable energies

It is important to open up the potential of renewable energies outside Germany, too. In many parts of the world, the natural conditions for using renewable energies (wind conditions, solar radiation) are considerably better than in Germany. This is why, with its initiative on the export of renewable energies, the Federal Government supports the marketing of German technologies abroad.

At the World Summit on Sustainable Development in Johannesburg in September 2002, Chancellor Gerhard Schröder invited the international community of states to the International Conference on Renewable Energies (www.renewables2004.de). The conference was held from 1 to 4 June 2004 in Bonn and underlined the fact that expansion of renewable energies worldwide can help combat poverty, aid economic development, safety of energy supply, and climate protection. In this sense, renewable energies, combined with increased energy efficiency, should become an extremely important and widely available energy source. The official results of the conference included, alongside a political declaration and recommendations on more effective political strategies, the concrete International Action Programme (IAP), which covers around 200 voluntary campaigns and undertakings by govern-

ments, international organisations, non-governmental organisations, trade and industry and science. Among these are ambitious goals of more than 20 states to expand renewable energies by 2020, in some cases, financial commitments by, among others, Germany, the World Bank and the Global Environment Facility (GEF) and numerous concrete projects. Consistent implementation of the programme will make a great contribution to reducing CO₂ emissions.

Pilot project - Expansion of Offshore Wind Energy

One of the pilot projects included in the National Strategy for Sustainability is the strategy to expand the use of off-shore wind energy at sea. This could increase the proportion of electricity consumption attributable to offshore wind energy to 15% within the next three decades. By implementing the offshore strategy, the following has been achieved to date:

- The procedure for determining suitable sites for offshore wind parks was launched. The first suitable sites for wind energy in the AWZ are to be demarcated by the end of 2004.
- A proposal on demarcating NATURA 2000 sites in the North Sea and Baltic Sea was published. The sites are to be registered with the EU Commission in 2004.
- With respect to the expansion of offshore wind use, the German Energy Agency (dena) is currently having a report drawn up on network expansion and effects on the structure
- Accompanying ecological research, research on measurement platforms as well as the further development of systems technology have been secured for the long term by the *Zukunftsinvestitionsprogramm* (Future Investment Programme) and research programmes on renewable energies. The first research platform began operating in the North Sea, approximately 45 km north of Borkum Island, in 2003.
- With the amendment of the Renewable Energy Sources Act, compensation for electricity fed into the grid was brought into line with current technological developments and distinctions were made based on water depth and distance from the coast.

The approving authority, the Federal Maritime and Hydrographic Agency (BSH), has so far approved seven wind parks in the North Sea with an installed output of more than 1,900 MW. Permits under regional law on the laying of cables through coastal waters have not yet been granted. At present, there are another four projects that are about to complete this administration process and another six will probably have reached this position before the end of 2004.

dd) Electricity supply

The German electricity market was liberalised completely and at one go in 1998. This liberalisation had resulted in substantial changes for companies active in the industry, for employees and for customers.

The German electricity sector faces huge challenges in the future, too. In the next 20 years it will gradually withdraw from using nuclear energy altogether. At the same time a considerable proportion of power stations run on coal, gas and oil are to be replaced, depending on their age. Together with the nuclear power stations to be shut down, the network is to lose power stations with an output of around 40,000 MW. This means that around a third of German power stations will need to be renovated.

The energy source structure of electricity generation will change considerably over the next few years as a result of this. In parallel to the gradual discontinuation of nuclear energy use, the proportion of renewable energies used is to be increased to 20% by 2020. The fossil energy sources lignite and hard coal, as well as natural gas, will then count for around 80% of electricity generation (currently around 60%).

Substantial investments are also required in the high voltage network. Above all, expansion of wind energy in northern Germany, as well as offshore in future, necessitates the construction of several high voltage lines. In addition, the liberalisation of the European electricity markets will be accompanied by new demands on the high voltage networks.

The Federal Government has focussed on these challenges in its National Strategy for Sustainability (see Section E. II). It will formulate the basic conditions of energy policy in such a way that Germany remains a major centre for industry and energy. This is important for investments in energy supply and jobs associated with it. Future energy supply must continue to guarantee the high level of supply safety and be available at prices that safeguard the profitability and international competitiveness of the German economy. At the same time, it must help ensure that Germany achieves its climate protection goals and, by doing so, fulfils its international responsibility.

Both from the perspective of climate protection as well as with regard to the competitiveness of electricity production in Germany, the forthcoming modernisation of power stations offers extensive opportunities that are worth taking. Efficient hard coal and lignite power stations will also play a major role in the future. So, for example, Germany's oldest lignite power stations have a net efficiency level of around 30%. By contrast, today's most modern lignite power station can achieve around 43%, while hard coal power stations can reach 46% and more. Considerable reductions in CO₂ emissions can therefore be realised through the forthcoming modernisation of power stations.

Increasing use of natural gas, especially in combined heat and power (CHP) plants, as well as in modern gas and steam turbine plants with high efficiency levels contributes to this trend. With its CHP Act (*Kraft-Wärme-Kopplungsgesetz – KWKG*), the Federal Government has given important stimulus for the modernisation of CHP

plants as well as the further expansion of combined heat and power generation. In addition, within the framework of the Ecological Tax Reform, highly efficient new gas and steam turbine plants with an efficiency level of 57.5% or more are exempt from payment of mineral oil tax for the first five years and CHP plants with an efficiency level of 70% or more are totally exempt.

An essential element of the energy policy of the Federal Government is the scheduled withdrawal from use of nuclear energy. With the amendment of the Nuclear Energy Act (*Atomgesetz*) of 22 April 2002, the relevant agreement with the energy sector was made legally binding on 11 June 2001. The nuclear power station at Stade was the first to be removed from the grid in November 2003. Next year the power station at Obrigheim will follow.

Domestic coal continues to make an important contribution to safe energy supply. This is mainly true of lignite, which was attributable for 27.4% of gross electricity generation in 2002. Hard coal made up 23.3%; half of this was from German hard coal. Mining of hard coal in Germany has steadily reduced over a considerable period of time. In 1990 around 66 million tonnes were mined, by 2002, just 26 million tonnes. In 2001 hard coal imports exceeded domestic mining for the first time. The decline in domestic mining will continue over the next few years.

The Federal Government has been successful in its efforts to bring about a new regime of EU aid for hard coal. On this basis, the Federal Government has also adopted a follow-up regulation at national level. Accordingly, public aid of € 1,700 million in 2005 will be reduced to € 1,830 million in 2012. At the same time, mining of hard coal is to be cut back from 26 million tonnes to 16 million tonnes. The staff cuts associated with this will be carried out in a socially responsible manner.

The Federal Government will further develop the framework of energy law and enforce under national law the new EU single market directive on electricity. The new framework must ensure stable basic conditions, but at the same time offer the flexibility required to react quickly to new market requirements. Maintenance and expansion of networks by companies must be guaranteed in the future, too.

On 28 July 2004, the Federal Government presented a draft amendment of the German Energy Industry Act (*Energiewirtschaftsgesetz*). This law will implement the EC directive concerning common rules for the internal market in electricity. Important market regulations on network access will be prescribed by law and the German Regulatory Authority for Telecommunications and Posts will be instructed to formulate the regulation. This authority must ensure non-discriminatory network access to facilitate effective and genuine competition.

ee) Energy consumption in the building sector

Around a third of all final energy used in Germany is required for heating buildings and providing hot water. Increases in efficiency and savings in this area therefore have an important part to play. The Federal Government has taken various steps over the last few years.

The German Energy Saving Regulation (*Energieeinsparverordnung*), which came into force on 1 February 2002, prescribes ambitious efficiency standards for new buildings, as well as some for modernisation measures. For new buildings, the requirement for maximum energy consumption was increased by around 30% on the previous standard.

Funding from the KfW-Förderbank building renovation programme to reduce CO₂ emissions, which was launched in 2001, was nearly doubled in May 2003 within the framework of the Ecological Tax Reform. By 2005 € 360 million will be available each year.

At the same time the funding conditions were improved. So there is a partial debt relief of 20% for the renovation of old buildings as low energy houses. 3,000 house owners made use of this opportunity in 2003. This shows very ambitious consumption levels can be achieved in old buildings, too.

In addition, there is also funding for the construction of “*Energiesparhäuser 40*” (houses with an energy consumption of less than 40 kWh/m²). This will help push forward the development and spread of energy-saving technologies in new buildings.

As a result of the improved funding conditions, loan commitments rose by more than 50% in 2003. Overall, around 46,000 jobs were secured in 2003 as a result of the KfW-Förderbank programme to reduce CO₂ emissions.

Considerable progress has been made in modernising existing buildings over the last few years. Between 1990 and 2001 specific energy consumption per m² of living space dropped from 240 kWh to 190 kWh. This trend will continue. Over the next 10 years, a reduction to 150 kWh is expected. Associated with this is a corresponding reduction in CO₂ emissions. This positive development is, however, countered by continuous growth in living space. From 1993 to 2002 living space per inhabitant rose from 36.2 to 41.6 m².

Before the end of this year, within the framework of its climate protection programme, the Federal Government will review whether, in addition to the goals set out in the National Allocation Plan, further measures are required in the building sector and if so, which steps should be taken.

Pilot project “Niedrigenergiehaus im Bestand”**(Low energy house in the housing stock)**

The project “*Niedrigenergiehaus in Bestand*” (Low energy house in the housing stock), which was proposed by the German Council for Sustainable Development (RNE), is designed to launch model projects on renovating buildings. By doing so, it is intended to show that the standard of a low energy house can be attained by old buildings as well.

The project is coordinated by dena. 26 residential construction firms from nearly all the German *Länder* are participating in it. They have undertaken to renovate a property of their choice over the course of 2004 so that its primary energy consumption is 60, 50 or 40 kWh/m². For the purpose of comparison: primary energy consumption of old buildings is around 200 kWh/m². The project is therefore aiming to achieve energy savings of up to 80%. The model project will renovate almost 1,500 residential units covering around 83,000 m² of living space. The building projects will be supported financially by the KfW CO₂ Building Renovation Programme.

Pilot project “Energieeffizienz-Contracting in Bundesliegenschaften”**(Energy Efficiency Contracting for Government Properties)**

The pilot project “*Energieeffizienz-Contracting in Bundesliegenschaften*” (Energy Efficiency Contracting for Federal Government Properties), which was also proposed by the German Council for Sustainable Development (RNE), is coordinated by dena. The aim is to optimise energy consumption at as many federal properties as possible by means of contracting. In this process, energy-saving measures are financed by private energy service providers (contractors). The savings guarantee of the contractor ensures that energy costs are reduced by a certain amount. The contractor is financed by the savings in energy costs. In this way the Federal Government can finance energy-saving measures, reduce operating costs, and, not least, contribute to climate protection without the need for additional funds from the budget.

Within the framework of the project, handling of contracting for federal properties was first clarified from a budgetary point of view and a manual for contracting projects was drawn up (sample contracts, tender documents, calculation programmes, etc.). In addition, around 600 properties were examined for their suitability to participate in the project. The aim is to incorporate 40–50 properties into the project. Before the end of 2004 around 20 of the Federal Government’s larger properties will be inviting tenders for contracting.

Dena wants to pass experiences gained from the project on to local authorities and districts. For this reason, it is planning consultations and information material to help overcome the obstacles currently in the way of decision-makers in politics and administration.

ff) Transport

Nearly 30% of German energy consumption is attributable to transport. As late as the 1990s, the transport sector was recording steadily rising energy consumption and CO₂ emissions were increasing at a corresponding rate. CO₂ emissions in the transport sector reached their highest point in 1999, when they were almost 15% higher than in 1990. This trend has been stopped. Since the year 2000 CO₂ emissions from transport have gradually decreased. In 2003 they were just 8% higher than the level of 1990.

The Ecological Tax Reform has played an important part in this development. On the one hand, it has lead to more economical behaviour among drivers and, on the other hand, it ensures that petrol consumption is an important criterion in car buying. The tax cut on natural gas and liquid gas as fuels, which was extended to 2009 (liquid gas) and 2020 (natural gas respectively), also has positive impact. The number of environmentally friendly natural gas cars had increased to 20,000 by the beginning of 2004. The basic conditions for biofuels were also improved. Biofuels - also as admixtures – are fully exempt from mineral oil tax from 2004 until 2009.

The commitment made by the European Automobile Manufacturers Association (ACEA) also provides important stimulus for reducing the CO₂ emissions of road traffic. Accordingly, the average CO₂ emissions of motor vehicles sold by ACEA members will be reduced to 140 g/km by 2008. This commitment is currently well on its way to being realised: whereas the specific CO₂ emissions of a new motor vehicle were on average 185 g/km in 1995, they were 165 g/km in 2002. The EU Commission is currently holding negotiations with the automobile industry on revising the voluntary commitment (target: 120 g/km by 2010).

A new decree on labelling motor vehicles will make an important contribution to increasing energy efficiency in road traffic. It obliges manufacturers and dealers to provide standard labelling on the fuel consumption and CO₂ emissions of new motor vehicles. There will be a handbook for consumers listing all motor vehicles for sale on the German market and their consumption and emission values available free of charge at the car dealers. Consumers will then be able to give greater consideration to climate protection and energy efficiency when buying a car.

Progress has also been made with the efficiency of freight transport. The proportion of empty kilometres of lorries has dropped noticeably (from 28.6% in 1995 to 24.7% in the year 2000). Incentives for efficient freight transport will be reinforced further with the introduction of the lorry toll (*Lkw-Maut*).

For further information on this subject, please refer to the chapters ‘Sustainable mobility’ and ‘Alternative fuels and innovative drive systems’.

gg) Innovation

Innovation plays an outstanding role in efficient and climate-friendly use of energy. In addition to further developing technologies for using renewable energies, above all, we must further increase the efficiency of our power stations and work towards making emission-free power stations a reality.

Main themes of future research on power stations

A new research strategy of the Federal Ministry of Economics and Labour on the further development of power plant technology (COORETEC) is aimed at making coal and gas considerably more environmentally friendly. The strategy follows two paths: the first path is about further improvements in efficiency. Coal and gas power stations can boost their efficiency levels by around 7–9% within the next two decades, as compared with today. Alongside the savings effect on the resources of coal and gas, this will result in a 15–20% reduction in specific CO₂ emissions.

The second path of COORETEC focusses on the separation of carbon dioxide at the power station in a cost-effective manner and with as little loss as possible and then to store it safely. The time needed for research and development to make these technologies ready for the market is estimated at 10–20 years. This would facilitate widely CO₂-free electricity generation from coal and therefore solve the conflict between the goals of climate protection and safety of supply. The German Council for Sustainable Development (RNE) referred emphatically to the importance of CO₂-free electricity production from coal in its “Guidelines for a Modern Coal Policy and the Promotion of Innovation” (*Leitlinien einer modernen Kohlepolitik und Innovationsförderung*). It sees this as prerequisite through which fossil energy sources can contribute to sustainable energy supply in the long term. The separation and storage of CO₂ represents an important means by which use of fossil energies can be brought over into the age of regenerative energies. The German Council for Sustainable Development therefore welcomes the fact that CO₂-free power stations are one of the main themes of COORETEC.

Development of fuel cells

Fuel cells represent a forward-looking and innovative technology. Due to their high level of efficiency in generating electrical energy, also in small units, they could take on a key position in sustainable energy supply in the future.

Before then, however, extensive development activities need to be carried out. Each year € 8–10 million in funds from the Energy Research Programme (*Energieforschungsprogramm*) are employed for this purpose. The main aim of the funded projects is to increase the life span of the fuel cells, to simplify the systems and thereby reduce costs.

From 2001 to 2005, an additional € 40 million will be made available from the Future Investment Programme (*Zukunftsinvestitionsprogramm*) for the development of fuel cell technology. Funding will be provided, e.g. for coupled production of electricity and process heat at one plant, equipment to supply heat and electricity to homes, as well as for accompanying ecological research. Mobile applications will also be funded. In Berlin, Stuttgart, Hamburg and the town of Barth, use of fuel cells will be demonstrated in buses.

Photovoltaics – leading position in the world

Thanks to continuously high levels of funding for research within the framework of the Energy Research Programme of the Federal Government, Germany is in a leading position in global research on photovoltaics. Germany is pioneering in technologies based on crystalline silicon and thin layer technologies. With research funds

of around € 25 million per year, cost reductions of around 25% in total have been achieved in photovoltaic solar electricity production since 1999. Thanks to these achievements in research, the German solar industry is well established in several lines of technology and over the entire value added chain – from silicon raw material production, through the manufacture of solar cells, to solar modules – and after Japan, it is one of the leading countries in technological development and export.

hh) Miscellaneous

Ecological Tax Reform

The Ecological Tax Reform provides incentives for economical and efficient use of energy in all sectors and thus contributes crucially to reducing CO₂ emissions. According to a study by the German Institute for Economic Research (DIW), the Ecological Tax Reform will cut CO₂ emissions by 2–3% by 2005.

At the same time the Ecological Tax Reform offers important stimulus for the labour market, because the revenue is used to reduce ancillary wage costs. Without the eco-tax, the contribution rate for pension insurance would have had to be fixed 1.7% higher in 2003 and 2004. Therefore the Ecological Tax Reform means a higher net income for employees paying social insurance and lower labour costs for companies. Thus the conditions for securing existing jobs and creating new ones is noticeably improved. More jobs mean less spending on unemployment benefit and more revenue from income tax. This offers public authorities more room to manoeuvre. As a result, German citizens not paying social insurance contributions also benefit indirectly from the Ecological Tax Reform.

On 1 January 2003, the Act on the Further Development of the Ecological Tax Reform came into force. With it, among other things, existing tax benefits that are problematic from the viewpoint of environmental policy (e.g. reduced tax rates and equalisation regulations for the manufacturing sector, energy-intensive companies and night storage heaters) were cut back. In addition, the tax rate on natural gas for heating purposes was increased while the favourable tax rate for natural gas in the transport sector was extended up to 2020.

Within the framework of the Ecological Tax Reform, the Budget Law 2003 granted an additional € 160 million for the extended CO₂ Building Renovation Programme of KfW-Förderbank. The coalition agreement of 16 October 2002 provides for a further review and, if necessary, the further development of the Ecological Tax Reform in 2004.

A breakthrough was achieved in the EU, after many years of negotiations, with the Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity which paved the way for greater harmonisation of energy management. Above all, this directive represents an important step in the direction of the Federal Government's desired alignment of the various tax rates for mineral oil in the EU Member States. The minimum tax rates for fuels set out in the directive are already in force in Germany, while adjustments are required in other EU countries. The Federal Government will quickly implement the directive.

German Energy Agency (dena)

The German Energy Agency – dena was founded in the autumn of 2000 by the Federal Government and the KfW as a competence centre for energy efficiency. Its objective is to promote pioneering approaches to and achieve provable successes in increasing energy efficiency. Examples of dena's activities:

- With its initiative *EnergieEffizienz*, dena provides information on efficient electricity use. More than 5,800 sales offices of the retail trade and electrical trade nationwide are participating and offering consumers targeted advice on the energy consumption of their products.

Craft and trade – links to consumers

How do consumers make their purchase decisions? Where do they seek advice? These are important questions for the successful conveyance of information about energy efficient products to consumers. A consultation with the architect or fitter is more likely to convince many people of the benefits of certain solar equipment than an expensive advertisement in a magazine. Likewise a seller's indication of the energy consumption of household goods is an important factor in the real buying decision. For this reason, dena often targets its info-campaigns at the craft and specialist trades. It is these target groups that need to be mobilised on the subject of energy efficiency in order to reach as many consumers as possible.

- In the area of energy efficiency in the building sector, dena is the coordinator of two pilot projects (renovation of old buildings and contracting), which the Federal Government adopted on recommendation by the German Council for Sustainable Development (RNE) (see above).
- In the interests of optimal integration of wind energy in the network system, dena is drawing up a network and power plant strategy together with important participants (e.g. network operators, manufacturers and operators of wind power stations).
- In order to support the expansion of renewable energies worldwide and the position of German manufacturers in the world market, dena has published the “*Exporthandbuch Windenergie 2003/04 - die europäischen Märkte im Vergleich*” (Exports Manual for Wind Energy 2003/4 – a Comparison of European Markets) as part of its series “*Exportinitiative Erneuerbare Energien*” (Renewable Energy Export Initiative). It provides information on the basic conditions of energy policy and the energy sector in 28 countries.

3. Summary and outlook

The Federal Government sees profitable, environmentally friendly and climate-friendly as well as safe energy supply as a key pre-condition of sustainable development in Germany and worldwide. This depends crucially on the intelligent linking of energy policy and climate protection policy. The integrated approach to

energy policy and climate protection policy of the Federal Government focusses on increasing energy efficiency and expanding renewable energies and aims at strengthening Germany as a location for energy and industry.

Reducing greenhouse gas emissions, increasing energy productivity and rapid growth in renewable energies show that the Federal Government's strategy is a success. The Federal Government's comprehensive set of measures is effective. The Ecological Tax Reform, the Renewable Energy Sources Act, the Market Incentive Programme for Renewable Energies, the Act on Combined Heat and Power Generation (*Kraft-Wärme-Kopplungs-Gesetz*), the Energy Saving Ordinance (*Energiesparverordnung*), energy research, the funding programmes and pilot projects on renovating old buildings, the successful voluntary commitment of the automobile industry, the founding of the German Energy Agency dena and many other measures are concrete steps on the path towards sustainable energy supply.

The Federal Government will continue on this path. With the International Conference on Renewable Energies in Bonn (renewables 2004) and the results of this conference, especially the International Action Programme (IAP), the Federal Government has also provided important stimulus for sustainable energy supply worldwide.

Within the framework programme "*Forschung für die Nachhaltigkeit*" (Research for Sustainability), the Federal Government has developed a new climate protection strategy: "*Forschung für Klimaschutz und Schutz vor Klimawirkungen*" (Research for Climate Protection and Protection against the Impact of Climate Change). In addition, the strategy is concerned with prevention of climate changes by people, although preventive adaptation strategies for unavoidable extreme weather events, like floods and droughts, are also included. This strategy is intended to reduce climate-related economic losses and open up new economic opportunities incorporating all social groups.

In the new National Climate Protection Programme that is being planned, the Federal Government will present a coordinated set of measures based on an evaluation of climate protection policy which will be the framework of the Federal Government's activities related to climate protection for the next few years.

II. Guaranteeing mobility – protecting the environment

Resolving the tension between guaranteeing mobility and protecting the environment by means of a forward-looking strategy forms the core of sustainable transport policy. The functioning of our society based on the division of labour, economic growth, prosperity and quality of life is directly associated with a high level of mobility. The transport infrastructure of our country is one of its important factors as a business location. However, increasing traffic is associated with a series of negative consequences for people and the environment. On this subject, the Strategy for Sustainability 2002 states: "Transport is a highly contentious issue. But we all want to be mobile, to get to work, to visit friends or do our shopping as quickly as possible. At the

same time we get annoyed about traffic jams, traffic noise, exhaust emissions and the impact of roads on landscapes.”

The role of a sustainable transport policy is to even out differing interests and conflicting goals. This is about finding future-oriented solutions that guarantee mobility for the long term and at the same time protect the environment for example, by decoupling economic and transport growth. Investments, innovation and also fiscal instruments should be used to organise mobility in a more efficient way and reduce the transport intensity of our business processes.

If we are able to achieve this goal, there will be fewer traffic jams and less of a burden on the environment. Economic incentives to cut transport intensity are an important key to guaranteeing mobility in the future and to protecting the environment.

On the basis of this, the Strategy for Sustainability 2002 offers four long-term goals for sustainable mobility (traffic prevention, shifting of traffic, integration and application of innovative technologies) and includes a comprehensive and detailed catalogue of measures.

In its first report on the subject “Sustainable Mobility”, the Federal Government describes the implementation and further development of this catalogue of measures. All the measures and instruments described here form the elements of an overall strategy and in many ways they are related to individual daily life, sustainable spatial planning, socio-economic trends like individualisation of lifestyle and globalisation of the markets.

A “genuine” conclusion is hardly possible after just two years. Unfortunately, short-term successes cannot be celebrated in this field of action of the Strategy for Sustainability. However, since the Strategy for Sustainability was adopted in April 2002, two important direction setters have been realised:

- The **distance-based motorway toll** for heavy lorries – even though it has been substantially delayed – puts the cost of domestic and foreign road freight traffic onto those responsible for it. At the same time, as an economic incentive, the lorry toll supports a central issue of sustainable transport policy: the shifting of a large proportion of freight onto the railways and waterways.
- In the *Bundesverkehrswegeplan 2003* (Federal Transport Plan 2003), the comprehensive and modernised methods of assessment for future infrastructure measures also cover effectiveness analyses for spatial planning as well as an environmental risk assessment – including a sustainability assessment of the Flora-Fauna-Habitat directive (FFH).

For our initial conclusions on the field of action ‘Guaranteeing mobility - protecting the environment’ we have looked at important subjects from the areas of freight transport and passenger transport and also dealt with two key problem areas for transport, namely the “reduction of emissions” and the “prevention of traffic

noise". In this respect, important interim targets have been reached, as evidenced by the many and various measures.

1. Freight transport – efficient and environmentally friendly

Europe is merging. As the most important transit land, Germany has a vital interest in preventing this country from becoming one of kilometre-long traffic jams and massive pollution for people and the environment. According to forecasts, freight transport will increase by 60% by 2015, as compared with the base year 1997. Against this backdrop, strategic importance is attached to a European transport policy.

Anyone who drives his/her motor vehicle on the German *autobahn* during the week can form an impression of the importance of lorries. Due to their flexibility over short distances, and also mainly because of their wide coverage, lorries fulfil an important role as suppliers and distributors in the transport of goods. On the other hand, lorries are often among the causes of traffic jams, a source of noise pollution and emissions of harmful chemicals. We know that, for logistical as well as economic reasons, it is not possible to perform by rail or inland water transport the large number of local supply journeys made by lorry. Good potential for transferring more freight transport lies mainly in journeys over longer distances, where the railways and shipping can make full use of their strengths.

The growing volume of traffic cannot be managed just by expanding capacity, i.e. building transport routes. In addition to methods of traffic prevention and traffic transfer, optimised utilisation of the existing infrastructure as well as more efficient transport organisation as a whole must form part of the solution. Efficient logistics strategies based on the needs of the industries and companies facilitate a reduction in traffic. This is demonstrated by very promising examples, for example in the mail order trade and the construction industry.

Efficient use of the forms of transport of rail, inland water transport and maritime shipping offers major development opportunities. Integrated multimodal (i.e. using various forms of transport) transport chains can help transfer more traffic from the roads onto the railways and waterways in the future. It makes sense to continue optimising transport organisations – e.g. the logistics systems of producers, customers and suppliers – in the future and by doing so make better use of the entire value added chain.

The above-mentioned guidelines for a sustainable policy for freight transport are particularly well illustrated by the following measures:

a) Improving conditions of competition for freight transport by rail

In order to strengthen the competitiveness of the railways, current differences of technology and administration in **cross-border rail traffic** of different countries within the EU need to be resolved. The necessary conditions for this have been put in place by the new EU directives (Railway Package I and II). A quantum leap is

also required in the organisation of European rail traffic in order to do justice to the mobility needs of the future. For this reason, we need competent European rail companies that can provide attractive offers from North Cape to Sicily under one roof.

More competition on the railways is also the aim of the draft bill of the Federal Government of the third amendment of provisions of railway law, which provides new regulations on, among other things, allocation of rail routes, the decision on fees for rail routes as well as the establishment of an agency for rail routes (*Trassenagentur*). Finally, the Federal Government is also working towards harmonising fiscal conditions of competition for all forms of transport at European level.

b) Technology as obstacle to progress?

While lorries can transport goods across borders easily and without any technical obstacles, this is not the same case for the railways system because of its current complexity. National development of the railways in the past has led to considerable problems as regards smooth networking, especially in the area of technology. There are major obstacles here due to the various electrical, breaking and security systems, track widths, etc. that are employed. Behind the term "inter-operability" lies the objective of creating common technical standards and interfaces at borders for existing systems in the future.

With two directives and accompanying Technical Specifications (TSI), the European Union has implemented key measures to improve this situation. Essential elements of these rules were adopted by the European Commission in May 2002 and came into force in Germany in December 2002.

c) Pushing ahead with European transport planning

In order to ensure that it is not just roads that are "borderless", it is important to provide universal cross-border travel on other transport routes, especially the railways.

As early as 1996, the European Community created guidelines on setting up a trans-European transport network (TEN guidelines) in order to overcome at European level current weaknesses of transport planning that had previously been geared more towards national needs. Not only do these define transport networks and connection points for the various forms of transport of importance from a European perspective, they also set out the main objectives in the development of European transport infrastructure. As part of the current revision of the TEN guidelines, greater significance is to be attached to the railways and short-haul shipping as well as links between railways and shipping.

d) Combined transport – the intelligent way to move goods

Ideal interlinking of forms of transport is an important instrument for a sustainable transport policy. Lorries and trains or lorries and ships must be combined in such a way that their natural strengths are shown to their best advantage and the transport chain from A to B is organised efficiently and cost-effectively.

Combined transport plays a major role in this. As regards dealing with future traffic volume, it has an important function in taking the strain off the roads.

Targeted support of combined transport is embodied in the Coalition Agreement of 16 October 2002. Here the Federal Government is attempting to assert control by means of targeted measures, including relief from legal as well as tax burdens, e.g.

- a higher maximum tonnage limit of 44 tonnes for pre-carriage and post-carriage on roads,
- exceptions from driving bans,
- exemption from or reimbursement of motor vehicle tax and
- subsidies for building costs for the expansion and construction of efficient trans-shipment terminals under the *Bundesschienenwegeausbaugesetz* (Federal Railway Network Expansion Act). Since 1998, the Federal Government has invested around € 354 million in the construction and expansion of 51 trans-shipment terminals.

So, after a downward trend in the past (total of around 33 million tonnes in 1999), the combined transport railways/roads developed positively to around 35 million tonnes in the years 2000 and 2001, around 37 million tonnes in 2002 and around 38 million tonnes in 2003. The development of combined transport in inland water transport was also positive, with volume increasing from 1.43 million TEU in 2001 to 1.52 million TEU in 2002 and to 1.58 million TEU in 2003.

e) Shipping and railways – a mixed double with a future

The Federal Government has set itself the task of securing and strengthening the position of Germany as a maritime centre and in doing so, using more free capacities in shipping for freight transport, e.g. to East European neighbouring countries. For this reason, it is supporting the efforts of the *Länder* to increase the location-related benefits and competitiveness of German sea ports. The **rail connections to the hinterland** of German sea ports are very important within the framework of maritime transport logistics and contribute significantly to strengthening Germany as a maritime centre.

The Federal Government is dealing with the subject of easing of road traffic by transporting goods by coastal and inland water transport as a main area of transport policy within the framework of its strategy “From Road to Sea/Waterway”.

There are still a number of obstacles preventing loading companies and carriers from transferring freight transport to the waterways. Against this backdrop, the Federal Government, coastal *Länder*, as well as associations and companies of the maritime industry and inland water transport, established the ShortSeaShipping Promotion Center (SPC) as a joint project. The SPC has since launched 19 traffic transfer projects, which have so far reduced the strain on the road network by 44 million tonne kilometres. This is the equivalent to more than 5,000 journeys – or 3,100 tonnes of carbon dioxide prevented – by a fully laden 40-tonne lorry between the German sea ports and the Ruhr District.

No other form of transport illustrates the conflicting goals of sustainable transport policy more clearly than **inland water transport**. Efficient waterways are a prerequisite for providing inland water transport with development opportunities in the competition between forms of freight transport. The competitiveness of inland water transport must be guaranteed through maintenance and expansion measures for the inland waterways. At the same time, the issues of nature conservation and flood defence also need to be taken into account.

In its 5-point programme, the Federal Government decided to halt widening of the River Elbe and not build barrages on the Saale, among other things, as a result of the flooding of the River Elbe in 2002. The Federal Government's *Hochwasserschutzgesetz* (Flood Defence Act) of July 2004 will further improve flood defence, without calling into question the advantages of energy-efficient and low-noise inland water transport and its suitability for transporting unwieldy and/or bulk goods, e.g. also in containers.

In addition, the "**Forum Binnenschifffahrt und Logistik**" (Forum Inland Water Transport and Logistics), which was launched by the Federal Ministry of Transport in May 2004, should bring us closer to finding a solution to the current and structural problems of German inland water transport. The goal of all parties involved is to develop a joint strategy in order to strengthen the future position of inland water transport in the competition between forms of transport.

2. Passenger transport: guaranteeing diversity in mobility

We have a large number of ways to be mobile: on foot, by bicycle, by bus and train or by car, one's own or sharing with others. In Germany there are many opportunities for choosing different means of transport to get to work and school, to go shopping, to go on holiday or reach one's leisure pursuits. Each of these "means of transport" has its transport routes, sometimes its very own: railways and roads (the latter often with special bus lanes), pavements, cycle paths, tram, underground, and urban railway networks.

The car is essential for our mobility. We also know, however, that the roads and motorised individual passenger transport in the towns and conurbations alone cannot cover mobility requirements. One only needs to imagine what urban traffic would look like without local public transport, which is used by around 27 million passengers each day. At any rate, by simple calculation, local public transport saves around 19 million car journeys per day. Unlimited expansion of the road infrastructure is also countered by the limited financial resources of public authorities as well as the limited availability of land in such a heavily built-up country.

The Federal Government regards the promotion of diversity in mobility as a central task of sustainable transport policy. Diversity in mobility is important for the economic performance of our towns and regions and their prosperity. At the same time it makes the towns and regions worth living in and is an essential factor for social integration. The Federal Government is working towards reducing traffic especially in

towns and conurbations by linking the various forms of transport as best as possible, and making it easier for people of all social and age groups to change to using local public transport as well as non-motorised forms of transport, like the bicycle.

Means of mobility can, however, only be guaranteed through joint efforts, i.e., in cooperation with the *Länder*, cities and municipalities responsible for organising transport regionally and locally. Above all, the Federal Government's contribution is to create sensible legal conditions. Planning (e.g. the Federal Transport Plan) and investments in the transport infrastructure must reflect the objective of sustainable mobility.

a) Improving the quality of public passenger transport through competition

For the Federal Government, attractive public passenger transport has a key role in creating a sustainable transport policy. The market share of public transport is around 16% of traffic volume nationwide. This figure needs to be improved. A good 60% of German people never use public transport, or use it less than once a month. A third of those who hardly ever or never use public transport (23% of all German people) admit that they can easily reach their destinations by bus or train. This shows that there is substantial market potential in public passenger transport which it is worth exploiting.

Consumer-oriented public passenger transport that is reliable, fast and obstacle-free and offers users extensive rights as passengers will contribute to increasing its own attractiveness and is an important concern of the Federal Government.

The Federal Government has seen to it that the purchasers – i.e. the *Länder* and municipalities – and operators of local transport services have a reliable planning framework. With the amendment of the *Regionalisierungsgesetz* (Regionalisation Act) on 1 July 2002 the transfer payments of the Federal Government to the *Länder* for local public passenger transport by rail are guaranteed for the long term. Since 2002 the *Länder* have received around € 6,750 million each year, which will increase by an agreed rate of 1.5% per year up to around € 7,270 million by 2007. However, the basis of funding public passenger transport has also been affected by the cost-saving requirements of the *Haushaltsbegleitgesetz* (Budget Accompanying Law) 2004 adopted by the German *Bundestag* and *Bundesrat*: it was agreed that funding for 2004 would be cut by € 139 million.

The fundamental amendment of the *Regionalisierungsgesetz* (Regionalisation Act) planned for 2008 will have a great influence on the future of regional and local transport. The major opportunity to implement available funds more efficiently and more transparently must be taken up and existing requirements need to be focussed on.

Overall the Federal Government's financial commitment to supporting the *Länder* in the provision of regional and local transport services totalled around € 8,000 million in 2003. As, in addition to regionalisation funds for local public passenger transport by rail, pro rata funds of € 1,677 million were available from the *Gemeindeverkehrsfinanzierungsgesetz* (Municipal Transport Funding Act).

According to the basic ruling of the Court of Justice of the European Communities of July 2003, usual funding of local public transport (ÖPNV) in Germany is permitted in principle because local transport is an essential service that must be provided by the State.

In a judgement the Court of Justice furthermore reinforced the Federal Government's intention to promote competition between companies offering public passenger transport. The Federal Government and the Länder agree: competition is necessary to make public passenger transport more customer-oriented. This requires new forms of organisation in local public passenger transport and funding that is geared more towards competition, which will offer incentives for improving quality and environmentally friendly innovation. The current legal situation already provides the necessary instruments: the **amendment of the German ordinance on the awarding of public contracts (Vergabeverordnung)**, which came into force in December 2002, gives the German *Länder* leeway when awarding contracts for transport services in local public passenger transport by rail.

Against this backdrop, the Federal Government supports the **proposal of the EU Commission** dated 26 July 2000 for a Regulation on action by Member States concerning the award of public service contracts in passenger transport by rail, road and inland waterway, which is based on the **model of "regulated competition"** and not on the experiences of Great Britain with its completely liberalised market for local passenger transport. In Britain it has turned out that although production costs are the lowest, passenger numbers have noticeably declined. By contrast, markets that are subject to regulated competition are efficient and attractive. For this reason, the Federal Government will do all it can in Brussels to ensure that a high level of quality in local public passenger transport is guaranteed through a fair and socially acceptable framework of competition.

The **basic conditions for non-discriminatory competition**, on the railways too, must be further improved. The reform of the railways and especially the regionalisation of local public passenger transport by rail have lent a new dynamism to structures that had been red-tape ridden for decades. While in 1993, alongside the state-run Deutsche Bundesbahn and Deutsche Reichsbahn, only 25 non-governmental railway companies were active in local public passenger transport by rail, today more than 50 companies are offering their services. Since regionalisation in 1993/94, local public passenger transport by rail as a whole expanded by around 20%.

Of course, efficient and customer-friendly public passenger transport is also transport that can be used without restriction and independently by people of limited mobility – disabled people, as well as older people, small children, people with push-chairs, etc. For this reason, the objective of **freedom from obstacles in public passenger transport** is a main theme of the German Act on equal opportunities for disabled people (*Behindertengleichstellungsgesetz*), which came into force in May 2002. Potential for mobility is influential in determining social participation and therefore the professional and social development of every individual. In this sense, the principle of freedom from obstacles particularly in the area of transport is not only an important condition for disabled people, but is also understood as benefit in terms of quality for all users of public transport.

**b) Implementation of the Nationaler Radverkehrsplan
(National Cycling Plan)**

With a share of 9% of all routes, **cycling** is relatively important in Germany and the Federal Government bears this in mind. It sees considerable potential in further promoting cycling.

The **Nationaler Radverkehrsplan (National Cycling Plan)** presented by the Federal Government on 24 April 2002 met with a broad response from the general public and was welcomed by most parties involved in the Länder and municipalities, including associations. The plan contains a wide range of recommendations for promoting cycling and has initiated a broad public dialogue. For a successful implementation, it requires active support at a local level, in particular. An important task will be to further expand route networks for cycling, bicycle stands and signs in order to increase, among other things, the safety of cycling.

In this sense, the **amendment of the Straßenverkehrsordnung (Road Traffic Regulations)** will make regulations on cycling simpler and more flexible.

The current length of cycle routes on national roads funded from the federal budget is around 16,000 km. The federal budget for 2002 doubled the budget for cycling (e.g. for building cycle paths) to € 100 million. Since 2003 use of the funds has been more flexible. As a result, in the interests of expanding active routes along federal waterways, additional federal funds of up to € 10 million have been used for cycle routes on active routes along federal waterways. Since 2004 € 2 million have been available for measures to implement the **National Cycling Plan**.

c) Promoting traffic-reducing structures of spatial planning and housing

Everyday traffic covers a total of around 270 million routes every day. With 165 million routes, the car is the most important means of transport. In second place with 62 million routes is walking and with 24 million cycling. Since the Strategy for Sustainability was adopted, the development of mobility in passenger transport has been characterised by the following trends:

- The number of routes has remained relatively constant.
- The density of motor vehicle traffic has risen further.
- Travelling times and the average length of routes have continued to increase.

In general, the number of people using public transport grows with the size of the town. In major cities with good local transport services, this number is about 30%. There are also medium-sized cities, however, where the use of public transport reaches the level of major cities. This indicates that transport behaviour of inhabitants can be influenced by instruments of urban and spatial planning.

The reduction of tax allowance for journeys between home and work (*Entfernungspauschale*) to one standard rate, lowering of the subsidy for house owners (*Eigenheimzulage*) of newly built houses and the resulting equal treatment of existing

and new buildings are important measures to keep land-intensive housing development at bay.

For the first time, the building regulations adopted in 2004 stipulate an environmental review for all building supervision plans and spatial planning. It also includes a series of other regulations intended to promote traffic-reducing structures of planning and housing. So, planning will in future take into account the interests of passenger and freight transport and the mobility of the population in local public passenger transport.

At the same time, the goal of traffic prevention and reduction as set out in the Strategy for Sustainability is now also laid down in building regulations. This should support a municipal transport policy that will contribute to reducing noise pollution and pollution by harmful chemicals in urban areas. These include, for example, measures to limit speed or create pedestrian zones.

Various **pilot projects** of the Federal Government prove that integrated town and transport planning reduces individual transport. The results of the field of research “**Städtebau und Verkehr**” (**City Planning and Transport**) of the research programme “*Experimenteller Wohnungs- und Städtebau*” (Experimental Home-Building and City Planning) of the Federal Ministry of Transport, Building and Housing show a clear shift in the modal split in favour of local public passenger transport.

Within the framework of Federal Ministry of Education and Research’s main area of funding, “**Local passenger transport for the region**”, the efficiency and quality of local passenger transport are to be noticeably improved through innovation, outside conurbations too, focussing on rural areas as well as on towns and small cities.

d) Mobility research – making results more accessible

What is the relation between traffic behaviour, lifestyle and the environmental burden of mobility? What might means of mobility and strategies for change for a sustainable transport policy look like? Without knowing and taking into consideration the needs of transport users – based on e.g. age, gender, situation – such strategies promise little success.

For this reason, the Federal Government targets its support on research projects (e.g. on instruction by the Federal Environmental Agency (UBA) “*Mobilitätsstile in der Freizeit – Minderung der Umweltbelastung des Freizeit- und Tourismusverkehrs*” (Forms of mobility in leisure time – reducing environmental burden of leisure time and tourist traffic) that are intended to deal with these issues. Important foundations for the further development of existing and the creation of new mobility strategies is supplied by mobility data (e.g. “*Mobilität in Deutschland 2002 – Erhebung zur Alltagsmobilität*” (Mobility in Germany 2002 – Survey on Everyday Mobility) or “*Mobidrive*”, a project that analyses changes in routines and rhythms of traffic behaviour).

A special concern of the research programmes of the Federal Ministry of Transport, Building and Housing is to make knowledge more transparent and to communicate it better. To this end, in cooperation with numerous science institutes, a

user-friendly research information system (FIS-BMVBW) was designed and set up. For research and science institutes as well as public institutions, **FIS-BMVBW** contains – listed by problem – past and ongoing research works on current issues from the areas of mobility, transport, town planning, regional development, and housing. Opening up the system to other users at a later date is being considered as an option.

Examples of mobility research by the Federal Government

In the interests of transport optimisation, the Federal Government is supporting the research initiative “**INVENT**” and lead projects on “**Mobility in conurbations**”. With information and navigation systems, new management and planning methods, German citizens are to be encouraged to use cars less frequently, and instead opt for public passenger transport by bus or rail, cycle or go by foot. In this way, air pollutants, climate gases, and noise are to be reduced, while increasing land use and economic losses through accidents and traffic jams are to be limited and access to transport by until now disadvantaged groups should be facilitated.

With its innovation campaign “**Forschung System Schiene 2010**” (Research System Railways 2010), the Federal Government has taken active steps – including exemplary demonstration projects – to make the railways more efficient and enable them to take as much freight traffic off the roads as possible. Inter-operability for cross-border rail freight traffic is a major subject here.

Within the framework of the research programme “**Schiffahrt und Meerestechnik für das 21. Jahrhundert**” (Shipping and marine technology for the 21st Century), coastal and inland water transport is to be integrated more strongly as an attractive component of freight transport. Shipping speed, load capacity, environmental sustainability and ship safety can be increased as important factors of the competitiveness of shipping by optimising ship types and drive systems, cutting back fuel consumption, reducing environmentally harmful emissions, as well as preventing and combating shipping accidents.

3. Reducing emissions – preventing noise

The greatest challenges the transport sector is still facing are transport noise, as well as **energy consumption and related emissions of air pollutants**, for example, emissions of soot particles from diesel-powered vehicles, and **greenhouse gases**.

The measures introduced already over the last few years have reduced air pollutants, for example, carbon monoxide emissions, by 60%, nitrogen oxide emissions by 40% and hydrocarbon emissions by 80% as compared with 1990. Within the next ten years these emissions are to decline further – despite an increase in traffic output – as a result of low-emission vehicles becoming more established among the vehicle fleet, as well as the compulsory introduction of the emission standard Euro 4 for cars and Euro 4 and 5 for lorries.

a) Preventing greenhouse gas emissions – further reducing fuel consumption

On the positive side, it should be noted that since the year 2000 there has been a **trend reversal with regard to fuel consumption**. The Federal Government has created economic incentives to this end. Not least as a result of the Ecological Tax Reform, domestic fuel consumption has been falling since the year 2000 (petrol: by 10% between 1999 and 2002, diesel: by around 3%). This has been accompanied by a corresponding reduction in climate gas emissions.

The adoption of a European **Energy Tax Directive** in October 2003 has made it possible for this course to be continued. Higher minimum tax rates for petrol, diesel and fuel oil have been set and minimum tax rates for natural gas, coal and electricity are being introduced. While there is no need for adjustment in Germany, some “old Member States” as well as the EU accession states need to increase their current tax rates, sometimes significantly. As regards the development of fuel consumption in Europe, the importance of the directive should not be underestimated.

Happily, since the year 2000, a trend reversal has been recorded for the first time for CO₂ emissions from transport, which had until then increased. This positive development was probably mainly attributable to the reduction in specific fuel consumption, a clear shift in favour of diesel-powered vehicles in new registrations, as well as the effects of the eco-tax.

CO₂ emissions must be reduced further in order to protect the climate. The transport policy of the Federal Government is therefore responsible for formulating the right framework conditions to support industry in further reducing CO₂ emissions by, among other things, increasing the efficiency of vehicles with Otto and diesel engines. An example of this is the ACEA’s commitment to the European Commission on CO₂ emission reductions on passenger cars, which stipulates a target to reduce CO₂ emissions from 185 g/km in 1995 to 140 g/km in 2008. The interim targets for 2003 were agreed at 165–170 g/km. Current results of monitoring are 165 g/km. Therefore, EU automobile industry is on its promised path to reducing emissions. The market share of vehicles with fuel consumption of up to 6 l is meanwhile more than 40%.

Further potential can be opened up by stronger optimisation and use of environmentally friendly fuels. With a faster market launch of especially low-sulphur fuels in mind, the Federal Government introduced a tax preference for low-sulphur fuels in the autumn of 2001 and expanded it to cover sulphur-free fuels from 2003. The German mineral oil industry has converted its production with the aid of considerable investment – and is a pioneer in Europe. Since then, only sulphur-free fuels have been available at petrol pumps in Germany. Fuel savings are up to 15% compared with traditional engine technologies. At the same time automobile manufacturers should be offered medium- and long-term incentives to make better use of the potential of alternative (pollutant-free) fuels and drive technologies. Detailed measures are described in Chapter E III ‘Alternative fuels and innovative drive systems’.

With respect to traffic growth, air traffic recorded by far the highest rates of increase, so that despite modern engines and the resulting significant improvement in the fuel consumption efficiency, emissions have increased considerably.

Characteristic of this situation is the fact that air traffic, especially mid-haul, has become more attractive to customers. For this reason, the railways need to offer flexible and customer-friendly services in order to win back their market shares in the future. The cut in the value added tax rate for long-distance rail traffic, which was included in the Coalition Agreement of 2002, could remove the unequal cost burden that still exists between these two forms of transport. However, current budgetary conditions do not permit such a decision to be made.

As **air traffic** is primarily of a multinational nature, measures at this level prove to be the most effective. For this reason, the Federal Government is working in the International Civil Aviation Organisation (ICAO) and the EU to implement measures to reduce greenhouse gas emissions (e.g. introducing a distance-based tax on emissions). Independently of this, the Federal Government is planning to supplement current fees based on noise at take-off and landing at German commercial airports by an **emissions-based component** based on an assessment of nitrogen oxide (NOX) and unburnt hydrocarbon (HC).

According to the European Energy Tax Directive, the Member States are now free to subject domestic flights to kerosene tax and to tax inter-community flights, if the Member States concerned have signed bilateral agreements to this effect. In principle, both options are being considered. However, there are currently no concrete plans to introduce a kerosene tax on internal German air traffic. The Federal Government is working towards reducing distortions of inter-community competition by harmonising the mineral oil tax on all forms of transport.

b) Breathing air without soot particles

Particle emissions are the focus of discussions about cars and commercial vehicles run on diesel. Soot particles or heavy dust in the air we breath can damage our health. With no change in technology, the expected growth in diesel-powered cars would mean a corresponding increase in particle emissions, as long as diesel-powered cars are not fitted with particle filter systems. At the same time, however, the greater number of diesel-powered cars helps reduce CO₂ emissions.

Against this backdrop, there is an urgent need to take action and considerably reduce future emissions of nitrogen oxide and particles by diesel-powered vehicles. In agreement with the Länder, the Federal Government will use tax benefits to promote clean, low-particle diesel from 2005 onwards. In this context, the Federal Government welcomes the automobile industry's promise to fit all new diesel-powered cars with a particle filter by 2008. Meanwhile, the EU Commission is preparing to introduce sliding scale limits that will apply throughout Europe in future (Euro 5 for cars and Euro 6 for lorries). In relation to this, in the summer of 2004, the Federal Government called upon the EU Commission to present compulsory sliding scale limits for diesel-powered vehicles by the end of 2004.

Also on the initiative of the Federal Government, corresponding limits for trains and inland ships were adopted for the first time at EU level in October 2003.

c) Preventing traffic noise

Despite many and varied successes in reducing traffic noise over a number of years, the subject of protection against traffic noise remains the focus of sustainable transport policy. At the same time, the Federal Government regards active protection against noise as an active protection of health.

According to the *Bundesimmissionsschutzgesetz* (Federal Emission Control Act) preventive measures against noise must be implemented at construction sites and during major changes to roads and railways. An average of around € 130 million a year is invested in measures to prevent noise on the federal highways alone.

Since the German *Verkehrslärmschutzverordnung* (Ordinance on Protection against Traffic Noise) came into force in 1990, with limits of 59 dB(A) during the day and 49 dB(A) at night, Germany has a good level of noise protection in the building of new traffic routes and extending existing ones, also compared with other European countries. Nevertheless, it is not disputed that further action needs to be taken. However, there is no simple and universal recipe for improving the noise situation. Various approaches are needed, as is the cooperation of all those involved, in order to come closer to achieving the goal of a good sustainability in transport and environment.

To this end, the Federal Government is implementing various strategies against noise. The essential instruments of protection against noise are:

- the reduction of noise at source,
- the noise remediation programmes on railways and roads,
- protection against noise at airports and
- noise reduction planning.

Noise prevention at source

From the Federal Government's point of view the key approach remains to **reduce the emission of noise at source**. Noise that does not come about in the first place does not need to be combated by means of costly noise protection walls. There have been many years of successful efforts to this end. Noise reduction at source is a focus of research of the Federal Government programme "Mobility and Transport".

Also in **rail transport**, the railway industry has already made significant improvements and has developed a **series of low-noise vehicles**. There is also considerable potential for optimising noise prevention in the individual vehicle components, e.g. breaks made from modern composite materials. These so-called composite pads can significantly reduce the **noise emissions primarily of rail freight traffic**, which still uses the traditional cast-iron brake pads.

Currently a joint rule on how to combat the noise emitted by track vehicles and tracks at European level only exists for high-speed trains. However, progress is also being made in conventional rail traffic: at present, binding technical regulations to reduce noise emitted by new track vehicles are being prepared for the first time at EU level. **At least this would provide a fixed and compulsory standard for noise prevention in this sector**. The Federal Government will work towards implementing progressive standards in order to achieve clear and binding guidelines with regard to

the uniformity of cross-border traffic. The objective is to strengthen protection of residents as well as the role of the railways as a more environmentally friendly form of transport.

Road traffic has long been a focus of noise reduction measures. **Provisions to control motor vehicle noise** were harmonised throughout the EU many years ago. The corresponding directive has been made stricter several times over the last few years – also for motorcycles. The next step is to **adjust the procedure for measuring noise** to real conditions experienced by vehicles in traffic. Germany has presented a proposal on this to the relevant UN body. On the basis of this new procedure for measuring noise, the noise limits must also be adjusted according to the present state of technology.

Protection against noise at airports

From 2006 onwards, according to a resolution by the International Civil Aviation Organisation (ICAO), only aircraft that do not exceed current noise limits will be admitted to traffic. This resolution will be supplemented by an agreement on stricter noise limits for helicopters and an agreement on a so-called “balanced approach”, which lists the various measures to reduce air traffic noise and sets out a comprehensive global approach to **dealing with air traffic noise at airports**. Elements of this “balanced approach” were implemented at European level in the form of a Directive on the establishment of rules and procedures with regard to the introduction of noise-related operating restrictions at Community airports.

In Germany, the amendment initiated in the summer 2004 of the *Fluglärmgesetz* (Air Traffic Noise Act), which has been in force since 1971, has created a new and fair basis on which to improve protection of the population against air traffic noise. A draft bill is expected by the end of 2004.

Noise remediation programmes on railways and roads

After **noise remediation** on federal highways had been practised under budget law since 1978 and results achieved accordingly, a noise remediation programme for the **tracks** of the federal railways was anchored as an important concern of environmental policy in the Coalition Agreement of 20 October 1998. Accordingly the federal budget has provided around **€ 51 million** a year for noise remediation on the railway tracks since 1999.

The Federal Government and Deutsche Bahn AG have agreed to present an overall strategy on noise remediation on the railway tracks by the end of 2004.

Noise remediation on existing roads is a voluntary task of construction companies and is not prescribed by law. The Federal Government has been applying noise remediation to its roads for 25 years now. It spends around **€ 18 million** a year on this, and to date it has spent **€ 710 million** on active and passive measures. For housing along federal highways for which the Federal Government is responsible, a protection level of **70 dB(A)** in the day and **60 dB(A)** in the night has basically been achieved. The remaining cases, where it is assumed these levels are exceeded due to general traffic development, will be resolved in the next few years.

In principle, it should be taken into account that it would be a noticeable improvement on the current situation for those affected by noise, if *Länder* and municipalities dealt with noise remediation more vigorously and applied the limits that the Federal Government has applied to its voluntary noise remediation measures for a long time.

Noise reduction planning

The Federal Government actively supported the implementation of the so-called **EC Directive on Environmental Noise**, i.e. on improving the basis of information on noise emission in Germany. The draft bill on the amendment of the *Bundesimmissionsschutzgesetz* (Federal Emission Control Act), which the Federal Government presented in mid 2004, extends and strengthens the tools of noise reduction planning. The new strategic **noise maps for transport routes, airports and conurbations** will provide those affected and relevant experts with a qualified tool for discussing noise problems and for further steps in noise reduction planning. The new legal framework should allow local participants to work together to develop practicable solutions that take into consideration the interests of residents as well as those of commercial traffic.

4. Summary and outlook

The Federal Government has opted for an integrated spatial planning, town planning and transport policy. The integrative character refers mainly to the greater emphasis put on the causes and effects of traffic. Solutions are required that enable a decoupling of economic growth and transport growth and at the same time guarantee sustainable mobility.

Goals like traffic transfer and traffic prevention cannot be achieved through traffic-reducing structures of spatial planning and housing structures. Economic instruments, in particular, are important, e.g. emissions-based organisation of the distance-related lorry toll according to classes of harmful chemicals or the Ecological Tax Reform, which take into account internalisation of external costs. In 2004 the Federal Government will review whether and how to further develop taxation from an ecological viewpoint, with regard to emissions of environmentally harmful gases, the price of oil, macroeconomic development, the competitiveness of German trade and industry and social sustainability.

Sustainable mobility development needs has to involve all forms of transport. This is why it is important to establish a network of all forms of transport so that mobility chains are created in a flexible manner and as a result many and diverse transport alternatives come about through competition. Increasing the proportion of total traffic volume made up by environmentally friendly forms of transport as well as non-motorised traffic remains a key task of sustainable transport policy and contributes towards achieving the goals of traffic transfer and traffic prevention formulated in the National Strategy for Sustainability.

Above all, by developing integrated freight transport networks, the efficiency and quality of railways, inland water transport and ShortSeaShipping can be

improved. First and foremost, this is the task of providers of transport services as well as logistics companies. What is also important, however, is that carriers are increasingly prepared to take into account different forms of transport when considering their supply chain structure in the next phase of EU enlargement. In addition, politics can support such projects that speed up implementation of integrated freight transport networks in research and practice.

Establishing a network of forms of transport also requires those involved to interlink their ways of thinking. It is up to them to organise all the increasingly standardised logistics system solutions into transport chains, with the aid, among other things, of new information and communication technologies. Making those involved aware of this is the purpose of the training initiative "Logistics", which was launched by the Federal Government.

The Federal Government will continue to use its potential to strengthen rail transport. This means

- a continuously high level of investments in the railways over the next few years;
- overcoming technical and administrative restrictions within the European railway network.

As is the case with multimodal freight transport already today, multimodal passenger transport will also have to be made a more solid component of the integrated transport policy in future. Alliances between innovative mobility service providers – e.g. between local transport companies and car-sharing providers – will make public transport more individual and make private transport more public. Electronic timetable systems, route planners for mobile telephones and electronic fare management are necessary modern services of public transport.

Within the framework of updating the National Strategy for Sustainability in the future, the Federal Government will develop more strategies, like the decoupling of economic growth and transport growth, achieving the objective of reducing transport intensity while at the same time guaranteeing sustainable mobility, economic growth and employment.

It is undisputed that the German population is ageing increasingly quickly and that from 2020 to 2050 it will decline by several millions. For this reason, long-term extensions of previous forecasts for traffic development beyond 2015 are not accurate. There are few studies on long-term development of individual mobility. Scenarios need to be worked out that demonstrate the long-term effects of demographic change on traffic development in 2020 with prospects for following years. In this way the basis can be formed on which to develop future-oriented mobility strategies that are tailor-made to the long-term requirements of individual regions.

More and more German citizens are no longer willing to accept an unlimited rise in noise pollution. The question of how far a national package of measures for protection against noise can combine and further develop the above-mentioned as well as new measures to improve protection of the population against harm from

noise needs to be pursued within the framework of the continued development of the Strategy for Sustainability.

The measures and instruments described and the interplay between them form an integrated solution for sustainable transport policy. Mobility, and with it transport, reflects the reality of people's lives, which is colourful and varied. Sustainable transport policy cannot be prescribed by law, it takes effect through concrete and balanced basic regulatory measures and through guaranteeing alternative sustainable services offerings.

It is certain that transport will be different than it is today in 30 years time. Demographic change and different lifestyles, economic, ecological and technological progress will change the mobility behaviour of people and goods traffic. Therefore, drawing up new strategies for transport of tomorrow is and will remain a task of highest priority for the future. The need to take action on designing sustainable mobility is therefore as great as before.

III. Producing healthily – eating healthily Consumer policy for a changing society

Since the National Strategy for Sustainability was adopted, important political courses have been set in the area of action of environment, nutrition and health. Federal Government's key plans here are the "agricultural reform" and the reorientation of reactive consumer protection towards proactive consumer policy.

This type of policy – going beyond nutrition, environment and agriculture – does not regard the consumer as a creature in need of protection. Instead, a modern consumer policy supports the development of consumer behaviour oriented more towards the quality and sustainability features of products, services and manufacturing processes. The main prerequisite for this is for necessary information to be available to consumers. Interest in and greater demand for sustainable products are incentives for sustainable – and therefore forward-looking – production. The modern consumer policy of the Federal Government makes an important contribution to sustainable development in trade and industry and society.

1. Forward-looking farming with consumer protection, animal husbandry appropriate to the species and envi- ronmentally friendly business methods

The Federal Government has consistently implemented the comprehensive reform of agricultural policy that was initiated at the beginning of 2001. This reform was based to the last detail on the management rules of sustainability set out in the Strategy for Sustainability.

Sustainable farming takes into account the natural cycles of materials and animal husbandry appropriate to the species, contributes to the preservation of the cultural landscape and protects natural resources. The natural resources and their

ability to function should be preserved for the long term for current and future generations. In particular, the soil, water and air must be protected and fertility of the soil and biological diversity need to be preserved and/or improved.

The new trend in agriculture also stands for a new agricultural policy that incorporates the interests of consumers. Preventive health-related consumer protection takes precedence over economic interests.

Finally, the policy of an integrated development of rural areas is a central component of the National Strategy for Sustainability. The long-term objective is to support rural areas in a way that can guarantee diversified economic structure based on regional economic cycles, a high quality of life for the people and the protection of valuable natural habitats.

We know that such support is necessary, especially right now, as the economic situation of farming in Germany is very difficult. With the new opportunities provided by the agricultural reform and a large number of funding instruments, we are supporting farmers who want to safeguard and improve their market position in a growing Europe by means of innovative ideas.

a) *Changing the direction of European agricultural policy – the Luxembourg reforms*

In June 2003 Europe's ministers for agriculture adopted a fundamental reform of European agricultural policy. By doing so, it has been possible to secure the following key elements of German proposals for reform at European level:

- Transformation of production-based subsidies into direct payments that are decoupled, do not distort trade and that support extensive cultivation,
- increased market orientation of production,
- greater ecological orientation of funding and
- sustainable development of rural areas.

The course that has been taken offers European agriculture new and better basic conditions for sustainable development.

In future, the direct payments that the European Union grants farmers will mainly no longer be linked to the farmers producing certain agricultural products.

The result of this decoupling of payments is that the producers have more flexibility when making production decisions and consequently can access new earning potential. The choice of which product to produce in future will depend above all on market conditions. There will no longer be production induced solely by the level of product-related payments.

Some of the funds currently available for direct payments will in future be used within the framework of so-called modulation to strengthen funding measures for the benefit of rural areas, in particular, production processes that are environmentally friendly and take into account animal welfare, as well as the production of high-quality food.

The result of the reform is that of direct payments are only fully granted to farmers who comply with compulsory provisions with regard to the agricultural land, agricultural production and agricultural activity (cross compliance).

These provisions include a series of EC Regulations and Directives from the areas of environmental protection, food safety and animal feed safety, animal health and animal welfare. If these norms are not adhered to the direct payments are cut – by 5% for the first breach, or, as a rule, completely in the case of deliberate breach. In addition, the Member States will enact provisions on keeping land in a good agricultural and ecological condition. These new provisions at European level are concrete regulations on soil protection and the minimum levels of land maintenance.

The Member States also have to guarantee that the proportion of total agricultural land made up of permanent set-aside land in 2003 does not decrease by more than 10%. In the course of implementation, the Federal Government envisages that the *Länder* will introduce the requirement to ask for permits for use of set-aside land, in case its share drops by more than 5%. If it decreases by more than 8%, the *Länder* may also rule that new set-aside land must be created.

The character of direct payments changes with these reform measures. Increasingly, they take into account the many and varied services for the public good performed by multifunctional farming – for example, for the environment, maintenance of the countryside, conservation of rural areas.

With its law on the implementation of the reform, the Federal Government used the scope available for its formulation to consistently reinforce sustainable farming. This mainly includes, alongside complete decoupling of payments, the standardised land premiums introduced in the relevant regions at the end of a transitional phase. The aim of the Federal Government here is also to reduce imbalances of previous funding – e.g. green fodder as opposed to silo maize – and especially to improve funding of set-aside sites and extensively cultivated land – without excessively burdening other sites or groups.

b) Changing the direction of German agricultural policy – a more sustainable orientation of funding policy

The Joint Task of the Federal Government and the *Länder* “Verbesserung der Agrarstruktur und des Küstenschutzes” (Improvement of the structure of agriculture and coastal protection) is the central instrument by which the Federal Government and the *Länder* jointly promote living conditions in rural areas and structural conditions of farming. The Federal Government has set itself the aim of organising this Joint Task as an instrument of rural development. Creating a sustainable farming and forestry industry is a crucial aim of this development.

To this end, in 2002 and 2003, new development measures were developed and existing measures were reoriented toward the new development aims. Environmentally friendly and animal friendly high quality production, land cultivation adapted to the market and location and ecological farming are the main focusses here. In addition, within the framework of investment promotion, organic farming businesses

and investments, in particular in systems of animal husbandry appropriate to the species, are being promoted more strongly than before. With the EU-wide **modulation** of direct payments – Germany had introduced this instrument voluntarily as early as 2003 – EU funds for rural development measures are also being increased.

In this context, sustainability also means considering rural areas as a unit, covering all sectors. Overall sustainable development of rural areas forms the basis from which farming and forestry can contribute to the performance of economic, ecological and social functions of rural regions for the long term. For this reason, a **new strategic approach** was introduced in 2004. This also enables support for the drawing up of integrated rural development strategies and regional management to accompany regional development processes. In this way, individual measures that have until now been isolated can be better coordinated with one another, brought together in a strategic context and thus employed in a targeted manner for the development of rural regions. In addition, the investment support measures for activities outside farming, e.g. cooperation between farmers and foresters and other partners within the framework of income diversification, were extended. A further extension of agricultural environment measures will be reviewed when the framework plan 2005–2008 is drawn up.

c) Exploiting the potential of sustainable farming

aa) Economic prospects of the farming industry

The economic situation of the farming industry was very difficult over the last two years, as was true for the whole economy. In the financial year 2002/2003 profits from farming dropped by 19.8% compared with the previous year. The reasons for this were noticeably reduced earnings from cereals and a lower selling price for cereals, milk and fattened pigs. Profits generated by organic farmers dropped by a lesser amount in the same period (-0.6%), mainly because the low prices for pigs hardly affected organic farming.

In view of the many and diverse functions of farming within the framework of sustainable development, its economic prospects play an important role. This is why the Federal Government is helping farming adjust to the different demands of society and the market.

The reorientation of European direct payments provides farmers with **entrepreneurial room to manoeuvre**. They can and must become more geared towards the market and consumers and show to their best advantage their strengths in terms of product quality, production processes and new selling methods.

The reoriented **funding policy** provides support for example, through funding of investments to improve quality or for environmentally friendly and animal friendly production. Processing and marketing of regionally or organically produced products as well as the introduction of management systems, which are increasingly important for comprehensive quality assurance, are also being funded. Future business prospects must start precisely with young farmers. Therefore special investment assistance for this group was improved even further was for 2004 onwards.

Alternative incomes are also important for the economic prospects of farming. The new measures to promote rural areas can help make it possible to exploit opportunities available in the regions – for example, in the area of tourism, alternative sources of energy or production and marketing of regional specialities. These sectors are opened up especially by women from farming businesses and also offer job opportunities in rural areas. For this reason, the conditions of investment assistance for combined incomes were improved in 2002. The model project “*Regionen aktiv*” (Regions in Action) (cf. 3) has produced valuable results for the exploitation of regional potential.

Alternative incomes and new markets for farming are also provided by the area of renewable resources and renewable energies, which the Federal Government funds directly and indirectly through research. With the amendment of the Renewable Energy Sources Act adopted in April 2004, conditions for feeding electricity generated by biomass into the grid are significantly improved. Bonuses for plants generating electricity from renewable resources, for combined heat and power generation plants using biomass as well as for particularly innovative technologies for electricity generation contribute to opening up other areas of use for biomass and to increasing energy efficiency. The regulations now planned for the biomass sector create good conditions as a whole for farming to expand the production of renewable resources and energy for long-term, secure economic support.

Sustainable land cultivation offers businesses in Germany and Europe the best opportunities for the future. More and more farming businesses are following this strategy and acting in accordance with it. They produce quality products, rely on regional marketing and expand their production processes by way of sustainable methods of cultivation.

bb) Organic farming – pioneer of sustainable farming

Organic farming has a pioneering role in the sustainable development of farming. It protects natural resources to a great extent, practices particularly animal friendly forms of animal husbandry and has many and diverse positive effects on the environment. Farming as a whole can profit from the results and innovative solutions that are produced within the framework of organic farming in terms of business – e.g. direct marketing, gaining consumer confidence, image building – as well as production technology – e.g. biological pesticides, alternative forms of animal husbandry or processing with fewer additives.

This is shown by the achievements of organic farming. Consumers recognise its special efforts. The **demand** for organically produced foodstuffs has risen continuously over the last few years. According to estimates by market experts, turnover in Germany has increased from around € 2,000 million in the year 2000 to around € 3,100 million in 2003. It makes sense to continue exploiting the growth potential of this market and, by doing so, ensure that the particular achievements of organic farming are rewarded appropriately.

Trends on the supply side are comparable. From 1999 to 2003 the number of businesses run organically rose by 58% from over 10,000 to around 16,500 businesses. In 2003, the “eco-businesses” cultivated 735,000 hectares of agricultural land, around

62% more than in 1999. The proportion of **land under cultivation** in organic farming made up 4.3% of total agricultural land in 2003.

In September 2001 the Federal Government's **Bio-Siegel** for products of organic farming was created as a universal logo that makes a product of organic farming instantly recognisable. More than 1,000 users of the symbol and the labelling of more than 22,000 products to date show the positive response of trade and industry and consumers.

The **Öko-Landbaugesetz (Eco-Farming Act)** introduced in July 2002 ensures that European regulations on organic farming are enforced more uniformly and more efficiently. The Act improves monitoring of organic farming businesses and enables stricter punishments in case regulations are breached.

The **Bundesprogramm Ökologischer Landbau (Federal Programme for Organic Farming)** promotes the further expansion and acceptance of organic farming at all levels, from production through to the consumer. It was provided with a total of around € 71 million in 2002 and 2003 and it will be continued up until 2007, receiving around € 20 million each year. In addition, with higher land premiums for organic farming businesses as well as improved measures relating to processing and marketing, the Federal Government has further developed support within the framework of the Joint Task "*Verbesserung der Agrarstruktur und des Küstenschutzes*" (Improvement of the structure of agriculture and coastal protection).

cc) Animal welfare

It is essential for the German agricultural industry to maintain both its **natural foundations** as well as the **confidence** of the general public and consumers for the long term. To this end, the Federal Government has introduced a series of measures to protect natural resources and safeguard food production sustainably. Requirements of animal welfare and animal husbandry appropriate to the species have also been expanded by means of several measures.

Animal welfare has been anchored as a **national objective** in the German constitution. The relevant amendment to the Basic Law came into force on 1 August 2002.

The *Tierschutz-Nutztierhaltungs-Verordnung* (German Ordinance on Animal Welfare and Farm Animal Husbandry) contains new national regulations on keeping laying hens. With this ordinance Germany exceeds the minimum requirements of the EU; **keeping laying hens** in traditional cages will only be permitted in Germany up until 31 December 2006. In order to support the abolition of battery farming of hens a **federal programme to promote methods of animal husbandry appropriate to the species** was launched. Since September 2002 laying hen farmers have been given the incentive by means of reduced-interest loans to replace traditional cages with alternative systems for keeping hens even before the expiry of the transitional period.

Withdrawal from battery farming is also promoted by the clear **labelling of eggs for consumption**. Since January 2002, there are only three categories of hen-keeping: caged, barn and free range. Since January 2004 the particular method of hen-keeping needs to be stated on each packet. In addition, each egg must be marked with a producer code, which reveals the method of hen-keeping, the *Land* from which it originated, and the producer's number. Within the framework of an information campaign, consumers were told about the new requirements of hen-keeping as well as the new labelling.

The *Tierschutz-Nutztierhaltungs-Verordnung* (German Ordinance on Animal Welfare and Farm Animal Husbandry) with ambitious provisions for **pig keeping** was submitted to the German *Bundesrat* in August 2003. The decree could not be enacted as two of the instructions of the German *Bundesrat* are not compatible with European law. In June 2004 the Federal Government once again submitted amendments to the provisions on pig keeping adopting some of the proposals of the German *Bundesrat*. They are to be considered at a plenary session of the German *Bundesrat* at the end of 2004. Standards for the keeping of **animals bred for their fur** are currently being agreed within the Federal Government.

In September 2003, the European Commission presented a proposal on the **replacement of the Directive on protection of animals during transport by an Animal Transport Regulation**. The Federal Government has been pointing out the importance of this project for a long time. The **compensation for exports of beef cattle** would be cancelled for a large number of – certainly less important – destination countries. This measure is a first step on the way to completely abolishing subsidies on exports of beef cattle.

d) Sustainable use of natural resources

aa) Bio-energy and renewable resources

In view of the finite nature of fossil raw materials, renewable resources contribute to the **sustainable use of resources**. This covers both the use of renewable energies as well as the development of products and materials made from renewable resources, e.g. packaging material as well as insulation and construction materials and lubricants. Even high-tech sectors, like automobiles, track vehicles or medical technology, are employing more and more products made from renewable resources. For many highly developed products, like medicines, plastics and technical tools, there are still no alternatives to production by fossil raw materials. For these sectors, it makes sense to test the possible uses of renewable resources through research and development in order to reduce drastically the consumption of finite, fossil resources. Renewable resources have the potential to offer alternatives for a large number of chemical engineering products. For this reason, pushing ahead with other developments in the commercial use of renewable resources and pursuing these more vigorously are included among the necessary measures on the way towards sustainable business methods.

In 2003 the Federal Government spent **€ 46.3 million** on further developing promising technologies in the area of renewable resources. Of this around **€ 27 million** went on funding **research, development and demonstration projects**. As the project sponsor for this area, the Agency of Renewable Resources (FNR) has managed

more than 1,000 projects since 1993. Funding by the Federal Government is mainly subdivided into three product lines. Around 70% of the funds went on the product lines of bio-energy – with by far the highest amount – as well as oils and fats, starch and lignocellulose/wood.

The market launch programme for renewable resources supports the market launch of **biogenetic fuels and lubricants and insulation materials made from renewable resources**.

Tax exemption of **biofuels** has ensured continuous growth in the use of biodiesel. In energy production the significance of renewable resources is increasing markedly, especially in the heating sector. Improvement of the funding conditions in the Federal Government's Market incentive programme for renewable energies is supporting this development. The Renewable Energy Sources Act, which was amended on 1 August 2004, plays a crucial role in opening up the energy-related potential of renewable resources in the electricity sector. It obliges power grid operators, among others, to buy electricity made from biomass at minimum prices. The amendment of the EEG has significantly improved conditions for electricity made from biomass.

bb) Protecting natural resources through environmentally friendly farming

The natural environment and especially the particularly sensitive eco-systems in Germany are still under too much strain from ammonia and other nitrogen discharges from farming. In order to cope with this problem, the Federal Government has brought the various measures together in a programme to reduce ammonia emissions. These include the revision of the *TA Luft*, the draft ordinance on the prevention of summer smog, acidification and discharges of nutrients and the handbook "*Ammoniak-Emissionen in der Landwirtschaft mindern – Gute fachliche Praxis*" (Reducing ammonia emissions in farming – good professional practice) with concrete recommendations for action.

The *Düngemittelverordnung* (Fertiliser Ordinance) was amended in 2003 to protect soil and water from excessive discharges of nutrients and pollutants. A fundamental overhaul of the Fertiliser Ordinance will be completed in 2005. This will make an important contribution to achieving the goal set out in the National Strategy for Sustainability to reduce the nitrogen surplus to 80 kg/ha by 2010.

With the action programme "*Umweltverträglicher Pflanzenschutz*" (Environmentally friendly plant protection), the Federal Government is pursuing a strategy of reducing as far as possible any risks associated with the use of pesticides. Elements of the action programme are included in the more comprehensive "*Reduktionsprogramm Chemischer Pflanzenschutz*" (Programme to Reduce Chemical Pest Management), which was drawn up in cooperation with the social groups of society concerned.

cc) Genetic resources for food, farming and forests

Conservation of biological diversity forms the core element of sustainable development. As the basis for the diversity of food, but also in the interests of facilitating future adjustments to different needs and environmental conditions, the diversity

of genetic resources must be preserved as a component of biological diversity. Further losses, e.g. of useful plant and animal species, must be countered. Efficient production of need-based, high-performance renewable resources and renewable energy sources also requires diversity of the resource base.

Access to genetic resources and economically, ecologically and socially responsible use of traditional knowledge plays an important role in worldwide sustainable development and a just world order. In this way, agricultural systems come about that preserve as many components of the biosphere as possible and use them actively within the framework of sustainability. Focussing on conserving and using genetic resources for food, farming and forests, a national programme is being set up with specialist programmes for the areas of forest plants, agricultural and garden plants, farm animals, fish and micro-organisms. Within the framework of this programme, concrete measures have been agreed in cooperation with the *Länder* and participating municipalities. Advisory and coordination bodies have been employed to implement the specialist programmes. In particular, they will carry out all necessary measures set priorities and analyse funding opportunities. The Advisory Committee for Genetic Resources was established to advise the Federal Minister for Consumer Protection, Food and Agriculture on fundamental and general issues.

dd) Forests

The Strategy for Sustainability presents the role of the *Nationales Waldprogramm* (National Forest Programme) in achieving social consensus on the treatment of forests. The 15th Round Table in July 2003 marked the end the second phase – 2001 to 2003 – of this National Forest Programme. Various associations from the forestry, hunting, environmental, wood and social sector participated, as well as *Länder*, federal institutions and other federal departments. The discussions centred on the subjects of forests and international cooperation/international trade, biodiversity, forest cultivation and nature protection, the choice of instruments for forestry policy, the importance of the forestry and wood industry and the new role of the forests.

The results offer an up-to-date and comprehensive impression of socio-political opinion on the state of forests and the forestry and wood industry in Germany (English language homepage of the National Forest Programme: <http://www.nwp-online.de/index1e.htm>). 182 recommendations were drawn up. These are directed at the Federal Government, *Länder*, municipalities associations. Many of the recommendations support measures that the Federal Government has already introduced, e.g. the amendment of the federal laws on forestry (*Bundeswaldgesetz*) and hunting (*Bundesjagdgesetz*), the project *Charta für Holz* (Charta for wood), the procurement of wood and wood products using the FSC standard as a benchmark or promotion of organic forestry cultivation; also, however, a number of new directions were set that are worth assessing individually.

The concept of the National Forest Programmes, which resulted from international negotiations on the management of forests is designed as a continuous process of dialogue. As regards the implementation of the recommendations, those involved have agreed on a simplified monitoring procedure as well as another round table to be held in 2004.

In addition, the framework plan 2003 of the Joint Task “*Verbesserung der Agrarstruktur und des Küstenschutzes*” (Improvement of the structure of agriculture and coastal protection) includes a new principle of funding to increase the stability of forests. In this way, sustainable, organic and ecologically oriented forest cultivation is reinforced.

In April 2004, within the framework of the programme Research for Sustainability the Federal Government made € 20 million available to create new stimulus for research into organic forestry and improving the forest-wood value added chain in the new area of funding “*Nachhaltige Waldwirtschaft*” (Sustainable Forestry). The strategic aim of funding is to provide practice-based sustainability strategies in order to trigger concrete changes in trade and industry and society for the benefit of sustainable development. The research results should be used for educational purposes to present the model of sustainability in terms of forests and wood in a comprehensible and clear fashion.

e) Outlook

Today's concern is to create the conditions for sustainable farming in Europe. In view of the varying requirements of product quality, animal and environmental protection worldwide, clear regulations are needed, e.g. on labelling of products. Agricultural policy is only future-oriented, if it is able to guarantee the higher standards necessary for sustainable farming and no longer controls prices and production amounts. In future, public funding must concentrate even more on promoting socially desirable agricultural services for which there is no market, as well as on social security. The proposals of the Commission for the Further Development of Policy for Rural Areas support this approach, regardless of their method of funding. Farming of the future must be regarded more as one component of an integrated policy for rural areas that guarantees a diversified economic structure, high quality of life, natural habitats and resources.

The basic regulatory framework for farming as a whole – for ecological and conventional businesses – creates more incentives for gearing business more strongly towards the criteria of sustainability, above and beyond statutory guidelines.

The change in the basic orientation of agricultural policy – the agricultural reform, which is currently being implemented in Europe and in Germany – is therefore essential for the future of our farming and forestry.

2. Consumer policy in the interests of sustainable development

With their buying behaviour, consumers are very influential. It is they who demand products and services that are manufactured or rendered in a sustainable manner.

Modern consumer policy is therefore increasingly geared towards strengthening way demand as a tool to shape and control the market. In this way, sustainable consumption patterns can be developed and established and the interests and ideas

of the consumers can gain recognition. The main task of consumer policy – in interplay with environmental, economic and development policy – is to create the basic conditions for self-determined and responsible consumer behaviour.

The Federal Government is aiming to use information, explanations and education to reinforce the powers of the consumers and enable them to take into account aspects of sustainability when making decisions as consumers.

In addition, market transparency and clear, comprehensible information are necessary conditions for consumers to become market-oriented. This facilitates responsible and competent decisions and makes freedom of choice – between products and suppliers, but also as regards the way in which environmentally friendly, socially acceptable or economically fair products and services are manufactured or traded – an opportunity for trade and industry and the consumer. By making conscious decisions, consumers are able to actively control markets and make a success of sustainable consumer habits, production methods and innovation.

a) Stronger impact and new structures for consumer policy and food safety

The Federal Government sees consumer protection as a common task of all areas of politics, as consumer confidence is an important prerequisite for creating demand for the products and services that are on offer.

aa) Efficient organisation of health-related consumer protection

The Act on the reorganisation of health-related consumer protection completed the separation of risk assessment and risk management. On 1 November 2002, in view of these changes, the **Federal Institute for Risk Assessment (BfR)** and the **Federal Office of Consumer Protection and Food Safety (BVL)** were founded. The federal institute with legal capacity as a public sector agency is now responsible for conducting risk assessments in the area of health-related consumer protection and food safety. Its tasks include improved risk communication. The federal office is responsible for risk management tasks. With this new structure, consumer protection at national level has been organised in line with European and international challenges.

bb) New European legal framework for food safety

Through implementation of the Regulation 178/2002/EC laying down the general principles and requirements of food law, which came into force with certain transitional periods in February 2002, a far-reaching legal framework has been created for the entire food chain from “field and barn to the consumer’s table”. In future, this will represent the basis for the EU and Member States’ activities in the food sector. With it, the necessary conditions have been created for the inclusion of all links of the food chain as called for in the National Strategy for Sustainability.

The following should be highlighted in particular:

- the anchoring of the principle of prevention,
- the traceability of food and animal feed,
- the establishment of the European Food Safety Authority, which is responsible for risk assessment at EU level, and
- the anchoring of a rapid warning system for food and animal feed.

In alignment with the new regulations, the Federal Government has presented a Code on food and animal feed (*Lebensmittel- und Futtermittelgesetzbuch*). To date, eleven acts have been brought together here to form a single law regulating food and animal feed. For the first time, animal feed is understood as the first link in the food production chain and is incorporated into it in a logical manner. In future, therefore, the safety of food and animal feed will be regulated with universal standards by one law.

The establishment of the European Food Safety Authority represents a central element, especially in winning back the confidence of consumers in the independence of the scientific bodies of the EU that was lost as a result of the BSE crisis.

b) Safety and freedom of choice with regard to genetically modified food

“Protecting the consumer and guaranteeing freedom of choice” is the guiding principle of the National Strategy for Sustainability on genetic engineering in farming. The two European Guidelines on this subject that have been in force since April 2004 represent an important step for consumers and farmers. They regulate, on the one hand, the approval of genetically modified food and animal feed, and on the other hand, the traceability and labelling of genetically modified organisms as well as the traceability of food and animal feed made from genetically modified organisms.

In order to guarantee a high level of protection for the health of people and animals as well as the environment, European law is planning to make it obligatory for all genetically modified organisms to be approved before being admitted to the market. The general public will be involved in the approval procedure. Authorisations will only be granted with a time limit of ten years; approved genetically modified organisms will be entered into a community register.

The new regulations also provide for comprehensive, clear and transparent labelling of genetically modified food and animal feed from now on, thus closing a previous gap in the regulatory framework. As of 18 April 2004, all food and animal feed that contains, consists of or was made from genetically modified organisms must be labelled. Regardless of whether genetically modified elements can be detected in the end product, products made from genetically modified organisms, e.g. vegetable oils, must also be labelled. The new labelling rules give consumers and farmers the opportunity to opt in favour of or against genetically modified products. Meat, eggs and milk from animals raised on genetically modified animal feed do not need to be labelled.

The new regulations stipulate labelling of products containing technically unavoidable or accidental traces of genetically modified elements, if such traces amount to more than 0.9%. They do not require labelling if the proportion of such traces falls below this threshold.

Also in 2003, the European Commission adopted a - non-compulsory - recommendation on measures of co-existence, i.e. sustainable juxtaposition of on the one hand, non-genetically engineered, conventional as well as organic farming, and on the other hand, farming employing genetic engineering. Concrete rules on co-existence can be drawn up at EU Member State level.

In February 2004, the Federal Government presented the draft amendment of the *Gentechnikgesetz* (Genetic Engineering Act), which is designed to implement the revised EU Deliberate Release Directive into German law. The bill aims to improve environmental and health protection, for example, by including the principle of prevention in the purpose of the law, by monitoring genetically modified organisms as well as by means of special regulations on ecologically sensitive areas. In addition, the Federal Government wants to guarantee co-existence between farming with and farming without genetic engineering in Germany and safeguard freedom of choice and transparency for consumers, the farming industry and food industry. To this end there is the obligation of those wishing to cultivate genetically modified plants to take the necessary preventive measures, a register with information about where such plants are to be cultivated, as well as clarifications on liability under civil law in case considerable damage is caused by the cultivation. The German *Bundestag* adopted in June 2004 those provisions that were not subject to approval by the German *Bundesrat*. In particular, these are regulations that concern co-existence. The remaining regulations will be brought together in a new draft bill.

Thresholds for the labelling of seeds containing technically unavoidable or accidental traces of genetically modified elements still need to be fixed at European level. These limits must be fixed at as low a level as possible so that the threshold of 0.9% for food and animal feed is certain to be maintained.

c) Healthy diet

Eating habits have changed significantly with changes to the living and working habits of people in industrial countries. It is true that the supply and quality of food in industrial countries is better than ever before; at the same time, however, more and more people are getting ill, because, in relation to their lifestyle, their diet is unbalanced and they exercise too little.

Of particular concern is the trend among children and young people. According to studies, 10-20% of all children and young people are overweight; 7-8% of children are adipose (obese). Children often take their excess weight with them into adulthood. If this trend continues, experts reckon that one in every two adults will be overweight in 40 years time. The World Health Organisation (WHO) is already talking about an adiposity epidemic.

A healthy diet – adapted to different basic conditions – is an important factor for people's health and is therefore an important factor for the sustainability of our society. In June 2004 the Federal Government underlined in a government statement the significance of a strategy for diet, physical activity and health in the context of the World Health Organisation (WHO).

Existing measures to provide information and explanations are aimed at promoting health-conscious lifestyles. Prevention, health promotion and the communication of knowledge about diets and food play an essential role. Examples of relevant measures are the campaigns "*Kinder leicht – besser Essen. Mehr bewegen*" (campaign for healthier diets and more exercise for children) and "*FIT KID: die Gesund-Essen-Aktion für Kitas*" (the healthy eating campaign for kindergartens), the mobile exhibition for schools "*Vollwertig essen und trinken mit Genuss*" about balanced eat-

ing and drinking being enjoyable, the model project “*Reform der Ernährung und Verbraucherziehung in allgemein bildenden Schulen*”(reforming diet and consumer education at school), as well as the campaign “*Fit im Alter – Gesund essen, besser leben*” about being fit in later years thanks to eating healthy and better living. The *Deutsches Forum Prävention und Gesundheitsförderung* (German Forum on Prevention and Health Promotion) stresses the value placed on the principle of prevention - among other things, through healthy eating.

With the objective of establishing healthy and sustainable ranges of food in community catering – which is becoming increasingly important –, the Federal Government is financing an advisory service to improve catering in all-day schools. Community catering is also incorporated into the programme “*Zukunft, Bildung und Betreuung*” (Future, Education and Care). Model projects within the framework of the federal programme Organic Farming also support community catering based on regional and organic products – and therefore in accordance with the aspects of diet relating to sustainability.

By founding a platform for diet and exercise, the Federal Government is creating an alliance of all social groups in order to work together towards a balanced diet and healthy lifestyle. In this way, it fulfils another requirement of the WHO, namely that of bringing all social groups together at one table.

d) Sustainable consumption

At the World Summit in Johannesburg 2002, a 10-year framework was adopted for the working programme on sustainable patterns of consumption and production. It forms the basis for regional, national and international processes. The Federal Government attaches great importance to it and is therefore taking the initiative both nationally and internationally.

More and more consumers are asserting their right to know where and under what conditions goods and services were produced and/or rendered. Promoting responsible consumption, which calls for **sustainability criteria** like adherence to minimum social standards, consideration of criteria of environmental and animal welfare in production, or information on origin, is an extensive task to be carried out by politics, trade and industry and society. This is why, within the framework of the National Strategy for Sustainability, the Federal Government is also dedicated to promoting sustainable consumption.

With its “*Aktionsplan Verbraucherschutz*” (**Action Plan for Consumer Protection**), which was adopted in 2003, the Federal Government’s express intention is to support consumers and suppliers equally. Consumers are to be supported in making buying decisions based more heavily on the criteria of sustainability.

A national **process of dialogue on sustainable patterns of consumption and production** was commenced with a conference held in February 2004. More events on a selection of main themes – e.g. integrated product policy, life cycle analysis, environmental symbols, fair trade – are to follow. This will enable the inclusion of all interest groups. The initiative’s main tasks are to develop new programmes and

further develop existing programmes at national level, as well as introduce German activities at European and UN level.

**aa) The project “Nachhaltiger Warenkorb”
(Sustainable Shopping Basket)**

All of us can contribute to sustainable development in our everyday lives, for example, by choosing products that correspond with certain criteria of sustainability when shopping. In order to do this, however, information is required on what characterises a sustainable product. The German Council for Sustainable Development’s project “*Nachhaltiger Warenkorb*” (Sustainable Shopping Basket) provides a good basis for this.

Building upon this, the Federal Government will carry out a participant-based campaign to provide information and explanations on sustainable consumption. They should convey concrete, practical alternatives for an environmentally and socially fair style of consumption. Local, regional and national participants are to be linked under the auspices of the campaign. By involving disseminators, social groups as well as information aimed at specific target groups, awareness of the positive aspects of sustainable consumer behaviour can be achieved. In order for sustainable lifestyles to become established, the various living conditions of consumers need to be taken into account.

bb) Fair trade

Sustainable consumption cannot be limited to Germany or even just one region. The establishment of sustainable patterns of consumption and production in industrial and developing countries is significant for environmental as well as development policy and represents a vital element of the Federal Government’s Strategy for Sustainability.

Fair trade forms an essential element in this context. It is currently a niche market offering special advantages for producers and supporting sustainable development. In particular, fair trade improves the social conditions of smallholders and farm labourers. It is therefore an important element of efforts to halve poverty by 2015.

In order to ensure that consumers and trade in industrial countries become aware of their common responsibility for global sustainable development, consumer policy must be implemented actively in the context of sustainable development; great importance is attached to information and product labelling here.

The Federal Government is planning to push ahead with fair trade in Germany. Currently it is stagnating in Germany, while in other countries considerable growth has been achieved over the last few years, encouraged by broad information campaigns. Through exploiting sales potential in conventional trade it is possible to reach a broader spectrum of consumers. The Federal Government’s activities focus on a **communication campaign** directed – in close cooperation with those involved in trade – at the end users and at disseminators. At the same time, mainly by those involved in fair trade, the range of products needs to be expanded, reliability of sup-

ply and punctual deliveries need to be guaranteed, and certification systems need to be standardised on international level, made more efficient and need to be secured.

Through a series of projects in Germany and developing countries, the Federal Government is promoting growth in the market share of products from developing countries that are produced organically and traded fairly. In addition to activities in the developing countries themselves and the above-mentioned information campaign, there is support for the development of standards, market launches and quality seals such as the new international Fair Trade/TransFair seal on the German market. This seal will serve as a common standard for the appearance of fair trade of the various international fair trade seal initiatives. The website www.oeko-fair.de (in German only) offers consumers a comprehensive and transparent overview of organic and fair trade initiatives for the first time. Furthermore, in order to improve supply, projects to improve certification of fair trade and organic products are being planned in cooperation with the UN Food and Agriculture Organization (FAO).

The Federal Government is currently drawing up a general strategy to promote fair trade in Germany, covering questions of quality and the range of products on offer, through consumer information measures.

cc) Public-sector procurement

In this context, a public-sector procurement policy that is based on criteria of sustainability is growing in importance. Public contracts and procurement have a model function in the implementation of sustainable patterns of consumption and production. Within the framework of the amendment of EU regulations concerning the award of public-sector contracts, the Federal Government has made it possible for significantly greater account to be taken of environmental issues in public procurement in future.

3. The pilot project “Regionen aktiv – Land gestaltet Zukunft” (Regions in action – the countryside shapes the future)

With the initiative “*Regionen aktiv – Land gestaltet Zukunft*”, which was launched in September 2001, model regions will be supported in their work to implement strategies of integrated rural development. The basic idea behind the supporting programme “*Regionen aktiv*” (Regions in action) is that people in the model regions can take their future into their own hands by working in partnership and independently. The supporting programme offers only basic guidelines; the regions themselves define the route to achieving the goal. Farming and forestry, craft professions, nature protection, tourism, educational institutions, public authorities and regional trade and industry form partnerships and work together on visions for the future and a development strategy tailored to the strengths and weaknesses of the region.

a) Main areas of focus for activities in the model regions

The various bodies and working groups in all 18 model regions have meanwhile been coordinated with one another. The decision-making processes and project

selection systems have been set up and are functioning. Activities in the model regions are now focussed on implementing the regional development strategies through suitable projects.

More than 400 projects have been approved in the model regions to date. The main themes dealt with by these projects are regional marketing, followed by promotion of regional rural tourism.

b) The halftime assessment – learning from the model projects

In January 2004, the regions presented their halftime reports, which are intended to show how and whether the goals set by the region itself were achieved and where there is still need for action. The reports form the basis of the halftime assessment. Their aim is to assess implementation processes in the 18 model regions and record the level of target achievement.

Conclusions on the further implementation of the competition and on the future formulation of development policy, for example within the framework of the Joint Task “Verbesserung der Agrarstruktur und des Küstenschutzes” (Improvement of the structure of agriculture and coastal protection), are drawn from the results of the halftime assessment.

Here the halftime assessment is understood as an instrument to promote learning processes at all levels concerned. In addition, it will be used to make results and processes known in the regions and to the general public and experts.

The halftime analysis of “Regions in Action” is mainly about the self-assessment of the 18 model regions. In contrast to so-called “external assessment”, the regions are significantly integrated into the evaluation process.

c) Financing

The budget for 2004 estimates funds of € 15 million for “Regions in Action”. By 2005, the pilot project “Regions in Action” will receive total funding of at least € 45.5 million.

d) Monitoring model regions

The model regions are monitored intensively by the Federal Minister for Consumer Protection, Food and Agriculture, the project’s secretariat, and accompanying scientific research. Questions and problems of interest to all model regions are dealt with openly and intensively in an online forum for regional participants.

IV. Taking global responsibility

A policy dedicated to the model of sustainable development focusses on the future: taking decisions that will give our children and their future offspring at least the same opportunities that we demand for ourselves. Yet, it also simultaneously casts its eye beyond its own domestic borders: for, given the extent of today's global network, sustainable development will only be achieved by applying a global perspective – in terms of both thought and deed. The life prospects of people in developing countries, and above all the battle against poverty and its consequences, are an essential element of such a policy. Consequently, and precisely against this backdrop, the National Strategy for Sustainability and the Federal Government's Action Programme 2015 to combat poverty go hand in hand.

All states must bear in mind the ecological burden they place on our planet Earth in the course of their economic and social development. The developed nations bear particular responsibility for ensuring that the limits of its capacity to bear such burden are not exceeded even further than is already the case today; for the consequences of non-sustainable use of resources within industrial countries are not confined to national borders. A fact that is apparent, for example, in the global deforestation of the rain forests, the fall in biodiversity, over-fishing of the oceans and increasing drought and flooding as a result of climate change. It is the developing countries in particular that are especially affected by the consequences of such occurrences.

However, in the face of the events of 11 September 2001, sustainable development is in danger of slipping from the central focus of international politics; a fact that could have incalculable consequences in terms of the safety and security of our planet. Only sustainable development will lead to the legitimate fairness required to tackle both traditional and new threats to global security at their root.

At the World Summit on Sustainable Development 2002 in Johannesburg – ten years after the Rio Earth Summit – the international community agreed on concrete goals to implement sustainable development, working in close alliance with civil society and the private sector. The European Union – and with it the Federal Government – took its seat in Johannesburg with an ambitious agenda and succeeded in making a decisive contribution to the outcome of the summit, despite in no means being able to push through all of their forward-looking proposals. Johannesburg demonstrated that during difficult economic times sustainable development represents a particular challenge in terms of politics. Yet, despite the difficult global conditions the Johannesburg Summit succeeded in strengthening the concept for multilateral global cooperation. Member States of the European Union also demonstrated their determination to push on ahead of others by means of implementation-oriented initiatives in individual areas. This applies in particular to the promotion of renewable energies, which are being championed strongly by a group of trailblazing states – first and foremost the European Union.

Goals agreed during the Johannesburg Summit, which in part include specific dates for implementation, re-address tasks formulated by Agenda 21 of the Rio Summit and the UN Millennium Declaration. Included are priorities for the Federal Government's international sustainability policy involving, amongst others, a cli-

mate-friendly and sustainable energy supply, overcoming the global water crisis, the sustainable organisation of world trade, provision of disaster aid and the promotion of corporate responsibility. These are the aspects upon which the Federal Government intends to place particular focus throughout the coming years. Consequently, without detracting from the significance of other subjects, they shall be addressed in detail below.

Ensuring that globalisation leads to sustainable development in all countries requires a coherent, global organisational framework with demanding social and ecological standards and functioning state and international institutions. Yet, it is not only states and international organisations which are called upon to advance sustainable development – such development also depends on a far greater inclusion and acceptance of responsibility by non-governmental protagonists in terms of the structure and implementation of the global, socio-ecological organisational framework. To facilitate such a contribution by civil society participants in particular, increased training with respect to sustainable development is needed. The United Nations have called for commensurate action during the next decade (2005–2014), and Germany will answer this call by organising its own programme of action. This envisages the formation of alliances for sustainable development in cooperation with other states, private economy and civil society, the necessary requirement being a forward-thinking political approach.

The greatest challenges to realising sustainable development arise in Africa. This continent is characterised by the extreme hardship and poverty of millions as it is by new, responsible political approaches. As such, initiatives undertaken by the New Partnership for Africa's Development (NEPAD) are presented here as an example.

Example of partnership with Africa: The NEPAD initiative

The New Partnership for Africa's Development (NEPAD) has generated particular potential for resolving the problems of this continent. NEPAD is an innovative Africa-wide programme, whose aim is to overcome poverty and lift Africa from the political sidelines. The NEPAD framework document emphasises the collective, independent responsibility of Africa, both in terms of past mistakes as well as with respect to its future development opportunities. Africa wishes to actively participate in shaping the global framework conditions and, consequently, political reforms are to be realised through the so-called African Peer Review Mechanism. The G8 began dialogue with NEPAD back in 2001 and, in the light of NEPAD, concluded a strategic framework for the long-term realignment of cooperation with Africa in 2002 by means of the G8 Africa Action Plan.

The Federal Government is extremely active in its participation in the G8-NEPAD initiative, both contextually and financially. Throughout 2002/2003, Germany sponsored projects in Africa totalling approximately € 1,000 million, around 10% of which (€ 110 million) is devoted to supporting Africa's own efforts in implementing NEPAD objectives. Of particular significance is the action plan – developed together with the African delegation and concluded at the G8 summit in Evian – to promote Africa's independent conflict management and crisis intervention capabilities. The aim of the plan is to enable Africa to overcome violent conflicts more effectively and implement peacekeeping measures using its own means by 2010. In effect, the plan

was drawn up under German supervision within the so-called Berlin process. The aim is to provide effective support – focussed on transparent pilot projects – in developing the security policy organs of the African Union, regional organisations and the African states. The long-term aim is to support Africa with the mobilisation and long-term deployment on peacekeeping missions of African task forces, as envisaged within the framework of the African Union.

1. Sustainable energy for development

a) Current situation

Approximately 2,000 million people, a third of the world's population, have no or insufficient access to modern energy supplies. As such, for many countries an adequate energy supply represents an important key to economic and social development. In addition, global greenhouse gas emissions must be halved by the middle of this century if climate change and all its perilous effects, such as a rise in sea levels, a shift in climate zones and the increase of drought and flooding, are to be warded off. Consequently, sustainable energy supplies through the development of renewable energies, as well as increased energy efficiency and conservation, in both the industrial and developing nations is one of the foremost objectives of international environmental policy and development cooperation. The prime responsibility for developing efficient technologies and renewable energies as well as facilitating their market feasibility lies with the industrial nations. Nonetheless, the support of developing countries – where the potential for exploiting renewable energies, efficient energy consumption and energy conservation is extremely high – can be gained to assist with this global task. Since energy systems minimise the threat of conflicts over limited fossil resources, they provide an important contribution to world peace and security.

b) Renewable energies in developing countries – a “win-win” strategy

Utilisation of renewable energies will play a key role in ensuring provision of the foreseeable, additional energy requirements of newly industrialised and developing countries. The increasing energy needs of these countries cannot be met solely by traditional energy sources, such as coal, gas or oil, which contribute considerably to climate change on account of their high CO₂ emissions. By contrast, renewable energies are “climate neutral”, that is, they do not emit CO₂. Three points of consideration demonstrate that this represents a “win-win” strategy for developing countries:

- In many developing countries the natural potential for renewable energies is superior to that in industrialised nations – particularly solar radiation in dry zones, wind potential on the continental coasts and the geothermal potential of, for example, the East African Rift Valley.
- “Energy poverty” is typical in the remote villages and scattered settlements of developing countries. In areas where the construction of a power supply network or the operation of a diesel generator is uneconomical, utilisation of renewable energies can offer new perspectives for the rural population and, thus, provide an important contribution in the battle

against poverty. This applies particularly to women and young girls who are traditionally burdened with the time-consuming task of gathering firewood, which, in turn, seriously limits their access to educational measures.

– Finally, increased use of renewable energies is in the economic interests of many developing countries owing to the fact that the technologies exploit local – in part freely available – domestic energy resources, such as wind and sun, thereby reinforcing the security of their energy supply. This reduces the dependence upon imports of fossil fuels and susceptibility to pressures resulting from often highly unstable world market prices, which can represent a serious barrier to effective development for developing countries in particular. Means allocated for energy source imports are then released and can be redirected to development measures.

Tapping this potential and using the opportunity to contribute to combatting poverty and furthering development, while at the same time supporting global climate protection, is the task of the programme entitled “Sustainable Energy for Development”.

c) Federal Government activities

At the World Summit on Sustainable Development (WSSD) in Johannesburg, Chancellor Gerhard Schröder, announced details of the “Sustainable Energy for Development” programme. Within the scope of development cooperation, a total of € 1,000 million has been allocated to the programme for the period 2003 to 2007: € 500 million for renewable energies and € 500 million to increase energy efficiency. The aim is to assist partner countries in gaining improved access to environmentally friendly energies, combating poverty, as well as replacing climate-damaging and ecologically harmful forms of power generation with environmentally friendly alternatives.

Within the scope of the programme, concrete pilot projects using various renewable sources of energy have been implemented in several cooperation countries (e.g. wind parks, solar thermal power plants in the “sun belt”, photovoltaic energy supplies in decentralised plants, geothermal power plants as well as projects for the sustainable use of biomass energy and hydro-power). These projects should act as a “pilot” in terms of international support for renewable energies. The essential basic requirement within the respective developing country is that there is a willingness to create the framework conditions for securing long-term utilisation of renewable energies in that country.

Over and above this, the Federal Government is calling for a significant expansion of the role of renewable energies in the portfolios of international financial institutions, such as the World Bank, and is also making efforts to strengthen support with respect to the allocation of export credit guarantees.

With the hosting of the International Conference on Renewable Energies in Bonn in June 2004 – under the title “renewables 2004” – the drive for global expansion of renewable energies generated in Johannesburg was given additional impetus, and the need for comprehensive strategies for a global energy turnaround incorpo-

rating renewable energies highlighted. The official results of the conference encompass:

- The political declaration which details common goals and a vision for the greater role of renewable energies within a sustainable and efficient energy system, as well as agreements with respect to post-conference action. In particular, in order to strengthen international dialogue and cooperation for the expansion of renewable energies, agreement was reached to establish a global policy network made up of government representatives, international organisations, and private sector and civil society representatives.
- The international action programme which comprises around 200 voluntary activities and obligations by governments, international organisations, non-governmental organisations, industry and scientific institutions. These include ambitious renewable energy expansion targets from over 20 states, to be achieved in part by 2020, and financing commitments on the part of the World Bank and the Global Environment Facility (GEF). Chancellor Gerhard Schröder announced the setting up of a special facility of € 500 million for renewable energy and energy efficiency projects (in addition to funding committed to in Johannesburg).
- The policy recommendations offer the decision-makers a choice of strategies and options to further expand renewable energies on the basis of available experience and knowledge.

Examples of projects in the energy sector

Geothermics: In a number of countries with favourable natural conditions, the use of geothermal energy is today already making a significant contribution to the supply of more cost-effective, clean energy. Consequently, by last year, the largest geothermal power plant in Africa, Olkaria II (64 MW), located in the Kenyan region of the East African Rift Valley and sponsored by the German development cooperation, had already commenced operations. This process involves transforming hot steam from the earth into electrical energy with the use of steam turbines and generators. The German contribution to the total cost of € 145 million stood at € 13 million. The Federal Government also plans to participate in further geothermal energy plants in Kenya. Through the reliable, efficient and environmentally friendly provision of electrical energy, these power plants are an important prerequisite for the growth of trade and industry in Kenya.

In order to develop the use of geothermal energy and with the support of Germany and East African partners, the United Nations Environment Programme (UNEP) also initiated a regional geothermics development programme. The aim is to assist with financing instruments and consultation for the development of geothermal resources and, for example, minimise the risk of costly misdrilling. In the long-term, in addition to East Africa, the programme could also be extended to other regions with high geothermal potential (such as South and Middle America as well as

volcanic islands in the Pacific and Caribbean). The “Geothermics for Development” initiative is sponsored by the Federal Government to the tune of € 10 million.

Solarthermics: According to recommendations by the German Advisory Council on Global Change (WBGU) solar thermal power plants, which utilise mirror systems to enable concentrated solar light to be used, for example, to power conventional steam turbines, should contribute significantly to future global energy supplies. At the Kramer Junction solar power plant (California), the Federal Government sponsored a demonstration project to test and evaluate a European parabolic trough collector, a technology in which Germany is the world leader. This is an important milestone for the commercial application of these power plants, which – in line with the goal – should be brought into operation in many countries on the Earth’s sun-belt through pilot projects initiated in the wake of the “renewables 2004” conference.

Wind energy: Within the scope of German-Chinese development cooperation, wind parks have been constructed at five locations in China and have been connected to the national grid. The capacity of these installations amounts to around 10% of China’s overall wind power capacity with China placed orders with German companies totalling € 26.3 million for delivery of the wind power turbines. Particularly the southeast coastal area and northern China possess great potential for exploiting wind energy. In light of this, Chinese project partners are being supported in the drafting of a law to promote renewable energies: through the training of specialists, sector-policy consultancy and wind measurement, whereby positive experiences with respect to output devices gathered in Germany are able to be transferred. Another German supported project set up in China, the “Training and Research Centre for Wind Energy”, will also take up work during 2004.

2. Water – a precious resource under threat

a) Current situation

Supplying all peoples of the world with clean drinking water and sewage disposal is one of the primary challenges for international environmental and development policy. This challenge is all the greater given the increase in occurrence of crisis situations resulting from climate change, such as flooding and drought. Water is our most precious resource and is irreplaceable. The health of mankind and its opportunities for development depend on clean water and, as such, the provision of drinking water and sewage disposal are important elements in minimising poverty. Contaminated water is already the main cause of infectious disease today - from which over 5 million people die each year. Children in developing countries are particularly affected. Around a fifth of the human race has no access to clean drinking water today. 2,400 million people are without sufficient sanitary systems. Above and beyond this, sufficient and clean water supply is absolutely essential for maintaining ecosystems, animal and plant life and genetic diversity.

At the United Nations Millennium Summit and the World Summit in Johannesburg, the international community set out development goals relating to water

that are aimed at halving the number of people without access to essential drinking water supplies and provision of basic sanitary systems by 2015.

b) Federal Government activities

The outcome of the International Freshwater Conference in Bonn, Germany (2001) was a catalogue of primary requirements and recommended actions drafted by governments, industry and civil society. This catalogue formed the basis of the EU's position in Johannesburg, from which the Johannesburg action plan was subsequently developed. The recommended actions refer to questions of good governance fund raising, capacity development, research, technology transfer, and gender equality - given that women play a central role in the collection, management and safe supply of water. In this respect, special importance was attached to the need for integrated water resource management.

Water and basic sanitary measures are one of the largest areas of investment for German development cooperation, with around € 350 million devoted to consultation and investment promotion each year. As such, Germany ranks in second place worldwide, behind Japan.

Achievement of development goals for the water sector requires the current volume of annual global investment to be doubled. The public sector, which holds around 90% of worldwide water services, will not be able to bear this burden alone. Thus, within the scope of the ongoing responsibility of the public sector to provide safe water supplies and sewage disposal, the issue must be addressed in dialogue with those affected in order to work out solutions that are tailored to local needs and which incorporate the private sector, including that in the local area. This was also demonstrated by the multi-stakeholder dialogue held in Berlin in June 2004. The participating representatives from non-governmental organisations, private industry and governments succeeded in agreeing upon a target understanding as well as further initiatives, whereby the role of the local private sector should be given particular consideration. Representatives from abroad were particularly interested in the experiences of German water suppliers and sewage disposal providers regarding the close cooperation with municipalities. The Federal Government will be inviting delegates to a workshop entitled "Water is life – opportunities and responsibility of the German water economy", which is scheduled to take place in December 2004.

In Johannesburg 2002, the European Union presented its own "Water for Life" initiative, which aims to enable more efficient application of funding by individual Member States in the international water sector. Furthermore, the intention is to facilitate use of current international processes for water sector development goals through cooperation between the state, private economy and civil-society groups. This includes, for example, the work of the UN Commission for Sustainable Development, which will be addressing the issues of water, sanitation and settlement structure in its 2004/2005 work schedule.

Germany has specifically taken up the theme of "cross-border watercourse management". Two thirds of the Earth's largest rivers flow through several countries, with more than 250 rivers crossing national borders. For a number of years and together with the World Bank, the Federal Government has been hosting the interna-

tionally renowned “Petersberg Round Tables” to promote cross-border cooperation in river regions. As of 2004, further events with an eye on cooperation are planned in the Balkans and Africa. Water can serve as a catalyst for international cooperation and peace. Simultaneously, rivers are the lifeblood for the economic development of entire regions. River region cooperation based on trust, as created with the European Water Framework Directive, represents a landmark model for conflict-avoiding regional cooperation.

The Federal Government has also taken up the theme of “cross-border watercourse management” with respect to research. Since 2000, German research institutions have been assisting with monitoring and evaluating the quantity and quality of water resources in the catchment area of major rivers in North and West Africa and the Middle East; additionally establishing integrated water resource management and effective water utilisation systems, with around € 30 million allocated to the projects up to 2006. At the same time, the Federal Government is financing more effective coordination between the various international research activities in this area.

On a global level, the question of water supply and sewage disposal as well as cross-border water management plays an important role. As such, the German G8-Africa delegation began an initiative within the scope of the G8 Africa action plan to network African regional river commissions. Moreover, Germany is committed to implementing the recommendations of the World Commission on Dams (WCD). Criteria for the socially and ecologically sustainable construction of dam projects were developed through the recommendations of the World Commission on Dams published in 2000. German development cooperation work therefore supports countries in Southern Africa (SADC) in the utilisation and application of WCD recommendations at national level, particularly with respect to participation and incorporation of the ecological and social criteria.

Examples of projects in the water sector

The Limpopo River runs through **South Africa, Zimbabwe, Mozambique and Botswana** and represents an important water resource for all four states. Throughout recent years the problems have heightened. Flooding and drought, deterioration in water quality and the drop in the water table have drastically affected the lives of people living in the rim nations. Germany promoted cooperative water utilisation through trust-creating measures, legal and institutional consultation and the training of specialist personnel. The rim nations' technical and legal committees were also supported in formulating a set of agreements for the establishment of a cross-border regional river commission. These measures brought positive results: the Limpopo River Basin Commission (LIMCOM) was formally set up in November 2003. All the states bordering the Limpopo River are members of the commission and, from this point on, have used this international river in cooperation to achieve sustainable utilisation.

Similar cooperation projects exist in the catchment areas of the **Dnestr** and **Neman** rivers, which run through settlements in **Romania, Moldavia, Belarusia, Russia** and the **Ukraine**. Moreover, since 2003, a cross-border model initiative for hazardous incident prevention and rational water management has been developed to maintain a sustainable existence in the **river catchment area of the Kura region in Southern Caucasus**. The Kura is immensely significant for water supply to the populations of Armenia, Georgia and Azerbaijan. By gradually improving the water condition, the supply of safe drinking water to up to 1 million people in the region can be assured, thereby making a significant contribution to achieving WSSD targets.

These cross-border cooperation projects strengthen trust between the participating states and, thus, contribute to easing tensions in existing conflicts and avoiding future conflicts.

To improve the institutional conditions for solving water problems in newly industrialised and developing countries, the Federal Government encourages the development of domestic capabilities in the states in question. Three years ago the Federal Government set up the grant programme “International Postgraduate Studies in Water Technologies (IPSWaT)”. This programme awards scholarships for masters and doctorate studies to specially qualified up-and-coming German and foreign scientists (to date 70 scholarships have been awarded to recipients from 29 countries), who study for degrees relating to internationally oriented professional water management at seven German universities.

3. Sustainable world trade

a) Current situation

The further opening of markets, especially for developing countries, and observation of ecological and social structures in the organisation of the international system of trade improve the chances of achieving globally sustainable development. Global trade and cross-border investment count amongst the most important prerequisites for wealth, growth and employment in all countries. In Germany, the export of goods and services represents an essential economic pillar. However, the wealth-creating character of global trade not only offers opportunities for industrialised nations, but also offers opportunities to poorer countries in particular.

More than three quarters of the members of the World Trade Organisation (WTO) are developing countries, many of which are amongst the least developed countries (LDC) in the world. The new round of WTO negotiations, the so-called Doha Round, which is supported by the Federal Government, is above all striving to achieve better integration of developing countries into the world economy. Similarly, at the 11th United Nations Conference on Trade and Development (UNCTAD) held from 13 to 18 June 2004 in Sao Paulo, Brazil, the concerns of developing countries were placed in the foreground – particularly the improvement of their foreign trade competence and the development of South-South trade. The State of Food Insecurity in the World 2003 published by the United Nations Food and Agriculture Organization (FAO) reports that the overall number of people suffering from hunger worldwide has risen

again and now stands at 842 million, 798 million of whom are in developing countries. Consequently, fair trade – already an important prerequisite to creating income for individuals in developing countries – has gained yet greater significance as an instrument in the fight against hunger.

In addition to strong development policy aspects, the WTO Doha Ministerial Declaration also includes all the elements of sustainability. Thus, amongst other things, environmentally related issues will be negotiated for the first time. This is an important step on the road to sustainable organisation of the globalisation process. Alongside improving the global framework for agriculture, agricultural negotiations are similarly directed at strengthening agriculture's contribution to sustainable development.

The 5th WTO Ministerial Conference in September 2003 in Cancun concluded without result due to conflicts of interest. Nonetheless, in July 2004 the WTO General Council succeeded in agreeing a negotiation framework for the continuation of the development round: the so-called July Package deals with the foundations for further negotiations in the areas of agriculture, market access for industrial goods, services, special and differentiated treatment of developing countries, and the easing of worldwide trade. The Federal Government supported the embodiment of the particular needs of developing countries in this mandate. Amongst other things, these include the abolition of agricultural export subsidies; the reduction of trade-distorting agricultural subsidies; a priority-target solution for problems with respect to cotton subsidies; as well as special and differentiated treatment of developing countries with respect to the implementation of obligations to reduce duties and subsidies. In this way, cross-border trade can be facilitated and encouraged. OECD country studies on the modernisation of developing countries' customs systems highlight the improvements and successes that can be achieved in this area, notwithstanding a difficult initial position.

With respect to further negotiations it is important that, alongside the European Union, all other WTO members also demonstrate flexibility and a willingness to make concessions – for only by doing so can the success of this round be secured.

b) Federal Government activities

The Federal Government takes the task of the Doha Round very seriously. The objective is for developing countries and companies domiciled in these states to be able to benefit more comprehensively from international trade and to improve their actual market access opportunities – including amongst themselves within the scope of the important South-South trade. An important signal was the agreement reached in August 2003 by the WTO Council regarding medicines for combating serious illnesses. On this basis, developing countries without any pharmaceutical capacity to manufacture medicines will, in future, be able to import cheaper medicines (so-called generic drugs) from other developing countries.

Decisive with respect to the July 2004 agreement and for the continuation of the Doha Round was the proposal put forward by the EU and expressly supported by the Federal Government to agree a cessation of all types of agricultural export subsi-

dies. This refers to export subsidies, export credits, exports by state trade enterprises and food aid for market relief. These subsidies are particularly trade distorting and, above all, disrupt markets in developing countries.

However, the EU and the Federal Government are also very involved outside the Doha agenda. As such, the EU created the trade initiative entitled "Everything but arms" in order to increase application of the effects of multilateral trade liberalisation for the least developed countries. Through this initiative the 50 "poorest of the poor" countries of the world gain more or less unlimited access – both in terms of quantity and tariffs – to the EU market. This includes agricultural products; time limited transition regulations only apply for sugar, rice and bananas. Furthermore, in 1994 (amended 2003) the EU introduced a Generalised System of Preferences (GSP), which is effective until 2005 and facilitates improved access to the common market for goods from practically all developing countries by means of preferential customs provisions. As an incentive, additional preferential provisions are granted for compliance with fundamental labour standards and environmental standards. To support efforts to combat the cultivation of narcotics, the Central American states and Andean countries are also granted full exemption from duty for a multitude of goods. This is to encourage the expansion of legal and profitable goods production as an alternative cultivation method by opening potential sales opportunities on the European market. Furthermore, the EU traditionally grants 77 states throughout Africa, the Caribbean and Pacific region (so-called ACP states) preferential access to the EU agricultural markets within the framework of the ACP-EU Agreement. It is intended that this classical preference system be reorganised into more comprehensive regional economic partnerships by 2008 for the purpose of achieving greater integration of developing nations. In this respect, the Federal Government will also be championing sustainability targets in regional agreements.

Global responsibility is also directed at consumers and trade. Through selection of product ranges and conscious purchasing decisions, and with corresponding market transparency and reliable information, traders and consumers can meet this responsibility. Consequently, with respect to the areas of production and certification, the Federal Government supports a comprehensive information campaign for so-called "fair trade", which began in November 2003.

The Federal Government also has high hopes for improved trading conditions for the German economy as a result of targeted liberalisation. In the interests of jobs and wealth creation, the opportunities presented by globalisation must be taken on board and access to third markets for German companies expanded. In addition, we need to assert ourselves as a business location vis-à-vis suppliers, products and services from other states. Abroad, German companies are still confronted with numerous barriers. Foreign investment is hampered by the considerable limitations and legal uncertainty which exist locally. As a consequence, the Federal Government is increasing efforts to create improved market conditions and more stable and transparent framework conditions for investors.

Integration of developing countries in world agricultural trade

Two thirds of the poor live in rural regions. Thus, the improvement of market access for agricultural products is of particular concern for the developing coun-

tries. Agricultural trade – often a first step on the road to economic development – must be organised through differentiated trade regulations. Therefore, the Federal Government supports the improved integration of developing countries into world agricultural markets, amongst other things, through the removal of trade barriers and market-distorting subsidies in the industrialised nations. In line with the creation of sustainable production methods in developing countries, an important contribution could be made in terms of ensuring basic supplies for the local population and avoiding, for the most part, poverty-induced environmental damage.

The Luxemburg resolutions on EU agricultural reform are an important paradigm turnaround – moving away from trade-distorting subsidies and giving a clear signal for extensive and environmentally friendly agricultural production in Europe. They contribute to fairer world trade relations and the WTO negotiations must secure this route to achieving sustainable agriculture in industrialised and developing countries. At the same time, the possibilities for so-called “green box” measures provide room for manoeuvre to develop the ecological and conservational standards desired by society. Creation of momentum for environmentally friendly agricultural production and the reduction of incentives for ecologically harmful production methods represent a fundamental contribution to sustainable development. Under the current WTO negotiations, regulations for special treatment for the developing countries and recognition of specific products aim to ensure that consideration is given to safeguarding food supplies and developing rural areas under the various different conditions in the developing countries. In this respect, the Federal Government also supports implementation of the “Right to Food” guidelines, in whose development it also plays a considerable role. These guidelines can go a long way to ensuring that the advantage of increasing trade can also be to the benefit of endangered groups in the poor countries of the world.

A Federal Government workshop scheduled for autumn 2004 entitled “Policies against Hunger III: Liberalisation of Agricultural Trade – a Solution?” is aimed at determining the links between trade liberalisation and safeguarding the food supply, in addition to discussing suitable instruments within the scope of the special and differentiated treatment of developing countries in order to support the ongoing WTO process.

Fair environmental and social structuring of world trade

That environmental issues are being discussed for the first time in a WTO round of negotiations is decisively the result of efforts made by Germany and the EU. The WTO has undertaken to achieve a balance within the world trade system between further liberalisation of regulations on the one hand, and its orientation towards sustainability and, in particular, environmental protection on the other. Environment-related negotiations aim to facilitate mutual support between environmental protection and the international trade system. In order to achieve this, the Federal Government is, amongst other things, pushing for recognition of parity between multilateral environmental agreements and WTO regulations. Furthermore, through the increasing openness of markets for environmental goods and services, synergies should be created between environmental protection and trade. The transfer of knowledge and technology associated with this promises to produce win-win situations for both developing and industrialised nations. Products manufactured using environmentally friendly and resource protecting/winning methods

should be encompassed in the removal of import restrictions, whereby an important factor in implementing this goal is the compatibility of environment-related labels with WTO rules. In the WTO negotiations regarding the removal of subsidies, the Federal Government is striving to reduce those subsidies that are most trade-distorting and ecologically harmful.

In addition to an environmentally just organisation of trade, the Federal Government is also pushing for a strengthening of the social aspects of trade. The Doha Ministerial Declaration recognises the importance of fundamental international labour standards and draws attention to the work of the World Commission of the International Labour Organization (ILO) on the social aspects of globalisation, whose concluding report was presented to the public on 24 February 2004. An important requirement called for by the World Commission is the networking of major protagonists such as the ILO, the WTO and the Bretton Woods Institutions through the establishment of a so-called "Globalisation Policy Forum". This aims to strengthen coherence between multilateral organisations with respect to economic and social policy. Nonetheless, particularly in developing countries, considerable reservations still remain regarding active participation by the WTO in international dialogue concerning these questions.

Example project on WTO membership

The subject of WTO membership lends itself to exemplary demonstration of the opportunities and risks for developing countries in terms of integration into the world economy. Mongolia became a member of the World Trade Organisation (WTO) in January 1997 and undertook to comply with WTO agreements and additional concrete steps for liberalisation. Within the scope of a technical cooperation project, the Mongolian government and other institutions were supported in implementing WTO agreements and obligations into the Mongolian legal system as well as in organising the structure of Mongolian economic and trade policy. In order to ensure that the chief Mongolian negotiators would be better able to assert trading interests during further WTO negotiations – for example, during the ongoing Doha Round and with respect to Russia's accession to the WTO – they were given particular support in terms of formulating Mongolian negotiating positions and increasing Mongolian negotiating capability.

4. Disaster prevention as an element of sustainable development

a) Current situation

Throughout recent decades, not only the number of natural disasters has risen sharply, but the loss of human life and material goods caused by such events has also multiplied. Around 200 million people are affected by natural disasters each year, seven times more than those affected by armed conflicts. Means spent on disaster prevention measures can lead to far greater savings on disaster reaction. Against the backdrop of continuing growth in the world population and the associated pressure this places on the environment on the one hand, and global climate changes on the other, disaster prevention is gaining increasing importance. Therefore, the Feder-

al Government has resolved to attribute greater significance to disaster prevention within its Strategy for Sustainability.

Thus, disaster prevention has been recognised as an important element of sustainable development in numerous statements, such as the political declaration of the World Summit in Johannesburg, the United Nations Millennium Declaration and Agenda 21. The Johannesburg action plan calls for a strengthening of the United Nations International Strategy for Disaster Reduction (ISDR). Both in technical terms (data collection and evaluation, application of scientific analysis methods etc.) and in policy terms (integration of disaster management into land utilisation planning, raising of awareness and continuing training measures for the populace etc.), national and international efforts must be strengthened and harmonised in order to ensure that future natural disasters claim fewer victims and negatively affect development of societies to the least possible extent.

b) Federal Government activities

The Federal Government considers disaster prevention to be an essential element of humanitarian assistance and finances numerous projects each year - around a third of which relate to early warning systems. Aspects of disaster prevention are also taken into account when structuring development policy and are subsequently transformed into concrete projects. The Federal Government's action plan on civil crisis prevention focusses on improving early warning mechanisms before natural disasters occur, in order to prevent the potential for conflict arising during the course of natural disasters.

In October 2003, under the auspices of the United Nations in cooperation with UN/ISDR (United Nations International Strategy for Disaster Reduction) and the German Committee for Disaster Reduction (DKKV), Germany organised the Second International Conference on Early Warning (EWC II), which continued the discussion process started during the first international conference (in Potsdam, 1998). Additional policy decision-makers were also brought in to bridge current communication gaps between scientific knowledge and policy implementation.

In addition, the Federal Government is supporting the establishment of an early warning platform that is being set up under the umbrella of the United Nations, which had been called for by EWC II participants – experts, policy decision-makers and representatives of UN organisations. The aim of such an institution is to maintain dialogue on disaster prevention and early warning, while achieving closer and stronger links between existing structures and the policy decision-makers. A further important task of the platform is to investigate current deficits in the implementation of disaster prevention so that a sustainable integrative disaster management system can be achieved in the long term.

Effective disaster prevention also includes active climate protection in industrial and developing nations. Worldwide climate changes are already leading to an increased need for disaster prevention funding, a fact which, for example, underlies the deliberations of the United Nations Framework Convention on Climate Change regarding new financing instruments for the benefit of particularly affected countries.

Examples of projects in the field of disaster prevention

In **Mozambique**, natural disasters such as floods, cyclones, drought and bushfires seriously exacerbate living conditions for the population and hinder productivity and development. The disastrous flooding in 2000 and 2001 set back economic development in Mozambique by years. In the first phase of the German assistance project, the structure of national authorities tasked with disaster prevention was strengthened to the point that – through the participation of the populace – an effective disaster prevention network reaching right down to local community level was established. At the same time, natural disaster awareness throughout the population was increased. In light of the fact that Mozambique cannot solve the problem of flooding in the long term (the sources of the nine largest rivers flowing through Mozambique lie outside the country), experience gained during phase one is to be expanded in a second phase of the project encompassing the entire region of the Southern African Development Community (SADC).

Afghanistan is hit time and again by natural disasters. Regularly recurring earthquakes and a four-year drought are making life very difficult for the citizens of this country. As a result of wars, conflicts and the lack of technical equipment and human resources, the important institutions of Afghan disaster management have been rendered ineffective. Thus, development of a national plan for disaster management is being supported within the scope of a project and the appropriate personnel trained in order to effect its implementation.

In **El Salvador**, numerous communities are affected by flooding and landslides and live at the unprotected mercy of such events. The precise risk to two communities was analysed in a pilot project whereby, in coordination with the local population, risk cards were produced and protective measures implemented. At the same time, awareness of the issues amongst the population was increased through the project's participative approach and training measures on action in the event of a disaster, so that the population is now in a position to implement appropriate measures.

5. Responsible corporate management

a) Current situation

Development characterised by the ongoing globalisation of many economic and private life domains can only be sustainably organised by successfully embodying social and ecological interests within business enterprise. The conduct of the private sector also plays a decisive role internationally given that, in the light of their economic strength, considerable political significance is often placed on transnational companies and the social and ecological effects of their corporate decisions. Their political importance is all the greater in countries with weak state structures and insufficient monitoring mechanisms. Where commitment to environmental and social issues is either lacking or insufficiently enforced at a national level, the observance of basic principles for responsible corporate management by the private economy takes on a decisive significance.

The action plan of the Johannesburg World Summit on Sustainable Development obliges states to actively promote the perception of corporate responsibility (CSR or "Corporate Social and Environmental Responsibility and Accountability") and to encourage industry to improve implementation of "codes of conduct". This obligation is to be further developed and implemented by means of international agreements, public and private partnerships and national regulations. In accordance with Johannesburg, the G8 summit in Evian 2003 welcomed voluntary initiatives by companies to promote social and environmental responsibility and called upon industry to work together with other partners to implement the existing instruments.

b) Federal Government activities

The Federal Government considers voluntary acceptance of social responsibility by companies to be necessary in order to achieve sustainable organisation of globalisation. In particular, internationally active and investing companies should be encouraged to assume responsibility for society beyond that required by statutory law. This could be achieved, for example, by introducing voluntary codes of conduct. In this way, binding international organisational frameworks and responsible corporate management can complement one another.

Currently, the most important instruments are the OECD guidelines for multinational enterprises. Germany is supporting the implementation of these guidelines through the work of the "National Contact Point" in the Federal Ministry of Economics and Labour. Tasks of the NCP include promoting dissemination of the guidelines, answering enquiries, following up references regarding possible non-compliance and contributing to the resolution of issues arising during application of the guidelines by means of amicable settlement. Through a "OECD guidelines working group" of the German NCP that was set up in January 2002, other ministries, social partners and non-governmental organisations have also been integrated into the work.

Furthermore, the Federal Government called for clear and demanding regulations during negotiations on the further development of OECD environmental guidelines for export credit. With respect to this, progress has predominantly been achieved in terms of greater commitment and transparency; now it is a question of implementation.

Another important approach to spreading the concept of corporate social responsibility, which is also strongly supported by the Federal Government, is the Global Compact initiative launched by UN Secretary-General Kofi Annan. A contact point for Global Compact companies – which currently include more than 20 German companies – and other interested parties has been set up by the *Deutsche Gesellschaft für technische Zusammenarbeit (GTZ) GmbH*; a German Global Compact Network (between companies, ministries etc.) is also currently being established. The second annual meeting of the "Global Compact Learning Forum", in which representatives of participating companies and the scientific and political sectors were able to exchange ideas, took place from 11 to 13 December 2002 in Berlin.

The "Round Table Code of Conduct" was established within the scope of development policy and in conjunction with representatives from government, busi-

ness, non-governmental organisations and trade unions. The participating groups aim to develop a common understanding of how voluntary codes of conduct can be effectively, transparently and participatively introduced and implemented for the purpose of improving social and environmental standards in developing countries. To facilitate this a “guide book” has been drafted that is predominantly targeted towards small and medium-sized enterprises.

The Federal Government is also supporting activities within the framework of the European strategy on corporate social responsibility. In particular, the Federal Government advocates improved information exchange, dissemination of good practise examples and increased establishment of networks in this area. A multi-stakeholder forum, which was set up by the EU Commission subsequent to the “Green Paper on Corporate Social Responsibility”, submitted its concluding report in July 2004. More far-reaching recommendations and measures at the European level are pending.

In 2000 within the scope of the United Nations, Germany succeeded in anchoring the goal of increased cooperation between the United Nations and the corporate economy into the UN General Assembly’s work programme “Towards Global Partnerships”. The resulting resolution, which was submitted by the EU and accepted by consensus at the 58th session of the General Assembly 2003, is based on a German draft document.

6. Summary and outlook

The themes highlighted in this chapter merely represent an excerpt – albeit a particularly important one – from the international spectrum of issues on sustainable development. In this respect, the Federal Government assumes global responsibility in a particular manner and, thus, orientates itself to the parameters of the Johannesburg World Summit and the Millennium Declaration. In addition, with respect to the implementation of guidelines on global sustainability, the Federal Government is also championing progress in other central areas as designated in the Johannesburg action plan and the German Strategy for Sustainable Development. Amongst others, these include climate protection, biodiversity, sustainable production and consumption models, safety of chemicals, debt relief, public-private-partnerships and financial support for developing countries. The Federal Government will continue to pursue its deliberations and support associated initiatives regarding the protection and financing of global public goods within the context of international debate on new and innovative financial instruments – such as the internationally coordinated introduction of a payment system for global goods, for example, as discussed by the United Nations with respect to the use of airspace and oceans.

On the basis of its clear commitment to multilateralism and joint cooperation for problem resolution, Germany will actively work towards ensuring that the United Nations – and ultimately that includes all of us – demonstrate throughout the coming years that they are capable of actually achieving their stated goals within their own established deadlines.

This, however, requires that the United Nations have strong institutions capable of introducing and firmly anchoring the sustainability criteria right across the rapidly developing system of globalisation. The Federal Government supports the reform initiatives put forward by the United Nations Secretary-General, which are aimed at strengthening – where necessary – the institutional structure and improving the efficiency of its existing institutions. With regard to international trade and financial institutions, a good start has already been made. In this respect, the strengthening of the UN Environment Programme (UNEP) and its upgrading to a UN Environment Organisation (UNEO) remain important concerns of the Federal Government that it will keep on striving for.

The EU has also taken on an important pioneering role in terms of global sustainability policy and has, thus, demonstrated awareness of global responsibility. The example set by the EU is being observed throughout other parts of the world; and precisely for this reason, the EU must continue to underscore the high standards of sustainable action that it has set itself with additional results – both internally and externally. In this respect, consistent implementation and further development of the EU sustainability strategy and the Lisbon strategy play an essential role. In examination of these strategies, scheduled for 2005, the political instruments to ensure equal consideration of economic, social and environmental issues must be strengthened. Integration of environmental issues into other policies within the scope of the Cardiff process must be continued in terms of sustainable EU development. Strategic means and long-term goals at the EU level, supported by consistent monitoring, are important pointers to achieving sustainable development in the European Union. This monitoring process should also incorporate the global aspects of the EU sustainability strategy. Germany will work to strengthen the EU sustainability strategy and – where possible – will link this to national sustainability strategies.

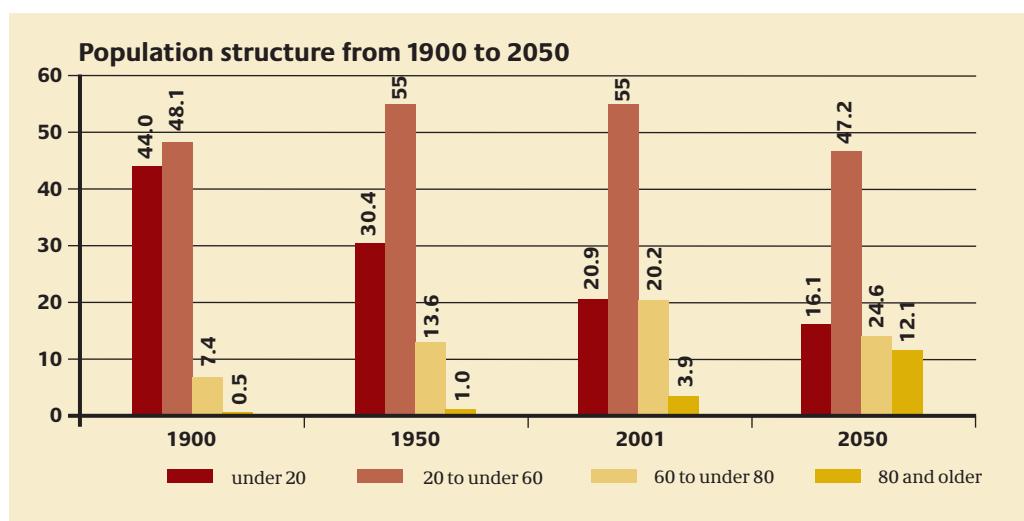
The Federal Government is facing the challenges stated above – at a national, EU and global level. There are no alternatives.

E. Additional Focal Points of Sustainable Development

I. The potential of older people in the economy and society

1. Current situation

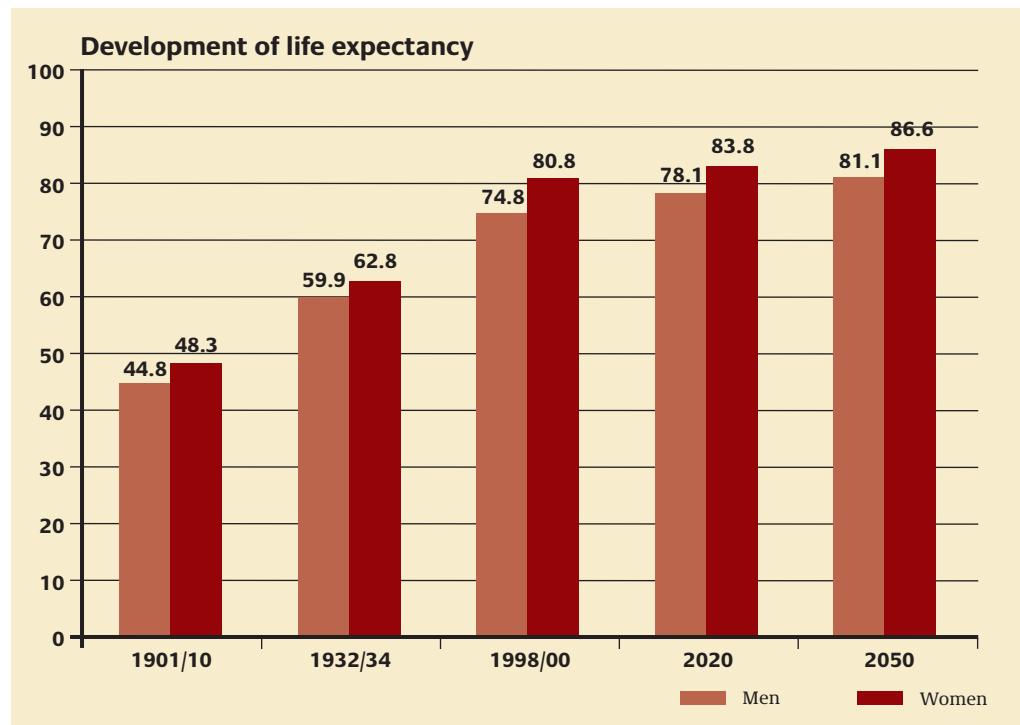
Demographic forecasts point to the irreversible process of an ageing society. The percentage of older people in the overall population will continue to increase and future social and economic tasks will have to be taken on by a generally smaller and, on average, older population. This scenario presents various challenges, both politically and for each individual citizen. The demands of today's generations need to be linked to the life prospects of future generations in such a way as to ensure that fair participation in the opportunities and chances of the future is safeguarded for all (intergeneration equity as a fundamental idea of sustainable development).



In the current political debate on the consequences of demographic change, discourse on the question of burden continues to dominate and unilaterally highlights the problematic consequences of an ageing society. The upshot of this abridged view is a deficient image of age, with resulting policy recommendations concentrating on the question of how social security systems can be maintained under such conditions.

This view fails to recognise that an increased lifespan represents a benefit for each individual as well as for society. And the discourse on burden obscures the fact that demographic development represents an **opportunity for growth, employment and social development**. The political task is shaping demographic change within this positive context.

The number of older people and their share in the population will continually increase, not least due to longer life expectancy.



The average age of the workforce will rise and, in all events, the contribution to the economy and society rendered by older people will gain greater significance.

In the mid-term, the facts of demographic development cannot be changed. Nonetheless, the implications that politicians and social protagonists draw from this fact and whether they actually use the opportunities generated will have a decisive impact on whether our country is up to the challenges presented by globalisation, structural change and international competition and whether it possesses the necessary innovative ability. In accordance with the WHO slogan “Years have been added to life; now we must add life to years”, attitudes towards the older members of society that have been applied to date must be changed.

The **growing potential of older people** also dictates a change in attitude towards the old. Today’s older generation is significantly better placed to assert opportunities than all previous generations. Older people are healthier, more mobile, better trained and possess far greater experience, they have a wider spectrum of interests and abilities, are better off financially and also have a much more positive attitude towards their own age. At the same time, most older people have absolutely no interest in withdrawing from society. Provided the “conditions are right”, an overwhelming part of the older generation are ready and willing to continue their professional, economic and social commitments. These older individuals see benefits for themselves in such commitment – giving them an enhanced feeling of self-esteem and greater social recognition.

However, the fact is that the existing potential of the older generation remains greatly untapped, clear evidence of this being the system of early retirement

that has been practised for decades. This is also reflected by the participation of older people in gainful employment: in the case of 55 to under 65 year olds, only around 40% are gainfully employed. Whereas the figure for 55 to 59 year olds is around 60%, the figure for 60 to 65 year olds in gainful employment is only around 23%.

Continued observance of “old age redundancy” is contradictory to structural changes in the lifecycle. Against the backdrop of continually lengthening life-spans, the usual three-stage division of life into an ever longer educational phase, an ever-shorter working phase and an increasingly extended “old age phase” is outdated and must be revised. This includes lengthening the active participation stage for older people and achieving greater integration of training, work, voluntary commitment and leisure into the course of life.

2. Concrete vision

Against the ever-dominating discourse on burden, the Federal Government has introduced a role model that not only characterises the older population in terms of years gained for each individual, but also sees ageing as opportunity for economic growth and development. Such a policy rejects passive acceptance of demographic development; on the contrary, it considers it a challenge which should be actively managed. In response to the pessimism that still currently dominates public debate, a vision illustrating the new opportunities and possibilities presented by demographic change needs to be projected.

This requires us to gain a more positive and differentiated view of age. Together with partners in politics, the economy and society, the Federal Government aims to induce a change in consciousness and transform the image of age and the older generation into a positive issue. This is an essential prerequisite to creating an environment where older people are asked to exercise their ability and experience for the purpose of making a recognised contribution to the economy and society. Policy itself can be steered towards the interests of members of the older generation wishing to release their potential to a far greater extent.

Embodying this change in values within the public consciousness requires widespread public debate. The road from “deficit to competence approach” is a long one, as effecting change in overall models can only be achieved by changing their practical implementation. We need to create a framework which allows the unused potential of the older generation to be tapped and/or allow it to be applied more effectively in practice. Achieving this depends, to a substantial extent, on linking longer working life participation, active participation in social life and the exercise of voluntary commitment with the needs and opportunities of older people. In turn, this requires new, more flexible lifestyle models, whereby educational, working and leisure phases, as well as time spent on continuing training, upbringing and voluntary commitments, are not placed in a strict consecutive order, but rather are flexibly interchangeable events.

This fundamental change of consciousness cannot be achieved in the short term or with isolated activities that focus exclusively on the older generation. Rather,

change must be encouraged on a broad basis. As such, the areas of action described in the following are integrally intertwined with long-term permanent activities undertaken by the Federal Government for the purpose of stimulating voluntary involvement or balancing family and working responsibilities. They are an important element of a comprehensive overall concept by the Federal Government to generate demographic change, within which, amongst other things, the increasing significance of voluntary involvement by the older generation plays an essential role. Included are the recommendations of the “Kommission Impulse für die Zivilgesellschaft” (Commission for Stimulus for the Civil Society), in whose report the opportunities and framework conditions necessary for voluntary services and civilian involvement, particularly that of the older generation, were highlighted. Furthermore, there is close contextual coordination with the work of the Federal Government’s fifth report on ageing, which comprehensively examines the potential of older people.

The aim of this chapter is not to address demographic change – with its multifaceted consequences for all areas of politics, society and the economy – in its entirety. Rather, within the scope of its Strategy for Sustainability, the Federal Government is focussing on the particularly important question of mobilising the older generation’s potential in the workplace; thus supplementing concepts developed within other contexts aimed at strengthening civilian involvement.

3. Fields of action

In 2000, the Lisbon European Council reached agreement on the “Social Policy Agenda” as a framework of decisive steps to reform the European Union. With its agenda, the European Union is treading a path to more and better jobs, while at the same time, placing individuals’ ability to work, their qualifications, performance and health at the forefront.

The European guidelines on Member State employment measures adopted in July 2003 establish three comprehensive and mutually conditional goals of the European employment strategy, namely: full employment, improvement of job quality and increased labour efficiency. Added to this is also the Commission’s call to Member States to develop and implement comprehensive strategies for the active older generation within the framework of the European employment strategy.

For the fact is that the future challenges of the workplace will have to be overcome by an overall older labour force. Consequently, investment in training and qualification, but also in terms of fostering employee healthcare take on central importance. Within its scope, the proposed concept consciously focusses on three areas of action

- a) lifelong learning,
- b) fostering employee healthcare and
- c) employment of older people.

It demonstrates ways by which the potential of older people can be better integrated into the workplace, thereby ensuring appropriate consideration of their needs and opportunities.

It is important to note that the strategies should not be purely limited to the later phases of life. The demographic challenges will only be overcome if action is taken early.

Positive experience should be accumulated in the form of concrete pilot projects and made known to the public in order to further push the concept's basic idea: better integration of older people's potential into the economy and society. The respective requirements for these pilot projects are formulated within the individual areas of action.

a) Field of action: “Lifelong learning”

The “ageing of the labour force”, but also the reduced number of pupils entering school and students going on to further education, is leading to an altered paradigm regarding education policy. The training and qualification of older people and those who have already been working for many years is generally developing into a new focal point for schools and educational institutions. Innovation and value added can only be secured in the future if ageing members of society remain up-to-date. Education must relate to all stages of life and be open to all sections of the population. In short, our goal is: lifelong learning for all.

Lifelong learning encompasses a person's progression from early childhood right up to and including the retirement phase; it also encompasses the most varied learning locations and, indeed, learning in educational and training institutions as well as learning during the daily routine, at the workplace, within the family and during leisure time. Consequently, we understand learning as being the constructive processing of information and experiences into knowledge, insight and ability. Conducive framework conditions cannot solely be created under the responsibility of adult education facilities; but rather require close cooperation with companies, which must organise work in such a way as to present the opportunity of learning – both in terms of time and content.

Given the fall in student numbers, ongoing qualification of the occupationally active generation is gaining new focus with institutions of higher education. For all concerned, this means greater alignment in terms of corporate organisation as well as in terms of the particular learning requirements/needs and existing ability of the older generation.

Lifelong learning is a central prerequisite for both employability at all stages of life and for the readiness and capability to participate in society to a ripe old age. Through positive learning experiences in youth and qualification at the initial training stage, individuals also retain a willingness to learn, continue to undertake further training and remain employable in later life. As such, sustainable development of the older generation's potential requires a **generation-spanning approach**. The foundations for lifelong learning are laid at a very early stage. In order that – throughout the coming decades – significantly more older people continue to participate in working life and social development processes for longer, the education, training and continuing education opportunities for both the young generation and those at the mid-life stage must be permanently improved. Older people must be given greater opportunities for occupational realignment and modification through further training.

Each individual should consider the preservation of its employability to be an ongoing task, including beyond the age of 50 or 60, and should adapt its training and occupational biography accordingly. Companies and administrations must build this concept into their organisational and personnel development. An innovative work structure must encourage the development of occupational ability and age-commensurate changes in work-activity more systematically and effectively by providing learning and development opportunities within the work process.

The structure of the training and education system must be organised in a more flexible manner. Reliable opportunities to enter specific educational sectors and to shift from one sector to another must be available throughout all levels of training. Each young person should have the opportunity to gain qualified professional training or further academic education in accordance with their ability and development potential. A flexible system of continuing vocational training that incorporates interfaces and transition opportunities to institutions of higher education enables occupational adjustment, modification and further training to be achieved during all stages of life and career. Colleges and universities must participate in the further training of highly qualified employees to a far greater extent.

Federal Government activities relating to lifelong learning

Action programme:

“Lebensbegleitendes Lernen für alle” (Lifelong learning for all)

The action programme “*Lebensbegleitendes Lernen für alle*” (Lifelong learning for all), which was set up in 2001, combines concrete areas of action with corresponding measures implemented along the path to a “learning society”. Its aim is to assist the sustainable promotion of lifelong learning across a broad social strata and a future-oriented reform of educational facilities. In light of this, its central focus lies upon increasing the individual responsibility and self-determination of learners, eradication of unequal opportunities, cooperation between educational institutions and their students, in addition to strengthening relations between all areas of training.

Programme: “Lernende Regionen - Förderung von Netzwerken”

(Learning regions – promoting networks)

Started in 2001 and running until 2006, the programme promotes the establishment and development of regional networks within which – through the coordinated efforts of the greatest possible number of participants – innovative lifelong learning projects are planned, tested and permanently established. The programme’s aim is to modernise local structures and basic provision for education and further training in such a way that the greatest possible number of people are able to participate and the “learning society” model becomes a reality. Educational institutions and learners, as well as important regional protagonists, such as companies, employment services, social partners and social and cultural institutions, are encouraged to work together more closely and efficiently: consequently developing into networked “learning regions”.

Pilot programme: “Lebenslanges Lernen” (Lifelong learning)

The aim of the pilot programme “*Lebenslanges Lernen*” (Lifelong learning) of the *Bund-Länder* Commission (BLK) for Educational Planning and Research Promotion is to initiate new forms of cross-educational cooperation between all German *Länder* and thereby encourage lifelong learning. Above all, this encompasses increasing the individual responsibility and self-determination of learners and improving cooperation between training and educational institutions and students. Coordinated projects for quality assurance as well as certification of qualifications and skills obtained outside the official educational institutions are supported jointly by different *Länder*.

Strategy for Lifelong Learning in the Federal Republic of Germany

In July 2004, the *Bund-Länder* Commission for Educational Planning and Research Promotion concluded its “Strategy for Lifelong Learning in the Federal Republic of Germany”. Keeping the framework of constitutional law in mind, this sets out the changes required within individual areas of training and education (schools, vocational training, institutions of higher education, further education) in order to ensure that lifelong learning becomes a matter of course for each and every educational biography.

Innovative development of work – The future of work

The programme “Innovative development of work – The future of work” is carrying out research and development projects, initially until 2005, with the aim of supporting employees and companies with respect to successful, socially responsible adjustment to structural change. Practicable solutions for processes of change are generated from scientific knowledge regarding the links between work structuring, human resources development, corporate culture and the innovative capability of companies and networks. In this respect, emphasis is placed on dealing with the effects of demographic change on gainful employment, questions of fair and just structuring of work under extensive application of ICT (e.g. in eBusiness, virtual companies), as well as the connection between innovation capability and corporate culture.

Learning culture – competence building

Rapidly changing job profiles require swift adaptation of qualifications by company employees. In many cases, this process begins directly following conclusion of initial vocational training and continues for a lifetime. Traditionally organised in-house and external further training is no longer sufficient in itself and is becoming less and less appropriate for attainment of the required qualifications and professional competencies. Particularly small and medium-sized enterprises lack the means and opportunity to independently organise human resources development programmes and competence building measures to the necessary extent. The aim of the “*Lernkultur Kompetenzentwicklung*” (Learning culture – competence building) programme is to organise comprehensive research, development and implementation of competence building in order to meet the future needs of small and medium-sized enterprises in particular.

Focus on additional qualification

The programme entitled “*Kompetenzen fördern - Berufliche Qualifizierung für Zielgruppen mit besonderem Förderbedarf*” (Promoting individual skills – profes-

sional qualification of target groups with need for particular support) was set up with the aim, amongst other things, of promoting innovative concepts to enable young semi-skilled and unskilled people to subsequently fill their qualification gap. In order to improve the chances of integration into the labour market for young people who are unable to gain professional qualification within the framework of initial vocational training, new approaches to commercially oriented remedial qualification to enable subsequent attainment of recognised professional qualifications are being developed and tested.

Work programme for reform of vocational training

Within the scope of its responsibility, the Federal Government is creating the legal and institutional framework for lifelong learning in its reform of vocational training; the primary objective being to make vocational training more transparent. As such, the pending legal reform on vocational training will provide final examinations in a recognised profession for young persons, who, due to the lack of apprenticeship places, complete professional training in a school. By increasing flexibility in professional training, education and further training will be more closely linked. Furthermore, in coordination with all social actors, qualifications for top management functions without a university degree are to be prepared, and the crediting of academic degrees with vocationally acquired qualifications is to be examined.

Pilot projects on lifelong learning

Pilot projects must target the successful implementation of the model conception of lifelong learning. This also includes learning as preparation for non-vocational or post-professional voluntary involvement, particularly in the second half of life. Suitable pilot projects are initiatives and measures that, both during and outside of work, practise lifelong learning in a strategic manner and structure while consciously including the older generation. In this respect, projects directed at those new to training are also of particular interest. In future, projects should give particular impetus to the following central areas:

- Creating access to educational degrees

Where this is required for old or new activities, the opportunities for remedial and/or initial attainment of educational degrees should be improved. This applies particularly with respect to the support of "second careers". Above all, attention should be given to ensuring that those who lack formal qualifications are able to gain such at a later stage.

- Cross-learning between generations

Different generations can learn a lot from each other. Through contact with older people, the young can benefit greatly from their experience and knowledge of life, while the older generation can gain inspiration from the curiosity and openness to innovation of the young. More projects are desired that target cross-learning between generations and also appropriately address the different learning requirements and needs.

- Opening and securing institutions of higher education for qualified further training

Those currently employed in gainful activity as well as those who have already retired need to gain additional qualifications in order that they can remain “up-to-date”, both in terms of their specialist-contextual knowledge and their technical competence. In order to achieve this courses to gain supplementary qualifications or needed for occupational re-orientation should be offered by institutions of higher education. These courses should enable the students to continue working while learning (part-time, occupationally integrated studies, distance learning, online studies).

- Expansion of studies geared to older people

Many highly qualified older people, who are unable to or do not wish to continue in their current occupation, would like to try a new start.

For this group of learners, institutions of higher education need to offer specific studies in currently available subjects or even set up their own courses of studies that pick up on the professional experience of the students and exploit existing skills. Study programmes for retired persons offered by many institutions of higher education need reorganising. The range offered must be more closely geared to economic and social application. Also conceivable in this respect would be cooperation with regionally located companies (e.g. in terms of “corporate identity”, utilisation of “real” age-related part-time work for training opportunities).

- Promotion of lifelong professional learning at work

The promotion of lifelong professional learning is not only directed at the older generation, but also already targets the younger working population. Pilot projects should demonstrate that it is possible to create learning-conducive work environments and organisations, and organise professional qualification in such a manner that both young and older workers are equally able to adapt their skills to new demands and thus keep pace with ongoing development.

- Interlinking training and qualification opportunities with the working world

Companies and employees are dependent on the fact that learning-conducive work and theoretical training are closely interlinked and accomplished in clearly defined periods of time. As such, the requirement is for lifelong professional learning projects in which companies and administrations cooperate closely with educational institutions and where, for example, corresponding measures such as training and study courses for working people are developed under closer cooperation.

- Utilising further training for professional reorientation

The wide range of continuing vocational training on offer – from occupational-update training and retraining to vocational training certificates regulated under federal law – offers a multitude of opportunities to support professional reorientation and opens up prospects for new areas of

employment. Projects are required in which both middle-aged as well as older individuals receive greater focus from further-training providers. Where this can be coupled with greater transparency regarding the development opportunities associated with continuing vocational training, such projects can make a considerable contribution to increasing people's willingness to undergo change and, simultaneously, bring about realisation of desired changes.

b) Field of action: Fostering employee healthcare

Companies and administrations are faced with the challenge of assuring their future innovative, competitive and performance capability through increased reliance on the potential offered by older members of the working population. In this respect, fostering employee healthcare can assist companies and must become an integral element of modern corporate management. Particularly in the light of an ageing society, companies must increase concern for fostering and maintaining the health of employees. Through employee health support, work-related health problems that occur in certain sectors and particularly amongst older personnel, can be avoided. Employee health protection is primarily a task of the industrial partners. In the future, they must foster work and health protection more resolutely and also develop a corporate health policy. In this, they are supported by the supervisory services and social insurance providers. There is a need to reinforce the view that corporate investment is required in terms of structuring work in a manner fair to the age of employees and in terms of their health throughout the entire working life. Efforts also need to be directed towards ensuring that all employees accept individual responsibility for health-conscious conduct both at work and with respect to life in general.

Federal Government activities relating to fostering employee healthcare

Industrial Safety Act

With the Industrial Safety Act 1996 (*Arbeitsschutzgesetz*), for the first time in Germany, transparent and uniform basic regulations for employee industrial safety were created. In addition to provisions on prevention of accidents at work and work-related health hazards, industrial safety regulations encompassed within the law also include measures to ensure humane working conditions. Employers have a comprehensive responsibility for the safety and health of those working in their facilities. Employers are obliged to evaluate working conditions in their company in terms of any risks posed to employees associated with their work, and to subsequently implement any necessary protective measures to maintain and foster the employment capability of their workers. In safeguarding these measures, employers are to abide by certain fundamental basic principles: these include planning such measures with the aim of achieving an appropriate link between technology, organisation of work, other working conditions, social relations and environmental impacts on the workplace. The law covers all areas of employment (trade and industry, public service, agriculture, independent professions).

Preventative Act

The *Vorsorgegesetz* (Preventative Act), which is due to be passed at the start of 2005, aims to accomplish a paradigm change in the healthcare system. Prevention and promotion of healthcare, including fostering employee healthcare, is to be developed into an independent pillar of healthcare provision, alongside emergency treatment, rehabilitation and care. The objective is to maintain and foster the health of individuals, thereby improving their quality of life, mobility and performance.

German Forum Prevention and Health Promotion

The German Forum Prevention and Health Promotion, which was established in 2002 with a secretariat at the Federal Ministry of Health and Social Security, aims to embody and strengthen the preventative approach in terms of activities within the German health system and in all areas of policy and life. The Forum sees itself as a decisive platform for prevention and healthcare, upon which common goals, programmes, measures and instruments can be agreed, implemented and communicated. Having expanded since its conception to 71 members, these not only include central umbrella associations and organisations from the healthcare system, but now also include additional organisations and ministries at both national and regional level who are able to contribute towards prevention.

The Forum's objective is to develop and implement a far-reaching and effective, unilateral preventative healthcare concept whose emphasis, for example, is on fostering employee healthcare and affording consideration to specific age and gender-related requirements. In addition, the aim is to bundle and network the various preventative healthcare activities and strategies of the Federal Government, the *Land* Governments and local authorities and create the necessary requirements to establish a communication and information platform in order to gain greater transparency for both providers and recipients of preventative healthcare provisions.

Implementation of an ergonomically supported rehabilitation programme for older employees in craft professions using, as an example, the construction industry/Learning how to carry and move – vocational specific rehabilitation (RehaBau)

The construction industry is an area in which extreme physical demands are placed upon its workers on a daily basis, which, in the long term, take their toll in the form of health complaints. Many older construction workers complain of backache and have to give up their profession prematurely. Yet, especially in the light of demographic developments, society needs these older and experienced hands. For this reason, the RehaBau project aims to teach construction workers specific ergonomic techniques, which help them to remain in their trained profession for longer. The rehabilitation programme is a common project encompassing industrial and rehabilitation physicians, public pension schemes and other social insurance providers.

Age-appropriate personnel development – challenge of an intergenerational personnel policy using the secondary steel sector as an example

Experience gained from two selected branches (foundries and forges) of the industry with respect to the activity of older employees is now to be published industry-wide. To enable this, various communication platforms are being set up (e.g. work groups, industry conferences, online industry-practice forums, internal company

workshops), within which themes such as work ability, employability and empowerment take a central position. Positive examples will also be determined, documented and published by industry conferences.

Sustainable work and health policy in medium-sized enterprises

The aim of this combined project is to establish sustainable work and health policies in small and medium-sized enterprises across various sectors (confectionary industry, automotive, municipal administration) by means of company health management programmes. Innovative concepts and their application are required in order for health processes to become a second-nature element of corporate organisation at all levels (*“Gesunde Menschen in gesunden Unternehmen”* (Healthy people in healthy companies) please refer to www.nagu-projekt.de).

Project Identification and dissemination of corporate health policy concepts for healthy ageing at work

In a region predominantly characterised by small and medium-sized enterprises, it is envisaged that a network of companies, professional chambers, trade guilds, trade associations, healthcare schemes and other associated organisations in commercial practice will provide support in implementing an extensive employee health policy. It is intended that corporate input relating to the fostering of healthcare, structuring of working conditions, qualification of employees and management, as well as motivating and changing the attitude to older employees within companies, will be facilitated and circulated using model methods (joint initiative with the Bertelsmann Foundation and the Hans-Böckler Foundation).

Pilot projects on fostering employee healthcare

Within the scope of a health-oriented corporate policy, all those concerned jointly set out health-conducive working conditions, with employees given motivation and the ability to maintain health-conducive working methods and lifestyles.

Pilot projects within the “Fostering employee healthcare” field of action must continually take stock of the following aspects of the “Four pillars of work ability”:

- maintaining and promoting employees' health and performance in terms of their physical, psychological and social performance;
- job-specific training to increase professional competence and experiential knowledge throughout the course of the entire working life;
- changing employee values and attitudes, including those relating to their older colleagues (move from deficit model to promotion of competence model);
- structuring of physical, psychological and organisational working conditions.

Exemplary fostering of employee healthcare encompasses a wealth of diverse measures, each distinctive in their individuality from project to project. Of note are:

- ergonomic structuring of work,
- promotion of employee health and fitness (e.g. work-related back exercise seminars, stress management courses),
- optimisation of work patterns (workload, work rhythms and workflows)
- individual structuring of occupational biographies (e.g. far-sighted planning for change to an alternative occupation in the case of jobs with a limited working life)
- development of a systematic corporate healthcare management system.

c) Field of action: “Employment of older people”

Not least in light of demographic changes, can we afford to forego the experience and knowledge of the older generation for any great length of time. The practice of early retirement that has been practiced for decades cannot be maintained in the future. Increasing life expectancy must also be reflected in the employment of older people. This approach also shadows the European employment strategy with the target of increasing the quota of older workers (55 to 64 year olds) employed in gainful activity to 50% by 2010.

Particularly within the scope of Agenda 2010, the Federal Government has introduced a multitude of statutory measures in order to systematically remove false incentives for premature exit from the labour market and to improve the opportunities of (re)integration for older employees by means of a targeted range of active labour market policy measures. It is anticipated that the quota of older people in the labour force will increase significantly through the combination of employment-stabilising statutory measures and labour policy instruments targeted at enhancing employment opportunities.

Federal Government activities relating to the employment of the older generation

Measures to improve the employment situation of the older labour force

With the reform of the German Works Constitutions Act (BetrVG) in 2001, employment security was, for the first time, incorporated into the catalogue of tasks covered by works constitution law. In accordance with this, a works committee may put forward proposals for the security and promotion of employment; whereby, the employer is obliged to consult the works committee on such proposals. Moreover, the works committee has an enforceable right of co-determination regarding the introduction of vocational training measures that are planned or introduced by employers, and which result in changes in the activity of affected employees in that their vocational knowledge and skills are no longer sufficient for the performance of their job. In light of the fact that technological innovation often presents more of a challenge for older employees than it does for their younger colleagues, works committees can primarily become active for the benefit of older workers. In order to stabilise the employment of older workers, in particular, false incentives for early exit from the

labour market are being reduced. The Labour Market Reform Act (*Gesetz zu Reformen am Arbeitsmarkt*) introduces a reduction in the period for which unemployment benefit is paid to older workers, from the current 32-month period to a maximum of 18 months in the future. As a result, the release of older workers will be perceptively more expensive for companies, and the practice of early retirement at the cost of contribution payers counteracted. Furthermore, regulations on reimbursement of unemployment benefit by the employer in the event of dismissal of long-serving employees are being temporarily tightened up. For example, the age threshold at which an employer can be obliged to reimburse the cost of unemployment benefit for older unemployed persons is being reduced from 58 to 57 years of age. In addition, the so-called "*Struktur-Kurzarbeitergeld*", often used as an instrument for early retirement, has been further developed and its maximum funding period has been reduced to 12 months (as opposed to 24 months, to date).

Early retirement incentives are also being removed by the Pensions Insurance Sustainability Act (*Rentenversicherungs-Nachhaltigkeitsgesetz*). Access to early retirement on the grounds of unemployment or age-related part-time work is being limited, with the decisive age thresholds to be progressively raised from 60 to 63 years from 2006 to 2008. This provision applies for insured persons who were born after 1945. In this way, effective retirement ages are being brought in line with the pensionable age envisaged under statutory law.

Integration subsidy for difficult to place workers

Employers can receive wage cost subsidies, so-called integration subsidies, as (degressive) reimbursement for wages where they employ workers needing extra assistance in finding work. In principle, integration subsidies can be claimed for up to 50% of the employee's wage for a period of up to 12 months. For older employees, upon reaching the age of 50, a subsidy period of 36 months is possible and the obligation for repayment and subsequent employment does not apply. This special provision applies for a limited period to 31 December 2009.

Measures for determining aptitude, training measures

To improve integration prospects, activities or measures lasting for a total period of up to 12 weeks are sponsored. The Federal Employment Agency may continue to pay unemployment benefit during participation in the training measures; and may also cover the cost of the measures. For older workers, of particular relevance are measures geared to gaining knowledge and skills that significantly increase the chances of being placed in work or of leading to conclusion of further vocational training.

Fostering further training for employees over 50 years old

In small and medium-sized enterprises with up to 100 employees, to encourage qualification of older workers, training costs are paid by the Federal Employment Agency provided the employer continues to pay the employee's wages. This increases participation in further training measures by older employees and thereby secures their employability. This provision applies for a limited period to 1 January 2006, that is, it applies for measures commenced by 31 December 2005.

Fostering further vocational training through temporary replacement (job rotation)

Sponsorship of further vocational training through temporary replacement (job rotation) is also geared in the same direction, albeit not specifically targeted at older employees. Through job rotation, employers who allow their employees to participate in further vocational training and employ an unemployed person in their absence receive a subsidy for the cost of employing the unemployed replacement. The aim of the programme is to increase employers' willingness to release their staff from work in order to take up further vocational training. Simultaneously, unemployed workers are provided with additional work opportunities, thereby increasing their chances of professional reintegration. Subsidies can be paid for the duration of the replacement's employment up to a maximum period of 12 months, and amount to 50% minimum/100% maximum of the regular collectively agreed pay level, or that which is standard for the location, including the employer's contribution to social security provision.

Wage assurance for older employees

The aim of wage assurance is to offer older job seekers a financial incentive to accept employment paying a lower salary than that of their previous occupation. Wage assurance benefit is paid to employees of 50 and over, who are either unemployed or are under threat of unemployment and who take a job paying significantly less than their previous occupation (minimum limit € 50). Benefit is paid in the form of a subsidy of 50% of the difference in pay between the previous and new flat-rate net salary; guaranteed for the period of entitlement to unemployment benefit that remained upon acceptance of the lower-paid job. Pension contributions will also be topped up in certain cases, provided there is a remaining period of entitlement to unemployment benefit of at least 180 days. This provision applies for a limited period to 1 January 2006.

Exemption of employers from unemployment insurance contributions

Employers who employ workers of 55 years and older are exempted from the obligation to pay unemployment insurance contributions. The employee is nevertheless fully covered by unemployment insurance. This provision applies for a limited period to 1 January 2006.

Easing temporary employment of older workers

With respect to easing temporary employment of older workers, the age has been reduced from 58 to 52. As such, limited employment contracts - with or without material ground and without limitation on maximum periods of duration - can be concluded for older unemployed persons who have reached the age of 52. This provision applies for a limited period to 1 January 2006.

Age-related part-time work

Age-related part-time work provisions enable older employees to reduce their working hours in line with their age and the effort required for the job. The aim of this is to prevent older workers having to give up work because they are no longer able to cope with the demands of full-time employment. Hence, state support provided within the scope of the Age-related Part-time Working Act (*Altersteilzeitgesetz*) can assist in the transition to retirement.

In addition to creating a new, more favourable statutory framework, the Federal Government has set up and assisted in implementing a wide range of projects and initiatives aimed at achieving a significant change in social consciousness with respect to attitudes towards older people.

Federal Government partnership initiatives for a change in social consciousness

Initiative “TeamArbeit für Deutschland” (TeamWork for Germany)

Publicity campaign in cooperation with celebrities, which include promoting a positive attitude by businesses towards older employees, and which aim to increase awareness within companies of the success factors offered by high-quality personnel as well as labour market projects and stimulate similar practice; focus is directed at the idea of “professionals of the nation” as put forward by the Hartz Concept; around 1,000 companies are involved in the network throughout Germany.

Together with the “**Initiative for Employment**” (IfB), “*TeamArbeit für Deutschland*” introduced a corporate competition entitled “*Beschäftigung gestalten – Unternehmen zeigen Verantwortung*” (Shaping employment – companies demonstrating responsibility). This predominantly paid tribute to companies that direct special attention to the problem of demographic change within their business and are a shining example in terms of the employment of older workers.

Initiative “Neue Qualität der Arbeit” (New Quality of Work)

The *Neue Qualität der Arbeit* initiative (INQA) is supported by both sides of industry, the national level, the German *Länder*, social insurance schemes, the Bertelsmann Foundation, the Hans-Böckler Foundation and companies. Through sustained cooperation, the initiative partners want to promote structural knowledge in selected fields of activity to create a new quality of work and commercial examples within companies, and to stimulate processes of change. Various activities, for example, practical projects, provision of information on the Internet site www.inqa.de, network building and the publicity campaign “30, 40, 50plus – gesund arbeiten bis ins Alter” (healthy working into later life), provide a discernible contribution to promoting and maintaining the work and employment ability of older workers and to ensuring age-commensurate working conditions. The competence model for ageing is established publicly and in the corporate domain.

Supported by the Federal Institute for Occupational Safety and Health within the scope of an initiative group established by INQA, “**ProÄltere – Älterwerden in Beschäftigung**” (**Pro-Ageing –Working and Ageing**) is being developed into a network in cooperation with the German Federation of Institutions for Statutory Accident Insurance and Prevention (HVBG). Participants in the project include social, economic, research and political institutions as well as social security institutions and representatives from both sides of industry. The platform’s objective is to further knowledge, experience and activities in order to enhance the employability of older members of the labour force. In particular, the intention is to make a discernible contribution to the re-employment and continued employment of older workers.

OECD Germany review on the improvement of labour market opportunities for older employees

The Organisation for Economic Cooperation and Development (OECD) is currently carrying out an extensive thematic country review on the topic of the improvement of labour market opportunities for older employees in the majority of its member states in which Germany is participating. The aim of the review is to identify barriers that still remain with respect to the employment and further training of older employees and to pinpoint the associated causal factors on the supply and demand side. Ultimately, it is intended that "good and best practices" will be illustrated through comparison of the strategies and mixes of measures in individual participating countries, and country-specific recommendations for action articulated. The OECD expects to publish the initial results of the survey in spring 2005.

Joint initiative EQUAL

Co-financed by the European Social Fund, the joint initiative is testing new ways to combat discrimination and inequality with respect to employees and job seekers on the labour market; with special emphasis on promoting human resources, particularly the occupational integration of disadvantaged groups into the labour market and the improvement of lifelong learning.

Projects of the German Center for Productivity and Innovation

The German Center for Productivity and Innovation (RKW) is a neutral network (state, economy, trade unions, research academia) tasked with promoting the economic, technological, social and ecological competitiveness of German companies. Amongst other things, the organisation develops recommended actions to aid development of human resources within companies and working practices in order to maintain the employability of older workers. In cooperation with the Hesse Ministry for Social Affairs, the project entitled "*Wandel der Beschäftigungsfähigkeit älterer Arbeitnehmer – Informationen und Empfehlungen für die betriebliche Personalpolitik und die Einführung lern- und gesundheitsfördernder Strukturen*" (Change in the employability of older workers - information and recommendations for company personnel policy and an introduction to learning and health conducive structures) is currently being carried out. An essential element of the project is the Internet portal aimed at small and medium-sized enterprises entitled "*Altersgerechte Arbeit – Demographischer Wandel in der Arbeitswelt*" (Age-commensurate working – demographic change in the labour market), which, amongst other things, provides specific examples of good commercial practice and subject-relevant research developments.

Demographic Initiative II: consultation and organisational instruments for age-commensurate work and personnel policy

Building on 'Demographic Initiative I', this initiative is directed at the solutions for dealing with demographic change which were generated within the scope of 130 company-related projects. The aim of the initiative is to achieve broad commercial publication of the results of demographic change and its effects on companies and employees and to provide businesses with active measures and management tools to facilitate an age-commensurate work and personnel policy. Using the operational solution models, a number of instruments have been systematically worked out and specifically tested for their performance with respect to various differing operational requirements. The instruments are compiled into an "tool kit",

which deals with operational tasks and functions (analysis instruments, prognosis instruments, personnel management instruments etc.), and which enables targeted action regarding consultation, personnel issues, trade association activity, employee representation etc. The results are available in the form of a brochure or via an Internet portal. Professional associations and representatives from both sides of industry are participating as partners and information brokers. Overall, the objective is to ensure that the instruments developed become incorporated into the daily work of companies and management decisions, and especially those of smaller and medium-sized enterprises, thereby opening up ways to proactively shape the possible effects of demographic change.

Pilot projects for the employment of older people

Throughout the coming years, most companies will have to deal with the fact that the average age of their workforce is increasing. In 2005, for the first time ever, more people over 50 years old will be employed in gainful activity than under 30. From 2010, a massive increase in the number of over 50's gainfully employed is expected, with figures reaching their zenith around 2020 before subsequently dropping back.

Against this backdrop, companies and administrations will have to abandon their current "youth centred" approach and will have to ensure timely preparation and adjustment to the specific employment requirements, needs and expectations of a labour force whose age structure is different to that currently seen. In order to effectively move away from the trend of early retirement, conditions need to be created within companies and administrations that enable working lives to be extended. Pilot projects should contribute to making gainful employment for older people easier, accessible and desirable in the future. Projects should fulfil one or more of the following criteria:

- Adjusting jobs, organisation of work and working hours to different performance levels

This concerns adapting jobs, organisation of work and working hours to the different performance levels of an older workforce – who in turn are characterised by greater life and professional experience – through, for example, different work tasks and procedures, group work or special working hours. Closely associated with this are preventative industrial safety and health measures and the promotion of employee healthcare.

- Enabling early development planning

Measures to promote gainful employment for older people must not be approached first and foremost at the end of the professional career, as this prevents the full effect of such measures. Rather, the need is to plan for gainful employment throughout the working life. Supportive measures targeted at younger employees always show positive effects on the individuals' later professional situation. For occupations with high "burn out" rates (teaching, social work), "career changes" should be planned in and catered for through further training.

- Easing professional reorientation

In particular, this concerns developing prospects for workers who cannot continue in their job until the age of retirement (e.g. physically and psychologically demanding occupations). Individual interests may also stimulate the desire for new occupational prospects. These may arise, for example, in terms of a change of profession or job, transfer to self-employed activity or voluntary work outside and/or subsequent to the actual period of gainful employment.

- Re-organising the overall working life

It makes sense to incorporate such integrated concepts into deliberations on the re-organisation of the overall working life. In future, the rigid succession of training followed by gainful activity and finally retirement will be replaced by more flexible models, which allow or ease the realisation of specific tasks undertaken at certain points in life, such as starting a family, care provision or professional reorientation. However, this also means that gainful employment must be simultaneously extended throughout the course of life. If overall working lives are more closely aligned to individuals' specific needs and interests at different stages of their biography, the willingness of older people to continue in gainful employment for longer will also increase.

4. Summary and outlook

Older people wish to and can make a greater contribution to the economy and society if the framework conditions are right - and we are also acutely dependent upon this fact. Only if older workers remain "up-to-date" will we continue to have high levels of innovation and added value in the future. The alternative is that we will experience a lack of qualified skilled labour in the near future. In a host of ways, society too is dependent upon the involvement of older people. Thus, to ensure greater involvement by the older generation the following changes are required:

- New approach

A change in thinking begins in the mind. We need a new approach to older people that places their opportunity to make a valuable contribution to social and economic development in the foreground.

- Lifelong learning

Only through lifelong learning is it possible to maintain the ability to work throughout all stages of life as well as the capacity to pursue social participation to a ripe old age. Consequently this approach covers all generations and is not predominantly targeted at the older members of society.

- Paradigm change in educational policy

The need for lifelong learning requires a change in the educational policy paradigm, whereby falling numbers of pupils and students facilitate such a change. Consequently, the focus lies on new tasks arising with respect to continuing vocational training within companies and externally, as

well as with respect to the “traditional educational institutions” (schools and institutions of higher education).

- Preventative healthcare

In order that health and performance are maintained into old age, preventative healthcare both within companies and externally is becoming vitally significant. Working hours and work organisation, as well as the overall commercial work environment, need to be structured in such a way as to specifically ensure the avoidance of premature fatigue and deterioration.

- Enabling “second careers”

This is a question of developing new professional prospects for workers whose previous activity was overly strenuous or who wish to turn their hand to new tasks. Early qualification for such new tasks is of prime importance here.

- Flexible employment biography

The rigid succession of education, followed by employment and then retirement no longer corresponds to today's requirements and must be more flexibly structured. This supports newly founded families and opens up new opportunities to gain qualifications or become involved in social commitments. Periods where individuals opt out of employment for personal reasons could be compensated at a later stage, for example, within the scope of an extended working life.

By means of laws and numerous other initiatives, the Federal Government has pursued a wide spectrum of measures (see above) and, thus, provided incentives for greater participation in gainful employment by the older generation.

Ultimately, the mutual goal of enabling older people to use their potential to greater economic and social effect can only be achieved if the social protagonists take the matter to heart. To a major extent this is a fundamental concern of enterprises and their professional associations, but also includes works committees and trade unions. If investment in lifelong vocational qualification and development is made by these institutions, the opportunities for older workers improve commensurately. The continuance of unacceptably high levels of unemployment and forced structural changes in a number of sectors has, however, prevented the subject from gaining the necessary priority. This position could, however, rapidly change if a rally in the economy unearths a lack of qualified labour in the not too distant future. In that case only those who get on track today will see success with their business.

The required paradigm change in educational policy (see above) is an important element. This is a question for institutions providing further vocational training, both company-internal and external, and adult education facilities, but also extends to the Länder in terms of their responsibility for schools and, above all, institutions of higher education. The subject has also been partially taken on board by the Bund-Länder Commission for Educational Planning and Research Promotion (BLK). Overall, educational policy is still in the early stages in terms of getting workers qualified for new requirements.

The subject will also receive high priority from the Federal Government throughout the coming years, supporting the necessary transition process through

- implementation of Agenda 2010 for more growth and employment,
- further statutory measures, such as the Preventative Act (Präventionsgesetz) which promotes the employment of older workers,
- concrete projects to test, evaluate and publicly embody solutions in the three strategic areas of action: lifelong learning, employee healthcare and employment of older individuals,
- a national programme seeking proposals for pilot projects which exploit the opportunities for an ageing society in an exemplary fashion,
- widespread information on pioneering concepts within the respective areas of action,
- a comprehensive information campaign to promote the necessary change in consciousness, and through
- cooperation with economic and social partners.

The Federal Government will report on the results and further developments of these activities in its 2006 Progress Report.

II. New energy supply structure incorporating renewable energies

1. Current situation

In many areas, the supply of energy is experiencing a time of great upheaval, not least due to increasing oil prices and the requirements posed by climate change. In order to produce conclusions within a manageable sphere, the comments in this chapter are limited to the supply of electricity. As an important element of energy supply, a safe, cheap, consumer-friendly supply of electricity that is compatible with the climate and overall environment is of great significance for the sustainable development of our country. The investment decisions of many companies, and consequently a multitude of jobs, depend on it. Stimulating investment in sustainable energy supplies is a tremendously important objective for the Federal Government, and is also directly linked to the credible contribution that Germany is making to global climate protection.

Increases in efficiency in terms of electricity generation and consumption, combined with responsible ecological and economical development of renewable energies within the scope of a balanced energy mix, characterises the Federal Government's approach to sustainable energy supply¹².

2. The challenge

Demands presented by climate protection and the liberalisation of electricity and gas markets are the driving forces behind structural change in the supply of electricity. In accordance with the 1997 Kyoto Protocol to the UN Framework Convention on Climate Change and the European-wide sharing of the burden associated with it, Germany has committed itself to reducing greenhouse gas emissions until the period 2008-2012 by 21% in comparison with 1990 levels. In 1996 and 1998 the European directives on liberalisation of the electricity and gas markets were concluded.

Against this background, the Federal Government has introduced important steps to generate sustainable energy supplies, including the expansion of renewable energies that now account for around 10% of the electricity supply. At the same time, fossil fuel energy supplies are being replaced through the development of renewable energies, thereby also contributing to climate protection. However, modernisation and the development of combined heat and power generation also represent significant steps. Through such measures, energy is being generated more efficiently and greenhouse gas emissions are being reduced. The introduction of emission trading is also bringing about real change in the energy policy landscape. Emissions trading creates economic incentives to reduce carbon-dioxide emissions in facilities where this is associated with the lowest costs.

¹² Reference is also made to the fundamental statements in chapter D I of the German Strategy for Sustainable Development and chapter DI of the Progress Report.

These important and necessary realignments are changing the overall framework of the energy industry. In the light of such newly introduced instruments and the multitude of changes, the question arises: what must be done for the stated individual measures to be more effectively incorporated into an integrated sustainable energy supply structure?

Overall, following the stated basic realignment, this concerns a phase of coordination in which the various elements required for a sustainable energy supply must be linked in such a manner as to ensure the best possible achievement of the following objectives, which form the Federal Government's central energy policy:

- safeguarding supply,
- environmental compatibility,
- efficiency.

The subject is one of optimally developing – both economically and ecologically – the energy industry in a liberalised European market. In this respect the Federal Government is standing by its fundamental energy policy decisions. Hence, the question is not one of whether renewable energies should be developed, but rather one of how they can be best integrated into the energy supply. Against the background of withdrawing from nuclear energy, the question for debate is how a practical mix of energy sources can subsequently be achieved.

Accordingly, in a market economy with statutory regulations and economic incentives, the state merely lays down the framework, but cannot determine the energy source mix or stipulate a specific generating plant. These decisions are a matter for the energy industry, which ultimately bears the associated entrepreneurial risk. Consequently, beyond the governmental framework conditions, the goal of optimal, economic and ecological development of the energy supply can only be attained in cooperation with energy industry protagonists (particularly energy supply companies, but also consumers). This is also in the interest of competitive energy suppliers, which contribute significantly to value added and safeguard employment.

The energy industry is also on the move internationally. Furthermore, the global demand for energy is increasing, particularly as a result of high economic growth in Asia and the increasing world population. Insecurity in the oil markets created by political instability (e.g. through terror attacks) has led to considerable price risks. These aspects affect both availability and primary energy source prices and, as such, are of importance to Germany in terms of the future structure of electricity supplies. The dry summer of 2003, which led to serious electricity supply problems in a number of European countries, clearly demonstrated the major importance of an efficient supply of electricity. Specifically, highly developed industrial nations such as Germany are dependent upon ensuring that supply is also secured in the future.

How the German energy industry comes to terms with this transitional situation will be decisive in determining the extent to which the above stated energy policy goals can be realised, how Germany will fare against future international competition as an energy supply location and what the prospects are for electricity-intensive

sectors. In this respect, the optimisation of economic and ecological framework conditions is becoming an ever more pressing issue.

3. The task

The stated changes in the framework conditions and the resulting upheaval of the German energy industry, in addition to the illustrated need to optimise achievement of energy policy goals, generate a number of specific tasks which need to be addressed.

a) Ideal integration of renewable energies

The development of renewable energies presents the electricity industry with enormous challenges that require innovative solutions. Wind and solar energy are weather-dependent and are consequently subject to considerable fluctuations, which have to be balanced out by other power plants (additional balancing energy). By contrast, biomass, hydro and geothermal power provide a stable contribution and, comparable with other methods of power generation, can be utilised for the basic and medium energy supply load. Today, the lion's share of renewable energy already falls to wind power, which offers the greatest potential and, consequently, the Federal Government's development strategy envisages a considerable increase in the generation capacity of offshore wind power. Against this background, optimal economic integration of wind power into the energy supply is a significant focal point of current plans.

The second challenge to optimal integration of renewable energy into the energy supply lies in the different regional distribution of core generation and consumption. In Germany, the main areas of consumption are in the west and south of the country. The development of wind energy plants in coastal regions in the north of Germany and offshore wind parks in the North Sea and Baltic Sea will give rise to new, consumer-distant regional centres generating electricity capacity. The national electricity grid (on the high tension level) consequently needs to be adapted to. Thus, development of wind power at these locations with particularly high wind levels creates an urgent requirement for expansion of the electricity supply network.

Deutsche Energie-Agentur GmbH (dena) commissioned a study (the so-called dena network study) which examined the technical and economic effects that further expansion of renewable energies – particularly the integration of wind power plants located at sea and on land – would have on the power grid and future power plant parks. The study was prepared by a consortium under the direction of the Institute of Energy Economics at the University of Cologne (EWI). Relevant protagonists (from the wind energy sector, grid operators, power plants and associated industries as well as the responsible federal ministry) were also contextually integrated into a project steering group that accompanied the study.

b) Power plant renewal

The upcoming renewal and restructuring of the German power plant network is of decisive importance for orientation towards an overall sustainable and, consequently, economically successful energy supply. Currently, around 115,000 MW of power plant capacity is installed in Germany. By the year 2020, it is predicted that more than 40,000 MW will be required from new power plant construction as a result of decommissioning nuclear and inefficient fossil fuel power stations.

With respect to the necessary construction of new power plant capacity, the share of individual primary energy sources in electricity generation is particularly important.

In 2003, the gross level of electricity generated in Germany stood at around 600 TWh of electricity, with 51% coming from lignite and coal-fuelled power stations, 28% from nuclear power stations and around 8% generated by renewable energies, in addition to 13% from other energy sources (e.g. gas, oil). Assuming a gross level of electricity consumption of up to 660 TWh in 2020, a contribution from renewable energy of around 140 TWh (20%) and a contribution from nuclear energy of around 40 TWh, leaves fossil-fueled power plants with a contribution to gross electricity generated of around 480 TWh (73%), thus, around 100TWh more than at present.

The requirement for additional power plants in Germany is decisively determined by the following factors:

- improvement with respect to electricity consumption, particularly in relation to economic growth, energy efficiency and consumption habits,
- the share of fluctuating power plant provision, particularly from electricity generation using wind energy and photovoltaic energy facilities, and the resulting need for balancing power and energy reserves,
- the development of new storage technologies,
- development of other lines of renewable energy, such as biomass, geothermal and hydro energy,
- expansion of decentralised capacities for electricity generation (particularly combined heat and power generation),
- measures to extend the operational life of available power plants,
- technical and economic conditions regarding the import and export of electricity,
- Germany's competitiveness as a power plant location in an international context,
- the volume and structure of electricity trade.

In summary, it must not be forgotten that around a third of the existing power plant park must be renewed and/or replaced by 2020. Given the long life service of power plants, decisions on new power plant construction determine structural adjustments to the power supply for decades to come. Renovation and restructuring of the power plant park, as well as the integration of renewable energies, place new demands upon the electricity network.

c) Optimising the framework conditions

Today, the energy industry is governed by historically rooted and ever more compact regulations. Liberalisation of electricity and gas markets, environmental protection provisions, the development of renewable energies and the increasing significance of consumer protection have traditionally been and remain the driving forces, one inevitably leading to another. As such, the network of regulatory provisions has become more tightly interlinked and supplemented by ecological incentives.

Today, the question has to be asked as to whether all these regulations are necessary. Where are the provisions contradictory? In what areas can we forego regulatory provisions or do away with fiscal differentiations for the benefit of economic incentives (e.g. emissions trading)? Does this require the amendment of European directives?

Overall, the matter is one of determining how the existing statutory regulations and economic incentives can be optimised in order to allow energy policy goals to be achieved with greater efficiency and less bureaucratic effort. Therein lie the major opportunities for successful, economically and ecologically balanced sustainable development.

Such ideal framework conditions are important in order to maintain the international competitiveness of the German energy industry and to ensure that Germany remains an attractive location for power supply investment in the future. However, this task must also be addressed in order that industry, trade and households can be supplied with electricity that is cost-efficient and in line with internationally competitive prices.

4. Conception and approach

The starting point requires taking stock of legal, economic, ecological and technical framework conditions pertaining to the energy industry and their subsequent effects. Added to this, amongst other things, are the goals and agreements that the Federal Government has already resolved with the economy (e.g. agreement on the systematic phasing out of nuclear energy utilisation). National stocktaking is also supplemented by a stocktaking of European framework conditions. Hypotheses are concluded with respect to the progression in demand for electricity.

The objective of the overall process is to generate a proposal as to how energy policy framework conditions can be optimised through an intelligent linking of the economic and ecological issues.

To this end, the initial step is to evaluate the individual aspects ascertained in the stocktaking process in an integrated analysis. Forming the basis of this are currently available expert reports, in particular the dena network study that will shortly be reaching its conclusion.

Upon integration of the individual aspects, the next step is optimisation of the overall system. Drawing upon the experience gained through such optimisation, conclusions are then drawn with respect to the structuring of energy policy instruments. Results will be documented in the 2006 Progress Report.

III. The fuel strategy

Alternative fuels and innovative drive systems

1. Current situation

a) Reducing consumption of fossil fuels

Oil is the fuel of traffic. In answer to the increasing global demand for oil, owing to limited available resources and the effect on the climate of fossil energy sources, consumption of fossil fuels must be reduced. Consequently, the development of alternative fuels and energy-saving drive systems is imperative to ensuring sustainable mobility.

b) Fuel strategy goals

In its Strategy on alternative fuels and drive technologies, the Federal Government is pursuing the following goals in particular:

- Consumption of fossil fuels is to be reduced and, thus, the dependency on oil decreased (safeguarding supply).
- Greenhouse gas emissions generated by traffic are to be reduced (climate protection).
- Promising alternative fuels and drive systems that also have high availability potential are to be identified (innovation and efficiency).
- Action required to ensure progress with efficient promising alternatives is to be determined and coordinated into a programme of implementation measures (implementation).

In summary, the Federal Government believes that, given the long-term economic, traffic-related and ecological implications, a promising strategy for the application of competitive alternative fuels and drive system technologies is required. Above all, the innovative potential for alternative fuels and drive technologies should be used to create growth and employment. Thus, such action will not only significantly contribute to environmentally friendly mobility, but also to overall sustainable development in our country.

c) Promising alternatives

The fuel strategy is not a question of finding the “ideal fuel or engine of the future”, but rather of identifying the fuel options and drive system technologies that are the most promising. Subsequently, the limited resources available from the state and economy need to be concentrated on these. This provides orientation in terms of which developments are considered feasible and, above all, illustrates which fuels and drive technologies are relevant for future direction.

The fuel strategy is oriented in line with the development goals of the European Union. On this note, in its resolution of October 2002, the European Parliament called upon the Commission to “swiftly draw up a long-term strategy for biofuels and other alternative fuels in consideration of their ecological effects and, thus, send out a clear signal for investment in this sector”.

A fuel strategy developed in cooperation with science and industry, which is incorporated into European and international strategies, will secure planning for investment and provide incentives for innovation in the long term. This, in turn, smoothes the progress of industry in maintaining a technologically and economically leading role on the world market in the future. Innovation in relation to fuel and efficient drive system technologies can make an important contribution in this respect.

2. Method of approach

To maintain the overview within this complex subject, a stringent method of approach is needed.

a) Status quo (paragraph 3)

Initially, a comprehensive determination of the status quo is necessary. This must illustrate and evaluate the current position of national, European and international activities aimed at developing alternative fuels and drive systems.

b) Evaluating the alternatives (paragraph 4)

The multitude of possible alternative fuels and drive systems must be evaluated on the basis of uniform economic and ecological sustainability criteria.

c) Identification of promising alternatives (paragraph 5)

On the basis of the assessment matrix, promising alternatives are to be identified which fare well from a climate point of view and which simultaneously offer great potential in terms of volume and international market penetration.

d) Need for action and programme of measures (paragraph 6)

The next step is to ascertain what action needs to be taken in order to develop the promising alternatives identified and tap their potential (programme of measures).

3. Status quo

Given its essentially export-oriented automotive industry and its position in the heart of Europe, a “fuel strategy” based on a national approach makes little sense for Germany. Hence, deliberations on a strategy for sustainable alternative fuels and innovative drive systems concepts must fit into the European and international environment. In Japan and the USA in particular, efforts are being made to develop innovative drive systems and alternative fuels with considerable state sponsorship.

a) Important fuel options

Traditional, currently marketable fuels

Natural gas (predominantly methane) in compressed form (CNG) can be directly used as a fuel. The same applies for **autogas/liquid gas** in liquefied form (liquefied petroleum/natural gas [LPG], propane/butane mix).

Given its high octane rating, natural gas is suitable for commensurately adapted Otto engines. The advantage natural gas has over conventional petrol and diesel fuels lies in its particularly low emissions of NO_x and particulate matter, such as its potential to minimise CO₂ emissions in comparison with existing vehicles. Compared to other fossil fuels, use of natural gas is currently associated with higher costs for engines, storage units, as well as in terms of investment, operation and maintenance costs for service stations. In the medium-term, significant potential for savings exist in this area through mass production of natural gas vehicles. Worldwide, there are around 9 million liquid gas vehicles and approximately 2.5 million natural gas vehicles, of which around 1 million are in Argentina and around 0.4 million each in Italy, Brazil and Pakistan. Over 3 million vehicles in the European Union currently run on liquid gas, with more than 420,000 driven by natural gas.

Bio-diesel (FAME) is made from fat or oily plants (rapeseed/sunflower; RME) using methanol and can be mixed with traditional diesel fuel as an admixture of up to 5%. With its annual production capacity of around 1.1 million tonnes (2003), Germany is currently the world's leading producer of biodiesel. Production has increased 10-fold over the last decade; however, given the limited area for rapeseed cultivation, it is anticipated that further expansion of capacity in the future will only be limited.

The use of **pure plant oil** as fuel is limited in Germany to the application of rapeseed oil. Currently, it is used in a few thousand private vehicles and a small number of agricultural machines.

Traditional production of **bioethanol** has used biotechnological fermentation of raw materials containing sugar. Possible raw materials in Germany are, in particular, starch crops, potatoes or sugar beet (production capacity for 500,000 tonnes from starch crops is currently under construction). With respect to the fuel sector, bioethanol is used particularly in Brazil, where it is essentially made from sugar cane. Bioethanol production from lignocelluloses (wood residue, biomasses without sugar content) is currently at the development stage (see below). In accordance with DIN EN 228, ethanol can be mixed with traditional petrol in an admixture of up to 5%.

On account of the global distribution of petrol, of all the regenerative fuels outside Europe, ethanol has the largest distribution. The major ethanol producers and users are Brazil (approx. 9.5 million tonnes annually) and the USA (approx. 4.8 million tonnes annually). Within the EU, bioethanol is produced for the fuel sector to a minor extent in France, Spain and Sweden. Brazil, the USA and Sweden also use flexible fuel vehicle technology (FFV). In these vehicles, larger bioethanol quantities can be mixed with petrol.

Ethyl tertiary butyl ether (**ETBE**) is a chemical mix derived from (regenerative) ethanol and (fossil) isobutylene. ETBE is not used as a pure fuel, but is used as an admixture of up to 15% with petrol – predominantly used in France and Spain¹³.

Biogas is a metabolic product of methane bacteria that results from biochemical decomposition of liquid organic substances (biomasses, waste and other organic remainders) by way of unaerobic treatment. Through purification it takes on the quality of natural gas and can be used in natural gas compatible vehicles. In Germany biogas is not currently used as a fuel, rather exclusively in the non-mobile area. In Sweden and Switzerland, biogas can be bought at public filling stations. Currently, Sweden and Germany are the only countries to have introduced a standard for biogas as a fuel.

Synthetic fuels, new developments – not yet market viable

Synthetic fuels are fuels produced from synthetic gas (using the Fischer-Tropsch process), which in turn derive from fossil **coal (CTL)** or **natural gas (GTL)**. In addition, **biomass (BTL)** particularly lends itself as a base raw material for synthetic fuels.

The particular interest of the mineral oil industry in **GTL** from natural gas lies in the fact that there are large natural gas reserves in geographically unfavourable marginal areas. Given the high cost of transporting liquid gas, tapping these reserves is not an economically viable proposition. In addition, there are also large reserves of natural gas in the form of petroleum gas that, to date, have been burnt off unused. **GTL** production costs are predominantly determined by the cost of the source of energy used (feed). Costs fluctuate significantly depending on whether “stranded gas” (gas from remote gas fields) is used, or whether gas is obtained from gas fields forming part of the overall infrastructure. The advantage of **GTL** fuels predominantly lies in their high cetane rating and the absence of odour and sulphur. Compared to traditional fuels, there are no benefits in terms of the reduction of CO₂ with **GTL** and **CTL**.

The base material for the manufacture of **BTL** is synthetic gas, which, in principle, can be produced from any type of biomass. **BTL** is not currently being produced commercially. Its high quality is commensurate with that of **GTL** fuel. **BTL** fuels are also free of contaminants. The benefit over synthetically produced fuels derived from natural gas (or coal) is its **CO₂ advantage**. **BTL** can be used as an admixture or as a pure fuel in diesel engines.

Production of bioethanol through the “saccharification of wood” is a long recognised fact; however, it is only recently that processes have been developed which enable **bioethanol production from wood, straw or other plants (lignocellulose)**. Using such methods, which no longer require sugar or starchy raw materials, the biomass basis of ethanol production can be broadened considerably.

¹³ ETBE can be used to replace fossil fuel MTBE as an octane rating enhancer

Hydrogen can, in principle, be produced with the aid of all primary energy sources (fossil, regenerative and nuclear fuels). The spectrum of different hydrogen manufacturing processes and the raw materials used for such production is extremely diverse. Nonetheless, the difference in raw material base in terms of non-renewable (fossil and nuclear) and renewable (regenerative) primary energy sources is of paramount importance in evaluating hydrogen as a source of energy. All regenerative primary energies – solar, wind and wave energy, hydropower, geothermal energy etc. – which can be utilised in the form of electricity, can therefore also be transformed into **hydrogen**.

Hydrogen, with respect to mobile applications, can be used in Otto engines or fuel cells. Storage is possible in liquid form at very low temperatures (LH_2), or in the form of gas under high pressure (CGH_2).

b) Current situation in Germany

aa) Current use of alternative fuels in Germany

Alongside the traditional petrol and diesel fuels, alternative fuels being used on the roads in Germany are essentially biodiesel, natural gas and liquid gas.

In 2003, biodiesel as a pure fuel was the only biofuel with considerable market relevance in Germany. As of 1 January 2004, in addition to biogenic pure fuels, biogenic admixtures (e.g. biodiesel, bioethanol or ETBE) for fossil fuels have been exempted from mineral oil tax within the scope of the Ecological Tax Reform. Since that time, the extent of biodiesel used in Germany as an admixture for fossil diesel – to the permissible maximum of 5% – has notably increased.

With an overall total of 54 million vehicles in Germany and given that less than one in every thousand and only around 20,000 vehicles use natural gas, this form of fuel only holds a minor share in the overall fuel market at the present time. Through the mineral oil tax incentive introduced in 1995 and extended to 2020, natural gas should continue to increase its share in the fuel market. This is also supported by the doubling of natural gas filling stations to around 1,000 in Germany throughout the next two years, which will provide wide coverage of supply.

Consumption of fuels in Germany 2003

	in 1,000 tonnes	Share of total fuel consumption in %
Total fuel consumption	53,600	100
Petrol	26,000	48.5
Diesel	27,600	51.5
Natural gas (CNG)	47	0.08
Liquid gas/autogas (LPG)	113	0.2
of which biogenic fuels		
Biodiesel	800	1.4
Rapeseed oil (pure)	5	0
Ethyl tertiary butyl ether (ETBE)	0	0
Bioethanol	0	0
Biogas	0	0

Similar to natural gas, with 15,000–20,000 vehicles, liquid gas only has a share of less than one per thousand in the total fuel market in Germany. Through the existing mineral oil tax incentives, which will initially apply until 2009, a slight increase in market share is also anticipated for this fuel. By the end of 2006, around 1,000 filling stations should be offering liquid gas.

bb) Activities on the part of industry

German industry – particularly the automotive and plant engineering industries – has for many years been an active participant with respect to the research and development of alternative traffic concepts and, consequently, has become one of the global leaders in this area. Within the scope of European initiatives, such as the “Alternative Fuels Contact Group (AFCG)” or the “Hydrogen Technology Platform”, German companies occupy an important role.

In Germany, all national automotive companies as well as the oil companies BP/Aral, Shell and Total are involved with the Transport Energy Strategy (TES), which, amongst other things, is pursuing a common position with regard to future alternative fuel options.

Strategies of the automotive companies

Volkswagen (VW) has developed a fuel strategy centred on the development of **synthetic fuels**. VW is initially focussing on GTL fuels, but is also simultaneously committed to projects looking into the use of BTL fuels. The advantage here is that these fuels can be mixed with traditional diesel fuels. VW is not currently publicly involved in the area of hydrogen fuel and fuel cells.

DaimlerChrysler (DC) is pursuing a “double strategy”. Alternative fuel options such as synthetic fuel, including BTL fuels, are a welcome “additional option” for DC, but the long-term objective centres on hydrogen as a fuel. Furthermore, DC has begun development of so-called “hybrid concepts” and has launched its first natural gas vehicles onto the market – as have BMW and VW. Alongside Toyota and General Motors (GM), DC is the world’s largest producer of fuel cell vehicles.

BMW is wholly committed to hydrogen for the future and, in line with this, has its “own transition strategy”. At the moment BMW is developing small fuel cell prototypes, but is also aiming to speed up the introduction of hydrogen as a fuel and expand the necessary associated infrastructure by using (liquid) hydrogen in (dual-use) Otto engines. (Commercial vehicle manufacturer **MAN** is also pursuing a similar concept).

Opel and **Ford** have immense capacity in Germany for research and development. In light of the fact that these activities are embedded in the respective international company strategies, they are reported in paragraph 3.c).

cc) Development goals for alternative fuels

In terms of the further application of alternative fuels to 2020, the Federal Government is principally focussing on the goals formulated by the European Union. The Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport (Biofuels Directive) was adopted in May 2003. It aims to increase sales in biofuels to 2% of the fuel market by 2005 and to 5.75% of the market by 2010. Furthermore the EU Commission presented an optimistic development scenario, which assumes a 20% share for alternative fuels by 2020 and illustrates how this could be structured overall in a communication on this topic:

	2005	2010	2020
Biofuels	2%	5.75%	8%
Natural gas		2%	10%
Hydrogen		2%	5%

Against the background of EU enlargement and the development of new technologies – such as synthetic fuels – the EU Commission announced in summer 2004 that it would be re-examining these objectives.

In Germany, the share of biofuels stood at 1.4% of overall fuel consumption in 2003. As detailed in the first report on implementation of the EU Biofuels Directive in July 2004, the Federal Government is striving to achieve a share in overall fuel consumption of at least 2% for biofuels for the year 2005.

dd) Research activities in Germany

Programmes in the area of research and development (R&D) within Germany are currently concentrating on innovative drive system technologies and the mobile application of fuel cells, the use of natural gas and liquid fuels based on sustainable resources.

R&D – Development of general strategies

Programmes within the scope of the Environmental Research Plan (ERP) examine the development of general strategies for alternative fuels and drive system technologies. To this end, € 1.1 million is being invested during the period 2000-2004 and focusses on the following research goals:

- Determination of a basic foundation for accelerated market introduction of environmentally friendly and innovative drive system and vehicle concepts for commercial vehicles;
- Development of a general strategy for the introduction of alternative fuels, particularly regeneratively produced hydrogen as a fuel for the automotive sector;
- Development of natural gas vehicle motor up to the demonstration stage in order to accelerate market introduction;
- Continued development of special natural gas vehicle technology.

Since 1995, around € 35 million have been invested in national pilot projects for the application of natural gas in various areas of road transport.

Since 1998, the Federal Government has been a member of the “Transport Energy Strategy (TES)”, which is a consortium of German and European automotive and oil companies. Currently the members are specifically involved in the Clean Energy Partnership (CEP), which is managing the joint construction and operation in Berlin of Europe’s first public hydrogen filling station. The Federal Government is supporting the project with a total volume of € 5 million (project duration 2003–2007).

R&D – Energy research and technologies

Major programmes of the Federal Government on “Energy research and technologies” are predominantly concerned with developing technologies for the rational and environmentally friendly provision of electrical and thermal energy, for example:

- Demonstration of the entire chain of a solar hydrogen energy industry, including utilisation of hydrogen in the automotive sector,
- Development of battery technology for application in electric vehicles;
- Fundamental development of fuel cell technology for mobile applications.

These measures were essentially completed by the end of the 1990’s. Thanks to additional funding from the Future Investment Programme (ZIP), it has been possible to support the following measures also relating to the transport sector:

- Development and testing of a zinc/air battery system in a demonstration vehicle (Bremen Institute of Industrial Technology and Applied Work Science; total funding € 6 million).
- Projects to construct and test fuel cell vehicles, including realisation of hydrogen infrastructure (Stuttgarter Straßenbahn AG, Hamburger Hochbahn AG, HEW, Berliner Verkehrsbetriebe, Stadt Barth, Audi AG; total funding € 9.4 million).
- Renewable fuels produced from biomass (CHOREN Industries GmbH; total funding € 5.4 million).

However, since these ZIP projects came to an end, development programmes in the area of “Energy research and technologies” are no longer the focal point in the transport sector.

R&D Biofuels

Development funding for ongoing biogenic fuel projects currently stands at around € 4.0 million. Basis for current research and development into biogenic fuels is the Federal Government’s development programme entitled “*Nachwachsende Rohstoffe*” (Renewable resources), which was introduced in 2000.

With the first R&D projects on **synthetic biofuels**, in particular BTL, a pioneering direction of development has been set that not only makes a significant contribution to sustainable mobility, but could also open up economic prospects for domestic agriculture and forestry. Within the scope of this, research is currently being carried out on, amongst other things, establishing a pilot BTL fuel facility for production on a large technically relevant scale. In addition, the Federal Government

also set up a BTL information platform this year to improve the information exchange and tap synergy effects.

Due to the fact that the production and use of biodiesel and bioethanol (from sugar beet and starch crops) is state-of-the-art technology, development funding is only being applied to a limited extent at present. Development initiatives relating to plant oil are currently only focussing on agricultural application. According to industry assessments, in the future, plant oil as a fuel will only be applicable in niche areas and will not offer an alternative on the open market.

R&D Innovative drive systems

The “Mobility and Transport” programme of the Federal Government promotes the development and demonstration of alternative drive systems. This encompasses the drive system (combination of efficient Otto engines with electric motor/generator drive systems) and the associated energy management (battery storage systems for energy retrieval and recycling during the journey), as well as the necessary simulation instruments that enable initial analysis of operational processes and the efficiency of individual concepts.

These R&D projects also include specific development of new electrical drive components for electric and hybrid vehicles. These are based on high performance batteries for hybrid vehicles that ensure high performance, while simultaneously offering long life and a high degree of safety, for example, in the case of accident.

Concepts for pioneering driving methods that are adapted to the transport flow are also being investigated. In this respect, these vehicle concepts and their coordinated energy management strategies demonstrate that an energy saving potential of up to 20% could be achieved.

Based on these conceptual studies, various personal vehicle/hybrid concepts are being specifically planned with decisive participation on the part of vehicle manufacturers and the ancillary industry. New concepts for hybrid drive systems are being installed into test vehicles in order to clarify fundamental questions with respect to battery lifetimes and whether operation is in line with requirements. As such, the achievable potential for CO₂ reduction can also be more reliably assessed on the basis of experience gained by actually operating a system in real conditions.

Within the “Mobility and Transport” funding programme, funding of € 17.1 million was made available during the period 1999 to 2003 for the purpose of developing environmentally friendly drive systems. This activity will also continue.

ee) Tax incentives for alternative fuels in Germany

Tax policy framework conditions created by the Federal Government have had a decisive impact on the dynamic development of alternative fuels in Germany and the fact that Germany has, consequently, taken a leading position within Europe. Nevertheless, analysis needs to be carried out to establish the extent to which fuel-specific tax reductions are consistent with targeted objectives (CO₂ reduction, increased safeguarding of supply, efficiency).

In Germany, mineral oil tax law currently provides tax relief, for example, in terms of tax allowances for biofuels, natural gas, liquid gas, as well as the possibility of tax relief for the use of mineral oil for experimental purposes. Depending on their biogenic level, biofuels are currently exempt from mineral oil tax until the end of 2009.

Given the current rates of mineral oil tax for petrol and diesel fuels, the tax exemption on biofuels and tax relief for natural and liquid gas, considerable subsidies are needed in Germany in order to achieve EU goals. Based on the current rates of mineral oil taxation, estimates based on expert analysis of rolling stock development predict the following tax losses: For 2010, tax subsidies would amount to € 3,000 million per year (5.75% biofuels, 2% natural gas); in 2020 to approximately € 5,000 million (8% biofuels, 10% natural gas). Nonetheless, the subsidised fuels are showing overwhelmingly positive external results.

Since 2004, hydrogen as a fuel has essentially been subject to mineral oil tax; however it is granted tax exempt status under a special dispensation.

Funding of fuels, as at 1 July 2004

Product	Raw material source	Type of tax relief	a) Standard rate b) Reduced rate	Tax per MWh
FUELS ON THE MARKET IN 2003				
Petrol ^l	Crude oil	none	a) € 654.50/1,000 litres	€ 72.58
Diesel ^l	Crude oil	none	a) € 470.40/1,000 litres	€ 47.45
CNG	CNG	Reduced rate	a) € 31,80/MWh	€ 13.90
	Stranded/flare gas	until 2020	b) € 13,90/MWh	
Liquid gas/ LPG	Stranded/flare gas Crude oil	Reduced rate until 2009	a) 1217/t b) 180.32/t	€ 13.92
Bio-diesel (pure or 5% admixture)	From fat (FAME) From oil plants (RME)		Bio share tax free	
Rapeseed oil (pure)	Oil plants	Tax free		
Ethyl tertiary butyl ether (ETBE; 15% ad- mixture)	Starch crops Sugar beets	Bio share tax free		
Bioethanol (5 % admixture)	Starch crops Sugar beets	Bio share tax free		
Biogas	Old, waste and animal fats Energy plants	Bio share tax free		
OTHER FUEL OPTIONS (NOT OR NOT YET MARKET RELEVANT)				
Synthetic/ designer fuels	Natural gas (gas to liquid/GTL)	none	a) € 654.50/1,000 litres	
	Coal (coal to liquid/CTL)	none	a) € 654.50/1,000 litres	
	Old, waste and residue wood, Energy plants (BTL)	Bio share tax free		
Bioethanol	Lignocelluloses (residue wood)	Bio share tax free		
Ethanol (fossil)	(fossil) Flare gas (stranded)	Reduced rate until 2020	a) € 31.80/MWh b) € 13.90/MWh	

Product	Raw material source	Type of tax relief	a) Standard rate	Tax per MWh
Fatty acid ethyl esters (FAEE)	Oil plants, Old, waste and animal fats	Bio share tax free		
Methyl tertiary butyl ether (MTBE; 10% admixture for Otto engines)	Crude oil Natural gas	none Reduced rate until 2020	a) € 654.50/1,000 litres a) € 31.80/MWh b) € 13.90/MWh	
Dimethyl ether (DME)	Natural gas	Reduced rate until 2020	a) € 31.80/MWh b) € 13.90/MWh	
Compressed gaseous hydrogen (CGH ₂)	Natural gas Stranded/flare gas LPG Coal Biogas Old, waste residue wood Energy plants	Reduced rate until 2020 none Tax free	a) € 31.80/MWh b) € 13.90/MWh a) € 654.50/1,000 litres	
Liquid hydrogen (LH ₂)	Natural gas Coal Old, waste and residue wood Energy plants	Reduced rate until 2020 none Tax free	a) € 31.80/MWh b) € 13.90/MWh a) € 654.50/1,000 litres	
	Conventional power Regenerative power		a) € 20.50/MWh a) € 20.50/MWh	
	Conventional power Regenerative power		a) € 20.50/MWh a) € 20.50/MWh	

¹ Petrol: unleaded and sulphur-free; Diesel: sulphur-free

c) International development Strategies of the automotive companies

Against the background of strict emissions legislation – above all in the USA, Toyota and Honda already offer fully developed **hybrid drive systems** with Otto engines as an alternative drive form. Opel/GM and Ford are adopting the same course. Toyota claims to already have sold more than 100,000 corresponding vehicles in Japan and the US and is now launching a successive model on the market.

Opel/GM is the pioneer with respect to mass production of **natural gas** vehicles. Other manufacturers of liquid and/or natural gas driven vehicles are, for example, Volvo, Renault, Ford and Fiat. In addition, individual manufacturers, such as Ford and VW, offer flexible fuel vehicles.

Moreover, American and Japanese automotive producers are leading the way in **fuel cell development** and already operate their own hydrogen vehicles.

International research activities and development programmes

While research activity in Germany and Europe is focussing equally on fuel development and innovative drive system technologies, international research activity, such as in North America or Japan, is concentrating more on the development of drive system technologies. Recently, particularly large-scale hydrogen and fuel technology programmes have been initiated in this area.

European Union

In recent years, the EU has been involved in numerous **biogenic fuel projects** and their distribution throughout the EU or within the framework of development cooperation (e.g. "STEER" and "COOPENER" projects).

Particular focus has been placed on the areas of biodiesel and bioethanol. As such, sponsorship has been given to projects dealing with the production of ethanol using materials containing lignocelluloses, such as wood or straw, in order to expand the fuel base. Within the scope of the 6th Framework Programme, projects were sponsored that, amongst others, addressed the production of BTL fuels (e.g. "RENEWS" with around € 10 million and "CHRISGAS" with around € 8.8 million).

In its 5th and the current 6th Framework Programme, the EU has supported the **development of alternative drive systems**. Research projects to develop alternative drive systems place focus on fuel cell development as well as fostering the development of short-term alternative applications, such as hybrid drive systems. For example, three vehicles with hybrid drive systems that are close to the production stage have been developed by a project consortium of automotive manufacturers with German participation. At the same time, so-called "mild-hybrid" drive system concepts were also realised (electro-engines/generators combined with combustion engines and starters/generators with electric acceleration function using storage batteries).

At the end of last year, in coordination with and as a supplement to national activities, the EU Commission called for submission of project proposals relating to hydrogen and fuel cell drives for transport systems in its 1st invitation to tender of the current 6th Framework Programme. In connection with this, the EU Commission set up the European Hydrogen and Fuel Cell Technology Platform, HFP, in January 2004. This platform is tasked with drawing up a concept to ensure a smooth transition for the European energy industry, from its present predominant reliance upon fossil fuels to becoming a "hydrogen industry" (HyWays).

United States of America

The fuel market in the USA is dominated by petrol; with diesel only playing a marginal role. Consequently, application of biofuels in the USA is dominated by bioethanol. In 2001, consumption of ethanol stood at 6.8 million m³ (1.6% of petrol consumption). Market introduction is being supported by tax concessions and admixture constraints for oxygeneous fuel components (Clean Air Act).

The 2003 "Energy Policy Act" (HR6), which is not yet in force, also provides for further biofuel incentives. Thus, it is anticipated that biofuel will amount to 18.9 million m³ of fuel consumption by the year 2012.

In the USA in the mid-1990's the PNGV Programme (Partnership for a New Generation of Vehicle) was jointly set up by the government and the three largest national **car manufacturers**, General Motors (GM), Ford and Chrysler. This is a joint research and development passenger car programme which, in the course of the 10-year programme, aims to produce an appropriate 3L saloon car in line with American conceptions. Nevertheless, it is not yet apparent whether the project's goals can be achieved. Meanwhile, the PNGV programme has expanded its remit to include a broader and more long-term research programme for the US automotive industry (foreign partners are largely excluded), which encompasses activities relating to telematics and, in particular, fuel cell and hydrogen technology programmes. In this respect, in 2003, the American government also expanded initiatives to promote hydrogen and fuel cell technology by means of additional programmes (Freedom Car – with around USD 1,700 million and Freedom Fuels – with around USD 1,200 million)

Tax incentives for alternative fuels on an international scale

Existing fuel duties in Europe are predominantly characterised by historical limitation to fossil fuels (cf. **mineral oil tax**). By contrast, separate rates of tax for alternative fuels (with the exception of autogas/LPG) are not common. Currently, within the scope of the European Energy Tax Directive now in effect, moves are underway to harmonise the widely differing levels of taxation.

Notable in the USA is the fact that both federal duties as well as state duties are levied on fuels used for transportation. Generally, it is apparent that rates for fossil fuels are extremely low in the USA and, moreover, special rates of duty on alternative fuels are widespread.

4. Assessment of alternatives

The current situation – in Germany and Europe – is defined by a large number of technological processes and ideas for potential alternative fuels and the possibilities for their production and application. Given the lack of transparency in this situation, uniform analysis of the manifold alternatives within a single matrix that includes specific economically and ecologically sustainable criteria is urgently required. Since the summer of 2003, this task has been performed by an inter-disciplinary specialist study group (see table of the next site).

Within this so-called "**matrix process**", the potential of all known fuel production options – currently amounting to around 270 – is to be assessed for the period to 2010 and for the period to 2020.

Group of experts “Fuel matrix”	
Members of the Transport Energy Strategy (VES)	Mineralölwirtschaftsverband e.V.
German Association of the Automotive Industry (VDA)	Federal Environmental Agency (UBA)
Agency of Renewable Resources (FNR)	IFEU, Heidelberg
Institut für Energetik und Umwelt gGmbH, Leipzig	dena - German Energy Agency
Mineral Oil Analysis and Quality Management	Ludwig-Bölkow-System-Technik (LBST)
Institute for Energy Process Engineering and Chemical Engineering, TU Freiberg	
Consulting federal ministries	
Federal Ministry of Transport, Building and Housing (BMVBW)	
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)	
Federal Ministry of Economics and Labour (BMWA)	
Federal Ministry of Consumer Protection, Food and Agriculture (BMVEL)	
Federal Ministry of Finance (BMF)	
Federal Ministry of Education and Research (BMBF, in the field of drive system technology)	

a) Assessment criteria

All technological activity and, consequently, also the use of alternative fuels and drive system technologies, is intertwined with an environmental impact. Nevertheless, the decisive factor for an overall assessment is how these technologies should be evaluated in comparison to traditional technologies, both today and in the future.

Essential factors are the previously mentioned criteria:

- climate impact,
- availability/safeguarding supply and
- efficiency.

The result of the specialist group's efforts is a “fuel usage matrix” for the years 2010 and 2020 that illustrates potential fuels in connection with the respective drive system concept which, in the opinion of the experts, are suitable in terms of contributing to the future fuel supply.

In addition to analysis provided by the IFEU, the “European Well-to-Wheel Study” by CONCAWE/EUCAR/JRC [CONCAWE 2003] was selected as an essential data basis for the study group. The results of this study expand upon important previous studies, particularly those by the TES and the General Motors Study [GM 2002]. Indeed, there are currently no other data bases in existence, which provide a similar scope and which are supported by the important European protagonists. Nonetheless, the data basis should be further expanded in the future.

A comprehensive account of the results of the “matrix process” work and corresponding conclusions are detailed in the full report produced by the “expert group” on the “matrix process”. It is recommended that matrices set out in the report for 2010 and 2020 are read in association with the report text. The full report is available at www.bmvbw.de

aa) Potential for reducing greenhouse gases

The benchmark for assessing “climate impact” is the contribution that each fuel can make to reducing greenhouse gas emissions through its use in the appropriate vehicles. An expedient and meaningful comparison of the different fuels can, however, only be achieved within the scope of a Well-to-Wheel (WTW) analysis, i.e. the route the fuel takes from “its source to the wheel”. This requires that a “fuel assessment” encompasses both its production and supply as well as its use in a vehicle.

In this respect, it should be borne in mind that a fuel’s possible contribution to reducing emissions is not to be understood as a projection, but rather as its potential. As such, statements refer to the maximum contribution that a fuel could make by a specified date under the most favourable conditions. These conditions comprise the technically achievable potential quantity of the fuel, the technological stage of development of the vehicles/drive systems and their possible market penetration within the specified period of analysis.

The following table shows a summary of the fuel usage matrices compiled by the specialist group, classified according to the respective potential reduction in greenhouse gas emissions (ranges) of potential fuel/drive system combinations, with an estimation of the respective quantity potential for 2010 and 2020. All fuel paths include greenhouse gas emissions on a “Well-to-Wheel” basis. Assessment relates to the potential quantity of the fuels on the fuel market based on current legal and technological conditions.

Comprehensive details can be read in the above-mentioned full report.

CO₂-reduction potential per vehicle kilometre and estimated quantity potential

Fuel/drive system combination with potential CO₂ reduction of 0 to 33%		Estimated market potential in 2010	Estimated market potential in 2020
► Note: There are no marketable options with higher CO ₂ potential for the period up to 2010.		(values cannot be added up)	(values cannot be added up)
Reference: petrol and Otto engine, standard of technology 2002: 189g CO ₂ -equivalent/vehicle kilometre			
Diesel fuel, diesel engine	Crude oil	55%	65%
Petrol, Otto engine	Crude oil	45%	35%
Bio-diesel (5% admixture, diesel engine)	Bio-diesel from various sources	max. 2.75% ^①	max. 3.25% ^①
Bioethanol (anticipated: 5% admixture, Otto engine)	From sugar beet From wheat	max. 2.25%	max. 1.75% ^②
Natural gas (CNG), Otto engine	Via pipeline	0.5 -1% ^③	2 - 4% ^③
LPG, Otto engine	Crude oil refining Natural gas refining	max. 0.4%	max. 1%
Ethyl tertiary butyl ether (ETBE); 15% admixture, Otto engine	Ethanol from sugar beet, Isobutylene from crude oil Ethanol from wheat, Isobutylene from crude oil	max. 0.5%	max. 2.7% ^②
MTBE (10% admixture), Otto engine	Methanol from natural gas	max. 0.5%	max. 0.5%
Dimethyl ether (DME), diesel engine	Reforming of natural gas DME synthesis	0	0 ^③
Fuel/drive system combination with CO₂ reduction potential of 33% to 66%		Estimated market potential in 2020	(values cannot be added up)
► Fuels that may only be market relevant subsequent to 2010			
Compressed hydrogen (CGH ₂), fuel cell engine	Liquid hydrogen (LH ₂), fuel cell engine Steam reformed from LPG		2 - 4% ^{④⑤}
Steam reformed from natural gas	Steam reformed from natural gas and subsequently liquefied		
Fuel/drive system combination with CO₂ reduction potential of over 66%		Estimated market potential in 2020	(values cannot be added up)
► Fuels that may only be market relevant subsequent to 2010			
Synthetic diesel fuel (BTL), diesel engine	Biomass gasification (residue wood/short rotation wood), Fischer-Tropsch synthesis		2 - 4% ^④
Synthetic petrol, Otto engine	Gasification of lignocelluloses (residue wood/short rotation wood), methanol-to-gas process		2 - 4% ^④
Bioethanol, Otto engine	Hydrolysis and fermentation of lignocelluloses (residue wood/short rotation wood)		1.3 - 2.6% ^{①④}
Dimethyl ether (DME), diesel engine	Gasification of lignocelluloses (residue wood/short rotation wood), DME synthesis		0
Methane, Otto engine	Biogas (residue substances) Through gasification of lignocelluloses (residue wood/short rotation wood)		2 - 4% ^{④⑤}
Hydrogen (Otto engine and fuel cell engine)	Through reforming biogas Through gasification of lignocelluloses (residue wood/short rotation wood) Through electrolysis with regenerative electricity		2 - 4% ^{④⑤}

^①) In addition, biodiesel will also be used to a certain extent in future as a pure fuel, particularly with respect to rolling stock.

^②) Through the use of so-called flexible fuel vehicles a limited market potential could emerge in 2020. The share of bioethanol in 2020 could decrease depending on the introduction of BTL fuels onto the market; however, if new technologies in the production of bioethanol from a pure vegetable basis (lignocelluloses) are successful, the share could rise to over 1.75%.

^③) 15% ETBE admixture indicates the use of 7.5% Ethanol.

^④) Not assessed, as no current vehicle development.

^⑤) Limited on account of the possibility of availability in 2020.

^⑥) Limited on account of size of rolling stock on the market in 2020.

bb) Availability/safeguarding supply

A realistic estimation of the actually **available** and accessible energy sources for use in fuel production is of immense importance for the transport sector. Relevant (technical) potential with regard to quantity is expected for biofuels and to a certain extent for natural gas and liquid gas and, after 2020, for hydrogen.

Typical for all alternative fuel options is the fact that they compete for limited energy sources with the frequently more energy-efficient electricity and geothermal sectors. Thus, analysis/discussion must also constantly take relevant alternative use into consideration.

(1) Biofuels

Given the minimal risk they represent for water and soil and their low toxicity, biofuels have advantages over fossil fuels. Moreover, they contribute to added value and employment, particularly in rural communities.

In terms of the availability of biofuels, consideration must be given to the fact that use of these fuels for energy essentially gives rise to a “competitive situation” for available biomasses between the non-mobile sector and the transport sector. Of the total energy produced from biomasses in 2003, 82% was devoted to thermal power, 7.8% to electricity generation and 10.2% to fuels. This breakdown reflects the fact that, notwithstanding other factors, due to the high level of efficiency of CHP plants, using bioenergy potential in the non-mobile sector is associated with significantly higher efficiency with respect to the reduction of climate gas emission than is the case in the mobile sector. As a result of structural changes in the electricity and geothermal sectors and, in particular, also with respect to innovative biofuels, this ratio will need reassessing in the long term. Essentially, thermal power is based on the use of wood, with electricity based on the use of waste wood and biogas. The contribution to fuels has been rendered by rapeseed, which until today is the most important biomass cultivated by German agriculture.

Hence, on the one hand, the Renewable Energy Sources Act (EEG) and the Market Incentive Programme are fostering the use of biomasses for generation of electricity and thermal power. And alongside the stated sustainability goals, there is also the development goal that aims to double the share of regenerative energy sources used for electricity generation and primary power demands by 2010 as compared to 2000. On the other hand, it is also anticipated that fuels will be produced from biomasses to an increasing extent. Currently, competitive applications are being examined in order to ascertain the realistic potential for thermal power and electricity generation on the one hand, and the production of fuels on the other.

The biomass potential that could be used for the generation of thermal power, electricity and biofuels is not currently being fully exploited. However, long-term developments, for example during the course of agricultural policy reform, give rise to the expectation that larger areas will be made available for use with respect to energy, including for biofuels.

The climatic impact is not the only aspect that could prove decisive with respect to utilisation between the mobile and non-mobile sectors. The question of

safeguarding supply of fuels is also an important factor. In this respect, the question of fuel diversification is of relevance, especially given the fact that biofuels for fuel consumption could reduce the transport sector's dependency on oil.

The question of biomass availability in Germany is overshadowed by the question of possible options for importing biofuels. Indeed, initial studies into the surface area potential within the 25 Member State EU indicate that the situation in other EU states is not essentially different from that in Germany. Accordingly, it is not expected that surface area potential will expand in any of the countries of the EU 25 that constitute a multiple of domestic open areas. Nevertheless, it is anticipated that further liberalisation of global trade will result in increased biofuel imports from third countries. With respect to such imports, steps should be taken to ensure that biomasses are cultivated and produced in harmony with the demands of sustainable development in order to avoid negative ecological or social consequences impacting on the country of origin or the world climate. Similarly, in terms of well-to-wheel evaluations, the climatic impact of alternative forms of surface area utilisation must also be considered.

In this context, due to the problem of surplus sugar, the option of developing a specific fuel system (beyond admixtures) for bioethanol is being discussed. However, this is predominantly rejected by industry on account of the high costs for its infrastructure (logistics and filling stations). Solving the problem through so-called Flexible Fuel Vehicles (FFV), which can be filled with both traditional fuels as well as bioethanol, currently only has niche potential in Germany (e.g. for fleet operators). Nevertheless, German companies are regionally (e.g. Brazil, USA) involved in the development and market launch of FFV.

(2) Natural gas and liquid gas

Natural gas is a fossil fuel – as is liquid gas – and, consequently, a limited source of energy. It can be used in a whole host of ways, thus, competitive application is a consideration in this area too. The specialist group "Fuel Matrix", which established the basis of the alternative energy strategy, has concluded that the realistic estimation of market share to 2020 for natural gas as a fuel is 4%. The gas and water industry's professional association *Bundesverband der Gas- und Wasserwirtschaft* is assuming a 10% share in terms of its investments. Moreover, there is also the possibility that natural gas could play a bridging role for other alternative fuels. The realistic estimated market share of liquid gas as a fuel by 2020 is 1.5%.

(3) Hydrogen

Hydrogen will only attain commercial significance in the fuels market after 2020. A share of 2% is considered to be an important threshold by the experts.

In particular, electricity from offshore wind farms can and should make an important contribution to the future energy and environmental policy of the Federal Republic. In this respect, the dena – German Energy Agency is coordinating a study that is examining the technical, ecological and commercial potential of using electricity from offshore wind farms to produce hydrogen. This could represent one method for regenerative production of part of the level of hydrogen required. Results are expected around the end of 2004.

cc) Efficiency

Most of the new, innovative techniques for producing alternative fuels are still in the early stages of development. As a consequence, statements on the efficiency of alternative second generation fuels remain within the realm of uncertainty. Accordingly, current estimates of the cost of producing such fuels are also significantly higher than the cost of conventional fuel production. For example, without tax exemption biofuels would currently only be competitive if the price of oil was around USD 100 a barrel. This does not, however, include consideration of external cost savings.

Nonetheless, through further technological developments and improvements in production and large-scale manufacture, these costs can be reduced in comparison to established technologies. Specifically with respect to the development of long-term scenarios, which extend over a period of several decades, the temporal dynamics of cost trends play a decisive role in identifying economically viable development strategies. The competitiveness of alternative fuels is also enhanced by the generally anticipated tendency for oil prices to rise. Further development into this area should also examine the economic cost/benefit ratios of individual fuels.

b) Results of the assessment matrix

The following portrays the above-stated assessment criteria in an overall view. As a principal result, alternative fuels and innovative drive system technologies in Germany are identified, which are economically and ecologically viable in the long term according to the current train of thought.

aa) Potential to 2010

The **potential** of fuels and drive systems to 2010 is assessed as follows:

- To 2010, increases in efficiency for diesel and Otto engines as well as innovative drive system concepts are clearly of top priority.
- The current structure of the fuel market will essentially remain unchanged. Further optimisation of fuel quality will result in additional consumption improvements.
- Natural gas as a fuel (CNG) and to a lesser extent also autogas (LPG) will have lower market potential.
- Traditional biofuels such as biodiesel and bioethanol will play an important role, particularly as admixtures. Quantities of biodiesel and bioethanol currently available in the EU will, however, not be sufficient to reach EU targets (2010: 5.75% share). Additional capacity, as well as imports from third countries could nevertheless increase the share of each.
- It is not anticipated that biomass-to-liquid fuels (BTL) will have larger production capacity in the short term. The position is similar with respect to gas-to-liquid fuels (GTL). Depending on the construction of industrial scale facilities, they will therefore have gradually increasing relevance in the fuel market throughout the coming years. A certain level of imports could be the case by the end of the decade, if the currently planned construction of GTL plants (Quatar, Alaska) is completed by then.

In summary, it is not expected that any essentially new concepts in addition to the currently known alternative fuel options will arise in the fuel market to 2010. This is due, on the one hand, to the fact that in the few remaining years to 2010, it will not be possible to develop production capacity in the relevant quantities for the technologically well-developed alternatives; and on the other hand, other alternatives require a considerable amount of development.

Therefore, short-term potential for reductions in the consumption of fossil fuels and greenhouse emissions to 2010 will essentially be achieved by increasing the biogenic share of fuels and, in particular, by increasing efficiency in terms of drive system technologies. Further development of conventional engine technology (efficiency increases in traditional Otto engines) and innovative drive system technologies (hybrid concepts combining Otto engines, electric motors/generators, electric storage and energy recycling) could result in an additional reduction in fossil fuels in the mid-term and pave the way for wider application of regeneratively produced fuels.

bb) Potential to 2020

The **potential** of fuels and drive systems to 2020 is assessed as follows:

- Also in the period to 2020, increases in efficiency for diesel and Otto engines will play a central role.
- Natural gas (CNG), and to a lesser extent LPG, will continue to gain an increasing share in the fuel market, up to a total of 5%. The associated potential reduction in climate gas for the 2020 fuel market is estimated to be up to 2%.
- Compressed methane (CMG) from biogas can supplement or substitute the availability of natural gas as a fuel. The fuel matrix for 2020 states a market potential of 2% to 4%.
- According to EU targets, biomass fuels should reach a volume of up to 8%. If this target is to be achieved, in addition to traditional biofuels, synthetic biofuels will also have to gain an increasing share. Above all, BTL fuels have high potential depending on available biomasses. As BTL fuels gain an increasingly greater foothold in the market, the consumption of biodiesel and ethanol should decline.
- Global capacity for the production of synthetic fuels from natural gas (GTL fuel) will continue to be expanded. Estimates to 2020 anticipate around 10 million tonnes/annum for GTL. In terms of greenhouse gas emissions, this fuel is disadvantageous compared to petrol and diesel fuels.
- Hybrid concepts (e.g. energy regeneration on braking and recycling during drive operation) will increasingly be incorporated into drive systems.
- Post 2020, hydrogen as a fuel will gain increasing importance. A 2% share (approx. 1 million vehicles) is considered to be a decisive threshold for the start of market penetration. To facilitate development and acceleration of a corresponding infrastructure, hydrogen can be used more cheaply in Otto engines than in fuel cells. However, fuel cells promise to deliver greater efficiency in the long term. Moreover, both systems need considerable development to become established in the future market and successfully contribute to climate improvement and safeguarding of supply, through the use of regeneratively produced hydrogen.

cc) Development dynamics

An overview of the scenarios for 2010 and 2020 demonstrates the dynamics of development:

- **Efficient drive system technologies** offer innovative ways to further reduce consumption in the short and mid-term with continued use of fossil fuels, including fuel alternatives. This relates particularly to combination drive systems (hybrids).
- Given the position for limited fossil energy sources, **biomasses** must be increasingly utilised for the generation of energy.
- With the **new generation of biofuels**, synthetic biofuels (BTL) and processes for extracting bioethanol from lignocelluloses, an opportunity exists to supplement traditional biofuels (biodiesel, bioethanol, ETBE) in the mid-term.
- The broad range of estimates relating to the market share of **natural gas** clearly indicates that there is potential for development in this area, which, in turn, is dependent on the available infrastructure, vehicle development and the availability of non-European natural gas.
- According to current assessments, fully **electric drive systems** with fuel cell supply will only be able to replace conventional drive system technology in the long term. On the one hand, this concept has excellent long-term potential with respect to quantity, but on the other hand, still requires extensive development.
- **Fuel cell technology** also requires considerable development. Yet, given the multifaceted synergies between mobile and non-mobile applications, these markets and areas of development support one another.

Today, the transport sector is more than 95% dependent upon oil. If this dependency is to be reduced in the long term, the above-stated dynamics must be exploited and, owing to the lengthy transition periods, early access to alternative fuels ensured.

5. Focussing on a small number of alternatives with high potential

An essential objective of the fuel strategy illustrated here is that the Federal Government, industry and scientific research concentrate the limited financial and other resources on fewer highly promising alternatives without completely excluding other developments.

This is to occur on the basis of the above-stated assessment matrix results. **Provided that the climatic impact is appropriate**, alternatives that are to be classed as promising are, above all, those which fulfil the following criteria:

- high potential for quantity,
- opportunities for market penetration.

Efficiency, particularly the cost of manufacturing such fuel, is likewise an important criterion. Currently, many alternative fuels and drive systems are still a long way from being efficient. As stated above, at present, reliable evaluation of the alternatives based on available knowledge and extremely limited experience (development stage) is barely possible. Consequently, this criterion is only adopted insofar as assessment is possible.

a) Increasing efficiency in petrol and diesel engines

Potential: The experts agree that beyond 2010 efficiency increases in petrol and diesel engines will be of the utmost priority. The potential for reducing fuel consumption is still nowhere near being tapped to the full. Above all, efficiency in this area is assessed far more favourably than with alternative fuels and drive systems.

Need for action: For all manufacturers, high fuel prices are a first-rate incentive for investment to achieve further increases in efficiency and remain competitive. Consequently, there is no longer any need for separate policy incentives.

b) Natural gas

Potential: Provided it comes from European sources, natural gas does have lower CO₂ emission than petrol and diesel in conventional engines, but does nonetheless have an impact on the climate. Above all, there are increasing indications that, with timescale delays and specific reductions in terms of availability and price, natural gas is running a similar course to that of oil. On the other hand, natural gas does have a certain significance for the transition to hydrogen. Overall, for the reasons stated, natural gas has limited potential for an increasing share in the fuel market. The industry estimates market potential by 2010 at 0.5% and by 2020 at around 3%.

Need for action: A tax allowance to 2020 for natural gas has already been concluded. It is likely that one in ten filling stations will offer natural gas by the end of 2007. Natural gas engines have already been developed and are currently being used. There is no specific need for further action.

c) Biofuels (biodiesel and bioethanol)

Potential: As admixtures to existing fuels, biodiesel and bioethanol will continue to play an important role. Their essentially large potential is restricted by limited areas for raw material cultivation (e.g. rape crops). A market share of 5% would represent a considerable contribution.

Need for action: As is the case for all biofuels, biodiesel and bioethanol are exempt from mineral oil tax. Research and development is only needed with respect to certain specific questions, for example, technology developments and effects on emissions. Through essentially privately financed model projects, analysis could be done on the question of whether additional potential for the application of bioethanol could be achieved through the use of FFV technology.

d) Synthetic biofuels from biomasses (BTL)

Potential: In the medium and long term, the new generation of biofuels manufactured synthetically from biomasses offer the greatest potential. Given that high-grade diesel fuel can be manufactured from all types of biomass (e.g. waste,

plants, wood) through gasification and subsequent synthesis, these fuels benefit from the advantage of having an extensive raw material base. Consequently, the potential for quantity is commensurately higher. Nonetheless, the competition from alternative applications of biomasses also needs to be considered.

Need for action: Demonstration BTL production facilities are currently in existence. Above all, an increase in efficiency is required in order to reduce costs. In this respect, the concepts need to be further developed on the one hand, while on the other, the next generation of plants must be built on an industrial scale so that potential can be utilised and practical experience gathered. Similarly, questions of logistics and integration into sustainable rural development and agricultural production still remain open.

e) Combined drive systems (hybrids)

Combined drive systems (hybrids) will become increasingly relevant. These use energy released during braking, store it (batteries) and then subsequently utilise it for drive propulsion. As such, they offer excellent potential for increased energy efficiency.

Need for action: Cars with combination drive systems have already been launched on the market by two manufacturers. Nonetheless, a significant need for development still remains in order to increase energy efficiency, battery performance and optimise the interplay of elements within the overall system. Research and development activities are being stepped up and spread across a broader basis.

The goal must be to produce vehicles suited to everyday use at acceptable prices. Analysis of the question regarding the extent of temporary support necessary for market introduction also needs to be examined.

f) Hydrogen/Fuel cells

Potential: In the long term (from 2020), hydrogen as a fuel will gain major significance. Hydrogen can be used directly in Otto engines, or with greater energy efficiency in fuel cells. Nevertheless, hydrogen is purely an energy storage medium, and only environmentally compatible if the electricity needed for electrolysis (production of hydrogen) is generated using renewable energies.

Need for action: Of utmost importance is the development of an efficient hydrogen industry (production, storage and transport) and production cost reduction. The next step are large-scale demonstration projects in order to gather practical experience. Drive system technology still requires development, particularly with respect to fuel cells.

g) The four alternatives with the greatest potential

In the next two decades, fossil energy sources will still determine the fuel market - given that their share is well over 80%. Other fuel alternatives will not be available in large quantities to this point. Consequently, a substantial contribution to the reduction of climate gases and future safeguarding of supply up to this point in time will essentially be achieved by optimising traditional engines and developing

more efficient and innovative drive technologies with lower fuel consumption. The complementary utilisation of alternative fuel options is important and worthwhile.

This analysis gives rise to the fact that the following **four alternatives demonstrate the greatest potential for reducing consumption of fossil fuels:**

- increased efficiency in petrol and diesel engines,
- synthetic fuels from biomasses (BTL),
- combined drive systems (hybrids),
- hydrogen (engines and fuel cells).

6. Planned measures

The objective of the fuel strategy lies in concentrating resources on the most promising alternatives and accelerating their development progress. These aspects have been illustrated in the above and the four alternatives with the greatest potential stated in paragraph 5. g). In the following, measures necessary for the four spheres of action are systematically ascertained and summarised into a programme of measures.

The following spheres of action are important:

- tax incentives,
- research and development,
- demonstration and pilot facilities,
- technical and legal standards.

In terms of making headway with promising fuels and drive systems, the Federal Government is merely one of the players. Above all, the state must set the right framework conditions with regard to fiscal incentives, R&D programmes and legal standards (e.g. safety and environmental protection). It is then the job of science to progress with research and development, the oil and energy industries to build fuel production facilities; and the automotive industry to make headway in developing drive system technologies. Only if each of the protagonists fulfils its task will the significant breakthrough be achieved. Thus, in terms of this fuel strategy, it is of even greater importance that understanding is reached between the protagonists with respect to promising alternatives and as to who does what.

a) Tax incentives

In terms of tax incentives, the Federal Government has already made important fundamental decisions in this legislative period. As such, subject to assessment for overcompensation, all biofuels are exempt from mineral oil tax until 2009. This time restriction arises from binding provisions in European law. However, with respect to the extensive investment necessary and particularly for fuel production plants, a more long-term perspective is decisive. On both a pan-European and national level, the Federal Government will press for biofuel tax incentives which extend beyond 2009. The conditions and extent of fiscal incentives depend on how necessary the tax relief is to achieve a greater market share. Furthermore they depend on the question how much tax revenue the German Government will lose due to these incentives.

Mineral oil fiscal framework conditions for hydrogen as a fuel are currently sufficient in terms of the fuel matrix results. According to currently applicable law, hydrogen is subject to mineral oil tax (taxation similar to that of natural gas as a fuel). However, in reality, tax is not imposed as the use of hydrogen in projects for the development of alternative drive system technologies can be exempted. Given that hydrogen will not play any major role before 2020 according to the fuel matrix results, introducing comprehensive provisions for hydrogen at the current time would be premature. A decision needs to be taken in good time regarding the point of transition from a project incentive to a tax incentive in consideration of market development and secure planning for investors.

All tax incentives for alternative fuels will need to be regularly examined on the basis of the criteria developed in this paper. Thus, the Federal Government is striving to achieve the same regular monitoring for all alternative fuels as is currently envisaged for biofuels. As such, the Federal Government will initially report to the German *Bundestag* regarding the market introduction of biofuels by 31 March 2005.

Essentially, it should be taken into consideration that any possible restructuring of support measures falls within the framework of existing financial planning and must take the difficult budget situation into account. In particular, this means that expansion of supportive activity in one area must be linked with examination of where supportive activity can be restricted in other areas.

b) Research and development

To date, the Federal Government has already placed essential focus on research and development for alternative fuels and innovative drive systems. In line with the promising alternatives detailed here, it is concentrating, on the one hand, on combined drive systems (hybrids) as well as on the production of liquid biofuels (BTL) on the basis of renewable resources. With respect to hydrogen, the emphasis of research and development has been on developing fuel cells for non-mobile and mobile applications.

The consultation paper for the 2005 budget envisages funding of around € 43 million for the market introduction and research and development relating to renewable resources, including for biofuels. If necessary, additional funding may be available within the scope of the Innovation Initiative (*Innovationsoffensive*).

c) Demonstration and pilot facilities

Although research and development is generally focussing on the right areas, a second step to making a significant breakthrough that would be of benefit to promising alternative fuels depends on pilot and demonstration facilities being set up.

This applies particularly with respect to construction of plants for the production of liquid fuel from biomasses (BTL). The first plant with 1 MW has already been built in Freiberg (Saxony). The Federal Government is currently preparing a project for the development and construction of a second facility with alternative technology, which aims to provide answers to a number of technological, economical and ecological questions still open and which, amongst other things, should further

improve energy efficiency. On the basis of demonstration facilities, development of the necessary capacity on an industrial scale can be accelerated. This places demands upon industry in general as well as the oil and automotive industries. At the moment, dena – German Energy Agency is working with industry to prepare a timetable to create the technical and economic requirements for further investment.

The potential admixture of up to 5% bioethanol with petrol and of up to 5% diesel with diesel fuel also requires additional production capacity that does not currently exist. However, the technology is in place and by exempting biofuels from mineral oil tax, the Federal Government has sent out the right economic signal.

Development of an efficient hydrogen industry is of strategic importance. Above all, there is a need to gain experience from real facilities, in order that hydrogen can be produced by electrolysis using electricity from renewable energy sources more cost efficiently than has been the case to date. Expansion of offshore wind farms in the North Sea and Baltic Sea offer potential here. In all probability, it will not be possible to feed the total level of power produced into the electricity grid at economically viable conditions (network expansion). Ensuring that the level of available power anticipated here can be utilised requires greater experience with respect to production, storage and transport. This means that a strong hydrogen industry as a whole is required. Together with industry, the Federal Government is investigating how EU initiatives to develop larger regional “hydrogen pilot projects” can be used to further this aim. This theme is also being addressed by the “*Strategiekreis Wasserstofftechnologien*” (Hydrogen Technologies Strategy Group), which brings all the relevant protagonists together.

d) Technical and legal standards

As seen with examples from the telecommunications (UMTS) and information technology industries, technical standards can play a vital role in taking up a leading position internationally. The same applies with respect to alternative fuels and drive systems, where progress depends on close cooperation between state agencies and industry.

The task of the Federal Government is to ensure appropriate adjustment to the legal framework conditions pertaining to licensing and safety requirements for the hydrogen infrastructure and hydrogen driven vehicles. In common with the industrial partners of the transport industry’s energy strategy, the Federal Government has commissioned a commensurate expert report on associated licensing and safety requirements.

7. Outlook

The fuel strategy outlined here leaves many questions as yet unanswered. It needs to be put into concrete terms and the concept further developed. Nonetheless, it sets a clear direction for the development and exploitation of alternative fuels and innovative drive systems. Overall, it sets specific priorities and outlines the need for action.

The subject will also be given a high priority by the Federal Government in the coming years. As such, the fuel strategy is also an important element of its innovation strategy "Partners for Innovation". The Federal Government will report on the progress of activities in its 2006 Progress Report (Sustainable Development).

IV. Reducing land use

1. Status quo

Reducing land use is an issue encompassing a complex structure of ecological, economic and social requirements. Particularly in a densely populated country such as Germany, it is of vital importance that land's ecological functions as a base for resources and space for humans, animals and plants and as an element of ecological balance with its water and natural cycles are properly maintained. At the same time, use of currently available and future land requires further development in terms of sustainability for a host of functions, for example, for housing, recuperation and transport, for the cultivation of foodstuffs and sustainable resources, for commercial and public use, as well as for conservation purposes.

Moreover, land consumption is being increasingly influenced by changes in social framework conditions. New developments, such as the anticipated fall in population, increased contrast in regional development, an ageing society, as well as the somewhat problematic situation of municipal budgets, all demand a new approach.

In the 2002 Strategy for Sustainability we set out our goal: by 2020, utilisation of new housing and transport-related areas is to be reduced to a maximum of 30 ha per day. This is a tremendously ambitious goal. In 2000, the level was 129 ha per day. The latest data for 2002 show a reduction to 105 ha per day, although this is essentially down to cyclical economic factors. Nevertheless, the first signs of progress in land management are also apparent.

In this respect, actual utilisation of new areas in the West German Länder is commensurate with the comparable low levels seen at the end of the 1980's. By contrast, in the East German Länder, housing areas continue to spread at great pace, despite a fall in population. Above all, this stems from the need to redress a backlog in housing. As a consequence, housing areas are becoming less dense, there is less burden on public and private infrastructure, the maintenance of which is becoming more expensive. In a number of regions, these developments are accompanied by an increase in empty residential and commercial property. This does not only concern Eastern Germany, with around 1.1 million empty dwellings, but is also increasingly the case in regions in Northern and Western Germany.

The character and extent of land consumption has changed throughout recent years. The share of green spaces, for example, has increased. Nevertheless and especially with respect to built-up urban areas, the quality and extent of free space is under particular threat, with further utilisation and sealing off of the land being problematic.

One of the greatest difficulties in achieving the "30 ha target" is that a large number of protagonists are responsible for the overburdening demands for land utilisation, and that a balance needs to be struck between various equally valid considerations, such as ecology, economic growth and socially acceptable living space. The Federal Government and the *Länder* determine the economic and legal framework.

The *Länder* are responsible for spatial planning, local authorities arrange land utilisation and development plans, and investors determine the actual new use of land.

2. Concrete vision

Within the scope of the Federal Government's Strategy for Sustainability, the aim is to develop a practical programme of measures that, overall, will result in the reduction and qualitative improvement of land utilisation for housing and transport-related purposes, while ensuring consideration is given to ecological, social and economic objectives. In this respect, the intention is to avoid or minimise urban sprawl, fragmentation of the countryside and loss of natural habitat, as well as avoiding further reduction in agricultural and forestry acreage. Ideally, this means successfully ensuring in the long term that actual new use of land is predominantly replaced by re-utilisation of existing areas (land rotation through land recycling); that new allocation is compensated by de-sealing or other renaturation of land and that this is achieved in harmony with sound economic development, affordable and socially acceptable housing provision, and a high level of employment in the construction industry.

In light of the complexities of the subject matter and the number of active protagonists, with their differing and often conflicting objectives, these goals can only be achieved in progressive stages:

- In a first step, the Federal Government has examined its currently ongoing and foreseeable projects to establish the extent to which they can contribute to reducing land consumption. In particular, this also includes projects that were not directly initiated with this goal in mind, but which nevertheless - depending on their actual organisation – could inject important positive impetus into sustainable urban development in individual cases. Furthermore, initial perspectives for action in terms of additional programmes of measures with greater relevance for urban development need to be developed. A summarised description of this examination is set out under point 3 below. A more extensive version containing a comprehensive listing of the numerous individual measures is available on the Internet at www.bmwbw.de
- In a second step, clarification is required as to which measures are suitable in the medium and long term to facilitate the reduction of land consumption. To this end, the Federal Government has requested that the German Council for Sustainable Development (RNE) arranged for broad dialogue with the *Länder* and local authorities in particular, and subsequently used this as a basis to submit proposals for measures to reduce land consumption to the Federal Government. Further details of this are set out in point 4 below.
- The results of the examination of ongoing projects required by step one should then be combined with established long-term projects to produce

an integrated programme of measures. Further details of this are set out in point 5 below.

3. Assessment of Federal Government land utilisation projects

a) Legal and planning instruments

Germany has a host of instruments in the field of spatial planning and construction planning law, as well as nature conservation and specialised planning law, which are directed at the protection of open spaces and sustainable urban development. As such, economical and careful use of land is already embodied within the Federal Building Code (*Baugesetzbuch*) and the Federal Spatial Planning Act (*Raumordnungsgesetz*). The regeneration of contaminated sites regulated under the Federal Soil Protection Act (*Bundes-Bodenschutzgesetz*) enables expansion of the available land area, thereby avoiding development of new areas. Through its creation of biotopes linked to one another, the upgrading of landscape planning and a strengthening of intervention rights, the new Federal Nature Conservation Act (*Bundesnaturschutzgesetz*), which entered into force in April 2002, provides important instruments in terms of determining land consumption.

The task here is to ensure that existing legal and planning instruments, including their organisation, are tailored to sustainable development of settlements to a greater extent, and that current enforcement deficits are eliminated. Furthermore, legal instruments are to be examined in order to ascertain the possible contribution to reducing land consumption.

Two recent examples demonstrate the shape of this in legislative practice:

- The **amendment to the Federal Building Code (BauG)**, which came into force in July 2004, introduces an environmental assessment of all development plans. This should ensure that environmental issues are given greater consideration when drawing up plans than has been the case to date. Furthermore, the amendment contains a series of provisions specifically targeted to reducing land consumption. As such, the so-called land protection clause tightens the requirement for economical use of land in terms of the internal development of a community. The particularly important protection of peripheral areas is strengthened by a newly introduced renaturation obligation, which takes effect when use of the land for certain projects is ceded permanently.
- The **Act to Improve Preventative Flood Protection (Gesetz zur Verbesserung des vorbeugenden Hochwasserschutzes)** adopted by the German *Bundestag* on 1 July 2004 pursues the aim of improving the function of land for natural regulation of flooding by means of a series of important specifications regarding land consumption in flood areas. Sealing off land in flood areas affected by the worst floods of the past century should be fundamentally eliminated in the future. Furthermore, retention

areas are to be maintained, newly created or reclaimed land in flood areas better protected against soil erosion.

b) Financial, fiscal and development policy instruments

Due to the fact that legal instruments alone to reduce land consumption are not sufficient and in order to structure policy in the medium and long term, analysis needs to be carried out in terms of which economic incentive instruments and pricing policy could contribute to sustainable development. Thus, the available land-related financial, fiscal and development policy instruments have been examined for their potential contribution to reducing land consumption.

aa) Housing policy

With respect to housing policy, an overall shift in focus is apparent with respect to financing, subsequently moving away from new-build and – in the light of demographic change and altered framework conditions in, what is for most regions, a slack housing market – focussing more on current housing stock. Increased orientation towards stock in housing policy could also generate positive ecological effects.

The level of new-build housing in the future will not only depend on income and budget development, but will also significantly depend on the extent to which the available housing stock can compete with new attractive building forms. Consequently, the maintenance and improvement of housing stock through refurbishment and modernisation measures will play an important role in future land consumption. The Federal Government is supporting – in many cases, together with the Länder and municipalities – improvement of the housing stock, for example, through the KfW programme for renovation of old properties, promotion of social housing, or investment subsidies for the modernisation of rented accommodation.

Revision of the subsidy for house owners, the so-called *Eigenheimzulage*, which reduces subsidies for new-build projects to the level available for existing housing stock with effect from 1 January 2004, will also contribute to reducing land consumption. Until now, new-build projects have been subsidised at twice the level available for building work on existing owner-occupier homes. Also as of 1 January 2004, the regressive depreciation for new-build rented accommodation was reduced in order to create a balanced structure for framework conditions regarding rented accommodation and owner-occupier property. This too has made an indirect contribution in terms of land consumption reduction.

bb) Urban development, the *Stadtumbau Ost* programme

Included in “traditional” urban development targets (renovation and development measures) is also a contribution to limiting land consumption. Amongst other things, Federal Government subsidies for urban development are expressly intended for the regeneration of derelict areas within the scope of urban regeneration and development. Similarly, one of the aims of the “*Stadtumbau Ost*” programme, launched by the Federal Government in 2001, is to reincorporate land that has been freed up by structural change into the utilisation cycle and, thus, exploit the opportunities for internal development of towns and cities.

cc) Mileage allowance

Within the scope of pressing forward with fiscal reform, the mileage allowance has been reduced to a flat rate of € 0.30/km. Thus, this measure has also made an initial step towards reducing incentives for city-countryside migration. Indeed, additional models with varying potential effects upon mobility and residential development are currently the subject of public discussion. Possible alternatives should be assessed for their relevance to land consumption.

dd) Land tax, tax on acquisition of property and municipal tax reform

In the light of the increasing use of land, assessment is to be carried out on how the organisation of these instruments can afford equal consideration to fiscal, economic, social and ecological requirements. However, it must be borne in mind that the central objectives of these instruments do not lie in land consumption policy. Rather the foremost objective of taxation is to generate income: in this case, above all, for the benefit of local authorities and the *Länder*. In this respect, on 11 September 2003, Finance Ministers of the *Länder* unanimously rejected a reform of tax law geared toward land consumption goals. Furthermore, this concerns an area in which reform proposals have a predominant effect on the *Länder* and local authorities.

Nevertheless, a series of concrete proposals are already being discussed in political and scientific circles. In examining and evaluating such proposals, alongside fiscal objectives and practicability, the criteria should also include the effects of ecological control measures. Within the meaning of sustainable development, economic and social effects require equal analysis and consideration. Insofar as land taxes are concerned, the Federal Government emphasises the position that legislative initiatives to maintain and further develop land tax are first and foremost incumbent upon the *Länder*.

Land tax

From an environmental point of view it is clear that current land tax provisions based on outdated fixed values do not provide any incentives to reduce land consumption and, owing to the rating provisions for developed properties, actually tend to benefit development of detached houses that make less efficient use of land compared to apartment houses.

The reform proposals discussed by the *Länder* could provide incentives for more efficient use of land. On behalf of the finance ministerial conference, the *Länder* Bavaria and Rhineland-Palatinate have submitted a concept for reform which proposes calculating new land tax values on the basis of land value, supplemented by a flat-rate building value for developed properties. The essential objective of this is to secure local authority revenue from land tax and simplify the basis for assessment.

The models favoured by the *Länder* and local authority associations evaluate land utilisation indirectly on the basis of the land value or directly via a flat-rate basis of assessment according to property size.

In particular, the proposals include an assessment which considers the actual benchmark value of the land. This could provide an incentive for more economical

land utilisation overall and more intensive utilisation of occupied land. Given the value gradient between population hubs and rural areas, a land tax that places greater focus on land value could, however, also contribute to suppressing utilisation in inner cities and increasing urban sprawl into the countryside.

A further proposal being discussed is a combined land value and surface tax. The land value related components should, in particular, encourage the utilisation of building land and fallow areas. Finally, a comprehensive land taxation concept incorporating environmental considerations has also been proposed, which specifically provides incentives for economical and careful use of land as well as the de-sealing of already developed areas.

However, it is clear that with a purely neutral revenue structure, all the discussed models can only have limited affects on land consumption and, consequently, can only be deemed supportive instruments. Moreover, from an environmental point of view, minimum assessment rates could subdue the inter-community competition for area-intensive new development.

Tax on acquisition of property

Tax on the acquisition of property is currently levied based on legal transactions related to the property such as the purchase. The rate is 3.5% of the agreed purchase price for property – be it developed or undeveloped. In 2003, the tax revenue generated stood at around € 4.8 billion. The basis of assessment has no direct relation to the area or the ecologically harmful aspects of land consumption.

Proposals put forward from scientific circles suggest realigning tax on the acquisition of property more in the direction of an area usage and/or new sealing off tax. Allocation based on the sealed area would create an incentive for moderate sealing off or utilisation of land area. However, the character of property acquisition tax and revenue distribution between the *Länder* (to date, extremely high tax revenue in densely populated areas), would be fundamentally altered if the decisive factor was no longer the financial value of the property, but rather its intended or actual usage. The time and money needed for assessment would also increase considerably if the basis for assessment was no longer determined by the legal transaction itself, but rather had to be individually determined on the basis of utilisation/area of land sealed.

Municipal tax reform

The current structure of financing of municipalities generates a positive correlation between land consumption and local authority revenues from land tax and the municipal share of income tax. In terms of land-use decisions, local authorities are faced with the choice between unprofitable preservation of open spaces, and allocation of building land which at least has the potential to generate profit through taxation. Within the scope of equalisation of income between municipalities of the same *Land*, the municipalities generally receive funds for current expenditures from the *Land* Government on the basis of general indicators of need. Special ecological factors, such as preserving open spaces or maintaining retention areas in flood prone areas, are not compensated separately. The *Land* Ministries for the Environment could be encouraged to advise the ministries in the *Länder* that are responsible for the

redistribution of revenue to local authorities to incorporate land-related indicators in expenditure assessment. More far-reaching long-term research could, amongst other things, address the development of a systematic implementation proposal on how to make the provision of ecologically necessary free spaces attractive for the municipalities by means of the municipal equalisation scheme (*kommunaler Finanzausgleich*). Such a proposal would need to be both feasible in terms of finance and practical. The result of the conciliation process was a structural and quantitative improvement of local authority financing. In terms of organisation, the regional and inter-community distribution effects were also considered. The effects of legal provisions pertaining to the city-hinterland ratio played a particular role in this respect. In the interests of economical use of land for housing, development of densely populated areas also gains particular importance.

c) Supplementary areas of action

In the future, attention needs to be focussed upon establishing systems of incentive and promoting inter-disciplinary methods of working, in order that economical use of land as a resource is rewarded and further urban sprawl and fragmentation of living space avoided. This also includes achieving a greater link between ecological and planning approaches, for example, improved cost-benefit analysis at regional level. Moreover, other possible alternatives to prevailing building methods and residential forms need to be developed which, on the one hand, encroach upon the function of the land to a lesser extent, and on the other hand, are more in line with the change in the population's residential desires, leisure time behaviour, lifestyles and time structures. Against the backdrop of demographic change and gender perspectives, smaller scale measures of a demand-oriented land management at local authority level are also to be recommended. In this respect, good examples at local authority level need to be ascertained and communicated on a national level.

Tradable land allocation rights – a model for the future?

Along the lines of emission trading rights, experts (for example, the German Advisory Council on the Environment in its 2004 environmental report) propose linking the right of city and local councils to allocate building areas with tradable certificates. The extent of allocation of building land would be restricted in advance, thereby creating an artificial shortage. Certificates would be freely tradable. A local authority that wishes to allocate building land but does not have sufficient certificates would have to buy them. Local authorities with a surplus of certificates may sell them. In this way, a market for land allocation rights would be created, with the price of certificates determined by supply and demand. Theoretically, this would enable strict adherence to the goal of reducing land consumption. However, what appears to be so brilliantly simple in theory, throws up numerous currently unsolved questions in practice. For example, the planning sovereignty of municipalities guaranteed by the German constitution sets tight limits on fixing building land quota by the Federal Government. Moreover, distribution of building land allocations via a certificate trading exchange only considers economic factors. Special issues affecting spatial planning, such as environmental protection, are not taken into account. On these factors alone, tradable land allocation rights can only be considered as a supplement to existing planning regulation systems.

Further supplementary areas of action of national importance involve the use of land by agriculture and forestry, as well as cultivation of property owned by the Federal Republic. Thus, for example, appropriation of ecological services by the agricultural and forestry industries within the scope of global agricultural programmes is a positive contribution by rural regions in terms of the quality of land utilisation. By means of recognised environmentally compatible management of its exercise areas, the German armed forces (*Bundeswehr*) maintain and promote the valuable natural environment in its ecological and geographical diversity. With respect to building projects undertaken by the *Bundeswehr*, great emphasis is placed on land protection, as well as de-sealing and the avoidance of sealing. Moreover, by enabling civilian use of former military areas for, amongst other things, residential accommodation, allocation of new development areas can be relinquished in other areas, thereby preventing urban sprawl into the countryside.

Given that the Federal Government only has authority to provide a framework relating to spatial planning, whereas the *Länder* draw up spatial development plans and the local authorities exercise planning authority over their area, the Federal Government cannot directly influence land consumption. Nevertheless, in order to make a contribution to concepts and planning for economical use of land, exemplary projects and case studies are supported at national level. Thus, alongside legal, economic and subsidy instruments, its important supplementary areas of action also include numerous model projects and research programmes.

Not least, it is also intended that recording and monitoring systems to provide differentiated information on area and land development be improved. The register of unused sites has, for example, had a demonstrably positive effect on local and regional land management; however, its level of application must be expanded. Synergy effects relating to the monitoring of environmental effects and observation are to be sought and developed on the basis of new EU legal provisions and the Federal Nature Conservation Act (*Bundesnaturschutzgesetz*).

An instrument of utmost importance in the support of individual fields of action is ensuring a significantly more intensive public relations programme at all levels. Consequently, further public awareness and consciousness can be achieved and independent action encouraged within the meaning of the overall strategy, for example, within the scope of inter-community cooperation or local Agenda 21 processes. In this respect, further education and training, for example, for city planners and architects, with regard to sustainable land and soil use also needs to be strengthened. Where possible, public awareness of the problems of land consumption needs to be awakened and increased using concrete case studies and model projects.

d) Further development in registration of quantitative and qualitative aspects of land consumption

In terms of an international comparison, while the Federal Republic of Germany has a good statistical data system for quantitative monitoring of land consumption, deficits do exist with respect to the availability of national indicators for evaluating qualitative changes in land consumption. The official land survey provides information on the quantity of previously open land used for the purpose of new housing

and transport projects. Projections and studies carried out by the *Länder* suggest that less than half of housing and transport-related land is sealed off; however, these are unable to provide precise information – at least on a comprehensive basis – of the specific state and quality of both sealed off land and open land.

A significant part of housing land comprises green and open spaces and, therefore, encompasses environmentally friendly use. On a purely mathematical basis, this also includes a part of the comprehensive balancing measures that have to be implemented according to legal provisions for each individual use of land. In the cases investigated, balancing measures were mostly implemented outside the housing development area – insofar as they were carried out in an area separate to that of the development – for example, on land used for agriculture. As a rule, this did not change the classification in the land statistics as land used for agriculture. According to estimations of the Federal Office for Building and Regional Planning, about half of housing and transport-related land is sealed off.

In addition to these qualitative aspects, spatial differences of land development for housing are of importance for the formulation of strategies to reduce land consumption (e.g. various levels of sealing off in rural and densely populated areas). Thus, the database needs to be improved and further indicators developed. In this respect, necessary factors include,

- equal level of further development of quantitative and qualitative indicators,
- differentiating land reduction targets according to type of use,
- formulation of regionally differentiated targets for land consumption, in addition to the national global indicators,
- ensuring precise recording of land consumption.

Central to deliberations on developing indicators of quantitative and qualitative aspects of current and future land consumption is the question: “What is sustainable land utilisation?” The development and application of indicators can, therefore, not be carried out exclusive of discussions on quality and activity targets for the individual problem areas.

4. Recommendations by the German Council for Sustainable Development (RNE)

At the request of the Federal Government, the German Council for Sustainable Development (RNE) has produced recommendations for long-term measures to reduce land consumption. Many actors participated in the preparation of its recommendations. In a broad dialogue, the Council brought together specialists from the Federal Government and the *Länder*, from local authorities, from the building industry and land economy, architects and city and spatial planners, environmental protection agencies, as well as agricultural and scientific representatives. Reports involved the cities of Munich, Stuttgart, Essen, Leipzig, Dresden, Chemnitz, Görlitz and the region of Hanover, as well as from the work of specialist commissions from the German association of cities and towns *Deutscher Städetag*, the German Association of Cities and Municipalities (DStGB) and the Agenda-Transfer-Agentur. The *Länder* of Baden-Württemberg, Rhineland-Palatinate, Schleswig-Holstein and the Free State of Bavaria submitted reports on research and development initiatives, new action concepts, innovative approaches to ecological planning and construction, and land management. Specialists from the Federal Office for Building and Regional Planning, the Federal Environmental Agency and the Academy for Spatial Research and Planning conducted discussions with architects and town planners from spatial planning departments of towns and cities and politics. Land developers from agriculture, nature protection and the building industry also contributed, as did specialists from housing associations and environmental agencies and scientists. Relevant foreign experience in relation to the situation and solutions were drawn from the United Kingdom, the Netherlands and Switzerland. All these contributions are available on the Council's homepage at www.nachhaltigkeitsrat.de

The Council presented a draft of its recommendations for public discussion and requested positive and negative feedback. Its recommendations were published in July 2004 as volume 11 in the series *Texte des Rates*. The most important points of the recommendation entitled "More value for land: the 30 ha target" with respect to urban and rural sustainability are:

a) New models for town and country

The "30 ha target" should provide impetus for new models of urban development in all cities and local communities. Today's towns and cities are more varied and complex than was the case 20 years ago – sustainability will also make them more attractive in the future. However, this will not simply happen unaided. The Council recommends that cities, towns and municipalities and all those responsible for urban development place land consumption at the heart of their efforts for future sustainability and make the effects of demographic change, the safeguarding of social cohesion, new residential forms and impending hidden costs to infrastructure, as well as environmental protection and economical use of resources the starting point of new models. Growth regions too must face stagnating or shrinking sub-areas and contraction phenomena.

The cities need new, more flexible residential forms that allow for retreat into private life and work, without relinquishing daylight and greenery. By contrast, detached housing developments in the suburbs with a residential monoculture are a

mortgage for the urban future. Towns and cities without a future-sustainable model run the risk of being considered as mere urban trouble spot and left old neglected property.

New models of urban development require a recovery of local community borders. Yet, current land consumption is an expression of the idea of boundlessness, which can hardly be regarded as sustainable. The Council encourages good practical examples of active local authority land management; it rewards economical use of land with enhanced local authority organisational competence and urban quality. Local authority land management should progress from being a model to forming part of everyday life.

The Council recommends consolidating the importance of municipal planning sovereignty to ensure sustainable residential development. Municipal planning sovereignty is not rendered susceptible through the “30 ha target”, as some suspect, rather it is the “130 ha problem” which is its sovereignty and guiding it *ad absurdum*.

The Council advocates local authority cooperation in the development of land and use of infrastructures, but does not, however, rule out new competitive mechanisms. New cooperation projects cannot be prescribed and decreed. Such a path should be taken as the most simplistic and promising way to succeeding in one’s goals. Cooperation with the civil population, companies and investors, as well as with regional partners is an indispensable element of new local authority activity.

b) New target-management for the “30 ha target”

New target-management of land consumption is required at all levels of spatial planning. Binding and quantifiable, that is to say concrete, targets with respect to land consumption should be set out. The tried-and-tested instrument of planning obligation between local authorities and the *Länder* should also apply between the *Länder* and the Federal Government. In this respect, amendment of the Federal Regional Planning Act (*Bundesraumordnungsgesetz*) is required.

Planning reality no longer sufficiently reflects the legislative intention of a fair balance between mutual and contrasting public and private interests. Therefore, the Federal Government should ensure that, in future, development plans are prepared by the *Länder* and that they encompass binding minimum requirements to establish quantified land targets, as well as an accountable and justifiable land utilisation obligation; thus, consequently enabling the *Länder* to enjoy mutual support based on roughly similar standards and avoid damaging locational competition to the detriment of development principles.

c) Planning reality and land recycling

In future, spatial planning should incorporate “planning reality” in the sense that planning statements – as with prices in the economy – reflect ecological and social reality. The development of economic management instruments for planning and their practical testing in planning simulations and regional reference cases, above all with respect to eco-accounts and the pooling of balancing measures, should be pursued further.

The practice of German nature conservation law based on intervention and compensation must be improved in order to ensure appropriate consideration of the finiteness of land resources and the quality of soil. In future, we must strive to compensate intervention – in terms of sealing off land – with the de-sealing of a comparable area. A field should not be subject to a reduction in terms of its conservational weighting, if its potential consists in sustainable cultivation or ecological farming.

Successful land recycling has immense symbolic power in terms of establishing land recycling management. Funds have shown themselves to be a suitable way of removing such deadlocks in usage. To facilitate recycling of fallow areas and redevelopment of wasteland, it has been proposed that measures for rehabilitation of contaminated ground are exempted from intervention regulations under conservation law.

d) Taxation and subsidies

Decisive economic framework conditions laid down by the Federal Government should be reorganised to provide incentives for economical land utilisation. To date, land tax, property acquisition tax and local authority financial systems have not been aligned with the standards of sustainability. However, they are also not “land neutral”. Reform by the Länder – which, whatever the case may be, is necessary due to constitutional reasons and owing to the lack of efficiency in collection – should also take land consumption into consideration.

A steering effect through land tax is possible, insofar as land tax relates to the buildings on the respective piece of land. If buildings on newly allocated building land are more heavily taxed than existing buildings in inner urban areas, incentives for economical land utilisation are created. Intermediary acquisition of fallowed land by local authorities and fiduciary intermediary acquisition in urban planning and environmentally relevant regeneration and development areas should be exempted from land tax.

Fiscal relief for housing construction and spatial measures for promotion of urban development, economic development, regional development, the federal transport planning and local authority traffic funding should be aligned to the goal of economical land utilisation. The Council recommends – including with respect to the goal of financial sustainability – complete abolition of owner-occupier subsidies and fiscal support in accordance with Section 7 (5) of the German Income Tax Act (*Einkommensteuergesetz*), as well as deletion without replacement of mileage allowance. These subsidies have run their course.

e) Additional measures by the Federal Government

It is recommended that the Federal Government call additional instruments into play if the trend in land consumption cannot be reversed through the abolition of subsidies and urban planning measures. In this respect, possible measures could involve the incorporation of shadow social costs into development law and land value assessment, a duty on new developments on green spaces, as well as new building regulations. Here, a time limitation on planning permission, a renaturation obligation for building in peripheral areas and an extended duty of substantiation for development of peripheral land are all possible measures. Furthermore, municipal land

management and the land reports (*Flächenberichte*) could be defined as planning obligations with minimum fiscal, planning and environmental data.

f) Recommendation for a project related to the ongoing dialogue on surface

It is proposed that the Federal Government set up a “30 ha target” congress based on positive experience from urban planning dialogue processes and organise an ongoing project “Nachhaltige Stadt” (Sustainable City). It is intended that this will improve communication between those involved, either directly or indirectly, in surface policy. It is also proposed that the Federal Government open the initiative for the “30 ha target” congress with a competition of good local authority solution approaches. The competition should be considered a part of an extensive initiative to increase public awareness of the need for economical land utilisation. The results of the competition could be reported in updates of the Strategy for Sustainability, thereby allowing the discussion on the objective and its approaches regarding solutions to be continued.

In remainder, it is recommended that the Federal Government and the Länder coordinate their measures through joint congresses at the level of ministerial conferences for environment, traffic, building, spatial planning and agriculture.

g) Improvement of the statistical database is required

A widening of knowledge and understanding of the importance of land for the environment, of its usability in line with nature and its character as a finite resource is essential in terms of efforts directed at reducing land consumption.

Improving the statistical information base makes sense. Methodical improvement of the information base should allow contributions to relieving the burden on land, for example through recycling, to be produced in a statistically readable format and enable differentiated regional economic strategies for action.

5. Conclusions of the Federal Government

Examination of the scope of possible activities to reduce land consumption has demonstrated that a small number of individual legal and financial measures are unlikely to achieve the targeted reverse in trend. Conversely, the task requires that a host of instruments and concepts be developed and applied, which in their entirety, will curb the rate of land consumption. The continuation and strengthening of a policy for internal development of towns and cities and the re-utilisation of existing areas appears to offer promising chances for success. Therefore, in order to move closer to the “30 ha target”, the recycling quota for existing fallowed land must, above all, be increased and its development balanced out. In line with the German Strategy on Sustainable Development’s goal of achieving a 3:1 ratio between city and periphery development, wherever possible, land consumption must be steered towards land that has already been developed and locations integrated in towns and local communities.

This requires that development planning sets out binding and comprehensible commitments to ensure housing growth is limited to land that is suitable for

such utilisation. Moreover, amendments to the order of competence between the Federal Government and the *Länder* must ensure that they do not allow individual *Länder* or regions to totally disregard the corresponding planning rules and commitments in order to create temporary locational competitive advantages for themselves.

The previously instituted trend in urban planning and housing policy towards increasing support for already existing property and city development serves the goal of economical land utilisation and must be consistently pursued. The structure of promotional instruments can be directed more closely towards the achievement of this goal and, in this respect, the abolition of owner-occupier subsidies is an important step.

Even in its reduced form, mileage allowance still contributes to a situation where residential locations that result in longer journeys to work do not hit household transport costs to their full extent. This makes it easier for many families to opt for residential locations in the suburbs or outside urban regions and increases the tendency for new land consumption on greenfield sites. On the other hand, many workers are nonetheless forced to accept ever-longer commuter journeys from their existing home in order to find work in the first place. Any possible additional restructuring of mileage allowances must take this into consideration.

Opportunities to create incentives to reduce land consumption within the course of necessary reform of land tax still require further examination. In this respect, investigation of the various models needs to be carried out, particularly with regard to their steering effect on land consumption and possible evasive reactions. In addition, the social, economic and financial impact on citizens and communities must be examined. The same also applies with respect to property acquisition tax.

Further instruments currently under discussion – such as a duty on new developments that seal off land, inclusion of land consumption in the restructuring of local authority financial systems, consideration of the social infrastructure in determining land betterment charges, and fully exhausting the potential of fund models for wasteland regeneration – should similarly be examined at the appropriate level with respect to their efficiency and practicability.

In light of the knowledge that is now available and against the backdrop of proposals put forward by the German Council for Sustainable Development (RNE), four central concepts appear to be worth pursuing in the future:

- In relation to decisions on the allocation and utilisation of land, greater cost-reality for both developers and local authorities must be achieved.
- Economic instruments can be a useful supplement to the system of planning instruments. Subsidies, taxes, duties and development programmes need to be examined with respect to their potential contribution to land consumption reduction. To that end, social, economic and financial effects must also be considered.

- The instruments of spatial planning must be tightened. At the same time, pan-regional responsibility and cooperation must be strengthened to ensure resource-protective land management.
- Dialogue between those involved in the planning and realisation of housing and traffic developments must be continued, intensified and supported by model projects at regional and local level.

a) Cost reality

The location, type and extent of land utilisation for housing purposes are essentially determined by the price of land. Higher prices indicate a shortage and lead to economical use of land. Of decisive importance in terms of such a steering effect is that, above all, the costs that arise in connection with the purchase and use of any given plot of land must also correspond to the actual costs incurred by the local authority for planning, development and services provision. There is significant evidence to show that the relatively high costs of particularly land-intensive housing development forms are not charged to the beneficiaries in full, while residents of more densely populated urban areas – which are therefore cheaper to develop – are drawn on through a type of hybrid calculation to finance the more expensive housing forms.

If we succeed cutting back cross-subsidies, the incentive for cost-intensive new development of greenfield areas will diminish. In addition, betterment charge regulations, which have been incumbent upon the *Länder* since the 1994 constitutional reform, must be amended where necessary. The development costs are in the discretion of the municipalities but they are under an obligation to support cost-effective development. As such, further examination needs be undertaken to establish whether the increasing private organisation of supply and waste disposal services and access to public transport can be linked to more appropriate cost allocation. This does not envisage the withdrawal of socially motivating subsidies for everyday facilities and services, but rather is a question of correct determination and allocation of costs for the various forms of development, which should play an important part in the selection of residential and commercial locations.

The guiding principle of cost reality should also be given greater consideration with respect to allocation of building land by local communities. Recent studies show that costs partially or wholly incumbent upon local authorities for planning, development and subsequent provision of new building areas frequently exceed the long-term revenue generated from taxation of residents. The same applies with respect to commercial zones. To a considerable extent, local authorities allocate new building areas – and particularly commercial areas – in periphery zones, generally at the cost of land currently used for agricultural purposes. It is not yet clear how consideration of indirect, i.e. the hidden costs of land consumption (adverse affects to soil functions, sealing off and encroachment upon underground water reserves, adverse affects on biodiversity etc.) can be incorporated into such decisions. Attempts to give greater transparency to such considerations and incorporate associated costs into deliberations on the subject must be jointly and actively pursued by the Federal Government, the *Länder* and local authorities.

Ultimately, within the reorganisation of supportive measures, attention must be given to ensuring that cost reality is intensified in connection with land allocation decisions taken by the local authorities and the locational decisions of private individuals.

b) Economic instruments

In the opinion of the Federal Government and the Sustainability Council, economic instruments can be a useful supplement to planning instruments. Initial measures to dismantle subsidies that promote land consumption – such as the reduction of mileage allowance and owner-occupier subsidies for new-build houses – have already been implemented. Now additional steps are required, for example, with respect to a series of development programmes whose funding is still flowing, in part, into new-build and infrastructure measures on greenfield sites, despite successfully implemented re-orientation measures.

Additional potential is apparent through re-organisation of land tax and local authority finances. Whereby a number of these instruments have already been investigated with respect to the effects of tax, subsidy and fiscal-policy reform proposals, others still require in-depth technical and political examination. This applies, in particular, in terms of their practicability and options for implementation, as well as in terms of their socio-economic consequences and effects on settlement structures. The new sealing-off tax proposed by the Sustainability Council should also be included in the investigations.

Economic instruments can also provide important contributions with respect to the activation of waste and fallowed land. The application of funds and insurance models needs further study and development.

Discussions on introducing a national or federal state wide system of inter-community tradable land allocation rights on the basis of national or state-wide land consumption, with predetermined maximum permissible contingent areas, gives rise to a number of constitutional and planning policy concerns. Tradable land certificates do not take into account locational suitability and qualitative land conservation issues. They must, in all cases, be viewed together with planning guidelines. Before any fundamental decision is taken on the continued pursuance of such approaches, the results of pilot projects currently being run in a number of municipalities must be ascertained, carefully evaluated and discussed with the participants, particularly those in the municipalities.

From the Federal Government's point of view, it is possible that small-scale forms of inter-community exchanges of land utilisation rights could initially be targeted. These would occur on a regionally restricted basis and within the scope of spatial planning stipulations and enable the exchange of specific land contingents incorporating elements of a cost-benefit analysis between communities. The Federal Government considers it purposeful to support and further develop such options, in order to enhance and provide greater flexibility for planning instruments, in the form of model concepts within the context of regional land management.

c) Regional responsibility

Planning and control of land consumption in Germany occurs in accordance with the so-called top-down principle. The *Länder* and regions draw up a spatial planning policy that stipulates conditions for housing developments and the conservation of open spaces. Municipalities and associations of municipalities are responsible for land utilisation and construction planning, which must meet the conditions set out within the spatial planning policy but which are also incorporated into the overriding plans.

Implementing the goal of a sustainable spatial planning policy requires further efforts in terms of economical land utilisation, and proficient further development of land policy instruments that are tailored to the respective regional problems and requirements.

Prior to developing completely new land policy instruments and processes, it is of prime importance that existing planning instruments are consistently applied at all planning and administrative levels, that existing implementation deficits are eliminated, suitable individual planning instruments proficiently tightened, and that the effectiveness of "hard" planning instruments is increased through supplementary "soft" instruments and informal procedures.

The following measures may contribute to make spatial planning instruments more precise and eliminate implementation deficits at the interface of regional spatial planning and municipal construction planning:

- Tightening up and intensification of land-related provisions within the spatial planning policy of the *Länder* and, in particular, consolidation of spatial planning, for example, through benchmarks for targeted minimum densities,
- Strict application of planning policy performance parameters within the scope of allocation and permission procedures for local building plans, to ensure economical utilisation of land in housing developments; this should also consider corresponding requirements of necessary future strategic environmental assessment inspections.
- A tighter structure with respect to the basis of assessment and requirement substantiation in establishing and inspecting necessary land allocation in building planning, including at the *Land* and regional planning level,
- Closer inspection of and, where possible, restriction on planned reallocation of ecologically and agriculturally valuable areas of land, due to the irrefutable need for such restriction on the basis of commensurately applicable landscape planning quality criteria,
- More consistent implementation of conservational intervention and balancing regulations to reduce land consumption.

In terms of spatial planning practice, the effectiveness of "hard" planning instruments for the purpose of implementing economical land development is considerably increased through the use of "soft" instruments and informal procedures. These supplementary planning approaches are to be progressively continued and tailored to regional surface management.

In terms of this, strategically important areas of action are:

- Strengthening inter-municipal and regional cooperation

Cooperative approaches to planning and action provide an essential contribution to sustainable building development and economical utilisation of land. In the development and implementation of regional urban open space concepts, they can be applied to countryside parks just as easily as to the development of inter-community commercial zones.

- Increasing land monitoring

To improve the information base and to heighten awareness of the problem, improvement of land monitoring at federal, *Land*, regional and local authority level is advisable, including with respect to the introduction of strategic environmental assessment inspections. On the one hand, this aspires to create land data banks for the registration, assessment and mobilisation of building land reserves in an appropriately detailed format. On the other hand, in addition to quantitative identification, suitable indicators of efficiency and quality of land utilisation should increasingly be developed.

- Bundling into regional land management

The impetus for economical land policy, which it is assumed will be generated through intensified regional cooperation and improved land monitoring, can be enhanced through its bundling and networking into a regional land management system. In this respect, economical utilisation of land is understood in terms of a complex management task that is successfully overcome through the combined and coordinated use of instruments by a regional network association. The regional association could also provide a platform for regional pools of commercial or compensatory land. Concurrently, a local land management system should be progressively developed at local community level, such as is the case currently in Baden-Württemberg and Bavaria, for example.

In order to make clear progress in terms of economical utilisation of land, the planning approach requires additional support through informative, cooperative and incentive-oriented measures. These predominantly encompass:

- Measures to increase awareness and acceptance of the problem within the scope of intensified public relations,

- Increased efforts to utilise land economically at local authority level by means of organisational and informative assistance for a local land management system, as well as

- Targeted incentives and impulses for inner city development and re-utilisation of fallowed land, for example, within the scope of housing policy, or through the promotion of urban and economic development.

d) Continued dialogue

The German Council for Sustainable Development (RNE) recommends that the Federal Government set up an ongoing “Sustainable City” project in order to improve communication to those directly or indirectly involved in land policy, whose starting point should be a “30 ha target” congress. Furthermore, it is proposed that a competition be initiated for superior local approaches to solutions.

Greater inter-sector policy cooperation between government departments will provide further impetus for the subject of land consumption. Federal ministries have set up ongoing initiatives that extend beyond the research areas, model projects and case studies illustrated in paragraph 4, and which also address competition themes:

- On behalf of the Federal Office for Building and Regional Planning (BBR) and the Federal Ministry of Transport, Building and Housing (BMVBW), the German Institute of Urban Affairs (Difu) is implementing a research programme on experimental residential and urban development (ExWoSt) entitled **“Fläche im Kreis-Kreislaufwirtschaft in der städtischen/stadtregionalen Flächennutzung”** (**Municipal land - recycling in municipal/urban regional land use**). The project focuses on planning simulations in which various protagonists in five cities or urban regions jointly develop strategies for a land recycling economy. The central German associations of local authorities *Deutscher Städetag*, *Deutscher Landkreistag* and the German Association of Cities and Municipalities - are supporting the implementation of the project.
- From 2004 to 2006 and within the scope of the new **spatial planning pilot projects**, the BMVBW will be promoting the development of practical approaches for action, which counter further growth in the utilisation of land for housing purposes. At the interface “interlinking economic instruments with spatial planning controls”, a spatial planning project is currently ongoing, in which a regional association is examining whether the economic steering approaches being discussed are suitable as practicable and feasible instruments to supplement urban and regional land policy. The project also examines whether such instruments can be practically integrated into the planning and finance systems currently in existence in the regions and federal states. It is intended that the circle of project regions be expanded.
- Beginning in 2004, and particularly in cooperation with the BMVBW, BMU and BMVEL, the Federal Ministry of Education and Research is planning to put highly innovative inter-ministerial development programmes out to tender under the title of **“Nachhaltiges Flächenmanagement”** (**Sustainable Land Management**). It is intended that methods and

assessment approaches for sustainable land management and recycling will be developed within the planned focal point of support "Research into the reduction of land consumption and sustainable land management" (REFINA). The project also aims to implement procedures for differentiated regional and inter-regional analysis of sustainable urban land development and assessment (data bases, data management, trends and scenarios). In particular, this involves further development of methods to record and evaluate spatial and residential structures and their development by means of regional and inter-regional examples. Amongst other things, these include criteria and/or indicators of sustainable land management as well as the further development of instruments and future land consumption framework concepts. These planned studies are anticipated to commence in summer 2005; they will be continued from April 2006 to 2010.

The planned model concepts and research activities represent an important contribution to continuing the discourse on opportunities for the reduction of land consumption within the scope of sustainable regional and urban development policy. The "30 ha target" congress recommended by the German Council for Sustainable Development (RNE) is welcomed by the Federal Government as a suitable forum for discussing intermediary results and pressing ahead with further activities in this area.

F. Outlook

In the 2002 Strategy for Sustainability, we pointed out that this strategy is not a final product, but rather a long-term process involving its continual updating and further development. This first Progress Report encompasses the implementation of this in four specific areas: from the fields of action "Demographic change", "Energy and climate protection" and "Environmentally friendly mobility" already addressed within the strategy, we have singled out and consolidated particularly relevant focal points. With the support of the German Council for Sustainable Development (RNE), the "Reduction of land consumption" field of action has been further expanded and reinforced with concrete measures. Results obtained with respect to the implementation of specific goals and measures contained within these fields of action will be documented in a second Progress Report in 2006.

In 2006, we also wish to place greater emphasis on the contribution that each individual within the economy and society can make to sustainable development. The World Summit in Johannesburg specified the promotion of sustainable consumption and production as a global target, to which the industrialised nations, in particular, should contribute. In Germany, a national process has been in existence since February 2004 to implement the Johannesburg resolutions and numerous other additional activities aimed at improving the framework for enhanced sustainability in consumption and production.

The 2006 Progress Report will provide an opportunity – four years on from adoption of the Strategy for Sustainability – to scrutinise the strategy as a whole. Moreover, the strategy should undergo further conceptual development.

Future sustainable development is a social process of learning and decision-making, which is permanently accompanied by social and economic changes. In the light of future developments, we must ask ourselves whether the priorities for sustainable development have been correctly positioned. The political and social protagonists are called upon to address changes in society and ensure that such changes influence decisions on the priorities of sustainable development. Science and research are providing new knowledge, technological progress is opening up previously unknown opportunities, and international developments are presenting us with new challenges. The future Strategy for Sustainability will also need to take account of this.

Our course of sustainable development has a clear goal: a society that safeguards social cohesion, providing quality starting opportunities for the young and opportunities for the older generation to contribute. Sustainable jobs. Economic growth that persists because it does not burden the environment. Effective preservation of nature and our natural living conditions. If we remain an enterprising, innovative society that deals with risks responsibly, while also treading new paths with optimism, then we all have opportunities to achieve this goal and bring about sustainable change in Germany.

List of Abbreviations

ACEA =	European Automobile Manufacturers Association
ACPS =	Africa-Caribbean-Pacific-States
AFCG =	Alternative Fuels Contact Group
AG =	Aktiengesellschaft (public limited company)
AG =	Arbeitsgemeinschaft (working group)
BAföG =	Bundesausbildungsförderungs-Gesetz (Federal Education and Training Assistance Act)
BBR =	Bundesamt für Bauwesen und Raumordnung (Federal Office for Building and Regional Planning)
BDI =	Bundesverband der Deutschen Industrie e.V. (umbrella organisation of German industry)
BFR =	Bundesinstitut für Risikobewertung (Federal Institute for Risk Assessment)
BIBB =	Bundesinstitut für Berufsbildung (Federal Institute for Vocational Education and Training)
BLK =	Bund-Länder Kommission (Bund-Länder Commission)
BMBF =	Bundesministerium für Bildung und Forschung (Federal Ministry of Education and Research)
BMF =	Bundesfinanzministerium (Federal Ministry of Finance)
BMU =	Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety)
BMVBW =	Bundesministerium für Verkehr, Bau- und Wohnungsweisen (Federal Ministry of Transport, Building and Housing)
BMVEL =	Bundesministerium für Verbraucherschutz, Ernährung und Landwirtschaft (Federal Ministry of Consumer Protection, Food and Agriculture)
BMW =	Bayerische Motorenwerke
BMWA =	Bundesministerium für Wirtschaft und Arbeit (Federal Ministry of Economics and Labour)
BSE =	Bovine Spongiforme Encephalopathy, Mad Cow Disease
BSH =	Bundesamt für Seeschifffahrt und Hydrographie (Federal Maritime and Hydrographic Agency)
BTL =	Biomass-to-liquid fuel

BUND =	Bund für Umwelt- und Naturschutz Deutschland e.V.
BVL =	Bundesamt für Verbraucherschutz und Lebensmittelsicherheit (Federal Office of Consumer Protection and Food Safety)
CDM =	Clean Development Mechanism
CEP =	Clean Energy Partnership
CGH ₂ =	Gaseous hydrogen under high pressure
CHP =	Combined heat and power
CMG =	Compressed methane
CNG =	Compressed Natural Gas
CO ₂ =	Carbon dioxide
CSD =	Commission on Sustainable Development
CSR =	Corporate social and environmental responsibility and accountability
CTL =	Coal-to-liquid fuel
dB(A) =	Decibel (value to measure noise at a specific frequency (A))
DC =	DaimlerChrysler
dena =	Deutsche Energie-Agentur GmbH - German Energy Agency
Difu =	Deutsches Institut für Urbanistik (German Institute of Urban Affairs)
DIN =	Deutsches Institut für Normung e.V.
DIW =	Deutsches Institut für Wirtschaftsforschung (German Institute for Economic Research)
DKKV =	Deutsches Komitee für Katastrophenvorsorge e.V. (German Committee for Disaster Reduction)
DME =	Dimethyl ether
DNR =	Deutscher Naturschutzbund e.V.
DStGB =	Deutscher Städte- und Gemeindebund (German Association of Cities and Municipalities)
EC =	European Community
EEA =	European Environment Agency
EEC =	European Economic Community
EEG =	Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz)

EQUAL =	Funded by the European Social Fund, EQUAL will test new ways of tackling discrimination and inequality experienced by those in work and those looking for a job
ERDF =	European Regional Development Fund
ETBE =	Ethyl tertiary butyl ether
EU =	European Union
EWC =	International Conference on Early Warning
ExWoSt =	Experimenteller Wohnungs- und Städtebau, Forschungsprogramm (Research programme on experimental residential and urban development)
FAME =	Fatty Acid Methyl Ester, biodiesel
FAO =	Food and Agriculture Organization
FFH =	European Flora-Fauna-Habitat directive on the protection of the environment
FFV =	Flexible Fuel Vehicle
FIS =	Forschungs-Informations-System (research information system)
FNR =	Fachagentur Nachwachsende Rohstoffe e.V. (Agency of Renewable Resources)
FSC =	Forest Stewardship Council
GDP =	Gross Domestic Product
GEF =	Global Environment Facility
GJ =	Giga Joule = 109 Joule
GM =	General Motors
GPS =	Generalised System of Preferences
GTL =	Gas-to-liquid fuel
HC =	Hydrocarbon
HEW =	Hamburger Elektrizitätswerke
HFP =	European Hydrogen and Fuel Cell Technology Platform
HGF =	Helmholtz Gemeinschaft deutscher Forschungszentren (Helmholtz Association of National Research Centres)
HR6 =	Energy Policy Act of 2003
IAP =	International Action Programme
ICAO =	International Civil Aviation Organisation

IEA =	International Energy Agency
IfB =	Initiative für Beschäftigung (Initiative for Employment)
IFEU =	Institut für Energie- und Umweltforschung (Institute for Energy and Environmental Research)
ILO =	International Labour Organisation
INQA =	Initiative Neue Qualität der Arbeit (New Quality of Work Initiative)
IPSWaT=	International Postgraduate Studies in Water Technologies
ISCED =	International Standard Classification of Education
ISDR =	International Strategy for Disaster Reduction
JI =	Joint Implementation
KfW =	German banking group
kWh =	Kilowatt hour
KWK =	cf. CHP
LBST =	Ludwig-Bölkow-System-Technik
LDC =	Least Developed Countries
LH ₂ =	Liquid hydrogen
LIMCOM=	Limpopo River Basin Commission
LPG =	Liquified Petroleum/Natural Gas
MAN =	Maschinenfabrik Augsburg - Nuremberg
MTBE =	Methyl Tertiary Butyl Ether
MWh=	Megawatt hour
MWV =	Mineralölwirtschaftsverband e.V.
NABU =	Naturschutzbund Deutschland e.V.
NEC =	National Emission Ceilings
NEPAD =	New Partnership for Africa's Development initiative
NGO =	Non-governmental organisation
NH ₃ =	Ammonia
NIR =	National Inventory Report
NO _x =	Nitrogen oxides

ODA =	Official Development Assistance
OECD =	Organisation for Economic Cooperation and Development
ÖPNV =	Öffentlicher Personen-Nahverkehr (Local public transport)
PJ =	Peta Joule = 1015 Joule
PNGV =	Partnership for a New Generation of Vehicles
R&D =	Research and development
REFINA =	Forschung für die Reduzierung der Flächeninanspruchnahme und ein nachhaltiges Flächenmanagement (research into the reduction of land consumption and sustainable land management)
RKW =	Rationalisierungs- und Innovationszentrum der Deutschen Wirtschaft e.V. (German Center for Productivity and Innovation)
RME =	Rape Seed Methyl Ester
RNE =	Rat für Nachhaltige Entwicklung (German Council for Sustainable Development)
SADC =	Southern African Development Community
SO ₂ =	Sulfur dioxide
SPC =	ShortSeaShipping Promotion Center
StBA=	Statistisches Bundesamt (Federal Statistical Office)
StrEG =	Stromeinspeisungsgesetz (Electricity Feed Act)
TEN =	Train European Network
TEU =	Twenty Foot Equivalent Unit
TSI =	Technical specifications
TU =	Technische Universität (Technical University)
TWh =	Terawatt hours (1012 Wh)
UBA =	Umweltbundesamt (Federal Environmental Agency)
UMTS =	Universal Mobile Telecommunications System
UN =	United Nations
UNCTAD =	United Nations Conference on Trade and Development
UNEO =	United Nations Environment Organisation
UNEP =	United Nations Environment Programme
UN/ISDR =	United Nations International Strategy for Disaster Reduction

VDA =	Verband der Automobilindustrie e.V. (German Association of the Automotive Industry)
VDEW =	Verband der Elektrizitätswirtschaft e. V. (German Electricity Association)
VDN =	Verband der Netzbetreiber e. V. (Association of German Network Operators)
VES =	Verkehrswirtschaftliche Energiestrategie (Transport Energy Strategy)
VOC =	Volatile Organic Compounds
VW =	Volkswagen
WBGU =	Wissenschaftlicher Beirat Globale Umweltveränderungen (German Advisory Council on Global Change)
WCD =	World Commission on Dams
WHO =	World Health Organisation
WSSD =	World Summit on Sustainable Development
WTO =	World Trade Organisation
WTW =	Well-to-Wheel
ZDF =	The German television channel Zweites Deutsches Fernsehen
ZIP =	Zukunftsinvestitionsprogramm (Future Investment Programme)
ZUMA =	Zentrum für Umfragen, Methoden und Analysen (Centre for Survey Research and Methodology in Mannheim)