ENVIRONMENTAL ECONOMICS

ENVIRONMENTALLY HARMFUL SUBSIDIES IN GERMANY

Update 2010

Umwelt Bundes Amt

Für Mensch und Umwelt

This publication is a translation of
„Umweltschädliche Subventionen in Deutschland
Aktualisierte Ausgabe 2010“

Imprint

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Published 2011, German Edition published 2010

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INTRODUCTION

1. Why it is necessary to reduce environmentally harmful subsidies

For many years, the German public have regarded environmental protection as one of the most important problems in Germany[1]. People attach great importance to the quality of environmental assets – such as climate, water, soil or air. This is reflected by public and private expenditure on protection of the environment: in 2006 the state and industry spent a combined total of €34.2 billion on water conservation, waste management, air quality control and noise abatement[2].

Nevertheless, Germany is still a long way from pursuing a consistent and sustainable budget policy that systematically promotes environmental protection and takes systematic account of environmental interests in all governmental decisions on income and expenditure. One central problem here is Germany's policy on subsidies. As early as 2001 the OECD, in its Environmental Performance Review for Germany, came to the conclusion that about 35% of subsidies in this country were potentially harmful to the environment[3]. In 2008, according to the Federal Environment Agency's calculations in this report, subsidies in Germany totalling a good €48 billion[4] have to be classified as environmentally harmful.

1 Wippermann et al. (2008)

2 Federal Statistical Office (2010a). Expenditure by manufacturing industry, the state and privatised public companies on environmental protection, broken down by environmental sectors.

3 OECD (2001), p. 129. The percentage of subsidies potentially harmful to the environment is based on the financial assistance and tax concessions set out in the German Government's 17th Subsidies Report (1999). The figure relates to the volume of subsidies.

4 This sum consists largely of federal subsidies. It also includes subsidies which the German government grants jointly with the Länder – in the context of Community taxes and co-financing – or in which it participates under framework legislation. The environmentally harmful parts of the following subsidies are not quantifiable in this report and are therefore not included in the total of €48 billion: subsidies for nuclear energy (cf. 1.2.10), the reduction in energy tax for biofuels (cf. 2.2.7), the Joint Agreement for the Improvement of Regional Economic Structures (cf. 3.2.4), the agricultural subsidies of the European Union (cf. 4.2.1), the Joint Agreement for the improvement of agricultural structures and coastal protection (cf. 4.2.2), and the European Union's subsidies for fisheries (cf. 4.2.6).

Public-sector finances would benefit very considerably from a reduction in these subsidies. Environmentally harmful subsidies place a double burden on public-sector finances: today, due to increased state expenditure and reduced state revenue, and tomorrow, due to increased costs for dealing with the harm done to human health and the environment. Prominent examples include the exemption of commercial air transport from the energy tax, energy tax concessions for the manufacturing sector and agriculture, and the tax refund on agricultural diesel fuel. Abolishing environmentally harmful subsidies should therefore play a central role in the forthcoming budget consolidation process.

The state uses subsidies to intervene in many aspects of the economic production process and in individual decisions by consumer households. The reasons given for this are many and varied, but such interventions are rarely justified from an economic point of view. As a general rule, subsidies violate the "polluter pays principle", i.e. the general principle – which is not only to be understood in environmental terms – that the polluter (or party responsible) pays: a free market system can only function and be "fair" if producers and consumers each bear the full costs of their actions. Subsidies run contrary to this principle. Instead they give rise to a situation where responsible parties do not bear part of the microeconomic costs of production and consumption, but offload them onto society in general. Thus subsidies distort competition, resulting in suboptimal functioning of input and product markets and leading to market results that are inefficient at the macroeconomic level.

The environment is usually available free of charge. As a result, producers and consumers frequently fail to consider the environmental impacts of their actions, and this leads to over-exploitation and impairment of the various environmental assets – such as climate, air, soil, water and other natural resources. This also has impacts on human health and on flora and fauna – and especially biological diversity.

It is not the polluter who has to bear the resulting costs, but society. Environmentally harmful subsidies exacerbate this basic problem of external environmental costs. Either

they are directly based on environmentally harmful products, production methods and behaviour patterns, or they favour them indirectly. This makes for additional production and consumption at the expense of the environment. Environmentally harmful subsidies entail additional expenditure on remedying the damage, and in this way they counteract the environmental protection efforts that society is making elsewhere at great expense. Subsidies also prevent effective climate protection, for example by making fossil fuels – such as coal or gas – cheaper. That is why the Kyoto Protocol explicitly calls for the abolition of subsidies that impede reductions in greenhouse gas emissions[5].

In some cases another reason for reducing subsidies is that they make environmentally harmful technologies more competitive. In this case the harmful impact on the environment arises from the fact that in the course of time environment-friendly technologies have poorer development opportunities and poorer market access. For example, the EU Commission comes to the conclusion that only the abolition of environmentally harmful subsidies in the energy sector would create equal competitive conditions for the various energy sources[6]. This would in particular improve the market prospects for renewable energy sources. Without any reduction in subsidies, the market distortions described above make it necessary to provide extra assistance for innovative, environmentally sound technologies. In association with a reduction in environmentally harmful subsidies, economic change in the direction of environmentally sound production methods would make businesses more competitive in the long term and would give rise to less environmental damage and hence lower expenditure on environmental protection in the future. Thus environmentally harmful subsidies give rise to greater burdens on the state budget in the future, whereas subsidies that improve the quality of the environment tend to reduce the pressure on the budget in future as a result of lower costs for remedying environmental damage.

For the most part, current practice with regard to subsidies does not promote sustainable development, either from an environmental or an economic point of view. This is because the systematic investigation of impacts on environmental assets such as climate, air, water, soil, health or biological diversity has so far played little or no role in the design of financial assistance, tax concessions or other forms of preferential treatment. The reductions in subsidies called for in many quarters should not be made across the board on the "lawnmower principle", but should specifically target those subsidies which fail to achieve their purpose and/or which have negative environmental effects. This would make a significant contribution to a sustainable financial policy. That is why there is a need for an environment-oriented subsidy controlling system for all subsidies which – as well as reviewing the success of the subsidy – takes a systematic look at any negative impacts on environmental assets.

2 Subsidies and their (close) relatives

There is no unique single definition of the term "subsidy", either in financial literature or in practice. Subsidies are essentially concessions granted by the public sector to businesses without any counter-consideration of a market nature.[7] Taking this as the starting point, there are – depending on the institution and the purpose of the study – broad or narrow definitions of subsidies. First of all, one can distinguish between explicit and implicit subsidies.

The budget relevance of explicit subsidies is direct – in the case of direct financial assistance and tax concessions – or potential (as in sureties and guarantees). This distinction is also used by the German government's Subsidies Report, which the Federal Ministry of Finance compiles every two years on the basis of the Stability and Growth Act of 1967 (Stabilitäts- und Wachstumsgesetz)[8]. Here

5 UNFCCC (2007), Article 2, Section 1, a) v).

6 European Commission (2005), p. 6.

7 Assistance to private households may also count as subsidies if it is indirectly attributable to economic activity, provides targeted preferential treatment for specific branches of industry, or reduces factor costs. This certainly includes the concessions granted under housing and savings schemes and the distance-based tax allowance for commuters. In the case of the distance-based tax allowance, this definition goes beyond the use of the term "subsidy" in the Stability and Growth Act. Cf. Federal Finance Ministry (BMF 2007), 21st Subsidies Report, p. 8, 112 and 115.

8 BMF (2010a) p. 8f.

"financial assistance" means money payments by the federal authorities to recipients outside the federal administration. According to the Subsidies Report, tax concessions are special fiscal exceptions to existing statutory regulations which result in reduced revenue for the public sector. In some cases, however, this definition is too narrow. It does not take account of the fact that a subsidy may consist in exempting certain activities from taxation. Thus it is not the letter of the law that determines whether a tax subsidy exists, but whether preferential treatment is in line with the fundamental purpose of and reason for the tax. One example here is the energy tax reduction for diesel fuel compared with petrol, which the Subsidies Report does not list as a subsidy. However, the energy tax reduction for diesel fuel leads to distortions of competition which result in environmental burdens. On the other hand, not every tax concession is automatically an unjustified subsidy. Under the Eco Tax, for example, differences in tax rates linked to the adverse environmental impacts of the different fuels are not to be regarded as subsidies, because – unlike the exemptions for the manufacturing sector – they are in line with the purpose of the tax.

Implicit subsidies comprise all concessions which occur in concealed form and have no direct budgetary impact. These include all sureties and guarantees not taken up, targeted concessions under state regulations, or state provision or procurement of goods, services and rights at prices other than market prices. Implicit subsidies may have both environmentally relevant impacts and indirect budgetary impacts, and for this reason they must also be considered in any analysis of environmentally harmful subsidies.

However, the definition of implicit subsidies should not be extended to include inadequate internalisation of external costs. Although the cost of failure to internalise external costs is – like subsidies – borne by society as a whole, it is a general problem of inadequate environmental policy and is not attributable to targeted concessions for specific parties. Full internalisation of external costs[9] is an overriding maxim which goes beyond subsidy policy and the confines of this report[10].

To take in all concessions that favour environmentally harmful economic activities, it makes sense to use a broad definition of subsidies. Subsidies are essentially all special governmental arrangements that partially favour commercially oriented private and public companies or their products and which involve a counter-consideration that is either non-existent or lower than usual market levels. This alters the relative prices of goods and factors and prevents correct allocation of microeconomic costs to the parties responsible. For this purpose it is necessary to consider not only explicit, but also implicit subsidies.

Evey definition, every extension or restriction of the definition of subsidies, ultimately involves methodological and normative problems. In the final analysis, the crucial consideration is the suitability of the chosen definition of subsidies in relation to the specific purpose of the findings in view. The broad definition of subsidies used here ensures that the analysis of subsidies permits comprehensive identification of state action deficits and undesirable developments in the environmental sector.

In addition to environmentally harmful subsidies, there are also subsidies of relevance to environmental policy which are intended to promote environmental protection interests. This report, however, is concerned solely with environmentally harmful subsidies. The argument for this thematic distinction is that such subsidies cause serious distortions of competition at the expense of the environment, so that in this case there is more urgent need for review and reduction. Also, at over €48 billion in 2008[11], their scale is much larger than that of environment-promoting subsidies[12]. However, there is a connection between the existence of environmentally harmful subsidies and the need for environment-promoting subsidies. The fewer

9 Cf. Federal Environment Agency (UBA 2007a) and Maibach et al (2007).

10 However, when examining other issues it may make sense to look at external costs as well as subsidies, e.g. where it is a matter of designing measures intended to reduce distortion of competition between energy sources.

11 Cf. footnote 4.

12 For example, the financial assistance and tax concessions quantified by Sprenger and Rave (2003) for the year 2000 on the basis of the German government's 18th Subsidies Report, which partly benefit environmental protection interests, come to only €4.3 billion.

environmentally harmful subsidies there are favouring consumption of the environment, the less the state has to make use of environment-promoting subsidies to combat the resulting distortions of competition and misdirected developments.

3 Approach

Subsidies favour economic activities which are capable of affecting the environment in a variety of harmful ways. This report analyses how subsidies have adverse impacts on the environmental assets climate, air, soil, water, human health, biodiversity and landscape, and also natural resources. In doing so it applies the assessment criteria which are also used as a basis for environmental impact assessment. The report analyses subsidies and their environmental impacts in the fields of energy supply and use, transport, construction and housing, and also agriculture, forestry and fisheries, because these are the fields that cause the greatest environmental problems and derive the greatest benefit from environmentally harmful subsidies. The report focuses on the main federal subsidies, taking only a peripheral look at regional and local assistance programmes.

The analyses make it clear how varied and interlinked the environmental impacts of subsidies are. It is sometimes difficult to establish a direct causal connection between a subsidy and environmental damage. And because the effects – in view of the changes they induce in the behaviour of the economic subjects and the large number of boundary conditions – are virtually impossible to isolate, it is even more difficult to quantify the impacts of the individual subsidies on a specific environmental asset. Moreover, the effect of environmentally harmful subsidies is rarely confined to a single environmental asset, but has adverse impacts on several environmental factors at once. This is due to the complexity of ecological relationships and the interactions between the environmental assets.

For example, the distance-based tax allowance for commuters has a traffic-generating effect, resulting in emissions of climate-relevant carbon dioxide (CO_2), atmospheric pollutants and noise. It also creates incentives that tend to increase urban sprawl, one of the principal causes of the decline in biological diversity. Landscape depletion due to settlement leads in turn, indirectly, to further traffic-induced environmental burdens – for example because the distances people have to travel are growing, with a consequent deterioration in the basic conditions for public transport.

In view of the difficulty of quantitative assignment of the various adverse environmental effects of the individual subsidies, this report presents a purely qualitative account of the cause-and-effect relationships between the subsidies and their harmful environmental impacts. But it goes without saying that we quantify the subsidies as far as possible. The single reference period here is the year 2008.

The following main part of the study documents the most important environmentally harmful subsidies. It is divided into four chapters:

1. Energy supply and use,
2. Transport,
3. Construction and housing, and
4. Agriculture, forestry and fisheries

Each chapter begins with a section providing an overview of the adverse effects of the subsidies on the environmental assets under consideration. This is followed by sections describing the main environmentally harmful subsidies in the sector in question. Part III describes how an environmentally oriented subsidy controlling system can contribute to a systematic reduction in environmentally harmful subsidies and to achieving a sustainable policy on subsidies. The appendix presents the individual subsidies in the form of fact sheets providing a rapid overview.

II THE MAIN ENVIRONMENTALLY HARMFUL SUBSIDIES

1 Energy supply and use

1.1 Impacts on the environment

At present our energy supplies are to a large extent based on fossil and nuclear energy sources, in other words non-renewable sources of energy. They are not sustainable, because they give rise to substantial pollution and environmental risks. The exploitation of fossil and nuclear energy sources causes damage in the extraction and production areas. This includes large-scale destruction of the countryside and associated loss of species, surface subsidence and mining damage due to underground coal mining, adverse effects on water resources and drinking water supply, and pollution due to dust (particulates). Moreover, the transportation of fossil and nuclear energy sources involves great environmental hazards. There is the risk of soil, water and coastal pollution along the transport routes and serious damage as a result of damaged pipelines, gas explosions, and accidents involving oil tankers.

"End-use energy" – mainly electricity, heat, heating fuels and motor fuels – is mainly produced from the non-renewable primary energy sources coal, oil, gas and uranium. The environmental problems involved in energy supply, conversion and use are many and various. From an environmental protection point of view, each energy source has its own specific advantages and disadvantages and has different harmful effects on the environment depending on its energy, carbon and pollutant content.

Combustion of fossil fuels to produce electricity, heat for heating and heat for industrial processes gives rise to atmospheric pollutants – such as sulphur dioxide, oxides of nitrogen, carbon monoxide or particulates, and the greenhouse gas CO_2. Atmospheric pollutants affect human health, lead to acidification and eutrophication of water and soils, and cause damage to nature and buildings, cultural assets, e.g. monuments. CO_2 is the greenhouse gas that makes the biggest contribution to the anthropogenic greenhouse effect and hence to current global warming. The climate protection target of a 40% reduction in greenhouse gas emissions in Germany by 2020 (compared with 1990) cannot be achieved with our existing energy supply arrangements. Examples of adverse impacts of climate change include increasing frequency of heat-waves, droughts, intense rain and increasing intensity of tropical storms, rising sea levels, dwindling ice and snow cover, and acidification of the oceans. Adverse effects on climate have far-reaching worldwide negative impacts on ecosystems, endanger human health, threaten biological diversity, and lead to economic losses in many sectors, e.g. agriculture and forestry or tourism.

Nuclear energy also has substantial disadvantages from an environmental point of view. It may give rise to high radiation exposure and hence to serious health damage. The operation of nuclear power plants always involves a risk of accidents, and the issue of long-term final disposal of radioactive waste remains unresolved.

The energy industry and the industrial sector make a major contribution to environmental pollution. The energy industry – as defined by the German greenhouse gas inventory – encompasses public power generation, central heat generation (e.g. in heating plants), refineries and coke ovens. In Germany the energy industry was the biggest emitter of sulphur dioxide (54%)[13] and CO_2 (41%)[14] in 2008. While the industrial sector also operates power plants for its own supplies, it takes the greater part of its electricity from public electricity generation plants. In 2008 it consumed nearly half of all electricity[15] and caused more than one third of all CO_2 gas emissions[16] in Germany.

In addition to the environmental pollution and risks already mentioned, our present use of energy is not sustainable because oil, gas, coal and uranium are not renewable and sooner or later they will run out. Our high

13 Federal Environment Agency (UBA 2010a).

14 Federal Environment Agency (UBA 2010b).

15 Arbeitsgemeinschaft Energiebilanzen e.V. (2009a), data sheets 4 and 4.1.

16 Calculated on the basis of data from the Arbeitsgemeinschaft Energiebilanzen e.V. (2009a), Tables 4 and 4.1, and from UBA (2010b).

resource consumption restricts future generations' opportunities to use these resources, because they will no longer be available. This ought to be reflected more strongly in the prices of such natural resources.

All links in the value-added chain – from production via conversion to use of fuels – are the subject of explicit or implicit subsidies. There are numerous examples of this in the following sections. Subsidies which result in reduced energy costs for energy users – whether commercial or private – encourage energy consumption, because lower costs reduce the economic incentive to make economical and efficient use of energy. Examples include numerous exceptions and concessions relating to energy tax and electricity tax for businesses in the manufacturing sector and in agriculture and forestry (cf. Sections 1.2.1 to 1.2.3 and 1.2.6 to 1.2.8). Subsidies in the energy sector must also be classed as environmentally harmful if they distort competition between energy sources to the benefit of relatively harmful sources and thereby lead to a non-sustainable energy mix. In many cases these are subsidies for coal and nuclear energy (cf. Sections 1.2.4 to 1.2.6, 1.2.9 and 1.2.10).

It must also be pointed out that in some cases subsidies in the transport and construction sectors have adverse repercussions on energy-induced environmental pollution (cf. Chapters 2 and 3). For example, indirect promotion of urban sprawl – e.g. through the distance-based tax allowance – gives rise to an increase in the length of infrastructure networks per head of the population. Above all, district and local heating networks will become unprofitable in view of the decrease in settlement density. This undermines the future potential of combined heat-and-power generation and reduces the possibility of cutting CO_2 emissions by using energy efficiently. Thus to reduce CO_2 emissions in the long term it will also be necessary to reduce environmentally harmful subsidies in other fields.

1.2 The main environmentally harmful subsidies in the field of energy supply and use

1.2.1 Reductions in electricity tax and energy tax for the manufacturing sector and for agriculture and forestry

Enterprises in the manufacturing sector and in agriculture and forestry have to pay only 60% of the standard tax rates for electricity and the heating fuels natural gas and liquefied gas and only 73% of the standard rate for heating oil; this is to avoid endangering their international competitiveness. A total of around 120,000 enterprises enjoy this preferential treatment[17]. They include many companies which do not have high specific energy costs and are not exposed to strong international competition, as revealed by the evaluation of this subsidy commissioned by the Federal Ministry of Finance[18]. Although this exemption has been confirmed by the Federal Constitutional Court[19] and approved by the EU Commission under the laws on state aid[20], it goes too far from an environmental and competition point of view. As a result of the tax concessions there is far less incentive to behave in an energy-saving fashion than in other sectors, e.g. the trade and services sector, or in private households. The following figures illustrate the fact that there is a considerable need for action, especially from a climate protection point of view: from 1993 to 2008 the industrial sector, as the biggest consumer, increased its electricity consumption by nearly one third[21], i.e. faster than other sectors.

The energy consumption and greenhouse gas emissions caused by the manufacturing sector could be reduced considerably – for example, by saving electricity and by changing fuels. There is a lot of catching up to do in the field of improving energy efficiency, especially where cross-sectional technolo-

17 European Commission, 13.06.2007 (State aid N 775/2006), p. 4.

18 Thöne et al. (2010), p. 224.

19 Federal Constitutional Court 1 BvR 1748/99 of 20.4.2004 - Judgement on "Eco Tax"

20 State aid No. N 449/2001 – Germany ("Continuation of ecological tax reform after 31 March 2002"), OJ C 137, 8.6.2002, and repeated approval of the modified arrangements in European Commission letter of 13.06.2007 (state aid N 775/2006)

21 BMWi (2010a), calculated from Table 6a

gies – e.g. electrical drives, compressed air systems, steam generation, pumps and fans, and lighting – are concerned. Given the innumerable electric motors used in trade and industry, there are great economic opportunities for saving electricity; these alone amount to 10% of Germany's total electricity consumption and hence about 5% of Germany's total greenhouse gas emissions[22]. However, there are not sufficient incentives for energy-efficient production in industrial enterprises – partly because of the tax concessions granted.

In 2008 the general tax concession for the manufacturing sector and for agriculture and forestry totalled

€2.415 billion

(€2.1 billion electricity tax plus €315 million energy tax[23]). Until the end of 2006 the 40% tax concession applied only to the electricity and eco tax rates, which were introduced and increased between 1999 and 2003. However, since 1 January 2007 the concessions have applied to the entire energy tax rates for heating fuels, i.e. including the petroleum excise duty that already existed before 1999. For electricity, which before 1999 was not taxed at all, and for natural gas and liquefied gas, this continues to mean a reduction of 40%; for heating oil – owing to the objections by the European Commission – it means a reduction of 26.7%. But because of the broadening of the calculation base to include all standard tax rates, both the tax burden and tax revenue are falling. Thus the tax reduction for natural gas, for example, rose from nearly 15 to 22 cents/kWh. This is a major reason for the fact that, despite the introduction of complete tax exemption for certain energy-intensive processes and methods in August 2006 (cf. Section 1.2.3), the volume of the subsidy did not decrease, but actually increased by a good €250 million compared with 2006.

This tax concession must gradually be abolished, in other words the tax rates are to be raised to the level that applies to other sectors of the economy and the household sector. This will permit a substantial improvement in the fiscal incentives to behave in an energy-saving fashion in the manufacturing sector and in agriculture and forestry.

The abolition of tax concessions involves a risk that certain energy-intensive enterprises exposed to international competition may have to bear an unreasonable burden of energy taxes, with consequent threats to their existence. This can however be avoided by applying a hardship rule. Such hardship rules exist, for example, in the emissions trading field (hardship clause pursuant to Section 6 (6) of the Allocation Act (Zuteilungsgesetz – ZuG) 2012), and also existed in connection with the "coal pfennig" (electricity price supplement to support the mining industry) until the 1990s.

If the state continues to grant energy tax concessions, these should only be granted to enterprises which introduce a verified energy management system, draw up an energy saving programme and at least implement those energy saving measures which pay off in microeconomic terms, i.e. are profitable and pay for themselves within a reasonable period. This would ensure that in return for the tax concessions the enterprises implement energy savings and energy-efficient production methods.

1.2.2 Peak equalisation scheme for eco tax in the manufacturing sector

In addition to the general electricity and energy tax concession of 40% of the standard rates (cf. Section 1.2.1), enterprises in the manufacturing sector receive a refund of 95% of the remaining eco tax payments that exceed the relief on pension scheme contributions. In 2005 this benefited some 20,000 enterprises producing on a relatively energy-intensive basis[24]. This concession is intended to avoid their being burdened with eco tax in view of international competition. The marginal tax rates resulting from this rule are only 3% of the normal electricity tax rate for power, and – due to the extension of the general tax reduction in 2007 – even less than 3% of the regular eco tax rates for the eco tax component of natural gas and liquefied gas. In concrete terms this means that the relevant enterprises no longer pay around 2 cents of eco tax for each additional kilowatt-hour of electricity consumed, but only about 0.06 cents.

22 UBA (2007b), p. 2.

23 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 240 and p. 235.

24 State aid No. N 449/2001 – Germany.

In 2008 the peak equalisation scheme had a volume of

€1.962 billion

and was thus roughly one tenth of the total eco tax revenue of €18 billion per annum. The tax shortfall in 2008 came to €1.8 billion for electricity tax and €162 million for energy tax[25].

The peak equalisation scheme very considerably reduces the incentive for the beneficiary enterprises in the manufacturing sector to adopt energy-saving behaviour. For climate protection reasons, this special arrangement for eco tax is in need of fundamental reform. The European Commission's approval of the peak equalisation scheme under state aid law expired at the end of 2006. At the end of June 2007, however, it was renewed virtually unchanged until 2012 with retroactive effect from the beginning of 2007[26].

From an environmental point of view it makes sense to abolish the peak equalisation scheme and thus increase the much reduced marginal tax rates, in order to increase the incentive to reduce energy consumption and greenhouse gas emissions. Companies that had to bear too great a burden as a result of the abolition of this tax concession would be exempted under the hardship rule (see Section 1.2.1).

1.2.3 Tax reduction for certain energy-intensive processes and techniques

For reasons relating to international competition, the revised version of the Energy Tax Act in force since August 2006 (and similarly the Electricity Tax Act) contains new fiscal exceptions under which many energy-intensive processes remain 100% tax-free. Dual-purpose energy products (e.g. fuels for the steel manufacturing sector which are also used there as source material) and energy products for use in mineralogical processes (e.g. in the extractive and building materials industry) are basically exempted from energy taxation. Individual exemptions apply to electrolysis, chemical reduction processes, metal production and processing methods, and thermal treatment of waste and exhaust gases. Also exempted are processes in the glass, ceramic, brick, cement and lime industry, the production of other building materials – gypsum, sand-lime bricks, aerated concrete products and asphalt – and mineral fertilisers. These exemptions for an indefinite period are permissible under the EC Energy Tax Directive, but not compulsory[27].

The tax concessions under the Energy Act and the Electricity Tax Act for the processes mentioned are estimated by the 22nd Subsidies Report at an annual total of

€886 million[28].

Thus the volume of the subsidy more than doubled compared with 2006 (€322 million). As there are no fiscal incentives at all to make economical use of energy in the favoured industrial processes, these blanket exemptions for the specified chemical, metallurgical and mineralogical production methods must be abolished. For this reason the regular tax rates and the proposed hardship rule should apply[29]. The latter should be used on a targeted basis to support enterprises which cannot pass the additional cost of the energy tax on to their customers in view of the keen international competition, and which therefore run into financial difficulties. To fill the taxation gap, the EU should extend the field of application of the EC Energy Tax Directive to include the stated chemical, metallurgical and mineralogical production methods and the production of basic building materials.

1.2.4 Coal subsidies

In 2008, the German (hard) coal mining industry continued to be the biggest recipient of direct financial assistance from the German government, with €1.9 billion and a share of nearly 33%. This figure included nearly €1.82 billion in grants in 2008 in respect of sales of German coal for electricity generation, sales to the steel industry and compensation for burdens due to capacity

25 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 241 and p. 237.

26 Letter from European Commission dated 13.06.2007 (State Aid N 775/2006).

27 Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity, Art. 2 (4) b).

28 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 238 and p. 242.

29 Cf. previous sections 1.2.1 and 1.2.2.

adjustments, plus federal adjustment payments for coal-mining employees totalling nearly €121 million. In 2008 there was also €1 million in "miner premiums" from wage tax revenue[30] and €516 million financial assistance from North-Rhine/Westphalia[31], bringing the total subsidy volume for 2008 to

€2.454 billion

The 17.1 million tonnes of coal in 2008 were produced by 30,400 employees in the German coal-mining industry[32] – so simple arithmetic shows that the subsidies in 2008 totalled more than €80,736 for each employee.

On 7 February 2007 the German government and the Länder of North-Rhine/Westphalia and Saar reached a basic agreement with RAG AG and the Mining, Chemical and Energy Trade Union (IG BCE) that coal subsidies be run down and subsidised coal mining be discontinued in a socially acceptable manner by the end of 2018[33]. From 2009 to 2018 the German government and North-Rhine/Westphalia are providing further subsidies of around €15.6bn and €3.9bn respectively, totalling €19.5 billion – without taking account of adjustment payments[34]. This is laid down in the Coal Financing Act. However, in 2012 the German Bundestag (lower house of Parliament) will have to make a review to ascertain whether the agreement to end subsidised coal mining is to be maintained in the light of efficiency considerations, security of energy supply and other energy policy objectives.

The cost of coal mining in Germany is so high by comparison with production costs in other countries that coal mining in Germany would not be possible without permanent subsidies. Apart from the economic absurdity of permanent subsidies for its maintenance, coal mining also gives rise to serious environmental problems and follow-on costs. The greenhouse gas methane, which has particularly adverse effects on the climate, escapes from coal mines. Mine waste heaps have to be sealed at considerable cost to prevent risks to the groundwater. Mining subsidence causes substantial damage to buildings and transport infrastructure. The fall in ground level gives rise to flood risks, which have to be permanently contained by means of dykes and pumping systems. These factors give rise to "eternal burdens". The provisions of the Coal Financing Act (Steinkohlefinanzierungsgesetz)[35] on the funding of eternal costs by the RAG Foundation do not exclude the possibility that the German government and the coal-mining Länder may in future have to bear part of the eternal burdens, which would mean a further subsidy. If the Foundation's funds proved inadequate, the coal-mining Länder North-Rhine/Westphalia and Saar would have to step in and shoulder the eternal burdens, and the German government could also bear a one-third share.

The German electricity industry's focus on coal militates against the development of a sustainable energy supply system in Germany. Even if an end of German coal-mining subsidies initially resulted in substitution by imports of coal, the end of coal subsidies would be an important signal for a long-term climate-friendly energy policy, which requires a fuel mix producing considerably lower CO_2 emissions than at present.

For these reasons it is necessary to make greater and faster reductions in coal subsidies than currently planned. This would considerably reduce the burden on public funds and create financial scope for additional promotion of renewable energy sources and efficient use of energy, e.g. in energy-saving building refurbishment. Apart from a reduction in greenhouse gas emissions, this would also result in positive effects on employment[36]. By contrast, the economic disadvantages of abolishing the coal subsidies would be relatively small, since the end of subsidies

30 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 118, p. 120 and p. 195.

31 Parliament North-Rhine/Westphalia (2007)

32 Gesamtverband Steinkohle e.V. (2010), p. 84.

33 NRW Ministry for Economics, SMEs and Energy et al (2007).

34 Federal Ministry of Economics and Technology (BMWi 2007).

35 Coal Financing Act (Steinkohlefinanzierungsgesetz) of 20.12.2007.

36 Frohn et al (2003). North-Rhine/Westphalia – which is particularly affected by any reduction in coal subsidies – planned in 2007 to treble the refurbishment rate to 3% of existing buildings per year, and for this purpose it had made money available – in addition to the nationwide building refurbishment programme of the KfW Banking Group. The Land government expected the energy-saving building refurbishment programme to result in up to 100,000 additional jobs (EnergieAgentur, NRW 2007). In 2008 the refurbishment rate was still around 1% (Ministry for Economics, SMEs and Energy of NRW 2008).

would not affect the export prospects of German mining technology on a global market. Inexpensive supplies of coal for the German electricity industry and the steel industry would be assured even without German hard coal, because the worldwide reserves of coal are very large. Moreover, the supply risks are relatively low for coal in particular, since the deposits are spread around the world and are to a large extent located in politically stable states.

Both environmental and economic arguments indicate the need for a speedy end to the coal subsidies – not later than 2012, and preferably earlier[37]. The subsidies granted after this point are to be used to mitigate the consequential damage resulting from mining and to promote employment and innovation. In the review of the basic decision on the end of coal subsidies which is planned for the year 2012, the discussions should at least not be about extending the coal-mining subsidies beyond 2018, but about ending them earlier. In this context – in additional to economic and energy policy aspects – the environmental impacts and follow-up costs of coal mining should also be taken into account as a decision-making criterion.

1.2.5 Privileges for the lignite industry

The German lignite industry receives subsidies in various ways. Since in most cases these are not direct financial assistance or tax concessions, these cases of preferential treatment are not evident from the German government's Subsidies Report. They are difficult to identify and quantify[38]. One particularly important example is the exemption of open-cast lignite mining from the production charges for mineral resources and from water abstraction charges.

According to the Federal Mining Act (Bundesberggesetz), a production charge of 10% of the market price is payable on non-mining mineral resources. The Länder may vary this rate or exempt certain raw materials. On the basis of ancient rights, open-cast lignite mining is completely exempted from this production charge. About 175 million tonnes of lignite were produced in Germany in 2008[39]. Thus a production charge of 10% of the price of about €10/t[40] would come to around €175 million per annum.

In most Länder with open-cast mining (except Saxony-Anhalt) a charge is payable for the abstraction of groundwater. North-Rhine/Westphalia, however, has decided to phase out the water abstraction charge from 2010 to 2018[41]. The EU Water Framework Directive requires the cost of "water services" including environmental and resource consumption, to be covered in accordance with the polluter-pays principle, at least for the household, industrial and agricultural sectors. Admittedly this does not include any obligation on the part of the state to levy water abstraction charges that cover costs. However, if the adverse environmental effects due to drainage shafts cannot be fully compensated for by environmental conditions, there would be a residual need to charge the environmental and resource costs to the parties responsible. To date the only instrument available for this in Germany is the water abstraction charge levied by the majority of Länder. But all Länder that levy this charge exempt the drainage of open-cast lignite mining from this charge – provided the water is not used for commercial purposes. This subsidising of free water consumption amounts to at least €20 million per annum[42], if one takes the water abstraction charges – which differ from one Land to another – as a guide to the cost of resource consumption.

By waiving the production charge for mineral resources and granting exemption from water abstraction charges, the Länder implicitly support lignite through free or cheap use of resources to the tune of

at least €195 million per annum.

Lignite is the fossil fuel with the greatest adverse effects on climate, environment and health. The serious consequences of open-cast mining include destruction of the natu-

37 RWI (2007).

38 Lechtenböhmer et al (2004).

39 Statistik der Kohlenwirtschaft e.V. (2009).

40 Lechtenböhmer et al (2004), p. 42 and p. A 34. Fluctuations in the price of lignite are relatively small.

41 NRW Ministry for Environment and Nature Conservation, Agriculture and Consumer Protection (2009).

42 Lechtenböhmer et al (2004), p. 43.

ral groundwater regime, involving damage to drinking-water wells, wetlands and their plant and animal species. The large amounts of land needed for open-cast lignite mining lead to large-scale destruction of landscape and settlements. Using lignite for power generation gives rise to the greatest specific climate impact costs, because this is the fossil fuel with the greatest climate-relevant CO_2 emissions per energy unit.

From an environmental protection point of view it is therefore necessary to abolish the implicit assistance for lignite. In the long term this would help to reduce the share of lignite power in the fuel mix, thereby lowering the emissions of pollutants and CO_2 and reducing the other environmental and health impacts of the lignite industry. The production charge of 10% of the market price must be levied on lignite. The charge would then amount to about €1 per tonne of lignite. The Länder should also levy water abstraction charges on open-cast lignite operations. The charge should cover the environmental and resource costs of groundwater abstraction and the rates should be designed to encourage sensible reuse of the water abstracted. North-Rhine/Westphalia should repeal the abolition of the water abstraction charge and include open-cast mining. Saxony-Anhalt should actually levy the water abstraction charge provided for in Section 47 of its Water Act. New and existing lignite power plants and open-cast mining operations should not receive either explicit or implicit subsidies that run contrary to the "polluter-pays" principle.

1.2.6 Energy tax reductions for coal

For a long time coal – unlike other heating fuels such as heating oil and natural gas – remained untaxed in Germany. This continues to be true of the greater part of the coal used for power generation and steel production. With effect from 1 August 2006 the German government abolished the taxation of the fossil fuels gas and oil for used power generation, which means that all fossil primary fuels in this sector are not subject to taxation. However, the Energy Tax Directive continues to permit taxation of energy sources used for power generation on environmental grounds. Steel production plants, which use a substantial proportion of coal, take part in the emissions trading scheme and, as an energy-intensive process, are exempted from energy tax. This tax exemption is an unjustified preferential treatment for steel production, and for coal as its energy source, as long as the emissions trading scheme does not sufficiently internalise the resulting external costs.

Only for the small proportion of coal that is used for heat generation did the German government introduce taxation under the Energy Tax Act with effect from 1 August 2006, in view of the European Energy Tax Directive. The tax rate is €0.33 per gigajoule (GJ) – based on the calorific value. It corresponds to the minimum rate in the EU Energy Tax Directive for private use of coal. After deduction of tax concessions (mainly for certain energy-intensive processes and techniques, cf. Section 1.2.3), coal tax revenue in 2008 came to €12.09 million[43]. For the present, however, this revenue is due entirely to commercial use, because the coal tax for private households remains suspended for social reasons until 31 December 2010. Since coal consumption for heating purposes by private households amounts to around 1.6 million tonnes of coal equivalent (TCE) or 47 million GJ in 2008[44], the state is losing nearly €16 million per annum as a result of the tax suspension.

The tax rate of €0.33/GJ does not adequately reflect the environmental and health impacts of sulphur dioxide, CO_2 and fine particulates. The insufficient tax on coal – and its total absence in the case of private households – gives rise to distortion of competition in the heating market at the expense of oil and gas, which are taxed despite their lower emissions. This favours the use of coal, although coal is the fossil fuel with the greatest environmental and climate impacts.

To avoid such distortions of competition and ensure a strong environmentally oriented steering effect for energy taxation, the tax rate for all fossil fuels should be made up of two components, 50% based on energy content and 50% based on CO_2 emission relevance. The current tax rate of €61.35 per 1,000 litres for light heating oil could be

43 Federal Statistical Office (2010b).

44 Energy Accounting Association (Arbeitsgemeinschaft Energiebilanzen e.V. 2009a), Table 4.2.1.

taken as a reference base for the level of the tax rate in the heating market. On this basis the appropriate tax rate for coal would be around €1.98/GJ (corresponding to 0.715 cents/kWh), which is six times the present rate. On the basis of this tax rate, the annual subsidy for coal used for heating purposes amounts to

€154 million.

Of this, €60.6 million is due to the under-taxed commercial use of coal and €93.1 million to tax-exempt private consumption. To remedy environmentally harmful preferential treatment of coal on the heating market and to improve the steering effect for environmental protection, the coal tax should gradually be raised to €1.98/GJ. This should apply equally to commercial and private use. To mitigate social hardship, the introduction of the coal tax for private households should be accompanied by an effective upgrading programme for heating systems, many of which are old and inefficient. Private households which replace their coal heating with a new and environmentally sound heating system should receive a grant towards the cost of conversion. Assistance programmes for the replacement of environmentally harmful night storage heaters are already offered by the Kreditanstalt für Wiederaufbau[45], and the German government should ensure that these are provided with adequate funds for the purpose.

1.2.7 Manufacturer privilege for producers of energy products

The "manufacturer privilege" under the Energy Tax Act allows enterprises which produce energy products – for example, refineries, gas producers and coal plants – to use fuels free of tax for their production. This applies both to energy products produced on their own site and to external purchases – such as petroleum products, gases or coal. In its 22nd Subsidies Report the German government expects the annual tax shortfall to come to

€270 million[46].

Refinery processes and other processes in the creation of energy products are frequently very energy and emission intensive. The manufacturer privilege means that such pro cesses suffer from a lack of fiscal incentives to improve energy efficiency and hence to reduce emissions of greenhouse gases and atmospheric pollutants. There is thus no justification for this preferential treatment of the producers of energy products. Commercially available fuels – such as light heating oil or gas – should be subject to the normal energy tax rates even if they are used in production operations. Thus refineries, gas producers and coal plants should be governed by the same energy tax arrangements[47] as for other energy-intensive enterprises in the manufacturing sector.

By contrast, non-marketable substances such as distillation and conversion residues in refineries should continue to be untaxed. The aim must remain to ensure that such residues are used on the refinery site (or close by) in suitable plants with efficient and comprehensive flue-gas cleaning systems. Taxation would strengthen incentives to make uncontrolled use of these residues for other purposes that are particularly undesirable from an environmental point of view – for example as bunker oil.

It should be noted that the manufacturer privilege exists throughout the EU and that the European Energy Tax Directive rules out taxation of self-produced energy sources[48]. At present only taxation of externally purchased energy sources is possible under EU law. Unequal fiscal treatment of self-produced and externally purchased energy sources within a refinery operation may have both positive and negative environmental and climate impacts[49]. Ultimately the positive incentive of taxation with regard to economical and efficient use of energy comes out on top. For this reason – and having regard to the Energy Tax Directive – the short-term demand should be for externally purchased energy in production operations

45 KfW (2010).

46 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 234.

47 Cf. Sections 1.2.1 and 1.2.2.

48 Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity, Art. 21 (3), first sentence.

49 From a climate protection point of view the fiscal incentives for energy-efficient design of production processes have a basically positive impact. However, the tax could encourage substitution of a relatively climate-friendly fuel (e.g. natural gas) by a relatively harmful fuel (e.g. heating oil) and thereby have negative environmental impacts.

to be made subject to the normal tax on energy. In the medium and long term, however, marketable self-produced energy sources should also be subject to taxation. To this end, efforts should be made to lift the ban on taxation of self-produced energy sources in the EC Energy Tax Directive.

1.2.8 Energy tax exemption for non-energy uses of fossil fuels

Energy sources which are not used as heating or automotive fuels are exempted from energy tax. For example, petroleum products are used as raw materials in the production of plastics, paints, solvents or fertilisers. Natural gas is a raw material for ammonia production. And there are also refinery products used for non-energy purposes – such as bitumen and lubricants. In 2008 the total volume of non-energy uses of energy sources in Germany came to about 1000 petajoules, or 7% of total primary energy consumption[50]. If one takes the light heating oil tax rate of €61.35/1000 litres (corresponding to €1.69 per gigajoule) or the natural gas tax rate of €5.50 per megawatt-hour (corresponding to €1.53 per gigajoule) as the reference base, this results in an annual subsidy volume of €1.71 billion or €1.55 billion. Since the greater part of non-energy uses are accounted for by oil, a conservative estimate of the subsidy volume is

€1.6 billion.

The tax exemption for non-energy uses of fossil raw materials is not justified, because their use as material also depletes finite resources and because waste and greenhouse gas emissions are created in the course of the product life cycle. Even the production and use of chemical and petrochemical products give off greenhouse gases because carbon oxidises and is released in the form of CO_2. These adverse environmental impacts are not reflected in product prices. There is therefore a need to create tax incentives to make more efficient use of fossil fuels for material purposes, replace them by renewable raw materials, and avoid creating waste and greenhouse gas emissions. Energy sources used for non-energy purposes should be taxed in line with their demands on environment and resources. In the interests of effective environmental policy and international competitiveness, such an arrangement should as far as possible be introduced throughout the EU or in a group of pioneer states.

50 Energy Accounting Association (Arbeitsgemeinschaft Energiebilanzen e.V. 2009b).

1.2.9 Free allocation of CO_2 emissions trading allowances

Under the European CO_2 emissions trading scheme, Germany assigned approximately 389 million out of 452 million annual CO_2 emission allowances free of charge to installations in the energy and industrial sectors for the trading period 2008-2012[51]. This allocation procedure enables the operators of the installations taking part in the emissions trading scheme to emit CO_2 free of charge provided they do not need more than the allowances allocated to them[52].

Since the emission allowances allocated within the emissions trading scheme are both scarce and tradable, the emission allowances command a price on the market[53]. For the companies, it means that the state makes them a present of a saleable asset in the form of a pollution right. This also gives them the option of including opportunity costs in their production costing on the basis of the prices that are becoming established on the market for allowances. Many energy suppliers have done this and have to a large extent added the opportunity costs to their electricity prices. On balance, the allocation of emission allowances free of charge has presented the energy supply companies with additional profits running into the billions. For 2008 these windfall profits are estimated to total between €5.4 and 6.2 billion[54]. At the same time the state has lost considerable revenue as a result of the free allocation of emission allowances.

Thus the free allocation of emission allowances satisfies all essential criteria for an

51 Federal Environment Agency (UBA 2009d).

52 The introduction of the emissions trading scheme is a change of regime which introduces the polluter-pays principle for CO2 emissions and fundamentally changes the original allocation of pollution rights. The operators of the installations in question are no longer permitted to emit CO2 unless they possess the relevant allowances. The upper emissions limit introduced does not automatically mean that emissions must continue to be possible free of charge. Instead the state can sell the emission allowances.

53 This is a central difference from the – also free – allocation of pollution rights in the context of regulatory instruments.

54 Matthes (2010).

implicit subsidy that are mentioned in Chapter I 2 (indirect budget impact, provision of allowances by the state at prices below the market price).

On the basis of an estimated average allowance price of €20/tonne CO_2 in 2008[55] and approximately 389 million allowances, the volume of subsidies for German plant operators in 2008 totalled

€7.783 billion.

The environmental impacts of this subsidy are difficult to assess. Since the method of allocation does not have any feedback effect on the fixed emissions budget, allocation free of charge does not itself constitute an environmentally harmful subsidy with regard to the CO_2 emissions limit. Both the free allocation and the method of allocation do however give rise to indirect environmentally harmful feedback effects on the energy mix and the construction of new power plants.

Emission allowances that are not auctioned must be allocated to plants in accordance with different allocation rules. The allocation rules for energy installations are based on benchmarks which are different for gas and coal, and which are based on the best available technology in each case. However, the fuel-based differentiation of allocation to electricity production gives rise to indirect environmentally harmful impacts on the energy mix – especially where the construction of new power plants is concerned. New installations also receive free emission allowances based on the same (fuel-dependent) benchmarks as for existing installations. However, this benchmark system with fuel differentiation provides considerably less incentive to use relatively low-CO_2 energy sources – such as gas – than a single, entirely product-based benchmark system. In many cases the retention of a separate benchmark for coal-fired power plants – especially in view of the continuing relatively high price of natural gas – will probably continue to tip the balance in favour of investing in coal-fired power plants.

The long useful life of new power plants ensures long-term emission of climate relevant CO_2. The preferentially treated coal-fired power plants also cause considerable emissions of pollutants such as NO_x and SO_x, for which no binding maximum limits exist. Thus the free allocation of emission allowances on the basis of fuel-differentiated benchmarks is an environmentally harmful subsidy favouring the operators of coal-fired power plants. It therefore remains difficult to effect the changeover of power generation to gas-fired power plants or renewable energies, which is desirable from an environmental point of view[56].

Allocations to industrial installations are largely made free of charge on the basis of historical emissions for a reference period ("grandfathering"). This provides very little motivation to change the CO_2-intensive energy mix in the direction of sustainable energy supplies. The largely free allocation to industrial installations means that the subsidy here must be regarded as even larger than in the energy sector.

In the medium and long term, the practice of free allocation and the allocation mechanism itself increase the macroeconomic costs of further emission reductions, because the existing allocation rules set a course that is geared to a non-sustainable energy mix.

For the third trading period from 2013 to 2020, the EU laid down the basic rules in 2009. With effect from 2013, electricity companies must buy 100% of their allowances. Emission allowances for industry will be auctioned on a rising scale, from 20% in 2013 to 70% in 2020. The remaining emission allowances will be allocated in accordance with benchmarks that are independent of fuels and technologies – on the basis of the most efficient plants in the relevant sector[57]. Installations in industries which are classified as at risk of "carbon leakage" will continue to receive 100 percent of their benchmark allowances free of charge.

The future regulations represent a considerable advance in terms of incentives to replace plants and select lower-emission technologies, not only as regards the reduction in

55 The figure of €20 is an average determined on the basis of various methods for calculating the average price of emission allowances in 2008 (yielding results of between €17.38 and €22.66).

56 Installations for renewable energy sources do not receive any allocations under the emission trading scheme; this means that free allocation to new fossil-fuel power plants is in itself an environmentally harmful subsidy.

57 BMU (2009).

subsidies and the extension of the "polluter pays" principle, but also through the use of uniform benchmarks for the remaining free allocations.

In the long term all allowances must be auctioned, as this is the only way of avoiding allocation rules, which have a tendency to be inefficient – such as grandfathering or benchmarks – and preventing plant operators from making windfall profits that are not associated with climate protection measures. Complete auctioning applies the polluter-pays principle by eliminating the implicit subsidy. The revenue should accrue to the national budget and be spent on climate protection measures. If, as seems possible, the European Union's CO_2 reduction target is raised to 30 instead of 20 percent, the EU should make a corresponding reduction in the number of emission allowances without making any increase in free allocations.

1.2.10 Subsidies for nuclear power

Particularly at the start of its use for power generation, nuclear energy received large explicit subsidies, especially for research. From the time financial assistance started to the present day, the German government and the Länder have spent between €40[58] and €60[59] billion of public money in the field of nuclear energy. As a result, nuclear energy has received considerably more financial assistance than, for example, renewable energy sources and energy efficiency, which have received research funding totalling little more than €6 billion since 1974[60].

In 2008 nearly €332 million from the federal budget was available for nuclear energy research and for the disposal of nuclear installations[61]. In addition, nuclear power receives substantial support in the form of implicit subsidies. In particular, the liability arrangements with regard to potential accidents in nuclear power plants and the provisions made by the NPP operators constitute benefits of a subsidy character running into the billions.

On the basis of the polluter-pays principle, the polluter ought to bear full liability for the risks arising from nuclear power. Certainly the operator of a nuclear power plant is liable to the extent of his entire assets in the event of an accident. However, the required provision for cover involves a cash requirement of only €2.5 billion (€256 million from the operator's liability insurance and €2.244 billion from the cover provided by the operator pool). Above and beyond this amount there is no certainty of payment – if the operator becomes insolvent, the state has to bear the remainder of the loss. Insuring a higher sum under liability policies is not possible for economic reasons, since the probability of occurrence and the scale of the accident are virtually incalculable. Moreover, it is difficult to insure such costs, which may be very high. It has been estimated that a nuclear accident could cause a loss of more than €5,000 billion[62]. Thus the operator bears only a small portion of the risk: the costs of the remaining risk are borne by the state (and hence by society), which is thereby implicitly subsidising nuclear power[63]. It is extremely difficult to quantify this subsidy. Estimates of the preferential treatment represented by the limited liability obligations for nuclear power plants vary between 5 and 184 cents per Kwh[64].

There are also other kinds of preferential treatment in the form of provisions for the subsequent closure and disposal of nuclear power plants. The operators build up these provisions over 25 years, thereby reducing their taxable income. From the 26th year[65] onwards the operating company accumulates interest gains until the time of closure[66]. At present it is impossible to quantify precisely the concession represented by these provisions. On the basis of a simplified model calculation the German Institute for Economic Research (Deutsches Institut für Wirtschaftsforschung – DIW) estimates the

58 DIW (2007), p. 19, price basis 2006.

59 Meyer et al. (2009). Price basis 2008. Including tax concessions and implicit subsidies, FÖS calculates that subsidies to date total more than €164 billion.

60 DIW (2007), p. 53, price basis 2006. Before 1974 public financial assistance for research into renewable energy sources and energy efficiency was negligible.

61 DIW (2007), p. 14. The sum quoted is made up of the key assistance areas "Nuclear Energy Research" and "Disposal of Nuclear Installations".

62 Ewers and Rennings (1992).

63 Hausner and Simon (2006).

64 Thomas et al (2007).

65 For the first 25 years the provisions are subject to a discounting requirement

66 Cf. Fouquet and Uexküll (2003).

benefit resulting from the present provisions system to be at least €175 million per annum[67]. However, the companies can also continue to use the provisions to finance company activities. This creates an additional internal financing benefit, which according to a method devised by Green Budget Germany (FÖS)[68] can be estimated at around €770 million in 2008 . This practice must be changed so that companies which operate nuclear power plants are not favoured by provisions. However, the agreement between the German government and the energy supply companies on the phasing-out of nuclear power rules out the possibility of such a reform[69]. If the lifetimes of nuclear power plants are extended, critical consideration should be given to changing this practice.

Although, in view of the problems described, it is not possible to determine the precise extent to which nuclear power as a whole is subsidised, estimates to date indicate that without the high level of implicit subsidies – and especially the limited provision of cover with regard to liability – nuclear power would not be competitive as a source of energy[70].

In view of the environmental and health issues associated with uranium extraction, the unresolved question of final disposal of nuclear waste, the danger of serious accidents and the potential proliferation of military uses, nuclear power is a technology that is inherently harmful to the environment. From a climate protection point of view too, there are more effective and more efficient ways of reducing CO_2 emissions. For instance, the use of nuclear power to generate electricity – involving, for example, the extraction and enrichment of uranium for fuel elements – gives rise to more greenhouse gases than the use of wind energy[71].

67 DIW (2007), p. 39.

68 Meyer et al. (2009), p. 52ff.

69 The agreement of 14 June 2000 states: "The German government will not take any initiatives in the form of unilateral measures which discriminate against the use of nuclear power. This also applies to tax legislation."

70 Irrek (2007).

71 Cf. Fritsche (2007), p. 7. On this basis, using nuclear power to generate one kWh of electricity results in 32 to 65 g CO2 equivalent, depending on the origin of the uranium used; using wind power – depending on whether in offshore or onshore systems – results in 23 to 24 g CO2 equivalent.

Furthermore, investment in renewable energy sources and energy efficiency is usually the lower-cost alternative. Where the cost of avoiding greenhouse gas emissions is concerned, nuclear power is not competitive in most cases[72]. The explicit and implicit subsidies for nuclear power make it more cost-effective and result in its being profitable at all at the individual microeconomic level.

2 Transport

2.1 Impacts on the environment

The environmental damage caused by the transport sector is primarily due to traffic-induced emissions and land take.

In Germany transport made a substantial contribution to emissions in 2008, namely CO_2 (18%)[73], carbon monoxide (34%), oxides of nitrogen (46%), volatile hydrocarbons (10%), particulates (17%), fine particulates (18%) and noise[74], which result in a variety of environmentally harmful impacts. Transport is an important sector for climate protection in particular. Since traffic carried will probably continue to grow in future under present conditions, it is all the more important to reduce this growth and increase the share of low-emission modes of transport. Emissions of nitrogen oxides and volatile hydrocarbons by the transport sector play a major part in ozone levels in near-surface layers of the atmosphere. Nitrogen oxides are also responsible to a large extent for the acidification and eutrophication of terrestrial and some aquatic ecosystems and the subsequent loss of biodiversity. Moreover, traffic-induced emissions of atmospheric pollutants present a considerable threat to human health. For instance, elevated concentrations of fine particulates in city centres, in which traffic plays a major part, have harmful effects on human health – in the form of increased respiratory diseases, for example. Acute and chronic stress due to traffic noise also involves health risks.

Not only traffic-induced emissions, but also land take and landscape fragmentation resulting from the construction of traffic routes have harmful environmental impacts (cf. Section 3.1). The associated impairment and

72 Fritsche (2007).

73 Federal Environment Agency (UBA 2010a

74 Federal Environment Agency (UBA 2010b).

fragmentation of habitats are a major cause of the ongoing loss of biodiversity[75]. Increasing urban sprawl, which is encouraged by the development of traffic routes to open up rural areas, also results in a shift towards the use of cars for passenger traffic, since bus and train connections become increasingly unattractive and expensive in areas with low population density[76]. This trend towards the car results in adverse ecological consequences. In this way the transport infrastructure – along with other factors – has a major influence on the total transport volume and the shares carried by the individual means of transport[77].

Subsidies in the transport sector contribute to environmental pollution in various ways. Preferential treatment of fuels or drive systems with comparatively poor environmental properties reduces their cost and thereby increases their share of the overall traffic volume. One example of this is the tax concession for diesel fuel compared with petrol (cf. Section 2.2.1). Another result of low fuel or running costs due to subsidies is that there is little incentive to invest in innovative, efficient drive systems and vehicles or vessels – for example the inland waterway sector (cf. Section 2.2.4), the flat-rate taxation of private use of company cars (cf. Section 2.2.6), or the energy tax concessions for biofuels (cf. Section 2.2.7).

Preferential treatment for environmentally harmful carriers makes them more competitive, which results in them gaining a growing share of the total transport volume. This is true of the tax concessions for air transport, for example (cf. Section 2.2.3 and 2.2.5). What is more, by reducing the overall cost of transport, subsidies create an incentive to increase the transport volume. An example of this is the distance-based tax allowance for commuters (cf. Section 2.2.2). In combination with building subsidies and a well developed transport infrastructure, such subsidies result in increased land take, especially in areas where settlement densities are low. Thus they indirectly support the development of the transport network and the growth of urban sprawl, with the result that transport routes – e.g. from home to work – are getting longer and the total volume of traffic is continuing to grow.

2.2 The main environmentally harmful subsidies in the transport sector

2.2.1 Energy tax reduction for diesel fuel

At 47.04 cents per litre the energy tax rate for zero-sulphur diesel fuel is 18.41 cents per litre less than the rate of 65.45 cents per litre for petrol. Including value-added tax, the tax concession for diesel fuel is even higher (21.9 cents per litre).

The lower tax on diesel fuel is an instrument intended to favour commercial road transport, but it also applies to private cars. In order to offset the associated unjustified subsidy for diesel-powered cars, the latter are subject to a higher vehicle road tax. Cars with diesel engines are nevertheless becoming increasingly attractive, as demonstrated by their growing share of the total (in Germany from 14.5% to 24.4% from 2001 to 2008[78]). This is an indication that the higher vehicle road tax does not adequately offset the lower energy tax on diesel fuel.

On the basis of the more than 36 billion litres of diesel taxed in 2008[79], the concession for diesel fuel compared with petrol amounts to an annual tax shortfall of

€6.633 billion[80].

From an environmental point of view, the energy tax concession for diesel fuel should be viewed critically. A diesel car pollutes the air with an average of about ten times more nitrogen oxides than a petrol-engined car. And when it comes to fine particulates, diesel cars which are not yet equipped with a particle filter represent a much greater risk to health than petrol cars because of the harmful effects of fine particulates. Particularly from a climate policy point of view, the tax concession of 18.41 cents per litre is not

75 Federal Agency for Nature Conservation (BfN 2005).

76 UBA (2010d), p. 10.

77 European Environment Agency (EEA 2007), p. 12/13. In its latest report on transport subsidies in Europe, the European Environment Agency comes to the conclusion that, in particular, road traffic in the EU profits from publicly financed transport routes to the tune of three-digit billions.

78 Federal Motor Transport Authority (Kraftfahrt-Bundesamt 2010).

79 Federal Statistical Office (Statistisches Bundesamt 2010b), Table 1.1.

80 This figure does not take account of the additional loss of value-added tax revenue.

justified because, owing to its greater density, diesel fuel has a higher carbon content than petrol and its combustion gives rise to roughly 13% higher CO_2 emissions. In view of these adverse effects on the environment, the reduced tax rate for diesel should gradually be eliminated and the diesel tax rate brought up to the same level as for petrol[81]. In parallel with the increase in energy tax on diesel fuel, the vehicle road tax for diesel cars should be reduced to the same level as for petrol cars.

2.2.2 Distance-based income tax deduction for commuters

Employed persons can set off expenditure on journeys to and from work against income tax as a business expense. The rate is 30 cents per kilometre one-way distance between home and work. This reduces the tax burden once the individual flat-rate allowance of €920 per annum is exceeded. Most other EU countries do not have comparable tax concessions. From the beginning of 2007 this concession was restricted to distances in excess of 20 kilometres, but after the Federal Constitutional Court had held that this was not compatible with the Basic Law, the German government restored the legal situation which had been in force until 2007. This return to the old system was not necessary, however, because there were – and still are – other constitutional alternatives to reducing this concession.

The distance-based tax allowance supports the increase in traffic, the trend to long distances to work and to fragmentation of the landscape. Above all, it favours car traffic because public transport is very limited, especially in areas with low settlement densities, and is therefore not a viable alternative for many employees. Thus the distance-based tax allowance runs contrary to climate protection and contributes to atmospheric pollution and noise. Land take as a result of urban sprawl processes is also an important factor responsible for loss of biodiversity and has other environmentally harmful impacts (cf. Section 3.1).

The loss of tax revenue due to the distance-based tax allowance[82] amounts to

€4.350 billion.

The distance-based tax allowance tends to favour high-income households considerably more than earners of low incomes. This is firstly because high-income households have a higher (marginal) tax rate, and secondly because they often have additional income-related expenses, which puts them in a position to exceed the individual flat-rate allowance with these tax-deductible travel costs.

From an environmental point of view, the withdrawal of the new rule introduced in 2007, together with the reintroduction of tax deductibility for the cost of travel to work right from the first kilometre is a retrograde step. To remove the incentives to environmentally harmful behaviour, the distance-based tax allowance should be abolished completely. The legislature could avoid any unreasonable hardship for employees whose travel costs from home to work account for a very large proportion of their income by recognising costs for the journey between home and work as extraordinary expenses deductible for income tax purposes. This kind of hardship rule should take effect once expenditure on travel to work – on its own or together with other extraordinary expenditure – exceeds the relevant maximum reasonable burden[83]. This would specifically reduce the burden on those employees who had very high travel costs in relation to their income, for example because they have to travel long distances to work for social or work-related reasons.

If complete abolition of the distance-based tax allowance and a changeover to recognition of journey costs as extraordinary expenses deductible from income tax were not possible, other possibilities could be considered. For example, the legislature could

81 Reducing the energy tax rate for petrol to the same level as the diesel tax rate would reduce the economic incentive to adopt energy-saving driving habits and buy low-consumption cars, which would make it an unfavourable option from a climate protection point of view.

82 "Monitoringbericht zu klimaschädlichen Subventionen und umweltbezogenes Subventionscontrolling", FKZ 204 14 106; calculated using the FiFoSiM model; for details of the model see Fuest et al. (2005) or Peichl and Schaefer (2006). This figure confirms the information from the Federal Statistical Office, which estimated the tax shortfall due to the distance-based tax allowance at €4 billion in 2005; see also Federal Statistical Office (Statistisches Bundesamt 2005), p. 20

83 The maximum reasonable burden is calculated individually on the basis of income and family situation. It is currently between 1% and 7% of total earnings.

considerably reduce the rate of 30 cents per kilometre and put a ceiling on the maximum allowance payable.

Model calculations indicate that abolition of the distance-based allowance could cut CO_2 emissions by more than 1.8 million tonnes per year by 2015 and 2.6 million tonnes per year by 2030[84]. In order to avoid increasing the overall tax burden, income tax rates could be reduced. This would relieve the burden on taxpayers, while largely retaining the positive effects for climate protection[85].

2.2.3 Exemption of kerosene from energy tax

Unlike the fuels used by motor vehicles and the railways, the kerosene used in commercial air transport is exempted from energy tax[86]. However, owing to the altitude at which they are emitted, air transport emissions have at least twice the climate impact of ground-level emissions[87]. This is due in particular to water vapour and nitrogen oxides, which – if they enter the atmosphere at great heights – have a much greater climate impact than at ground level. What is more, emission-reducing advances in engine technology are not keeping pace with the passenger-kilometres travelled. For this reason the foreseeable technical measures will be nowhere near sufficient to maintain or reduce present emission levels.

The introduction of a kerosene tax is therefore not only necessary to ensure equal fiscal treatment for the individual modes of transport and thereby avoid distortion of competition, but is also important as an environmental protection measure. Basically kerosene should be taxed at the rate of €65.45 cents per litre that is set out in the Energy Tax Act[88]. According to the Subsidies Report, the tax exemption for kerosene resulted in a tax revenue loss of €640 million[89] in 2006, but this only takes account of fuel consumption on domestic flights. In view of domestic sales of 8.84 million t of kerosene[90] to the civil aviation sector in 2008, the exemption of this sector from energy tax resulted in a tax shortfall of

€7.232 billion.

For a long time there was a ban on taxation of kerosene throughout the EU. Today the EU Energy Tax Directive of 2003[91] permits taxation of kerosene for domestic flights and for flights between Member States, provided relevant bilateral agreements exist. This means that an EU-wide kerosene tax is basically possible. However, there is strong resistance on the part of several Member States, so it will be difficult – especially in view of the principle of unanimity on tax issues – to gain acceptance for the introduction of an EU-wide tax.

Furthermore, at international level the Chicago Convention restricts the taxation of fuels in the aviation sector, since it bans the taxation of kerosene which is already on board and which serves the purpose of onward international flights. It is however possible – even outside the EU – to introduce a kerosene tax by amending bilateral air transport agreements. In the interests of equal fiscal treatment of the different means of transport, efforts should be made, despite the existing difficulties, to agree on a kerosene tax for as large an area as possible – at least EU-wide. If it proves impossible to levy the excise duty rate of 65.45 cents/litre included in the German tax rate for kerosene, the minimum tax rate of 30.2 cents/litre laid down in the EC Energy Tax Directive should be levied[92].

84 Matthes et al (2008), p. 269ff.

85 Distelkamp et al (2004), p. 89/90.

86 Section 27 (2) Energy Tax Act (EnergieStG).

87 Federal Environment Agency (UBA 2008a).

88 Energy Tax Act (EnergieStG) Section 2 (1), No. 3. The tax rate is made up of 50.11 cents per litre excise duty component and 15.34 cents per litre eco tax component.

89 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 257.

90 Federal Office of Economics and Export Control (BAFA 2009), Table 7j.

91 Art. 14, 2003/96/EC.

92 Taxation of kerosene should be pursued in addition to the inclusion of the aviation sector in the EU Emissions Trading Scheme. Whereas emissions trading exclusively serves climate protection interests, the kerosene tax is primarily an excise duty justified entirely on fiscal grounds. It also makes sense to levy eco tax on kerosene consumption as well: This because the EU emissions trading scheme in the air transport sector is based entirely on CO2 emissions and does not take account of any other adverse climate impacts of air transport such as changes in natural cloud formation. Moreover, in view of the fact that its goal is confined to climate protection, the emissions trading scheme does not make any contribution to internalising external costs which arise as a result of other negative impacts of air transport (impairment of air quality due to emission of nitrogen oxides, stress due to air traffic noise).

2.2.4 Energy tax exemption for inland waterway transportation

The diesel fuel used in the commercial inland waterway sector is tax-free[93]. Commercial fishing boats also profit from this tax exemption. Although assistance for inland waterway traffic is desirable from a transport policy point of view, it should not be provided at the price of doing without appropriate cost allocation to the responsible party and incentives to make efficient use of energy. The fuel used in inland waterway vessels has a higher sulphur content than the diesel fuel used in trucks and diesel locomotives, and its combustion therefore gives rise to greater sulphur dioxide and particulate emissions. This means the tax exemption does much to encourage atmospheric pollution and acidification of soils and water.

In 2008 this subsidy resulted in a tax shortfall of

€118 million[94].

To harmonise the competition situation between the various modes of transport – especially between goods traffic via inland waterways, road and rail – marine diesel should, like diesel fuel containing sulphur in the road transport sector, be taxed at the rate of 48.57 cents per litre. This would create incentives to increase energy efficiency. The abolition of tax exemption should be effected throughout the EU, or at least for international traffic on the Rhine. Accompanying measures – such as investment bonuses for more efficient, environmentally sounder engines – would make sense in order to simplify adjustments to inland waterway traffic. For example, financial assistance has been available since 2007 for modernising inland waterway shipping by giving financial incentives to buy lower-emission diesel engines and emission reduction systems.

2.2.5 VAT exemption for international flights

Transboundary commercial air transport is exempt from value-added tax in Germany; only domestic flights are subject to value-added tax. This tax exemption puts the aviation sector at an advantage compared with other means of transport, and should be abolished in the interests of equal fiscal treatment of air and rail transport. This is also urgently needed from an environmental point of view, as aircraft are the most harmful means of transport in terms of climate impacts (see Section 2.2.3).

Subsidies for the air transport sector in 2008 as a result of VAT exemption amounted to

€4.237 billion[95].

Domestic flights within Germany should be taxed at the full VAT rate (19%) in the near future. To create uniform framework conditions for transboundary travel, efforts should be made in the medium term to levy an EU-wide value-added tax for transboundary flights within the Community.

2.2.6 Flat-rate taxation of privately used company cars

When company cars are used for private purposes, the user has to pay income tax in respect of this "payment in kind", on the basis of 1% per month of the vehicle's list price at the time of first registration.

This low flat-rate taxation is an incentive for companies to pay employees part of their salary in the form of a company car. Company cars account for a large proportion of cars on the road. More than 30% of new registrations in Germany in 2008 were company cars[96]. Company cars tend to be fairly large cars with above-average fuel consumption. For example, the great majority of heavy off-road vehicles are used for business purposes, while only one such vehicle in four has a private owner[97]. Thus the company car privilege promotes the car as a means of transport and contributes to environmental pollution by the road transport sector (see Section 2.1). Private use of company cars should therefore be taxed at a higher rate and – as in the United Kingdom, for example – differentiated by CO_2 emissions. The legislature should reduce this rate for vehicles with low

93 Section 27 (1) Energy Tax Act (EnergieStG) (until August 2006 Section 4 (1) No. 4 Petroleum Excise Duty Act (MinöStG).

94 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 258.

95 Calculated from the VAT payments in Federal Statistical Office (Statistisches Bundesamt 2010c) and the total turnover of air transport companies in (Statistisches Bundesamt 2009), Table 10.1.

96 Federal Motor Transport Authority (Kraftfahrt-Bundesamt 2008).

97 Deutsche Umwelthilfe (2007).

CO_2 emissions (e.g. up to 130 g/km), and raise it in stages for vehicles with higher emissions (e.g. over 130 g/km). In the United Kingdom, phased taxation of private use of company cars on the basis of CO_2 emissions, which was introduced in 2002, has resulted in a significant reduction in CO_2 emissions[98].

The additional tax revenue resulting from an increase in taxation of private use of company cars is difficult to quantify. A bill presented by the parliamentary parties SPD and Bündnis 90/ Die Grünen (Green party) in 2002 to reduce tax concessions and exceptions estimates that the additional annual revenue from raising the "payment in kind" from 1% to 1.5% of the list price would come to

€500 million[99].

Regardless of the taxation of private use, there is a need for a general, environment-oriented reform of the fiscal treatment of company cars. The legislature should basically differentiate the deductibility of purchase and running costs on the basis of greenhouse gas emissions or the fuel consumption of the vehicles. For example, the cost of low-emission vehicles (e.g. up to 130 g CO_2/km) might be set off against tax in full, whereas vehicles with CO_2 emissions in excess of this threshold would only be partly deductible. The higher the vehicle's emissions, the smaller the deductible portion of costs should be. This would create targeted incentives for the purchase of low-emission company cars.

2.2.7 Biofuels

First-generation biofuels use only a small part of the crop grown. By contrast, second-generation biofuels, which are still under development, use the entire plant or only waste material, which means they are probably sounder from an environmental point of view. However, second-generation biofuels are still at the research stage.

Since 2007 the state has promoted consumption of biofuels and heating bioliquids by means of the biofuel admixture quota, which requires biofuel to account for a certain minimum percentage of the total quantity of fuel marketed. Furthermore, in 2008 the state gave preferential treatment to first-generation biofuels sold above and beyond this quota, by reducing the energy tax to 14.88 cents/litre for biodiesel and 9.86 cents/litre for vegetable oil fuels. Second-generation biofuels are completely tax exempt. The energy tax reductions are intended to promote the market launch of biofuels. The aim is to achieve a minimum share of 10% for biofuels in 2020.

From the point of view of environmental and climate protection, some bioenergy utilisation paths are very controversial, especially first-generation biofuels. This is because a rigorous examination of the entire life cycle of biofuels may even reveal a negative greenhouse gas balance[100]. Cultivating biomass may cause substantial environmental damage. Central issues here are the release of greenhouse gases and the endangerment or destruction of areas of ecological value (especially for biodiversity). Threats to soil, water and air cannot be ruled out either. Moreover, the present promotion of first-generation biofuels is also regarded as inefficient from a climate protection point of view[101].

In September 2009 the Bundestag passed the Biofuels Sustainability Ordinance (Biokraftstoff-Nachhaltigkeitsverordnung), which lays down certain greenhouse gas reduction potentials for biofuels put on the market with effect from January 2011. Whether this sustainability ordinance will prevent the adverse environmental effects of biofuels from then on remains to be seen. Up to the end of 2010, however, a proportion of production can be expected to have considerable adverse effects, especially if land of great nature conservation value (e.g. rainforest) or with a high carbon content is ploughed up for the production of biofuel[102].

In 2009 the German government, fearing competition between biofuels and food crop cultivation, and worried that biofuels might not be very climate-friendly, froze the biofuels quota at 6.25% for the years 2010 to

98 Her Majesty's Revenue & Customs (2006). By this means emissions were reduced by 0.2 to 0.3 million t CO_2 in 2005.

99 German lower house of Parliament (Deutscher Bundestag 2002), p. 22.

100 UBA (2010d), p. 53; WBGU (2008).

101 OECD (2008)

102 UNEP (2009).

2014[103]. In spite of the existing reasons for not giving preferential tax treatment to biofuels, the Act amending the Promotion of Biofuels (Gesetz zur Änderung der Förderung von Biokraftstoffen) reduced the tax on biodiesel to around 18 cents/litre in 2009. The Growth Acceleration Act (Wachstumsbeschleunigungsgesetz) extended this reduced tax on biodiesel and vegetable oil fuel to the years 2010 to 2012, although the tax was to increase in those years. In other words, this subsidy was increased rather than reduced.

However, it is not possible to make an accurate estimate of the proportion of biofuels production which is environmentally harmful. The size of this subsidy is therefore classified as unquantifiable. As a result of the preferential treatment of biofuels, the state lost a total of €580 million in 2008[104].

The state should suspend the energy tax reduction until it is confirmed that biofuels are good for the climate and the environment, as is also recommended in the evaluation of this tax concession commissioned by the Federal Ministry of Finance[105]. Until then the biofuels quota should also be reduced. It would make more sense to base the level of subsidy on the reduction in greenhouse gas emissions. This assistance by means of the quota is also problematical from an environmental point of view, since it promotes marketing of the less environment-friendly biofuels of the first generation. Research into second-generation biofuels should be promoted, as should their market launch, though not by a reduction in energy tax, but via direct assistance for research and development[106].

103 BMU (2008). This target should be easy to achieve, because according to the German government's Biofuels Report the percentage of biofuels had already reached nearly 6% in 2008.

104 Federal Ministry of Finance (BMF 2010a): 22nd Subsidies Report, p. 231.

105 Thöne et al. (2010), Vol. 2, p. 266.

106 At the beginning of 2008, for example, the initiative "BioEnergie 2021" was started with resources of €50 million with a view to producing climate-friendly forms of bioenergy on a competitive basis.

3 Construction and housing

3.1 Impacts on the environment

Construction activities involve very high consumption of resources. They entail substantial expenditure of materials and energy, and are undertaken at the expense of a limited natural resource: land. All in all, the land covered by settlement and transport infrastructure comprises 13.2% of the area of Germany[107]. The surface of nearly half this area is sealed. Reducing land take is a goal of fundamental importance for sustainable settlement development. Despite a decline in the growth of the land area (from 120 ha per day in 1996 to 95 ha per day in 2008[108]), the present trend is still far from the goal of the German sustainability strategy, namely to reduce the additional land take for settlement and transport to 30 ha per day by 2020. The discontinuation of the home ownership grant makes a contribution to reducing land take[109]. However, further measures are necessary to achieve the 30-hectare goal. As a basic principle, the goal of saving land must be systematically taken into account in all state regulations that influence demand for land for settlement and infrastructure purposes. It is also necessary to give priority to using waste land within settlement areas rather than unused areas outside, as this offers considerable potential for reducing land take. The total area of unused land is put at between 150,000 hectares[110] and 176,000 hectares[111]. This is 15 times the annual growth in land under buildings and open spaces (33 ha/day)[112].

Land take and growing urban sprawl give rise to a chain of mutually reinforcing interactions, many of which have adverse impacts on the environment. Land take results not only in loss of habitats, but also loss of the finite natural resource "soil" as a produc-

107 Federal Statistical Office (Statistisches Bundesamt 2010e), Table 2.2.

108 Federal Statistical Office (2010d).

109 The number of building permits for residential buildings fell by nearly 40% between 2006 and 2008 (Statistisches Bundesamt 2009b).

110 Federal Government (Bundesregierung 2008), p. 145.

111 UBA (2008c), p. 9.

112 Federal Agency for Construction and Regional Policy (BBR 2010), p. 2ff.

tion factor for agricultural use. Other consequences of urban sprawl are traffic generation, landscape fragmentation and surface sealing. These consequences in their turn contribute to increased pollution of various environmental assets – such as climate, water, soil, air, health and biodiversity.

Destruction and fragmentation of habitats as a result of the expansion of settlement and infrastructure areas are important contributory factors to the decline in biological diversity[113]. Surface sealing also results in far-reaching restrictions in natural soil functions and has adverse impacts on the water regime. Faster rainfall runoff is detrimental to groundwater recharge and increases flood risks.

Increasing urban sprawl generates additional traffic and thereby leads to rising emissions of pollutants and noise (cf. Section 2.1). The large volume of traffic is also the reason for the comparatively high energy consumption in areas of low settlement density[114]. The steady decrease in settlement density (users per km² of settlement area) also reduces the profitability of district and local heating networks and hence the potential for future use of combined heat-and-power generation, because it increases network length per user and hence the per capita costs of building and maintaining the infrastructures. This reduces the medium-term climate protection options for cutting CO_2 emissions. Thus urban sprawl also has indirect adverse impacts on climate protection.

The growth of settlement and transport areas takes place mainly at the expense of agricultural land. This means there is a permanent change in land use which cannot be reversed, or only at great cost. The loss of high-quality soils reduces the potential for organic farming and for environmentally sound production of renewable raw materials. In many cases, failure to make adequate use of waste land also has adverse impacts on environmental assets. As a result of former commercial use, waste land often displays a high degree of surface sealing. Sealed land prevents rainwater from seeping away into the ground, and therefore – as already mentioned – has harmful impacts on the water regime. Another common characteristic of waste land is soil contamination, which would have to be remedied in the event of development for commercial or housing purposes. Thus the adverse effects on environmental assets arise not only from the use of new land, but also as a result of failure to clean up contaminated waste land.

Substantial quantities of material are needed for the construction of residential and commercial buildings and transport infrastructures. In 2007 some 557 million t of mineral construction materials were used in Germany (about 84% of the mineral resources used in Germany)[115]. The stock of existing buildings is a sizeable indirect materials depot that is growing year by year.

The subsidies described below actually or potentially favour the growth of construction activities for settlement purposes, land take, and progressive destruction of the landscape by urban sprawl. This is because subsidies reduce the cost of building new housing (cf. Sections 3.2.1 to 3.2.3) or of developing new industrial, commercial and transport areas (cf. Section 3.2.4). Money from the state encourages land take without differentiating between waste land and open spaces. It generally increases the incentive to build – including on "greenfields" sites. From an environmental protection point of view, however, priority should be given to supporting investment in existing buildings and the use of waste land and vacant city-centre sites for settlement purposes.

3.2 The main environmentally harmful subsidies in the construction and housing sector

3.2.1 Home ownership grant

The home ownership grant (Eigenheimzulage) is still the largest single state subsidy in Germany. The German Bundestag introduced it in 1995 as an instrument for promoting home ownership – with special regard to objectives of social and family policy. As far as the abolition of environmentally harmful subsidies is concerned, it is a success that this subsidy has not been available since 1 January 2006. However, existing cases (building permit application or purchase agreement before 31 December 2005) can

113 Federal Agency for Nature Conservation (BfN 2005).

114 European Environment Agency (EEA 2006), p. 29/30.

115 Calculated from basic data in Federal Statistical Office (Statistisches Bundesamt 2009c), Part 2.

continue to claim the full assistance for a maximum period of eight years. In this way the home ownership grant will continue to be paid until at least 2013. The assistance is a maximum of €1,250 a year (depending on the cost of production or acquisition), plus €800 for each child. From 1996 to 2000 nearly half the basic subsidy went to new buildings. The child supplement gave more support to new buildings than to purchases of existing buildings[116].

The ongoing trend to home ownership, and especially detached and semi-detached houses, is showing an increasing focus on rural areas. In addition to other factors, the frequently low level of land prices in rural areas encourages new building. The home ownership grant reinforced this trend[117]. The result is an increase in land take and consumption of natural resources, and a rise in traffic-induced environmental pollution. The home ownership grant is not compatible with the German sustainability strategy's objective of reducing land take for settlement and transport to 30 hectares per day by 2020. Its abolition is therefore an important step towards an environmentally sound housing policy. Partly in view of the surplus of housing in many regions and the increasing need for vocational mobility, the home ownership grant is no longer in keeping with the times. Moreover, in view of the long-term demographic trend (declining population, increasing average age), the number of young people potentially interested in home ownership will tend to fall rather than rise.

In 2008 the volume of subsidy represented by the home ownership grant was still

€6.223 billion[118].

By abolishing the home ownership grant, the German government has made an important contribution to sustainable development. To reduce land take as a consequence of housing construction, future housing policy should focus on making existing buildings and city-centre areas more attractive, especially for older people. Above all, there is an urgent need for energy-saving refurbishment of existing buildings in the interests of climate protection[119].

3.3.2 Promotion of saving for building purposes

The state promotes saving for building purposes by means of the housing construction premium (Wohnungsbauprämie), the employee savings allowance (Arbeitnehmer-Sparzulage) and the Home Ownership Pensions Act (Eigenheimrentengesetz).

The housing construction premium is available to all building society savers whose taxable annual income does not exceed €25,600 (married couples €51,200). The premium amounts to 8.8% of the eligible deposits paid in, up to a maximum of €512 (married couples €1,024) per annum. Thus the housing construction premium is up to €45.06 a year (or €90.11 for married couples).

The employee savings allowance serves the interests of state promotion of private wealth formation, and consists of two separate assistance channels. As well as promoting participation in productive assets, the state also supports investment in building society savings schemes. Employees whose taxable annual income does not exceed €17,900 (or €35,800 for married couples) are eligible for the employee savings allowance if they arrange to have part of their salary – often in combination with employer contributions to the employee's capital formation savings scheme – transferred to their building society account. In that case the state grants a bonus of 9% of the deposits paid in up to maximum of €470, so the employee savings allowance for building society savers comes to €42.30 a year.

It is doubtful whether the housing construction premium and the employee savings allowance for building society savings plans effectively serve their real purpose of promoting home ownership. After all, there are

116 Federal Agency for Construction and Regional Policy (BBR 2002), p. 7 and p. 10.

117 Sprenger and Triebwetter (2003), p. 44.

118 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 266 and p. 269. The figure is made up of €4.172 billion basic allowance and €2.051 billion child supplement; it comprises the payments for new and existing homes.

119 In the wake of the Meseberg decisions of 23.08.2007, the German government has already decided on important steps to boost the refurbishment rate in the form of the Integrated Energy and Climate Programme (IECP). Among other things, this includes funding the CO2 building refurbishment programme with €1.4 billion a year until 2011. In 2009 the figure was actually stepped up to €2.25 billion in view of the great demand. For 2010, however, only €1.5 billion was made available, and for this purpose €310 million was taken off the budget for 2011.

considerable free-rider effects. At any rate the support for saving for building purposes potentially increases the incentive to build individual homes and hence increases land take. In this respect it is not compatible with the German sustainability strategy's 30-hectare goal. Furthermore, in view of the housing surplus in many regions, the increasing need for vocational mobility and the long-term demographic trend, both the housing construction premium and the employee savings allowance are no longer in keeping with the times.

The new Home Ownership Pensions Act (Eigenheimrentengesetz), which includes owner-occupied homes in the "Riester Pension" scheme with effect from 2008, promotes the purchase, construction or paying-off of a house or apartment and the acquisition of shares in housing cooperatives. Thus the "home ownership pension" provides undifferentiated incentives nationwide for housing construction, and may thereby contribute to further urban sprawl. Modernisation, refurbishment or energy-saving measures are not eligible for assistance.

According to calculations by the German government, support for building society saving in 2008 came to €458 million[120] under the Housing Construction Premium Act (Wohnungsbauprämien-Gesetz) and €9 million[121] under the Home Ownership Pensions Act (Eigenheimrentengesetz), in other words a total of

€467 million.

In the same year, the federal and regional authorities spent €146 million on the employee savings allowance (€62 million of this was contributed by the state[122]); it is not known what proportion is due to building society savings as a form of investment. The extent to which abolition of the employee savings allowance for building society savings plans would lead to an increase in tax revenue remains an open question, since employees could switch to other wealth formation options that continue to be subsidised.

120 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 175.

121 German lower house of Parliament (Deutscher Bundestag 2008a), p. 1.

122 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 274.

In future, support for wealth formation for households with small and medium incomes – such as the housing construction premium and the employee savings allowance – should no longer favour building society savings. The state should not provide any regionally undifferentiated incentives to build additional homes. In the interests of targeted support for housing that already exists, federal assistance for housing should in future be confined to the modernisation and energy-saving refurbishment of existing buildings. Regardless of wealth formation and property ownership, the state should provide support where home owners take action to repair or maintain housing, e.g. under the KfW assistance programmes. The home ownership pension should be spent on existing buildings and energy-efficient refurbishment of buildings, and also on energy-saving measures.

When designing new assistance programmes in the housing sector there is a basic danger that assistance not tied to specific regions may lead to environmental, social and financial problems – as demonstrated by the example of pension plans.

A critical look should be taken at support for owner-occupied homes, not only in the interests of ensuring retirement provision that is viable in the long term, but also with regard to efficient use of public funds. Against the background of the changing demographic trend and the long-term decline in population numbers, it is in any case doubtful whether home ownership will always be a safe and stable investment for old age. In view of falling demand for property, many homes are threatened by a substantial loss of value.

3.2.3 Promotion of social housing

In 2002, in view of the good average supply of housing, the German government used the Housing Assistance Act (Wohnraumförderungsgesetz) to develop traditional social housing activities into a social housing assistance scheme. Since then the assistance provided has been geared much more to existing housing. This development is to be welcomed. Nevertheless, assisted housing in 2006 still accounted for around 11 to 12% of the new homes built[123]. Thus social housing

123 Federal Ministry of Finance (BMF 2006), 20th Subsidies

assistance still makes a sizeable contribution to increased land take and the resulting environmental damage (cf. Section 3.1).

As part of the reform of the federal system, responsibility for legislation on social housing assistance was transferred from the federal to the regional authorities on 1 September 2006. Thus since 2007 the German government has no longer played a direct part in social housing assistance. Until 2013, however, the Länder are entitled to compensation of

€518 million

a year from the federal budget[124]. The Länder have to use this money for promoting social housing.

Housing construction in Germany has fallen off considerably in recent years, which means that social housing assistance as a whole is supporting a much smaller number of new buildings. The reorientation of the assistance in favour of existing buildings is also to be welcomed. However, the public sector should, if possible, discontinue assistance for public housing completely and use the money in future solely to support the stock of existing buildings. To provide more targeted support for those who do not have the resources of their own to find appropriate accommodation on the housing market, the assistance should focus more on the households concerned (assistance for subjects) rather than housing (assistance for objects). The Federal Environment Agency therefore recommends that greater use be made of the instrument of housing benefits and municipal acquisition of occupancy rights in existing buildings for needy households.

3.2.4 Joint Agreement for the Improvement of Regional Economic Structures

The purpose of the "Joint Agreement for the Improvement of Regional Economic Structures" (Gemeinschaftsaufgabe "Verbesserung der regionalen Wirtschaftsstruktur" (GA)) is to compensate for the locational disadvantages of structurally weak regions, to give them a chance of getting in line with the general economic development and reducing development differences. Here there is a special focus on promoting investment by trade and industry to create and safeguard jobs[125]. Implementing these assistance measures is the responsibility of the Länder. However, the German government plays a part in framework planning and financing. The federal and regional authorities each provide 50% of the money. To this must be added assistance from the EU structural funds[126] – especially the European Regional Development Fund (ERDF). For the year 2008, GA assistance amounting to roughly €2 billion (including ERDF) was approved. Of this, a good two thirds went to trade and industry and nearly one third to infrastructure[127].

Improving and expanding industry-oriented infrastructure is a central area for assistance in the Joint Agreement. This also includes the development of new industrial estates. According to the Federal Ministry of Economics and Technology (BMWi), 19% of all money approved for infrastructure assistance between 1991 and 2009 was used to develop trade and industry sites, whereas only 3% went into the restoration of waste land[128]. Even in the assistance period starting in 2007, the assistance criteria of the Joint Agreement continue to support the development of new sites. At present the publicly available data does not yet permit any assessment of the current ratio of revitalisation of waste land to development of new land.

In view of the continuing rapid growth of land used for settlement and infrastructure, new development of areas for trade and industry as a measure of regional structural policy must be seen in a critical light. Espe-

Report, p. 40.

124 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 13.

125 German lower house of Parliament (Deutscher Bundestag 2006), p. 8/9.

126 For the current assistance period 2007 to 2013, Germany is to receive for the three goals "Convergence", "Regional Competitiveness and Employment" and "European territorial cooperation" a total of €26.3 billion, i.e. an average of €3.8 billion a year (European Commission, DG Regional Policy (2006)). Money from the EU structural funds frequently serves as co-financing for the Joint Agreement money. It will not be possible to determine the level of environmentally harmful subsidies as a percentage of EU structural fund payments in combination with the Joint Agreement (GA) until sometime during the current assistance period.

127 Federal Office of Economics and Export Control (BAFA 2010). For 2009 the German government, in its Economic Package I, increased the GA funds once by a further 200 million euros (BMWi 2010b).

128 Federal Ministry of Economics and Technology (BMWi 2010c).

cially in those regions which are key assistance areas of the EU and the federal and regional authorities, the area under settlement is growing faster than the population. At the same time the intensity of utilisation of newly developed areas is frequently low, and the number of vacant lots in newly developed trading and industrial estates is growing. Investigations of the existing industrial sites in the New Länder show that the existing supply will be able to meet the predicted demand for industrial sites in the decades ahead[129]. The development of new industrial land – especially in non-built-up areas – makes a direct contribution to land take and hence to harmful impacts on various environmental assets (cf. Section 3.1). Thus uncritical promotion of such projects is not compatible with Germany's land-saving objectives. As a rule, new development for industrial purposes entails the expansion of transport infrastructure, which – as well as additional land take – results in further traffic-induced environmental pollution (cf. Section 2.1). Moreover, the Joint Agreement also supports other assistance measures which favour environmentally harmful activities, e.g. for regional airports in accordance with No. 3.2.2[130] (including, for instance, 27 measures in Schleswig-Holstein during the period 2000-2008[131]).

Structural assistance instruments – like the Joint Agreement – could be used to give an important boost to economical use of land[132]. If structural policy were rigorously geared to the sustainability objectives, German and EU regional assistance activities could be important instruments for curbing the growing use of the countryside for settlement purposes. To this end the assistance rules of the Joint Agreement will have to be supplemented by environment-oriented assistance criteria which give clear priority to recycling of waste land rather than development of new industrial sites. One assistance requirement should be that the applicant must first present an inventory of vacant lots in settlement areas and of existing trade and industry sites. New sites should only be developed if the available reserves of land are exhausted.

However, not only environmentally harmful infrastructure measures – such as development of new industrial sites –are eligible for assistance under the Joint Agreement, but also ecologically desirable investments – for example, wastewater treatment plants. This means it is not possible to quantify the environmentally harmful component of the subsidy.

In general, the promotion of industry-oriented infrastructures is based on an outdated definition of investment, which recognises only the formation of physical capital as an investment. In line with the Lisbon strategy of the EU, German economic assistance should in future pay more attention to improving competitiveness by promoting human capital, innovation and environmental awareness.

4 Agriculture, forestry and fisheries

4.1 Impacts on the environment

With more than 50% of the total area, agriculture is the most important sector of the German economy when it comes to use of land[133]. Extensive agricultural use performs important ecological functions by maintaining the cultural landscape and keeping it open. Among other things, it helps to conserve biological diversity and supports groundwater recharge. In recent years, however, agricultural production has been characterised by increasing intensification and specialisation. Intensive agricultural production is one of the main causes of eutrophication and of pollution of the environment (especially soil and water), declining biodiversity and impairment of natural soil functions[134]. The agricultural sector is the main

129 Bonny and Glaser (2005).

130 Deutscher Bundestag (2007). Projects eligible for assistance are the construction, expansion and modernisation of regional airports and airfields in the structurally weak assistance areas, which as a rule are under public ownership (municipalities, local authority associations or rural districts). The assistance covers only airport infrastructure that serves the general public interest and is open to all interested users on a non-discriminatory basis within the capacities created. Infrastructure for the use of one enterprise only is excluded from assistance.

131 German lower house of Parliament (Deutscher Bundestag 2009), p. 101.

132 Cf. EEA (2006), p. 7.

133 Federal Environment Agency (UBA 2007c).

134 Council of Experts on Environmental Issues (SRU 2004), p. 173.

source of emissions of ammonia (95%), methane (53%)[135] and nitrous oxide (68%)[136]. In 2008 a total of nearly 7% of all greenhouse gas emissions originated from agricultural sources. This means that agriculture gives rise to more greenhouse gases than the "trade, industry, services" sector, for example[137]. If one includes all emissions indirectly connected with agriculture, this share increases to 13.5%[138]. Livestock farming in Germany results in 95 million tonnes of greenhouse gas emissions. This is more than 70% of greenhouse gas emissions by the agricultural sector, and nearly 10% of Germany's total emissions of greenhouse gases[139].

Environmental assets are particularly affected by the nutrient surpluses and pollutant inputs in the agricultural sector. Excess nutrients find their way into the air (especially as ammonia and nitrous oxide) and water (above all as nitrate). These nutrient surpluses have far-reaching adverse impacts on the natural regime – such as acidification and eutrophication of terrestrial, aquatic and coastal ecosystems with resulting damage to biological diversity and pollution of the groundwater, surface waters and the sea. Excessive use of nitrogen fertilisers plays a major role here. Since the 1990s the annual nitrogen surplus in the German agricultural sector has been over 100 kg/ha, and is thus considerably higher than the target of 80 kg/ha by 2010 in the German sustainability strategy[140].

The continuing high sales of plant protection products (PPPs) must also be seen in a critical light from the point of view of environmental protection. In Germany a strict authorisation procedure creates the basis for safeguarding the natural environment from the toxic effects of PPPs. In practice, however, infringements of the safe conditions of use occur on a considerable scale – for example, the requirement that when PPPs are applied, a certain minimum distance must be maintained from bodies of water or from hedgerows[141]. Studies of water bodies have shown that infringements of environmental quality standards and the PPP concentrations that are acceptable under the regulations are by no means unusual. To date the federal Länder – which are responsible for monitoring PPP application in Germany – have failed to achieve the reductions in the scale of incorrect PPP use which are necessary to prevent adverse effects on water quality and biodiversity. Another problem, frequently overlooked, lies in the indirect environmental impacts of the use of plant protection products: The use of broadband herbicides to eliminate weeds associated with arable crops or of combinations of various active ingredients deprives a large number of species – e.g. the partridge – of their food supply and hence the basis for their existence.

The new EU plant protection package, approved at the beginning of 2009, could bring about improvements. Firstly, it includes a new regulation on the marketing of plant protection products, which results in considerable changes in the authorisation procedures. This also includes the protection of biodiversity as a separately formulated protection objective which has to be taken into account in the authorisation procedure in future. Secondly, the new EU plant protection package contains a new EU Framework Directive on sustainable use of pesticides. Among other things, this requires Member States to draw up a National Action Plan (NAP) with quantitative reduction targets and concrete measures and timetables for achieving marked reductions in the total quantity of PPPs used and in the risks associated with their use. In Germany, the federal and regional authorities are currently hard

135 Federal Environment Agency (UBA 2010b).

136 Federal Environment Agency (UBA 2010a).

137 Federal Environment Agency (UBA 2010b). The sector "trade, industry, services" produced over 4% of all greenhouse gas emissions. On a worldwide scale, the agricultural sector is responsible for as much as 10-12% of greenhouse gas emissions (based on 2006) (IPCC 2007).

138 Internal calculations by the Federal Environment Agency (UBA)

139 Hirschfeld et al. (2008). The figures relate to 2006. They also include indirect emissions, e.g. from fodder cultivation. The UN Food and Agricultural Organisation FAO estimates that livestock farming accounts for 18% of worldwide greenhouse gas emissions (FAO 2006). Against this background, product related subsidies for animal products, like the reduced rate of VAT on meat products, can also be regarded as environmentally harmful. At the intermediate production stage of processing, the loss in 2008 due to the VAT reduction amounted to €2.46 billion for meat processing, €2.63 billion for milk processing and €180 million for fish processing.

140 Federal Environment Agency (UBA 2009b).

141 Federal Environment Agency (UBA 2006).

at work preparing this NAP. However, the benefits for environmental protection will ultimately depend on how binding and how efficient the measures are.

In addition to pollution by substances, soil destruction or impairment may also result from agricultural production. Such impacts are largely due to the use of heavy machinery in arable farming and in the construction of roads and tracks in the farming and forestry sector.

Financial assistance und tax reductions have always have been – and still are – a central instrument of agricultural policy. Depending on how they are designed, they can amplify or reduce environmental pollution by agriculture. The OECD has identified a variety of instruments in the agricultural sector and their impacts on the environment[142]. These findings indicate that subsidies which support prices and are coupled to production – which until 2003 were the central instrument of EU agricultural policy – increase the pressure on environmental assets by creating production incentives and reinforcing intensification trends (cf. Section 4.2.1 and 4.2.5). A subsidy policy of this kind encourages farming of monocultures, increased use of pesticides and fertilisers, and the cultivation of environmentally sensitive land, all of which is accompanied by an increase in environmental impact due to production. By contrast, decoupled direct payments of the kind introduced by the EU agricultural reform of 2003 do not have direct impacts of an environmentally harmful nature (cf. Section 4.2.1). Because the payments are tied to environmental standards (cross compliance) they could theoretically even help to improve the quality of the environment. In practice, however, the existing cross-compliance rules are not sufficient to achieve important environmental protection objectives such as maintaining biodiversity[143].

Not only subsidies coupled to production, but also subsidies for agricultural production factors may contribute to impairment of environmental assets by creating incentives to make excessive use of the factors in question. Examples include the energy tax rebate for agricultural diesel fuel (cf. Section 4.2.3) or the exemption of agricultural vehicles from vehicle road tax (cf. Section 4.2.4).

These examples show that some agricultural subsidies can considerably increase harmful impacts on the environment[144]. In principle, all agricultural subsidies should be granted on the basis of the ecological performance of the agricultural sector and should serve as rewards for the latter.

4.2 The main environmentally harmful subsidies in the agricultural and fisheries sector

4.2.1 Agricultural subsidies of the European Union

The Common Agricultural Policy (CAP) of the European Union largely determines the economic framework conditions for agriculture in Germany. The CAP is based on two pillars. The first pillar is the market and price policy, which is intended to stabilise the prices of agricultural products and safeguard farmers' earnings. The second pillar of the CAP consists of measures to promote rural development. These are intended to improve the competitiveness of the agricultural sector, raise the quality of life and the environment in rural areas, and open up opportunities for earning outside the farming sector[145]. Compared with the first pillar, it offers the Member States considerably more scope in the design of instruments and measures. On the other hand, measures under the first pillar are fully financed by the EU, whereas measures under the second pillar have to be co-financed by the Member State in question.

For a long time the central instrument of the first pillar of the CAP was guaranteed minimum prices for agricultural products (price support). The undesirable result of this agricultural policy was over-production ("butter mountains" or "milk lakes"). To reduce the artificial incentives for production and relieve the pressure on the market, the EU has

142 Cf. OECD (2002).

143 Council of Experts on Environmental Issues (SRU 2010), p. 16 and 19f.

144 Nevertheless, complete abolition of assistance measures would not make sense from an environmental point of view, because without them it would not be possible to achieve environmentally sound production. Moreover, the extensive, mostly traditional farming of low-yield land would become unprofitable with the result that such areas would increasingly become waste land, with consequent loss of valuable habitats; see also Ganzert et al (2004).

145 Moreover, certain innovative activities in rural areas are promoted and interlinked (LEADER).

increasingly cut back price-support measures in favour of direct payments since the early 1990s (McSharry reform 1992). However, the coupling of the direct payments to production essentially continued, since they were tied to specific crops/products. Ecologically advantageous forms of farming, such as extensive use of grassland, were often not eligible for direct payments.

Environmentalists have long been critical of the first pillar of the CAP, because it contributed to the growth and expansion of intensive production, for example by promoting specific crops – e.g. maize. This trend considerably increased the pressure exerted on the environment by the agricultural sector (cf. Section 4.1)[146]. Thus the former market and price policy definitely had environmentally harmful impacts.

It was not until the Luxembourg decisions of June 2003 that the CAP was fundamentally reformed. The direct payments have been largely decoupled from production since 2005. Germany initially implemented this decoupling by means of a "combination model". Accordingly, the payment a farm was entitled to claim was based on the amount of direct payments received in the past (average of the years 2000 to 2002) and the size of the area eligible for assistance[147]. From 2009 to 2013 the combination model is undergoing a gradual change to a purely regional model: Then all claims to payment by a farm in a given region will be based entirely on farm area (uniform area-based premium for the region), regardless of agricultural use.

The direct payments are also conditional upon the farm complying with the standards for the environment, animal feed safety and food safety, and veterinary health and animal protection ("cross compliance"). As far as the environment is concerned, this essentially means observing good professional practice. Farmers are also obliged to keep their land in "good environmental and agricultural condition". Furthermore, permanent pasture must largely be preserved, in other words farmers may only change a very small portion of it to other forms of use.

As well as cross compliance and the decoupling of direct payments from production, another core element of the reform is "obligatory modulation". Obligatory modulation requires the Member States to cut direct payments to farmers under the first pillar in favour of promoting rural development (second pillar). Thus since the year 2007 direct payments under the first pillar in excess of a basic allowance of €5000 to farmers (farm owners) in Germany have been reduced by 5% a year.

The CAP's medium-term financial forecast for the years 2007 to 2013 resulted in second-pillar funds for rural development in Germany being cut by 11%, which above all affected the assistance for changing over to organic farming. However, individual Länder have raised assistance for organic farming again out of their own budget resources.

In 2008, however, with the review of this arrangement ("Health Check") the European Council decided that the cuts in direct payments under the first pillar should be offset by gradually increasing the second pillar by a further 5-10% during the period 2009 to 2012 [148]. Germany, however, managed to persuade the European Commission that the additional funds should be used to promote not only climate protection, biodiversity, water management and renewable energy sources, but also dairy farming[149].

Finally the reform of 2003 provides an opportunity to use up to 10% of the direct payment volume for promoting special forms of agricultural activity and quality production. For example, this enables the Member States to give special treatment to particularly environment-friendly extensive forms of farming, without having to make money available from the second pillar or provide national co-financing. However, Germany also applies this option to intensive farming operations in the dairy sector.

In the first pillar the gradual decoupling of direct payments from production (including

146 Council of Experts on Environmental Issues (SRU 2004), p. 173.

147 Federal Ministry of Food, Agriculture and Consumer Protection (BMELV 2006), p. 11 and p. 15/16.

148 For farms with direct payments in excess of €300,000 the direct payments are also reduced by an additional four percent.

149 DBV (2009), p. 156. There are also numerous other subsidies for dairy farming, for example the special programme of €750 million, which from 2010 onwards includes the grassland premium (€113 million) and the cow premium (€75 million) (BMELV 2010d).

the abolition of the former livestock premiums and integration of the payments into the area-based premium) means that direct payments are having less and less influence on the intensity of agricultural production and are thus not environmentally harmful per se like the previous payments that were coupled to production. Furthermore, the uniform regional area-based premium takes in areas that were previously not considered from an economic point of view – such as grassland and landscape elements (biotopes, small-scale structures) – with the result that they gain in value. However, the reform approach needs to be exploited more actively than in the past, in order to achieve environmental goals. In all efforts to reduce bureaucracy, it is therefore essential to ensure that the environmental standards of cross compliance are rigorously applied and continuously developed. Special exceptions favouring small farms ("new de minimis rules") are not justified from an environmental protection point of view and represent a threat to its objectives.

By contrast, the second pillar of the CAP must be given a positive rating from an environmental point of view. Agri-environmental programmes – including promotion of organic farming – are an important part of the second pillar. Compliance with good professional practice forms the starting point for rewarding ecological achievements that go beyond this level, and therefore plays an important role. So far, however, measures belonging to the second pillar have on the whole only been able to mitigate the negative environmental impacts that were supported rather than prevented by the first pillar – but not to offset them entirely[150]. This is because the first pillar has a much greater influence on the development of agriculture than the second pillar[151]. For example, the volume of funding available for price support and direct payments is far greater than for rural development measures. In 2008 Germany had over €5.7 billion[152] at its disposal in the first pillar, but only €1.16 billion[153] in the second pillar[154]. Thus even including national aid, an average of only €928 million per year is left for the focus area "environment and landscape" in the second pillar[155].

Moreover, as a result of the co-financing requirement for measures under the second pillar, there are cases where money for agri-environmental measures is not being taken up, because the Länder are unable or unwilling to contribute the co-financing. This leads to a lack of certainty for farmers trying to plan, and makes it more difficult to implement agri-environmental measures.

Since the environmentally harmful portion of the total EU assistance for agriculture is difficult to identify, this subsidy is reported as unquantifiable.

In 2013 Germany should take advantage of the forthcoming review of the CAP for the period 2014 to 2020 to promote the environmentally appropriate development of rural areas more than in the past. The granting of subsidies should be tied directly to specific environmental protection services and other non-marketable services in the public interest (public money for public goods).

Furthermore, the first and second pillars should be placed on an equal footing as regards reliability and planning certainty. The second pillar should be topped up considerably by reallocating funds from the first pillar. The first pillar should in future consist only of compensation for the higher production standards in the EU and compensation for a new cross-compliance element "ecological priority areas", which should be added.

Germany should also make every effort to secure the immediate abolition of export sub-

150 Council of Experts on Environmental Issues (SRU 2009), p. 12.

151 At a regional level, however, second-pillar measures certainly play an important role (e.g. in low-yield and ecologically sensitive upland areas in Bavaria, Baden-Württemberg and Saxony).

152 Federal Ministry of Food, Agriculture and Consumer Protection (BMELV 2009).

153 DBV (2009), p. 154; annual average for the years 2007-2013.

154 Funds from the second pillar were co-financed with approx. €5.1 billion of national resources in 2007-2013. Furthermore, each federal Land makes additional funds for individual measures available from its own resources to provide targeted support for individual topics. In this way a further €3.2 billion of "top-ups" find their way into assistance for rural areas. Thus during the assistance phase 2007-2013, some €16.4 billion of national and EU funds are available under the second pillar for financing measures and projects (European Commission 2010a), or an average of €2.3 billion per year.

155 DBV (2009), p. 157; annual average for the years 2007-2013.

sidies. At present the EU supports exports of agricultural produce in order to place its surpluses on the global market. Export subsidies have environmentally harmful consequences, since they favour the environmentally harmful transportation of agricultural produce. They also reduce the relative advantages of agri-environmental measures in the second pillar[156]. In 2008 the EU spent some €925 million[157] on subsidies for exports of agricultural products, i.e. Germany's share amounted to about €185 million. German companies profited from the export subsidies to the tune of €98 million[158]. Under international agreements, these export subsidies are to be phased out by 2013. However, the EU reintroduced them for dairy products in 2008.

4.2.2 Joint Agreement for the improvement of agricultural structures and coastal protection

The purpose of the Joint Agreement for the improvement of agricultural structures and coastal protection (Gemeinschaftsaufgabe "Verbesserung der Agrarstruktur und des Küstenschutzes"– GAK) is to[159]

- ensure an efficient agricultural and forestry sector geared towards future requirements,
- facilitate competitiveness of the agriculture and forestry sector on a European comparison, and
- improve coastal protection.

In the process, the objectives of environmental protection and animal protection are to be observed.

The annually updated GAK framework plan is the central instrument for applying the second pillar of EU agricultural policy in Germany, as described in the "Federal Republic of Germany's National Strategic Plan for Rural Development 2007-2013". The GAK serves as a content-oriented and financial basis for Länder programmes for earmarking the relevant EU resources[160]. The EU can co-finance GAK measures up to a maximum of 65% in the new Länder and up to 45% in the old Länder[161]. Some 60-80% of the GAK (depending on the task) is financed from the federal budget and 20-40% from the Länder budgets, with the German government acquiring the EU co-financing resources[162]. In 2008 expenditure by the GAK came to over €1 billion[163]. The fields assisted by the GAK include "Improving rural structures", "Improving production and marketing structures", "Sustainable land management" and "Forests".

Originally the assistance was aimed primarily at measures to boost productivity, thereby contributing to intensification of the agricultural sector and the associated adverse environmental impacts. In the GAK realignment process in recent years, the federal and regional authorities have already made significant changes in the objectives and content of individual assisted fields. This has made it possible to substantially reduce negative environmental impacts and transform them into effects that are ecologically neutral to positive[164]. The GAK nevertheless continues to support measures that can have adverse impacts on the environment[165], for example by assisting certain measures in the fields of water resource management and crop growing, and the creation of new capacities in the fishing industry[166] (€4.6 million in 2008[167]).

Furthermore, the broad freedom enjoyed and variously exploited by the Länder in their implementation of the GAP results in conflicting developments within national agricultural policy which are not only at the

156 Moreover, export subsidies may "impede the establishment of efficient domestic food production in the importing countries and thereby run contrary to the aims of development policy" (UBA 2009c, p. 97).

157 EUR-Lex (2010).

158 Federal Ministry of Finance (BMF 2010b).

159 Cf. Joint Agreement Act (GAK-Gesetz – GAKG), Section 2.

160 Federal Ministry of Food, Agriculture and Consumer Protection (BMELV 2007a).

161 German lower house of parliament (Deutscher Bundestag 2008b), p. 14. Higher rates of assistance are also possible for certain projects (e.g. for particularly innovative projects).

162 op. cit., p. 14 and p. 5.

163 op. cit., p. 14 and p. 82.

164 Burdick and Lange (2003), p. 49.

165 NABU (2004), p. 40.

166 German lower house of parliament (Deutscher Bundestag 2008b), p. 38.

167 German lower house of parliament (Deutscher Bundestag 2008b), p. 87.

expense of the taxpayer, but also at the expense of the environment. For example, the southern Länder promote dairy farming on grassland in upland and mountain areas, not only to secure the economic livelihood of the various farms, but also to preserve the landscape (for leisure, recreation and tourism) and to conserve the diversity of species on the mountain pastures and meadows (implementation of the Convention on Biological Diversity). At the same time, for example, funds from the GAK are used in Lower Saxony to assist cattle farming in cowsheds on the basis of maize and imported feeds. Because of the more economic production conditions on the north German plain this leads (via competition on the market) to a creeping shift of milk production from south to north, which tends to thwart the above-mentioned environmental objectives associated with conserving the agricultural economy of the central upland and mountain areas. Here demands should be made for better coherence of the objectives and measures of the GAK, to be achieved by strengthening the competence of the federal level.

The assistance for integrated rural development and forestry measures also includes infrastructure measures – such as developing farm and forest roads and tracks and surfacing existing routes with asphalt or concrete. The GAK therefore needs ongoing development based on environmental criteria, and the assistance for environmentally harmful measures needs to be reduced as far as possible.

4.2.3 Tax rebate for agricultural diesel

The German government pays 21.48 cents per litre towards diesel fuel for agriculture and forestry[168]. In this way, farm diesel enjoys a reduced tax rate of 25.56 cents per litre compared with the standard rate of 47.04 cents per litre. The Budget Accompanying Act 2005 (Haushaltsbegleitgesetz 2005)[169] restricted this tax concession to 10,000 litres a year per farm and also deducted a lump sum (so-called excess) of €350 from the refund. The Act of 2009 amending the Energy Tax Act (Gesetz zur Änderung des Energiesteuergesetzes) suspended these restrictions on the tax concession [170] for the years 2008 and 2009[171]. As a result the amount of subsidy rose by €287 million per year[172]. From a budget point of view, however, this will not take effect until 2009 and 2010.

According to the German government's 22nd Subsidies Report, the agricultural diesel refund is intended to reduce competitive disadvantages suffered by German agriculture with regard to diesel costs. However, the present distortion of fuel prices means that there is less incentive to make efficient use of fuel than in other economic sectors. From an environmental and climate protection point of view, the tax concession on agricultural diesel thus has harmful impacts and is therefore not a suitable means of supporting agriculture and forestry (cf. Section 2.1). Agricultural diesel should therefore be subject to the standard tax rate.

In 2008 the tax concession for agricultural diesel resulted in a tax shortfall of

€135 million[173].

Instead of the tax rebate on agricultural diesel, this money could be used to strengthen the competitive position of the agricultural sector in ways that were environmentally sounder and more efficient. The additional tax revenue resulting from the abolition of this tax concession could be used for rural development (second pillar) – and especially the agri-environmental programmes – and could thus remain largely within the agricultural sector. If the subsidy for agricultural diesel were not done away with entirely, the second-best solution would be to refund the tax on a flat-rate basis[174]. Here the legislature would presume a specific diesel consumption per hectare of land and would refund the tax partly on the basis of farm size. This

168 Section 57 Energy Tax Act (EnergieStG) (until 01.08.2006: Section 25b Petroleum Excise Duty Act (MinöStG)).

169 Federal Law Gazette, Vol. 2004, Part I, No. 73; Bonn, 28.12.2004

170 The Budget Accompanying Act of 2005 had restricted this tax concession to 10,000 litres per year per farm and also deducted a lump sum (so-called excess) of €350 from the refund.

171 Federal Ministry of Food, Agriculture and Consumer Protection (BMELV 2010a).

172 Federal Ministry of Food, Agriculture and Consumer Protection (BMELV 2010b).

173 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 194.

174 Cf. Federal Environment Agency (UBA 2004), p. 17ff.

form of refund would be compatible with the production-independent ("decoupled") direct payments under the agricultural reform. The refund would have the effect of a flat-rate premium per unit area, because the actual fuel consumption would no longer play any role in the tax refund, since agricultural diesel would be taxed at the standard rate of 47.04 cents per litre. As a result, the incentive to save fuel in agriculture and forestry would be just as great as in other sectors.

4.2.4 Exemption of agricultural vehicles from vehicle road tax

Agricultural vehicles are exempted from vehicle road tax[175]. This tax exemption goes back to 1922, when it was intended to promote the motorisation of agriculture and forestry. This objective is now out of date. Also, this concession supports an over-dimensioned inventory of machinery[176]. This also has the consequence that farms have an excess of machinery (expressed in kW/ha), instead of making adequate use of potential efficiency improvements – such as "machinery rings".

The trend to increasingly heavy machines in agriculture results in increasing damage to agricultural soils through compaction. Compaction damage is often irreversible and restricts the natural functions of the soil.

In 2008 the exemption from vehicle road tax for tractors etc. in the agricultural sector resulted in a loss of tax revenue for the Länder totalling

€55 million[177].

Here too the assistance for the agricultural sector is focusing on the wrong aspect. As an alternative, one could use the money to strengthen rural development or to provide direct rewards for environmental achievements, e.g. for maintenance of ecologically valuable land by means of extensive use, or care of landscape elements.

4.2.5 Subsidies for production of spirits

The subsidy is intended to safeguard sales of agricultural alcohol, which is produced mainly in small and medium distilleries.

Owing to their unfavourable production conditions these are at a competitive disadvantage compared with large distilleries in other European Member States. It is thus designed to ensure that German distilleries derive adequate earnings from this activity. Since 2000 the German market for agricultural alcohol has basically been deregulated. Nevertheless, until 2010 agricultural distilleries can continue to produce subsidised agricultural alcohol within the limits of their quota and can market it through the federal monopoly administration. The EU Commission approved the spirits monopoly subsidies until the end of 2010 as a special exception to the basic ban on national production-related subsidies. However, in May 2008 the Bundestag decided to intercede with the European Commission for an extension until 2017[178]. Negotiations to date indicate that the outcome might be a compromise in the form of a continuous phase-out of the subsidy[179].

The production methods of the approximately 10,000 farm-based distilleries differ very widely, ranging from environmentally sound (e.g. based on extensive fruit orchards) to environmentally dubious (e.g. based on intensive potato growing)[180]. Since this subsidy is coupled to production, in principle it creates an incentive to intensify farming methods. In 2008 the German government supported the production of agricultural alcohol to the tune of

€80 million[181].

As an alternative to continuing the subsidy in its present basic form, the producers benefiting from the agricultural alcohol subsidy should receive it in the form of direct payments which are independent of production quantities and prices and which are tied

175 Section 3 No. 7 Vehicle Road Tax Act (KraftStG).

176 Burdick and Lange (2003), p. 76.

177 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 195.

178 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 109.

179 Federal Ministry of Food, Agriculture and Consumer Protection (BMELV 2010c).

180 Burdick and Lange (2003), p. 41.

181 Federal Ministry of Finance (BMF 2010a), 22nd Subsidies Report, p. 108.

to extensive production methods that are worth promoting from an environmental point of view.

4.2.6 Fisheries subsidies of the European Union

Since the creation of the Common Fisheries Policy (CFP) in 1983, the European Community has regulated the fisheries sector in Europe. Initially the CFP was supported by payments from the European Agricultural Fund, but in 1993 the European Union created a separate fisheries fund, which has been known since 2003 as the European Fisheries Fund (EFF). The EFF has five priority axes: 1. adaptation of the Community fishing fleet, 2. aquaculture, inland fishing, processing and marketing of fisheries and aquaculture products, 3. measures of collective benefit, 4. sustainable development of fisheries areas, and 5. technical assistance. Priority axis 4 for sustainable development covers measures for improving the quality of the environment in coastal areas, but also, for example, increasing the value added in fisheries and aquaculture products or maintaining and creating jobs[182].

In addition to the direct payments from the European Fisheries Fund and comparable aid schemes at national level, the fishing industry receives numerous indirect subsidies, the most important of which is complete exemption from fuel taxes. Estimates indicate that in several Member States the total value of catches fails to cover the costs borne by the state as a result of the fishing industry[183].

As a result of the decline in the supply of fish from Community waters, the bulk (approx. 75%) of the fish consumed in European countries now comes from countries outside the EU. According to official information from the EU Directorate-General for Fisheries, the European fishing fleet has a surplus capacity of more than 40%[184]. This means excessive fishing pressure and hence diminishing fish stocks. Some 88% of Community stocks are fished beyond the maximum long-term yield, and 30% of these stocks are now beyond safe biological limits.

Although the fleets have been reduced by an average of two percent a year in recent years, this has to be set against improvements of two to three percent a year in catch efficiency as a result of technical advances. The EFF creates an incentive to maintain[185] or even (due to ineffective control mechanisms) expand fishing capacities[186] that are out of proportion to the available resources. The OSPAR Commission for the protection of the marine environment of the North-east Atlantic and the Helsinki Commission for the protection of the Baltic Sea estimate that fisheries are responsible for some of the greatest burdens on the marine environment.

Aquacultures in open systems do not improve the situation either, since the kept fish stocks are usually fed with wild fish, which further increases the pressure on wild fish stocks. For example, up to four kilograms of wild fish are used as feed to obtain one kilo of salmon or cod.[187]

Fishing subsidies thus endanger the survival of numerous species of fish, and indirectly other marine animals, and hence the valuable biological diversity of the seas. It should also be borne in mind that up to 650,000 marine whales and seals are caught every year as by-catch in the nets of fishing vessels worldwide. Scientists point out that large predatory fish such as tuna or cod have already been decimated by 90 percent in the last 50 years[188].

For the period 2007-2013 a total budget of €4.3 billion[189] is planned for the EFF, which works out at an average of €615 million per year. In the same period the German fishing industry profits from the EFF (including the national contribution) to the tune of €247

182 BMELV (2007b), p. 114.

183 European Commission (2009), p. 8.

184 UBA (2008b), p. 14.

185 Markus (2010).

186 European Court of Auditors. Special Report 7/2007 on the control, inspection and sanction systems relating to the rules on conservation of Community fisheries resources. OJ 2007 No C317/I: para. 119.

187 Aquaculture can also offer opportunities by applying environmentally sound practices. However, it cannot be a substitute for inadequate management at sea. Special attention should therefore be paid to breeding herbivorous species and production in closed-cycle facilities on land, in order to effectively reduce and control negative environmental impacts.

188 Worms, B. et al. (2006), p. 787-790.

189 European Commission (2008), p. 27.

million, or an average of €35.3 million a year[190]. For priority axis 4 – "sustainable development" – only €33.6 million is available over the period 2007-2013, in other words

one seventh of the funds. Since the precise purpose of the projects subsidised by the EEF is not published, it is not possible to quantify accurately the environmentally harmful portion of this subsidy.

In 2009 the European Commission initiated a CFP reform process. This process is to be completed by 2013. In this reform process, Germany should do its best to ensure that in future the EU supports only sustainable projects and discontinues non-sustainable practices like deep-sea fishing. A mechanism must be put in place in the future CFP to ensure that the size of the European fishing fleet is appropriate and in proportion to the available fish stocks.

In order to do justice to the objectives of the EU's integrated marine policy and its environmental pillar, the Marine Strategy Framework Directive (Dir. 2008/56/EC), there is a need for rigorous implementation of the ecosystem approach, the precautionary principle in fisheries management and the application of the multi-species approach[191].

The Federal Environment Agency also takes the view that the fisheries agreements between the EU and African countries need to be changed: this is because the over-exploitation of those countries' local fish stocks by fishing fleets from the EU results in impoverishment of the coastal populations dependent on fishing[192] and endangers their supplies of animal protein.

190 BMELV (2007c), p. 45; average figure for the years 2007-2013.

191 The multi-species approach involves taking account of all fish species, and not just the target species, when preparing management plans.

192 UBA (2008b), p. 28.

III OVERVIEW OF THE SITUATION AND DEVELOPMENT OF ENVIRONMENTALLY HARMFUL SUBSIDIES

1 Summary of the main environmentally harmful subsidies

As can be seen from the information above, environmentally harmful subsidies in Germany total **more than €48 billion** (see Table 1). Subsidies totalling some €24 billion directly favour fossil energy sources and thus run contrary to climate protection. Since this report only gives an overview of the main federal subsidies and takes almost no account of assistance programmes at regional and local levels, the picture is not complete, and the actual volume of environmentally harmful subsidies in Germany is higher. Furthermore, in some cases it has not been possible to quantify the environmentally harmful component of the subsidies, which means that for this reason too the total volume shown in the table only indicates a lower limit.

Looking at how the environmentally harmful subsidies analysed break down among the individual sectors, we find that in 2008 the transport sector – especially because of the tax exemptions for aviation – ranks first with €23 billion, followed by energy with nearly €18 billion and the construction and housing sector with over €7 billion[193].

There are legal reasons why immediate and complete abolition of some of the environmentally harmful subsidies identified is not possible, as the example of the home ownership grant shows. Thus in many cases they will continue to be a considerable burden on public-sector budgets, and hence on the taxpayer too, for years to come. For this reason alone it is important to check carefully before introducing a subsidy whether it makes sense and what long-term impacts it has on public-sector finances.

Environmentally harmful subsidies are also an indirect burden on public finances, since they give rise to additional follow-on costs for the state due to the resulting damage to health and the environment. Also, environmentally harmful subsidies distort competition at the expense of environmentally sound technologies and products. This in turn tends to result in a situation where the state has to give more support to such environmentally sound technologies and products so that they have a fair chance in competition and can become established on the market. This means that reducing environmentally harmful subsidies would ease the pressure on public-sector funds in several respects.

Subsidies can adversely affect the environment in a variety of complex ways, making it difficult to quantify the resulting environmental impact, especially since there are also interactions between the various environmental assets. This report therefore presents only a qualitative picture of the damage caused by subsidies to the environmental assets climate, air, water, soil, biodiversity and landscape. The study reveals that subsidies put pressure on or threaten all these environmental assets via primary and secondary effects.[194] Table 1 provides an overview of the negative primary and secondary effects of the individual subsidies.

Subsidies of €17.7 billion are provided to assist the energy supply and use sector. This applies not only to extraction of the energy sources (e.g. coal and lignite), but also to energy generation. The subsidies lower the price of energy and thereby reduce the incentive to make economical and efficient use of energy. This results in higher energy consumption, combined with greater energy-induced environmental pollution. Examples include tax reductions and exemptions in the field of energy tax and electricity tax for companies in the manufacturing industry and the agricultural sector.

Subsidies in the energy sector must also be classed as environmentally harmful if they

193 This figure will however show a marked drop in the years to come because of the abolition of the home ownership grant.

194 Primary effects are harmful environmental impacts which are direct consequences of the subsidy, i.e. the subsidy favours activities which directly trigger the environmental damage. Secondary effects are harmful environmental effects which the subsidy triggers indirectly via cause-and-effect chains. These are "second-round" effects or feedback effects which the environmental assets suffering the primary damage transmit to other environmental assets.

Table 1: Environmentally harmful subsidies in Germany in 2008

Sector	€m (2008)	Environmental Asset: Climate	Air	Water	Soil	Biodiversity and landscape	Health	Resources
1 Energy supply and use								
Reductions in electricity tax and energy tax for the manufacturing sector and for agriculture and forestry	2.415	■	■	▒	▒	▒	■	■
Peak equalisation scheme for eco tax in the manufacturing sector	1.962	■	■	▒	▒	▒	■	■
Tax reduction for certain energy-intensive processes and techniques	886	■	■	▒	▒	▒	■	■
Coal subsidies	2.454	■	■	■	■	▒	■	■
Privileges for the lignite industry	min. 195	■	■	■	■	■	■	■
Energy tax reductions for coal	154	■	■	▒	▒	▒	■	■
Manufacturer privilege for producers of energy products	270	■	■	▒	▒	▒	■	■
Energy tax exemption for non-energy uses of fossil fuels	min. 1.600	▒	▒	▒	▒	▒	▒	■
Free allocation of CO2 emissions trading allowances	7.783	■	■	▒	▒	▒	■	■
Subsidies for nuclear power	n.q.	▒	▒	▒	▒	▒	■	■
2 Transport								
Energy tax reduction for diesel fuel	6.633	■	■	▒	▒	▒	■	■
Distance-based income tax deduction for commuters	4.350	■	■	▒	■	■	■	■
Exemption of kerosene from energy tax	7.232	■	■	▒	▒	▒	■	■
Energy tax exemption for inland waterway transportation	118	■	■	▒	▒	▒	■	■
VAT exemption for international flights	4.237	■	■	▒	▒	▒	■	■
Flat-rate taxation of privately used company cars	500	■	■	▒	■	■	■	■
Biofuels	n.q.	■	▒	■	■	■	▒	▒
3 Construction and housing								
Home ownership grant	6.223	▒	▒	■	■	■	▒	■
Promotion of saving for building purposes	467	▒	▒	■	■	■	▒	■
Promotion of social housing	518	▒	▒	■	■	■	▒	■
Joint Agreement for the Improvement of Regional Economic Structures	n.q.	▒	▒	■	■	■	▒	■
4 Agriculture, forestry, fisheries								
Agricultural subsidies of the European Union	n.q.	■	▒	■	■	■	▒	▒
Joint Agreement for the improvement of agricultural structures and coastal protection	n.q.	■	▒	■	■	■	▒	▒
Tax rebate for agricultural diesel	135	■	■	▒	▒	▒	■	■
Exemption of agricultural vehicles from vehicle road tax	55	▒	▒	▒	■	▒	▒	▒
Subsidies for production of spirits	80	■	▒	■	■	■	▒	▒
Fisheries subsidies of the European Union	n.q.	■	▒	■	■	■	▒	▒
TOTAL	48.267							

n.q. = not quantifiable

■ Primary effects ▒ Secondary effects

distort competition between energy sources to the benefit of relatively harmful fuels and thereby lead to a non-sustainable energy mix. This applies to the free allocation of CO_2 emission allowances in the emissions trading scheme, and to the explicit and implicit subsidies for nuclear energy that make it at all profitable for individual operators in the first place.

In the **transport** sector, subsidies amounting to €23 billion contributed to environmental pollution in 2008. Nearly half the environmentally harmful transport subsidies, €11.5 billion, were due to air transport. Other major items of quantitative significance are the energy tax reductions for diesel fuel, the distance-based income tax allowance, and the privileges in the taxation of company cars.

The tax concessions for fuels reduce their cost and thereby increase their share of the overall traffic volume. One example of this is the tax concession for diesel fuel compared with petrol. Low fuel or running costs due to subsidies also reduce the incentive to invest in innovative and efficient drive technologies or vehicles, e.g. in the inland waterway sector.

Preferential treatment for environmentally harmful carriers makes them more competitive, which results in them gaining a growing share of the total transport volume. One particularly telling example is the tax concessions for air transport. What is more, by reducing the overall cost of transport, subsidies create an incentive to increase the transport volume. This is the case with the distance-based income tax allowance, for example. Subsidies for biofuels, especially those of the first generation, can also have harmful effects on the environment if there is no need to comply with strict sustainability criteria.

The **construction and housing** sector received environmentally harmful subsidies totalling €7.2 billion in 2008. The subsidies reduce the cost of building new housing or developing new industrial, commercial and transport areas. The state funds tend to strengthen the incentive to build, and in most cases they do not differentiate between previously used land and newly developed "greenfields" sites. Subsidies of this kind favour increasing land take for settlement and transport, the progressive sprawl of settlement in the countryside, rising energy consumption, growing traffic flows and high demand for resources. The largest share of these subsidies is still due to the home ownership grant, though this was discontinued in 2006 and is therefore running out.

In the **agriculture, forestry and fisheries** sector there are also numerous environmentally harmful subsidies. This applies in particular to the EU's agricultural assistance and the measures under the Joint Agreement for the improvement of agricultural structures and coastal protection.

In general, agricultural subsidies which support producer prices or are coupled to production quantities, e.g. in the case of agricultural alcohol, must be classified as environmentally harmful. They create incentives to increase agricultural production, reinforce intensification trends and thereby increase the pressure on the environment. But even subsidies for agricultural production factors have adverse effects on the environment by creating incentives to step up use of the individual production factors. The reduced energy tax rate for agricultural diesel and the exemption of agricultural vehicles from vehicle road tax are therefore harmful from an environmental and climate protection point of view.

Although the European Union's agricultural assistance has been largely decoupled from production, there are still many cases where it results in negative environmental impacts. This applies particularly to the subsidies for exports of surplus agricultural produce. The EU paid some €925 million[195] for these subsidies in 2008, and German companies profited from the export subsidies to the tune of €98 million[196]. Such subsidies run contrary to the principle of sustainable development because they artificially generate transport flows, impede the establishment of efficient domestic food production in the importing countries, and thus also conflict with the objective of poverty alleviation in developing countries.

195 EUR-Lex (2010): General budget 2010, Chapter 05 02 – Market-related measures.

196 Federal Ministry of Finance (BMF 2010b): Ausfuhrerstattung für Marktordnungswaren.

It is also interesting to consider the vertical aspect of Table 1. For example, it is evident that in Germany one quarter of the environmentally harmful subsidies – more than €12 billion – have harmful primary effects on biological diversity and the landscape. This does not include subsidies that have adverse effects on biodiversity, but are not quantified in this report.

2 Development of environmentally harmful subsidies from 2006 to 2008

The Federal Environment Agency last analysed the environmentally harmful subsidies for the year 2006[197] in a study published two years ago. Two subsidies have been newly included in the update of the study for 2008: the tax reductions for biofuels and the European Union's assistance for the fisheries sector. Both subsidies result in adverse environmental effects, especially in the field of biodiversity. Since it is not possible to quantify them accurately, there is no change in the total volume of environmentally harmful subsidies.

The update on environmentally harmful subsidies for the year 2008 shows that compared with 2006 no progress has been made with the task of reducing environmentally harmful subsidies. All in all, environmentally harmful subsidies increased by more than 15 percent from nearly €42 billion (2006) to over €48 billion (2008). A large proportion of this growth is not due to political decisions aimed at expanding existing subsidies or introducing new environmentally harmful subsidies, but to other factors. In recent years, however, there have also been definite setbacks to the reduction of environmentally harmful subsidies, because some decisions to cut subsidies have been reversed and new environmentally harmful subsidies introduced. The following outline provides an overview of the main developments since 2006 and their causes.

The **energy supply and use** sector showed a marked increase in environmentally harmful subsidies compared with 2006, from €11.6 billion to €17.7 billion. A factor of central importance here was the increased price of emissions trading allowances. With an average price of €20 per allowance for 2008, the implicit subsidies due to free allocation of emissions allowances amounted to about €7.8 billion. In 2006 the figure was €2.5 billion, based on an average allowance price of €5 per tonne of CO_2.

The concessions on electricity tax and energy tax for industry rose compared with 2006, from €6.5 billion to €7.1 billion. This development was due to changes in legislation which created additional environmentally harmful energy tax concessions. For example, since 1.1.2007 the general tax rebate of 40% for the manufacturing sector and for agriculture and forestry has no longer applied solely to the eco tax amount, but to the entire energy tax rate. Moreover, when the Energy Tax Act was revised in 2006, certain energy-intensive processes and techniques were exempted from energy tax altogether. Examples include electrolysis, metal production and processing methods, chemical reduction processes, thermal treatment of waste and exhaust gases, and processes in the glass, ceramic, brick, cement and lime industries.

Environmentally harmful subsidies in the **transport** sector increased from €19.6 billion (2006) to €23.1 billion (2008). The amount due to energy tax exemption for diesel fuel rose by nearly €500 million compared with 2006, and the energy tax exemption for kerosene by around €300 million. In both cases the growth in traffic volume played an important part. The biggest increase in subsidy volume resulted from the VAT exemption for international flights, which more than doubled from €1.6 billion to €4.2 billion. The reasons for this lay in the raising of the VAT rate from 16 to 19 percent, the sharp rise in the volume of air traffic, and improved calculation methods for estimating sales.

In the **construction and housing** sector, by contrast, environmentally harmful subsidies showed a marked drop, from €10.3 billion (2006) to €7.2 billion (2008). This was largely due to the phasing out of the home ownership grant, which fell by around €3 billion from 2006 to 2008.

197 Federal Environment Agency (UBA 2008): Environmentally Harmful Subsidies in Germany, http://www.umwelt-daten.de/publikationen/fpdf-l/3659.pdf

In the field of **agriculture, forestry and fisheries,** the greater part of the environmentally harmful subsidies cannot be precisely quantified. One setback to the reduction of environmentally harmful subsidies concerned the agricultural diesel refund for farmers, since the Act amending the Energy Tax Act suspended the provisions that had been introduced in 2005 to restrict this tax concession.

On the whole, therefore, one cannot say that Germany has made progress with the task of reducing environmentally harmful subsidies. On the contrary: in some cases of privileges or concessions, cuts that were planned or had already been made were cancelled, for example the distance-based tax allowance, biofuels and agricultural diesel.

3 International initiatives for reducing environmentally harmful subsidies

In some cases, reduction of environmentally harmful subsidies calls for coordination on at least a European scale. This applies, for example, to the exemption from kerosene tax, the EU-wide exemption from VAT for transboundary flights, the energy tax concessions for highly energy-intensive operations, and the environment-oriented reform of EU agricultural policy. In the meantime there are international approaches and activities for reducing environmentally harmful subsidies, and these could follow on from such coordination processes.

The potential financial and ecological benefits of international reductions in environmentally harmful subsidies are considerable. Studies by the International Energy Agency and the OECD come to the conclusion that subsidies for fossil fuels come to more than €400 billion worldwide. Phasing out these subsidies could reduce global CO_2 emissions by nearly seven percent by 2020 [198] and ten percent by 2050[199].

This demonstrates the immense importance for environmental and climate protection of reducing environmentally harmful subsidies at international level as well. There are already a number of different approaches:

- In its proposal on its strategy "Europe 2020" the European Commission calls upon the Member States to phase out all environmentally harmful subsidies[200].
- The Kyoto Protocol explicitly calls for the abolition of subsidies that impede reductions in greenhouse gas emissions[201].
- Among the G20 decisions in Pittsburgh in September 2009, the heads of government undertook to phase out in the medium term subsidies for fossil fuels that encouraged wasteful consumption[202].

Germany should therefore not only set a good example by reducing environmentally harmful subsidies at national level, but should at the same time take or support initiatives at EU and international level that are aimed at reducing environmentally harmful subsidies. Since many states have very high budget deficits as a result of the financial and economic crisis and are pursuing ambitious consolidation targets in the next few years, this is a very favourable time for initiatives to reduce environmentally harmful subsidies at EU and international level.

Furthermore, a systematic review of subsidies at national level to identify negative environmental impacts is urgently needed to relieve the burden on state funds and reduce the pressure on the environment. This is the only way to achieve a sustainable policy on state expenditure. The following part of the study describes how such an "environmental check" on subsidies could be implemented using an environment-oriented subsidy controlling system.

198 IEA (2010). Seven percent of global CO2 emissions corresponds to the total emissions of France, Germany, Italy, Spain and the United Kingdom.

199 OECD (2009).

200 European Commission (Europäische Kommission 2010b).

201 UNFCCC (2007), Article 2, Section 1, a) v).

202 G20 Leaders (2009)

IV ENVIRONMENT-ORIENTED SUBSIDY CONTROLLING: THE "ENVIRONMENTAL CHECK" FOR SUBSIDIES

1 Importance of environment-oriented subsidy controlling

The long list of environmentally harmful subsidies demonstrates that it is not a question of individual cases, but of a wide-ranging problem which can only be solved by systematic consideration of the various environmental protection aspects in the context of subsidy policy. This would not only relieve the pressure on the environment, but would also help to remedy a number of other problems of subsidy policy. Many subsidies have been in existence for decades – numerous tax concessions date from the time before 1940. As a consequence, the objectives of many of these subsidies are out of date. Moreover some subsidies are not only environmentally harmful, but actually miss their main target or are inefficient in the way they achieve it, which means that these subsidies are in need of reform for that reason alone. One example of this is social housing assistance, which finances the building of new homes (cf. Section II 3.2.3).

Against this background, environment-oriented subsidy controlling has the function of

- identifying environmentally harmful (side) effects of subsidies,
- reviewing the effectiveness and efficiency of environmentally harmful subsidies in the light of their principal objective, and
- making a critical review of the objectives of environmentally harmful subsidies.

This forms the basis for developing and implementing reforms. Thus a controlling system of this kind is an important basic requirement for an effective, efficient and environmentally sound subsidy policy.

Experience shows that once subsidies exist, it is very difficult to abolish or reform them. Obstacles exist which are rooted in lack of transparency and in the political process. Frequently there is a lack of detailed information about how the subsidies work and who benefits from them, or such information is asymmetrically distributed among the actors. As a rule, those receiving the subsidy are a homogeneous group who are often well informed and organised, and who know how to safeguard their advantages in the political process. Those financing the subsidy, as taxpayers and electors, are a very large and heterogeneous group; this means they are difficult to organise and are not particularly interested in or dedicated to the abolition of an individual subsidy. Thus for political decision makers it is often advantageous to retain or expand subsidies with a view to securing votes. Another factor in the case of environmentally harmful subsidies is the fact that the additional environmental costs are borne by the general public, i.e. the groups receiving the subsidies do not have to bear these costs.

To reduce the obstacles to reforming subsidies, it is crucial to expose the deficits mentioned, create transparency and thereby step up the pressure to reform. One suitable method is a systematic and regular check on impacts and results for all subsidies. This goes far beyond the German government's present subsidies report. An environment-oriented subsidy controlling system would perform two essential functions: creating transparency (subsidy assessment) and on this basis preparing decisions for an effective, efficient and environmental sound subsidy policy (subsidy steering).

To achieve the goal of a sustainable financial policy, environmental impact should as a general long-term principle be made a central criterion in all state decisions on income and expenditure. For this reason, an environment-oriented subsidy controlling system must be introduced as an "environment check" not only for existing subsidies, but also for all new subsidies. Such a system not only eases the burden on the environment, but also offers a number of other advantages (cf. Fig. 1). Not least, it is an important lever for making efficient use of the taxpayers' money.

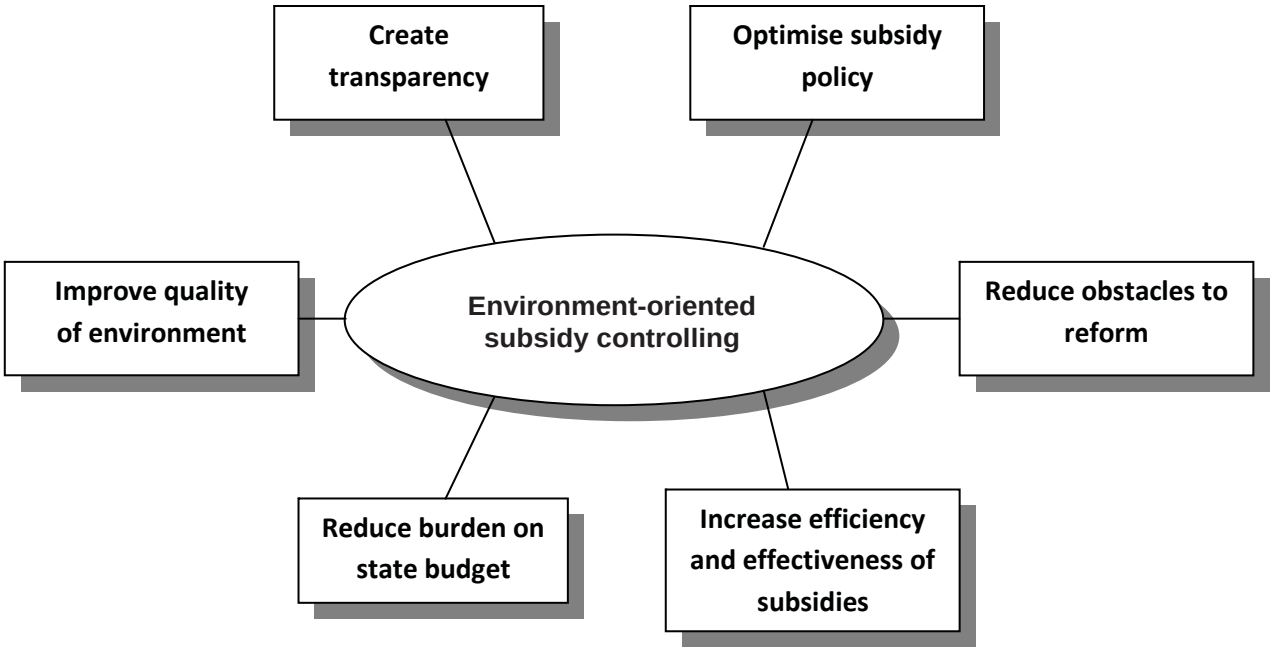

Fig. 1: Benefits of environment-oriented subsidy controlling

The environment-oriented subsidy control system should comprise three phases[203]:

1. Subsidy screening: The aim of this first step is to identify all explicit and implicit subsidies which may be harmful to the environment and to set priorities for further analysis of the elements of the subsidy.
2. Subsidy assessment: This phase of subsidy controlling is concerned with in-depth analysis of subsidies which are potentially harmful to the environment – both with regard to their environmental impacts and with regard to the question of whether their main purpose is still up to date and whether the relevant subsidy achieves this purpose efficiently.
3. Subsidy steering: The focus of this phase is drawing up specific proposals for the abolition or reform of environmentally harmful subsidies and thereby paving the way for political decisions in the interests of an effective, efficient and environmentally sound subsidy policy.

203 The draft of an environment-oriented subsidy controlling system presented here is based on the OECD proposal for a check list on environmentally harmful subsidies (OECD 2005), the results of a completed UFOPLAN project (Sprenger and Rave, 2003) and the interim results of the research project "Monitoring report on subsidies harmful to the climate and environment-oriented subsidy controlling", FKZ 204 14 106. The last-named project will develop the concept further. The European Commission is also conducting research into models for environment-oriented subsidy controlling (Valsecchi et al. 2009).

The following sections explain the individual phases of subsidy controlling. They concentrate on describing the environment-related steps of investigation and analysis. In other words, the outline below does not provide a detailed description of the analysis of the main purposes of the subsidies and the efficiency with which they achieve their individual purposes.

2 First phase: Screening of environmentally harmful subsidies

The first step in the screening process is to systematically identify all subsidies that are potentially harmful to the environment. This is an ambitious task, firstly because the effects of subsidies are complex, and secondly because it is not sufficient to screen explicit subsidies only. In fact it is necessary to take a look at all forms of state intervention so as to cover implicit subsidies as well, i.e. concealed concessions (cf. Part I, Chapter 2).

On the basis of this analysis, the second step is to set priorities for treatment of the selected subsidies in the further phases of subsidy controlling (subsidy assessment and steering). The aim is to select those subsidies where abolition or reform promises the greatest environmental benefits. Setting priorities enables efficient use to be made of the time and financial resources available for subsidy controlling. But screening is not

an exclusion procedure. In the long term the aim is to make an in-depth scrutiny of all existing and potential new subsidies.

To identify and prioritise subsidies that are potentially harmful to the environment, the screening process focuses on the following key issues:

1. Does a state intervention have effects that are potentially harmful to the environment?
2. Is the measure a subsidy?
3. How environmentally harmful is the subsidy? Do other political instruments prevent or reduce potential harm to the environment?
4. Are there any obstacles that currently rule out a reform of the subsidy?

Item 1 To ensure targeted identification of measures that are potentially harmful to the environment, the first step in the screening process should be to identify those economic activities which can be expected to have a special impact on the environment (cf. Fig. 2). These could, for example, be use of fossil fuels for energy, intensive use of fertilisers in arable farming, or building on open land. It makes sense here to determine the environmental relevance with the aid of specific criteria. These could be indicators, e.g. greenhouse gas emissions, nitrogen surpluses in agriculture, or the increase in land used for settlement and transport infrastructure. If the economic activity in question conflicts with political objectives – e.g. of the kind defined in the National Sustainability Strategy –, the second step should be to identify as fully as possible the state instruments which can be expected to foster the relevant economic activity. In the case of fossil fuels, for example, this includes state regulations on the production, trading and use of fossil fuels.

Item 2 The screening process also clarifies whether the instrument in question is indeed a subsidy. The crucial issue here is how broad a definition of subsidies one uses. To make it possible for subsidy analysis to fully identify all state action deficits and undesirable developments in the environmental sector, it is advisable here to use a broad definition of subsidies (cf. Part I, Chapter 2). If on this basis the instrument proves not to be a subsidy, it should not be investigated in the subsidy assessment, but possibly in an alternative approach.

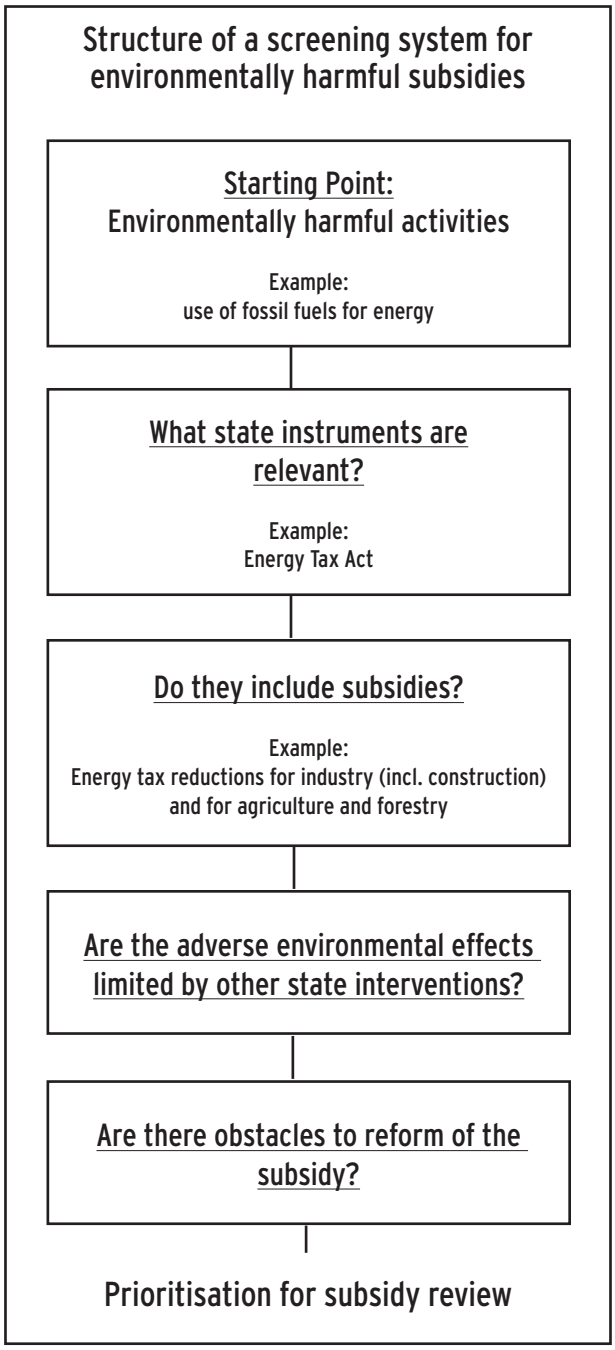

Fig. 2: Structure of a screening system for environmentally harmful subsidies

Item 3 If it is a subsidy, the next step is to investigate whether there are any factors which initially argue against an intensive subsidy assessment. For example, it is possible that other instruments (such as statutory limits or quotas) effectively restrict or prevent the potential harmful effects of a subsidy on the environment. If this were the case, assessing the subsidy from an environmental point of view would not be a high priority[204], because abolishing the subsidy would hold little or no promise of improvement in the environmental situation.

Item 4 Furthermore, obstacles might exist which make it difficult to abolish or modify the subsidy. For example, the design of a subsidy may be prescribed by the EU, or abolition of the subsidy might conflict with EU law or international agreements. One example of this is the international bilateral air transport agreements which prevent the introduction of a widespread kerosene tax. This may be an argument for temporarily postponing a thorough examination of the subsidy.

If there are no such obstacles, and if abolition or reform of the subsidy can be expected to result in a significant easing of the environmental situation, an in-depth review of the subsidy should definitely be undertaken in the subsidy assessment.

3 Second phase: Environment-oriented subsidy assessment

The core task of an environment-oriented subsidy control system is to use an intensive subsidy assessment to create transparency. The public, the government and Parliament need a sound basis of information in order to take decisions on subsidies – independently of the special interests of the beneficiaries. The subsidy assessment creates this basis by means of an independent technical assessment. It is thus an essential prerequisite for subsidy steering on the basis of sustainability objectives (cf. Section 4). The essential principles and elements of the subsidy assessment are described below.

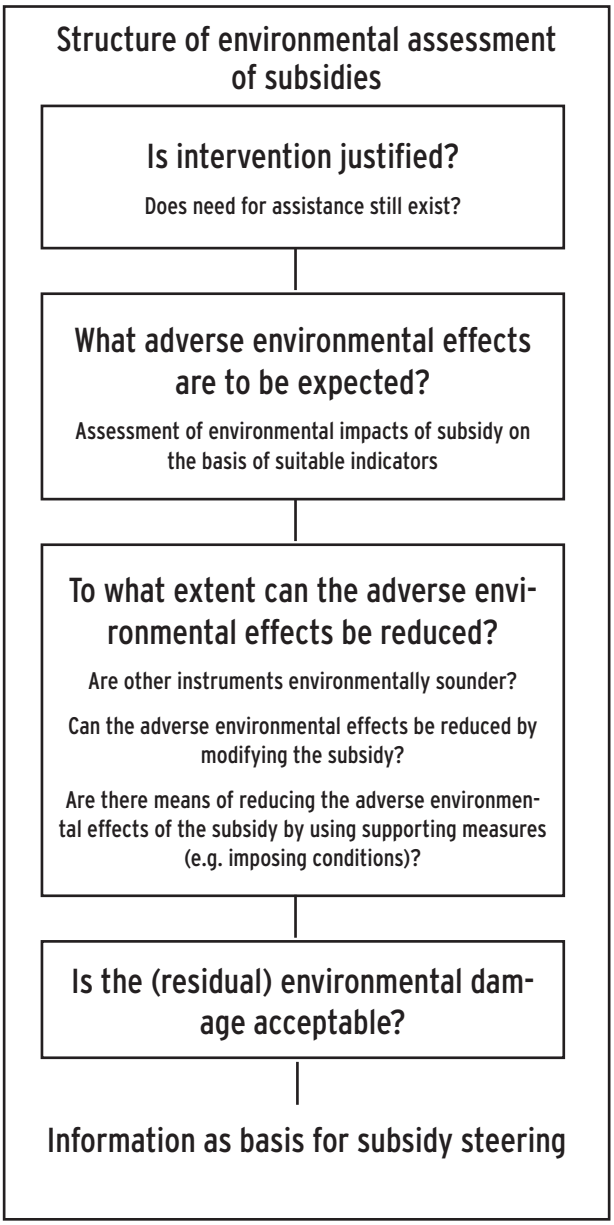

Fig. 3: Structure of environmental assessment of subsidies

The aim of the assessment is to analyse whether the reasons for the subsidy make sense, whether and how it achieves its primary promotion purposes, and what negative, environmentally harmful (side) effects it causes. The scale and effects of the concessions must be determined, and the fiscal cost, the beneficiaries and the parties responsible must be disclosed. If the subsidy had an adverse impact on the environment, it would also be necessary to examine whether ways and means existed of avoiding

204 However, other factors might argue in favour of assessing the subsidy as a matter of priority, for example the goal of effective and efficient allocation of public financial resources.

or at least reducing these negative effects by modifying the subsidy, using a different instrument or employing accompanying instruments.

To determine whether a subsidy is justified, it is first necessary to investigate whether and to what extent there is still a need to promote the goal it pursues. It is not always possible to give a clear answer to this, because the legislature frequently describes the goals in vague terms, or in some cases the goals are conflicting. Since many subsidies are not subject to time limits, it frequently occurs that the state continues to pay subsidies even though the relevant political goal has long since been achieved or it has become apparent that the goal cannot be achieved at all with this instrument. A good example of this is the exemption of agricultural tractors from vehicle road tax. This tax exemption applies for an indefinite period; it was originally introduced in 1922 to promote motorisation and efficiency improvements in the agricultural and forestry sectors. This goal has long been achieved, but the subsidy continues to exist.

If the need for assistance no longer exists, the subsidy is no longer justified and must therefore be abolished. However, if the subsidy is (still) basically justified from an economic and political point of view, then the effectiveness and efficiency of the subsidy must be investigated with regard to the promotion objective and the environmental impacts. The investigation of these two dimensions should be interlinked to simplify the review process and minimise the work involved.

The environmental assessment of the subsidy (cf. Fig. 3) ascertains as far as possible what adverse effects the subsidy has on the environment. The environmental impacts of the subsidy must be systematically analysed in the light of various environmental dimensions and criteria. This presupposes that the environmental assets affected and the type of impacts are known, so that suitable indicators, e.g. of the kind defined for environmental quality objectives, can be used to estimate the subsidy's harmful effects on the environment. Here one could, for example, make use of assessment criteria that are taken as a basis for environmental impact assessment. It is also possible to use sectoral indicators or productivity indicators of the kind found in the National Sustainability Strategy. If it proves impossible to quantify the harmful environmental effects, a qualitative description of the environmental impact should be prepared with the maximum possible detail to provide adequate information for subsidy steering. It is then necessary to examine whether the adverse environmental effects can be reduced, for example by employing alternative means of assistance, modifying the subsidy, or making use of supporting instruments. The environmental assessment ends with a judgement as to whether the remaining adverse environmental effects are acceptable.

When examining the effects on the promotion objective it is necessary to ascertain how suitable the subsidy is as an instrument for achieving the promotion objective, or whether there might be more practical alternatives – e.g. regulatory instruments. If a subsidy is the most suitable instrument, one should also investigate what particular form of subsidy – e.g. financial assistance – makes the most sense. If the subsidy is found to be suitable, its effectiveness and efficiency must be assessed – in other words it is necessary to determine the extent to which the defined objectives could be achieved and the cost of doing so.

Subsidies must be subjected to an environment-oriented subsidy assessment at regular intervals to ensure that they remain part of an efficient and effective state expenditure policy, even under changed economic conditions and political objectives.

4 Third phase: Environment-oriented subsidy steering

On the basis of the information yielded by the subsidy assessment, it is the task of those responsible for environment-oriented subsidy steering to prepare decisions for an effective, efficient and environmentally sound subsidy policy. This can be done in various ways, by developing proposals for

- the abolition of environmentally harmful subsidies,
- the modification of environmentally harmful subsidies, and/or
- the use of alternative instruments.

Here it is particularly important to discontinue or modify subsidies which conflict with an efficient, environmentally sound subsidy policy because they fail to achieve the main purpose of the subsidy, are inefficient or do not satisfy the requirements of sustainable, environmentally sound development. The text box on page 61 sets out the basic principles of an effective, efficient and environmentally sound subsidy policy which have to be observed when reforming existing subsidies and introducing new ones.

In subsidy steering it is important to weigh up all positive and negative aspects of subsidies. There may often be a conflict between the promotion objectives of the subsidy and environmental objectives, a conflict that has to be resolved by a political decision. Environmental objectives should always be given at least equal weight. Also, it frequently happens that conflicts between the promotion objective and environmental objectives are only superficial and can be resolved or at least mitigated by modifying the subsidy. One example of this is the reform of the Common Agricultural Policy of the EU, which decouples direct payments from production and transforms them into uniform regional area-based premiums (cf. Section II 4.2.1). A redesign of this kind may also improve the effectiveness and efficiency of the subsidy.

Under the present economic framework conditions, subsidies often systematically distort competition in favour of environmentally harmful products and production methods. In some cases it may therefore be necessary – having regard to the design principles for subsidies – to provide targeted assistance for sustainable production methods and consumer behaviour. An environment-oriented subsidy controlling system is useful here in two respects. Firstly, the financial resources released by the abolition of environmentally harmful subsidies create financial scope for the ecological modernisation of the economy. And secondly, the more the state abolishes environmentally harmful subsidies, the less it needs to provide assistance for environmentally sound products and production methods.

Principles of an effective, efficient and environmentally sound subsidy policy

1. Detailed investigation of justification for subsidy:

At regular intervals it is necessary to check whether the justification for the subsidy still holds good, or whether, as a result of ongoing changes – e.g. of an ecological, economic, technical or political nature – it no longer exists. This creates periodic pressure to justify the state intervention once again.

2. Examination of alternative instruments

Subsidies are only one of a number of instruments for achieving economic or environmental objectives. This makes it necessary – in addition to checking the justification for the subsidy – to determine whether the subsidy chosen achieves its objective effectively and economically, or whether other instruments would be more suitable.

3. Time limit

Placing a time limit on subsidies prevents beneficiaries from getting used to them and ensures timely adjustment to changed economic conditions. Limited-term subsidies can expire without the need for a fresh political decision. It would then be necessary to justify any extension of the subsidy.

4. Declining benefits

Subsidies that decline as time goes on give the beneficiaries an incentive to gradually become independent of the assistance and adapt to changing circumstances. For example, assistance designed to provide declining benefits is needed when dealing with crisis situations in individual industries or when launching new technologies on the market. The declining scale makes it clear that the subsidy is not a permanent solution, and simplifies its complete abolition.

5. Own contribution by subsidy recipient

If subsidy recipients did not receive total funding, but had to bear a portion themselves, this would maintain an incentive to make careful use of the money. Beneficiaries would not become so accustomed to the state aid and would remain more independent.

6. Cut back tax concessions, replace by other kinds of subsidy

Tax concessions are relatively opaque, difficult to quantify and difficult to abolish in the political process. Owing to the progressive nature of the tax system, income tax concessions may also give rise to undesirable reallocation effects and hence cause fiscal equity problems. To eliminate these disadvantages, and in the interests of simpler taxation, preference should be given to more transparent types of subsidy – such as direct financial assistance.

7. Assistance for subject, not object

Instead of subsidising production methods or consumer habits (objects) that have harmful environmental impacts, it is more targeted to provide direct assistance for the subsidy recipients (subjects) identified as worthy of support. One example of this is the direct payments to farmers, which have been decoupled from production. These direct payments prevent free-rider effects and seepage losses. This also makes it clear who ultimately benefits from the subsidy.

8. Subsidies independent of quantities

Subsidies that are tied to quantities further stimulate production and consumption and thereby encourage the consumption of environment and resources for these purposes. Instead the beneficiaries should receive lump-sum subsidies appropriate to their eligibility for assistance.

9. Environmentally beneficial inputs by recipients, environmental requirements

Subsidies tied to conditions or environmental requirements ensure that beneficiaries do in fact pursue activities beneficial to the environment and do not use the assistance for other purposes. This is a good way of achieving environmental standards.

10. Consistency with other subsidies and state measures

To avoid inconsistencies between different policy areas – for example environmental and economic policy – every subsidy should be checked for interactions with other subsidies and state measures, and synchronised with them if necessary.

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APPENDIX

Fact sheets on environmentally harmful subsidies

1 Energy supply and use

Subsidy	Reductions in electricity tax and energy tax for the manufacturing sector and for agriculture and forestry
Description	Enterprises in the manufacturing sector and in agriculture and forestry only have to pay 60% of the standard energy tax rate for heating fuels; this is to avoid endangering their international competitiveness. This exemption goes too far from an environmental and competition point of view. There is far less incentive to save energy than in other sectors of the economy or in private households.
Environmental impact	The energy consumption and greenhouse gas emissions caused by the manufacturing sector could be reduced considerably – for example, by changing fuels or using energy-saving cross-sectional technologies. But there are not sufficient fiscal incentives for energy-efficient production in industrial enterprises.
Financial volume/ Savings potential	2006: €2.163 billion 2008: €2.415 billion (€2.1 billion electricity tax plus €315 million energy tax).
Specific proposal	The granting of reduced tax rates should be abolished. Certain companies which are in international competition and which would have to bear an unreasonable burden of energy tax that threatened their existence should be afforded relief via a hardship rule. Where the state grants a tax concession, it should at least tie the tax concession to the successful introduction of energy management systems. This ensures that in return for the energy tax concessions, enterprises also implement energy savings and energy-efficient production methods.

Subsidy	Peak equalisation scheme for eco tax in the manufacturing sector
Description	Enterprises in the manufacturing sector receive a refund of 95% of the eco tax they pay (at the rate of 60% of the standard energy tax rates) in excess of the relief on pension scheme contributions This is intended to prevent significant eco tax burdens for comparatively energy-intensive companies in international competition. As far as eco tax is concerned, the marginal tax rates resulting from this rule are only 3% or less of the standard eco tax rates.
Environmental impact	The peak equalisation scheme very considerably reduces the incentive for the beneficiary enterprises to adopt energy-saving behaviour and ensure energy-efficient production. There is scope for further reductions in the energy consumption and greenhouse gas emissions of energy-intensive enterprises.
Financial volume/ Savings potential	2006: €1.94 billion 2008: €1.962 billion
Specific proposal	From an environmental point of view it makes sense to abolish the peak equalisation scheme, in order to increase the incentive to reduce energy consumption and greenhouse gas emissions. The proposed hardship rule should be used to cushion unreasonable hardship for energy-intensive enterprises in international competition.

Subsidy	Tax reduction for certain energy-intensive processes and techniques
Description	Energy products with two different uses and energy-intensive processes, such as chemical, metallurgical and mineralogical production processes, and the production of basic construction materials are exempted from energy tax on the grounds of international competitiveness.
Environmental impact	There are no fiscal incentives to make economical use of energy in the favoured industrial processes.
Financial volume/ Savings potential	2006-2007: €322 million for a full year 2008: €886 million
Specific proposal	Abolish the blanket tax exemptions for the favoured chemical, metallurgical and mineralogical production processes. The regular energy tax rates and the proposed hardship rule should apply. The EU should extend the field of application of the EC Energy Tax Directive to include the production processes currently favoured.

Subsidy	Coal subsidies
Description	Mining of (hard) coal in Germany is not internationally competitive. The German government and North-Rhine/Westphalia make substantial grants in respect of sales of German coal for electricity generation, sales to the steel industry, and compensation for burdens due to capacity adjustments. These are to run out in 2018. A re-examination of the basic decision to phase out coal subsidies is to be undertaken in 2012 with a view to ending subsidies before 2018.
Environmental impact	Prevents the development of sustainable energy supply, causes methane gas emissions, mining damage, flood risks, groundwater hazards.
Financial volume/ Savings potential	2006: €2.285 billion 2008: €2.454 billion
Specific proposal	Phase out coal subsidies as quickly as possible. Instead, step up assistance for renewable energies and efficient use of energy, e.g. energy-saving building refurbishment.

Subsidy	Concessions for lignite industry
Description	According to the Federal Mining Act, a production charge of 10% of the market price is payable on non-mining mineral resources. The Länder do not levy this charge on lignite mining. The relevant Länder also refrain from levying the water abstraction charge for drainage of open-cast lignite mining. These subsidies for lignite result in distortion of competition on the energy market.
Environmental impact	Lignite is the fossil fuel with the greatest adverse effects on climate, environment and health. The serious consequences of open-cast mining include impairment of the natural groundwater regime and large-scale destruction of landscape and settlements. Lignite, which is used mainly for power generation, is the fossil fuel with the greatest climate-relevant CO_2 emissions per unit of energy.
Financial volume/ Savings potential	2006: at least €196 million 2008: at least €195 million (exemption from production charge approx. €175 million, plus at least €20 million a year due to exemption from Land-specific water abstraction charges)
Specific proposal	The Länder should claim the lignite production charge of 10% of the market price, approx. €1 per tonne. The Länder should also levy water abstraction charges on lignite mining at a rate that covers the environmental and resource costs of the groundwater abstraction.

Subsidy	Energy tax reductions for coal
Description	Since August 2006, coal used for heating purposes has been taxed in Germany. In view of the adverse environmental effects of coal compared with heating oil and natural gas, the tax rate of €0.33 per gigajoule (GJ) is much too low. Until the end of 2010 private households are actually exempted from coal tax completely.
Environmental impact	Coal is the fossil fuel with the greatest environmental and climate impacts.
Financial volume/ Savings potential	2006-2007: €157 million for a full year 2008: €154 million
Specific proposal	Gradually raise coal tax rate to a level of €1.98 per GJ, which is comparable to that of heating oil. This would result in uniform taxation of coal used for heating purposes in the commercial and private sectors. Social hardships could be cushioned by means of assistance programmes for the installation of new heating systems.

Subsidy	Manufacturer privilege for producers of energy products
Description	The "manufacturer privilege" under the Energy Tax Act allows enterprises which produce energy products – for example, refineries, gas producers and coal plants – to use fuels free of tax for their production. This applies both to energy products produced on their own site and to external purchases of energy such as petroleum products, gases or coal.
Environmental impact	Refinery processes and other processes in the creation of energy products are frequently very energy and emission intensive. The manufacturer privilege means that such processes suffer from a lack of fiscal incentives to improve energy efficiency and hence to reduce emissions of greenhouse gases and atmospheric pollutants.
Financial volume/ Savings potential	2006: €400 million 2008: €270 million
Specific proposal	Refineries, gas producers and coal plants should be governed by the same energy tax arrangements as other energy-intensive enterprises in the manufacturing sector. Having regard to the EC Energy Tax Directive, the short-term demand should be that externally purchased energy in production operations be made subject to the normal tax on energy. In the medium and long term, however, marketable self-produced fuels should also be subject to normal taxation. To this end, efforts should be made to lift the ban on taxation of self-produced fuels in the EC Energy Tax Directive.

Subsidy	Lack of energy tax on non-energy uses of fossil fuels
Description	Energy sources which are not used as heating or automotive fuels are exempted from energy tax. This applies primarily to petroleum products, natural gas and refinery products, which are used as basic materials by the chemical and petrochemical industry. There is a lack of incentives to make more efficient use of fossil fuels for as basic materials and to replace them by renewable raw materials.
Environmental impact	The use of fossil energy products for material purposes also depletes finite resources and causes waste in the course of product life cycles. Also, it is not free from CO_2 emissions.
Financial volume/ Savings potential	2006: €1.6 billion 2008: €1.6 billion
Specific proposal	Energy sources used for non-energy purposes should be taxed – throughout the EU if possible – in line with their demands on environment and resources.

Subsidy	Free allocation of CO_2 emissions trading allowances
Description	Under the European emissions trading scheme, Germany assigned approximately 389 million out of 452 million annual CO_2 emission allowances free of charge to installations in the energy and industrial sectors for the trading period 2008-2012. Only 40 million CO_2 emissions trading allowances are to be auctioned. There is also a reserve of 23 million emissions trading allowances for free allocation to new installations. This largely free allocation represents a subsidy for plant operators. Since the emission allowances are both scarce and tradable, they command a price on the market. For the companies this means that the state makes them a present of a saleable asset in the form of a pollution right. At the same time the state has lost considerable revenue as a result of the free allocation of emission allowances. The allocation rules for energy installations are based on benchmarks which are different for gas and coal, and which are based on the best available technology in each case. New installations also receive free emission allowances based on the same (fuel-dependent) benchmarks as for existing installations.
Environmental impact	However, this fuel-based differentiation of allocation to electricity production gives rise to indirect environmentally harmful impacts on the energy mix – especially where the construction of new power plants is concerned. The long useful life of new power stations will cause climate-relevant CO_2 emissions even after 2020. The preferentially treated coal-fired power plants also cause considerable emissions of pollutants such as NOx and SOx, for which no binding maximum limits exist. Thus the allocation of emission allowances on the basis of fuel-differentiated benchmarks is an environmentally harmful subsidy favouring the operators of coal-fired power plants. It is therefore difficult to effect the changeover of power generation to gas-fired plants or renewable forms of energy, which is desirable from an environmental point of view.
Financial volume/ Savings potential	2006: €2.5 billion 2008: €7.8 billion
Specific proposal	For the third trading period (from 2013 to 2020), the EU laid down the basic rules in 2009. With effect from 2013, electricity companies must buy 100% of their allowances. Emission allowances for industry will be auctioned on a rising scale, from 20% in 2013 to 70% in 2020. The remaining emission allowances will be allocated in accordance with benchmarks that are independent of fuels and technologies – on the basis of the most efficient plants in the relevant sector. The future regulations represent a considerable advance on the existing rules in terms of incentives to replace plants and select lower-emission technologies and systems, not only as regards the reduction in subsidies and the extension of the "polluter pays" principle, but also through the use of uniform benchmarks for the remaining free allocations. In the long term all allowances must be auctioned, as this is the only way of avoiding allocation rules, which have a tendency to be inefficient – such as grandfathering or benchmarks – and preventing plant operators from making windfall profits that are not associated with climate protection measures. The revenue should accrue to the national budget and be spent on climate protection measures. If, as seems possible, the European Union's CO_2 reduction target is raised to 30 instead of 20 percent, the EU should make a corresponding reduction in the number of emission allowances without making any increase in free allocations.

Subsidy	Subsidies for nuclear power
Description	Particularly at the start of its use for power generation, nuclear energy received large explicit subsidies, especially for research. From the time financial assistance started to the present day, between €40 and €60 billion of public money has been spent in the field of nuclear energy. As a result, nuclear energy has received considerably more financial assistance than, for example, renewable energy sources and energy efficiency. Direct state subsidies for nuclear power are currently relatively low. A large proportion continues to benefit the research sector. However, nuclear power still receives substantial support in the form of implicit subsidies. In particular, the present liability arrangements with regard to potential accidents in nuclear power plants and the provisions made by the NPP operators constitute benefits of a subsidy character running into the billions.
Environmental impact	In view of the environmental and health issues associated with uranium extraction, the unresolved question of final disposal of nuclear waste, the danger of serious accidents and the potential military uses, nuclear power is a technology that is inherently harmful to the environment. There are more effective and more efficient ways of protecting the climate. The use of nuclear power to generate electricity – involving, for example, the extraction and enrichment of uranium for fuel elements – gives rise to more greenhouse gases than the use of wind energy .
Financial volume/ Savings potential	It is not possible to quantify accurately the total amount of environmentally harmful subsidies. On the basis of a simplified model calculation, the German Institute for Economic Research (Deutsches Institut für Wirtschaftsforschung – DIW) estimates the interest benefits resulting from the present provisions system to be at least €175 million per annum. To this must be added an internal financing advantage of approx. €770 million per year. Estimates of the preferential treatment represented by the limited liability obligations range from 5 to 185 cents per kWh.
Specific proposal	The practice regarding provisions must be changed so that companies which operate nuclear power plants are not favoured by provisions.

2 Transport

Subsidy	Energy tax reduction for diesel fuel
Description	At 47.04 cents per litre the energy tax rate for zero-sulphur diesel fuel is 18.41 cents per litre less than the rate of 65.45 cents per litre for petrol. Including value-added tax, the difference in taxation is even higher (21.9 cents per litre). The lower tax on diesel fuel is an instrument intended to favour commercial road transport.
Environmental impact	A diesel car pollutes the air with an average of about ten times more nitrogen oxides than a petrol-engined car. And when it comes to fine particulates, diesel cars – most of which are not yet equipped with a particle filter – represent a much greater risk to health than petrol cars because of the carcinogenic effect of fine particulates. Particularly from a climate policy point of view, the tax concession of 18.41 cents per litre is not justified, because diesel fuel has a higher carbon content than petrol and its combustion gives rise to 13% higher CO_2 emissions.
Financial volume/ Savings potential	2006: €6.15 billion 2008: €6.63 billion
Specific proposal	The diesel tax rate should be raised to the same level as the petrol tax rate. At the same time, the vehicle road tax for diesel cars should be brought into line with the rate for petrol cars.

Subsidy	Distance-based income tax deduction for commuters
Description	Employed persons can set off expenditure on journeys to and from work against income tax as an income-related expense. The rate is 30 cents per kilometre one-way distance between home and work. This reduces the tax burden once the individual blanket allowance is exceeded. The limitation of this concession to distances of over 20 kilometres, introduced in 2007, was withdrawn by the legislature after the Federal Constitutional Court had ruled that it was unconstitutional. The legal situation that had applied until 2007 was restored, although other alternatives that were compatible with the constitution were available. Most other EU countries do not have comparable tax concessions.
Environmental impact	The distance-based tax allowance supports an increase in traffic, the trend to long distances to work and to urban sprawl. Above all, it favours car traffic because public transport is very limited, especially in areas with low settlement densities, and is therefore not a viable alternative for many employees. Thus the distance-based tax allowance runs contrary to climate protection and contributes to atmospheric pollution and noise. Land take as a result of urban sprawl processes is also an important factor responsible for loss of biodiversity. Abolition of the distance-based allowance could cut CO_2 emissions by over 2 million tonnes by 2015 and reduce land take by more than 30 square kilometres per year.
Financial volume/ Savings potential	2006: €4.35 billion 2008: €4.35 billion
Specific proposal	To eliminate the adverse ecological incentives and effects of the distance-based allowance, it should be abolished completely. The legislature could avoid unreasonable hardship for employees with very long distances from home to work by recognising very high costs for the journey between home and work as extraordinary expenses deductible for income tax purposes. If these steps were not possible, the legislature could considerably reduce the rate of 30 cents per kilometre and put a ceiling on the maximum allowance payable.

Subsidy	Exemption of kerosene from energy tax
Description	Unlike the fuels used by motor vehicles and the railway, the kerosene used in commercial air transport is exempted from energy tax .
Environmental impact	Owing to the altitude at which they are emitted, air transport emissions have at least twice the climate impact of ground-level emissions. What is more, advances in engine technology are not keeping pace with the passenger-kilometres travelled. For this reason the foreseeable technical measures will be nowhere near sufficient to maintain or reduce present emission levels.
Financial volume/ Savings potential	2006: €6.9 billion 2008: €7.23 billion
Specific proposal	Basically kerosene should be taxed at the rate of €654.50 per 1000 litres that is set out in the Energy Tax Act. In the interests of equal fiscal treatment of the different means of transport, efforts should be made to agree on a kerosene tax covering as large an area as possible – at least EU wide.

Subsidy	Energy tax exemption for inland waterway transportation
Description	The diesel fuel used in commercial inland waterway transportation is tax-free. Section 27 (1) Energy Tax Act (formerly Section 4 (1) No. 4 Petroleum Excise Duty Act
Environmental impact	The fuel used in inland waterway vessels has a higher sulphur content than the diesel fuel used in trucks and diesel locomotives, and its combustion therefore gives rise to greater sulphur dioxide emissions. Commercial fishing boats also profit from this energy tax exemption. This means the tax exemption encourages atmospheric pollution and acidification of soils and water in particular.
Financial volume/ Savings potential	2006: €129 million 2008: €118 million
Specific proposal	To harmonise the competition situation between the various modes of transport – especially between goods traffic via inland waterways, road and rail – marine diesel should, like diesel fuel containing sulphur in the road transport sector, be taxed at the rate of 48.57 cents per litre. This would create incentives to increase energy efficiency. The abolition of tax exemption should be effected throughout the EU, or at least throughout the Rhine basin. Financial assistance has been available since 2007 for modernising inland waterway shipping by giving financial incentives to buy lower-emission diesel engines and emission reduction systems.

Subsidy	VAT exemption for international flights
Description	Transboundary air transport is exempt from value-added tax in Germany; only domestic flights are subject to value-added tax.
Environmental impact	Owing to the altitude at which they are emitted, air transport emissions have at least twice the climate impact of ground-level emissions. Advances in engine technology are not keeping pace with the passenger-kilometres travelled. For this reason technical measures will be nowhere near sufficient to maintain or reduce present emission levels.
Financial volume/ Savings potential	2006: €1.56 billion 2008: €4.23 billion
Specific proposal	Domestic flights within Germany should be taxed at the full VAT rate (19%) in the near future. To create uniform framework conditions for transboundary travel, efforts should be made in the medium term to levy an EU-wide value-added tax for transboundary flights within the Community.

Subsidy	Flat-rate taxation of privately used company cars
Description	When company cars are used for private purposes, the user has to pay income tax in respect of this "payment in kind", on the basis of only 1% per month of the list price of the vehicle at the time of first registration.
Environmental impact	This flat-rate taxation is an incentive for companies to pay employees part of their salary in the form of a company car. Company cars account for a large proportion of cars on the road. More than 30% of new registrations in Germany in 2008 were company cars. Company cars tend to be fairly large cars with above-average fuel consumption. For example the great majority of heavy off-road vehicles are used for business purposes. Thus the company car privilege promotes the car as a means of transport and contributes to environmental pollution by the road transport sector.
Financial volume/ Savings potential	2006: €500 million 2008: €500 million
Specific proposal	The tax rate should be raised to an average of 1.5% and – as in the United Kingdom, for example – differentiated by CO_2 emissions. The legislature should reduce this rate for vehicles with low CO_2 emissions (e.g. up to 130 g/km), and raise it in stages for vehicles with higher emissions (e.g. over 130 g/km).

Subsidy	Energy tax reduction for biofuels
Description	The state is supporting the market launch of biofuels and heating bioliquids by reducing energy tax; in the case of biodiesel and vegetable oil fuels it is reduced to 18 cents per litre. The aim is to achieve a minimum share of ten percent for biofuels in 2020. As an interim target, the Act amending the promotion of biofuels lays down a figure of 6.25 percent by 2010. The German government's biofuels report states that nearly six percent had been reached as early as 2008. The Growth Acceleration Act nevertheless reduced the tax rates for biodiesel and vegetable oil fuels to 18 cents per litre for the years 2010 to 2012.
Environmental impact	From the point of view of environmental and climate protection it has become a very controversial issue whether consumption of fuels from biomass, especially first-generation biofuels, makes sense. This is because a rigorous examination of the entire life cycle of biofuels (life cycle assessment) may even reveal a negative greenhouse gas balance. In particular, the production of biomass can cause great environmental harm. Central aspects are the release of greenhouse gases and the endangerment or destruction of biodiversity. Environmental damage may also occur in the environmental media: soil, water and air. The extent to which the Biofuels Sustainability Ordinance passed by the Bundestag in September 2009 prevents such damage, remains to be seen following its entry into force in 2010. It must however be assumed that great environmental damage has been caused by some of this biomass production up to 2009, especially where rainforests have been cleared for biomass production. However, since this component of total production cannot be estimated accurately, the size of this subsidy is classified as unquantifiable. As a result of the preferential treatment of biofuels, the state lost €580 million in 2008.
Financial volume/ Savings potential	2008: n.q.
Specific proposal	The state should at least suspend the energy tax reduction until it has been confirmed that biofuels are climate friendly and environmentally sound. Until then the biofuels quota should also be reduced. It would make more sense to base the level of subsidy on the reduction in greenhouse gas emissions. This assistance by means of the quota is also problematic from an environmental point of view, since it promotes marketing of the less environment-friendly biofuels of the first generation. Research into second-generation biofuels should be promoted, as should their market launch, though not by a reduction in energy tax, but via direct assistance for research and development.

3 Construction and housing

Subsidy	Home ownership grant
Description	The home ownership grant is still the largest financial assistance instrument in Germany. It was introduced in 1995 as an instrument for promoting home ownership – with special regard to aspects of social and family policy. Since 1 January 2006 it has no longer been available to new applicants.
Environmental impact	The ongoing trend to home ownership, and especially detached and semi-detached houses, is showing an increasing focus on rural areas. In addition to other factors, the frequently low level of land prices in rural areas encourages new building. The home ownership grant has increased this incentive for land take. The result was an increase in land take and depletion of natural resources, and a rise in traffic-induced environmental pollution.
Financial volume/ Savings potential	2006: €9.244 billion 2008: €6.223 billion
Specific proposal	By abolishing the home ownership grant, the German government has made an important contribution to sustainable development.

Subsidy	Promotion of saving for building purposes
Description	The state promotes saving for building purposes by means of the housing construction premium and the employee savings allowance, provided the individual saver does not exceed certain income limits. The housing construction premium on deposits paid into building society plans is up to €45.06 (or €90.11 for married couples). The employee savings allowance for building society savings plans serves the interests of state promotion of private wealth formation, and may reach up to €42.30 a year. For this purpose, employees must have part of their salary – often in combination with employer contributions to the tax-deductible employee savings scheme – transferred to their building society account. In addition, the Home Ownership Pensions Act supports retirement provision plans that are invested in home ownership. In 2008 the federal component came to approx. €9 million. However, it will rise to €47 million in 2012.
Environmental impact	The support for savings for building purposes potentially increases the incentive to build individual homes, and hence to increase land take. In this respect it is not compatible with the German National Sustainability Strategy's 30-hectare goal. Furthermore, in view of the housing surplus in many regions, the increasing need for vocational mobility and the long-term demographic trend, both the housing construction premium and the employee savings allowance are no longer in keeping with the times.
Financial volume/ Savings potential	2006: €500.3 million (housing construction premium only) 2008: €467.1 million (housing construction premium and Home Ownership Pensions Act)
Specific proposal	In future, support for wealth formation for households with small and medium incomes – such as the housing construction premium and the employee savings allowance – should no longer favour building society savings. The state should not provide any regionally undifferentiated incentives to build additional housing, and should instead promote sustainable forms of investment and provision for old age. In the interests of targeted support for housing that already exists, federal assistance for housing should in future be confined to the modernisation and energy-saving refurbishment of existing buildings, for example under the KfW assistance programmes.

Subsidy	Promotion of social housing
Description	In 2002, in view of the good average supply of housing, the German government used the Housing Assistance Act to develop traditional public housing activities into a social housing assistance scheme. Since then the assistance provided has been geared much more to existing housing. Nevertheless, assisted housing continues to account for around 11 to 12% of the new homes built in recent years. As part of the reform of the federal system, responsibility for legislation on social housing assistance was transferred from the federal to the regional authorities on 1 September 2006. Thus since 2007 the German government has no longer played a direct part in social housing assistance. The Länder receive a lump sum of €518 million a year from the German government as financial compensation until 2013.
Environmental impact	Social housing assistance still makes a sizeable contribution to increased land take and the resulting environmental damage.
Financial volume/ Savings potential	2006: €588 million 2008: €518 million (federal level only)
Specific proposal	Subsidies for public housing should if possible be abolished completely, and the money should be used solely to support the stock of existing buildings. The assistance should focus not on homes, but rather on households that do not have the resources of their own to find appropriate accommodation on the housing market. The Federal Environment Agency therefore recommends that greater use be made of the instrument of rent subsidies and municipal acquisition of occupancy rights in existing buildings for needy households.

Subsidy	Joint Agreement for the Improvement of Regional Economic Structures
Description	The purpose of the Joint Agreement for the Improvement of Regional Economic Structures is to compensate for the locational disadvantages of structurally weak regions, to give them a chance of getting in line with the general economic situation and reducing development differences. Here there is a special focus on promoting investment by trade and industry to create and safeguard jobs. Implementing these assistance measures is the responsibility of the Länder. However, the German government plays a part in framework planning and financing. The federal and regional authorities each provide 50% of the money. To this must be added assistance from the EU structural funds – especially the European Regional Development Fund (ERDF). For the year 2008, GA assistance amounting to €2.012 billion (including ERDF) was approved. Of this, €1.421 billion went to trade and industry and €591 million to infrastructure.
Environmental impact	The development of new industrial land – especially in non-built-up areas – makes a direct contribution to land take and hence to harmful impacts on various environmental assets. In view of the continuing rapid growth of land used for settlement and infrastructure (2005 to 2008: an average of 104 hectares per day), new development of areas for trade and industry as a regional structural policy measure must be seen in a critical light. Especially in those regions which are key assistance areas of the EU and the federal and regional authorities, the area under settlement is growing faster than the population. At the same time the intensity of utilisation of newly developed areas is frequently low, and the number of vacant lots in newly developed trading and industrial estates is growing.
Financial volume/ Savings potential	No clear quantification of the environmentally harmful portion of the subsidies provided is possible.
Specific proposal	The assistance rules of the GA will have to be supplemented by environment-oriented assistance criteria which give clear priority to recycling of waste land rather than development of new industrial sites. Another assistance requirement should be that the applicant must first present an inventory of vacant lots available in settlement areas and of existing trade and industry sites. New sites should only be developed if the available reserves of land are exhausted.

4 Agriculture and forestry, fisheries

Subsidy	Agricultural subsidies of the European Union
Description	The Common Agricultural Policy (CAP) of the European Union largely determines the political framework conditions for agriculture in Germany. The CAP is based on two pillars: The first pillar is the market and price policy, which is intended to safeguard farmers' earnings. The second pillar of the CAP consists of measures to promote rural development. These are intended to improve the competitiveness of the agricultural sector, raise the quality of life and the environment in rural areas, and promote and interlink opportunities for earning outside the farming sector in rural areas. Since 2005 the direct payments have been largely decoupled from production. They are also conditional upon the farm complying with the standards in the fields of environment, animal feed safety and food safety, and veterinary health and animal protection (Cross Compliance). Measures under the first pillar are fully financed by the EU, whereas measures under the second pillar have to be co-financed by the Member State in question. At present the EU still supports exports of agricultural produce in order to place its surpluses on the global market. Under international agreements, these export subsidies are to be phased out by 2013. However, the EU reintroduced them for milk in 2008.
Environmental impact	Since the decoupling of direct payments (under the first pillar) from production, these payments have ceased to have any influence on production intensity. This means they are not in themselves environmentally harmful like the earlier payments which were coupled to production. However, the environmental requirements attached to direct payments are not sufficient. There are also deficits in enforcement. A negative issue from an environmental point of view is the fact that as a result of the co-financing requirement for measures under the second pillar, there are cases where the Länder are not claiming money for agri-environmental measures because they are unable or unwilling to contribute the co-financing This leads for example to a lack of planning reliability for farmers, and makes it more difficult to implement agri-environmental measures. Export subsidies also have numerous environmentally harmful consequences.
Financial volume/ Savings potential	In 2008 German farmers received subsidies of more than €5.7 billion under the first pillar, but only €1.159 billion under the second pillar. For the reasons mentioned above, the direct payments cannot be pronounced definitely harmful to the environment. In 2008 the EU spent some €925 million on subsidies for exports of surplus agricultural produce. Germany's contribution to this, via the financial commitment to the EU, amounted to about €185 million. German companies profited from the export subsidies to the tune of €98 million.
Specific proposal	In 2013 Germany should take advantage of the forthcoming review of the CAP for the period 2014 to 2020 to promote the environmentally appropriate development of rural areas more than in the past. Granting of subsidies should be tied directly to specific environmental protection services and other non-marketable services in the public interest (on the principle of "public money for public goods"). Furthermore, the first and second pillars should be placed on an equal footing as regards planning reliability. The second pillar should be topped up considerably by reallocating funds from the first pillar. The first pillar should in future consist only of compensation for the higher production standards in the EU and compensation for a new cross-compliance element "ecological priority areas", which should be added. Germany should also make every effort to secure the immediate abolition of export subsidies.

Subsidy	Joint Agreement for the improvement of agricultural structures and coastal protection
Description	The purpose of the Joint Agreement for the improvement of agricultural structures and coastal protection (GAK) is to ensure an efficient agricultural and forestry sector geared towards future requirements, facilitate competitiveness of the agriculture and forestry sector on a European comparison, and improve coastal protection. ´The annually updated GAK framework plan is the central instrument for applying the second pillar of EU agricultural policy in Germany, as described in the "Federal Republic of Germany's National Strategic Plan for Rural Development 2007-2013". In 2008 the financial volume was over €1 billion (federal funds €660 million).
Environmental impact	In the GAK realignment process in recent years, the federal and regional authorities have already made significant changes in the objectives and content of individual assisted fields. This has made it possible to substantially reduce negative environmental impacts and transform them into effects that are ecologically neutral, or even positive. The GAK nevertheless continues to support measures that can have adverse impacts on the environment, for example by assisting measures in the fields of water resource management and crop growing. The assistance for integrated rural development and forestry measures also includes infrastructure measures – such as developing farm and forest roads and tracks, and surfacing existing routes with asphalt or concrete.
Financial volume/ Savings potential	No clear quantification of the environmentally harmful portion is possible.
Specific proposal	The GAK needs ongoing development based on environmental criteria, and the assistance for environmentally harmful measures needs to be reduced as far as possible.

Subsidy	Tax rebate for agricultural diesel
Description	The German government pays 21.48 cents per litre towards diesel fuel for agriculture and forestry. In this way, farm diesel enjoys a reduced tax rate of 25.56 cents per litre compared with the standard rate of 47.04 cents per litre. The Budget Accompanying Act 2005 restricted this tax concession to 10,000 litres a year per farm and also deducted a lump sum (so-called excess) of €350 from the refund. The Act of 2009 amending the Energy Tax Act suspended these restrictions on the tax concession for the years 2008 and 2009. As a result the amount of subsidy rose by €287 million per year. From a budget point of view, however, this will not take effect until 2009 and 2010.
Environmental impact	The distortion of fuel prices means that there is less incentive to make efficient use of fuel than in other sectors, with corresponding adverse effects on the climate and air quality.
Financial volume/ Savings potential	2006: €180 million 2008: €135 million
Specific proposal	The subsidy for agricultural diesel should be abolished. The resulting additional tax revenue could be used for rural development (second pillar) – and especially the agri-environmental programmes – and could thus remain largely within the agricultural sector. If the subsidy for agricultural diesel were not done away with entirely, the second-best solution would be to refund the tax on a flat-rate basis. Here the legislature would presume a specific diesel consumption per hectare of land and would refund the tax partly on the basis of farm size. This form of refund would be compatible with the production-independent ("decoupled") direct payments under the agricultural reform. The proposed refund would have the effect of a flat-rate premium per unit area, because the actual fuel consumption would no longer play any role in the tax refund, since agricultural diesel would be taxed at the standard rate of 47.04 cents per litre. As a result, the incentive to save fuel in agriculture and forestry would be just as great as in other sectors.

Subsidy	Exemption of agricultural vehicles from vehicle road tax
Description	Agricultural vehicles are exempted from vehicle road tax . This tax exemption goes back to 1922, when it was intended to promote the motorisation of agriculture and forestry.
Environmental impact	This concession supports an over-dimensioned inventory of machinery. The trend to increasingly heavy machines in agriculture results in increasing damage to agricultural soils through compaction. Compaction damage is often irreversible and restricts the natural functions of the soil.
Financial volume/ Savings potential	2006: €55 million 2008: €55 million
Specific proposal	The exemption of agricultural vehicles from vehicle road tax should be abolished. Alternatively, one could use the money to strengthen rural development or to provide direct rewards for environmental achievements (e.g. maintenance of ecologically valuable land by means of extensive use, or care of landscape elements).

Subsidy	Subsidies for production of spirits
Description	The subsidy is intended to safeguard sales of agricultural alcohol. This is produced mainly in small and medium distilleries which owing to their unfavourable production conditions are at a competitive disadvantage compared with large distilleries in other European Member States. It is thus designed to ensure that German distilleries derive adequate earnings from this activity. The EU Commission has approved the subsidies until the end of 2010 as a special exception to the basic ban on national production-related subsidies. However, in May 2008 the Bundestag decided to intercede with the European Commission for an extension until 2017. Negotiations to date indicate that the outcome might be a compromise in the form of a gradual phase-out of the subsidy.
Environmental impact	The production methods of the approximately 10,000 farm-based distilleries differ very widely, ranging from environmentally sound (e.g. based on extensive fruit orchards) to environmentally dubious (e.g. based on intensive potato growing). Since this subsidy is coupled to production, in principle it creates an incentive to intensify farming methods.
Financial volume/ Savings potential	2006: €86 million 2008: €80 million
Specific proposal	As an alternative to the present arrangement, the producers benefiting from the agricultural alcohol subsidy should receive it in the form of direct payments. The assistance should be independent of production quantities and prices, and should only be granted for extensive production methods that are worth promoting from an environmental point of view. .

Subsidy	Common Fisheries Policy (CFP)
Description	Since 1983 the Common Fisheries Policy (CFP) of the EU has subsidised the fisheries sector; since 2006 this has been done with the European Fisheries Fund (EFF) as financing instrument. In this way assistance is being provided for adapting/reducing the fishing fleet, inland fishing or the expansion of aquaculture. The fleets have been reduced by an average of two percent a year in recent years. However, this has to be set against improvements of two to three percent a year in catch efficiency as a result of technical advances.
Environmental impact	The EFF results in the maintenance of surplus fishing vessel capacity, which is out of proportion to the available resources. According to official information from the EU Directorate-General for Fisheries, the European fishing fleet has a surplus capacity of more than 40%. This means excessive fishing pressure and hence diminishing fish stocks. Some 88% of Community stocks are fished beyond the maximum long-term yield, and 30% of these stocks are now beyond safe biological limits. These factors endanger the survival of numerous species of fish, and indirectly other marine animals, and hence the valuable biological diversity of the seas. Scientists warn that large predatory fish such as tuna or cod have already been decimated by 90 percent in the last 50 years.
Financial volume/ Savings potential	A total budget of €4.3 billion has been allocated for the period 2007-2013. German companies profited from payments of €35.3 million by the EFF in 2008. Germany's contribution to the EFF in 2008 came to around €200 million. Since the precise purpose of the projects subsidised by the EEF is not published, it is not possible to quantify accurately the environmentally harmful portion of this subsidy.
Specific proposal	In 2009 the European Commission initiated a CFP reform process. This process is to be completed by 2013. In this reform process, Germany should do its best to ensure that in future the EU supports only ecologically sustainable projects. Non-sustainable practices, such as promoting deep-sea fishing, should be discontinued. The German government should discontinue all financial assistance and measures in the GFP that encourage expansion of fishing capacity. Changes should also be made to the fisheries agreements between the EU and African countries: the over-exploitation of those countries' local fish stocks by fishing fleets from the EU results in impoverishment of the coastal populations dependent on fishing and endangers their supplies of animal protein. The EU's fishing industry is the second-largest in the world – it processes over seven million tonnes of fish every year. As a result of the decline in the supply of fish from Community waters, the bulk (approx. 85%) of the fish consumed in European countries now comes from third countries. Financial assistance should increasingly be channelled into third-country projects that promote long-term development. A mechanism must be put in place in the future CFP to ensure that the size of the European fishing fleet is appropriate and in proportion to the available fish stocks. In order to do justice to the objectives of the EU's integrated marine policy and its environmental pillar, the Marine Strategy Framework Directive (Dir. 2008/56/EC), there is a need for rigorous implementation of the ecosystem approach, the precautionary principle in fisheries management and the application of the multi-species approach.

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