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Environment Policy Committee
Working Party on Environmental Performance



ENVIRONMENTAL PERFORMANCE REVIEW OF GERMANY

REVISED ASSESSMENT AND RECOMMENDATIONS

FINAL

This document presents the Assessment and Recommendations of the Environmental Performance Review of Germany that were adopted by the Working Party on Environmental Performance on 19 January 2012.

ASSESSMENT AND RECOMMENDATIONS

1. Progress towards sustainable development

1.1. Policy-making environment

Assessment

1. Germany has continued to play a proactive role in environmental policy within the EU and internationally. At the national level, it has consolidated and further developed what was already an ambitious environmental policy framework. There has been a shift from sector-specific to more comprehensive and cross-cutting policies; for example: the National Sustainable Development Strategy (NHS) (2002) and its progress reports (2004, 2008), the National Strategy on Biological Diversity (NSBV) (2007), the Integrated Energy and Climate Programme (2007), the German Strategy for Adaptation to Climate Change (2010), and the Energy Concept (2010), which was jointly developed by the federal ministries of environment and economy. Opportunities exist to further exploit potential synergies between policy areas, for example in the area of resource productivity. The National Resource Efficiency Programme, which is currently being developed, may contribute to achieving this objective.

2. As in other countries, obstacles to horizontal co-operation persist. Some important steps have been taken to overcome some of these as, for example, the horizontal bodies and mechanisms established to support the NHS implementation. The greater use of targets and indicators to monitor progress has also helped make the role of different ministries in implementing cross-cutting programmes more transparent. Policy coherence could be further enhanced by strengthening the assessment of the environmental impacts of economic and sectoral policies (*e.g.* in the transport and agricultural sectors), and of the economic aspects of environmental policies (*e.g.* biodiversity). In 2009, a sustainability criterion was included in the existing regulatory impact assessment procedure for new legislation. However, after the first two years of implementation, there is little evidence that such checks have resulted in changes to draft legislation. Environmental Impact Assessment, Strategic Environmental Assessment and tools such as cost-benefit analysis could be more systematically integrated into decision making. This would help assess the inter-linkages between sectoral policies and the environment. Continued attention should also be given to ensuring that independent, high-quality analysis supports the development of environment-related policies.

3. A 2006 amendment to the Basic Law that governs constitutional affairs helped streamline the transposition of EU environmental directives into German law. The *Länder* continue to have the primary responsibility for policy implementation. There are concerns that resource and capacity constraints are leading to an “implementation deficit” in some *Länder*. Amongst other things, this results in a divergence in environmental performance at sub-national level. The private sector is playing a greater role in providing environmental services. Some *Länder* are relying more on voluntary approaches to promote compliance with environmental requirements.

4. Over the last decade, there have been a number of developments involving more participatory and transparent approaches to decision making. Non-governmental actors have played important roles in connection with the NHS, the NSBV, and other recently developed strategies. The federal ministries consult frequently with non-governmental organisations and the business community. However, some existing legal provisions for access to justice regarding environmental decision making appear to be not fully in line with the Aarhus Convention. There are plans to amend the relevant legislation in light of a 2011 ruling by the European Court of Justice.

Recommendations

- Further promote the policy co-ordination approaches and implementation tools embedded in the National Sustainable Development Strategy.
- Further integrate the results of environmental assessments and sustainability checks on legislation in decision making; strengthen support for the more effective implementation of Environmental Impact Assessment and Strategic Environmental Assessment, particularly at the local level; reinforce the quality and independence of the economic assessment of environment-related policies.
- Promote the use of independent mechanisms to monitor and report on how federal environmental legislation is implemented by the *Länder*, with a view to benchmarking and disseminating good practice approaches.
- Continue to deepen and broaden the participation of stakeholders in environmental decision making; review provisions for access to justice in environmental decision making in order to ensure consistency with the Aarhus Convention.
- Further promote synergies and coherence among policies related to resource productivity (e.g. waste, raw material, energy, climate and innovation policies).
- Build upon the ongoing assessment of the economics of ecosystems and biodiversity to guide implementation of the National Strategy on Biological Diversity and to strengthen inter-institutional co-operation in this area.

1.2. Towards green growth

Assessment

5. Germany has made major progress in establishing an environmental policy framework that is supportive of green growth. While strict technology-forcing regulations and standards remain at the core of German environmental policy, the use of economic instruments has been extended to improve pricing of environmental externalities. However, potential synergies among instruments have not been fully exploited. Further extending the use of environmentally related taxes (and other economic instruments) could make the tax system more growth-friendly if revenue is used to reduce more distortionary taxes such as those on labour and capital.

6. The ecological tax reform, implemented in 1999-2003, confirms this view. Revenue from increased energy taxation was mostly recycled to reduce social security contributions. Estimates indicate that this mechanism helped reduce energy consumption and greenhouse gas (GHG) emissions, while having positive employment and economic effects. A number of design features, however, have reduced the effectiveness of the reform. The eco-tax (*i.e.* the additional tax applied to the original excise duties) is neither based on the carbon content of fuels nor on other environmental externalities. The reform allows for several tax exemptions, in particular for coal products and export-oriented industrial sectors; this has resulted in areas of the economy not being subject to any GHG-related price signal (*i.e.* neither the eco-tax nor the CO₂ allowance price under the EU Emissions Trading System), as well as in some forms of double taxation or pricing. Finally, failure to adjust the tax rates for inflation has reduced their incentive effect. Since 2003, the overall increase in energy efficiency can be attributed more to higher global oil prices than to the incentive provided by the eco-tax. While total energy use has not declined, revenue from energy taxation has decreased since 2003. As a result, environmentally related taxes revenue has also declined. In 2009, it accounted for 2.3% of GDP and 6% of total tax revenue, slightly below the respective OECD Europe averages.

7. Germany relies less on vehicle taxation than most other OECD countries. The annual motor vehicle tax has not provided sufficient incentives to renew the car fleet towards more efficient and less polluting cars. In 2009, the tax was restructured to promote a shift towards cars with lower CO₂ emission levels. However, the CO₂-related component accounts for a relatively low share of the tax, which, in turn, represents a minor share of the total costs of vehicle ownership and use. This suggests that the incentive provided by the new tax remains relatively weak. On the other hand, the emission-based highway toll for heavy goods vehicles has helped increase the uptake of low-emission freight vehicles. However, it is not applied to light duty vehicles or to passenger cars. In addition, incentives that encourage private car ownership and use, and hence emissions of GHGs and air pollutants, remain in place. These include the preferential tax treatment of company cars and the commuting allowance.

8. Overall, Germany spends large amounts on support measures that have a potentially negative impact on the environment. These were estimated at EUR 48 billion (1.9% of GDP) in 2008. Germany has made progress in cutting direct subsidies to coal production with a view to gradually phasing them out by 2018. Nevertheless, support to production and consumption of fossil fuels accounts for a large part of environmentally harmful subsidies and runs contrary to Germany's ambitious climate change policy. Much of this support goes to energy-intensive sectors, often in the form of tax exemptions. Germany's public finances, and the cost-effectiveness of its environmental policy, would greatly benefit from the reform of support measures with perverse environmental effects.

9. The government started to reduce some of these exemptions and introduced new environmentally related taxes (e.g. the air travel tax) in the framework of its fiscal consolidation programme for 2011-14. Prior to this, public finances had deteriorated, partly due to the fiscal stimulus launched to address the 2008-09 economic crisis. While Germany's stimulus package was smaller than in other G7 countries, its environment-related share was relatively large. Increased investment in energy-efficient buildings and innovative transport, and the above mentioned revision of the vehicle tax, were measures intended to promote a low-carbon economy. The package also included a car scrapping programme, which helped stabilise production and employment in Germany's large automobile industry. However, it could have been designed to provide better environmental outcomes.

10. Over the past decade, investment in traditional environmental domains declined while environment-related financing became more focused on climate change mitigation. In both the water and waste sectors, investment, operation and maintenance costs are mostly borne by consumers through water and waste charges, in line with the user-pays principle. This has allowed greater participation of the private sector; most providers of water and waste services now involve private operators in some form. However, there are some concerns about insufficient transparency in setting water tariffs, potential inefficiencies of water utilities, and the related impacts on water prices. Electricity consumers have also been the primary financier for increased investment in renewable energy. The government also provided investment grants and soft loans through the development bank, KfW, to leverage private investment in energy saving and renewable energy.

11. Water and waste pricing, together with strict regulations, have provided incentives for reducing water consumption and municipal waste generation, and for increasing waste recycling and recovery. Water abstraction fees are in place in several, but not all, *Länder*. The existing wastewater charges could be made more effective by adjusting their scope and level. The implementation of some extended producer responsibility systems (e.g. waste electrical and electronic equipment) could also be improved to enhance waste prevention. The use of economic instruments could also be broadened to help reduce the environmental impacts of agriculture and to strengthen, *inter alia*, biodiversity conservation. Such measures could provide potentially large gains in cost-effectiveness compared to indirect payments or regulatory approaches.

12. Germany's emphasis on technology-forcing environmental policies has helped generate new domestic and export markets in the environmental goods and services (EGS) sector. The Federal Statistical Office estimated the turnover of the EGS sector at about 2% of GDP in 2009 with the development of renewable energy sources being the main growth engine. Most EGSs were sold on the domestic market, while manufacturing of renewable components was more export-oriented. As conventional industries are increasingly implementing environmental technologies and improving energy and resource efficiency, defining the scope of the EGS sector has become more complex. Using a broader definition, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety came up with an estimate of the EGS market size almost three times as large as that of the Federal Statistical Office. Clarification of the correspondence of these definitions would help inform the debate on the economic impacts of environment-related policies and on the economic opportunities associated with the EGS sector. Technological progress and productivity gains will be key factors in Germany maintaining its global competitive advantage in the EGS sector.

13. In 2010, Germany was the fourth largest provider of Official Development Assistance (ODA). Over the previous decade, ODA increased significantly from 0.27 to 0.38% of gross national income (GNI). However, Germany fell short of its 2010 target of 0.51% of GNI and further efforts are needed to attain the target of 0.7% by 2015. Bilateral aid for the environment more than tripled in the same period, reaching nearly half of the (screened) sector-allocable aid in 2008-09, a very high percentage compared to other countries participating in the OECD Development Assistance Committee. Climate protection gained further prominence. In 2008-09, Germany was the second largest donor of both bilateral and multilateral climate-related assistance. This support will continue to increase following the pledge made at Copenhagen to provide fast-start climate financing. In addition to public finance, Germany has pioneered innovative instruments for leveraging and mobilising private capital. It has also consistently supported access to water and sanitation: since 2000, bilateral aid increased by 46% and Germany provided the largest imputed multilateral contribution to the Water and Sanitation sector in 2008-09. Nevertheless, striking a balance between the current emphasis on climate change and supporting other environment and development priorities is a challenge. Since 2011, all ODA projects are systematically subject to a Joint Environment and Climate Assessment at both strategic and operational levels.

Recommendations

- Consider creating an effective carbon tax in the sectors not covered by the EU ETS and ensure that other, non-carbon related, externalities are adequately priced.
- Reduce perverse incentives for car use by revising the tax treatment of company cars and the commuting allowance; consider extending the current system of road tolls to light duty vehicles and eventually passenger cars; consider adjusting the rates of the annual motor vehicle tax and complementing it with a vehicle purchase tax.
- Introduce a mechanism to systematically screen existing and proposed subsidies against their potential environmental impact, with a view to phasing out environmentally harmful and inefficient subsidies.
- Strengthen the incentive effect of wastewater charges and promote water abstraction fees in all *Länder* and all sectors, including mining; consider introducing taxes on agricultural inputs.
- Strengthen coherence between agriculture and water policies, including by: ensuring effective cross-compliance with environmental requirements (Pillar 1 of agriculture payments); and expanding nature protection payments (Pillar 2 payments).

- Reinforce the benchmarking of water utilities to increase their efficiency, as well as the transparency of tariff-setting.
- Strengthen waste prevention, for instance by: broadening and strengthening extended producer responsibility systems; expanding the use of economic instruments to promote primary resource substitution (e.g. incineration tax); and expanding knowledge networks and dissemination of best practices.
- Maintain a strong, balanced commitment to environment within an expanded volume of official development assistance, in line with international commitments.
- Continue to provide international leadership on climate-related development assistance including by promoting innovative instruments for leveraging and mobilising private capital.

2. Progress towards selected environmental objectives

2.1. Environmental innovation

Assessment

14. Germany is a rich source of experience on policy-induced environmental innovation. A strong national innovation framework, a broad industrial base, and a high level of participation in international trade have underpinned Germany's environmental innovation performance. Strict environmental regulations have also been key drivers. While this approach has been criticised by some for not being cost-effective, others have seen it as a way of driving down compliance costs and a source of new investment and markets. Waste management legislation, for instance, enacted over several decades helped improve the resource productivity of the economy and generate an internationally competitive waste management equipment industry. Stringent emission standards, complemented by market-based instruments, stimulated technological improvements that reduced pollution from motor vehicles and spurred the development of Germany's renowned auto industry.

15. By the turn of the century, innovation rates in the traditional environmental domains (air, water and waste) were levelling off and even declining. In part this was because further innovation in these areas required more challenging institutional, behavioural and structural changes. At the same time, the focus of environmental policy was shifting from the traditional to a more complex global environmental agenda including, most notably, climate change. Promoting environmental technologies has become more difficult as the nature of innovation has increasingly shifted from end-of-pipe to integrated technological solutions. In these circumstances, environmental policy instruments should be, more than ever, carefully designed. In particular, more account should be given to how environmental policy instruments could induce innovation and thereby contribute to reducing the costs of reaching environmental objectives. In addition to establishing a given level of ambition, environmental policy should also provide predictable signals, allow flexibility in achieving objectives, provide a continuous incentive for innovation, and, as far as possible, directly target the causes of environmental problems.

16. German policy on renewable energy exhibits many of these characteristics. Policy in this area, namely the feed-in tariff, has helped significantly increase the share of renewable energy in electricity generation without placing the public budget under undue strain. Ensuring that renewable energy producers had guaranteed access to the electricity grid was one of the key factors underlying this development; another was passing the costs on to consumers. Public R&D and other support provided by the broader innovation framework have also helped German industry achieve a significant share of domestic and

international markets for various renewable energy technologies. At the same time, questions have been raised about the cost borne by German consumers of electricity. Questions remain about whether the policy instruments applied to reduce greenhouse gas emissions are sufficiently stringent, consistent and stable to provide incentives for the further development of renewable energies and other low-carbon technologies. The complexity of the policy challenge requires a learning-by-doing approach, and adjustments which can generate uncertainty for investors.

17. A key issue in promoting environment-related innovation is the role of public support. Germany has a wide range of research and development (R&D) support programmes such as the framework programme “Research for Sustainable Development”. However, the disbursement of public R&D funding does not seem to be subject to adequate critical assessment. Compared to some other highly-innovative OECD countries, Germany has a relatively low share of gross domestic expenditure (public and private) on R&D in GDP, although the trend has been increasing recently. At the same time, the share of gross investment in GDP has been decreasing. It is therefore particularly important that public support (*e.g.* for large-scale projects such as those identified in the Energy Concept) is carefully designed so as to avoid crowding out private investment, to ensure that public funds maximise the leverage of private capital, and, as far as possible, to avoid attempts to pick winners.

18. The changing nature of environmental innovation requires greater co-ordination among ministries and between central government and the *Länder*. The Master Plan on Eco-Innovation is an example of policy and institutional co-ordination among branches of government. However, more needs to be done to assure coherence between policies to promote environment-related innovation and sectoral policies. This is particularly true in relation to transport-related policies, which provide a range of incentives that favour existing technologies, manufacturers and modes of transport. Labour, education and migration policies should be part of the co-ordination effort, as shortages of skilled labour could impede the further development and diffusion of some environment-related innovations.

Recommendations

- Establish a clear, predictable policy framework that provides continuous innovation incentives, *e.g.* by providing a clear signal about the long-term future taxation of energy carriers; promote greater coherence between policies for environment-related innovation and related sectoral policies, particularly transport policy.
- Carefully design instruments aimed to financially support environment-related innovation so as to achieve policy objectives efficiently and effectively, promote diversity, avoid picking winners, and maximise the leverage of private capital; adjust the subsidy component of financing instruments in light of market developments, and phase out subsidies as technologies become commercially viable.
- Systematically assess the effectiveness and efficiency of environmental and innovation policies in terms of measurable outcomes (*e.g.* environmental benefits, patented inventions, rate of mobilisation of private capital).
- Assess possible shortages in high-skilled labour needed for the development and diffusion of environment-related innovation, and develop measures to fill gaps.
- Make further efforts to improve policy co-ordination at the EU level and beyond to strengthen incentives and support for environment-related innovation (*e.g.* labour mobility, energy pricing, and infrastructure development).

2.2. Climate change

Assessment

19. Germany is among the few Annex 1 parties to the United Nations Framework Convention on Climate Change that will comply with its commitments under the Kyoto Protocol exclusively through domestic greenhouse gas (GHG) emission reductions. Domestic GHG emissions declined by 10% between 2000 and 2010, and in 2010 they were 24% below the Kyoto Protocol base year level. About 40% of this reduction occurred in 2008-10 and was partly due to the economic recession.

20. Progress in reducing emissions can be also attributed to a strong political commitment and to an effective climate policy cycle based on regular evaluation and adjustments. However, parliamentary oversight remains limited and the decision-making cycle has been criticised as not being fully transparent and not ensuring enough stakeholder participation. Addressing these issues could help provide a more balanced basis for decision making and maintain the widespread public support for the government's climate policy.

21. Germany is committed to continue its leadership role in climate policy and has pledged to reduce GHGs by 40% by 2020. This domestically agreed target goes beyond what would be required under current agreements at EU level. While this ambition is to be commended, and is in line with broader international goals, a number of related uncertainties remain to be resolved, not least how the target is to be achieved in the context of a transboundary emissions trading system that covers a large part of German GHG emissions. Achieving the 2020 target will require accelerating the pace of emission reductions in the 2010s. GHG emissions are expected to grow in the early 2010s as a result of the expected economic recovery. In addition, the immediate closure of seven nuclear power plants in 2011, and the decision to phase out nuclear power by 2022, could initially lead to an increase in fossil fuel use and a related increase in GHG emissions.

22. Germany has increasingly used economic instruments as part of its climate mitigation policy. A reform of energy taxation (ecological tax reform) launched in 1999 helped reduce energy use and is estimated to have cut GHG emissions by about 2%. Germany participates in the EU Emissions Trading System (EU ETS), launched in 2005, which covers about 60% of its CO₂ emissions. However, as in most EU countries, emission permits were systematically overallocated and resulted in the sectors involved benefitting from substantial windfall profits. These factors contributed to the volatile and persistently low allowance price, which, as a result, did not provide sufficient incentives for investing in lower-carbon technology and energy sources. While revision of the EU ETS is expected to address these issues to some extent from 2013, free allocations will continue for some sectors. Uncertainty remains about whether the market will lead to a sufficiently stable and high CO₂ allowance price.

23. As in other EU countries, energy taxation and the EU ETS should be adequately combined to provide an effective and consistent carbon price signal across the economy, in both ETS and non-ETS sectors. In a number of areas, however, double regulation is a concern, and in others – including small combustion plants, export-oriented agriculture and manufacturing – neither instrument establishes a price on carbon. A flexible form of taxation could be applied at EU level to sectors participating in the ETS to supplement the anticipated (low) price of allowances and help control price volatility.

24. Germany's strategy for achieving climate- and energy-related goals relies heavily on increased use of renewable energy sources and energy efficiency. The share of renewables in electricity generation increased from 7% of in 2000 to 17% in 2010. Progress to date has relied heavily on a system of feed-in tariffs. This system has been better designed than in many other countries, and has helped the development and the diffusion of renewable energy technologies. This has contributed to increasing job opportunities

and to reducing domestic CO₂ emissions and fossil fuel imports. However, the implicit CO₂ abatement cost is estimated to be well above the CO₂ allowance price. Continuous efforts are needed to control the relatively high costs of the feed-in tariffs, and their impact on electricity prices, and to shield them from unpredictable developments in the renewable energy market. The interactions between Germany's feed-in tariffs and the EU ETS should also be kept under review. The promotion of renewables in any EU country, especially a big player such as Germany, can lead to lower allowance prices and the displacement of emissions. For this reason, the expected development of renewables in EU countries was taken into account in setting the EU-wide cap for the third phase of the ETS. Achieving the targets outlined in the 2010 Energy Concept – at least 35% of gross electricity consumption from renewables by 2020 and at least 80% by 2050 – also implies additional costs due to the considerable investment to expand the electricity transmission and distribution network, as well as storage capacity, in order to ensure the security and reliability of the grid.

25. The Energy Concept provides for the establishment of a special energy and climate fund. This fund could be a positive development provided that it targets areas that present clearly identifiable market failures and projects that are justified environmentally and economically. The government launched a number of initiatives to overcome market barriers to investment in residential energy efficiency. However, to meet the ambitious target of doubling the annual number of thermal retrofits as outlined in the Energy Concept, barriers which prevent take-up among households, including in the private rental sector, need to be addressed.

26. Despite a significant increase in overall transport activity, especially in the freight sector, GHG emissions fell steadily throughout the review period. Germany is among the few OECD countries that managed to decrease transport-related GHG emissions in 2000-09. Several factors contributed to this, including significant progress in vehicle fuel efficiency, improvements in logistics, energy taxation and increasing world oil prices. As in most countries, diesel is taxed at a lower rate than petrol. This has led to a major shift towards diesel passenger cars, which are more fuel-efficient than petrol vehicles. However, diesel has a higher carbon content and generates more local pollutants than petrol. Low-emission zones in major cities and emission-based road tolls for heavy goods vehicles have also stimulated the uptake of more fuel-efficient freight and passenger vehicles. The new CO₂-based motor vehicle tax is expected to reinforce this trend. However, incentives that encourage private car use, thus contributing to increasing GHG emissions, remain in place. While GHG emissions from passenger road transport are expected to decrease further, efficiency improvements in freight haulage are needed to address the expected increase in related GHG emissions. Germany has supported biofuel use through mandatory blending quotas and tax reliefs. This has also helped reduce GHG emissions, although at high costs and with potentially negative impacts on the environment. To address these impacts, in 2009 Germany introduced biofuel sustainability criteria.

Recommendations

- Strengthen mechanisms to identify policy adjustments needed to stay on track to achieve climate targets, *e.g.* by explicitly benchmarking progress, presenting an annual report to the Bundestag, and enhancing mechanisms for stakeholder and civil society participation in policy making.
- Contribute to discussion at EU level about possible measures to maintain an effective carbon price signal in the EU Emissions Trading System in line with overall medium- and long-term EU emission reduction targets.

- Use energy taxation to effectively complement the EU Emissions Trading System and to provide a consistent carbon price signal across the economy; gradually phase out energy tax exemptions that are not needed to avoid double taxation or pricing.
- Review the taxation of diesel and petrol with a view to internalising their environmental external costs.
- Continue to monitor the costs of feed-in tariffs; ensure that the mechanisms to control for the impact of unpredictable developments in the renewable energy market on these costs are effective and efficient.
- Ensure that the energy and climate fund targets projects that are justified environmentally and economically by: establishing appropriate criteria for eligible projects; applying instruments to provide targeted support and to leverage private resources; and establishing an independent mechanism to assess progress.
- Further improve the energy efficiency of buildings in the rental market, *e.g.* by introducing an energy-efficiency rental index.
- Further extend low-emission zones and use them to test the introduction of incentives (*e.g.* congestion and pollution charges) to reduce vehicle use in urban areas.
- Review support policies for biofuels in light of a comprehensive assessment of their costs and benefits, including their impact on land-use, biodiversity and water.