

Evaluating the German Federal Environmental Planning System



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Abstract

At the 1992 United Nations Conference on Environment and Development in Rio Germany and the rest of the world community officially recognized the importance of developing in an environmentally sustainable manner and pledged their commitment. This study utilizes a quantitative framework developed by Ellis et al (2010) to evaluate whether Germany's Federal Government has successfully implemented associated institutional structures and processes and how effective they are for planning an environmentally sustainable future. The study identifies the individual components of Germany's environmental planning system (EPS) and assesses to which extent the system adheres to internationally recognized best practices. As such Germany's environmental legislation, the environmental component of its National Sustainable Development Strategy, as well as a host of other federal environmental strategies are reviewed and assessed holistically. The extent to which the German EPS meets the following criteria is evaluated: incorporation of comprehensive goals and measurable targets, an indication of how these goals and targets will be met, whether the system is integrated sectorally and spatially, responsibilities for implementation are clearly defined, progress is monitored and reported frequently, adaptive management is exercised, the EPS is developed through a collaborative process that involves all relevant stakeholders and the system is enshrined in German law. The study finds that Germany's EPS has a number of deficiencies. Specifically, the EPS is missing environmental targets for the medium- and long-term; implementation strategies often do not quantifiably show how goals, targets and timelines will be met or are not adequately resourced; a comprehensive, mandatory process for adaptive management is missing; transparency in stakeholder collaboration lacks; and there is no legislative basis for most of the EPS components. By addressing these deficiencies Germany can improve environmental planning and better ensure long-term sustainability.

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1 Introduction

“The real world of interlocked economic and ecological systems will not change; the policies and institutions concerned must” (WCED 1987; p. 9)

The World community has officially recognized the importance of developing societies in a forward-looking and sustainable manner. One of the key examples of this is the 1992 United Nations Conference on Environment and Development in Rio where 191 nations ratified a commitment to develop national sustainable development strategies (NSDS; Lafferty and Meadowcroft 2000). When the World leaders gathered again in Johannesburg in 2002 for the World Summit on Sustainable Development this commitment was reaffirmed (UN DESA 2004).

One of the main messages conveyed at these meetings is that a fundamental requirement for sustainable development (SD) is an effective policy making, as well as strategic planning process that takes into account the feedback systems between the environment and the economy. A comprehensive NSDS plays a central role in terms of successfully achieving sustainability in a society (UN DESA 2002) and the international commitment to develop such strategies for each nation is a first step. It is, however, very important to develop tools that are able to evaluate the performance and effectiveness of national environmental planning systems (EPS) as a whole.

The World Commission on Environment and Development (WCED) defined SD as “development that meets the needs of the present without compromising the needs of future generations” and conceptualized the concept into three pillars: economic, social and environmental (WCED 1987). An EPS is essentially concerned with the third of these pillars. The concept therefore spans all parts of environmental governance and includes governmental programs and strategies as well as environmental legislation. An evaluation of a country’s EPS would typically include an examination of how well the NSDS is implemented into governmental structures and translated into action within governmental institutions in order to assess how well an EPS performs (Göll and Thio 2008, UWE 2000). A case in point is that although many countries have so far successfully developed an NSDS, implementation of such a strategy is still unsatisfactory in the international community (OECD 2005).

The environmental planning system of Germany’s federal government is the focus of this study. An in-depth study with a clear focus on the EPS in Germany has not been performed to this date. The Organization for Economic Co-operation and Development (OECD) periodically publishes progress reports on Germany’s environmental performance (OECD 2001). But the most recent study is from 2001 and concentrates on an evaluation of the environmental performance rather than the planning process itself. Another OECD study from 2001 (Jänicke et al 2001) was more process orientated but its scope excluded a review of Germany’s environmental legislation and government programs.



Other studies specifically deal with Germany's NSDS (Tils 2007, Stigson et al 2009, IISD 2004b, European Commission 2004). Their scope is thus too large to capture specifics about Germany's EPS or the strategy's environmental component itself. In many cases these studies also fail to apply a structured and accessible qualitative framework. The lack of an explicit evaluative framework means that their results cannot easily be replicated and thus used to track progress over time. Various other studies have also assessed Germany's strategy and highlight some of the major defaults and short-comings that need to be addressed in order to confirm Germany's progress towards sustainability (Jänicke and Jörgens 2000, Volkery et al 2006, Statz 2008).

In order to address the major shortcomings and limitations of previous approaches, the study at hand applies the EPS evaluation framework developed by Ellis, Gunton and Rutherford (Ellis et al 2010).

The paper also aims to provide a brief overview of Germany's environmental performance in order to evaluate the effectiveness of the measures that are currently taken. This is achieved by summarizing the results from a separate review of existing outcome evaluations by both government and independent bodies and their studies (see Zeiger 2012).

2 Methodology

In order to comprehensively assess environmental planning systems, both outcome evaluations, as well as process evaluations are important. Outcome evaluations enable an assessment of the environmental performance of a country relative to given targets or certain benchmarks. Per capita greenhouse gas emissions, for example, are often used to evaluate a country's achievements with respect to climate change. Process evaluations, on the other hand, compare the planning processes themselves to proven best practices. In combination, both types of evaluation provide a clue to which extent planning and implementation are successful, as well as which part of the involved processes need to be adapted to yield better results in the future. Our research program combines these two approaches. The focus of this particular study is, however, on process evaluation. Nonetheless, a brief overview of results from an associated outcome evaluation of the German EPS is included. A more detailed account of our findings from this evaluation can be found in subsequent publications (see also Zeiger 2012).

The framework for this process evaluation was developed by Ellis et al (2010). They developed a list of best practice criteria from the literature on preparing national sustainability strategies that emerged shortly after the 1992 United Nations Conference on Environment and Development (UN CED). At the time, a number of organizations started to develop guidelines to support UN member states in their endeavor to formulate the national strategies they committed to at the conference. The World Bank (1995) was the first to prepare such guidelines. During the nineties, the Organization for Economic Cooperation and Development (OECD) also began



comprehensive environmental performance reviews of its member countries (OECD 2004) and later published planning guidelines based on the experience in its member countries (OECD 2001). These OECD guidelines were later reviewed and refined (OECD 2005). The United Nations (UN) also published best practices that it developed in preparation of the 2002 World Summit for Sustainable Development (UN DESA, 2002). A joint project of the UN and OECD led to the development of a guidebook for preparing national sustainable development strategies (Dalal-Clayton and Bass 2002). To this date, this guidebook remains one of the most comprehensive collections of best practice guidelines for environmental planning. It formed the basis for a process evaluation by the International Institute for Sustainable Development (2004). The study evaluated sustainable development strategies in 19 countries and identified challenges, innovations and international practices. The European Union also assessed sustainable development initiatives in its member countries (European Union 2004), which resulted in best practice criteria very similar to those developed by the UN and OECD studies. A number of independent academic studies were undertaken to identify best practice criteria for sustainable development. These include Kenny and Meadowcroft (1999), Lafferty and Meadowcroft (2000), Gunton and Calbick (2006) and Gunton and Joseph (2006).

Following their literature review, Ellis, Gunton and Rutherford (Ellis et al 2010) found that they were able to compile all of the best practice criteria the other studies identified into a single list (see Table 1). This list is all-inclusive and contains all of the criteria identified in previous studies, regardless of whether they were present in all or only part of the studies. They also developed detailed definitions for each of the criteria in order to enable a systematic and consistent evaluation (Table 1). Building on and advancing some of the more detailed studies (e.g. IISD 2004 and Kenny and Meadowcroft 1999) Ellis, Gunton and Rutherford then developed a list of 45 indicators in the form of questions, to assess to which degree each criterion is met (Table 3). This novel approach provides a more methodical basis for evaluation than previous studies and was therefore chosen for application in this study.

An update of Ellis, Gunton and Rutherford's (2010) work was unable to find major new contributions to the best practice literature since 2010 (Zeiger 2012). This update was, however, able to identify a number of European studies that were not previously taken into account (e.g. Goell and Thio 2008, Tils 2007, Volkery et al 2006 and Steurer 2007). Although these studies did not add to the framework developed in Ellis et al (2010), they provided various interesting approaches. An evaluation of the Austrian NSDS (Steurer and Martinuzzi 2003), for example, was based on the literature mentioned above. The assessment itself was, however, divided into three parts: content-specific, process-specific and participant-specific. The content-specific part assessed whether a new, integrative and people-centered perspective was developed and worded in a general language for the public to understand. It further looked at whether the number of policy-relevant targets is adequate or excessive and to what extent they can be monitored via a set of indicators. The process-specific part examined whether the Austrian NSDS was in



fact a societal consensus paper rather than an expert or mere political document. It then examined the development of the strategy and whether implementation was a cyclical and flexible process. The participant-specific part assessed the continuity of participation, the leadership that was displayed, the roles that academics and scientist played and whether institutions were adjusted and societal commitment demonstrated.

The methodology applied here follows the exact approach taken in Ellis et al (2010). This enables a direct comparison with their results and hopefully sparks further application of the framework.

During the evaluation each of the indicators is assigned a performance rating. An overall performance rating for each criterion is arrived at, by collating the ratings of indicators associated with it. For some of the indicators, the rating merely consists of a dichotomous assessment (yes or no). Other indicators can be assessed more quantitatively and are therefore assigned a numerical rating. Certain indicators do not lend themselves to either of these rating approaches and only a more qualitative assessment can be used. Each of the indicators and criteria are assigned a rating based on the following scale, irrespective of the type of assessment that is used:

- Fully met = no deficiencies
- Largely met = no major deficiencies
- Partially met = no more than one major deficiency
- Not met = two or more major deficiencies.

From the ratings for each criterion, it is then possible to calculate an aggregated score for Germany's environmental planning system. For this purpose each of the ratings is assigned points that can be summed to calculate an overall score. The points are assigned as follows:

- Fully met = 3 points
- Largely met = 2 points
- Partially met = 1 point
- Not met = 0 points.

Average scores for each criteria were calculated via the mean. In the process, quantitative results were converted into ratings according to the following calculation: 0%-49%=Not met; 50%-79%=Partially met; 80%-99%=Largely met; 100%=Fully met.

Data collection for the evaluation was accomplished via an evaluation guide that is structured around the best practice criteria and 45 indicators. Information about the EPS is retrieved by reviewing relevant government documents. For the purpose of this study the following documents were reviewed: *Perspectives for Germany* (Germany's NSDS), other environmental strategies and official policies including updates and progress reports and all federal environmental legislation (see Appendix). On completion, the evaluation guide was sent to the German Council on

Sustainable Development (RNE), the Federal Environmental Agency and various independent researchers in the field. Although none of the contacts was able to provide a comprehensive review of the data, they did provide valuable comments and suggestions that were incorporated into the study. A full account of the methodology and data collection can be found in Zeiger (2012).

The data collected throughout this study is subject to a number of limitations. First of all, it should be noted that only federal policy, initiatives and legislation is included in the review. A number of the deficiencies highlighted below might therefore be compensated by initiatives on state, regional or local governmental levels. Second, the study reviewed the German EPS as it existed on February 29th, 2012, which marks the end of the data collection period. German environmental policy is dynamic as the government's response to the nuclear disaster in Fukushima, Japan shows. Over a very short time-frame the federal government abandoned its plans to extend the lifespan of Germany's nuclear reactors and instead legislated for a swift phase-out of nuclear energy by 2022 (see, for example, Bundesregierung 2012, p. 23). Energy policy is currently a hotly debated topic in Germany and changes to official government policy can be expected at any time (see for example Federal Agency for Civic Education 2012). It is therefore recommended that the evaluation process is repeated at intervals to track changes in the German EPS over time. Thirdly, despite a concerted effort to be transparent and objective, assessments contained in the study are to a certain extent subjective and may vary depending on the analyst. It is therefore recommended that the reader focuses on the deficiencies identified during the analysis. These are likely to be more useful than the overall ratings, which rely to a larger extent on subjective distinctions between major and minor deficiencies. Lastly, the study does not identify the factors that constrain policy makers in designing environmental planning systems that meet best practice criteria. An analysis of these underlying factors is an important component of evaluation and warrants further research in the future.

Table 1 Evaluation Framework

Best Practice Criteria
1. <i>Comprehensive Goals with Measurable Targets:</i> There should be an integrated, comprehensive statement of goals that cover all aspects of environmental sustainability and include scientifically based measurable short, medium and long-term targets with timelines to achieve environmental sustainability. Measurable targets are necessary to assess progress.
2. <i>Effective Strategy:</i> EPS should have a strategy that quantitatively shows how sustainability targets will be met including how financial resources will be allocated to meet strategy objectives.
3. <i>Integration:</i> EPS should integrate economic, social and environmental objectives both sectorally and spatially
4. <i>Monitoring:</i> There should be regular, independent public reporting to assess progress in implementing strategies and achieving targets. Monitoring is necessary to assess success and identify deficiencies that need to be addressed
5. <i>Leadership and Accountability:</i> Responsibility for developing EPS should reside with the most senior levels of government to ensure that the plan is a priority and responsibility for implementation must be clearly delineated to ensure accountability.
6. <i>Adaptive Management:</i> There should be mandatory adjustments to EPS plans to address deficiencies

identified in monitoring.

7. Stakeholder Collaboration: Development, implementation, and monitoring of the EPS should be collaboratively managed through permanent and institutionalized multi-stakeholder processes to ensure public support for the plan and that the plan meets public priorities.

8. Legal Framework: The process and requirement for EPS planning should be enshrined in legislation to provide transparency and certainty.

3 Findings

3.1 Outcome Evaluation Results

Following Gunton and Calbick (2010), Germany's environmental performance was reviewed (for a full account see Zeiger 2012). The review is based on the environmental data collected by the OECD (2009) for each of its 25 member states. A grade was calculated for each environmental indicator based on Germany's performance relative to the best and worst OECD performer. Table 2 summarizes the results from this evaluation. An analysis grouped the indicators into thematic headings that correlate with the sustainability goals developed by the David Suzuki Foundation (Boyd 2004; see below). In addition these findings were compared to those made in other outcome evaluations (Federal Statistical Office 2010, WWF 2010, Global Footprint Network 2010, Emerson et al 2010).

Table 2 Germany's rank among OECD countries and grade by environmental indicator

Environmental Indicator	OECD Rank	Grade
Percent of Species at Risk (%)	23	F
Timber Harvest (m3/km2 forestland)	22	F
Municipal Waste (kg/capita)	19	F
Number of Species at Risk	18	C
Livestock (sheep eq./km2 arable/grassland)	16	C
Timber Harvest-to-Growth Ratio	16	F
Nuclear Waste (kg/1,000 people)	15	A
Environmental Pricing (% of GDP)	14	F
Renewable Electricity w/ Hydro (%)	14	F
Pesticide Use (kg/km2 arable land)	14	A
Fertilizer Use (NPK) (kg/km2 arable land)	14	A
Energy Consumption (toe/capita)	13	A
GHG Emissions (t CO2 eq./capita)	13	B
Official Development Assistance (% of GNI)	13	F
Energy Intensity (toe/US\$1,000 GDP)	11	B
Sulfur Oxides (kg/capita)	9	A
Protected Areas: IUCN Categories 1 – 3 (%)	9	F
Renewable Electricity w/out Hydro (%)	8	F
Water Consumption (m3/capita)	7	B
VOCs (nonmethane) (kg/capita)	6	A



Carbon Monoxide (kg/capita)	6	A
Recycling of Municipal Waste (%)	6	C
Municipal Sewage Treatment (%)	5	A
Distance Traveled (1,000 vehicle-km/capita)	5	F
Seafood Consumption (kg/capita)	4	B
Nitrogen Oxides (kg/capita)	3	A
PAC Expenditures (% of GDP)	1	A
Protected Areas: All Categories (%)	1	A

For simplicity the results from this review are summarized for each of the following environmental areas: air pollution, water, agriculture, fisheries, forests, climate change, biodiversity, energy, as well as resource utilization and waste.

Air Pollution: It seems as though Germany is performing well with respect to air pollution given the country's economic aspirations and industrial layout. Emission levels are however seemingly too high to be assimilated by the environment.

Water: Trends in water consumption and the associated stress on water resources are overall improving in Germany. At the same time access to clean water and sanitation is very good and municipal sewage treatment is widespread. Two issues are however becoming apparent in Germany: an increase in virtual water imports via predominantly agricultural and food products and some areas in Germany are actually depleting water resources much faster than they can be replenished.

Agriculture: The review suggests that Germany had made considerable progress regarding pesticide and fertilizer regulation and enforcement before the 1990s but that the more recent success in further reducing the use of agricultural chemicals has stalled somewhat. It is suggested that this might be due to perverse incentives from agricultural subsidies.

Fisheries: Fishing practices in Germany include dredging and trawling and are therefore clearly not sustainable. The Living Planet Report (WWF 2010) highlights the measurable detrimental effects of overfishing since the late 1990s.

Forests: The results shows that Germany is harvesting a relatively large amount of timber per unit of forest land relative to other countries. The fact that the forested area and growing stock are however increasing indicate that Germany is likely operating within sustainable limits. This is further supported by the finding that the forestry sector is operating within the forest land biocapacity of the country.

Climate change: Not unlike other highly industrialized nations Germany is still emitting vast amounts of GHGs, despite recent improvements. There are however positive trends and the industrial emission intensity is continuously decreasing. Germany is also meeting its Kyoto commitments as well as government targets. Its relative performance to other OECD countries is above average.

Biodiversity: The strain on the landscape is powerful with scarce new land being developed on a daily basis. Terrestrial species indices and the governments own proxy indicator suggest that land habitats are continuously compromised and species are increasingly at risk. Despite the majority of land being under some sort of protection, only a small fraction is rigorously protected. Freshwater habitats on the other hand are improving since their all-time low in the 1970s and 80s and various freshwater species are recovering.

Energy: Germany's carbon footprint is larger than its entire biocapacity due to the country's economic layout and standard of living. Much of this is attributable to a carbon intensive electricity production. Germans, however, drive less than the average OECD citizen and the renewable sector is strong and continuously expanding. The government's ideas to shift a proportion of the goods transport from the road to waterways and rail have, however, not been realized.

Resource utilization and waste: Similar to the situation in other western countries much still remains to be done with respect to improving material efficiency in production and consumption processes. On a per capita basis Germans are producing a lot of waste. Some of this is due to the export-oriented nature of the main industries. As the export to import ratio has been decreasing recently, this indicator is improving. Germany's efforts with respect to recycling are worth mentioning and about one third of the municipal waste is now recycled.

3.2 Process Evaluation Results

The following section presents the results from the application of the methodology to the German EPS. Table 3 provides a summary overview of the findings.

Table 3 Detailed evaluation of the German EPS

Criterion	Indicator	Assessment	Rating
Comprehensive Goals and Measurable Targets	1. Are there published sustainability goals?	Sustainability Goals are published in <i>Perspectives for Germany</i> - Germany's NSDS - as well as in a number of additional strategy documents (Biodiversity Strategy, Energy Concept 2050, Forest Strategy 2020, Strategy for the Sustainable Use and Protection of the Sea and Agrobiodiversity Strategy). A number of goals are also stated in Germany's environmental laws.	Fully Met
	2. Are the goals published as an integrated goal statement or as separate goal statements?	Germany has published most of its environmental sustainability goals in its comprehensive NSDS and in subsequent progress reports to the document. These documents make reference to the other strategy documents mentioned above.	Fully Met
	3. What proportion of 9 SWAG sustainability goals are fully covered by published goals?	All of the 9 SWAG sustainability goals (100%) are fully covered.	Fully Met

	4. What proportion of 9 SWAG sustainability goals are fully and/or partially covered by published goals?	All of the 9 SWAG sustainability goals (100%) are fully covered.	Fully Met
	5. What proportion of 43 sustainability indicators are covered by measurable targets?	35 of the 43 indicators are covered by measurable targets (81%). A number of them were however missing: dissolved solids in drinking water, suspended solids in surface waters, carbon monoxide and particulate air emissions, water conservation, municipal and hazardous waste as well as sewage treatment metrics, fisheries harvest and public transit use.	Largely Met
	6. What proportion of 43 sustainability indicators have short (1-5 years), medium (5-15 years) and long term (15-50 years) targets?	Only one of the 43 indicators (2%) stood up to this test: GHG emissions.	Not Met
Effective Strategy	1. Is there a published Environmental Sustainability Strategy (ESS)?	The Federal Government has published <i>Perspectives for Germany</i> which represents its NSDS. Updates to this strategy are regularly published as Progress Reports. Other strategy documents also touch on environmental issues (Biodiversity Strategy, Energy Concept 2050, Forest Strategy 2020, Strategy for the Sustainable Use and Protection of the Sea and Agrobiodiversity Strategy). These strategies are referenced in Germany's NSDS and supplement it.	Fully Met
	2. Is ESS published as an integrated plan or separate plans?	Germany has a published NSDS that references the other environment-related strategies (see above).	Fully Met
	3. What proportion of 43 sustainability indicators is covered by an implementation strategy	All of the 35 strategies, policies and legislation mentioned previously that exist for any of the 43 sustainability indicators also contain targets (81%); this proportion is therefore identical with number 5 in the previous table.	Largely Met
	4. What proportion of the 43 sustainability indicators is covered by an implementation strategy that quantifiably shows how initiatives will achieve goals, targets, and timelines?	Strictly speaking none of the 43 indicators is covered by an implementation strategy that quantifiably shows how certain initiatives will achieve goals, targets or timelines. In order to do so the contribution of each initiative in the strategy would need to be estimated. The strategy should then show how all initiatives collectively result in achieving the targets in time. Only restrictions on ozone depleting substances and pesticides were taken into account since they clearly result in meeting the goals and targets. The Cyclical Economy Act also clearly indicates how recycling targets will be met in the future and was thus also included. Overall 3 of the 43 indicators (7%) were therefore covered by an implementation strategy.	Not Met

	5. Are there adequate financial resources and other resources allocated to the strategies objectives? This should involve an estimation of the cost of implementation as well as a budget commitment in the strategy that makes available all necessary funding.	Neither the cost of implementation, nor a budgetary commitment were included in any of the strategies. As above, the bans for pesticides as well as ozone depleting substances were counted as adequate. This means that two of the 43 objectives (4.7%) were costed and allocated a budget commitment.	Not Met
Integration	1. Is there a single plan for the country?	Germany has an NSDS that incorporates all of the issues discussed here or refers to those strategies that do so.	Fully met
	2. Does this plan integrate economic, social and environmental objectives?	The NSDS integrates economic and social sustainability objectives in its environmental component.	Fully met
Monitoring	1. Is there a regular public monitoring report measuring sustainability progress?	There are public monitoring reports by the Federal Statistical Office every two years that assess outcome progress. These reports are incorporated into the progress reports to the NSDS as well as the Environmental Report by the BMU. The BMU also publishes the Indicator Report to the NSBD which contains additional metrics related to the 43 sustainability indicators. The Green Cabinet also publishes Progress Reports that monitor implementation progress every four years. Similar reports are published for the NSBD and planned for the Energy Concept 2050	Fully met
	2. What proportion of 43 sustainability indicators is included in these reports?	The public monitoring reports for the NSDS and NSBD contain 20 of the 43 (47%) sustainability indicators. None of the legislated targets or standards are included in public reporting. Nine of the 20 indicators are only monitored in an aggregate metric (21%).	Not Met
	3. What proportion of Germany's environmental targets is included in these reports?	The government has targets for 35 of the 43 sustainability indicators but only 20 of the targets are included in these two reports (57%). Again, nine of them are reported as aggregates.	Partially Met
	4. What proportion of 43 sustainability indicators is assessed relative to targets?	There are timelines relative to the target for the indicators contained in the Indicator Report by the Federal Statistical Office only. This means that 10 of the indicators are assessed relative to targets (23%), of which three are assessed in aggregates (7%).	Not Met
	5. What proportion of 43 sustainability indicators is assessed relative to comparable jurisdictions?	None of the indicators is assessed relative to other jurisdictions on a regular basis (0%). (In 2009 a report by the World Business Council on Sustainable Development and the RNE discussed Germany's performance in relation to other jurisdictions.)	Not Met

	6. What proportion of 43 sustainability indicators is assessed relative to trends?	There are trends in both the Indicator Reports by the Federal Statistical Office and those to the NSBD. A total of 12 of the indicators is thus assessed relative to trends (28%) but three water quality indicators are only monitored in an aggregate metric (7%).	Not Met
	7. Is there regular detailed reporting of noncompliance of permit holders with environmental regulations?	No public reporting on regulatory non-compliance is in place in Germany. The voluntary European Eco-Management Audit System registers only willing businesses that also fully comply with all environmental regulations but gives no information about businesses that do not comply.	Not met
Accountability and Leadership	1. Is there a committee of elected members dedicated to Germany's ESPS?	The Parliamentary Council for Sustainable Development consists of members of parliament; It comments on the Green Cabinets decisions and develops recommendations; It also keeps the parliament informed about developments surrounding the NSDS.	Fully met
	2. Is there a senior civil service committee dedicated to Germany's ESPS?	The State Secretary's Committee on Sustainable Development (Green Cabinet) is dedicated to overseeing the development and implementation of Germany's NSDS; The Green Cabinet is comprised of deputy ministers from each ministry; the Working Group on Sustainable Development (UAL-AG) supports the Green Cabinet behind the scenes.	Fully met
	3. Is there an independent agency dedicated to evaluating Germany's ESPS regularly?	The Federal Statistical Office is charged with evaluating Germany's performance every two years. This however only covers some of the goals and targets of the NSDS. The ministries responsible for developing the energy concept and the NSBD are themselves also responsible for evaluating their progress. Such reports are however usually not independently produced.	Partially met
	4. Are the parties responsible for preparing Germany's ESPS strategies clearly identified?	<i>Perspectives for Germany</i> was prepared by the Green Cabinet which is still responsible for its development. The NSBD and the Strategy for the Sustainable Use and Protection of the Sea are the responsibility of BMU. The BMU and the BMWi oversee the Energy Concept 2050.	Fully met
	5. Are the parties responsible for implementing Germany's ESPS strategies clearly identified?	The Green Cabinet is responsible for overseeing the implementation of the NSDS. It receives input from the RNE as well as the Parliamentary Council on SD. The BMU is overseeing the implementation of the NSBD and receives help from an inter-ministerial working group that integrates the strategy into all aspects of the government. The BMU and the BMWi are responsible for overseeing the implementation of the Energy Concept 2050. The Forest Strategy 2020 and the Agrobiodiversity Strategy are the responsibility of the BMELV.	Fully met

	6. Are the parties responsible for monitoring Germany's ESPS strategies clearly identified?	The Green Cabinet is publishing a progress report on the implementation of the NSDS every four years. These reports include chapters submitted by the Federal Statistical Office, the Parliamentary Council for SD as well as the German Council on SD (RNE). The Federal Statistical Office publishes its Indicator Report every two years and thus tracks the development with respect to most of the targets and goals set in the NSDS. Progress with respect to the NSBD is monitored by the BMU. Progress with respect to the Energy Concept 2050 is monitored by the BMU and BMWi. Both ministries prepare a report each and have them reviewed by an independent committee of experts. Once feedback has been received these reports are then amalgamated into one final report every year (this process was prescribed in June 2011 but has not yet been implemented; the first report is scheduled for December 2012).	Fully met
Adaptive Management	1. Is there a mandatory review and revision of Germany's ESPS based on monitoring results?	No official mandate for the Green Cabinet could be found. The process of implementing and adapting Germany's NSDS is therefore not officially defined. Hence, there is no mandatory requirement to address deficiencies for those targets mentioned in the NSDS (or any other strategy) that are not otherwise legally binding. Neither of the other strategies included in this study are subject to a mandatory review. There are however a number of targets and associated adaptive management processes that are enshrined in legislation. Air quality: Regional agencies are required to address breaches of concentration limits and draw up management plans according to the 39th BImSchV. Drinking Water Quality: According to the Drinking Water Ordinance the Health Authority is required to act on heavy metal concentrations and turbidity values that surpass the required limits. Surface Water Quality: The OGeWV makes state-level authorities responsible for achieving the EU-standard in time. They are also required to address shortcomings and draw up plans that outline how the targets will be met.	Partially met
Stakeholder Collaboration	1. Is there a permanent ESPS multi-stakeholder body?	The German Council on Sustainable Development (RNE) is a multi-stakeholder body consisting of societal stakeholders.	Fully met



<p>2. Are there collaborative, multi-stakeholder processes used to develop ESS?</p>	<p>The development of Germany's NSDS incorporated a multi-stakeholder process that consulted the public during the development of the initial strategy as well as each progress report. It allows a wide array of societal stakeholders to comment on the strategy and make suggestions. The RNE further plays an important role in advising the government with respect to environmental sustainability. The implementation of the Energy Concept 2050 also involves a multi-stakeholder process in the form of the Platform Renewable Energies. Representatives from a variety of societal interest groups and experts advise the government with respect to policy and implementation through three working groups. The platform was only very recently created (April 2012) and no further information is available on its process and how it influences federal policy. A variety of forums is being held on the national, regional and Laender level with respect to the implementation of the NSBD. These forums include contributions by a wide array of societal stakeholders as well as the general public. Additionally, specific stakeholders discuss implementation of the strategy in ongoing topic-specific forums across Germany. No indication as to how these forums influence federal policy could be found.</p>	<p>Fully met</p>
<p>3. Are all relevant stakeholder interests included in multi-stakeholder processes?</p>	<p>Yes, anybody can participate in reviewing the NSDS and its progress reports. The government also invites commentary from specific interest groups and incorporates suggestions from the RNE which itself consists of members that represent a multitude of societal interests. Similarly the platform renewable energies and the various forums on the implementation of the NSBD invite comments and suggestions from all relevant societal stakeholders.</p>	<p>Fully met</p>
<p>4. Is consensus based negotiation used in multi-stakeholder processes?</p>	<p>The RNE is only an advisory body and the commentary from the public is merely reviewed and not discussed with the commentator. Inclusion of these comments is discretionary. The same appears to be true for the results from the forums on the NSBD. No experience exists with respect to the platform renewable energies.</p>	<p>Not met</p>
<p>5. Do stakeholders meet regularly?</p>	<p>Public consultation happens infrequently every 3-4 years and cannot be referred to as a meeting. The RNE however does meet regularly and produces reports, aires suggestions and develops policy recommendations. It could not be determined how often the platform renewable energies will meet. The NSBD forums meet on a regular basis ranging from annually (national forums) to multiple times a year (regional and dialogue forums).</p>	<p>Largely met</p>

	6. Are there adequate resources to fulfill multi-stakeholder process mandates?	The RNE receives an annual budget of 5.8 million Euros. The budget for the dialogue with the public that precedes each progress report could not be found. No information about the budgets for the platform renewable energies nor the NSBD forums could be found.	Partially met
	7. Are multi-stakeholder processes mandatory?	Although each progress report goes through a public consultation, the process is discretionary. No official process for consulting with the RNE could be found. Similarly no requirement for the other multi-stakeholder processes was found.	Not met
	8. Are multi-stakeholder processes provided for in legislation?	None of the multi-stakeholder processes mentioned here are provided for in legislation.	Not met
Legal Framework	1. Is there a German ESPS Act?	No such act exists.	Not met
	2. Is there a legislative basis for goals and objectives?	Goals and purposes of environmental acts cover most of the objectives outlined in the NSDS and associated strategies, but not all of them. To be Fully met, all objectives in Germany's ESPS would require legislated goals.	Largely met
	3. Is there a legislative basis for targets?	There are legislated targets and standards for the share of renewable energy sources, water and air quality, energy efficiency, recycling rates and various nature conservation issues. No legislated targets exist for a large part of the various environmental strategies in Germany.	Partially met
	4. Is there a legislative requirement to clearly designate responsible parties and show accountability?	No such legislative requirement exists.	Not met
	5. Is there a legislative requirement for public consultation?	No such legislative requirement exists.	Not met
	6. Is there a legislative requirement for monitoring and reporting?	No such legislative requirement exists.	Not met
	7. Is there a legislative requirement for adaptive management?	Adaptive Management is part of both the BImSchV and the OGewV. The responsible agencies are legally bound to prepare management plans that outline actions to be taken should concentration limits for relevant compounds be surpassed. No other areas of the ESPS are covered by similar types of regulation.	Partially met
	8. Is there a legislative requirement for State of Environment Reporting?	No such legislative requirement exists.	Not met

3.2.1 Comprehensive Goals with Measurable Targets

The first best practice principle criterion for environmental sustainability planning is to develop and incorporate comprehensive goals with timelines that address all



aspects of sustainability and include measurable targets for the short, medium and long term. Like in Ellis et al (2010), the goals and targets of the German EPS were compared to ideal benchmarks developed elsewhere in the literature. Ellis, Gunton and Rutherford derived and slightly adjusted the benchmarks for environmental sustainability goals from a study by the David Suzuki Foundation (Boyd 2004; see Table 3). The benchmarks for measurable targets are based on a previous study by Gunton and Calbick (2006) that compiled a list of 43 environmental categories covering all aspects of environmental policy (Table 4).

The first indicator of this criterion is to have published sustainability goals. This component is fully met in Germany. Germany's NSDS, *Perspectives for Germany*, contains a comprehensive list of such goals. There are a number of additional strategy documents, which contain environmental goals. In addition, various environmental acts and regulations contain relevant goals. The majority of additional strategies and environmental legislation are referenced in *Perspectives for Germany*. The second indicator is therefore also fully met.

To which extent these goals cover all aspects of environmental sustainability, was assessed by evaluating how fully they cover all aspects of the benchmark sustainability goals in Table 3. It was found that Germany fully meets all nine of the goals. The sustainability categories in Table 4 served as a benchmark for the targets contained in the German EPS. It was found that the system contains measurable targets for 35 of the 43 categories (81%). The fifth indicator was therefore largely met. Only one of the categories – greenhouse gas emissions – was covered by long-, medium- and short-term targets. The last indicator for this criterion was therefore not met.

The assessment shows that overall, the best practice criterion of having comprehensive goals with measurable targets was largely met. This is consistent with the findings of an international Peer Review facilitated by the German Council on Sustainable Development (Stigson et al 2009). The study praises Germany for the targets and indicators as well as timelines outlined in *Perspectives for Germany* and the accompanying progress reports (see also Volkery et al 2006). The study, however, also finds significant shortcomings in that the German NSDS does not fully encompass all areas deemed important to environmental sustainability and in general lacks targets that span across the short as well as longer term. The German Advisory Council on the Environment also continuously points out the lack of long-term targets (SRU 2008, 2012).

Table 4 Benchmark environmental sustainability goals

Sustainability Challenge	Sustainability Goal
1. Improve Efficiency	Germany reduces energy and material use by at least 75% in order to live within the capacity of the Earth's natural systems while maintaining its residents's quality of life.
2. Shift to Clean Energy	Germany replaces fossil fuels with low-impact renewable energy.
3. Reduce Waste and Pollution	Smart design of Germany's production and consumption processes would reduce environmental health threats.



4. Protect and Conserve Water	Germany implements comprehensive water policies that protect fresh water systems from the threats of climate change and industrial, agricultural and municipal pollution.
5. Clean Air	Germany implements comprehensive air quality policies that eliminate risks to human health.
6. Produce Healthy Food	Germany ensures that its food is healthy and produced in ways that do not compromise its land, water or biodiversity.
7. Conserve, Protect and Restore Nature	Germany effectively protects species and ecosystems by strengthening endangered species legislation and ensuring that land and marine use decisions protect biodiversity.
8. Build Sustainable Cities	German cities become vibrant, clean, livable, prosperous, safe and sustainable.
9. Promote Global Sustainability	Germany becomes one of the most compassionate and generous nations on Earth, a global leader in securing peace, alleviating poverty, and promoting sustainability in the developing world.

Adapted from Boyd, 2004

Table 5 Benchmark environmental categories

Air Quality	1) Sulphur Concentrations
	2) Nitrogen Concentrations
	3) VOC Concentrations
	4) Particulates Concentrations
	5) Carbon Monoxide Concentrations
	6) Ozone Concentrations
Drinking Water Quality	7) Heavy Metal
	8) Dissolved Solids
	9) Turbidity
Surface Water Quality	10) Heavy Metal Concentrations
	11) Phosphorous Concentrations
	12) Nitrogen Concentrations
	13) Dissolved Oxygen
	14) Biochemical Oxygen Demand
	15) Suspended Solids
Pollution Emissions	16) Coliform
	17) Greenhouse Gases
	18) Nitrogen
	19) Volatile Organic Compounds
	20) Carbon Monoxide
	21) Particulate
	22) Ozone Depleting Substance
	23) Sulfur Oxide
Natural Resource Consumption	24) Energy Consumption
	25) Energy Efficiency
	26) Clean/Renewable Energy Production
	27) Water Conservation
	28) Natural Resource Efficiency
Waste Generation and Treatment	29) Municipal Waste
	30) Hazardous Waste
	31) Sewage Treatment
	32) Recycling
Agriculture Practices	33) Pesticide Use
	34) Fertilizer Use



Protecting Nature	35) Biodiversity
	36) Species at Risk
	37) Protected Areas
	38) Fisheries Harvest (total allowable catch)
	39) Forest Harvest (total allowed cut)
Transportation	40) Sustainable Forest Management Certification
	41) Public Transit Use
Government Procurement	42) Private Transportation Use
	43) Government Green Procurement

3.2.2 Effective Strategy

The second best practice criterion is to devise an effective strategy that quantifiably shows how proposed targets will be met within the timeframe set out in the EPS. All of the strategies, initiatives and policies referenced in *Perspectives for Germany* – the German NSDS – and its progress reports, as well as all federal environmental legislation were included in the assessment of this criterion (for an exhaustive list see Appendix).

Given its comprehensive environmental component and reference to other relevant strategies and environmental acts, Germany's NSDS represents a published environmental sustainability strategy. The first and second indicators are therefore fully met. The documents reviewed contained implementation strategies to meet targets in 35 of the 43 sustainability categories in Table 4 and the third indicator is largely met. With reference to above, this means that Germany has an implementation strategy for each of the environmental targets it has set for itself.

Only three of these targets are however covered by an implementation strategy that quantifiably shows how planned or existing initiatives will achieve the goals, targets and timelines outlined in the EPS strategy documents. For this criterion to be fulfilled the contribution achieved through each initiative should be laid out or estimated. It should also be outlined how all initiatives collectively result in the achievement of these objectives. Only legally binding restrictions with respect to ozone depleting substances and pesticides, as well as hard recycling targets set out in the Cyclical Economy Act were regarded as *en par* with such an implementation strategy. This indicator is therefore overall not met. Further, none of the strategies estimated the real cost of implementing associated initiatives and no budget commitments were found that make financial and other resources available to fulfill strategy objectives. Only the bans on ozone depleting substances and pesticides mentioned above were accounted for under this indicator, which was overall not met.

Germany's EPS meets the second best practice criterion only partially given the impediments outlined above. In his evaluation of Germany's NSDS, Tils (2007) comes to a similar conclusion. He highlights the "gap between long-term visions of the SD strategy short- and medium-term necessities" (Tils 2007; p. 169) as well as the missing link between Germany's NSDS and federal budgetary processes. A study by the International Institute for Sustainable Development (IISD 2004) also laments

the lack of special financing of the NSDS strategy except for the funding made available for the RNE and identifies an overall “capacity overload” at the Federal Chancellor’s Office. Likewise the Peer-Review mentioned above (Stigson et al 2009; p. 26) calls for a new implementation strategy that will provide better short term guidance and additional strength for the Chancellery’s leadership. Volkery et al (2006) note the lack of coordination between the NSDS and the national budgeting process, which results in political discretion during implementation.

3.2.3 Integration

Integration is an important component of any EPS and represents the third best practice criterion. It is defined as having one comprehensive environmental sustainability plan for the entire country that coordinates initiatives on the federal, state, regional and local levels (vertical integration) and spans across economic, social and environmental goals (horizontal integration).

Germany’s NSDS has a strong environmental component that makes references to all major environmental strategies of the country. Besides environmental issues and goals *Perspectives for Germany* also integrates economic and social goals and therefore fully meets both components of this best practice criterion. The third best practice criterion is therefore overall fully met.

Other evaluations praise the horizontal integration of Germany’s NSDS (e.g. Tils 2007, Volkery et al 2006). On probing deeper into this aspect of the EPS, others, however, find that the process through which the document was developed led to ‘negative coordination’. This term implies that each ministry reviewed drafts of the document mainly with their own interests and agenda in mind and various important environmental aspects were excluded from the final document.

The vertical integration of the NSDS is frequently described in less flattering terms (see Stigson et al 2009, Statz 2008 and SRU 2008). Such studies highlight especially the limited timeframe for coordination between different levels of government during strategy development and the virtual absence of the *Länder* governments during the final phase of the process. We argue that the findings of the study at hand are nonetheless valid given a number of points. The NSDS itself calls for action on all levels of government regardless of how it was developed. The wider scope our study also resulted in the inclusion of additional strategies, such as the National Strategy on Biological Diversity, which features exemplary vertical integration.

3.2.4 Monitoring

The fourth best practice criterion is to have regular, independent monitoring and reporting to track progress relative to targets, past trends as well as to performances in other jurisdictions. Notably, there are two elements of progress that should be monitored: *implementation progress*, that assesses how successfully a strategy is being implemented over time, and *outcome progress*, that assesses whether given environmental sustainability goals and targets are being met (Ellis et al 2010).

In Germany implementation progress is continuously being assessed via progress reports to the various strategies. The State Secretary's Committee on Sustainable Development (also referred to as 'Green Cabinet') publishes a NSDS progress report at least every four years. It contains contributions by the Federal Statistical Office, the German Council for Sustainable Development and the Parliamentary Advisory Committee on Sustainable Development (for the latest version see Bundesregierung 2012). A first progress report for the implementation of the National Strategy on Biological Diversity (NSBD; BMU 2007) is also expected for late 2012 and a similar reporting system is planned for the Energy Concept. The German Advisory Council on the Environment publishes an Environmental Report every two years, which also comments on Germany's environmental policy more in general (SRU 2012). Monitoring of the outcome progress of the NSDS, on the other hand, is accomplished through bi-annual so-called Indicator Reports by the Federal Statistical Office (see Federal Statistical Office 2010). A separate Indicator Report exists for the NSBD and is published regularly (see BMU 2010). The first indicator is therefore fully met.

Combined, these monitoring reports cover targets in 20 of the 43 environmental categories in Table 4 (47%). Nine of the categories are however only monitored through aggregate indicators. Missing indicators include those for emissions to air, drinking water quality, waste, pesticide use, fisheries and forest harvest as well as public transit use. The second indicator of this criterion is therefore not met.

As mentioned above, Germany has set itself environmental targets in 35 of the 43 benchmark environmental categories. This means that 57% of the relevant targets that Germany has set itself are regularly reported on. The German EPS therefore partially meets the third indicator.

According to best practices it is essential that assessments are relative to targets in order to determine whether or not initiatives are appropriate or not. Only the indicator report published by the Federal Statistical Office contains timelines relative targets. Merely ten of the sustainability indicators are therefore assessed in this way. None of the indicators is assessed relative to other jurisdictions at all. Only twelve of the sustainability indicators, on the other hand, are assessed relative to trends either in the Indicator Reports to the NSDS or the NSBD. Indicators four, five and six of this criterion are therefore all not met.

An additional shortcoming of the German EPS is the absence of a public regulatory non-compliance reporting system. Experience from elsewhere suggests that such a reporting system is crucial to creating regulatory compliance and transparency. The voluntary European Eco-Management Audit System fulfills a similar function. It only registers willing businesses that can demonstrate that they have not infringed upon environmental regulations. A blacklist of businesses and industries that do not comply with regulations does, however, not exist.

In conclusion, this analysis finds that although Germany has incorporated public reporting on environmental sustainability progress it only partially meets international best practices with respect to monitoring. The quality of the

environmental indicators in the German EPS (as discussed above) is a common theme in other studies (Tils 2007, IISD 2004b, Stigson et al 2009, SRU 2008, SRU 2012). Volkery et al (2006) applaud Germany's efforts with respect to progress monitoring but do not probe further into its specifics. None of these studies, however, evaluate the quality of the monitoring process itself. No adequate comparison to the conclusions reached here could therefore be found.

3.2.5 Leadership and Accountability

The fifth best practice criterion relates to the allocation of responsibility of the development and implementation of the EPS. According to the international literature, it is best to assign this responsibility to the highest level of the federal government in order to ensure long-term accountability. Ellis et al (2010) note that this does not necessarily imply that a centralized management of environmental policy is more effective than a de-centralized approach. Rather, the criterion requires that the environmental agenda is a top priority of government.

The State Secretary's Committee on Sustainable Development is principally the agency responsible for overseeing the implementation and development of Germany's NSDS. It thus plays a central role in the country's overall EPS. It is comprised of the deputy ministers from each ministry and reports directly to the chancellery's office, the most senior institution in the German government. Additionally the chancellery conducts a special Working Group on Sustainable Development that guides the work of the Green Cabinet. It serves as a forum for sustainability staff from each ministry and enables them to reach consensus on various issues and initiatives before the Green Cabinet implements them.

The Parliamentary Advisory Council on Sustainable Development represents a direct link between the development and implementation of the German EPS and the political arm of the government. The Council consists of members of parliament and has the mandate to introduce the parliament's interests and opinions into sustainability debates that are lead in the administrative parts of the government.

The German EPS therefore features both a committee of elected officials and a senior civil servant committee dedicated to environmental sustainability.

As mentioned above, the Federal Statistical Office is charged with independently evaluating Germany's outcome progress bi-annually. The Office's report, however, only includes goals and targets included in Germany's NSDS and therefore misses assessments of a number of the 43 sustainability indicators used as a benchmark throughout this study. The Indicator Report for the NSBD and the planned monitoring reports for the Energy Concept are conducted by the relevant ministries themselves and therefore not independent. No independent implementation progress evaluation is undertaken for any part of the EPS. Overall, the third indicator is therefore only partially met.

Perspectives for Germany clearly assigns responsibilities for further development and implementation, as well as monitoring of the NSDS to the Green Cabinet. A



progress report is published every four years and includes contributions by others (see above). Similarly the Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU) is responsible for developing and implementing the NSBD and the Strategy for the Sustainable Use and Protection of the Sea (for monitoring responsibilities see above). The Ministry also shares responsibility for the Energy Concept with the Federal Ministry of Economics and Technology. The other studies that were reviewed also identify the parties responsible for their implementation and development. The remaining three indicators of this criterion are therefore all fully met.

The findings of the International Institute for Sustainable Development (IISD 2004b) and the European Commission (2004), as well as the external reviews led by Stigson et al (2009) and Tils (2007) correspond to those presented here. All four studies applaud the leadership on the highest levels of government. Volkery et al (2006) note that this allocation of responsibility has allowed the BMU to take a more active role in pushing for the inclusion of environmental issues where it previously was occupied with moderating between other ministries' interests. They, however, also note the lack of periodic external reviews of NSDS implementation progress to create more transparency. According to Statz (2008) the German government seems reluctant to allow external assessments, which would scrutinize its politics. This hampers the learning process that would otherwise take place.

3.2.6 Adaptive Management

The sixth best practice criterion calls for a mandatory requirement to adapt the EPS and address the shortcomings identified during monitoring. The various progress reports discussed above regularly address a number of the deficiencies highlighted for example by the RNE or the Federal Statistical Office. In fact, Volkery et al (2006) suggest that institutional learning and adaptive management take place, to a certain extent, every time the Green Cabinet is creating a new progress report. Their study, however, provides no additional information as to how this takes place and how effective it is in addressing EPS deficiencies. There is – in any case – no mandatory requirement to do so.

It should also be noted that Germany has a number of binding commitments on the European level. Binding clean energy targets, to name but one example, exist for Germany. Non-compliance can lead to proceeding in the European Court of Justice and may result in financial penalties (for a full account see Boerzel 2001). Such commitments therefore have an influence on how Germany addresses strategic shortcomings.

In addition, a number of EPS components are enshrined in legislation that, in turn, require adaptive management should associated limits be breached or targets not be met (Federal Emission Control Ordinances, Drinking Water Ordinance and Surface Water Ordinance).

Overall the German EPS meets this criterion only partially.



3.2.7 Stakeholder Collaboration

According to the seventh best practice criterion, all aspects of the EPS should be collaboratively managed through permanent and institutionalized multi-stakeholder processes to ensure public support for the plan. This also ensures that the plan meets public priorities.

The German Council on Sustainable Development is a permanent multi-stakeholder consisting of representatives from various societal groups and interests such as religious groups, environmental NGOs, agriculture associations, academics and various industry groups. The RNE may act upon requests for advice from the Green Cabinet but also explores issues on its own terms. The first indicator is therefore fully met.

The next indicator requires the EPS to be developed via a collaborative, multi-stakeholder process. Germany fully meets this requirement. *Perspectives for Germany* was developed through a multi-stakeholder process that involved consultation with the general public via the Internet as well as face-to-face discussions between the chancellery and specific interest groups. NSDS progress reports, barring minor alterations, continue to be developed in this fashion.

The NSBD was developed and continues to be implemented in a similar way. Periodic biodiversity forums are held by the BMU on a number of different geographical scales. During annual national forums, for example, governmental as well as non-governmental groups present biodiversity related topics to the general public and invite discussion. A number of issues are also voted upon. Regional and state-wide forums as well as topic-specific discussion with the public are conducted in this way.

The so-called Platform Renewable Energies is a committee installed by the BMU and advises the government when it comes to the implementation of the Energy Concept 2050. Its members include representatives from the federal government, states, municipalities, the renewable energy sector, transmission and grid operators, environmental, consumer and conservancy non-governmental groups, economic interest groups, the conventional energy economy, as well as scientists and researchers.

Apparently, all major societal interest groups are included in the various forms of stakeholder collaboration mentioned above. The third indicator is therefore met.

Consensus based negotiation is a requirement for effective stakeholder collaboration. None of the multi-stakeholder processes discussed here incorporates such an approach and this indicator is not met. Although the RNE's internal proceedings are based on consensus decisions, the council is merely an advisory body and the implementation of its recommendations by the government is subject to discretion. The same holds true for the comments and suggestions provided by the general public, as well as specific interest groups during the development of the

NSDS and the NSBD. To date, there is no evidence surrounding the influence of the Platform Renewable Energies government policy.

For any multi-stakeholder process to be effective, it is necessary for participants to meet regularly. None of the large-scale public consultation associated with the development of the NSDS and its progress reports happens on a regular basis (every 3-4 years). The RNE on the other meets 4-5 times annually and frequently provides comments and suggestions to the government. Smaller working group meetings within the RNE are held more frequently. The biodiversity forums associated with the NSBD meet at least annually. At the time of writing it was not possible to determine how frequently the Platform Renewable Energies is or will be meeting. Overall, the German EPS largely meets the requirement for stakeholders to meet regularly.

This study was not able to determine the budgets associated with most of the processes mentioned above. In any case, the definition of 'adequate' varies with the process, as well as in different locations and a judgment is difficult to justify and always subjective. The RNE indicated that it has an annual budget of 5.8 million to prepare and conduct meetings and disseminate findings and recommendations. This study therefore finds that this component is at least partially met.

None of the processes described here are mandatory or legislated for and the EPS does therefore not meet indicators seven and eight.

Overall the German EPS largely meets the stakeholder collaboration requirement. Especially the establishment of the RNE represented a big step towards effective stakeholder participation (Volkery et al 2008, p. 2059). There is however a clear lack of transparency with respect to the process of incorporating such interests into the system (Tils 2007, IISD 2004b and SRU 2008, p. 43).

3.2.8 Legal Framework

According to the eighth and last best practice criterion, the requirement for developing and implementing an EPS and the process involved must be enshrined in legislation. For this part of the analysis all relevant federal acts were reviewed and evaluated.

Most of the indicators for this criterion are not met by the German EPS. There is no EPS or NSDS Act; responsible agencies are not written into legislation and thus ultimately not legally accountable; public consultation is not mandatory and neither is monitoring and reporting; and State of the Environment reporting is not legally required.

Adaptive management is partially addressed in German legislation as per the Surface Water Ordinance and Federal Emission Control Ordinances (see above) and the seventh indicator is partially met. Germany also included most of the goals and objectives outlined in its NSDS and associated strategies - notably the Energy Concept 2050 - into relevant acts and regulations. It therefore largely meets second

indicator – requiring a legislative basis for goals and objectives – and partially meets the third indicator – requiring associated targets to also be legislated for.

Adaptive management is – at least partially – a legislated requirement (see above) and the seventh indicator is also partially met.

Based on these results, the German EPS overall meets this best practice criterion only partially. The lack of a legislative basis for the NSDS has also been noted elsewhere (e.g. IISD 2004b and Goell and Thio 2008) and needs to be addressed to guarantee to disconnect the EPS from political agendas.

4 Conclusions and Recommendations

Sustainability and environmental issues are by now a high priority of governments in most countries in the World. In many cases national sustainable development strategies and other environmental policy initiatives have been developed and – at least to a certain extent – implemented. At the same time many of the environmental indicators continue to decline (see for example Worldwatch Institute 2012, WWF 2010). It is therefore necessary to evaluate the approach that countries are currently taking in a comprehensive, replicable and comparable manner. Such an evaluation, in turn, allows decision makers to address deficiencies and improve the performance of their response to environmental issues. It was shown that the findings made here go beyond those made elsewhere in the literature and Ellis, Gunton and Rutherford's (Ellis et al 2010) methodology therefore provides a valuable additional tool for the evaluation of environmental planning systems.

Applied to the German case, the evaluation framework reveals a number of deficiencies. Germany fails to set itself goals with measurable targets in a number of key environmental sustainability categories and is overall missing targets for the medium- and long-term. Many of these targets are also not monitored in a meaningful manner or via an independent agency. Implementation strategies are either missing, do not quantifiably show how goals, targets and timelines will be met or are not adequately resourced. A comprehensive, mandatory process for adaptive management based on monitoring results is missing. Stakeholder collaboration exists, but transparency about the process through which it is incorporated into official policy is lacking. Lastly, there is no legislative basis for most of these components. The implementation of many aspects of the German EPS therefore remains subject to the government's discretion.

These findings could explain some of the results from the outcome evaluation. Despite clear improvements around air pollution, agricultural chemical usage, GHG emissions, forestry and resource recycling, it was clearly shown that a number of issues remain especially around the high energy use and material throughput of the economy, the ongoing decline in biodiversity, overfishing and localized exhaustion of water resources. It remains to be seen how recent changes to the energy policy of Germany impact related trends. Some of these changes are likely not yet reflected in the data that underlies the outcome evaluation. Most of the other issues are – not

surprisingly – among those not fully incorporated into the EPS, which might be a reason for poor performance.

In order to address the shortcomings of the German EPS, we recommend a number of actions to be taken by the federal government. The deficiencies and recommendations for each criterion are summarized in Table 6.

By addressing these deficiencies, the German government can improve environmental planning. This, in turn, will help to better rectify remaining environmental issues and bring Germany on a path to long-term sustainability.

Table 6 Summary of the German EPS deficiencies and recommendations

Criterion	Overall performance	Score	EPS Deficiencies	Recommendations
Comprehensive Goals with Measurable Targets	Largely met	2	Not all of the indicators are covered by measurable targets. Only one of the indicators had short-, medium- and long-term targets.	Develop measurable short-, medium- and long-term targets for the remaining indicators to enable a more effective assessment of the progress towards achieving environmental sustainability.
Effective Strategy	Largely met	2	Hardly any of the indicators are covered by an implementation strategy that quantifiably shows how initiatives will result in targets, goals and timelines being met. Eight of the 43 indicators are missing an implementation strategy altogether. There is no clear allocation of resources - financial or otherwise - to the EPS objectives.	Develop implementation strategies that estimate the contribution of each initiative towards achieving the overarching targets, goals and timelines. Such strategies should then also show how all initiatives combined will meet these aims. Estimate the cost of implementing EPS objectives and create a budget commitment in the strategy that makes available all necessary funding.
Integration	Fully met	3	None	
Monitoring	Partially met	1	Less than half of the 43 benchmark indicators is included in monitoring reports, which translates to only 20 out of Germany's 35 environmental targets being reported upon publicly. Only 10 of these indicators are assessed relative to targets and 12 relative to trends. None of them are assessed relative to other jurisdictions at all. Germany is also lacking	Include the remaining 23 benchmark indicators into public monitoring reports and ensure all indicators are assessed relative to targets, as well as trends. A regular comparison to achievements in other jurisdictions is also recommended. In addition, a reporting system that exposes companies with a questionable environmental track-record can set a powerful example and strengthen environmental

			regular, public non-compliance reporting system that exposes permit holders that offend environmental regulations.	compliance and help consumers make more sustainable choices.
Accountability and Leadership	Fully met	3	Not all monitoring and progress reporting is achieved independently.	Assign progress reporting and monitoring for the energy concept and NSBD to independent agencies rather than to the ministries responsible for implementation.
Adaptive Management	Partially met	1	There is no official, mandatory process for revising all components of Germany's EPS based on monitoring results.	Create an official and mandatory process for reviewing and adapting all components of Germany's EPS in order to continuously address deficiencies.
Stakeholder Collaboration	Largely met	2	Consensus-based negotiation is not used in multi-stakeholder processes and they are not mandatory or provided for in legislation. Resources for multi-stakeholder processes remain nebulous and are potentially not adequate.	Consensus-based negotiation ensures that all stakeholder interests are taken into account. It should be included in all engagement processes and result in binding results that are subsequently implemented by the government. It is furthermore important to ensure that multi-stakeholder processes are adequately funded.
Legal Framework	Partially met	1	There is no German EPS or NSDS Act. There are also no legislated requirements to either clearly designate responsible parties, public consultation, monitoring and reporting nor State of Environment reporting. Some of Germany's EPS' goals and objectives are also not legislated and most environmental targets are not enshrined in legislation. Only two of Germany's regulations include adaptive management stipulations.	Elevate the NSDS and other environmental strategies above the current policy and coalition agreements by making their development and implementation legally binding. Any such step should also ensure that it is a requirement to a) designate responsible agencies and ensure accountability, b) consult with the public, c) monitor progress and report and d) include mandatory adaptive management mechanisms. All of Germany's EPS goals as well as associated targets should also be incorporated into legislation to make them binding in the long-term. It is further recommended to make State of Environment reporting



Appendix

List of legislation, federal environmental sustainability strategies and other government documents used in the EPS evaluation.

Legislation

Act for the Implementation of the EU PRTR Directive (*Gesetz zur Durchführung der PRTR-Verordnung der EU*)

Act of Genetic Engineering (*Gentechnikgesetz*)

Act on Combined Heat and Power Generation (*Kraft-Wärme-Kopplungsgesetz*).

Act on the Assessment of Environmental Impacts (*Gesetz über die Umweltverträglichkeitsprüfung*)

Act on the Strategic Environmental Assessments (*Gesetz zur Einführung einer Strategischen Umweltplanung*)

Administrative Offence Act (*Gesetz über Ordnungswidrigkeiten*)

Allocation Act 2012 (*Zuteilungsgesetz 2012*)

Animal Protection Act (*Tierschutzgesetz*)

Battery Act (*Batteriegesezt*)

Chemicals Act (*Chemikaliengesetz*)

Circular Economy Act (*Kreislaufwirtschaftsgesetz*)

Closed Substance Cycle Waste Management Act (*Kreislaufwirtschafts- und Abfallgesetz*)

Drinking Water Ordinance (*Trinkwasserverordnung*)

Electricity Taxation Act (*Stromsteuergesetz*)

Electronic Devices Act (*Elektro- und Elektronikgerätegesetz*)

Energy Conservation Act (*Energieeinsparungsgesetz*)

Energy Conservation Ordinance (*Energieeinsparungsverordnung*)

Energy Efficiency Labeling Act (*Energieverbrauchskennzeichnungsgesetz*)

Energy-using Products Act (*Energiebetriebene-Produkte-Gesetz*)

Environmental Appeals Act (*Umwelt-rechtsbehelfsgesetz*)

Environmental Damages Act (*Umweltschadensgesetz*)

Environmental Information Act (*Umweltinformationsgesetz*)

Environmental Liability Act (*Umwelthaftungsgesetz*)

Environmental Statistics Act (*Umweltstatistikgesetz*)

EU Environmental Audit Ordinance (*EG-Umweltauditverordnung*)

Federal Emission Control Ordinances (*Bundesimmissionsschutzverordnungen*)

Federal Emission Control Act (*Bundesimmissionsschutzgesetz*)

Federal Forest Act (*Bundeswaldgesetz*)

Federal Nature Conservation Act (*Bundesnaturschutzgesetz*)

Federal Soil Protection Act (*Bundes-bodenschutzgesetz*)

Federal Trunk Road Toll Act (*Bundesfernstraßenmautgesetz*)

Federal Water Act (*Wasserhaushaltsgesetz*)

Fertilizer Act (*Düngemittelgesetz*)

Fertilizer Application Ordinance (*Düngeverordnung*)



Geo-data Access Act (*Geodatenzugangsgesetz*)
Greenhouse-gas Emissions Trade Act (*Treibhausgas-Emissionshandelsgesetz*)
Groundwater Ordinance (*Grundwasserverordnung*)
Laundry Detergent and Cleaning Agent Act (*Wasch- und Reinigungsmittelgesetz*)
Motorway Toll Act for Heavy Goods Vehicles (*Autobahnmautgesetz*)
Nuclear Act (*Atomgesetz*)
Plant Protection Act (*Pflanzenschutzgesetz*)
Pollution Emissions Register Act (*Schadstofffreisetzungsregistergesetz*)
Precautionary Radiation Protection Act (*Strahlenschutzvorsorgegesetz*)
Renewable Energies Heating Act (*Erneuerbare-Energien-Wärme-Gesetz*)
Renewable Energy Sources Act (*Erneuerbare-Energien-Gesetz*)
Surface Water Ordinance (*Oberflächengewässerverordnung*)
Waste Water Levy Act (*Abwasserabgabengesetz*)

Environmental Sustainability Strategies

Perspectives for Germany

National Strategy on Biological Diversity

Energy Concept 2050

Energy Transformation 2011

Forest Strategy 2020

National Strategy on the Sustainable Use and Protection of the Sea

Agrobiodiversity Strategy

Other government documents

National Sustainable Development Strategy Progress Report 2008

National Sustainable Development Strategy Progress Report 2012

Sustainable Development in Germany Indicator Report 2010

Indicator Report 2010 to the National Strategy on Biological Diversity

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