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Working Party on Innovation and Technology Policy

Summary Report of the MONIT Case Study on Sustainable Development

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This document presents a summary of the case studies on sustainable development that were undertaken by Austria, Belgium, Finland and Norway to examine issues of innovation policy and governance. It was prepared by researchers from participating countries. Key findings of this work will be presented at the TIP workshop on 6 December 2004, and introduced into the discussion of the MONIT project during the TIP meeting itself, under item 4 of the Draft Agenda. Delegates are invited to comment on this draft report, in view of its inclusion in a final publication of the MONIT group.

Contact persons: Mari Hjelt, Gaia Group Oy, Finland, E-mail: mari.hjelt@gaia.fi; Svend Remoe, E-mail: remoe@online.no; Jean Guinet, Tel: (331) 45 24 94 03, Fax: (331) 44 30 62 64, E-mail: jean.guinet@oecd.org

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ANNEX 1: SUMMARY REPORT OF THE MONIT SUSTAINABLE DEVELOPMENT CASE STUDY

Mari Hjelt, Gaia Group Oy, Finland
Ilse Dries, the Flemish Environment Ministry, Belgium
Peter van Humbeeck, Commission for Environment and Economy of the Social-Economic Council of Flanders (SERV), Belgium
Jan Larosse, IWT- Flanders, Belgium
Olav Mosvold Larsen, ProSus – University of Oslo, Norway
Audun Ruud, ProSus – University of Oslo, Norway
Katy Whitelegg, ARC systems research GmbH, Austria
Brigitte Ömer, ARC systems research GmbH, Austria

Introduction

1. This report summarises the results obtained from four countries (Austria, Belgium, Finland and Norway) participating in the WP2 Case Study on Sustainable Development (SD) of the OECD Monitoring and Implementing Horizontal Innovation Policy (MONIT) study. The summary is based on the individual reports produced in each country¹ and on the results of several workshops that focused on the comparative observations across the countries.
2. The summary focuses on the main questions posed by the MONIT project and concentrates on the implications and recommendations for the co-operation between **environmental** and **innovation** policy emerging from the results. It draws on, but does not detail the multifaceted and complex descriptions of the development of sustainable development and environmental policy domains in each of the countries. Nor does the summary describe the recommendations applied to these individual policy sectors. More information on these areas can be found in the individual country reports.
3. The focus of the MONIT work and this summary is on innovation policy, but the precise definition of this policy domain was at the same time one of the key challenges in the MONIT work. Throughout the MONIT work, the **core** of innovation policy has been defined as being the domains of science and technology (S&T) policy as well as having strong links with industrial, employment and regional development policies.² However, each participating country in the SD work had to modify this definition of innovation policy to reflect their own national conditions. In this summary report a view that the existing innovation policy is still mainly referring to S&T policy has been adopted. Thus also the evidence collected from past processes has mostly focused on S&T policies. However, in recent years the span of S&T policies has been significantly widened from S&T to complementary assets for innovation success, such as venture capital, education and training, entrepreneurial and management skills and IPR, that are subject to related policy domains. And in the future innovation policy may take shapes beyond these traditional sectoral domains if ‘third generation innovation policy’ also integrates with the innovation needs of all other domains that can contribute in taking the knowledge society further. The obvious

¹ Dries *et al.* (2004), Hjelt *et al.* (2004), Ruud and Larsen (2004), Whitelegg (2004).

² See further discussion in the MONIT Synthesis report.

candidates for such a ‘wedding’ are environmental policy and other key policy domains for sustainable development, that are in need of new technological and organisational solutions. In reading this summary it should be acknowledged that innovation policy as well as sustainable development policy domains are in a state of continuous change. This is further discussed in Chapter 2.

4. The challenge of summarizing the work of the different countries lies in the variety of analytic frameworks used in the case studies to structure the discussion. Although the key MONIT questions and general project framework were followed in each case, every country specified the methodology in order to fit the study into current debates taking place. This has led to an exciting range of discussions on how governance should be conceptualised as well as the conclusions. For example, the Norwegian case study relies heavily on the research tradition of assessing the success of Environmental Policy Integration (EPI). Also, in the Norwegian case study, the analytical approach is more explicitly related to evaluation studies³. The Flanders (Belgium) case study suggests the framework of transition management as a basis for new policy governance. The Austrian report draws attention to the way in which policies are formed in a small country with highly developed and autonomous policy fields. There is considerable informal co-operation between the policy fields, but formal forms of interaction are scarce. In the Finnish case study, an approach focusing on the policy process is used to collect experiences of ways to tackle the co-operation issues. The country reports cover in-depth discussions on these varying approaches.

5. In this summary report, the **policy cycle framework** used in the Finnish and in Austrian case studies has been adopted to structure the observations and recommendations. The policy cycle provides a dynamic framework for monitoring the policy processes and addresses the question of what has been done and what is emerging. It does not provide a tool to either evaluate the processes or suggest what should be done. But in focussing on the governance issue, and the status of policy co-ordination and integration in particular, it allows to derive recommendations on the level of systemic coherence and capabilities that are needed to advance integration. This choice of focusing on the description of the policy processes in the case study countries follows the MONIT aim to collect evidence of horizontal practices without evaluating their success in detail yet. By structuring the observations in this manner, the approach is generic and applicable to any policy domain. Some generic observations on the success conditions for the integration of innovation policy and sustainable development therefore can be explored.

6. An overview of the policy cycle is given in Figure 1. The process can be described to consist of eight parts that further can be divided roughly into five main parts:⁴

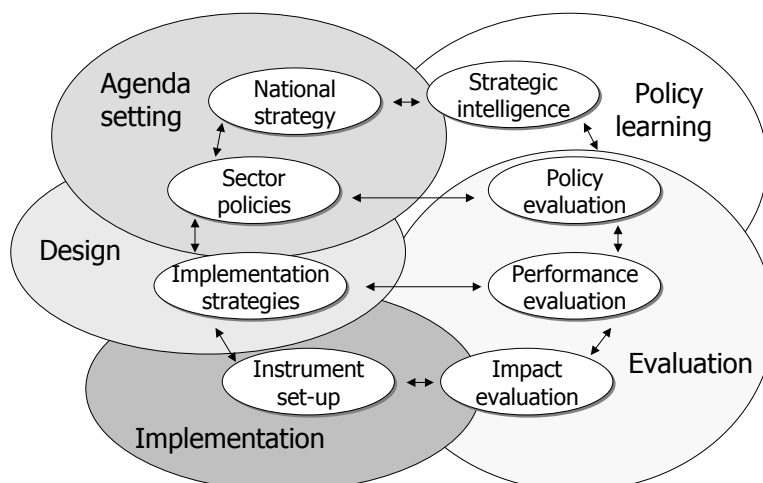
- 1) **Agenda setting** covers the processes needed to define the policy **objectives**. This includes both the national strategy setting and sectoral strategies. This part of the policy cycle is strongly influenced by different **interest groups** and is based on results from policy needs **analysis**. It also includes the processes of understanding why certain issues are on the political agenda and how they got there. This part also includes such processes and decisions made with the aim to set up the national **organisational** structures.
- 2) **Design** covers the part of the policy cycle where the issues that have got onto the policy agenda are formulated into concrete initiatives, programmes or policies. This involves an **assessment** of the situation and of the needs and the development of concrete **actions**.

³ The analytical approach chosen by the Norwegian team deviates from the broad policy-cycle approach. Consequently, the Norwegian study is more limited and mainly concerned with evaluation of public policy implementation. This is conducted in accordance with specific evaluation criteria both concerning horizontal and vertical environmental policy integration.

⁴ Naturally the boundaries between these parts are often vague. Also, different organisations may cover varying parts of the cycle depending, *e.g.* on the policy issue to be dealt with.

- 3) **Implementation** part of the policy cycle refers to the implementation of the policy measures developed in the last phase. It is important to see this phase as a separate phase as the implementation is often a very different experience to that of the design of the initiatives, due to changes in context and practical trade-offs.
- 4) **Evaluation** is an important part of the policy cycle. Here the policies that were formulated and implemented are evaluated. This often takes place in the form of **ex-post** evaluations but increasingly in the form of **ex-ante**.
- 5) **Policy learning** covers all the research, analysis and interaction processes that together enable a **strategic understanding** of the development requirements of the policy system. Policy learning is defined as all those processes by which policy systems generate and incorporate knowledge and understanding about *a) the underlying causes and preconditions for policies and initiatives and b) the effects of the policy and initiatives.*⁵ This knowledge is derived throughout the policy cycle and policy learning is feeding-back to all stages.

Figure 1. The different parts of the policy cycle



7. A short discussion on the special characteristics that the SD case study has in the MONIT work is presented in Chapter 2. The structure of the remainder of this report follows the division between the different phases pictured in Figure 1, and summarises the observations and common conclusions related to the agenda setting (Chapter 3), design, implementation and evaluation of policy actions (Chapter 4) and policy learning (Chapter 5). Common recommendations are collected in Chapter 6.

Characteristics of SD issues in the context of the MONIT discussion

8. There is a clear synergy between discussion issues of interest addressing innovation policy within the MONIT project and issues that have been at the centre of the SD and environmental policy discussions over the last decades. In its broad sense, SD policy aims to integrate SD as a **guiding principle** in all government actions in order to ensure that economic and social developments are within ecological limits.⁶

⁵ MONIT Conceptual Paper, Draft 22 April 2003.

⁶ See further discussion in the Norwegian case study where this is emphasised, see Ruud and Larsen (2004).

In the same way competitiveness, economic wealth or innovations that help to tackle societal challenges are issues that can be defined as overarching governmental responsibilities and mechanisms to integrate these principles in all governmental actions can be found. Thus both SD and innovation as concepts tend to be very broad and applied horizontally to policy processes across sectoral policy boundaries, and even meet each other on the level of the renewal of the ‘societal project’ that both pursue.⁷ The broadness of the concepts also results in some vagueness, where stakeholders and policy makers tend to use the same words with different meanings. The general guiding principle is also easily used as a stamp to justify all actions.

9. In assessing the interaction between SD and innovation policies, it is even more challenging to define the policy processes precisely, as both of these policy domains are evolving in a very complex and dynamic environment. Evolvement of innovation policy may take parts of the traditional – mostly sectoral – **S&T policy** into a direction that includes more interaction with other policy domains. However, it should be noted that this evolution is only emerging and it is thus not known what innovation policy will look like in the future. The SD policy is also in a state of continuous transition. The SD policy formulation originated from very broad international thoughts, where the aim towards SD was taken as a guiding principle that different government actions should follow. One of the questions for the future is whether this broad principle should – and could – take the shape of a clearly defined policy domain. In most countries, including the case study countries, the SD discussion still strongly emphasises environmental issues. Environmental policy is a clearly defined sectoral policy with a set of very clearly defined objectives and the means to reach these. Thus, the studies in the MONIT have also mostly focused on **environmental policy** in order to collect experiences from such policy processes that have already taken place.

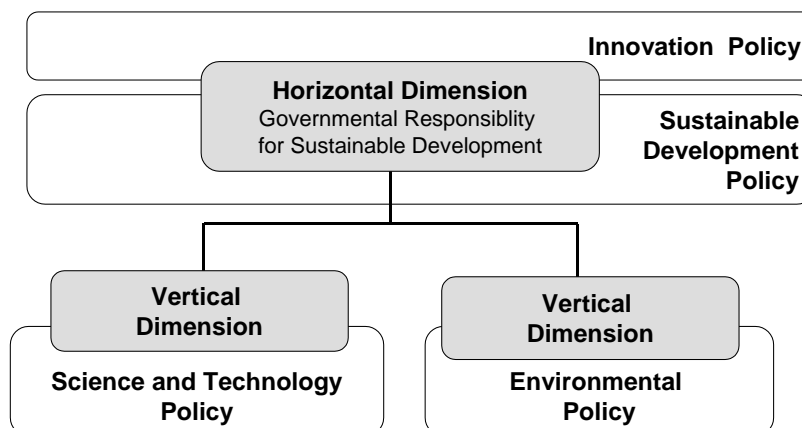
10. Figure 2 summarises the discussion above and highlights the viewpoints that the case studies have covered. Firstly, SD and innovation policies are highly **horizontal** issues that are not yet (or might never be) clearly defined policy domains. We can only observe the convergences and divergences in the development path of these emerging horizontal policies as the potential for further interaction and integration. Secondly, the evidence and observations in the case studies have focused on two **sectoral** policy domains (that are traditionally vertically organised), namely S&T policy and environmental policy.

11. In studying how the different policy processes interact with each other whilst aiming towards SD, two main linkages that are of interest can be seen. Firstly there is a need to look at existing, implemented policy processes aimed at increasing the **interaction** between S&T and environmental policies. Secondly, there is a need to analyse how horizontal SD or environmental principles are **taken into account** in the sectoral S&T policy domains.

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In the European Union the project of the ‘knowledge society’ has been elevated to the rank of ‘guiding principle’ by the adoption in 2000 of the so-called Lisbon-agenda that strives to make the EU the most competitive knowledge economy by 2010.

Figure 2. Horizontal and vertical dimensions of policy domains of interest in this study⁸



12. The requirements for improving interaction and co-ordination among SD and innovation policies are clear. New, radical innovations are needed to improve the eco-efficiency to the extent required to decouple economic growth and environmental pressure.⁹ New environmental innovations also offer an opportunity for new businesses to emerge. In the field of SD challenges, the improvements have not taken place at desirable pace only based on the market conditions – thus further government intervention is needed in several policy domains.¹⁰ The need for ‘systemic’ innovation is rooted in a ‘lock-in’ of the innovation systems of industrial countries in unsustainable – too material and too energy intensive – growth models.

13. Despite the logical arguments for a **win-win** opportunity that may result from a more intense interaction, such co-operation of policy domains has not happened to a desirable extent. This will be further discussed in this summary report. From a point of view of governance, it should be noted that certain cultural and institutional differences between the innovation and the SD policy domain act as potential barriers to co-operation.

- **Stakeholders differ.** S&T policy focuses on economic competitiveness and technological excellence and thus the most relevant stakeholders are the business and research communities. Very little effort to engage stakeholders representing technology users into the policy processes has been made. On the other hand, SD policy has from the beginning had a very broad stakeholder involvement covering different interest groups at its basis, that are often very critical to business and science.
- **Policy formulation drivers differ.** SD and environmental policy are traditionally driven by international agreements and global problems, whereas innovation policy in most countries is very much driven by national concerns. S&T policies are traditionally aiming at increasing national competitiveness and wealth, whereas SD policy is concerned with improving international governance for tackling global problems. It follows that S&T policy needs to be

⁸ Adapted from Ruud and Larsen (2004).

⁹ De-coupling signifying that necessary environmental protective measures should be pursued regardless of economic growth patterns and business cycles. In OECD’s policy document on how to enhance policies for sustainable development, de-coupling has been identified as a key challenge (OECD 2001).

¹⁰ See further discussion on the logic and urgency for improving the interaction and co-ordination among SD and innovation issues in, *e.g.* the Flanders (Belgium) and Norwegian case study reports. In the Norwegian case study benchmarks have been proposed.

more alert to international developments and SD policies have to tackle national challenges in the future.

- **Policy measures differ.** SD and environmental policies use mainly regulative and fiscal measures, often based on international agreements with strict, set targets and rules regarding actions. In addition, measures such as standards, voluntary agreements, information sharing etc are utilised. In contrast, the main innovation policy measure is resource allocation for R&D¹¹, and the regulatory and fiscal instruments have a much lesser role.
- **Resources for actions differ.** Political power is ultimately linked with control of money. Typically, SD and environmental policies have very little resources for actions, whereas S&T policies control the state budget for R&D allocations. For example, this difference may hamper such processes aimed at designing joint actions that would require some shared control of resources.¹²

14. The challenge to increase the interactions among the SD and innovation policies is sizeable. Clearly there is no single action or even single objective for joint work, thus multiple actions are required at different phases of the policy processes. This is a huge challenge for governance structures that are traditionally vertical and conduct a segmented administration of the policy instruments.

Agenda setting

15. Agenda setting refers to those processes related to setting the objectives and priorities for a policy. In the S&T policy agendas of each of the case study countries, SD and in particular environment related objectives can be recognised among the policy objectives. However, SD related objectives are not a priority for innovation policy in any of the countries. The main focus of innovation policy is to support economic growth through the development of new technologies that increase productivity and offer new functionality. Following this, it is also clear that none of the case countries has a clearly defined and coherent “green innovation policy” that would cover all the relevant actors and actions in the country.¹³ However, it should be noted that the relevance of SD issues in innovation policy has, in general, increased over time and can be expected to increase also in the future.¹⁴

16. An observation regarding the SD policy field is that in each of the countries a large amount of work has been done to define strategies and action plans for SD at the national level. There are very well reported strategy processes and active discussion across the sectoral borders. For example, all the case countries have national level committees, working groups or platforms for SD. However, national and sectoral strategies on SD have had a smaller impact than expected. There is a clear need for increased and

¹¹ When looking at the studies listing the policy measures promoting eco-efficiency or sustainable innovations, it can be seen that actually only a few of these are policy measures designed and implemented within the innovation policy domain, see, *e.g.* Technopolis (2004).

¹² An interesting counter-example on this is the Finnish cluster programme concept, where additional R&D appropriation originating from S&T policy processes was distributed across different ministries to foster inter-ministerial co-operation. See details in the Finnish case study report.

¹³ The Norwegian case study presents a set of detailed evaluation criteria and assessment of the existence of the green innovation policy, see Ruud and Larsen (2004). These criteria are based on a definition of environmental policy integration emphasising that environmental objectives must be assessed as potentially dominant in policy making.

¹⁴ An example of this is an ambitious governance experiment for combining innovation and environmental policy through the establishment of an ‘Innovation Platform for Environmental Technology’ in Belgium. See further details in the Belgium case study report.

more goal oriented co-operation across sectoral policy domains, as the sectoral actions in isolation have not had the desired impact, and, on the other hand, there is low political commitment to meet the obligations set by national strategies in many sectoral policy areas. But as a last resort, there is a need for political leadership that pulls the SD items higher on the policy agenda and shows real commitment to the stated objectives.

17. Particularly in the area of S&T policy, there is a lack of incentives to set strong priorities for promoting SD. There are, of course, changes over time, and in some cases a country's S&T policy increases the priority of SD issues. However, the SD issues are also dropped easily from the agenda when the situation changes. This illustrates the fact that SD and environmental issues are much more sensitive to the changes in the political landscape than innovation related issues. The stronger – and still rising – position of innovation on the political agenda, is shifting the discourse on sustainable development from 'quality of life' towards 'eco-efficiency'.

18. But the lack of strong incentives for promoting eco-efficiency and SD within the S&T area is linked to the observed tension in the processes of prioritising between economic growth and other objectives. As remarked earlier, there is a perception that the main objective for innovation policy is economic growth. Thus SD issues easily lead to processes where the economic objectives of the policy are felt to conflict with the SD objectives. There are different viewpoints related to this potential source of conflict.

- Firstly, the potential for conflicts between the policy objectives are not necessarily realised or acknowledged. There might be a fallacy that a new technology will always lead to an improved situation with respect to the environment; on the other hand, there may be a strong public opinion against any new technological improvements.¹⁵ If the core issues related to the policy objectives are not analysed in a consistent manner, it creates a barrier preventing horizontal co-operation. This is also reflected at the level of designing and implementing policy measures, and further discussed in Chapter 4.
- Secondly, it may be that the potential for conflicts or synergies is not understood or analysed in a concrete manner. The statement that eco-efficiency is a win-win strategy for innovation policy as well as environmental policy is too superficial. The strategy for 'sustainable growth' is an empty statement if not followed with an action plan that creates the right balance between the short term 'end-of-pipe' solutions and the longer term system changes.
- Thirdly, across the case study countries a tendency was seen to underexploit the active role of policies and policy makers to mediate in this arena of conflicting and/or converging interests. Innovation policy aims to create win-win situation for all and to be 'neutral'. This leads to a tendency to be politically rather passive. However, it becomes more difficult to continue in this manner if the innovation policy has to serve more and more objectives related to SD and are incorporated into innovation policy.
- Fourthly, agenda setting for SD objectives has to be supported by large fractions of public opinion and politicians. But the governance solutions to obtain such caution have also to be resistant for short term political changes. Long term planning and social contracts beyond the electoral cycle therefore are necessary channels for decision making.¹⁶

¹⁵ For example, GMO discussion easily is geared towards a direction where any innovations are linked only to the potential risks that should not be accepted [precautionary principle could be discussed here].

¹⁶ *E.g.* the commitment of all political parties in Flanders to the 'Pact of Vilvoorde' that has a ten year time horizon. See further discussion in the Belgium case-study report.

Design, implementation and evaluation of policy measures

19. In order to utilise technology to solve SD challenges, potential technologies must be used and there must be a market for them. Markets for new SD innovations need to be in part created and supported by government intervention. Such market creation requires intense interaction and co-design of a set of policy measures cross cutting policy domains. The same goes for still more far reaching system innovations, *e.g.* in energy provision, that require a combined shift in technology, infrastructure and consumption patterns. Cluster policies can provide platforms for such multi-measure and multi-actor policy design. But practice in co-operative policy development is still limited.

20. Across the case study countries, a common observation is that innovation policy measures are designed and implemented mostly in isolation from policy measures on environmental and sustainable development policies. There is not sufficient understanding of the interaction between measures and mechanisms promoting SD (environmental) innovations. Technology policy measures do not deal with the use of technologies and the role of new technologies in drafting new fiscal and regulatory measures related to environmental policy is ambiguous.¹⁷ Technology Assessment is still weak.¹⁸ Improving the situation requires that 1) there should be more knowledge of the interaction mechanisms of policy measures across the domains and that 2) the design of the measures is done through more intense co-operation across the policy domains. The issue is to find the facilitating governance for this new kind of policy making. There is a need for experimentation that is hampered by the inertia of the present policy domains. Often only by passing them with new governance forms can something new be achieved.

21. One way to strengthen the understanding of the interaction among the policy measures is the evaluation of their impacts. Evaluation activities on assessing the combined impact of different measures in stimulating new environmental innovations are limited. However, there is a stronger tradition to assess the environmental impacts of different individual policy measures. These different viewpoints on the impacts of policy measures should be analysed more consistently. There are examples from case study countries of these types of evaluation activities.

22. The mechanisms for co-designed policy measures across the domains are, on average, weak. The case studies mention only a few examples of using environmental expertise in S&T policy design processes. Particularly, one would expect to see a stronger link across the policy domains in designing the RTD programmes. Large programmes that distribute R&D resources for technology development are the most important S&T policy measures. Across the case study countries, numerous examples of very important programmes that have created advances in environmental technologies can be found. For example, the National Technology Agency (Tekes) technology programme concept in Finland is a good example of a long-term and consistent policy measure to take environmental technology development further. However, overall programmes in the case study countries are executed in isolation and not linked to a broader view on how markets develop and what the role of other policy measures is. There is a lack of such programme concepts that take a strong systemic perspective to innovation. Preparation of the programmes is often based on a too thin stakeholder participation – this should also include the users as

¹⁷ One concrete attempt to concretise this is the BAT processes in relation to the IPPC directive. Some discussion on this can be found in the Finnish case report.

¹⁸ *E.g.* the recent establishment of a Parliamentary TA institute at the Flemish Parliament in Belgium aims to strengthen this activity. In Finland, there has been for a long period a parliamentary permanent futures committee that has been conducting TA work. However, these attempts are far from adequate.

well as the developers of innovations. In this respect the Austrian case study showed an example of a further developed stakeholder participation process.¹⁹

23. An important observation is that in Austria, Belgium and Finland, in contrast to Norway, there was a very active attitude towards environmental innovations within the agencies and units responsible for the design and implementation of S&T policy measures. None of the countries had a clearly defined “green innovation policy” to cover the whole S&T domain. However, strategies and work within individual organisations – or parts of the S&T policy domain – were regarded to be at a very advanced level. They can be considered to be ‘autonomous’ translations of the general SD guiding principle in the proper S&T domain. Examples of these include the Belgium Flanders SD ‘bonus’ in all programmes for projects that meet stated eco-efficiency criteria and the Finnish Tekes strategy work as well as Tekes technology programmes. Although this ‘internalisation’ strategy is successful, a problem is that without more coherent support through agenda setting for the whole innovation policy, these efforts tend to remain isolated and not be linked across the policy domains, thereby losing momentum.

Evaluation and policy learning

24. Across the case studies²⁰ it was found that the biggest gap in the horizontal activities across the policy domains is in the area of policy learning, covering the accumulation of strategic intelligence and broad evaluation attitudes. A key factor for improving this was seen to be the broadening of the knowledge base within policy domains, both in S&T as well as in other policy domains. Thus, for example, there should be more joint actions and projects where the civil servants work across policy domains to combine their different backgrounds for knowledge-based decision making. The disciplines represented by human resources hired within each policy domain should also represent a more balanced combination of environmental, social and technological knowledge.²¹ Another observation is that S&T policy does not have the well developed, broad stakeholder participation processes that would be needed to increase the broad knowledge within the policy domain. As already remarked in the previous chapter, these stakeholder processes should be strengthened, especially during the phase of designing concrete policy actions.

25. There is also a lack of supporting policy research. One barrier is formed through the research institutes in different countries also being organised following the policy domains. For example, related to the Ministry of Environment, in many countries there are environmental research institutes that often do very little innovation research. This structure does not encourage cross-cutting policy research efforts. An example of an effort to overcome this was the environmental cluster programme in Finland, where R&D

¹⁹ The Austrian programme “Technologies for a Sustainable Development” is fully aware of the fact that it is trying to pursue a different line of argument in its three programmes than is the case in other Austrian technology programmes. These do not have resource reduction as their main aim. However, the Sustainable Technologies Programme is built on the principle of creating a successful working example which others can follow (it refers to these as “lighthouse projects”). In two of the programme lines (Building of Tomorrow and Energy Systems of Tomorrow) this involves an assessment of the framework conditions and key players and their involvement in the concrete projects. These programmes can only work based on a systems approach to the introduction of new, greener technologies.

²⁰ The Norwegian study was limited to an evaluation of policy implementation by applying specific benchmarks both on horizontal and vertical levels. Consequently, few relevant empirical references concerning policy learning can be drawn from the Norwegian study.

²¹ For example, in Belgium the MONIT research work was regarded as an interesting experience for the participants as such, where representatives from different policy domains could create new joint thinking through this joint research project.

funds were given to a programme to foster policy research related to eco-efficiency²² co-ordinated by the Ministry of Environment.

26. Across the participating countries it was agreed that broad evaluations are important tools for increasing knowledge and analysing the needs of policy. Examples of broad evaluations where the policy domain completed an evaluation of its actions with respect to SD and more specifically to the environment were found. These activities can also be linked with the resulting sustainability reports for a policy domain. Examples of broad activities in these areas were the Austrian Ministry of “Life” sustainability report in 2003, the evaluation of the Finnish SD strategy in 2003 and the evaluation of the Finnish Ministry of Transport and Telecommunications environmental programme in 2004.²³ But more important than having evaluation reports is having evaluation based policy designs. The integration of evaluation as a policy learning experience in the policy cycle is also an issue for new governance, where stakeholders participate and policy makers improve their understanding of the interaction in the system. This is not a common practice.

27. Technological development often proceeds slowly over decades and SD challenges are also characterised by their long time horizon. For example, the development of new energy sources (fusion energy) and energy investments are issues where policy decisions need to take into account the future over a very long time period. Thus one would expect the S&T policy to be very active in promoting long-term thinking in policy discussions, in order to encourage opportunities that innovative technologies may bring over a long time perspective. In many countries Foresight Studies become better known. However, the results from the case studies appear to indicate that the role of technology foresighting or other analytical, future oriented tools is minor in creating this strategic knowledge.

Common recommendations

28. The integration of innovation policy and sustainable development is an emergent process. At present the main efforts are on the level of co-ordinating the vertical policy domains of S&T and environmental policy. Although the circumstances are compelling to advance more quickly to be able to tackle the huge societal challenges, the institutional inertia is strong. The cultural divides between policy domains have a historical origin in the functional specialisation of their institutions for serving sectoral objectives. But the policy agendas now have to tackle the complex problems of climate change or global competition that involve the combination of all resources in a horizontal way.

29. Therefore the basic condition for policy integration between innovation policy and SD policy is the achievement of the new social contract for ‘sustainable growth’ in which the horizontal dynamics of both functional domains can converge their own operational logics. The establishment of a new integrative governance structure is at the same time the precondition and the result of this convergence. The case studies reveal that there are already elements that provide support but much more barriers to be taken to create such a new governance structure for better integrated policy cycles.

Agenda setting

- Future innovation policy aims to tackle wider SD objectives. This demands an active ‘internalisation’ of the SD guiding principle. There is a need for the internal analytical attitudes to acknowledge that clear trade-offs must be made, but also to operationalise actively the win-win opportunities.

²² Details of this can be found in a working paper related to the Finnish MONIT SD case study.

²³ See Austrian and Finnish case study reports.

- There is a requirement to increase the participation of different stakeholders in the processes setting priorities for innovation policy.
- S&T policy should actively participate in processes where priorities for SD policy are set in order to bring an understanding of innovation to such discussions.
- There is a requirement to develop and activate processes within policy governance (cross-cutting policy domains) that aim to resolve conflicts and stimulate discussion on the basis of sound retrospective and prospective evaluations.
- The integration of SD and innovation in a ‘sustainable growth’ strategy has to be endorsed on a higher institutional level, in the form of a ‘social contract’ and/or long term planning objectives that set new ‘standards’.

Design and implementation of policy measures

- There is a requirement for more active co-operation across the policy domains during the phase of designing policy measures that also actively encourages and includes wider stakeholder participation. This involves capabilities and governance for the design of ‘policy mixes’ and the management of ‘policy portfolios’.
- S&T policy measures should engage wider views on systemic innovations and, in addition to the development of technologies, pay more attention to the usage of technologies.
- The understanding of mechanisms related to ‘environmental’ innovations need to be strengthened in specific cluster programmes that address the environmental industry and the environmental challenges

Policy learning

- Policy learning for the integration of innovation and SD policies has to contribute to organising the ‘policy arena’ for strategic convergence, by a combination of analytical instruments and participative methods (strategic intelligence) that supports interactive policy making.
- There is a requirement to strengthen the research activities and to re-structure the organisation of policy oriented research in a less sector-focused manner. That implies a ‘distributed network’ organisation of the strategic intelligence combining the different sectoral and stakeholder perspectives under the wider umbrella of ‘horizontal’ objectives.
- There is a requirement to increase stakeholder participation in the innovation policy processes as a learning process for strategic convergence.
- The use of more, future oriented, tools for analysing policy needs should be developed as instruments of change management.

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