Integrating sustainable development and innovation policy

Austrian case study for the OECD NIS MONIT working group

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1 Synthesis and conclusions

Co-ordinated and coherent policy making is growing in importance as policy makers become aware of the limitations of single goal policy making. As a result, the number and variety of co-ordination mechanisms has grown considerably over the last decade. Co-ordination and coherence within innovation policy has been the focus of many of these initiatives. This is due to the fact that innovation policy is a horizontal policy area with a large number of interfaces with different policy areas. The OECD decided to organise a working group to look at the way in which different countries deal with co-ordination in innovation policy making and to analyse the successes and failures in moving towards greater coherence.

The OECD NIS MONIT Project

In December 2002 the OECD NIS MONIT (Monitoring horizontal innovation policy) working group was established to further the OECD's understanding of systemic approaches to innovation policy. The project has two main work packages. The first work package aims to understand how innovation policy is conceptualised in the countries involved and uses a range of performance indicators to build up comparable pictures of the different countries. The second work package looks at the way innovation policy co-operates with other policy fields. The approach is based on the idea that innovation policy is not limited to traditional innovation policy mechanisms such as public RTD spending, but is a horizontal topic present in many other policy areas. The second work package considers the relationship between innovation policy and four different policy areas (regional development, ICT, transport and sustainable development).

The Austrian sustainable development case study

This report is the final report from the case study on the links between sustainable development and innovation policy in Austria. The case study looks at the way in which the two policy areas interact in Austria and what kind of mechanisms exist to facilitate communication between the two policy areas. Following an overview of sustainability policy in Austria and the actors involved in its implementation, the report focuses on two case studies that play an important role in policy co-ordination between the two policy areas. The study is based on an assessment of key documents in the two policy areas and a series of interviews with policy makers and experts. The first case study focuses on the Austrian Sustainability Strategy as a policy co-ordination mechanism and the second case study concentrates on the research, technology and development (RTD) programmes in the area of sustainable technologies. Two case studies are assessed as part of the attempt to understand in more detail the way in which innovation policy and sustainability policy interact with each other. The case studies are based on a combination of desk research and interviews with key experts from the policy fields assessed. Although the two case studies are very different from one another, it was possible to gain a considerable overview of the barriers and problems that exist on the interface between the two policy areas.

Case study 1: The Austrian Sustainable Development Strategy

The Austrian Sustainable Development Strategy was adopted by the Council of Ministers in April 2002. At the same time, the "Committee for a Sustainable Austria" was established as

the main driving force to implement the strategy. It consists of representatives from all ministries, from the regional administration and from different interest groups and is an important institution for horizontal sustainability policy integration in Austria. The aim of this institution is to foster sustainable development through the common preparation of working programmes and progress reports for the federal government. In this case study, its way of working as well as its opportunities and limits are critically analysed. The results show that, even though the effectiveness of sustainability policy in Austria is very limited, the value of the committee's working process lies especially in awareness building for sustainability issues in a structured formal way. It is however, constrained by the individual focus of the committee members and by their particular ability to bring strategic content back into their organisations.

Case study 2: The RTD programme Technologies for Sustainable Development

The RTD programme "Technologies for Sustainable Development" was established in 1999 and now has three programme lines Factory of Tomorrow, Building of Tomorrow and Energy System of Tomorrow. The aim of the programme is to strengthen Austria's position in certain technology fields and increase economic growth whilst protecting the environment and decreasing resource use at the same time. The programme sees new technological innovations as the key route to achieving these dual aims. Using new technologies to integrate the two policy areas has proved to be a successful way of pursuing integration. However, a critical analysis of the programme from the point of view of policy integration focuses on two aspects of the programme. Firstly, the focus on technological innovation is narrow as it does not allow any consideration of the frameworks for embedding the technologies being developed through the programme. The focus is too concentrated on the technological innovation side as the only solution. Secondly, the programme is often criticised for being an isolated programme with relatively little concrete contact to other initiatives, policies or programmes. Although there are many informal exchanges through individuals and since recently the co-operation with other ministries involved in doing sustainability research through the FORNE initiative, the programme is only loosely connected to other policy strategies. These criticisms are to a certain extent justified. However, the entire Austrian policy scene is built on establishing small, relatively unconnected policies and initiatives and in this way, the programme is no different from many other initiatives.

Co-ordinated policy making: the general policy making process

From the analysis of the two case studies on co-operation and co-ordination between innovation and sustainability policy, a number of observations can be made concerning the co-operation mechanisms and the barriers between the two.

- Policy making in Austria is built up of highly segregated policy niches that formulate their own policy.

- Policy niches are often not clearly defined and there are overlaps between responsibilities.

- Strategic, top-down policy documents that attempt to co-ordinate whole policy areas have little impact on these policy niches.

- Policy making takes place in a bottom-up way through these policy niches. This can sometimes work very well. Other times it can allow one stakeholder or a group of stakeholders to dominate a policy area with few checks and balances.

- Informing each other about policies, strategies and initiatives mainly only takes place on an informal level.

- Informal co-ordination does not always suffice and there is a growing number of more formal mechanisms entering the policy making system.

- Problems occur if responsibilities and ministries change as informal links are more difficult to build up than formal ones. They also rely on stable responsibilities and structures.

Sustainable development − innovation interface

The interface between innovation and sustainable development is difficult to capture as both are horizontal policy fields. The two policy fields therefore have many interfaces with each other, few of which can be clearly defined. The easiest way of looking at the links between the two fields is to examine concrete initiatives. These can be found on different levels. On the highest policy level, the Austrian Sustainable Development Strategy provides a useful insight into the way in which attempts are being made to co-ordinate sustainable development policy. On one level the strategy is successful as different ministries come together and have to think about what sustainable development means. On another level, the strategy is not a top down strategy and nothing in it is binding. The ministries do not have to put any of the principles into practice or develop initiatives to achieve the goals of the strategy. Another, very different type of initiative is the Technologies for Sustainable Development programme of the BMVIT. This initiative specifically tries to link the two policy areas. In three different areas (production, building and energy systems) the programme aims to support the development of technologies that are not detrimental to the environment whilst at the same time supporting the growth of the Austrian economy. The programme has proved successful in developing demonstration projects in these three areas. However, the effects on other areas of innovation policy are still small and the programme remains in its own niche.

Policy recommendations

Looking at the links between two horizontal policy areas is a difficult thing to do, especially when they have many interfaces with other policy areas as well as with each other. When investigating the links between the sustainable development and innovation policy area, three main restraints could be identified which seem to be pivotal points for strategies to improve policy co-ordination.

Lack of a common comprehension about "sustainable innovation" and "sustainable innovation policy": One fundamental necessity found out in this study is to initiate a broad discussion about the question what sustainable innovation is, why it is important and what a sustainable innovation policy needs. If policy is understood as the solution of common, public and general problems, then sustainable innovation policy has to perform the conditions and settings for people to be innovative independently where and in which systems they act.

Different acceptance and embedding of the innovation and sustainability subject in the political system: Innovation and sustainable development are differently embedded in the ministries. While innovation is an explicit part of the BMVIT and well accepted, sustainable development is today no explicit policy area but still part of environmental policy and located within the BMLFUW.

Lack of power of authority of existing policy co-ordination boards: Establishing new boards and panels is not the right means to make policy co-operation happen. The more important question is how the already existing boards could improve their work and design it more efficiently. The Committee for a Sustainable Austria is a good example where all ministries try to adjust their working plans but it lacks of power of authority (like other sustainability boards in Austria, e.g. the sustainability coordinators conference).

2 Introduction

Over the last decade policy makers in many European countries have reached the conclusion that the current segregated approach to policy making is no longer adequate to address the complexity of the issues they are faced with. Segregated policy areas, with relatively little contact to one another, cause a number of problems for policy making. Not only does segregation cause policies from neighbouring policy areas to overlap with one another, but can even lead uncoordinated policies to pursue contradictory aims. Another feature caused by segregated policy making occurs when cross-cutting areas, not traditionally belonging to a single policy area, are not adequately addressed by any ministry and no responsibility is taken for the issues.

The trend towards increasing coherence and co-ordination in the policy making process has been most pronounced in those areas of policy making that are inherently of a cross-cutting nature. In areas of policy making such as sustainable development or science and technology policy the pressure to develop more appropriate co-ordination measures has been higher. A number of recent studies and workshops have supported the search for better coherence in the area of innovation policy (Edler, Kuhlmann, Smits, 2003, Boekholt and Arnold 2002, Arnold et al. 2003, Smits and Kuhlmann 2002). Although there is no such thing as a model of optimal policy coherence, the authors agree that there are ways of conceptualising policy making for innovation policy that can increase the overall functioning of the system.

The problems inherent in politico-administrative systems in general and innovation in particular in most OECD countries is characterised by Edler, Kuhlmann, Smits (2003, 5) as:

- A high degree of departmentalisation, sectoralisation of the political administration, and low inter-departmental exchange and co-operation,
- Heterogeneous, un-linked arenas: often corporatist negotiation deadlocks,
- Failing attempts at restructuring responsibilities in government because of institutional inertia,
- Dominance of "linear model" of innovation policy approaches (and of related economists as consultants),
- "Innovation policy" runs in a very specific, narrow field focusing on introduction of new technologies in SMEs, IPR (Intellectual Property Rights) or VC (Venture Capital) issues etc.,
- Emerging multi-level governance in the context of the European integration makes the launching of "bridging/systemic" policy approaches even more difficult.

The high level of segregation not only entails closed policy arenas in terms of ministries and departments. The closed way of thinking is often transported to the institutions such as universities, non-universities and other consultants that work closely for and with the departments. Policy fields create their own individual arenas where there is little space for input from sources other than those which are close to the central logic. Integration is

therefore made more difficult by the narrowness of the policy areas themselves. This phenomenon has also been observed in innovation policies, especially if they are designed and implemented by different ministries and/or agencies. Innovation policies should be more focused around knowledge and less around the narrowly focused priorities of individual ministries.

Based on this assessment of the problems, there have been attempts to design better processes or better governance. The basis is a model founded on a systemic perspective of innovation attempts to increase the coherence of the system through developing horizontal, vertical and temporal coherence. Although vertical and temporal coherence are perceived as being important, more attention is paid to horizontal coherence as the more urgent.

There are three ways of looking at horizontal co-ordination (Arnold et al. 2003):

- The co-ordination and attuning of different societal and economic goals of research and innovation,

- The integration of knowledge creation (mostly basic research) and the use of knowledge for innovation; In policy terms this means the integration of science, research and innovation policy.

- The combination of knowledge from different science disciplines to tackle interdisciplinary research needs (e. g. bio-technology) and overarching societal problems that need such an interdisciplinary approach (e.g. climate change).

Coherence and co-ordination are not goals in themselves, but should be seen as tools. Depending on the policy field and actor constellation there are then different mechanisms that can be implemented to increase the ability of the system to think in terms of the whole. These are based on the increased need to manage interfaces, to embed innovation policies in broader socio-economic context and for increasing learning and experimenting. The role of the state changes to that of moderator and enabler allowing different parts of the system to communicate more effectively with each other. This in turn supports collective decision making and implementation of policies and encourages learning within the system (Smits and Kuhlmann 2002, 48).

To alleviate overlaps and gaps between policy areas, an increasing number of governance mechanisms have emerged to fill the co-ordination gap (Glynn, Cunningham, Flanagan 2003, 5). Many of these new mechanisms take the form of councils, commissions or platforms which bring together individual policy makers from different ministries together with non-policy specialists to discuss issues and formulate common policies and procedures. These bodies provide a useful basis for discussion and also improve the chances that initiatives in one policy area do not conflict with the goals in another area and that policies are co-ordinated. They do, however, not replace the policy process policy and decisions still remain within the ministries. The extent to which the decisions taken in such forums have to be implemented or taken into account by the individual ministries differs from country to country and according to the subject matter. Recent examples of such mechanisms include the S&T Council in Austria, the Dutch Innovation Platform and the Finnish National Commission on Sustainable Development. These governance mechanisms are external processes that take place outside the ministries and have been designed to provide co-ordination and advice. Although these bodies are increasingly being

seen as one of the best mechanisms for integrating policy fields this greatly depends on the way in which they are set up and the powers that are given. Not all such councils support policy integration attempts and some further contribute to the fragmentation of policy making structures (Edler, Kuhlmann, Smits 2003, 19).

Specifically designed external mechanisms in horizontal areas of policy making are only one small part of the complex network of interactions that exists on a bilateral basis between individual policy areas. Recently, attention has turned to the way individual policy areas interact with each other. Special focus has been given to innovation policy, not just as a horizontal policy area in itself, but as an individual policy area that has specific and individual relationships with other policy areas. As is the case within innovation policy as a horizontal policy area, there is no one best-practise model defining what co-ordination and coherence between policy areas should look like. Countries and policy areas differ and require co-ordination mechanisms tailored to suit their own specific needs.

Hertin and Berkhout (2002) suggest four different approaches to integration in their paper on environmental policy integration: integrated departments, communication mechanisms, central strategy and sectoral integration strategies. These four approaches vary from centralised top-down methods to decentralised integration strategies with a focus on a specific sector rather on administrative co-ordination.

Although the emphasis is often placed on formal co-ordination mechanisms, informal means of co-ordination are equally important "enabling parts" of a system's coherence. However, such mechanisms are usually more difficult to analyse and the success factors harder to depict.

2.1 NIS MONIT aims and objective

The OECD has a considerable track record in analysing and benchmarking innovation policies. The OECD project on National Innovation Systems has produced policy implications that have had an impact on national innovation policy in some OECD member states. It was also influential in establishing a systemic approach to innovation policy. Although this approach is no longer questioned, putting it into practise has proved to be more of a challenge. For this reason the OECD Monitoring and Implementing Horizontal Innovation Policy (MONIT) project was established. The idea is to "provide a better understanding of national capabilities in innovation governance and policy co-ordination" (OECD, 2002). Although the multi-goal nature of innovation is no longer disputed and innovation policy is not any more confined to the role of enhancing competitiveness and economic growth, little is known about what a multi-goal innovation policy looks like and how policy areas interact and how policy areas are co-ordinated into a coherent horizontal innovation policy.

The aim of the MONIT project is to better understand what horizontal innovation policy means through analysing policy processes and mechanisms in selected countries. This includes understanding how traditional innovation policy (science, technology and industrial policies) can be opened up to include other frameworks, but also how innovation is understood and used in sectoral policies. It focuses on analysing tools that aim to facilitate a coherent approach to innovation policy and that are able to co-ordinate policies across institutional boundaries.

Each national innovation system is organised differently and the aim of the project is not to pick out best practise examples as these would most probably not be transferable but, to understand how the various national systems organise their interfaces between innovation policy and other policy agendas and how they overcome barriers to policy integration.

The MONIT project is divided into three parts. The first part provides a policy profile of the individual countries. Using a set of dimensions to build a picture of the national innovation system and building on previous OECD and EU literature it gives an overview of the main national priorities and strategies, the key reforms and decisions that have formed the current policy options. The second step, of which this report is part, provides an insight into the relationship between innovation policy and sectoral policies in each country. Each country covers one mandatory case study, the relationship between innovation policy and information and communication technologies and another case study from either sustainability policy, regional policy or transport policy, but that is not predetermined. This report focuses on sustainable development policy. The third step aims to produce a synthetic analysis of new models and practises for collaboration and co-operation in policy formulation. It will analyse the countries attempts to develop coherent policies and focus on how institutional arrangements influence the ability to develop such policies.

The second MONIT work package focuses on the interaction between innovation policy and other sectoral policies. This particular report focuses on the links between innovation policy and sustainable development policy in Austria. The focus is on governance structures and mechanisms.

This report is interested in three main questions:

- What are the underlying agendas that shape the direction of innovation in terms of sustainable development?

- What actors and stakeholders are (formally and informally) involved in the policy making process that determine the direction of innovation in terms of sustainable development?

- Which mechanisms exist to facilitate the development of coherent policy making between these two areas?

2.1.1 Conceptual framework

The conceptual framework of the MONIT project is based on analysing the policy process. The aim is to assess whether policy formulation, implementation and learning fit together to form a coherent policy process. The concept of coherence plays a key role. Coherence can be understood in three ways (Remoe 2002):

- Horizontal coherence ensures that individual policies build on each other to the extent possible, and minimises inconsistencies in the case of conflicting policy goals.

- Vertical coherence ensures that public outputs are consistent with the original intentions of policy makers. In other words, vertical coherence is much about the

relationship between policy objectives and the delivery of outputs through implementation instruments.

- Temporal coherence ensures that today's policies are consistent with perceptions of future changes.

The MONIT study is also looking for what it calls national capabilities in terms of the means and the resources governments use to achieve coherence on these three levels. The MONIT conceptual framework has identified three key capabilities for achieving coherence: governance, horizontalisation and transition management. In very general terms, governance refers to the "rules, processes and behaviour that affect the way in which powers are exercised….. particularly as regards openness, participation, accountability, effectiveness and coherence" (Boekholt et al. 2002). For MONIT purposes this definition was broken down into the individual phases of the policy process, in particular co-ordination, learning and managing. Co-ordination refers to specific mechanisms that the policy process introduces to increase the coherence between different objectives and instruments. Learning refers to the way in which policy systems generate knowledge and how they go about understanding the preconditions and effects of their actions. Managing the policy cycle refers to the individual steps involved in creating and implementing policies (agenda setting, implementation, policy analysis and evaluation) and the key focus here is on processes.

Horizontalisation refers to the degree to which the distributed nature of innovation policies are bound together in a strategic approach. The MONIT framework is based on the policy co-ordination scale (Box 1) and believes that the higher up the scale policy issues are co-ordinated the more horizontalised an innovation policy will be.

Box 1: The policy co-ordination scale[1])

9. Government strategy
8. Establishing central priorities
7. Setting limits on ministerial action
6. Arbitration of policy differences
5. Search for agreement among ministries
4. Avoiding divergence among ministries
3. Consultation with other ministries (feedback)
2. Communication to other ministries
1. Independent decision-making by ministries

The final concept that forms the basis of the MONIT conceptual framework is that of transition management and refers to the ability to redirect the course of policy making.

2.2 Approach to the sustainable development case study in Austria

The approach taken in this case study is based on the NIS MONIT conceptual papers and aims to assess the way in which innovation policy and sustainable development policy interact in Austria. Using the MONIT concept paper as a base, a project outline was developed that first mapped the policy areas and then analysed the mechanisms used to increase co-ordination. As the mechanisms used in different countries are quite different, the first step in Austria was to gain an overview of the policy areas and the mechanisms that exist, including the following examples:

- Agenda setting, programme, criteria definition, action plans, impact evaluation etc.,
- Effective role and influence of different actors,
- Mechanisms and structures for the mutual consideration of innovation and sustainable development aspects,
- Mechanisms for conflict resolution in policy-making,

[1] Taken from the “MONIT: Joint conceptual paper" and based on Metcalfe.

- Involvement of stakeholders,
- Mechanisms for coherence with long-term strategies,
- In-built learning processes (meta-level).

Following the initial overview, two individual case studies on the interface between innovation and sustainable development policy were chosen to look at in more detail. These were described and analysed. The aim was to assess the level of co-ordination and coherence in the development and the implementation in individual policy initiatives.

The approach taken to the project used a combination of desk research and semi-structured interviews to obtain the information needed. The desk research uses policy documents from both innovation and sustainable development policy fields, research policy strategies, RTD programme documents and evaluations of research activities in the sustainable development field, activities of the Council for Science and Technology and other relevant material that helps to understand the organisation, strategies and aims of either policy field.

The desk research and document analysis is supplemented by a series of structured interviews with stakeholders from both the sustainable development and innovation policy making areas, independent experts and agencies and consultancies involved in activities on the interface between innovation and sustainable development policy. The analysis of the information is based on reconstructing the case studies. It involves an assessment of the different stages of the policy cycle: agenda setting, implementation, policy learning and evaluation.

2.3 Report structure

The report follows the following structure. The first part looks at the necessity for increasing policy coherence. The second part of the report aims to set the scene for analysing the interaction between innovation policy and sustainable development policy. It describes both the current political discussions in sustainable development policy and sustainable development policy as it is formalised in sustainable development policy documents. It then maps the main actors responsible for policy formulation in the two areas and in addition other non-policy actors who play a role. The third part of this report looks in more detail at two case studies that are situated on the interface between innovation and sustainable development policy. It examines in each case how the policy areas interact with each other and what the barriers to interaction are. Although the conclusions that can be drawn from the case studies remain limited, it is possible to go into some depth as to how the two policy fields interact and to come to some general assumptions as to the barriers and challenges. The final part analyses the conclusions and attempts some preliminary conclusions as to ways of improving co-operation and co-ordination between the two policy areas.

The report does not aim to seek the objective truth as there are many truths. Not only do different actors have different viewpoints but, they are also willing or less willing to tell stories. Whereas some interviewees stick to the official line, other talk about the chaos behind the scenes and the processes through which policy making takes place. This report aims to make sense of the official lines, the story telling and the chaos and in doing so to

synthesise some of the key aspects crucial to co-ordination and co-operation in policy making between these two areas.

3 Policy coherence between sustainable development and innovation

The mostly used definition of sustainable development can be found in the Brundtland Report (World Commission for Environment and Development 1987). According to it, sustainable development is a “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. It requires a co-equal consideration of economic productivity, social balance and environmental protection. None of the three sustainability dimensions – economy, society and ecology – should develop at the expense of the others.

Innovation is an economy-related term and goes back to the economist Joseph Schumpeter who defined it as the “break-through of new combinations” (Schumpeter 1911, 100) which is related to the development of a new product or an increase in product quality, the implementation of a new production method, the use of new sources for raw materials, the opening of new markets or the implementation of new organisational structures. All these kinds of “new combinations” refer to an enterprise and indicate already a quite broad understanding of innovation.

Both innovation and sustainable development are comprehensive terms. They are broadly used but interpreted differently as the interview results show. The interviewed sustainability actors strongly question innovation and ask what it is for in the end. They tend to interpret it in a wider sense and want to see it serving the purpose sustainability. Innovations are understood as a means for sustainable development. This demands a broad understanding of innovation that is not only referred to economic matters but to the ability of the whole societal system to act according to the actual and future challenges in all kinds of systems like enterprises, municipalities etc.

Innovation in the context of sustainable development means to enable the societal system to develop new ideas to support sustainability and to implement them. In regard to current environmental and social problems, sustainable innovations are urgent but at the same time they are unpopular because nature is public goods and positive effects are not only awarded those persons working for. Nevertheless, it is a challenge concerning all groups within society. In the mind of the interviewed persons for this study, sustainable innovations refer more to new human behaviour than to new products and services on the market.

In the same manner, sustainable innovation policy is wider interpreted than the financial support of specific technologies. If policy is understood as the solution of common, public and general problems, then innovation policy has to perform the conditions and settings for people to be innovative independently where and in which systems they act. Policy should enable people to try new behaviour and to develop innovations, but not to define itself what sustainable innovations are. Sustainable innovation policy does not mean the financial support of solar panels – such a policy would lay claim to know itself what kind of innovations are sustainable and what are not. Policy should leave this search process to the relevant actors and enable them to search for ideas and implement them. According to these interview results, sustainable innovation policy is the design of a public framework that allows innovation processes.

Another consideration of an interview partner was that innovation policy should primarily support the development of radical innovations instead of incremental ones. His argument is that enterprises are usually forced to develop incremental innovations in competition with

other enterprises. So this kind of innovation happens more or less without political interference. But, if one assigns policy to support what would not happen by itself, then it is the main task of innovation policy to support radical innovations.

This vision about innovation and sustainable innovation policy is not compatible with the actual situation in Austria. The interviewed persons described the current sustainability policy situation as a niche policy that hardly affects other policy fields. The main problem is that people are not really interested in sustainable development and environmental topics. In history, every environmental topic that appeared before the public was opened by a triggering event, like forest dieback, nuclear power station etc. In contrary, sustainable development is no shocking subject but strives for remaining a high level of life quality for the world's population on the long run.

Another barrier for an effective sustainability policy is that sustainability is a long-term issue. Usually politicians are hardly interested to make policy whose effects become apparent later than the election period lasts. In this case, they cannot profit from the results of their own work if they are not elected again. Therefore, politicians have hardly incentive to work on long-term projects because they cannot receive the results. The political system is designed in a way that sustainability is no relevant policy issue and even cannot become one. So maybe the political system itself needs innovations to enable it to deal with sustainable development.

The current sustainable development policy in Austria is still strongly linked to environmental policy, the policy field from where it derives from. This situation becomes visible through the fact that sustainability policy is mainly under responsibility of the environment minister. Most interviewed persons evaluate this situation critically and want to see it as the policy field that spans like an umbrella all other policy fields. They say, sustainability policy should take in a special position and strive for the integration of the sustainability idea into all other policy fields. But, this structural suggestion requires a higher awareness about sustainable development and contradicts the general little attention for the sustainability concept in policy, public and media at this time.

4 National profile: Sustainable development policy

There are two important documents that have marked Austrian sustainability policy in the last ten years. These are the national environmental plan and the national sustainability strategy. The following paragraphs give insight in their development and contents.

Austria was the second country after the Netherlands to develop a national environmental plan (NUP). The development of this document took about four years and involved more than 300 persons from science, administration, economy and experts from different organisations in seven working groups. The co-ordination of the development process was under responsibility of the Federal Ministry for Environment, Youth and Family Affairs. In 1995, the NUP was published and adopted by the federal government. The aim was to integrate environmental policy into all levels of policy making. For that purpose, goals and about 470 measures to seven sectors have been worked out. These sectors are:

- Energy,
- Industry and trade,
- Traffic and transportation,
- Agriculture, forestry and water resources,
- Tourism and recreation industry,
- Resource management and
- Consumption and consumer behaviour.

The NUP was an important step in Austrian sustainability policy, since it contained quality and environmental protection goals to reduce emissions of harmful substances and to treat natural resources with care. They base on the perception that the carrying capacity of the earth is limited and the global circular flows of matter must not be influenced irreversibly. Therewith, the NUP corresponds already to the concept of sustainable development. The NUP became quite popular in Austria due to accompanying activities like the design of an exhibition called “sustainability nature trail” which was shown not only in the capital Vienna but also in the provinces, the preparation of a CD-Rom which allowed to visit this exhibition virtually and the publication of a so called “Youth Environmental Plan (JUP)” which was set up as a complementary initiative to allow Austria’s youth to participate in national environmental policy.

A further development of the NUP is the Austrian national sustainability strategy which was published in April 2002. Its international roots go back to the Agenda 21[2] adopted by the United Nations Conference on Environment and Development in Rio 1992, where a paragraph in chapter eight requires the preparation of sustainability strategies from federal governments which adjust the national economic, social and environmental policies in each country. At the Rio+5 Conference in New York 1997, this demand was repeated more insistently and the year 2002 was determined as time horizon. Finally, the European Council in Gothenburg, 2001, was an important initiating event, as the draft of the European sustainability strategy was discussed. Numerous member states of the European Union then started to develop national sustainability strategies.

The Austrian national sustainability strategy was also prepared under responsibility of the Federal Ministry for Environment that was renamed the Federal Ministry for Agriculture, Forestry, Environment and Water Management in the meanwhile. It is a self commitment of the federal government to sustainable development. It contains four comprehensive fields of action which are again composed of five key objectives for a sustainable development. Each key objective consists of a description of the challenge, goals and first steps. At the end of each field of action five to eight indicators are described. The content of the strategy can be summarized as follows (see Austrian strategy for sustainable development[3], 20):

Field of action: Quality of Life in Austria

Key objective 1 – A sustainable lifestyle: Orientation of lifestyles towards the model of sustainable development through education and awareness, and initiation of a shift in values.

Key objective 2 – Opportunities for the empowerment of all generations: Designing the financing of family and social benefits, health services and pensions in accordance with the demographic development, and promotion of health.

Key objective 3 – Gender equality: Implementation of gender mainstreaming and the true equality of men and women at work and in the family.

Key objective 4 – Solutions through education and research: Exploiting the opportunities of the knowledge society through research, education and life-long learning.

Key objective 5 – A decent life for present and future generations: Fighting poverty, creating social solidarity, and securing equal opportunities for everyone.

Field of action: Austria as a dynamic business location

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2 see http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21toc.htm

3 see http://www.nachhaltigkeit.at/strategie/pdf/strategie020709_en.pdf

Key objective 6 – Innovative structures promote competitiveness: Need-oriented research, technology and development provide systems solutions for innovations, structural and social change.

Key objective 7 – A new understanding of business and administration: Strengthening corporate responsibility and creating efficient administrative structures and processes.

Key objective 8 – Correct prices for resources and energy: Creating incentives for sustainable behaviour through price signals.

Key objective 9 – Successful management through eco-efficiency: Decoupling the consumption of resources and energy from economic growth even further – promoting the use of renewable raw materials and sources of energy more strongly.

Key objective 10 – Strengthening sustainable products and services: Setting impulses for a higher market share for sustainable products and services and promoting sustainable tourism.

Field of action: Living spaces in Austria

Key objective 11 – Protection of environmental media and climate: Quality targets and a responsible chemicals policy.

Key objective 12 – Preserving the diversity of species and landscapes: Preserving animal and plant species, living spaces, natural and cultivated landscapes.

Key objective 13 – Responsible use of land and regional development: Orienting and tuning the space-relevant policies towards more quality of life.

Key objective 14 – Shaping sustainable mobility: Reducing mobility pressures and shaping a sustainable fulfilment of mobility needs.

Key objective 15 – Optimising the transport system: Promoting the most environmentally friendly, most resource-sparing, and most energy efficient and safest forms of transport.

Field of action: Austria's responsibility

Key objective 16 – Fighting poverty, creating a social and economic balance equilibrium within and between the countries: Making a contribution towards the consolidation of security, peace and human rights.

Key objective 17 – A globally sustainable economy: Developing a world economy that guarantees an intact environment and social equity.

Key objective 18 – Our world as a living space: Securing natural and social living spaces for everyone in the long term.

Key objective 19 – International co-operation and financing: Making sustainable development affordable for partner countries.

Key objective 20 – Sustainability Union Europe: Turning the new Europe into a Sustainability Union.

The text of the strategy document describes mainly intentions and less concrete quantifiable targets with a date of implementation. Nevertheless, many experts think that in general the value of strategic political documents consists less in the documents themselves but more in the activation of discussion and implementation processes according to these documents. This claim is already confirmed in the strategy document itself where the intention to design the strategy as a "learning strategy" is announced (Austrian strategy for sustainable development, 109f.). This means that the structure and process design will be further developed according to needs that appear during the implementation process. The implementation process of the strategy and its assessment by several interviewed involved persons is described in chapter 7.1.

5 Institutional mapping of actors, institutions and flows

Providing an overview of all the actors that play a role in both sustainable development and innovation policy in Austria is a difficult task. This description could include all policy fields and actors as these two policy areas are by nature horizontal and have links to all policy areas. However, this description only holds true if the two policy areas are interpreted in the broadest possible way. In most countries, and here Austria is no exception, innovation and sustainable development policy are not policies that exist, but are more often represented only as strategies used in a co-ordination function. Policies and more importantly actors in these two areas tend to belong to more conventional policy areas such as science policy, technology policy and environmental policy. For this reason, the list of actors below falls into these areas.

5.1 Innovation policy

An institutional mapping of Austrian innovation policy actors is a complex undertaking. Innovation policy is comprised of a large number of actors both on the strategic and the implementation level whose responsibilities are not clearly defined and often overlapping. Evaluations have frequently referred to fragmentation as one of the barriers to the design and implementation of a coherent innovation policy in Austria. A recent evaluation (Arnold et al. 2004) of the two main research funds in Austria, the Austrian Industrial Research Fund (FFF) and the Austrian Science Fund (FWF) concluded that:

- Overly fragmented policy delivery limits the opportunities for building scale and for learning – both about policy delivery and about policies themselves.

- It makes the funding system hard to understand – which is a problem both for those who have to live in it and in terms of connecting it to developments in European R&D funding and performance.

- With many small agencies, it is hard to build critical mass and especially hard to afford the needed investment in capabilities for analysis and strategy development ('strategic intelligence').

- There is a wide diversity of governance practice and therefore unclear interfaces between the ministries (as principals) and the agencies (their agencies). In some cases, a ministry even simultaneously maintains different governance styles in its relationship with a single agency about different activities. This incoherence helps prevent ministries and agencies alike from building the right amount of strategic intelligence to maintain a coherent division of labour.

- Differences in governance styles limit the possibilities for individual agencies to serve multiple ministries.

Furthermore, to increase the confusion, the responsibilities and the organisation of actors within the policy field also changes frequently, often within one legislative period. The current Minister, Hubert Gorbach, is the fifth minister within the Ministry for Transport,

Innovation and Technology (BMVIT) to take office during the current coalition between the Austrian Freedom Party and the Austrian Peoples Party which began early 2000.

A mapping of actors and responsibilities that are directly involved in the design and implementation of innovation policy can be divided into ministries, research funds and programme management organisations. Four separate ministries are involved in innovation policy issues the Ministry for Economic Affairs and Labour (BMWA), the BMVIT, the Ministry for Education, Science and Culture (BMBWK) and the Ministry of Finance (BMF).

The main research funding agencies in Austria are, as mentioned above, the FFF and the FWF with the FFF concentrating on the private sector and the FWF on basic research. The funds concentrate on supporting “bottom-up” or unprogrammed research activities. Although channelling funding through strategic thematic programmes in Austria has been growing in recent years, there are still few thematic programmes and the “bottom-up” approach is the preferred method. Having said this, some of the recent programmes that have been established have been less of a strategic nature and more a bundling together of the individual research projects contracted by a ministry in a particular field. These often do not have the same quality criteria that the funds require (Arnold et al. 2004).

Other agencies include the Austria Wirtschaftsservice, the Division for Science-Industry Co-operation within the Austrian Research Promotion Agency (FFG), the Christian Doppler Gesellschaft, the Austrian Space Agency, the Ludwig Boltzmann Gesellschaft and the Anniversary Fund of the Austrian National Bank. Each of these has a budget of its own to pursue its own goals whether these are the Kplus centres (Science-Industry-Co-operation) or an individual area or type of research such as space (ASA).

In addition to the agencies with their own budgets there is a further series of organisations that manage and administrate the thematic programmes on behalf of the ministries. Some of these organisations have specialised in programme management and have fewer competencies on the content side whilst other organisations have been included due to their expertise in a particular field. The management consultant Trust Consult is an example of the first type of organisation and they have provided the BMVIT with the programme management for the programme line Factory of Tomorrow. An example of the second type of programme management is provided by the ÖGUT (the Austrian Society for Environment and Technology) who are a well-known player in the Austrian sustainability scene. They manage the programme line Building of Tomorrow for the BMVIT. The contracts for the programme management are given for the duration of the programme and are put out to tender again if the programme is continued. There is little exchange of experience between the management of the individual programmes and a large number of different actors are involved in one programme period. This practise mirrors the general fragmentation in innovation policy discussed above.

5.2 Sustainable development policy

At national level, the most important actor in Austrian sustainability policy is the Federal Ministry for Agriculture, Forestry, Environment and Water Management (BMLFUW). Under responsibility of this ministry the national environmental plan as well as the national sustainability strategy were prepared and coordinated. The assignment of this ministry to sustainability issues becomes also apparent due to the fact that the chancellor authorised the minister to coordinate the implementation process of the national sustainability strategy.

The ministry's organisational structure is divided in four departments whereof one of them, department II, is assigned to "sustainability and rural areas". Although the other departments deal partly with sustainability issues, this one might be assessed as the core competence centre for sustainability within administration in Austria. Especially through its co-ordination role of the strategy implementation process since 2002, it develops more and more to the institution in Austria which coordinates sustainability-oriented activities horizontally but also vertically, that is to say between the national and federal level.

The Corporate Social Responsibility Initiative Austria[4] is a cooperative initiative by the Federal Ministry of Economics and Labour, the Austrian Federal Economic Chamber and the Federation of Austrian Industry and started in late 2002. It aims to achieve two goals: Firstly to make evident how Austrian businesses work for state and society, secondly to motivate entrepreneurs to intensify their efforts to that effect and at the same time to encourage them to communicate these efforts to a broader public. CSR Austria bases on the conviction that economic gains and responsible actions are not a contradiction from the first but may lead to advantage of location for Austrian companies. One of the most important activities of CSR Austria is the yearly award show "Trigos". This award is designed to give an incentive to the companies to include CSR into their business strategy and to support public awareness for CSR.

Apart from these two exemplary initiatives at national level, many important actors work on sustainability-oriented activities at the federal level. It is a characteristic of the Austrian sustainability policy making structure that the federal level plays an even more active role than the national level. Some of the nine provinces strongly support a sustainable development by assignment corresponding institutions within their administration structure or by establishing and financial support of sustainability consulting organisations outside the administration body. These organisations and institutions have been initiating activities in the field of sustainable economy (e.g. Economy Initiative in Styria or the EcoBusinessPlan in Vienna), in the field of sustainable social development (e.g. Social Capital in Vorarlberg) or in supporting and facilitating Local Agenda 21 processes in their municipalities. The federal commitment to sustainability also becomes evident by the fact that three provinces – Upper Austria, Lower Austria and Styria – are preparing or have already published their Federal Sustainability Strategies.

It is not possible to describe all activities here, but two examples are picked out, that are the EcoBusinessPlan Vienna and the Economy Initiative Styria. The EcoBusinessPlan Vienna[5] was installed by the city administration and is a partnership programme between the municipality, the Vienna Business Agency, the Vienna Chamber of Commerce and Industry and its institute for vocational training (WIFI), the Vienna Chamber of Employees, the Austrian Trade Union and the Ministry for Environment. The EcoBusinessPlan offers a set of five different ecological consulting programmes (including a climate protection programme, Ökoprofit – an introductory programme in ecological-management, the international Ecomanagement Systems ISO 14001 and EMAS and the Eco-Label for tourism) to improve environmental protection and to increase economic profit in daily

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4 see http://csr.m3plus.net/website/output.php

5 see http://www.oekobusinessplan.wien.at

business. Within these programmes a team of consultants helps the interested companies to achieve all the requirements which are necessary to obtain the respective certificate.

The Economy Initiative Styria[6] is a co-operation between the province of Styria, the Economic Chamber of Styria and the Styrian Business Promotion Agency and aims at supporting enterprises to implement sustainability strategies. It wants to disseminate the sustainability concept as a guiding vision and to implement it in selected fields of the Styrian economy through referencing to qualified consultants, financial support for defined programmes and education measures. The initiative focuses on three main areas. The first one, strategic business leadership, covers services that support enterprises to align their fundamental positioning to sustainable development. The second one, sustainable management systems, addresses the management perspective of an enterprise. It offers services to adapt the organisation to enable the implementation of a sustainability strategy. The third main area, product- and process-integrated environmental and climate protection, provides services that ensure a higher effectivity or efficiency of the resource management in the enterprise.

The main actors in the provinces are well connected through the sustainability coordinators conference which is a special institution to support an exchange of experience between the provinces[7]. It is based on a document, the common “declaration for the further development of environmental policy in Austria”, which was adopted by the speakers for environmental affairs of the provinces and the Minister for Environment in 1999. This declaration agreed upon an alignment of the future environmental policy with the concept of sustainability. At the annual conference of the speakers for environmental affairs in 2000, the establishment of an expert’s conference between the sustainability coordinators of the provinces and the national level was decided on. Since that time the sustainability coordinators meet every half a year to exchange their experiences and to develop and implement common strategies.

Beside the national and federal level, also the local level has to be mentioned due to about 200 Local Agenda 21 processes in Austria. Local Agenda 21 means that the local authority enters into a dialogue with its citizens, local organisations and enterprises to discuss the question how life quality in their living space can be obtained or improved. It is a new form of participatory work to develop ideas and projects for a better future and to implement them. Thereby it is important that all three dimensions of the sustainability concept are reflected and none of them is neglected in favour of the others. Local Agenda 21 processes usually follow several phases, the development of a common guiding vision, guiding targets, measures and the implementation of these measures. In many cases, the regional administration provides financial support to the municipalities and connects it to a kind of quality assurance in that way that the municipality has to commit itself to engage only well educated and experienced process facilitators.

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6 see http://www.oeko.steiermark.at/

7 see http://www.nachhaltigkeit.at/netzwerke.php3?koord_netz.html

5.3 Policy co-ordination bodies

In addition to the ministries and regional actors there are a number of inter-ministerial and intra-ministerial bodies that support the integration of policy areas. Especially in the areas of innovation policy and sustainable development policy these bodies play an important role in linking different policy areas. Most of these bodies in Austria are either in innovation policy (Council for Science and Technology Development) and focus on the relationship between science, technology and innovation policy or in sustainable development policy (Business Unit Sustainable Development and the committee for a sustainable Austria) and concentrate on mainly on co-ordinating sustainable development policy with the BMLFUW.

The most important new addition to the innovation policy scene has been the Council for Science and Technology Development. The Council was established in August 2000 to advise the government, ministries and federal states on all matters concerning Austrian technology policy. The Council consists of eight members, four chosen by the BMVIT and four by the BMBWK. As well as advising on ad hoc issues, the Council has been charged with the task of developing long term strategic plans for Austrian technology policy. Most recently the Council was responsible for reviewing the special funds worth a total of 508 million euros. The special funds were not part of the normal science and technology funding and individual initiatives were applied for by different ministries. The Council reviewed and ratified each individual application according to a set of criteria that focused mainly on the leverage effect for private sector involvement. In addition, the Council also tried to build up a picture of the total initiatives handed in and to look for overlaps and cases where clearer definition would be useful.

The involvement of the Council in the distributing the special funds should not be underestimated. Previously, the ministries had been left to distribute such funding on their own without any external checks and balances. The Council brought a higher degree of transparency and standards to the formulation of individual programmes and initiatives and not merely through increasing the need to include evaluation. However, these recent developments also have negative aspects to them. The competition between the programmes has increased due to this new system as the Council has to decide between them. The decisions are not based on long term strategic planning but rather on which programme performs better and can impress the Council members. It is questionable as to whether increased competition between the ministries will also lead to increased co-operation. On another level the Council has begun to encourage the interaction between the ministries and the programmes involved in sustainable development research. The FORNE initiative is such an example and is described below (chapter 6.2).

Policy co-ordination in the field of sustainable development occurs mainly informally, only a few formal institutions exist. The following paragraphs describe two interesting examples. The first one, the business unit sustainable development, is a co-ordination body within one single ministry to coordinate the working tasks of all the departments. The second one, the committee for a sustainable Austria, is a co-ordination institution over all ministries to coordinate all their contributions to implement the national sustainability strategy.

The Business Unit Sustainable Development was established as an overlapping institution across all departments of the BMLFUW. It consists of representatives from all departments, the chairmanship and the minister bureau and is coordinated by department II. The main tasks of this business unit are the integration of sustainability into all policy fields within the ministry through a common planning and co-ordination of upcoming activities and thematic aims. In this way, the coherence of the working contents and results can be assured. It

functions as an in-house “think tank”, as a communication and co-ordination platform for sustainable development, and develops a common strategy for sustainable issues for the ministry which is accorded with all departments. A special task of the business unit is the accordance of all sustainability-related working fields in the ministry in order to implement the National Sustainability Strategy.

The business unit Sustainable Development is one of three business units in the BMLFUW. It is an example for strategic co-ordination in an organisation. The aim is to develop a planning culture for a time horizon that is longer than only one year, so that specific topics can be worked on strategically. Therefore the visionary, identity-founding aspect is quite important. This business unit gives consideration to the fact that sustainable development is not a single discipline but an umbrella subject. The integration of sustainable development in all environmental policy fields may be a first step for its integration into all other ministries and policy fields like economics or transport. Until now, no further business units like this example exist in other ministries. One interview partner suggests that it might be a good institution to copy, but of cause with the restriction that sustainability is no core concern in other ministries.

The “committee for a sustainable Austria” was established in 2002 as the main driving force to implement the national sustainability strategy. As the committee is maybe the most important horizontal policy co-ordination body in the Austrian sustainability policy field, it is described in detail in chapter 7.1.

6 Co-ordination initiatives

This section describes individual initiatives and actions that play a role in supporting the co-ordination between innovation and sustainable development policy. There are two different types of initiatives that should be mentioned in this context. Firstly, there are initiatives that aim to increase the co-ordination either within one policy area or between different policy areas. These are especially common within the area of sustainable development or within a specific sectoral policy area that covers more than one ministry or division. An example is the Austrian Forestry Dialog that aims to bring together all actors within the Forestry sector. Secondly, there are initiatives that exist on the interface between two policy areas, but were not designed primarily with a co-ordination function in mind such as the RTD programme Sustainable Technologies.

6.1 Participation in sustainability initiatives

As sustainable development requires the consideration of economic, societal and ecological aspects at the same time, it deals with complex issues. Sustainability-related discussions therefore often bear conflicts of interests. Solutions for complex problems have to be found that can be accepted by as many people as possible. Participation has always been a main principle in sustainable development. It serves to include the different opinions and interests in to find “socially robust” solutions that are accepted by the bigger part of people.

Although participation is an important criterion in sustainable development activities, only few good examples of participation in sustainability initiatives exist. The two examples below describe the Austrian Forest Dialogue which is a still on-going participation process and the already completed public participation during the development process of the national sustainability strategy which provides also insights into how it worked.

6.1.1 The Forest Dialogue

In April 2003, the Minister of Agriculture, Forestry, Environment and Water Management launched the Austrian Forest Dialogue. It is a new approach aimed at the development of a National Forest Programme by the means of broad participation of the relevant actors and intersectoral co-ordination. As the solution of existing problems in most cases is not possible by one sector alone, the co-operation of all those involved in the conflicts of interests is required. The Austrian Forest Dialogue is intended to be a continuous and open process, a dialogue between all forest-relevant sectors, associations, organisations and interest groups, in particular forest owners, the timber industry, hunters, tourism as well as nature conservation and environmental protection. All these stakeholders are invited to jointly develop strategies, guidelines and means for a sustainable improvement of the forest situation in Austria which do not conflict with ownership or usufruct rights and which are operationally realisable.

The implementation of the Forest Dialogue is organised through several boards. The *Round Table* was established to clarify political and thematic interests and therefore is maybe the most important decision making board. It is open to representatives from about 40 organisations which have been invited by the ministry. The real thematic working process and the preparation of contents takes place in three *modules*, which are

- protection forest – forest protection,

- forest and economy,

- environment and society.

The participation of the broader public is possible through the internet platform www.walddialog.at which provides information, documents about recent activities and meetings and a discussion forum (10 contributions till December 2004) that is open to everybody. Furthermore, public events take place from time to time and offer the opportunity to bring in one's position and to get involved.

As a framework of all forest-related activities, the National Forest Programme will determine Austria's forest policy in the short, middle and long term. First results are expected in the middle of the year 2005.

6.1.2 Preparation and implementation of the national sustainability strategy

The national sustainability strategy was adopted by the Council of Ministers in April 2002 after a two-year lasting preparation process. The strategy development is an example for a participatory process at national level. It began with the preparation of the Green Paper between March and May 2001 and continued with the development of the strategy document. About 50 representatives from the ministries, social partners and non-governmental organisations worked on guide lines, fields of action and concrete measures that could be part of the strategy. Actors that worked permanently for the strategy development process were a steering group that lead and managed the whole process, a commissioned moderator who supported the search process for consensus and decisions and scientific editorial staff that wrote down intermediate results and the document itself.

During the preparation process, the public was included via a questionnaire in written form which was sent to scientists, via the establishment of an internet platform and via a plenum of 50 persons that met four times. They are described as follows (see Martinuzzi and Kopp 2002, 10).

Between August and October 2001, a survey in written form was sent to 200 scientists to explore the necessary contents of the strategy. The return run of 20 answers was very low and can be interpreted in little interest in the strategy development. The answers could be divided in three groups:

- Fundamental criticism concerning the preparation process of the strategy (doubt about the sense and graveness of the strategy; too high pressure in time; insufficient involvement of science),

- Unspecific praise (for single statements in the Green Paper or for the initiative to develop a strategy in general) and

- Representation of the own scientific working fields or interests (especially integration of the own competence field).

Amount and quality of the answers show that this survey was not successful, at least in regard to the chosen time frame and the chosen setting to carry it out.

The success of the installed internet discussion platform was disappointing in the same way. A section of the Website www.nachhaltigkeit.at provided information about the strategy development process and invited visitors to post their comments. Although statistics show that about 1000 persons visited the website and informed themselves about the actual status, only 20 discussion contributions were posted. It is difficult to find answers why this participation initiative did not work in the expected way. Some speculations are a deficient credibility of the discussion offer, fear of positioning oneself in a documented way or less interest in active participation.

The third participation initiative was the so-called plenum. It consisted of about 50 representatives from ministries, social partners, federal governments and non-governmental organisations that were nominated by their organisations. The plenum met four times and discussed the aim, course of action and quality criteria of the strategy, the table of contents and fields of action, suggestions for the guiding targets of the strategy and the text proposal of the final version of the strategy. Different from the other two described initiatives, the plenum worked relatively successful and efficient as the working process was well structured. The main success criteria were a good atmosphere as well as expertise and negotiation possibilities of the plenum members.

6.2 Research programmes in support of sustainable development

Research programmes are one of the main interfaces between innovation policy and other policy areas. Here innovation policy aims have to be reconciled with the aims of the sectoral or other horizontal policy area. Austria has a long history of developing RTD programmes in the area of the sustainable development. The first, the Austrian Landscape Research Programme, was first established in 1992. Since then environmental and sustainable development research have grown and diversified. Currently, there are several RTD programmes that aim to support sustainable development. The two main programmes in this area are the “Technologies for Sustainable Development” Programme of the BMVIT and “Provision” of the BMBWK. The BMLFUW has a programme called “PFEIL 05” that also supports the aims of sustainable development, but where it is not the only goal of the programme.

The BMBWK established the Austrian Landscape Research Programme (KLF) to provide a scientific basis for sustainable development of Austria’s landscapes and regions. The development should have both ecological and social foundations whilst securing a permanent basis for future generations. The development of the programme began with a strategy paper that was sent out to 500 researchers for comments. As a follow up, five working groups were organised comprising over 200 people. The working groups asked such questions as what does cultural landscape mean, what should cultural landscape research do, what can it be based on, which methods can be used which still have to be developed and which themes should be addressed.

The main aims of the Austrian Landscape Research Programme were to reduce anthropogenic stock flows, to optimise the relationship between biodiversity and quality of life and to support development options in landscape dynamics. The programme aimed to

achieve these goals through the providing research that secured the long-term economic and socio-cultural development of regions, research for ecological and societal stability and to support a dialogue between science and practical experience. Once set up, the research programme ran for ten years and came to an end in mid 2003.

The BMBWK was very interested in establishing a follow up programme to the KLF called EcoForesightsAustria. The programme concept was presented to the Council for Science and Technology Development in autumn 2001 for ratification. At the Council meeting of April 9, 2002 the Council decided not to fund the programme. The Council made the following recommendation: For the Programme EcoForesightsAustria, the Council recommends its integration in appropriate activities of the BMLFUW (Council for Research and Technological Development 2002). However, this turned out to be unfeasible as a considerable proportion of the BMLFUW research funds are allocated to its own research and testing institutes it is required by law to maintain. In addition, the contents of the EcoForesightsAustria were quite different from the BMLFUW activities.

For a few years research on sustainable development was not funded in Austria, apart from the BMVIT's technology programmes (see below). Only when the Council realised that it needed to put this type of research back on the agenda did sustainable development research stand another chance of receiving funding. This the Council did through organising a strategy process to create a new programme. It organised workshops and working groups to design a new programme. The final result of this process ended in the development of “Provision” which started late 2004 and scheduled to run for ten years. The programme will be divided into three phases, two programme phases and a synthesis phase. The first call for proposals is due to be announced in September/October 2004. The programme has seven main areas of focus: Risk assessment, sustainable living, integrated welfare, environmental balance, adaptable space, global responsibility and sustainable mediation.

- The area of focus risk assessment aims at understanding the reasons and the consequences of environmental change, to find methods and ways through which these changes and risks can be identified at an early stage and managed.

- The area of focus sustainable living aims at securing standards of living that are also in line with the aims of sustainable development.

- The focus area integrated welfare aims at understanding the conflicts between ecology and economy and between environment and development. It asks how future living standards can be maintained in a participatory way.

- The area of focus environmental balance concentrates on ecosystems and asks how different ecosystems are used and how change affects them.

- The area of focus adaptable space focuses on how global change is affecting land management and how this can be adapted to support the aims of sustainable development.

- The focus area sustainability mediation aims to integrate the societal element into the research programme. It asks questions about what kind of science society needs and how to provide it.

- The area of focus global responsibility concentrates on Austria's global responsibility to support sustainable development.

In addition to the content specific areas of focus, the programme also aims to address a number of horizontal research goals including increasing international co-operation, improving co-operation between science and industry, increasing the participation of women in science, improving career prospects for young scientists, establishing continuous co-operation between research and education.

The BMVIT has an RTD programme called Technologies for Sustainable Development. This is the main programme in Austria that supports sustainable technologies. The programme was first established in 1999 and has three sub-programmes: Building of Tomorrow, Energy Systems of Tomorrow, and Factory of Tomorrow. The main aims of the programme are to create new economic opportunities, increase the economical use of natural resources, consolidate Austria's position in the filed of technology and to create positive effects on the economy and on employment. According to the programme documents this can be achieved through the strengthening of R&D competencies, encouraging interdisciplinarity and networking and through increasing the diffusion and application of R&D results. This programme is the subject of one of the case studies and will be dealt with further below.

6.2.1 A Research Strategy for Sustainable Development (FORNE)

In June 2004 the Council for Science and Technological Development ratified a research strategy for sustainable development that aims to co-ordinate the programmes described above. This process was initiated in reaction to new specifications introduced by the Council as part of its remit to try and increase the coherence of RTD funding in Austria. In 2004 the FORNE process led to the development of the Framework Strategy 2004 Plus (Paula, Smoliner, Tiefenthaler 2004) which sets down the aims and objectives of the initiative. The main aim of FORNE is to strengthen the field of research for sustainable development in Austria, to define common aims for sustainable development research in Austria and to set future priorities. It brings together the activities in the BMLFUW, BMBWK and the BMVIT and aims to increase the coherence between their RTD programmes. In addition, FORNE seeks to father the co-operation between the activities of the ministries and the Austrian Sustainable Development Strategy. The framework programme produced in 2004 sets out methodological and strategic fundamentals and details the working practices. In one part it sets out the different types of research needed to answer the questions required by a transition to sustainable development. In another part of the framework programme Austria's strengths in the area of research for sustainable development are portrayed both on a national and international level.

FORNE's main decision making body is the steering group. This is the platform of those responsible for the research programmes for sustainable development. The steering group has members from all actors involved in research for sustainable development or related activities and a representative from the Council for Science and Technology Development. The chair of the steering group rotates between the ministries from one meeting to the next. The meetings take place at least twice a year and more often if necessary. The members of the steering group are responsible for the implementation of the recommendations in their own ministry.

The establishment of FORNE has led to increased co-operation between the programmes, better co-ordination of the programmes and discussions on new methods for research for sustainable development. The ministries have also been able to exchange experience and co-ordinate co-operation with other national EU programmes and with the EU Framework Programme. In addition, the FORNE initiative has not only given the ministries the opportunity to exchange their experiences, but also to make this type of research more visible. It isn't any longer possible to obtain any of the special funds without having a clear strategy of how the programmes of the different ministries fit together. However, it is more an external strategy than a strategy that is really lived.

7 Co-ordination arrangements typical for the policy area

Policy areas interact with each other. Whether they do this as part of a co-ordinated process or on a more ad-hoc basis depends on the structures and also on the degree of necessity for interaction. The integration between transport policy and innovation policy in Austria provides an example of close physical proximity but, little co-ordination on the formal level. Higher levels of interaction can be found on the informal level where personal connections play an important role. There are few typical arrangements that characterise interaction for the policy area, but a rearrangement of actor constellations around each new issue with a greater or lesser degree of integration. The extent of the informal interaction that takes place between the different actors is difficult to depict and beyond the scope of this study. However, some of the general barriers and challenges to co-operation and collaboration can be observed when looking at specific activities that require interaction between the two areas.

7.1 Selected sub-cases

In this section two activities are looked at where the concrete interaction between sustainable development and innovation policy can be observed. These activities have been selected for three different reasons. Firstly, they represent arguable the most important interfaces between these two policy areas in Austria and secondly they are both activities where there is a concrete need for interaction. Thirdly, the two case studies represent very different types of co-ordination mechanisms. The Austrian Sustainable Development Strategy is a deliberate co-ordination mechanism that was designed to co-ordinate different sectoral policies under a horizontal sustainable development strategy. The Programme Technologies for Sustainable Development is a programme established and managed by the innovation division of the ministry. The programme is not a specific co-ordination mechanism, but a policy initiative that requires the interaction of the two different policy areas.

7.2 The National Sustainable Development Strategy

7.2.1 European background and document preparation

In June 1997, in New York the 19th UN General Assembly Special Session to Review Implementation of Agenda 21 (UNGASS) took place. This assembly is also known as Rio+5, indicating the first international Earth Summit in Rio de Janeiro 1992, convened to address urgent problems of environmental protection and socio-economic development. The Rio+5 meeting took stock of how well countries, international organisations and sectors of civil society have responded to the challenge of the Earth Summit. This meeting was insofar important in the context of sustainability strategies as a first call for the preparation of national sustainability strategies was published in the resolution adopted by the General Assembly:

Sustainable development strategies are important mechanisms for enhancing and linking national capacity so as to bring together priorities in social, economic and environmental policies. In the context of good governance, properly constructed strategies can enhance prospects for economic growth and employment and at the same time protect the

environment. All sectors of society should be involved in their development and implementation, … By the year 2002, the formulation and elaboration of national strategies for sustainable development that reflect the contributions and responsibilities of all interested parties should be completed in all countries … (Paragraph IIIA24)[8].

On request of the Helsinki European Council in December 1999, the European Commission developed a proposal for a European Sustainable Development Strategy for the Gothenburg European Council, called "A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development"[9]. Instead of adopting this document, the European Council formulated among others 14 paragraphs under the headline "strategy for a sustainable development" in the conclusions of the presidency[10]. One of them calls on the member states of the European Union to develop national sustainable development strategies. These 14 paragraphs are said to be the actual European Sustainability Strategy.

In Austria, a group of about 15 experts – delegates from ministries, social partners and external consulters – prepared a Green Paper under the co-ordination of the environmental minister which was completed in May 2001. It was conceptualized as a basis for the National Sustainable Development Strategy and contained already three fields of action which were incorporated in the later final strategy version: quality of life in Austria, Austria as a dynamic business location and living spaces in Austria. The Green Paper was presented for the first time at the European Council in Gothenburg 2001 and then worked on to produce the final document. This working phase included about 40 representatives from ministries, regional governments, social partners, lobbying groups and non-governmental organisations. Finally, the strategy draft was adopted by the Council of Ministers in April 2002.

The Sustainable Development Strategy contains four fields of action which are:

- Quality of life in Austria
- Austria as a dynamic business location
- Living spaces in Austria and
- Austria's responsibility.

Each of these fields of action contains five key objectives which are prerequisites to foster a sustainable development direction. They include a description of the current problem background, a list of concrete targets and approaches for achieving them. A number of indicators are assigned to each of the four fields of action to measure progress. The target

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8 see http://www.un.org/documents/ga/res/spec/aress19-2.htm

9 see http://www.nachhaltigkeit.at/strategie/pdf/EU_nachstrat_en.pdf

10 see http://ue.eu.int/ueDocs/cms_Data/docs/pressData/de/ec/00200-r1.d1.pdf

definitions in the strategy are more declarations of intent than clear quantified goals with a precise time horizon for implementation. For this reason, the European Commission, who analysed the different National Sustainability Strategies, categorised the Austrian one as a framing strategy and not as an action programme (Commission staff working document 2004).

7.2.2 Implementation process and structure

After the adoption by the Council of Ministers, the strategy implementation process started and is still going on. On the basis of a governmental resolution, the co-ordination of the implementation process is the responsibility of the Federal Ministry of Agriculture, Forestry, Environment and Water Management. This fact is assessed differently by persons who are involved in the strategy implementation process. Some of them, especially those from environmental related working fields, favour this assignment and argue that the success in implementation progress depends more on the personal dedication of the responsible minister or individuals in the ministries than on formal jurisdiction. The others say that the assignment inhibits an equitable dialogue between the three dimensions of sustainability because the environmental dimension is overstressed. Another consequence from this assignment is that the Ministry of Environment remains in its role as that institution which adds environmental aspects only retrospectively to concepts and proposals instead of supporting a change in attitude according to which environmental affairs are integrated equally in priority from the beginning on.

The main principles of the implementation process have already been described in the strategy document itself. In general, the process aims at continuously operationalizing the key objectives in short-, medium- and long-term targets. Existing policies, plans and programmes will be evaluated with regard to their compatibility with these concepts and objectives and then developed accordingly. The entire implementation process is based on five principles (Austrian Strategy for Sustainable Development, BMLFUW 2002, 98ff.):

- Systematic and efficient implementation through sector and regional strategies: As the implementation process is the joint responsibility of all relevant actors, the need for new forms of co-operation between decision makers as well as self-responsible and decentralised actions is stressed. The regional and local levels are assessed as the central levels for implementation and are asked for establishing independent sector, regional, communal and local sustainability policies.

- Co-ordination through co-operation: In order to assure consistency between the policy targets pursued at the European Union level and those pursued at the national, regional and local levels, a strong networking of ministries, provinces and social partners is required. Continuous information exchange on the status of implementation and regular co-ordination of the next implementation steps should be ensured.

- Transparency: To assure a high degree of transparency and publicity, several publications are planned. The annual or biannual working programmes are defined through delegates from ministries and contain projects and measures with a clear reference to the key objectives of the sustainability strategy. The progress reports on the implemented activities are oriented towards the structure of the working programmes and show the successes and possible barriers to implementation. An

external evaluation of the implementation activities is planned in autumn 2005. It will form the basis for the further development of the Sustainability Strategy.

- Participation opportunities and broad-based public relations work: The strategy wants to motivate all citizens, institutions and social groups to participate actively in the implementation process. Sustainable development requires a new culture of dealing with conflicts. Conflicting interests must not be ignored but discussed in a social dialogue and viable long-term solutions developed. Participation and co-determination is only possible on the basis of sufficient knowledge about the concept of sustainable development what requires more information about the interactions between ecological, economic and societal trends.

- Further development through evaluation and a "learning strategy": The implementation of the strategy is a dynamic and continuous learning process. Thereby, experiences from the implementation must be taken into consideration as well as new findings. When designing the implementation process as a learning strategy, several principles are important: Networking through new institutions, openness to participation opportunities and dialogues with target groups, reflectiveness through publishing progress reports and using internationally coordinated indicators and error tolerance through review processes, dialogue moderation and conflict mediation.

Since sustainable development is a cross sector issue, numerous actors are involved in the implementation process:

- Federal government: The strategy is an initiative of the federal government. The implementation process is under responsibility of the Federal Minister of Agriculture, Forestry, Environment and Water Management. All documents referring to the strategy are prepared by administration and adopted or noticed by the Council of Ministers.

- Steering group: It takes responsibility for both, the preparation of the strategy document and its implementation process. The steering group consists of four delegates from the Federal Ministry of Agriculture, Forestry, Environment and Water Management. It designs the strategic setting of points in the implementation process, supports the committee and forum in their work and creates the framework conditions for preparing the strategy documents in time.

- Committee for a Sustainable Austria: Established in 2002, it is one of the most important actors of the strategy implementation process. Its main task is the preparation of the annually or bi-annually working programmes and progress reports for the federal government. The committee consists of representatives from all ministries (one or two persons per ministry), from different interest groups and of four delegates from the Expert Conference of Sustainability Coordinators which is a special institution to support the exchange of experience between sustainability actors in the provinces.

- Forum for a Sustainable Austria: It was also established in 2002 and consists of 45 experts from scientific organisations and non-governmental organisations in the environmental and social fields. The forum supports and advises the committee, e.g.

through commenting on the working programme drafts by the committee. The forum is a critical but also constructive panel that brings in experts know how and that identifies societal relevant themes to discuss in the scope of the strategy implementation process.

The implementation process of the sustainability strategy has been in place for two years. In the interviews, it is assessed differently by the persons involved. Criticism is related e.g. to the fact that the Federal Minister of Agriculture, Forestry, Environment and Water Management – and not the Federal Chancellor – is responsible for the co-ordination of the implementation process. This is assessed differently those involved in the strategy implementation process. Some people, especially those from environmental related working fields, favour this assignment and argue that success in implementation progress depends more on the personal dedication of the responsible minister or individuals in the ministries than on formal jurisdiction. The others say that the assignment inhibits an equitable dialogue between the three dimensions of sustainability because the environmental dimension is overstressed. Another consequence of this assignment is that the Ministry of Environment remains in its role as that institution which adds environmental aspects only retrospectively to concepts and proposals instead of supporting a change in attitude according to which environmental affairs are integrated equally in priority from the beginning on.

Criticism is also related to the content of the strategy. It includes only sustainability activities and initiatives at the national level but not any at the federal level. This is the reason why the working programmes do not really reflect the actual sustainability policy situation in Austria because most activities occur at the federal level and are not mentioned in the official strategy documents. Especially the sustainability actors in the provinces therefore feel a bit excluded from the strategy implementation process. But the strategy content meets in another point with criticism. The target definitions in the strategy are more declarations of intent than clear quantified goals with a precise time horizon for implementation. For this reason, the strategy is criticised to be ambitious in content (e.g. ecological tax reform) but not binding.

Nevertheless, if one refrains from examining progress in content and takes the working processes into consideration, then this is evaluated as transparent and clearly structured by the involved persons. The implementation process of the National Sustainability Strategy is a highly useful effort that brings together different actors. By defining it as a learning strategy, the flexibility for necessary adaptations during the implementation process – for example for corrections concerning future main task focuses – is ensured. In addition, in comparison with the sustainability policy situation in other European countries, Austria is performing relatively well in opinion of the responsible delegates.

7.2.3 Linking sustainable development policy to innovation policy

7.2.3.1 Challenging sustainable innovation policy

To investigate the links between these two policy fields, it has to be first found out which different understandings of the term innovation exist, especially among sustainability actors who are not mainly concerned with innovation issues. The results of the interviews show that two different perceptions of innovation exist. The first one perceives innovation in a narrower sense and associates it strongly with technical and economical matters.

Accordingly, innovation is understood as a new or modified product or service which is provided on the market. The second one interprets innovation in a wider sense and defines it generally as the ability to create and implement new ideas. In this sense, innovation is understood as a horizontal policy area over all disciplines, systems (enterprises, municipality, etc.) and policy fields. Innovation in this sense is more related to human behaviour than to products for the market. Another result from the interviews is that sustainability actors strongly reflect on the cause of innovation activities and would like to bring it under the objectives of sustainability. So the connection between innovation and sustainability is obvious for many interviewed persons. They state that innovation should not occur because of innovation itself but must purposive support a sustainable development.

Asking for links between innovation policy and sustainable development policy referring to the narrow comprehension of innovation, the interviewed persons consistently name one example of success in Austria: the Research Programme on Technologies for Sustainable Development[11] which is an initiative of the Ministry of Transport, Innovation and Technology. Apart from the Research Programme on Technologies for Sustainable Development, there exists no explicit sustainable innovation policy in Austria and some of the interviewed persons say that they even do not know how it could be done. Combining innovation and sustainability is easy in the field of end-of-pipe technologies because concrete targets can be defined (e.g. emission regulations for diesel engines). But it is rather difficult in the field of clean technologies where no state-of-the-art exists. Best available technologies and state-of-the-art are always only retrospective and no clear terms. So every clean technology solution is a single solution in its specific context. Policy is difficult in this field because a clear target definition is hard. This is a fundamental problem in the support of sustainable innovation which hinders also the co-operation between enterprises and public authorities. On the one hand, every enterprise needs legal security and exactly to know what is allowed and what is not allowed, on the other hand the public authorities want to support clean technologies as far as possible. This problem is currently less discussed within expert circles and should become more aware as it is currently the case.

Considering links between innovation policy and sustainable development policy referring to the above described wider sense of innovation, there exist lots of examples and projects in Austria. If sustainable development is understood as innovation itself, all projects and activities of people and institutions engaged in sustainable development can be subsumed. Many interviewed persons who are engaged in sustainability related working fields stress that sustainable innovation policy does not only mean a policy on subsidies for environmentally friendly technologies (e.g. solar technologies) and should not be constricted to such a narrow sense. But, if policy is understood as coping with public and common tasks, it is also part of this policy to create innovative settings and frameworks, so that people can act innovatively regardless where and in which systems they are (municipality, enterprise, non-governmental organisation etc.). Therefore, a sustainable innovation policy need not claim to know what sustainable innovation is by itself but should enable people to develop innovations. The actors have to interpret sustainability in their specific working context and on the basis of their experiences, have to identify themselves with their search results and then implement their ideas. A policy like this gives consideration to the fact that sustainable innovations are single solutions in their specific context as suggested above.

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[11] see http://www.nachhaltigwirtschaften.at/pdf/program_e.pdf

At the national level, the working programmes 2003 and 2004 to the National Sustainability Strategy provide a good overview of “sustainable innovations”. These documents compile ongoing or planned sustainability activities and initiatives of all ministries and show the first implementation steps of the strategy. The working programmes are central elements in the implementation process of the strategy and serve

- to operationalise the strategy targets, that is to transform them into concrete measures to ensure a continuing implementation process,
- to implement the strategy according to the subsidiarity principle and to the competencies determined in the basic law,
- to adjust the planned measures between the different institutions for to increase consistency and coherence of the policies,
- to point out any gaps in implementation in time and therewith contribute to a continuing improvement,
- To create the basis for the progress reports which describe the state of implementation (BMLFUW 2003, 11).

The working programmes are prepared by the committee for a sustainable Austria which is the most interesting and promising institution in horizontal policy co-ordination within the framework of the sustainability strategy implementation process and described in the next chapter.

7.2.3.2 Policy co-ordination: the example of the committee for a sustainable Austria

In June 2002, the committee for a sustainable Austria was constituted. The committee consists of delegates from all ministries, from lobbying institutions and of four representatives from the sustainability coordinators conference[12]. This personal formation ensures the linkage of the institutions that are important for the implementation of the strategy as well as an information exchange referring to the fields of action defined in the strategy document. The foundation of the committee affords that sustainability issues are institutionalised as a priority in administration and that the idea of an integrated view of ecological, economical and societal challenges is widespread (Arbeitsprogramm 2003, 7).

The main working task of the committee is to accompany and coordinate the implementation of the strategy in regular meetings. The members of the committee analyse the sustainability strategy with regard to the relevant ministry-specific and institutional competencies and define concrete working programmes within the scope of the individual functions. These working programmes contain projects and measures with a clear reference

[12] The sustainability coordinators conference is a special institution to support an exchange of experience between the provinces.

to the key objectives of the strategy. They are the central elements of the implementation process and describe the framework of action in annually or biannually time horizons. In addition to the working programmes, the committee also prepares progress reports on the implemented activities which present the effects achieved so far. The monthly committee meetings are the only place where formal co-ordination between all ministries in terms of sustainability issues occurs.

The way of work in the committee has changed over the time since it has been established. In the first period, a general overview of all sustainability-oriented activities in the ministries was worked out. The result were about 200 current, planned or wished projects, initiatives and ideas enlisted into an electronical data base which was the groundwork for the working programmes 2003 and 2004. In doing so, a common understanding of all these activities in the context of sustainability was created, particularly when some of them have been launched in order to achieve a goal independently of the sustainability idea. In the second period, in co-operation between committee and forum ten working groups have been established to go in depth in content and to work on special issues. The aim of each working group was to develop two or three new initiatives whose implementation has a trans-sectoral character and is under the responsibility of at least two institutions. The results were 20 to 30 ideas and project suggestions which partly passed a resolution at the committee will be or have already been implemented. Apart from the content wise results, the working groups also provided the possibility to extend the person group of the committee or to reach persons from the different ministries who have no committee membership.

7.2.3.3 Assessing the committee as a horizontal policy co-ordinating institution

The work in the committee is assessed differently by the interviewed persons. Criticism is related to an unbalanced handling of the different topics and slow progress in content. The discussions and decisions whether specific contents are included or not included in the documents take long time. Some argue that the committee could be a good institution if it would not be dominated by the particular interests. The lack of formal authority of the committee members leads to long-lasting feedback loops with their organisations where the individual opinions have to be corrected or to put into perspective. These experiences made some committee members more cautious. But, in other arguments from the interviewed persons, the implementation process is highly praised as well-structured and democratic. It is an opportunity for ministries, which have no main working focus on sustainability, to get familiar with it or to reflect their own past activities from the view of this concept. So the value of the committee working process lies especially in awareness building for sustainability what did not occur in such a structured formal way before in Austria.

As already mentioned above, the co-ordination processes within the committee sometimes take a long time due to the fact that most of the committee members are not accorded with authority from their ministry but can only bring into the discussions their personal opinions. This leads to the procedure that single decisions have to be postponed while the members collect the official opinion from their ministry and bring it into the next meeting. These feed back loops are very time consuming. Another difficulty results from the content wise complexity of the sustainability concept. Some topics, which need to be agreed on, are completely new for some committee members and also in their ministries. In the committee therefore some contents are at the same time debated and decided about. That seems to overstrain some of the committee members.

In the first working period of the committee, when the committee members collected sustainability-oriented projects and measures of all ministries, a good overview of all initiatives on the national level was worked out. But the result, a list of 200 measures or projects, was also criticised as a conglomeration of all initiatives which can be interpreted in the sense of sustainability anyhow. About a quarter of the 200 listed measures were defined separately from the strategy context, even before the sustainability strategy was published. But, the value of this list was that the single measures have not been considered in regard to the sustainability concept before and have not been regarded as a whole before. So this work can be evaluated as a learning and awareness building process predominantly.

In the second working period of the committee, they established ten working groups in order to go more in-depth in content instead of breadth. The working groups consisted not only of committee members but also of members of the forum for a sustainable Austria. Each group focused on a specific topic, developed a common understanding of it and suggested two or three according concrete project ideas. It was a precondition that these project ideas cover the responsibility of at least two ministries, suggestions that cover the competence field of only one ministry were not accepted. At the end of this working phase, 20 to 30 project ideas were developed. Some of them were decided to implement and are now in differently advanced realisation stages. The success of these projects differs. While some of them reach a quite high publicity like the initiative "sustainable weeks"[13], others are less successful and tend to disencourage the involved persons.

A great barrier in the implementation process is the lack of any appropriate budget to implement projects and measures agreed on by the committee members. When the strategy document was adopted by the Council of Ministers, they didn't agree on a budget for the strategy implementation process. This is a great barrier in the opinion of most interviewed committee members. Projects within the scope of the strategy can only be initiated if the expenses can be covered from other budgets. Some committee members would appreciate a decision among all ministries that a specific percentage of all ministries' budgets will be dedicated to implementation activities. Then, this budget could be used to initiate projects on which the committee members have agreed upon together.

The quality of the committee work depends on some factors. First of all, voluntariness and proactivity of the committee members play an important role. Since the strategy goals are not binding and no clear political instructions exist, progress in implementation depends on individual goodwill and conviction of the involved persons. On the other hand, the strategy process is an opportunity especially for those delegates who are highly interested in sustainable development but were not accorded with authority from their organisations to set priorities in this field. The strategy implementation activities provide them the opportunity to engage more actively in these issues now.

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[13] The "sustainable weeks" were an initiative of the Ministry of Agriculture, Forestry, Environment and Water Management, the Ministry of Economics and Labour, the Austrian Federal Economic Chamber and the provinces Upper Austria, Lower Austria and Salzburg in co-operation with many Austrian trade chains and took place from 15th September to 15th October 2004. The aim of this initiative was to enforce the consumption of sustainable products and therewith to increase sales of these products.

The individual attitude of the committee members also plays a deciding role in regard to the fact that they were not nominated by the coordinator of the sustainability strategy, the Minister of Agriculture, Forestry, Environment and Water Management, but by their organisations. So the constitution of the committee derived from individuals who are mainly there to represent their ministries, not only on behalf of their own expertise. The formation of the committee according to this representation principle is criticised by some interviewed persons because it does not (or not enough) take the individual conviction of the committee members into account.

A great deficiency of sustainability policy in Austria is the lack of debates in political forums. Until now, sustainability discussions and activities remain on the administrative level but hardly influence politics. Therefore, sustainability policy in Austria can be characterized as a bureaucratically dominated policy which is mainly driven by activities from the regional level. One interview partner observes a discrepancy between the high diversity of sustainability activities in administration and the lack of discussions and debates in politics, for example in parliament. The activities of the committee or the sustainability activities as a whole are a relatively closed policy field within the environmental policy field and hardly affect other policy fields. The effectiveness of sustainability policy is strongly limited. This is a real weakness in Austrian sustainability policy, in particular in comparison with other countries like Germany, the Netherlands or Scandinavia where sustainability issues already entered political forums.

Horizontal policy co-ordination through the work of the committee for a sustainable Austria has its limits due to fact that administration works on the basis of bureaucratic logic and interests. As one of the interviewed persons explained, the administration structure can be compared with many little “boxes” which work relatively autonomously on their individual tasks. This structure, which has developed over decades, allows an efficient daily routine, but is not suitable for strategic renewals. This level of bureaucracy is contradictory to linking different working fields or policies and is a structural problem when dealing with horizontal subjects. Moreover, from the view of delegates in ministries, co-operation does not only incorporate chances, but can also involve the danger of loosing responsibility in a particular knowledge field and of therefore becoming redundant. To achieve links therefore cannot be left to the delegates but would need high level commitment as well as high level will to implementation.

7.2.3.4 Further possibilities to achieve horizontal sustainable development policy co-ordination

The question which further possibilities to achieve horizontal policy co-operation could be suggested, was answered differently by the interviewed persons. Considered possibilities were the implementation of a board, the assignment of single persons with a co-ordination function and the initiative of projects which need the co-ordination and co-operation of several ministries. These ideas are reflected as follows.

The establishment of additional boards is not really favoured because the interview partners think that enough of them exist already. The more important question is how these existing boards could improve their work and design it more efficiently. The committee for a sustainable Austria is a good example where all departments adjust their working plans. But to intensify this co-ordination, it would need a clear commitment from politics and the responsible administrative officers. The lack of power of authority is a great barrier for other sustainability boards in Austria. For example, the sustainability coordinators conference is

only authorised by the speakers for environmental affairs of the provinces. So it is not possible for them to extend their work to other policy fields.

The assignment of a single person with responsibility for linking different policy fields is estimated as not sufficient. An interview partner points out that a nominated sustainability coordinator who cooperates horizontally with all ministries would be doomed to failure. For example, if he would suggest co-operation between the transport and the environment department, he would have to demand the transport department cut back some projects or even to convince them to act against the ministry's ideology (e.g. necessity to delete environmentally harmful subsidies which exist for a long time). This might be a quite dangerous job.

The initiation of single projects at the interface between two or more ministries could be a way to create a climate of co-operation. A precondition is that the projects do not affect the interests of the partner organisations but are of good use for them all. It might be important to create a protected area for the project work and to communicate to all partners that the contents are calculable and debatable. Taking these factors into consideration, the work on common projects may offer the opportunity to try co-operation out in a concrete case for a limited time.

But, all three described possibilities for co-operation do not occur self-motivated. In the current administration structure and the way it works, co-operation is always associated with the fear to loose ones own competence and working field. It could lead to a reorganisation or cancellation In any case, co-operation needs a formal work order from a higher administration level as well as support.

7.2.3.5 Next steps and challenges in the strategy implementation process

After a two years working phase, some committee members notice a slight fatigue in the group. This becomes visible through the fact that more and more of the nominated committee members do no longer participate in the meetings themselves but send a colleague to deputise for them. Another point is that the change in the way of work of the committee from collecting sustainability-oriented projects and initiatives in their organisations to develop concrete project ideas in working groups also means to work more in depth than breadthways. The work on concrete project ideas requires patience and persistence. It is a challenge for the steering group in the ministry to cope with this situation and to find solutions how dynamic in work can be obtained over time.

An evaluation of the strategy implementation process is planned in 2006. Some interviewed committee members are rather sceptical in regard to the evaluation. They say that a four year lasting implementation process is too short to be able to observe really effects of the strategy implementation efforts and would like to postpone the evaluation some years later. Another doubt expressed is that no clear and common comprehension about criteria for a successful sustainability policy exists which would be a precondition for the evaluation. Other interviewed committee members favour this plan because they feel that the different topics are currently unequally dealt with. In their opinion, some contents are hardly or not included while others are overstressed. They hope that missing working focuses will be determined on the basis of the evaluation results.

7.2.4 Conclusions

The major difficulty discovered during this case study on links between innovation and sustainability policy is a lack of commitment to sustainability by politicians and individuals in the ministries. This is not only due to individual conviction, but also to the political system in general and the way it works. Whereas a successful policy in defining goals and measures and implementing these goals within the election period (4 years in Austria) exists, sustainability goals are based on long term considerations. Therefore a politician has no incentives to work on visions and measures beyond this time horizon because he would not achieve any success for himself during his working period. Some interviewed persons argue that the political system itself needs innovations so that sustainability can be dealt with at all.

Another general difficulty emerging from this case study is that the objective of a sustainable innovation policy is not yet clearly defined. No common understanding of what sustainable innovation is or should be exists. But, in Austrian sustainability circles, the opinion is widespread that sustainability does not only need technological innovations and changes of the economical system but also and especially institutional, social and systems innovations. In the opinion of the interviewed persons, sustainability requires the ability of the whole societal system to realise new chances in view of the actual and forthcoming challenges and to act accordingly. These activities may include every decision implementation, independently of where it takes place, e.g. in an enterprise, in a political institution or in a household. To limit the scope of this broad approach would also mean to limit the scope of the search for sustainable solutions.

A consequence arising from the conceptual ambiguity is the difficulty, or even impossibility, of defining clear and quantitative political targets for sustainable innovation. But target definition, the development of appropriate measures and the committing achievement of these targets are rules in policy making. Whereas target definition was easy for end-of-pipe environmental technologies and could be expressed in reduction amounts of harmful substances per time scale, such a proceeding is no longer accordant to sustainable innovation policy. For example, no best available technology exists in the case of sustainable innovation which could provide an orientation. Since the goals and objectives of a sustainable innovation policy are open, the ways to achieve these goals need also to be open. So the main problem is that every sustainable innovation can only be a single solution in its specific context. Policy in the sense of something that is generally valid is therefore difficult to make in this area. Policy formulation for sustainable innovation therefore strongly depends on the special context and framework.

Policy formulation in the scope of the Austrian Sustainability Strategy and its implementation process requires activities from the involved persons to a large extent on their own initiative since the strategy goals are not binding. One interviewed person states that the strategy is a good basis and reference for everyone to engage in sustainability issues but the success of the strategy depends on the voluntariness or willingness of the actors to use this basis and to become active. Furthermore, it needs not only the engagement by the ministries, but also from all other institutions and societal groups. Within the committee for a sustainable Austria, the institutional background of the members is a deciding factor. Some committee members have a larger scope to bring strategy contents into their organisations whereas others have little. The overall aim is therefore to develop initiatives on the upper end of what is politically feasible.

The fact that sustainable innovations are single solutions within their special context and framework leads to a special challenge in policy implementation, that is to say the need of the extensive participation of societal groups. The approximation to what sustainable innovation could be requires a search process which includes persons from all different societal systems. The role of the policy in this process is more the role of a moderator and facilitator for the search process than the role of an expert who provides knowledge content. So, as an interviewed person states, policy should mainly undertake the task of enabling a participatory search process for sustainable innovations and establishing and providing the necessary preconditions. In this way, a sustainable innovation policy means the organisation of the public framework so that renewal processes become possible.

Another challenge in sustainable innovation policy implementation from the example of the Austrian Sustainability Strategy is the different quality of the knowledge transfer and distribution from the committee work back to the single ministries. This information process is organised in different ways. In some cases the committee members keep the minutes and provide them to different departments and persons in their own organisation, in some other cases the information is only informally distributed. In all ministries, the horizontal co-ordination in the scope of the strategy implementation process ends with the autonomy of the single ministries. This means, the co-ordination process of the committee allows the inclusion of all ideas, but of course the minister's responsibility and autonomy remains and the final decisions whether and how to implement sustainable innovation policies are up to him.

An independently external evaluation of the Sustainability Strategy implementation process is planned in 2006 to investigate the achieved effects. The point of time of this evaluation is criticised by some sustainability actors as too early because they think in the case of sustainability it takes much more time than three years for to be able to observe real implementation effects. Nevertheless, the evaluation of the strategy is announced in the strategy document itself and reflects its conception as a "learning strategy" which means that it will be continually enhanced through experiences from the implementation process and through new findings.

7.3 Technologies for Sustainable Development

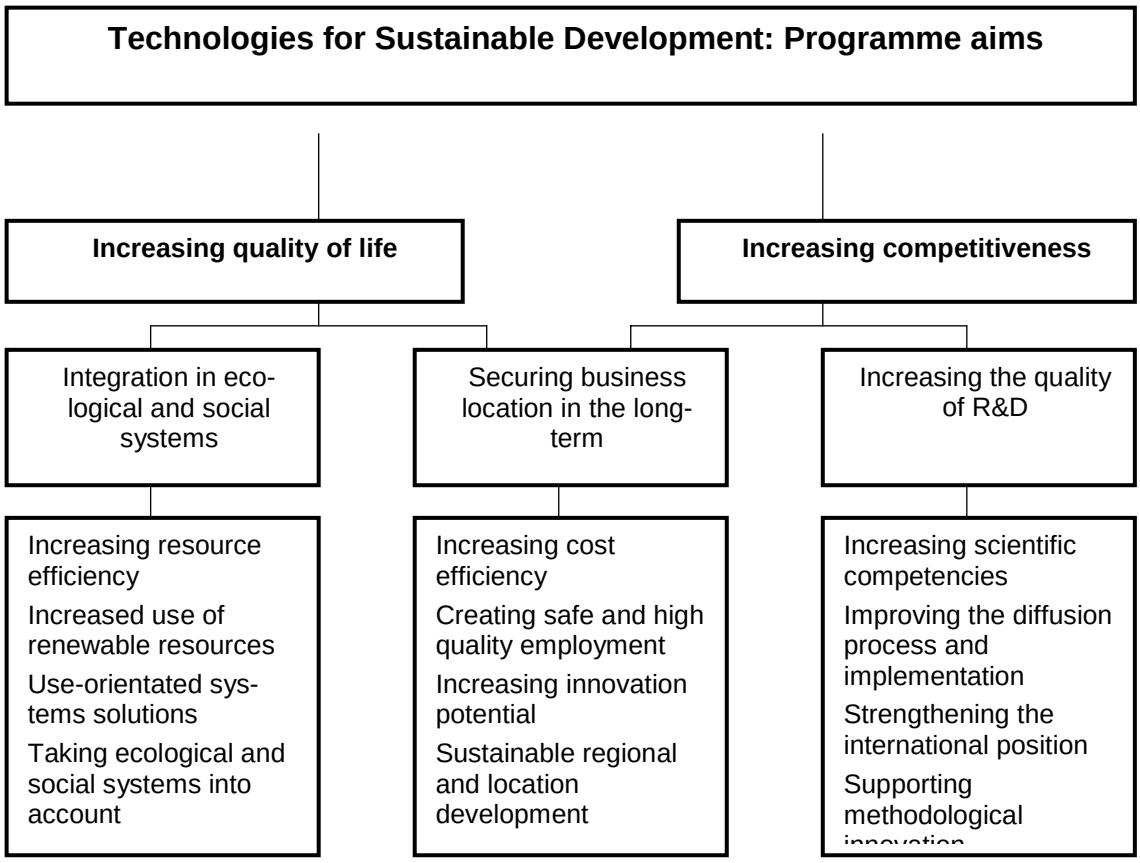
The programme Technologies for Sustainable Development is an Austrian RTD programme that sits on the interface between innovation and sustainability policy. The programmes attempts, through supporting new innovations, to pursue economic growth without negative effects on the environment. The first programme line began in 1999, followed shortly after by two others. The programme focuses mostly on technological development, leaving another Austrian R&D programme (Provision) to focus on the social and behavioural aspects of sustainable development.

7.3.1 Programme overview

The programme Technologies for Sustainable Development is the responsibility of the BMVIT who initiated and designed the programme. The main aim of the programme is to support the research and development of future technologies and solutions in order to create new chances for an eco-efficient economy and at the same time to ensure quality of life for future generations. The aims are built upon three pillars the integration of ecological and social systems, securing business location in the long-term and increasing the quality of

R&D. Diagramme 1 below elaborates how the different aims are to be integrated focusing on R&D as the interface.

Diagramme 1: Programme aims



Source: modified from BMVIT 2004.

The main objectives of the programme are therefore to ensure Austria's position in specific fields of technology, to create positive effects on the economy and on employment whilst focusing on the economical use of natural resources. Depending on the scientific and technological state of development of the individual thematic areas, the programme has different project types. Projects submitted to the programme for funding must be allocated to one category. The categories are basic research studies, concepts, business-related basic research, technology and component development and demonstration projects. These categories apply to all three programme lines.

The programme has three programme lines: Building of Tomorrow, Factory of Tomorrow and Energy Systems of Tomorrow. The programme Technologies for Sustainable Development began in 1999 with the programme line house of tomorrow, followed by Factory of Tomorrow in 2000 and Energy Systems of Tomorrow in 2003.

Factory of Tomorrow

Factory of Tomorrow focuses on technological development in companies. It concentrates on areas such as production processes, renewable resources and new product concepts. In many cases the creation of new partnerships, co-operation initiatives and internal qualification processes are important prerequisites for innovation. The aim of the programme is to show that demonstration projects can work. So far the programme has financed projects to the sum of 10.6 Mio. Euro.

There are seven guiding principles that form the basis for the programme. These aim at translating the principles of sustainable development on to a technical and economic level in order to make them implementable. The seven principles are: services and user orientation; use of renewable resources; efficiency; recycling; integration, flexibility, adaptation and learning aptitude; failure tolerance and risk precaution and securing employment, income and quality of life.

In addition to the seven guiding principles that form a basis for the development of the programme, Factory of Tomorrow has also defined a series of topics that provide a framework for the individual calls for tenders. Individual research questions for each call are based on this framework. The first topic is sustainable technologies and innovation in production processes. This subject is broken down into three sub-topics which are waste and emission free innovation processes, innovative processes for the use of renewable energy and for a substantial increase in energy efficiency and integrated management models and strategies towards sustainable economics and resource efficiency. The second framework topic for the programme line is the use of renewable resources “resources of tomorrow” which also includes the use of renewable resources for raw materials, new process technologies and processes for the treatment of renewable resources. The third topic concentrates on products and services which are orientated towards product use. This topic is also divided into three sub-topics from product to service, the design of complex products and the design of consumerables.

The programme line has so far had four calls for tenders. The last one, the fourth call for tenders focused on the design and implementation of products and product service systems. Four individual themes were included in the call. These were: products and product service systems, technologies and innovation in production processes, use of renewable resources and strategic questions. Some of these themes build on those of previous calls such as use of renewable technologies and technologies in production processes whereas other themes are new. With themes that are being continued from previous calls the focus is on the development of demonstration projects.

Each of the themes has defined sub-themes within the call. For example within the theme product and product service systems there are a numbers of sub-themes including start-up concepts, tools for product development and value chains. The theme strategic questions also has a number of sub-themes such as the inclusion of actors groups, barriers for product service systems entrepreneurship and sustainability, sustainable cost-benefit-analysis and synthesis projects that aim to further develop the results of projects from previous calls.

Building of Tomorrow

The programme line Building of Tomorrow is based on developments in the area of solar energy and energy efficient buildings and also aims to establish demonstration projects through research and development projects. These will be concentrated in the area of energy efficiency, use of renewable energy and ecological building material to ensure a high quality of life with acceptable costs. The projects will also focus on service and use aspects and on urban structures. So far the programme has financed projects to the sum of 17.8 Mio. Euro.

Building of tomorrow refers to new buildings and renovated old buildings which in comparison to current building and renovation practise adhere to the following criteria:

- Increased energy efficiency concerning the complete life cycle
- Increased use of renewables especially solar energy
- Increased use of renewable resources and efficient use of materials
- Increased consideration of services and use aspects for users of residential and office buildings
- Comparison of costs according to current building practises

The main aim of the programme line is the development and diffusion of components and methods of construction for residential, office and industrial buildings (new buildings as well as old ones) that adhere to the above mentioned criteria and also the guiding principles for sustainable technology development outlined under Factory of Tomorrow above. The programme line also contains a specific research and technology development strategy for renovating old buildings as this one of the key subjects of the third call for tenders.

As with all the programme lines in the programme line, Building of Tomorrow also contains the project categories described above and follows new technologies through from the concept to the demonstration phase. For Building of Tomorrow these are: strategic basic research, business-related basic research with firm co-operation, concept-based technology and component development; development of innovative building and renovation concepts for residential, office and industrial building; realisation and assessment of demonstration projects and market diffusion of technologies and concepts for the Building of Tomorrow.

In addition to the support of technologies in their different phases of development, the programme line also helps the whole process through a variety of actions such as supporting the generation of project proposals, the deliberate funding of projects in different phases, support for networking between actors during the project and support by know-how exchange and bringing to market.

There have also been five calls for tenders in this programme line to date which have focused on both new and old buildings. The last call for tenders focused on technology development and component development, support for demonstration activities and support

actions. The three themes were also broken down into concrete research questions which included large-volume residential buildings, service buildings and special buildings and renovation of private homes and residential estates in the area of demonstration projects. The support actions focused on the transfer phase, on supporting research for demonstration activities and strategic projects.

Energy Systems of Tomorrow

Energy Systems of Tomorrow is the most recent programme to be established and focuses on energy efficiency, use of renewable energy, questions relating to the functioning of the system and implementation strategies. Research and development strategies should provide the basis for model systems that can then be put into operation on the regional level. So far the programme has financed projects to the sum of 5.9 Mio Euros.

The main aim of the programme line Energy Systems of Tomorrow is to support technologies and concepts that are based on the use of renewable energy and that are able to meet future energy needs. Through a wide range of technology- focused activities and support actions the programme line aims to introduce new impulses whilst at the same time opening new opportunities for the Austrian economy. The programme line builds on current Austrian strengths especially in the area of solar energy and technology development. In order to pursue these aims, it focuses on three different areas: structural innovation:

- Change in structure and systems, the behaviour of systems and framework conditions
- Social innovations: changes in user behaviour depending on knowledge, attitude and lifestyle
- Technological innovation: the development of key areas taking into account the whole spectrum from primary energy sources to services.

One of the main quality criteria for the financing of projects is the potential contribution to an intelligent overall solution.

Similar to Factory of Tomorrow and Building of Tomorrow, this programme line also aims to support innovation from concept to demonstration project. It aims to produce example projects that can then be reproduced. For this reason the programme line will concentrate on funding projects that will produce workable example projects within five years. In addition, a further aim is to implement the innovative results from these projects in a demonstration region. For this reason the programme line aims to build up strong networks and co-operations from the beginning.

The second call for tenders within this programme line continued the subjects from the first call. In particular it specifically aims to fund concepts that will lead to the development of example projects. The call focused on five subject areas:

- Concepts, preparation and initiation of model systems

- Network integration and management in connection with decentralised production and supply of renewable energy
- Innovative production and service systems
- Specific technology development
- Strategic support actions

As with the other two programme lines, the projects have to fit into the project categories according to the stage of the technological development of the individual thematic area.

7.3.2 Programme actors and their responsibilities

The design of the programmes is the responsibility of the Unit for Energy and Environmental Technologies, BMVIT. This unit oversees the long-term development of the programmes, supervises the work of the programme managers and is also involved in the technological developments within the programmes. They day-to-day management of the programme has been delegated to programme management organisations. The programme Technologies for Sustainable Development has three separate programme management organisations: one for each programme line. The ÖGUT (the Austrian Society for Environment and Technology) manages Building of Tomorrow; Trust Consult Management Consultancy Ltd is responsible for Factory of Tomorrow and E.V.A (the Austria Energy Agency) for Energy Systems of Tomorrow. The way in which each of the programme management organisations manages the programme is different and depends on the competencies of the organisation and the role they see themselves. Whereas the ÖGUT has built up considerable competencies in the area of sustainable building, the Trust Consult does not try and get involved in the thematic direction and the selection of individual projects as the ÖGUT is inclined to do. The Trust Consult concentrates on delivering an effective programme management.

7.3.3 Background and development of the programme

The programme was initiated as a result of a government initiative in 1998/99 that increased the budget available for R&D activities. At this point in time the introduction of programmes became topical in Austria. Previously there had been very few designated, thematic programmes and funds for R&D projects had generally been allocated through bottom up funds or by individuals in the ministries.

The beginnings of the Programme Sustainable Technologies can be found in a concept paper from February 1999. This paper outlines the relevance, the political framework, the experiences to-date, the current status and the future procedure for developing the programme. The programme was able to draw upon previous experience from the previous key actions of the ITF (Innovation and Technology Fund) Energy Technologies and Environmental Technologies. It was especially able to draw upon the evaluation of these key actions and the recommendations made. The evaluation suggested that the subject area “Innovation for Sustainable Development” had “a high innovation potential and would be a follow-on theme able to deliver a significant contribution to resource efficiency” (BMWV 1999, 9). Other suggestions put forward by the evaluation included taking the different

phases of innovation into account which was taken up by the Sustainable Technologies Programme. The development of the programme was also supported by the at:sd network (the Austrian Network on Technologies for Sustainable Development. The network included all relevant actors from the economic-focused side of research for sustainable development. They were very important in working out the basic principles and the thematic directions of the programme.

The concept paper drew on both the above mentioned inputs and put forward a first sketch of the programme not only detailing its own understanding of the guiding principles of sustainable development, but also outlining the concrete thematic areas to be focused on under the programme. Five areas were initially focused on efficient use of energy and renewable energy sources, renewable resources, processes, products and services, sustainable regional economic development and implementation strategies, institutional and structural innovation. Following the outcome of an initial call for ideas from the Austrian science community the five areas were turned into six key actions that would be developed further. The key actions were solar energy, energy from biomass, sustainable building, renewable resources, processes, products and services and sustainable regional economic development and implementation strategies.

The programme was then further developed by the at:sd network (Austrian Network on Technologies of Sustainable Development) that worked on the six different key actions. Their main task was to turn the thematic outlines in a detailed programme description. They did this through focusing on four issues 1) setting out thematic aims that could be reached in each key action through financing projects 2) development of a strategy for each key action which would ensure that the project financed would together further the thematic aims 3) the development of a project acquisition strategy for each key action that would ensure a satisfactory number of project proposals and an effective selection process for the financing of projects 4) development of a monitoring and reporting concept for each key action that includes a continuous control and a final evaluation of each key action. The final two points were developed with external support owing to their focus on programme management.

The network relied on various sources to support the development of the actions. These included their own expertise, conclusions from the Austrian Delphi study, relevant thematic priorities from the Fifth Framework Programme and specific reports and evaluations relating to the individual actions. In some cases questionnaires with experts and organisations in the relevant field were undertaken and included in the analysis. Once the key action reports had been written, they were given to an external evaluator to be reviewed.

The ex-ante evaluation of the key actions from the Sustainable Technologies Programme

The ex-ante evaluation of the programme Technologies for Sustainable Development (Ohler and Knoflacher 2000) was carried out in 1999/2000 and reviewed the six key actions planned for the programmeTechnologies for Sustainable Development. Each of the key actions was evaluated independently based on the suggestions made for the individual action and its contribution to the whole programme. The evaluation considered content, organisation and economic aspects of the proposed programme.

It was based on criteria such as efficiency and transparency in programme implementation, clarity in development of aims and ability to test whether aims have been reached, inclusion of interdisciplinarity and the relationship between technological and socio-economic factors, the relevance of expected results for the overall aims of the programme, ability to implement the key actions and expected results and the use of synergies between the individual key actions and other programmes.

The evaluation of the individual key actions went into considerable detail and made a number of recommendations regarding the content and design of the actions. For example, the evaluation of the key action Sustainable Building and Living began with two questions 1) to what extent the key action line is an appropriate topic for a programme line and 2) do the suggestions for the development of the key action fulfil the aims of the action.

The evaluation was very critical about the need for a programme in this area. It suggested that the programme was being set up as a result of a political opportunity and not due to a concrete need. It came to the conclusion that there was no evidence of market failure in this area, but that the problems were due to political failure especially if the institutional and structural barriers were taken into account. The evaluation also stressed that these were due to a lack of co-operation with other policy areas and claimed that there was a need to establish the interfaces with other policy areas and to co-ordinate the key action with these areas. In addition, the evaluation pointed out that the key action put technological development at the centre of its strategy to increase resource reduction. It saw this as a narrow focus that would perhaps not take into account all aspects that would needed to be taken into account. For example, the regulatory system should also be taken into account as not all FTE deficits can be rectified through a programme. Although the aims, the objectives and the need for the programme were questioned by the evaluators, the proposed management was seen as well thought out.

The other five key actions were evaluated in a similar way and also focused on the two questions asked for the Sustainable Building and Living Programme mentioned above. Similar types of issues were highlighted in these five. For example, in the key action Solar Energy the evaluators found that the report calls for “the support of scientific, technological, economic, institutional and structural innovation in order to move solar energy forwards” (Ohler and Knoflacher 2000, 45). The report, however, only looks at technological innovation. The evaluation asks why, although other types of innovation are referred to, the stress is put on technological innovation. It does not see the justification for the technological emphasis.

The evaluation was very critical of the six key action lines and suggested that many aspects be reconsidered. The evaluation was received by the ministry, but it is unclear as to whether the recommendations were included in the further development of the key actions and the programme as a whole. Many of the criticisms in the evaluation were still referred to in the interviews for this project in particular the links to other policy areas and the technological focus of the programme.

Mid-term evaluation and strategic statements

The mid-term evaluation was commissioned in March 2004 as part of a series of activities to mark the half-way stage of the programme. The mid-term evaluation aims to provide an overview of the effectiveness and the efficiency of the programme. It explicitly states that it does not examine the strategic direction of the programme, whether or not the projects fulfil

the aims of the programme and what impact the programme and the projects have had. The evaluator was given 6.5 days to co-ordinate and write the evaluation and did not collect any primary data, but relied on the data provided by the programme management organisations, the people responsible in the ministries and members of the jury.

The evaluation is based on three reports from the individual programme managers (ÖGUT, Trust Consult and E.V.A) and the individuals responsible for the programmes in the BMVIT. The reports contain basic information on the programme lines focusing especially on the different project categories (basic research studies, concepts, business-related basic research, technology and component development and demonstration projects). In addition to these reports, the chairmen of the juries were also invited to provide their impressions of the programme based on a series of questions set by the evaluator. These three individuals were then invited to provide a strategic statement on each of the three programme lines respectively.

Using the above mentioned material the evaluation proceeded to concentrate on four main questions agreed with the Ministry:

- How can the efficiency and suitability of the individual activities be assessed in particular taking into account calls, advice, supporting the submission of proposals, jury and funding decisions, monitoring projects, co-ordination and networking during the project, PR activities and use of results?

- What is the relationship between funded to rejected projects, the proportion of funded projects and the use of resources per call compared with other programmes?

- How can timing be assessed, in particular the series of calls, the planning horizon and dealing with delays?

- Is the target group adequately addressed according to the aims of the programme? Do the proposals address the aims of the programme and could new co-operation initiatives be encouraged?

As well as providing annexes where the data from the programme managers is documented and the jury statements presented, the evaluation also provides a short analysis of the information gathered. In short, the analysis focuses on the success of the programme and how it has been well received by the Austrian economy. It also points out how well positioned and clearly visible the programme is in the Austrian economy. The conclusion the evaluation came to is that the programme has successfully managed to create a focal point in the area of sustainable technologies in Austria.

It depends on the definition of the word evaluation as to whether the document that was produced deserves the title evaluation. Some interview partners viewed the document more as a summary of the activities that have taken place within the programme than an external evaluation. Although proclaiming to be no more than a summary and not wanting to draw any conclusions, the authors decided that the programme is well placed and visible in the Austrian economy and it claims that the programme has become a focal point for sustainable technologies. That the programme managers, jurors and ministry employees speak highly of their own programme is not surprising; however an evaluation would normally require external verification of these statements. In this evaluation, no external

verification of the statements from the programme managers, ministry employees or jury members was undertaken.

There are many reasons why the ministry might not have been interested in a full scale evaluation. One of these is increasing pressure from the Council for Science and Technology Development for the programmes to compete with each other for funding. Under these circumstances it is self-evident that each programme will try to show itself from its best sides and not examine all aspects especially if a negative outcome could give the Council a reason to discontinue funding.

The two evaluations, the ex-ante and the mid-term evaluation, described above provide a useful insight into the way in which the programme was and is being developed. Like many other programmes in Austria the Technologies for Sustainable Development is a bottom-up designed programme with extensive use of experts from the technology fields involved (Whitelegg 2004). This method of designing programmes ensures that the research community is well informed and integrated, it does not, however, automatically provide for a strategic positioning of the programme. In particular the ex-ante evaluation refers to a lack of a strategic assessment in designing the programme. A recent project funded through the programme also supports this view and questions the “operationalisation of long-term strategies for structural and social change (as implicated in the underlying sustainability principles) and their integration into detailed work programmes” (Weber, Oehme, Rohracher, and Späth 2003, 6). Furthermore this project concluded that the lack of strategy had led to problems for the implementation of the programme especially in the programme line Factory of Tomorrow with a small amount of overall funding being allocated to a very broad research domain.

7.3.4 Co-ordination and co-operation

Links to policy initiatives

The only explicit link to concrete policy strategies or initiatives is the reference to the Austrian Strategy for Sustainable Development. The programme line Factory of Tomorrow is closely related to two out of 20 key objectives of the strategy, namely *Successful Management through Eco-efficiency* and *Strengthening Sustainable Products and Services*. Unlike the programme line Factory of Tomorrow that does not define quantitative goals for improving resource efficiency, the Austrian Strategy for Sustainable Development requires an increase in the productivity of resources by a factor of 4. There are no specific plans for how this goal should be reached.

Links and co-operation with other programmes and initiatives

Formal links to other programmes in the area of sustainable development are provided for through the newly established FORNE framework initiative. FORNE has greatly increased the visibility of research for sustainable development, an area that did not previously gain much attention from the Council. However, it remains to be seen whether it can also provide the ministries with a platform for increased co-operation within the programmes.

Most of the exchange between the programmes within this initiative happens on an informal level. The civil servants who are responsible for initiating and running the programmes in

the ministries know and regularly meet each other. They are therefore quite well informed about activities in the programmes of the other ministries. However, there are few initiatives that cross the responsibility borders of the individual ministries. Each of the ministries has its own focus and the boundaries between the two are clearly defined. This behaviour is slowly beginning to break down despite efforts from the Council which tend to decrease the willingness to cooperate. The BMBWK will run an initiative designed to link in with the Start-up initiative in the technologies for sustainable development programme.

There are co-operation attempts underway that are built on potential synergy effects between the sustainable technologies programme and other BMVIT programmes. One such co-operation that is still in its initial phases is with the Seed Financing Programme, a programme that supports start-ups. The programme managers have begun to see if the two programmes can work together. Other co-operations are more informal and take place more on the level of individuals who sit on programme panels of other programmes. Although such co-operations are not formal they are still useful methods for exchanging information on each others activities and for ensuring that overlaps are avoided. One such example is that of the K-net[14] that focuses on bio energy, a subject area close to the Factory of Tomorrow. The BMVIT has a member on the panel that observes the work of the competence network. Another such centre, the Austria Bio energy K-plus Centre, is also of interest to the BMVIT programmes. However, the centre is less focused on applied research.

The European ERA-Net initiative on linking RTD programmes in different countries, is giving people who work with the programme a chance to exchange methods, views and practises with each other. Links to other programmes that are not sustainable development focused are not common. The Division of Energy and Sustainable Technologies pursues its own agenda and does not interfere with the other technology programmes in the ministry.

Addressing different policy goals

One of the issues that became evident during the study was the complexity of issues surrounding the design and development of the programmes. Several critiques of the programme were linked to the fact that the same institutes and organisations are funded from one call to the next and this without questioning whether what they doing is necessarily a step in the right direction or not. Several interviewees criticised the programme for focusing on individual technologies and not assessing whether these stood a chance of succeeding. They pointed out that agricultural agendas were taken into account when designing and developing new technologies, but that the industrial agendas were barely considered. The fact that there was an abundance of renewable resources available was acknowledged but not that there were few if any industrial partners willing or able to use the products. The value added was always theoretically possible but not always thought through. The technical and agricultural agendas set the direction.

[14] K-net are competence networks that aim to support industrial research and technology transfer with a strong focus on SMEs.

7.3.5 Conclusions

The programme Technologies for Sustainable Development is the only initiative that solely focuses on the integration of innovation and environmental aims in Austria. The programme is perceived as successful by the BMVIT who runs the programme and by many of the actors involved in the sustainable technologies scene in Austria. However, the programme remains a niche programme and the concrete links to other initiatives are not visible. It also remains a niche programme to the extent that it is heavily focused on technology development. This is a product of the Austrian separation of responsibilities between the ministries. The research ministry (BMBWK) runs the programme on the more societal and behavioural aspects and these are not touched upon by the BMVIT. There have been very few co-ordinated activates in the past and there are only a few very specific ones planned for the future.

There have been recent attempts to co-ordinate research for sustainable development and all ministries who pursue research in this area have joined forces to design a framework for research activities in this area. However, although a very useful exercise in co-ordinating activities on this research area, this framework does not strengthen the links towards policies or strategies in other areas. The programme does not aim to support concrete policies in either innovation or sustainable development. The way in which the programme was designed and established also underlines this point.

The programme was designed through a bottom up processes with considerable contact to researchers in the area. This led to a programme being established which was very much in tune with the research agendas of the people in the field, but with little strategic input concerning the future direction of the programme in terms of supporting other policy initiatives.

The way in which the programme was set up and the narrowness of the focus is not only the due to the specificities of this policy area. Many other programmes in Austria follow this pattern and co-operation is generally difficult on an aggregate level. Co-operation is also not being encouraged by the system and recent activities by the Council for Science and Technological Development have done more to increase competition than to further co-operation.

8 Assessment

This section looks at the extent to which horizontal policy integration can be considered reality between innovation and sustainable development policy in Austria. This assessment is based on an analysis of the two case studies according to the following stages in the policy cycle.

- Setting directions (agenda setting/prioritisation, stakeholder involvement, using strategic intelligence),
- Horizontal co-ordination in policy formulation (interdepartmental collaboration, policy co-ordination at strategic level),
- Horizontal co-ordination in policy implementation (multi-principle approach, cross-agency initiatives)
- Policy learning (accountability).

Setting directions (agenda setting/prioritisation, stakeholder involvement, using strategic intelligence)

The individual policy areas in Austria act quite independently of each other. They have considerable contact with the stakeholders in these fields and produce solid and confident individual policies. However, the links between the policy areas are weak. There is little discussion both between experts and on the political level about what the interfaces should look like. For example there are few ideas about what sustainable innovation policy is or what it should look like. Therefore, the first step for any form of integration between the policy areas would be a common strategy. For instance, a sustainable innovation policy would benefit from sustainable innovation being recognized as a necessity and a chance for the future economic and societal development. It would need to become part of agenda setting across the policy fields, which is not the case at the moment.

Part of the reasons for the lack of integrated agenda setting between the policy fields sustainability and innovation are barriers caused by the bureaucratic structure of the policy fields. As one of the interviewed persons explained, the administration structure can be compared with many little “boxes” which work relatively autonomously on their individual tasks. This structure, which has developed over decades, allows an efficient daily routine, but is not suitable for strategic renewals. This level of bureaucracy is contradictory to linking different working fields or policies and is a structural problem when dealing with horizontal subjects. Moreover, from the view of delegates in ministries, co-operation does not only incorporate chances, but can also involve the danger of loosing responsibility in a particular knowledge field and of therefore becoming redundant. To achieve links would therefore need high level commitment as well as the will to implementation.

Horizontal co-ordination in policy formulation (interdepartmental collaboration, policy co-ordination at strategic level)

Current links between departments of different ministries were in most cases established on the initiative of individuals in the ministries and are of an informal character. Especially in

the field of research for sustainable development, good mutual information exchanges exist, e.g. between the BMLFUW and the BMVIT. One example of formal co-operation in sustainable development policy stands out: the committee sustainable Austria, an institution that supports the implementation of the National Sustainability Strategy. This institution is valuable in distributing the idea of sustainability and reflecting the different activities of the ministries from the view of sustainability the first time. But, the quality of co-operation among the committee members differs, dependently on the level of knowledge about sustainability issues they bring with them and the ability to create or use scope within the organisations.

The case study of the RTD programmes clearly shows that policy initiatives are developed on their own and are the responsibility of an individual ministry with few connections to other policy areas. In a similar way, the Austria Sustainability Strategy was prepared under responsibility of only one ministry, the BMLFUW. Representatives from other ministries were participated indeed through the so-called plenum but it met only four times and the credibility of the discussion offer was doubted by some interview partners.

Horizontal co-ordination in policy implementation (multi-principle approach, cross-agency initiatives)

Implementation of policy initiatives in Austria usually takes place in one policy area only. Due to the fact that Austrian policy making is divided up into small policy niches there is little cross-policy implementation that takes place. Most sustainability activities occur in the provinces. The regional governments are smaller units which stimulate and implement activities relatively autonomously and in a self-organised way. Some provinces are especially engaged in implementing sustainable innovations, for example Styria and Vorarlberg, but the initiatives come mostly from the administration, not from political level. Also the local level attracts as about 200 Local Agenda 21 processes are taking place. In Austria, it seems that the lower government and administration levels are more successful in implementing sustainable development than the higher ones.

Policy learning (accountability)

Evaluations are an indication that learning plays a role in policy formulation and policy implementation. There have been several evaluations of the RTD programme Technologies for Sustainable Development and there is also an evaluation tender currently underway for the Sustainable Development Strategy. Despite the fact that these evaluations are taking place, the question still remains as to how the results are taken up and there is evidence to show that it is not always the case.

In the areas of sustainable research there is also the FORNE exercise that shows that there is willingness to learn and to discuss and integrate different viewpoints. The ministries involved in sustainability research have developed a framework for their activities.

On another level, the Austrian Sustainable Development Strategy is conceptualised as a learning process in itself. The fact that with the establishment of the committee for a sustainable Austria the different ministries have been brought round the table to discuss sustainable development is an action that shouldn't be undervalued. However, this strategy also needs to be careful that it does not end up being an empty umbrella and the ministries carry on doing their own activities underneath it.

9 Conclusions

Looking at the links between two horizontal policy areas is a difficult thing to do, especially when they have many interfaces with other policy areas as well as with each other. When investigating the links between the sustainable development and innovation policy area, three main restraints could be identified which seem to be pivotal points for strategies to improve policy co-ordination.

1. *Lack of a common comprehension about "sustainable innovation" and "sustainable innovation policy"*: One fundamental necessity found out in this study is to initiate a broad discussion about the question what sustainable innovation is, why it is important and what a sustainable innovation policy needs. In the mind of the interviewed persons, sustainable innovation is wider interpreted than new products and services on the market and primarily the challenge concerning all groups within the society to develop new ideas to support a sustainable development and to implement these ideas. In the same manner, they interpret sustainable innovation policy wider than e.g. the financial support of specific technologies like solar energy. If policy is understood as the solution of common, public and general problems, then sustainable innovation policy has to perform the conditions and settings for people to be innovative independently where and in which systems they act. According to these interview results, sustainable innovation policy is the design of a public framework that allows innovation processes. – Not until these discussions about the meanings of sustainable innovation and sustainable innovation policy happen, the question about possibilities how to organise co-operation seems secondary.

2. *Different acceptance and embedding of the innovation and sustainability subject in the political system:* Innovation and sustainable development are differently embedded in the ministries. While innovation is an explicit part of the BMVIT and well accepted, sustainable development is today no explicit policy area but still part of environmental policy and located within the BMLFUW. Sustainability is not taken as seriously as innovation as a political task. It lacks attractiveness due to its admonishing character (you should do…) on the one hand and its abstractness and complexity on the other hand. Politicians have hardly incentives to work on the sustainable development theme what results in uncontinuous financial support of sustainability-oriented projects. – A sustainable innovation policy requires the acceptation of sustainability as an important and trend-setting policy issue that becomes manifest in the political structures.

3. *Lack of power of authority of existing policy co-ordination boards:* All interview partners were of the opinion that establishing other boards or panels is not the right means to make policy co-operation happen. The more important question is how the already existing boards could improve their work and design it more efficiently. The Committee for a Sustainable Austria is a good example where all ministries try to adjust their working plans but it lacks of power of authority (alike other sustainability boards in Austria, e.g. the sustainability coordinators conference). It derives also from the fact that the sustainability topic is still strongly bounded to environment policy and mainly under responsibility of the environment minister. – To intensify policy co-ordination in existing boards, they need to dissociate from the environment policy sector and to get into the area of authority of higher policy levels (e.g. federal chancellor) as well as a clear commitment from politics.

Sustainability policy in Austria is a policy niche that is more positioned in bureaucracy than in politics and is driven by a few people dedicated to the sustainability idea. This policy niche has proved quite successful – not in being highly effective in Austria but in

comparison to sustainability policies in other European countries and the possibilities of such a complex and abstract policy field. Innovation policy has many similarities to sustainable development policy. It also has certain niche characteristics and has developed its own way of thinking, its own programmes and initiatives. At the same time, and also similar to sustainable development policy, it has many interfaces with other policy areas and cannot fully play its role without recognising and encouraging interaction. These links are not as established as they could be and innovation policy is only starting to see itself as a horizontal policy area and to move out of its niche. Given this type of behaviour in the two policy fields, innovation and sustainable development, it is hardly surprising that the links between the two are few and far between. Apart from very specific initiatives that address the interface, there is little recognition of the importance of linking the two policy fields. However, with both policy areas moving out of their niches and seeing their role as more interactive, there is potential for greater co-operation. This especially applies to innovation becoming more important as a key driver for developing sustainability policy and for sustainability policy gaining more acceptance in innovation policy.

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11 Annex: List of interview partners

Dr. Christian Baumgartner	Respect – Institute for Integrative Tourism and Development
Mag. Rudolf Bernhard	Austrian Research Promotion Agency (FFG)
DI Oliver Dworak	Austropapier – Federation of the Austrian Paper Industry
Dr. Karin Feiler	Federal Ministry of Economy and Labour
Dr. Herbert Greisberger	Austrian Society for Environment and Technology (ÖGUT)
Univ.Prof.DI Dr. Christoph Mandl	Mandl, Lüthi & Partner
Dr. Manfred Hellrigl	Federal Government of Vorarlberg Office for Future Affairs
em. Prof. Dr. Heinz Hübner	University of Kassel Technology Assessement and Innovation Research
Dr. Peter Kowalski	Federal Ministry of Economic Affairs and Labour Center 1/10 Research and Technology
Dr. Markus Knoflacher	ARC systems research GmbH
SC DDr. Reinhard Mang	Federal Ministry for Agriculture, Forestry, Environment and Water Management Department II „Sustainability and Rural Areas“
Dr. André Martinuzzi	Vienna University of Economics and Business Affairs Research Focus „Managing Sustainability“
Univ.-Prof. Dr. Jürg Minsch	Vienna University of Natural Resources and Applied Life Sciences
Dr. Friedrich Nemec	Austrian Business Council for Sustainable Development
Mag. Susanne Schidler	Austrian Academy of Sciences Institute of Technology Assessment
Hans-Günther Schwarz	Federal Ministry of Transport, Innovation and Technology Department III/I 6 - Energy and Environment Technology
Dr. Gunter Sperka	Federal Government of Salzburg
Dr. Wolfram Tertschnig	Federal Ministry for Agriculture, Forestry, Environment and Water Management Department II/3
Univ.-Prof. Dr. Gunther Tichy	Austrian Academy of Sciences Institute of Technology Assessment
DI Brigitte Tiefenthaler	Austrian Council for Research and Technology Development
DI Brigitte Weiss	Federal Ministry of Transport, Innovation and TechnologyDepartment III/I 6 - Energy and Environment Technology