

# Innovation Governance: Getting the Most out of Innovation Systems

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SVEND OTTO REMØE

Ensuring viable and adaptive innovation systems is the task of innovation governance. Innovation systems have over the years assumed an effective tool box for policy makers, as they present a perspective of the innovation process that is dynamic and systemic. Contrary to the first generation innovation policy, where basic research was disseminated through transfer mechanisms toward the market, the innovation systems approach assumes a great degree of interrelatedness and complexity that has to be influenced through a more complex policy approach. Innovation governance has therefore received increasing attention by policy makers as a generic concept for managing and steering the innovation system and ensuring its viability.

The present article contains a discussion of innovation governance, its key dimensions and perspectives, and some recent lessons. It builds on the OECD MONIT project (OECD 2005) that brought together selected OECD countries' experiences on governance, and some other studies. The key message is that governments should govern their innovation systems through broadly based, cross-ministerial policies while attending to strategic, long term perspectives and learning.

## Key dimensions

### Governance

Governance concerns the systems and practices that governments use to make priorities and set agendas, implement policies and derive knowledge about their impacts and effectiveness. The concept has received renewed attention in the context of the shifting patterns of governing and policy making. Stoker (1998) suggests that governance refers «to the development of governing styles in which boundaries between and within public and private sectors have become blurred»:

- ▶ Governance refers to a set of institutions and actors that are drawn from but also beyond government.
- ▶ Governance identifies the blurring of boundaries and responsibilities for tackling social and economic issues.
- ▶ Governance identifies the power dependence involved in the relationships between institutions involved in collective action.
- ▶ Governance is about autonomous self-governing networks of actors.
- ▶ Governance recognizes the capacity to get things done which does not rest on the power of government to command or use its authority. It

sees government as able to use new tools and techniques to steer and guide.

### Vertical and horizontal linkages

Horizontal interactions are combined with vertical ones: Vertical interactions depict relationships between different layers of government bodies, like between ministries and agencies, and between ministries and the regional level. Typically, this is most important concerning implementation of policies, but lead in total to different governance structures across countries. Recent developments in governance underline this: New Public Management (NPM) has been to various degrees adopted across the industrialized world, leading to more decentralization.

**Governments should govern their innovation systems through broadly based, cross-ministerial policies while attending to strategic, long term perspectives and learning.**

Horizontalization is not a goal in itself, but could be defined as the degree to which innovation policy is guided by a comprehensive national strategy in which contributions from the various sectors are linked to achieve policy coherence. The link between horizontalization and the arrangements for co-ordination and governance is crucial.

## Governance for strategic policy

### Creating strategic frameworks

A common feature in many countries is that the institutional set-up of governmental bodies and institutions has become fragmented and difficult

to govern. Further, they have to deal with increasing globalisation and generate renewed basis for economic growth in light of significant innovative pressures as well as global relocation of manufacturing and services. Some countries, e.g. New Zealand and Norway, has over the past decade increasingly relied on market-based, liberal models of economic policy with a rather strong «hands-off» stance towards what is typically termed industrial policy. Increasingly innovation policy is taking up some of the role of the traditional industrial policy as an approach to enhancing economic growth and ensuring structural adaptation.

### The Norwegian plan regenerated an agenda for innovation and growth, but failed to address a comprehensive strategy for implementation.

This is seen in the recent responses in the two countries mentioned. In June 2000 the New Zealand government established an advisory council commissioned to look into a wide range of issues on how best to:

- ▶ Develop the talent base for the economy
- ▶ Attract appropriate foreign direct investment
- ▶ Develop the innovation system
- ▶ Build a more inclusive economy
- ▶ Ensure that social development is appropriately incorporated and measured
- ▶ Ensure a sustainable development approach to policy development and implementation

This and other initiatives were encapsulated into a framework called the «Growth and Innovation Framework» (GIF). The framework's main function is to create a vision and a focus on a broad approach to economic growth, and places innovation policy profoundly into such an approach.

Hence, the framework is useful in creating the debates and dialogues necessary for a horizontal, coherent and long term commitment (Williams 2005).

Norway's strategic plan for a coherent innovation policy was initiated in 2003 as an action plan for innovation on a broad scale. The context of this initiative was the future discrepancy between public expenses for pensions and the revenues from the petroleum activity. This was often referred to as the «shark's jaw», implying significant problems ahead as the petroleum industry will likely be phased out and the industrial structure will prove incapable of generating the growth necessary to compensate (Remoe 2005).

The Norwegian plan regenerated an agenda for innovation and growth, but failed to address a comprehensive strategy for implementation. An interesting problem was the apparent mismatch between implied innovation policy strategy and the macro-economic rationality dominating the key sections of public administration. Hence, the plan has met resistance and represents to some extent a clash of paradigms in Norwegian policy making.

Such frameworks, however, have a significant role to play in policy, as key policy areas may be redefined and aligned to fit a strategic direction of a nation's economy. The lessons to be learned from such framework policies may be that:

- ▶ The framework policy should be guided by broad, but precise visions for industrial development;
- ▶ It should integrate innovation as a driver in economic growth;
- ▶ It should address linkages and division of labor between ministries;
- ▶ It should provide directions for developing and implementing policy;

- ▶ It should address conflicting relations between key policy areas.

Such framework policies are useful when adopting a broad view of innovation policy, going beyond the core science and technology activities and including a focus on the wider economy such as labor markets, services and low-tech industries. Bearing in mind that economic welfare in most countries stem from the productivity and adaptability of traditional industries, such framework policies may be effective tools in addressing issues that may not seem as important from a scientific point of view.

## Strategic policy making through councils

The typical institutional set-up in OECD countries has been a ministerial structure with a relatively high degree of division of labour. On the one hand this often leads to differentiated trajectories and rationalities in these ministries. On the other hand these structures are increasingly ill suited to the needs for comprehensive approaches in policy making for innovation based growth and development.

**The Science and Technology Policy Council in Finland has ensured a legitimate basis for priorities being set by the Finnish government. But the Finnish example also illustrates that a Science and Technology Policy Council is not necessarily a means for comprehensive, horizontal innovation policy.**

In particular, governments often need to reconcile the structural deficit with new institutions that may mediate between different positions and priorities in government. The typical solution in many countries has been setting up science and

technology policy councils as institutions that deliver authoritative, negotiated recommendations for policy.

The prime example is the Science and Technology Policy Council in Finland that has ensured a legitimate basis for priorities being set by the Finnish government. But the Finnish example also illustrates that a Science and Technology Policy Council is not necessarily a means for comprehensive, horizontal innovation policy. Some important features associated with the Finnish council illustrate its role in the governance system (Hayrinen-Alestalo et al 2005; Pelkonen 2005):

- ▶ There has been a strong commitment to the concept of the national innovation system, giving core technology and innovation policy a key role;
- ▶ Science and technology policy is not debated broadly in Parliament;
- ▶ The Ministry of Trade and Industry has not been a central element in technology policy;
- ▶ The Ministry of Education has a strong role in science policy;
- ▶ A top-down, but consensus-based approach gave significant leverage to the corporatist system and key stakeholders;
- ▶ This meant that informal processes among a small number of well-placed actors became important in the Finnish system.

The Finnish Science and Technology Policy Council, has been very influential in directing the process of priority setting. There is a comprehensive membership with key ministers, representatives from other institutions and agencies, as well as stakeholders. Institutions like TEKES and Academy of Finland have important roles. The main function of the council has been to encourage key policy makers to commit themselves to innovation policy, and help direct resources to targeted priority areas. This has also meant that the strong con-

sensus orientation and small circle have given priority to the agenda that has been perceived as important, notably information society related innovation. The council has not been able to develop more comprehensive strategies for economic development integrating many ministries. Current developments in Finland are linked to this, as the hitherto successful Finnish policy making system is approaching a point where changes are needed. A horizontal, comprehensive approach may well lead to a redefinition of the role of the Council in the decision making system

Other countries like the Netherlands with her Innovation Platform and Austria has seen similar developments, where the integration of stakeholders in agenda setting and priority setting represents a vital mediating role in an otherwise fragmented system. This is different from the Norwegian Government's Innovation Committee, which is based on a membership from 6 key ministries but with less stakeholder involvement. The latter case, however, has significant stakeholder involvement in the implementation process through committee representation in project selection.

## Managing complexity

Studies in the MONIT project show that governments are increasingly concerned about fragmentation, complexity and governability. The need to deal with built up complexity in meeting demands from new developments is well demonstrated by Ireland. In recent years significant efforts have been made to bring innovation to the core of priorities and several contributions like white papers and inputs from stakeholders have pointed to the problems of a complex set-up and lack of coherence in policies and programmes. This is also related to country size:

«To some extent, the problem lies in the very complexity of the institutions and arrangements that comprise the governance system, which have their own historical origins and rationale, but at the same time reflect an insupportable policy

overload for a small country, with associated gaps and duplications at the point of delivery» (Hilliard and Green 2005).

A key task in innovation governance is to raise awareness of institutional complexity such as overlapping policies, duplication of agencies responsibilities, and contradictory objectives. In particular, governments should exploit their windows of opportunity to simplify the institutional set-up and make sure that effective institutions with clear rules of accountability are put in place. It is imperative to equip institutions like universities and research institutes with governance structures that can resist the tendency of being victim to internal vested interests and hence resisting necessary change. This includes in particular effective governing boards to which the executive level, elected or appointed, is accountable.

## Policy integration

There is a great potential to align innovation policy with other policy areas. However, even in this case, many ministries and departments engage in the process, if at all, based on their traditions, perception of their own area and competence, as well as perceptions of other policy areas. Typical issues that arise are:

- ▶ Lack of understanding of innovation policy in other policy domains undermines communication in the co-ordination process (see next section);
- ▶ Strong traditions, in particular in the science policy domain, create segmented «belief systems»;
- ▶ Different «schools of thought», e.g. between neo-classical economics and innovation research, may block an integration between innovation and economic policy;
- ▶ Dynamic coupling of problems, policy proposals and politics often take place in the context of specific windows of opportunities;

- ▶ Framing of specific sectoral policies in a way that defines others as rivals;
- ▶ Strong political leadership is necessary to create common visions and a legitimate basis for joint agendas;

**It is imperative to equip institutions like universities and research institutes with governance structures that can resist the tendency of being victim to internal vested interests and hence resisting necessary change.**

Studies in Norway address the issue of policy integration from the view of environmental policy, but with relevance for the present discussion (Collier 1997; Lafferty et al 2005).

According to a three point definition, environmental policy integration should aim to:

- ▶ Achieve sustainable development and prevent environmental damage;
- ▶ Remove contradictions between policies as well as within policies;
- ▶ Realize mutual benefits and the goal of making policies mutually supportive.

Seen from the point of environmental policy, an integration into innovation policy needs to be based on three criteria: Comprehensiveness, aggregation and consistency (Lafferty and Hovden 2003). This leads to a perspective for integrated policy agendas for sustainable development:

«Environmental policy integration implies the incorporation of environmental objectives into all stages of policy making in non-environmental sector, with a specific recognition of this goal as a guiding principle for the planning and execution of policy.

Further it is accompanied by an attempt to aggregate presumed environmental consequences into an overall evaluation of policy, and a commitment to minimize contradictions between environmental and sectoral policies by giving priority to the former over the latter» (ibid).

The empirical findings from the MONIT project confirm that policy integration may need some standard setting to be more easily implemented. The Norwegian study identified benchmarks on which policy makers may identify key leverage points for integrating policy. Bringing together the two key dimensions for coherence, Lafferty et al (2005) develop benchmarks for horizontal and vertical environmental policy integration respectively (HEPI and VEPI). These are brought together in table 1.

## Policy learning

Learning, evaluation and accountability all become more important as governance structures change and decision-making become more complex. The general trend towards NPM modes of governance has taken place with a view to increase the accountability of the system. But the very same trend increases the complexity as well. Governments are therefore faced with increasing needs to find ways to produce, disseminate and use policy relevant knowledge.

Policy learning assumes that policy makers and other actors linked to the policy making process are seen as endogenous to the overall innovation system. An evolutionary view of policy learning implies that policy making is itself an evolutionary process with institutional change and innovations as inherent outcomes (van der Steen 2000).

Evaluation of innovation policies and their instruments is key to policy learning, but is seldom institutionalised and implemented to accommodate such a role. For example, studies in Austria illustrate the marginal role evaluation may have as evaluation results are mostly used to legitimise

Table 1. Benchmarks for horizontal and vertical policy integration

Benchmarks for horizontal policy integration	Benchmarks for vertical policy integration
<ul style="list-style-type: none"> <li>▶ A “constitutional” mandate providing special status of rights and goals in a given domain</li> <li>▶ An overarching strategy for the given domain, with clear goals and operational principles with a political mandate from high level authority</li> <li>▶ A national action plan with over-arching and sectoral targets, indicators and time-tables</li> <li>▶ A responsible executive body for co-ordination, implementation and supervision of integration processes</li> <li>▶ A communication plan for sectoral responsibility and transparent intra-sectoral communications</li> <li>▶ An independent auditor with responsibility for monitoring and assessing implementation at both governmental and sectoral levels</li> <li>▶ A board of petition and redress for resolving conflicts</li> </ul>	<ul style="list-style-type: none"> <li>▶ A scoping report providing initial mapping of sectoral activity with (environmental) impacts associated with key actors and processes</li> <li>▶ A forum for structured dialogue and consultation with stakeholders and citizens</li> <li>▶ A sectoral strategy for change with basic goals and strategies for the sector</li> <li>▶ An action plan to implement the strategy with priorities, targets, timetables, policy instruments and responsible actors</li> <li>▶ A green budget for the integration and funding of the action plan</li> <li>▶ A monitoring programme for overseeing the implementation process and its impacts and results, with learning loops to revision of strategies and targets</li> </ul>

▲ The Norwegian study identified benchmarks on which policy makers may identify key leverage points for integrating policy.

programmes ex-post rather than being integrated in the learning process.

New Public Management results in general in improved accountability and stricter interface between policy making and implementation. Complexity has two sources: structural and cross-sectoral that requires broader policy attention. Such policy areas are typically cutting across sectors and ministries' competences, and represent a degree of comprehensiveness that exceeds the knowledge available for traditional governance practices. The evaluation and learning practices vary in the MONIT countries, but some important lessons emerge from the material:

- ▶ Policy learning is mostly ex-ante through mechanisms like white papers, but there is less focus on ex-post and follow-up of programmes and institutional reforms. Norway provides one example of institutional evaluation of her re-

search council reform that was integrated with the policy making process.

- ▶ There are various organisational mechanisms in place in most countries that may enhance learning if exploited properly. Task forces, team work etc should be institutionalised to support a more learning intensive governance style.

- ▶ Some countries engage in international learning beyond the usual exchange mechanisms in e.g. international bodies like OECD. For example, Netherlands commissioned a consulting group to conduct an international, comparative study of innovation governance in selected countries.

- ▶ Piecemeal evaluation has shortcomings, and as many reforms and innovation policies span sectors and interact with others, there are increasing needs to conduct more systemic evaluations leading to improved understanding of interactions and impacts.



- ▶ With more weight given to NPM in many countries, the agency level should be better equipped with strategic and intelligence functions to better co-ordinate between governance levels.
- ▶ Fragmented governance structures often represent a loss of strategic capacity, and governments should pay more attention to improving mutual understanding of innovation related issues across ministries.
- ▶ Institutions for knowledge production and policy analysis are often linked sectorally to specific ministries and domains, and may reinforce a segmented culture with inherent difficulties in producing coherent, policy relevant knowledge.

### Learning, evaluation and accountability all become more important as governance structures change.

- ▶ Intelligence and policy learning may get a boost by implementation of monitoring and reporting systems that improves the joint knowledge base for innovation governance.
- ▶ Structural challenges will often need to be met by governance processes that include transition in trajectories and infrastructures over a longer time span. A focus on transition management may create a comprehensive platform for innovation governance and learning.

## Conclusion

The results reported illustrate a number of dilemmas and implications for innovation policy governance in OECD countries. Developments like globalisation, a more innovation-driven economy, structural changes, ageing of populations, tight fiscal constraints etc, drive governments to long term changes in their innovation systems and socio-institutional changes in governance and poli-

cy-making. Governments experience several dilemmas in this process, for example:

- ▶ Significant tensions between disparate cultures, priorities and constituencies signify that traditional governance structures are under pressure. Governments must manage these tensions with the aim to create a legitimate basis for coherent agenda setting;
- ▶ History counts and represents strong inertia in governance. Governments need to renew governance and institutions, and these adjustments are difficult to induce as corporatist and other influences take part in prioritization;
- ▶ Many countries experience a great need to develop long term strategies for growth and change, but may lack institutional resources and mechanisms to do so. Perceived challenges are all too often not met as inherent short-termism take hold.

Assessing the issue of innovation governance in a wider perspective, it concerns the flexibility and adaptability of national economies.

Sound innovation governance therefore rests on a combination of factors. The most important seem to be:

- ▶ The ability to raise awareness of factual biases and resource allocations in the economy.
- ▶ The ability to set agendas and priorities independently from the short term interests of stakeholders.
- ▶ The ability transform institutions and cross boundaries to create effective policy packages or even transitional policies for future economic development in ways that decentralised markets would not be capable of.
- ▶ And the ability to learn and accumulate policy relevant knowledge that neutralises segregated knowledge communities in bureaucratic «silos».



### SVEND OTTO REMØE

Policy analyst and Director of Prokontra AS. He received his Master of Business Administration at the University of Mannheim, Germany, and his Master of Arts in sociology at the University of Bergen, Norway. He has worked extensively in the area of innovation and technology policy and has had positions in the European Commission, DG Research, and OECD, Science and Technology Policy Division. Most recently he was director of STEP-Centre for Innovation Research, Oslo.



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## Notes

1. Technopolis: The Governance of Research and Innovation: An International Comparative Study, Final Synthesis Report, 2002.