The Policy Content and Process in an SDG Context: Objectives, Instruments, Capabilities and Stages

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Agenda

• Formulating STI policy
• STI policy/instrument mixes
• Processes and structures for the implementation of STI policy
• STI policy monitoring and evaluation
• The research and development process in a corporation
The Policy Process

1. Agenda Setting
2. Policy formulation (or design)
3. Decision-making
4. Policy implementation
5. Monitoring and evaluation

Policy learning
Formulating STI policy
Setting STI policy objectives

• STI policy formulation is complex, multidisciplinary and multistakeholder process, often with conflicting agendas

• Policy levels:
  – The strategic level establishes the main national priorities, the speed at which it is hoped to attain objectives, how to act, with whom and for whom.
  – The political level defines the role of the institutions in charge of policy implementation and monitoring as well as the multisectoral and regional links, bringing together the macro- and micro.
  – The operational level is where projects and programmes are designed and implemented at sector, local or municipal level, in line with shorter time frames and more tangible and defined purposes.

• STI and development objectives are brought together either:
  – Through the relationship between national innovation systems and development with, for example, social inclusion as the ultimate goal
  – The other is framed by the theory on STI policy and considers social inclusion one of several STI policy objectives.

• The objectives of STI policy have to be highly contextual, aligned with broader national economic and social goals, respond to identified STI problems, on the basis of a detailed diagnosis, and include an analysis of technological trends worldwide.

• STI policy formulation starts with a definition of national objectives and their relative importance
STI policy/instrument mixes

• An STI instrument is a policy measure that:
  – mobilizes resources through publicly (co-)financed research and innovation programmes or initiatives;
  – funds the generation or diffusion of information and knowledge in support of research and innovation activities;
  – promotes an institutional process designed to explicitly influence the undertaking of research and innovation by organisations.

• Types of instrument
  – Regulatory instruments are legal tools (laws, rules, directives, etc.) that regulate social and market interactions and are obligatory in nature
  – Economic and financial instruments provide specific pecuniary incentives (or disincentives) that support specific social and economic activities.
  – Soft instruments are voluntary and non-coercive. They make recommendations, set standards, promote codes of conduct, or offer voluntary or contractual agreements. 

• Instrument mixes (i.e. the sum of the instruments used and the interaction between them) is key to STI policy formulation.

• Instruments are selected during STI policy formulation in a three-step process:
  – An initial selection is made of the most appropriate instruments from among a broad range of different possibilities;
  – The instruments are designed or adapted for the context in which they will be used; and
  – The instrument mix, i.e. the set of complementary policy instruments, is designed with a view to tackling the problems originally identified by the STI policy.
Figure 2.1 National development goals and STI policy

National economic and social development goals

- National economic growth and prosperity
- Inclusive and peaceful society
- Enable environmental sustainability

National science, technology and innovation goal

To make scientific and technological development, and innovation, pillars of sustainable economic and social progress

Specific national science, technology and innovation objectives

- Grow national investment to attain 1 per cent of GDP;
- Build a high-level human capital base
- Develop regional STI capabilities;
- Link academia with industry;
- Strengthen the country’s scientific and technological infrastructure

Policy STI instruments

- Technology and innovation funds
- Scholarships
- Financing of public research
- Intellectual property rights
- Creation of STI clusters, etc.
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<td>Funds for university research</td>
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<td>Training of human resources (scholarships and mobility)</td>
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<td>Support for STI infrastructure</td>
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* It should be noted that the orientation range of some instruments may vary in many of the cases. For example, tax incentives for R&D can be of general application (the same rules for all enterprises) or may target certain groups (reduced requirements or greater benefits for MSMEs).

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<th>Intensive use of the instrument</th>
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<td>Little use of the instrument</td>
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Processes and structures for the implementation of STI policy
STI governance

From the normative point of view, a desirable governance system is one in which:
- Public policies are the outcome of an agenda agreed by the agents;
- The State is accountable to society;
- Information and knowledge relating to public administration can be transparently accessed;
- Integration between the State and civil society generates effective alliances;
- The rule of law exists and the law is enforced;
- An appropriate regulatory framework exists for action by the State and the private sector.

STI policy governance challenges common to developing countries
- The need for better horizontal coordination between agents
- Existence of overlapping roles between agents and unclear responsibilities
- Creation of committees or coordinating groups that do not function properly
- Inefficient use of limited resources, or reallocation of scarce resources to other programmes
- Difficulty in establishing priorities for STI policy
- Lack of continuity in STI policy

Key principles underpinning the institutional framework for STI governance
- Separate the functions of formulating and implementing STI policy
- Clearly distinguish between roles and responsibilities, establishing institutional reporting lines corresponding to the hierarchy of subjects
- Separate the functions of implementation and evaluation to avoid conflicts of interest
Models and instruments for STI governance

• Levels of STI governance
  – Senior STI authorities tasked with formulating policy
  – STI councils and agencies in charge of policy implementation
  – Agents carrying out STI activities (research centres, firms, universities)

• Main institutional arrangements for STI governance
  – A dedicated STI ministry or agency
  – High-level STI Policy Council
  – High-level leadership (intervention by the Office of the President or Prime Minister)
  – Budget processes and structures
  – Agencies specialized in financing and implementation
  – National STI strategy
  – Strategic public-private partnerships
  – Consultative bodies to open spaces for participation by stakeholders
  – Legislative framework
  – Policy evaluation and review
  – Labour mobility of academics, officials and experts
Figure 2.4 Model of STI governance in Finland

Source: Halme, 2014, Figure BO.4.1.
Multilevel governance

- The need for coherent multilevel governance
  - Budget allocations (fiscal decentralization) and decision-making authority (political decentralization)
  - Attribution of authority and capacity to formulate and implement
  - Sharing of responsibilities

- Institutional arrangements to improve multilevel coordination
  - Consultation bodies, territorial representatives and agencies
  - Project co-financing and national-regional funds
  - National-regional contracts

- Challenges for regional-national links
  - Coupling regional STI strategies with the national strategy
  - Regional capacity-building
  - Dealing with the dilemma of how to promote excellence in more developed regions while furthering convergence between regions
STI policy monitoring and evaluation
The rationale for STI policy monitoring and evaluation

Figure 2.1 Purpose and orientation of STI policy monitoring and evaluation activities

Source: Adapted from OECD, 2014

Source: Adapted from OECD, 2014
Tools for informing, monitoring and evaluating STI policy

- Benchmarking
- R&D and innovation surveys
- Programme evaluations
- STI policy reviews
- Technological foresight
- Case studies
- Administrative data – Open data
The research and development process in a corporation
Ideas creation

Formulation of concepts

Selection of concepts

Transformation of concepts into designs and drawings

Building of prototypes

Development of pilot project

Manufacturing upscaling

Marketing

RESEARCH

Innovation Process

DEVELOPMENT
Pulling threads together: Technology, innovation and strategy

What are the companies’ core competencies, understood as harmonised streams of technical and organisational knowledge?

Does the company have:
The obsession of winning through innovation (strategic intent)?
Ways of protecting its innovation?
The necessary complementary manufacturing and distribution facilities?

Are the required leadership, organisational structure, personnel and incentives for innovation available?

At which stage of the technological life cycle is this company?
What opportunities does the corresponding stage open for innovation?

What is the potential for entry and for product substitution?
What is the extent of rivalry and power of suppliers and customers?

Which standards prevail in the industry?
Can they be modified?

What are the sources of knowledge in the industry?
Pulling threads together: Research and Development

R&D is a complex corporate process which inherently combines dimensions of order and chaos.

Researchers need a tailor-made incentive system to excel.

The organisational form of the R&D process needs to consider operational relatedness and strategic importance.

The funding of R&D at the corporate level depends on the strategic importance of innovation and the level of R&D expenditure in the industry. At the project level it depends on the rate of return of the project.

Collaborations with other companies are critical to achieve technical and market knowledge but they are extremely difficult to operationalise.

Development is the most costly and yet less organised phase of innovation. Building a portfolio of diverse types of projects is a challenge.

The team is the basic unit of development. Its composition and leadership depends on the nature of the project at stake.

The R&D process does not end with launching a product. Much of its success will depend on having the appropriate deployment strategy. Often being first does not mean being best.
Many thanks for your attention!