



# BENCHMARKING INNOVATION POLICY IN CATCHING UP AND EMERGING ECONOMIES: Methodology for innovation policy index

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**BENCHMARKING INNOVATION POLICY IN CATCHING UP  
AND EMERGING ECONOMIES**

Methodology for innovation policy index<sup>12</sup>

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## Summary

The working paper develops a methodology for a benchmarking innovation policy in emerging and catching up economies. The methodology takes the form of an index which defines innovation policy as a set of policy measures (financial, regulatory, informational) to support not only the generation and diffusion of new products, processes or services but also diffusion, demand, absorptive capacity and linkages (domestic and international) in the innovation system. This broader view of innovation policy is appropriate for emerging and catching-up economies whose drivers of growth include more than R&D based innovation.

The Innovation Policy Index (IPI) is designed as both a monitoring tool and an instrument to facilitate policy dialogue, programme coordination and promotion of good innovation policy practice. The IPI includes several policy pillars comprised of numerous dimensions, each of which includes indicators with six levels of performance.

The four principal pillars of the IPI are: innovation governance structure, innovation policy instruments, innovation policy processes and institutional capacity for innovation policy. These four pillars cover 18 dimensions with one or more qualitative indicators, ranked according to six categories or performance levels

The index can be used as self-assessment tool by national stakeholders and/or as a tool for international peer assessment. The design of the IPI is participatory and allows a fair evaluation of policy implementation via an independent peer-review process.

The IPI is calculated as the average of the innovation governance structure, instruments, process and institutional capacities scores.

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## 1. BACKGROUND

Innovation has become critical for promoting economic growth in both developed and (increasingly) catching-up and emerging economies (EME). This has made innovation policy a mainstream policy area in terms of its institutionalization, financial weight and number of stakeholders engaged in shaping it.

The mainstreaming of innovation policy has led to an expansion of innovation policy analysis and assessment. In addition to the ever-increasing academic-type innovation policy analysis (see Martin, 2012, 2016, Radošević, 2012, for reviews), the number of internationally recognized monitoring and peer reviews has also grown. The OECD Reviews of Innovation Policy, UNCTAD Science, Technology and Innovation Policy Reviews and UNECE Innovation Capacity Reports are some examples of these peer review reports. The EC has expanded its regular monitoring of member and non-member states' innovation policies significantly through Trendchart, ERAWatch, Research and Innovation Observatory (RIO) reports and, most recently, its RIO\_H2020 Policy Support Facility.<sup>4</sup> The recent World Bank guide to innovation policy (Cirera et al., 2020) and UNCTAD's (2019) Framework for Science, Technology and Innovation Policy Reviews are signs of this emerging trend towards the global mainstreaming of innovation policy.

As a companion to these innovation policy reviews, a new type of composite index metrics has emerged, focused on measuring different facets of countries' innovation capacity. The best known are the EU European Innovation Scoreboard (EIS), the Global Innovation Index (GII), the World Bank Knowledge Economy index, and more recently the World Economic Forum (WEF) Global Competitiveness Index (GCI) and UNIDO's Industrial Performance Scoreboard, which have become so influential that improvements to specific metrics have become policy objectives in themselves. This has led to a situation where metrics are driving policy rather than policy driving the metrics.

As the field of innovation policy has expanded the need has arisen for best practice to be recorded. A recent effort in this direction is the NESTA/Manchester Compendium of Evidence on Innovation Policy.<sup>5</sup> In addition, Crespi et al. (2014) is a comprehensive and excellent summary of what we know about innovation policy, which was produced by a Latin American group associated to Inter-American Development Bank.

World Bank (2010) is a comprehensive handbook, which touches on various areas of design, implementation and evaluation of innovation policy for developing economies. The UNIDO/GIZ EQUIP toolbox provides a fully developed methodology for the design and implementation of industrial policy with overlaps with innovation policy.<sup>6</sup> The EC (2010) Guide to Research and Innovation Strategies for Smart Specialization (RIS3)<sup>7</sup> and the EC

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<sup>4</sup> <https://rio.jrc.ec.europa.eu/policy-support-facility>

<sup>5</sup> <http://www.innovation-policy.org.uk/>

<sup>6</sup> <http://www.equip-project.org/equip/giz-unido/>

<sup>7</sup> [http://www.gsrt.gr/Financing/Files/ProPeFiles18/RIS3%20Guide%20March%202012final\\_0204.pdf](http://www.gsrt.gr/Financing/Files/ProPeFiles18/RIS3%20Guide%20March%202012final_0204.pdf)

Handbook on Smart Specialization Implementation (2016) are complete methodologies for the design and implementation of innovation policy in the EU. Another recently developed policy framework to assess innovation policy is the University of Sussex SPRU-led transformative innovation policy approach.<sup>8</sup>

In summary, the mainstreaming of innovation policy in catching up and EME has increased demand for innovation policy benchmarking. Conducting policy benchmarking is not a trivial issue. Given the multi-level and multi-dimensional nature of innovation, it can be difficult to agree about the boundaries to and scope of innovation policy. As our understanding of the complexity of the relationship between innovation and economic growth increases, it becomes increasingly difficult to assess whether a country's innovation policy is being responsive.

Increasing the use of data and indicators and their compression into composite indexes, is an attempt to capture the complexity of innovation as a social and organizational process. While innovation metrics have been facilitated by the increasing use of composite indicators, innovation policy benchmarking remains either particular to each country or based on loose analytical frameworks which do not contribute to inter-country comparability. A large-scale attempt to measure the diversity of innovation policy in the EU demonstrated the significant methodological difficulties related to such an exercise and the large financial and workforce resources required (see Izsak et al., 2013, 2014). Existing analytical frameworks used for policy analysis are seldom theoretically rooted, although all consider innovation to be a systemic phenomenon. For example, the analytical frameworks used in the EU Trendchart, EraWatch and RIO reports are rooted in internal EU policy practice and reflect changing policy objectives. They are not generic frameworks that can be applied outside the EU policy context.

Most analytical policy frameworks are based on a systems of innovation approach and do not allow comparison even of the countries analysed within the same framework. Therefore, the motivation for the IPI is twofold: first, policymakers need comparable innovation policy benchmarks and, second, current policy review frameworks do not allow comparability. It is against this context that the emergence of methodologies, such as the IPI, should be understood.

The IPI is an attempt to reduce the complexity of innovation policy benchmarking by going beyond individual, customized, but fundamentally not comparable country assessments. The IPI is an attempt to make policy assessment more structured and to benchmark countries along the major policy dimensions.

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<sup>8</sup> <http://tipconsortium.net/>

The IPI framework reflects the current state of the art of the innovation policy literature and assesses its four main dimensions: innovation governance, innovation instruments, the innovation policy process and institutional capacity for innovation policy. The innovation policy assessment is based on a structured questionnaire with rankings by peer reviewers or self-assessors.

However, it must be kept in mind that the ultimate aim is not to generate an overall index, but rather assessment scales and numbers, to serve as discussion points and to try to achieve a consensus on the current state of innovation policy. Numbers reduce the complexity of assessment and draw attention to the weakest or most influential policy dimensions. Although the index will generate an overall number as the average of the four significant innovation dimensions, inter-country policy comparisons require an understanding of the differences among diverse innovation systems.

The IPI methodology is designed explicitly for catching up and EME and should not be used to make comparisons across economies with hugely different innovation capacity levels. It is focused more on the dimensions of technology absorption, technology diffusion, demand for technology and technology linkages than on only R&D and frontier innovation activities. This means that any assessment of individual policy instruments and issues should be conducted in the context of development of innovation capacity. For example, venture capital instruments may differ in their importance in countries where the majority of firms operate at technology frontier compared to economies with isolated islands of high tech excellence. From this perspective, assessment using the IPI is focused more on functions (cf. innovation finance) than particular instruments per se (cf. venture capital).

Quantifying complex and ill-defined phenomena, such as innovation policy, requires a degree of courage; the advantage is that it diverts attention of the complexity of innovation policy and draws attention to critical policy weaknesses and strengths. However, there is a danger that using numbers could lead to uncritical comparison and benchmarking that ignores the contexts the numbers reflect. To avoid this, the IPI should be accompanied by a background analysis that embeds other relevant national information including indicators of (broadly defined) innovation activities, competitiveness, the green economy, the business environment, economic development and the economic structure. When applied to middle-income economies, there is a danger that the current innovation indicators may not capture the full range of often invisible innovation activities related to quality, management, software and process engineering. It is essential to be aware of the invisible part of the 'innovation iceberg' in emerging and catching-up economies. We would call for further analytical work and indicators able to capture both 'implicit' and 'explicit' innovation indicators, which would extend our list of proposed indicators. It is crucial, also, that background analysis should avoid simple input-output indicators to proxy for efficiencies in the innovation process.

## Innovation Policy Index and catching up and emerging economies

Drivers of growth and determinants of technology upgrading in catching up and EMEs are characteristic, also, of low-middle and middle-income economies. Such economies are factor-driven (natural resources, blue-collar labour) and efficiency-driven economies with a minimal role of local R&D as a driver of the innovation process. Their business sectors are characterized by low levels of sophistication of production and poor management, while R&D is related factor, primarily, to absorptive capacity. The business R&D sector in these economies is either very weak or predominantly extramural. Public R&D (science) is weak and unbalanced, due partly to historical legacies and lack of demand during the transition period. Also, while some EMEs participate very little in global value (supply) chains, others rely on them absolutely (cf. assembly based economies).

EME's innovation policies are focused mainly on R&D driven growth aimed at commercialization of local public R&D. At the same time, local productivity improvements include better quality, non-R&D innovations and labour skills, factors that, to a large extent, are ignored by innovation policy. Also, non-innovation policies and their conditions have strong anti-innovation effects; they do not foster a climate for innovation and their support for corporate governance hampers innovation.

Overall, international reviews of national innovation capacity demonstrate the need to improve the contribution of innovation policy to technology upgrading and innovation-based growth and a refocusing of innovation policy on the main drivers of growth in EMEs. The IPI aims to facilitate the restructuring of innovation policy in EMEs based on its role as a tool to complement international reviews.

## Broad notion of innovation and innovation policy

The IPI adopts the Oslo Manual (OECD, 2018)<sup>9</sup> definition of innovation as the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new method of organization of business practices, workplace arrangements or external relations.<sup>10</sup> However, we broaden the Oslo notion of innovation by extending the index to include production capability issues, management practices and vocational training which tend not be considered real innovation categories.

We define innovation policy as a set of policy measures (financial, regulatory, informational) to support not only the generation and diffusion of new products, processes or services but also diffusion, demand, absorptive capacity and linkages (domestic and international) in the

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<sup>9</sup> [https://www.oecd-ilibrary.org/science-and-technology/oslo-manual-2018\\_9789264304604-en](https://www.oecd-ilibrary.org/science-and-technology/oslo-manual-2018_9789264304604-en)

<sup>10</sup> This first version of index does not take account of the role of innovation policy for promoting social innovation and public sector innovation. This remains a conceptually and methodologically undeveloped area and a task for further refinements to the index.

innovation system. This broader view of innovation policy is appropriate for economies whose growth is driven by other activities than R&D based innovations.

It should be noted that the index does not include an explicit assessment of the directionality of industrial policy other than its implicit orientation towards technology upgrading and economic growth. An extension of the index based on assessment of directionality of innovation policy, towards objectives such as resilience to global pandemics (e.g. COVID19), climate change and the green economy, are essential tasks for further adaptations of the index.

## 2. WHY AN INNOVATION POLICY INDEX?

The IPI is designed to be both a monitoring tool and an instrument for facilitating policy dialogue, programme coordination and promotion of good innovation policy practice. It is designed to (i) review innovation policy developments related to important policy pillars and across countries; and (ii) be a **framework** to allow the exchange of experience and good practice and to foster policy dialogue.

The **objectives** of the IPI include provision of a framework for structured evaluation of innovation policies to provide actionable suggestions for innovation policy improvements. The actual index is not the main objective; rather, the aim is to provide a tool for assessment of and improvements to innovation policy. The IPI is aimed also at enhancing international collaboration in innovation policy, improving communication between the private and public sectors on the design and implementation of innovation policy, and facilitating the planning and restructuring of innovation policy funding (Table 1). In that respect, the 'index' or aggregate assessment, signals the completion of the assessment process which could be presented either as a 'dashboard' or as an 'assessment tool'. Thus, the primary outcome is not an aggregate number, but rather a structured picture of the critical weaknesses, challenges and successes related to national innovation policy.

**Table 1: Objectives of the index of innovation policy**

<i>Structured evaluation</i>	<ul style="list-style-type: none"> <li>- Evaluate progress in innovation policy reform on a comparative basis</li> <li>- Assess countries' performance according to the various innovation policy pillars</li> </ul>
<i>Targeted support for improvement</i>	<ul style="list-style-type: none"> <li>- Prioritize policy priorities and support needs</li> </ul>
<i>Regional collaboration and peer review</i>	<ul style="list-style-type: none"> <li>- Encourage more effective peer review through a common evaluation framework</li> </ul>

<i>Public and private sector involvement</i>	<ul style="list-style-type: none"> <li>- Offer a transparent and straightforward communication tool for all innovation policy stakeholders</li> <li>- Establish an assessment process that encourages public/private consultation</li> </ul>
<i>Planning and resource allocation</i>	<ul style="list-style-type: none"> <li>- Facilitate medium-term planning, particularly for issues requiring multi-year programmes</li> <li>- Provide a tool for resource mobilization and allocation, following an identification of the areas for improvement</li> </ul>

### 3. INNOVATION POLICY INDEX FRAMEWORK

The IPI is designed to improve the quality of innovation governance and innovation policy in EMEs and catching up countries. It follows the general methodological approach of the OECD and the ASEAN Small and Medium Sized Enterprises - SME Policy Index and is grounded in innovation studies. The IPI comprises several policy pillars, each subdivided into several dimensions which are composed of several indicators. Each of these indicators has six levels of performance.

The existence of market and system failures is widely acknowledged as is the fact that innovation and technology upgrading requires well-developed innovation policy able to both correct for these failures and to promote innovation-based growth.

#### 3.1. Guiding principles

Innovation policies differ depending on national innovation capacities and innovation systems and, especially, the relationship between enterprises and public support for innovation promotion. There is no innovation policy 'best practice' model that can be applied to different national technological and institutional contexts. However, innovation policy good practice should respect the following principles, which are implemented in various ways depending on national innovation capacity and the socio-economic and institutional context:

1. innovation policy is an inter-ministerial and inter-sectoral activity that cuts across several functional areas. Although formally, the area of innovation policy may be the responsibility of a specific ministry, in reality, innovation policy is affected and shaped by all public policies and the activities of public bodies;
2. innovation can be defined broadly as R&D activity and as the set of activities related to knowledge diffusion, knowledge generation and the implementation of new

- products and processes. Innovation can be technical and, also, organizational and social. It includes (quality and managerial) improvements to production capabilities;
3. innovation is an activity in which Science and Technology (S&T) and the market coincide, and innovative capacity emerges as the common outcome of commercial and business interests and demand, linked to publicly and privately created S&T opportunities, labour force skills and organization of innovative firms;
  4. innovation policy involves not just long-term planning but also active and continuous engagement of business, government and non-government stakeholders to correct market failures and shape demand for new products and processes;
  5. no individual stakeholder in innovation policy can have a complete understanding of the opportunities and constraints hindering innovation. Hence, innovation policy should be understood as a 'discovery process' and a collective 'learning activity'. As a learning activity, it requires continuous, multi-level, transparent monitoring and evaluation activity, which is critical for policy learning;
  6. the overall aim of public innovation policy is long-term social returns in the form of accumulated technological capability, which can respond to economic, health and environmental problems, diversification of the societal knowledge base to respond to social challenges, and inclusive and sustainable growth.

Innovation policy is a set of tools and activities aimed at correcting several types of failures.

#### *Market failure and public goods*

Market failure and public goods are a fundamental premise of innovation policy. It is assumed that government intervention is beneficial if profit driven actors underinvest in new knowledge generation or in public goods, from a social welfare perspective. Failure of the market to invest in knowledge generation and diffusion activities and in public goods to a socially optimal extent, arises from the specific features of knowledge. Knowledge is not entirely appropriable or, once produced, can be used by other users.

However, market failure is a minor rationale for innovation policy since innovation depends, also, on the emergence of innovation systems connecting the many actors engaged in the innovation process, and these systems are often self-organizing. Therefore, another rationale is system failure.

#### *System (linkage) failure*

System failure originates in the recognition of coordination failure, which can be defined as the inability of agents to coordinate their efforts, which, in turn, results in their being even more disadvantaged. This type of failure is endemic in activities with numerous externalities and spillovers and strong inter-dependencies among R&D and knowledge intensive

activities, for instance, which require public-private interaction. System failure is *de facto* coordination failure, but involving multiple agents.

System failure refers either to the incapacity of the actors in the innovation system to link up or a lack of rules to create incentives and opportunities for the actors to link up. If the innovation system is unable to secure sufficient interaction among the actors, the result is a fragmented system. Much innovation policy is driven, either implicitly or explicitly, by system failure and the search for missing components and missing connections in innovation ecosystem.

When system failure occurs, the state sets the framework conditions for innovation systems to better self-organize across the range of activities in the economy. While market failure is used as the justification for instruments that allocate resources to firms in the form of R&D grants or tax incentives, system failure leads to instruments that enhance innovation opportunities and innovation capabilities by addressing missing components and missing connections. In this sense, removing system failure is *de facto* about the state and a range of non-government actors shaping the markets for new products and processes (Mazzucato, 2016)

#### *Capability failure*

Capability failure refers to the situation when the firm lacks the skills, knowledge and equipment to support a required technical change. This may be due to managerial deficits, lack of technological capability, poor learning ability or lack of absorptive capacity. In some contexts, capability failure is seen as constituting system failure, failure related to the critical components of the innovation system; it is often considered a standalone rationale for firm-level support for innovation. For example, efforts to enhance university-industry links may fail due to weak capabilities in either the firms or the universities to engage in collaboration.

#### *Aligning innovation activities to sustainable and resilient development*

Achievement of sustainable and resilient development may be impossible even in the face of national policies that are able to overcome the types of failure discussed above. Ensuring sustainable and resilient development should be an explicit rationale for innovation policy. We acknowledge that innovation policy should aim to correct failures related to building partnerships to drive innovative and integrated approaches to achieve the UN sustainable development goals as well as health and climate change resilience.

### 3.2. The four principal pillars of the innovation policy index

The IPI rests on the pillars of: innovation governance structure, innovation policy instruments, innovation policy processes and institutional capacity for innovation policy.

Research on innovation policy and innovation capacity in EMEs shows that, overall, the adequacy of innovation policy depends crucially on the country's policy implementation capacity. Hence, it is institutional capacity more than the scale and the scope of the policy instruments that matters for the outcome. The IPI's combined the best practice and the best matching approach recognizes this. The best practice principle applies to the three components of the index (innovation governance, innovation policy instruments and innovation process). The fourth component –capacity for implementation of innovation policy – *de facto* 'corrects' these three components, which allows the overall approach to be described as 'a best match' approach.<sup>11</sup>

In what follows, we describe the four generic pillars of the IPI, based on the innovation policy studies literature, public policy practice and theory and national innovation capacity reports.

The four pillars of the index are rooted in the notion of governance which 'concerns the systems and practices that governments use to set priorities and agendas, implement policies and obtain knowledge about their impacts and effectiveness' (OECD, 2005). The notion of innovation governance assumes that managing the innovation process is an activity where the boundaries between and within public and private sectors are blurred. Innovation is not driven by individual inventors, but rather is the outcome of interactions between individuals and organizations engaging in collective activity. In that context, government does not have the power to get things done based on its authority; it must contribute by steering and guiding. Government is one of the actors involved in the interactive process involving various forms of partnerships, collaboration, competition and negotiation (OECD, 2005). By the same token, governance can suffer from the lack of accountability, lack of transparency and poor representation of stakeholders.

### Innovation governance structure

The innovation governance structure includes organizations involved directly or indirectly in managing the innovation process in the economy. Organizations such as the Ministry of S&T and the Innovation Agency, have the specific task to fund knowledge generation activities. However, these organizations operate in legal and regulatory contexts which determine the scope of their activities and mode of conduct. Hence, it is both the organizations involved

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<sup>11</sup> We recognize that in a broader sense, institutional capacity underpins all four components, which is acknowledged in the assessment criteria. Hence, we consider implementation capacity explicitly as core to institutional capacity in a narrow sense.

and the legal, regulatory and policy framework in which they operate, that constitute the economy's innovation governance structure.

Economies often differ in the number and types of organizations directly involved in regulating or performing innovation activities. The more that economic growth is based on innovation capacity, the more we can expect a 'thicker' network of organizations, programmes and rules supporting and facilitating the innovation process. This network of organizations will include both private and public entities, interacting with and complementing each other. Fragmented innovation governance occurs if organizations interact in a way that diminishes mutual understanding of innovation-related issues. The innovation governance structure is composed of three significant sub-components - institutional (legal and policy frameworks), organizational framework and inter-organizational framework - for promoting innovation and technology upgrading.

We would expect more developed economies to have a well established range of public and private organizations, involved not only in supporting and regulating knowledge-generating activities, such as R&D, but also in improving absorptive capacity through dedicated vocational training and diffusion activities, provided by public-private bodies linked to these activities in specific industries or technologies. We can expect, also, that such economies will have more traditional consumer associations and better developed regulations and standards, which require higher environmental efficiency, safety and quality from technology providers. In contrast, lower-middle-income economies may find it difficult to establish good quality infrastructure institutions and organizations such as certification bodies. Thus, assessment of this pillar of innovation policy focuses on the scope of organizations and legal/regulatory bodies and the nature of their engagement in the innovation process. This engagement can vary on a spectrum from high impact to irrelevant, depending on the real function in the innovation process. When regulatory changes, such as process and product standards, for example, affect the innovation process they *de facto* operate as policy instruments. In this perspective, there is an overlap between the organizational and institutional innovation governance structure (pillar 1) and direct policies and programmes (pillar 2) meant to provide direct support for innovation activities, knowledge absorption and knowledge diffusion.

### 3.2.2. Innovation policy instruments

In the absence of specific policy instruments, organizations and the institutional setup (legal/regulatory system) in which they operate, can influence the innovation process only to a limited extent. Laws need to envisage specific instruments that can influence the innovation process directly. Organizations lacking programmes and policy instruments have limited scope for action. So, while institutions and organizations can influence the innovation process *indirectly*, they can do it much more *directly* by using policy instruments

as tools. These instruments including both funding instruments and conformance requirements, unique allocated spaces in technology parks and specific mandates, obligations and rules. We are aware that there is a degree of overlap between innovation governance structures and instruments, but as a working distinction, we assume that, generally, instruments influence the innovation process directly while organizations and institutions influence it indirectly.

There are various ways of classifying instruments, but none of them is perfect. Vertical versus horizontal classifications might seem useful, but, in reality, involve too many blurred boundaries.<sup>12</sup> Policies, either explicitly or implicitly, always discriminate between individuals, sectors or firms. Firms and sectors face very different constraints and these are ignored by horizontal policies. Implicitly horizontal policies indiscriminately differentiate across sectors and technologies. Therefore, in reality, policy choices are never the neat categories that might be expected from a horizontal/vertical distinction, but tend to be somewhere in the middle of the horizontal-vertical spectrum (Radosevic, 2016).

A distinction between promotions and regulation type instruments might seem useful, but also includes several problems. First, some regulations, such as green economy requirements and health standards, may be regulatory, but *de facto* are innovation promoting. Are special economic zones or S&T parks regulatory or promotion type instruments? Second, promotion implies direct support, while regulation implies indirect support, which comes back to the above discussion on how to distinguish direct and indirect instruments which overlap.

Finally, policy instruments may be defined by whether they provide public inputs (skills, training, etc.) or are a form of market intervention (direct subsidies, tax incentives) (Crespi et al., 2014). However, this distinction, also, is driven by the fact that public inputs and market interventions can be horizontal or vertical and, thus, we come back to the blurred boundaries between vertical and horizontal instruments. In a nutshell, 'it is difficult in a real-world setting to establish sharp boundaries among these categories. So, they should be understood as heuristics or idealized categories rather than as operational concepts' (Radosevic, 2016).

Rather than focusing on the supposedly inherent properties of individual instruments as the criteria for their classification, here, we classify instruments based on the *functions* they support in the innovation ecosystem. Following an innovation systems approach, we classify

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<sup>12</sup> Vertical innovation policy is defined as government support for specific technologies or industries. Horizontal innovation policy is defined as government support to improve firms' innovation capacities by focusing on different aspects in the innovation value chain (R&D, commercialization, clustering and networking), but disregarding the nature of the sector or the technology. See also Warwick, K. (2013), "Beyond Industrial Policy: Emerging Issues and New Trends", OECD Science, Technology and Industry Policy Papers, No. 2, OECD Publishing, Paris available at <http://dx.doi.org/10.1787/5k4869clw0xp-en>

instruments based on whether they are meant primarily to support one of the four generic functions of the innovation system: R&D and knowledge supply, absorptive capacity, knowledge diffusion and demand for innovation (see Radosevic 2004 for an application). To these four generic activities, we add linkages (networking) among the four pillars as a significant policy area from an innovation ecosystem perspective.

It is assumed that the economy's growth and innovation capacity depends on the supply of both R&D and non-R&D knowledge and on the capability to absorb and diffuse technology and demand for its generation and utilization. Accordingly, each of these four generic activities or functions can be associated to a set of policy instruments, including a group of tools focused explicitly on enhancing the linkages among these four activities in the innovation ecosystem.

This component of the index is concerned with the *scope* of innovation policy or the extent to which policy instruments 'cover' various activities in the innovation ecosystem. The expectation would be that more developed innovation policies would cover all four generic innovation system activities (knowledge generation, knowledge absorption, knowledge diffusion and demand for innovation) and their interlinkages. We would expect, also, that the focus or number of instruments would vary depending on the distance of the country from the technology frontier. We would expect less technologically advanced economies to focus more on absorption and diffusion and more technologically advanced economies to focus more on knowledge generation and stimulating demand for new technologies for which no clear market demand exists.

#### Innovation policy process (policy cycle)

The innovation policy process or the policy cycle refers to how the policy cycle is managed and influenced. For policy instruments to be effective, there must be in place a well-established process of legitimation, design and implementation.

We distinguish among four stages in the policy cycle: agenda setting and prioritization; decision making about policies and programmes; implementation of policies and programmes; policy evaluation, including monitoring. These stages suggest a linear sequencing although, in reality, they are frequently interlinked, follow an inverse sequencing and, thus, should be viewed as elements in an interactive process. However, they can follow a linear logic and be derived top-down and with some of the four stages absent.

The choice and design of instruments is a reflection of the institutional environment and is dependent on the capacity of public servants to administer them and protect against capture and rent-seeking. A good design depends on the identification of either market or system failures, or capability failures.

The problems related to industry and innovation policies are not known *ex-ante* and different stakeholders hold quite different views about what they might include. Equally, once these problems are defined, it is difficult to agree on a generic solution and individual policy instruments will most likely be country or region specific. This uncertainty related to innovation policy makes its design and implementation a search process (Crespi et al., 2014: 322) and agenda setting and prioritization essentially a discovery process. However, policy effectiveness ultimately and crucially depends on the minutiae of its design and implementation.

#### Institutional capacities for implementation of innovation policy

The knowledge and technical skills requirements for innovation policy are demanding and are often beyond the competencies available in the public sector. Selection of R&D projects, evaluation of spillover effects and estimates of optimal R&D tax credit levels are nontrivial endeavours (Crespi et al., 2014).

In contrast to macroeconomic policies, innovation policies require developed institutional capabilities that go well beyond those required for macroeconomic policy. They include capabilities beyond government capacities and require ability to engage with the private sector, coordinate across several public agencies and ensure continuity of policy whose effects usually extend beyond the electoral cycle. In some economies, some of these capabilities are the outcome of different, historically rooted state and business roles and cannot be built by a small teams of 'modernizers'.

The systemic nature of innovation policy requires collaboration with the private sector, which frequently has a more in-depth understanding of the issues involved. It also requires cooperation across several public agencies or public bodies which is not always easy to achieve. So, again, unlike implementation of macroeconomic policy, innovation policy, by definition, is inter-ministerial, inter-sectoral and multistakeholder.

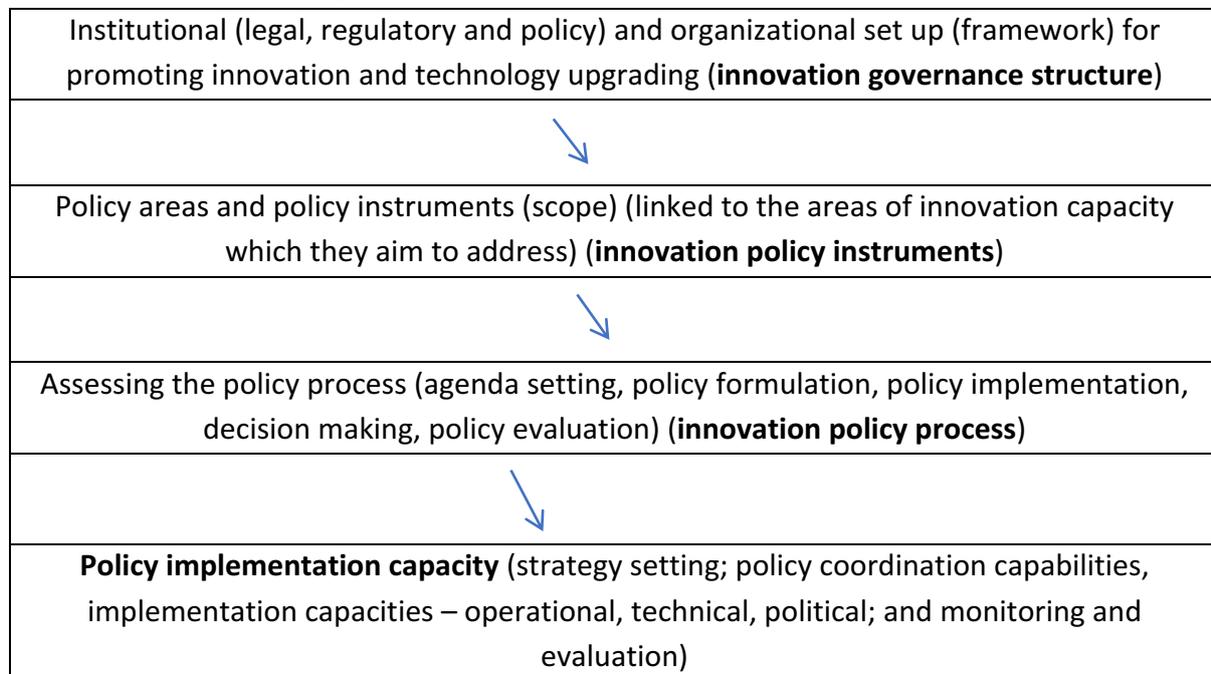
However, the institutional capacities for innovation policy are not confined to government administrative capacity. As an autonomous entity, the state cannot be effective in innovation policy, but needs to be enmeshed in rich knowledge networks with the private sector that facilitate dialogue on the challenges to growth. Hence, policy coordination capabilities are as crucial as in-house government capacities. The capacity to coordinate

actions across public sector agencies and to engage effectively in collaboration with private sector actors, is essential for innovation policy. If these capabilities are absent ‘the focus ought to be not on policy “best practice” but policy “best matches” with institutional capabilities’ (Crespi et al., 2014: 29). Hence, the institutional capacities pillar of the IPI corrects for best practice approaches that underpin the other three pillars of innovation policy (structure, instruments and process).

The IPI distinguishes among the following capacities for implementation of innovation policy (strategy setting capabilities, policy coordination capabilities, implementation capacities – operational, technical, political, and monitoring and evaluation capacities).

#### 4. CONSTRUCTING THE INNOVATION POLICY INDEX: METHODOLOGY

The IPI is built in four stages:



The process of building the index goes from assessment of individual levels of policy indicators to the dimensions (sub-pillars) which form part of four policy pillars:

- Step 1: Assessing individual policy indicator levels
- Step 2: Assessing individual policy dimensions
- Step 3: Assessing the four policy pillars
- Step 4: Constructing the aggregate IPI
- Step 5: Interpretation of the IPI

The four pillars are subdivided into 18 dimensions each of which is linked to one or more qualitative indicators, ranked in six categories or performance levels. These levels range

from 1 for no specific policy measure or institution (poor) to 6 for a well-functioning institution or effective implementation of each policy measure (good practice).

### Methodology

The IPI policy self-assessment should be conducted by an independent expert based on a questionnaire survey and peer review. The assessment will include inputs from government agencies, the private sector and other innovation policy stakeholders.

The individual country self-assessment results will be collated to allow consultations with government agencies and comparison and discussion in peer assessment workshops which will result in their revision and refinement. The results will be reviewed by an internal panel of experts from to ensure consistency.

Therefore, the indexing process is *participatory* and will allow a fair evaluation of policy implementation through an independent peer-review process.

The method is based on a qualitative national expert survey, with written assessments translated into numerical ratings (from 1 to 6) and examined in a three-stage review process to ensure comparability across countries. The resulting country assessments will be transparent and verifiable for each individual score.

However, inevitably this type of qualitative survey will suffer from some degree of subjectivity. The survey process will be based on a standardized assessment framework which will provide a single reference frame for the experts assessing the indicators. To ensure validity, reliability and comparability of the assessment, each score will be subjected to a multistep review process, by the country experts, peers and, wherever possible, a panel of international experts.

The first three IPI pillars are the ‘best practice’ categories, which are then corrected for local IP policy institutional capacity. This correction for the local institutional context is essential as the most effective innovation policy will be the policy with the optimum match between available levels of innovation governance, instruments and process, and level of institutional capacity for innovation policy. A mismatch between the governance and the capacities pillars will render the policy ineffective. In this respect, the IPI does not measure the level of innovation policy across countries at comparable levels (best practice), but rather measures *the extent of match or mismatch between governance levels and institutional capacity for policy implementation (best match)*. This is much more informative than measuring policies across different country contexts.

## STRUCTURE OF THE INNOVATION POLICY INDEX

Innovation governance structure	Innovation governance instruments	Innovation governance process (policy cycle)	Institutional capacity for innovation policy
Institutional framework	Promotion of technology absorption	Agenda setting and prioritization	Strategy setting capabilities
Organizational framework	Promotion of innovation and knowledge generation	Decision making about policies and programmes (policy design)	Policy coordination capabilities
Inter-organizational links	Promotion of intra-country linkages	Policy implementation	Policy implementation capabilities - TOP
	Promotion of international innovation linkages	Policy evaluation	Monitoring & Evaluation capacities
	Promotion of technology diffusion		
	Promotion of demand for R&D and innovation		
	Policy mix		

## 5. INNOVATION GOVERNANCE STRUCTURE (INSTITUTIONAL FRAMEWORK)

The innovation governance structure pillar includes those organizations that are players in the innovation process, the institutions that design and/or implement the rules and regulations, and the linkages among organizations. Innovation policy system failures can occur if the rules inhibit entrepreneurial and innovation-oriented behaviour or if public and private organizations fail to interact appropriately (coordination failure). Also, there may be some essential organizations absent from the innovation system, in which case, system failure will occur due to 'missing organizations/actors'. These missing actors could be regulatory bodies, venture capitalists or applied R&D institutes. For example, the infrastructures in low and middle-income economies may be missing metrology (legal, scientific and industrial), standardization, accreditation and conformity assessment institutions.

The following legislature, policy documents and organizations will serve as a reminder of their scope and impact on innovation activities. This list should not be considered and 'tick

box' exercise to indicate presence or absence of legislation, policy documentation or organizations that match the innovation policy good practice criteria.

### 5.1. Legal framework<sup>13</sup>

This sub-pillar evaluates the comprehensiveness of the legal framework for supporting the innovation process in all five of its dimensions (knowledge generation, knowledge absorption, knowledge linkages, knowledge diffusion and demand for knowledge).

Evaluation of the scope or comprehensiveness of the legal framework for enhancing innovation capacity involves consideration of the following legislative acts and regulations on innovation activities being adopted:

1. Law on R&D/ law on innovation supporting activities
2. Law on quality support infrastructure/standards setting and certification legislature
3. Monitoring and evaluation regulations
4. Intellectual Property Rights – IPR - framework and policies
5. Law on public procurement
6. Legislation regulating the establishment and liabilities of public-private partnerships
7. Law on Foreign Direct Investment - FDI and regulation of technology transfer
8. Venture capital legal framework
9. Vocational training regulations.

### 5.2. Policy framework<sup>14</sup>

Evaluate the scope and comprehensiveness of the policy framework for enhancing innovation capacity. Consider whether the following policy documents on innovation activities are being adopted:

1. R&D policy strategy document
2. Innovation policy strategic document
3. FDI policy document
4. Quality infrastructure strategy document
5. Vocational skills formation documents
6. SME and entrepreneurship policy documents
7. Sector-specific strategy policy documents (cf. ICTs, etc.)
8. Industry policy documents

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<sup>13</sup> The legal framework is the collection of laws and acts that are binding for government. Policy documents do not force governments to achieve their declared objectives.

<sup>14</sup> A policy framework is a collection of documents which outlines what a government ministry hopes to achieve and the methods and principles it will use to achieve them.

9. Other policy documents that affect human capital formation such as higher education measures, etc.

In assessing this governance dimension, it is essential to think about the actual impact and the implementation effects of these policies rather than just about the presence of a formal document.

### 5.3. Organizational structure

The innovation policy organizational structure refers to the distribution of decision making responsibilities and the control over resources, among the different organizations engaged in supporting innovation activities. This dimension assesses the range of government and non-governmental bodies explicitly in charge of stimulating or regulating the innovation process in the economy.

Evaluate the scope and comprehensiveness of the range of organizations engaged in enhancing innovation capacity. Consider whether the following organizations or their functions exist:

1. R&D council or other advisory R&D body, and innovation council
2. Research funding agency/science foundation
3. Innovation agency
4. Fund for commercialization of R&D /innovation fund
5. A separate and autonomous monitoring and evaluation unit
6. Industry technology assistance organization (e.g., productivity centre, engineering centre, productivity-enhancing institutes)
7. Quality infrastructure bodies (National Standardization Agency; National Metrology Institute; National Accreditation Body, Conformity Assessment Bodies (CABs) - mainly private; Management System Certification Institute
8. National and regional patent offices
9. Organizations to support the ICT infrastructure
10. National SME agency and regional offices
11. National FDI agency and regional offices
12. Development bank
13. Special economic zones
14. Other organizations relevant to the economy's innovation capacity.

### 5.4. Inter-organizational links

An effective innovation policy requires well-developed policy capabilities and a vibrant network of public-private interactions; the presence of only one of this is not sufficient. Policy capabilities without the capacity to engage in dialogue with the private sector will be

ineffective. This dimension assesses the range of consultative innovation policy bodies, that is, whether they are economy-, sector- or region-wide. It also evaluates whether innovation policy consultative bodies are informative (consulting) or dialogue type, or are jointly designed.

The simplest consultation process, involving the public sector listening to the private sector, may not be sufficient to obtain useful information and to achieve effective policy implementation. Different countries have different public sector propensities and capacities to interact with the private sector. For example, only some state sector actors may have the ability to interact. Also, we cannot assume that the public and private sectors will be well structured.

The public sector may not be organized such that it is able to interact with the private sector and it might require private sector-led institutions to act as mediators in public-private interactions. Alternatively, the private sector may be very poorly planned, which might require action by the public sector to improve private-private coordination. Business associations may not represent all stakeholders and might be ineffective at inducing members to commit resources and obey association rules and decisions (Crespi et al., 2014). On the other hand, the public sector might be governed inflexibly which might prevent it from engaging with the private sector.

*Issues to be assessed:*

Is public-private collaboration in innovation activities allowed and practised? Are there inter-ministerial bodies engaged in the coordination of innovation policy issues? Are there public-private consultative bodies engaged in innovation policy activities?

Evaluate the scope and comprehensiveness of the range of intermediary organizations responsible for enhancing innovation capacity. Consider whether the following organizations have been established:

1. Association of Business Incubators, industrial parks, special economic zones, technoparks or science parks
2. Public-private councils
3. Business councils
4. Industry associations
5. Supplier associations
6. Professional associations (e.g., engineers associations)

## 5.5. Overall qualitative assessment of innovation governance

To support assessment requires attention to the presence of legislature and its overall quality and promotion of innovation capacity. If there are gaps or contradictions in some legal areas, these must be taken into account when assessing innovation governance.

## 6. INNOVATION POLICY INSTRUMENTS

The innovation policy instruments pillar includes seven dimensions which group together instruments targeting specific activities in the innovation ecosystem (e.g. knowledge absorption, knowledge generation, knowledge diffusion, demand for knowledge, knowledge linkages).

The following innovation policy instruments should serve as a reminder about the scope of the policy tools that potentially could influence innovation activities. It should not be seen as a 'tick box' exercise to indicate the presence or absence of policy instruments. The instruments must meet good practice innovation policy criteria.

### 6.1. Promotion of technology absorption

Absorptive capacity is the ability to absorb new knowledge and adapt imported technologies (Cohen and Levinthal, 1989).

#### Instruments to support training

This dimension of the index assesses *the extent and quality of support for training programmes* at the country, industry and firm levels.

Which of the following training support instruments exist in your country?

1. Professional training for promotion schemes
2. Professional training in entrepreneurship development
3. Training for trainers in entrepreneurship
4. Professional training on national and international standards
5. Continuous vocational training at the firm level
6. Preferential loans for training programmes
7. Schemes to support international education and training.<sup>15</sup>

Which of the schemes present in your country are the most successful? What is their financial significance?

#### Instruments to support the development of technical and business services for enterprises

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<sup>15</sup> A good example here is the Kazakh Bolashak programme

Are there schemes in place to support the development of technical and business services to assist enterprises on a commercial or semi-commercial basis? If yes, provide a list and an assessment of the spread (e.g. are they available only to the business enterprise sector) and the uptake of these services?

#### Instruments supporting productivity-enhancing activities

This dimension assesses the extent to which policy promotes *productivity improvements* including quality improvements, and improvements to managerial practice and firm-level technology absorption.

Are there schemes in place to support the introduction of quality standards, productivity improvement techniques and adoption of specific types of technologies? If yes, list them and indicate their diffusion, for example, are they available to the business enterprise sector? Assess the uptake of these activities? Is the cost of these services acceptable to/affordable for local users?

### 6.2. Promotion of innovation and knowledge generation

R&D support measures (subsidies, loans, etc.)

Which of the following R&D support instruments exist in your country?

1. Individual R&D grants<sup>16</sup>
2. R&D subsidies
3. R&D programmes
4. Public R&D grants
5. Preferential loans for R&D activities
6. Discretionary institutional funding for R&D projects (e.g., block funding)
7. Competitive R&D project grants
8. Selective R&D support schemes
9. Loans for innovation
10. Preferential loans for technology upgrading.

#### Collaborative R&D projects

Which of the following instruments to support collaborative R&D exist in your country?

1. Collaborative R&D programmes involving industry and academies/universities/public research organizations
2. Collaborative R&D programmes involving enterprises
3. Collaborative R&D programmes involving R&D organizations

#### Indirect support for R&D

Which of the following indirect instruments to support R&D exist in your country?

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<sup>16</sup> R&D grants tend to be awarded to individuals or teams of researchers and do not have to be repaid.

1. Tax incentives for R&D (subsidies)<sup>17</sup>
2. Other modes of indirect support (e.g., R&D credit guarantees , tax credits for ICT specialists, etc.).

#### Supporting creation of new technology-based firms

Which of the following instruments to support the creation of New Technology-Based Firms (NTBFs) exist in your country?

1. Programme to support firms located in technology incubators
2. Innovation support services
3. Preferential loans for technology-based startups
4. Support schemes for R&D spin-offs
5. Support for technology-based start-ups
6. Venture financing programme.

#### Supporting mobility in the R&D system

Which of the following instruments to support the creation of NTBFs exists in your country?

1. R&D-specific employment policies
2. Subsidies for hiring R&D personnel
3. R&D mobility schemes.

#### R&D-specific Education Policies

Are there programmes to support S&T and engineering education and post-graduate and post-doc education?

1. Support for S&T and engineering post-docs and post-grads

#### Support for R&D infrastructures

Which of the following R&D infrastructure instruments exist in your country?

1. Selective support for centres of excellence
2. Selective support for competence centres
3. Selective support for technology incubators
4. Selective support for science parks.

### 6.3. Promote linkages within the innovation system

#### 6.3.1. Promote intra-country linkages in the innovation system

Innovation is a systemic activity and linkages are essential for enhancing the economy's innovation capacity. In this section, we evaluate the frequency and intensity of the linkages within the national innovation system.

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<sup>17</sup> Subsidies refer to direct contributions, tax breaks and other special assistance that governments provide to businesses to offset R&D costs.

### Linkages among R&D sectors

Which of the following instruments to support linkages among R&D sectors exist in your country?

1. University-industry linkages (other than collaborative R&D programmes)
2. University Business Incubator (UBI) programme
3. Technology platforms.

### Linkages within sectors

Which of the following instruments to support linkages within the business sector exist in your country?

1. Industry research network
2. Supplier matching services.

### Supporting co-location schemes

Which of the following instruments to support co-location of firms exist in your country?

1. Support for S&T parks
2. Support for innovation spaces/innovation habitats
3. Support for clusters and business networks
4. Promotion of clusters.

### 6.3.2. Promote international innovation linkages

Innovation occurs increasingly in an international context, that is, in collaborating organizations in different countries. In this section, we evaluate the frequency and intensity of international linkages.

### Infrastructure to enhance technology transfer and trade

Which of the following instruments to support technology transfer and trade exist in your country?

1. Special Economic Zones (Export Processing Zone/Enterprise Zone/Free Trade Zone)
2. Support for the business infrastructure (transport terminals, storage, cargo system improvements).

### Promotion of Foreign Direct Investments (FDI)

Which of the following instruments to promote FDI exist in your country?

1. One-stop-shop for FDI and exporters
2. Investment promotion schemes.

### Promoting inclusion in international supply chains

Which of the following instruments to promote inclusion in international supply chains exist in your country?

1. Match-making services
2. Support to meet the requirements of global value chains.

### Diaspora networks

Are there programmes to support knowledge links between diaspora and the local community, and R&D and the business community?

1. Support for diaspora networks.

## 6.4.Promoting technology diffusion

Diffusion is critical for reaping the economic benefits from investment in R&D and increasing absorptive capacity (Davies, 1979; Rogers, 1983). This section evaluates the frequency and significance of instruments to support technology adoption and diffusion.

### Enhancing quality and productivity

Which of the following instruments to enhance quality and productivity exist in your country?

1. Standards, testing and certification instruments
2. Industrial technology assistance programmes (extension services)
3. Promotion of activities to increase productivity and quality
4. Technology management support schemes.

### Embedding FDI in the economy

Which of the following instruments to integrate FDI in the local economy exist in your country?

1. FDI 'aftercare' programmes for already established investors<sup>18</sup>
2. Supplier upgrading programmes.

### Promoting restructuring towards green growth

Which of the following instruments to promote technology diffusion towards green growth exist in your country?

1. Credit guarantees for green energy producers
2. Preferential loans for the diffusion of green technology.

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<sup>18</sup> Aftercare includes the range of activities from post-establishment facilitation services to developmental support to retain investment, encourage follow-on investment and achieve greater local economic impact.

Information and brokerage schemes for technology upgrading

Are there programmes to support information and brokerage schemes for technology upgrading?

Support services for technology diffusion in SMEs

Are there programmes to support technology upgrading of SMEs?

Investment programmes providing explicit support for innovation diffusion

Are there programmes that promote innovation diffusion in specific sectors?

1. Selective innovation diffusion support schemes for existing high-tech sectors
2. Selective innovation diffusion support schemes for new high-tech sectors
3. Selective innovation diffusion support schemes for low to medium-tech sectors.

Entrepreneurship education

Are there programmes to support entrepreneurship education?

Stimulating demand for R&D and innovation

Demand for R&D and innovation is an essential mechanism that initiates the wealth generation process in R&D, absorption and diffusion activities (Schmookler, 1983). Demand for R&D and innovation differs from market demand for existing products and services; it refers to demand for future products and services whose usefulness, price and performance may be uncertain.

Public procurement for innovation<sup>19</sup>

Which of the following public procurement programmes exist in your country?

1. Public procurement of R&D (pre-commercial procurement)<sup>20</sup>
2. Public procurement for innovation<sup>21</sup>
3. Public procurement for innovation with domestic linkage requirement.<sup>22</sup>

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<sup>19</sup> ‘Public Procurement for Innovation (PPI) occurs when a public organization places an order for the fulfillment of certain functions within a reasonable period of time (through a new product)’. The purchase of a non-existing product is the central element of PPI. In contrast to PPI, regular procurement occurs when public agencies buy ready-made products such as pens and paper “off-the-shelf”, where no innovation is involved. Only the price and quality of the (existing) product are taken into consideration when the supplier is selected’ (Edquist and Zabala-Iturriagoitia, 2012:2-3)

<sup>20</sup> Public procurement of R&D should not be confused with regular public subsidy for R&D programmes defined by applicants. Public procurement of R&D is a type of “contract” research which may include development of a product prototype.

<sup>21</sup> Innovation can refer to a product or a system that is new to the country or new to the world, created as a result of the procurement process.

<sup>22</sup> Public procurement contract which requires the different involvement of local firms (usually as subcontractors).

Local content requirement and other performance requirement instruments

Are there local content requirements or any other performance requirements that apply to foreign investments in your country? In which sectors they are applied? Are they occasionally applied or do they apply to all firms in specific sectors?

Competition for innovative technology (Innovation prizes)

Are there programmes to promote innovative domestic achievements?

Voucher for innovation services

Firms, in particular, SMEs receive vouchers from government for a specified number of services from research or training institutions. Governments aim to encourage the use of knowledge services to improve technology diffusion and capacity–building in firms.

Do innovation voucher or similar programmes exist in your country?

Stimulating demand for new technologies

Are there tax incentives for specific types of firms or specific types of activities? Which of the following tax incentives exist in your country?

1. Tax incentives for firms with high development costs
2. Tax incentives for firms with patent boxes<sup>23</sup>
3. Tax incentives for firms investing in new technology
4. Tax incentives for renewable energy technologies
5. 'Feed-in tariffs' for renewable energy.<sup>24</sup>

## 6.5. Policy mix assessment

The simple accumulation of unrelated policy instruments does not constitute an appropriate innovation policy; it needs to include a portfolio of mutually complementary and reinforcing instruments. Individual instruments might have contradictory or non-synergistic effects. To ensure appropriate innovation policy requires an assessment of policy coherence, that is, evaluation of the portfolio of policy instruments assessed individually in sections 2.1-2.6.

The policy mix refers to the combination of policy instruments that interact with each other and which influence innovation, as opposed to the policy instruments considered in isolation (EC, 2009). Innovation policy can comprise a mix of different or similar instruments, targeting different or the same activities (Flanagan et al., 2011). The policy mix may reflect

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<sup>23</sup> Patent boxes mean that the firm pays a lower rate of corporation tax on the profits from its patented inventions.

<sup>24</sup> Feed-in Tariff (FIT) schemes offer guaranteed cash payments to households and firms that produce their own electricity using renewable technologies such as solar photovoltaic (PV) panels or wind turbines.

the different policy rationales, policy goals and implementation approaches (Flanagan et al., 2011).

Assessment of the overall policy mix is based on the average of the scores for individual dimensions plus the score for the overall policy mix which refers to the appropriateness of that policy mix. This assessment should consider all of the above pointers and the variety of instruments, whether they are vertical or horizontal and whether they are focused on generating public inputs or represent a form of market intervention. This portfolio should be considered from the perspective of appropriateness for and relevance to the innovation developments in the economy.

We assess a diversity of policy instruments and the coherence and complexity of the policy mix.

#### The diversity of policy instruments in the policy mix

- Do they capture all four innovation system functions (knowledge generation, knowledge absorption, knowledge diffusion and demand for new technologies) or are they skewed towards one or two of these functions?
- Do they include an appropriate mix of vertical and horizontal instruments?
- Do they include an appropriate mix of instruments that generate public goods (support for R&D, information support) or do they represent market interventions (taxation, preferential loans, financial subsidies, preferential tariff treatments)?

#### Policy mix coherence and complexity

- Do the instruments operate as a portfolio of related and complementary tools that apply to different stages in the innovation value chain?
- Are some policy measures contradictory, for example, renewable energy subsidies and subsidies for coal mining to maintain employment?
- Is the implementation of policy instruments administratively demanding?
- Does implementation require high technical, operational or political capabilities?
- Are instruments designed such that they reduce the scope for administrative discretion?
- Do instruments require close public-private collaboration?
- Does the implementation of policy measures require implementation by a single agency or cooperation across ministries and agencies?

### 6.6. Overall qualitative assessment of innovation policy instruments

To justify assessment, attention must be paid to both the presence and also the overall quality and relevance of policy instruments for promoting innovation capacity. Any gaps or

contradictions in the design and implementation of specific instruments must be considered in their assessment.

## 7. INNOVATION POLICY PROCESS

The innovation policy process or policy cycle includes three distinct stages: agenda setting and prioritization; decision making about programmes and instruments; implementation, evaluation and learning.

### 7.1. Agenda setting and prioritization

Agenda setting is the stage in the policy cycle when policy objectives are defined. It is influenced by various stakeholders and involves decisions about which issues are on the political agenda (OECD, 2005). It involves discussion and decisions aimed at changing the national organizational structure.

The innovation policy agenda can be defined top down or bottom up, or a combination of the two, and can follow a broad or narrow view of innovation. A broad agenda will include social, organizational, service and marketing innovation activities in addition to technological and science-based innovation. A narrow agenda will be focused on sustainability and environmental issues and grand challenges.

The innovation policy agenda may be shaped by broad participation of stakeholders involved in an interactive, consensus-based and collaborative process, or may be narrowly defined and focused only on technological innovation. In this case, it will be formulated by the S&T ministry and include R&D based innovation, and will have limited involvement of external stakeholders. Most innovation policies aim to support economic growth through the development of new technologies to increase productivity (OECD, 2005).

The agenda-setting process is linked closely to priorities. These may be identified via an interactive and broad consultative approach or by a small expert group. Priorities can be determined using formal methods, such as technology foresight, or informal non-transparent methods. Priorities may include designation of resources in a few sectors, or may be less strictly defined.

*Issues to be assessed:*

1. Is innovation policy a top priority of your government?

2. Is the policy agenda defined based on a continuous stream of policy efforts related to innovation-based growth, or is it defined based on occasional and sporadic efforts driven by external events?
3. Is the policy agenda shaped by innovation governance stakeholders (business, professional organizations, civil society) rather than only by government ministries?
4. Is innovation in strategic documents defined narrowly as S&T innovation or more broadly as social, organizational, service and marketing innovation?
5. Is the process of priority selection top down, bottom up or both?
6. Are innovation policy priorities derived based on an interactive and broad consultative approach or by a small expert group?
7. Are priorities determined by formal methods, such as technology foresight, or by an informal and non-transparent process?
8. Are policy priorities concentrated on a limited number of priorities or are they broad and loosely defined?
9. Are those policy measures targeting sectors and selection at the more granular level of specific sub-sectors (activities)?

## 7.2. Decision making about programmes and policies

Policy design is the stage in the policy cycle when policy issues and priorities are translated into concrete initiatives, programmes or instruments. The design stage involves the selection of different instruments and can be consensual or by decree.

Numerous innovation policy instruments are, by nature, inter-sectoral and cut across several policy domains. This requires co-operation over policy design and broad stakeholder participation across policy domains.

The design of policy instruments must take account of whether they address recognized bottlenecks or constraints. The instruments should be appropriate to the specific stage in the innovation chain. The closer to market, the greater the need to decide whether measures, such as loans or grants, are more appropriate, whether the form of risk sharing is suitable and whether the policy instrument preserves the incentives for entrepreneurs to invest time and effort on innovation activities. Funding criteria need to

distinguish between technologically interesting projects and projects with commercial success potential (World Bank, 2006).

1. Are policy measures designed with broad involvement of experts and stakeholders in various domains or only by the responsible ministry?
2. Are design and implementation of policy measures organizationally separated?
3. Are decisions on policy measures based on a market failure, system failure or capabilities failure rationale?
4. Is the specific stage in the innovation chain (close to market or early stage) considered when choosing among policy instruments?
5. In the case of risky projects, is consideration given to proximity to market, market relevance and potential users? Are risk sharing issues resolved satisfactorily in the case of close-to-market projects?
6. Before the final selection of policy instruments, are all possible policy solutions considered?
7. Are policy instruments selected by consensus or decree?
8. In the design of policy measures, is consideration given to criteria other than direct output, for example, indirect effects on technology accumulation, employment, exports, etc.?
9. Are policy measures and their implementation rules and conditions, publicly available and transparent?
10. Do policy measures include clear rules and procedures for complaints and conflicts of interests?
11. Are awards for projects allocated on a competitive basis?
12. Is selection based on external and independent peer reviewer evaluations?

*Performance requirements*

Public policy best practice requires public funds to be disbursed based on performance, that is, they are not unconditional.

1. Does public funding tend to be unconditional or performance based (financial, technical, impact)? Explain how each of performance criteria is applied?
2. Do most policy measures include a ‘sunset clause’?<sup>25</sup>

### 7.3. Policy implementation

Implementation refers to the implementation of policy measures and is considered a distinct stage due to the numerous unforeseen contextual issues that can emerge during policy implementation. These issues may be related to faults or inconsistencies in the design of measure, problems related to availability of administrative capacity to implement the measure or contextual problems that could not be envisaged at the time of the policy design.

Policy implementation may be influenced by the location of organization mandated to implement the measure(s) and whether the design envisaged checks and balances such as transparency, neutrality, supervisory board, technical assessment of the proposal, etc.

In contemporary innovation and industry policy, there is no clear separation between policy design and policy implementation, because, often, ‘the exact nature of the problems and the best way to address them are not known ex-ante’ (Crespi et al., 2014). In this case, the policy instrument is considered an experiment, which is adapted based on feedback. This approach requires a specific organizational context that facilitates an ‘experimentation – feedback loops – adaptation’ process (see Crespi et al., 2014; Radosevic et al., 2017). The aim of this section is to assess policy implementation quality, including the extent to which innovation policy includes piloting of policy instruments or projects within programmes.

1. How often do already approved measures need to be amended due to unforeseen issues?
2. Is the selection of proposed measures impartial or highly political?
3. How often does policy implementation suffer from lack of required administrative capacity?
4. Is there a discrepancy between *de jure* and *de facto* allocation of funds?

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<sup>25</sup> In public policy, a sunset provision or clause is a measure within a statute, regulation or other law that provides that the law shall cease to have effect after a specific date, unless further legislative action is taken to extend the law’ (Wikipedia).

5. Do approved measures allow for subsequent adaptations or experimentation in light of experience?

#### 7.4. Policy evaluation

Evaluation is the last, but is an essential stage in the policy formulation, implementation and evaluation cycle. Evaluations tended to be *ex-post* but increasingly are *ex-ante*.

Policy evaluation requires metrics to measure outcomes. It is common practice to select a small number of output and results indicators linked to priorities with clearly identified baseline and target mechanisms, supported by collection of relevant data to verify the match between activities and output and results targets.

A precondition for policy learning is proper evaluation which allows knowledge and understanding about the factors driving the policy and its effects. This knowledge is accumulated throughout the policy cycle and policy learning feeds back to all stages of the cycle.

1. How widespread was the use of ex-ante evaluation before the selection of individual policy measures?
2. How widespread is the use of ex-post evaluation?
3. Are evaluations conducted by someone other than the policy implementation body?
4. In the case of limited in-house evaluation capabilities, do organizations outsource evaluation and selection activities?
5. Are ex-post evaluations formal and confined to administrative completion or do they include evaluation of outcomes and impacts?
6. Are any measures discontinued or modified based on evaluations?
7. Are evaluations used for policy learning?

#### 7.5. Overall qualitative assessment of the innovation policy process

To justify assessment, attention must be paid to both the formal agenda setting and prioritization processes, decisions about programmes and instruments and evaluation, and the scope and impact of these processes on innovation policy quality.

## 8. CAPACITY FOR INNOVATION POLICY IMPLEMENTATION

Assessment of institutional capacity for innovation policy implementation is crucial to ensure the proposed policy measures will be implemented as intended. The capacity for innovation policy implementation was addressed, in part, in section 1 on the evaluation of the organizational structures for innovation policy. Here, we focus on implementation capabilities.

This pillar assesses whether institutional capabilities are sufficient to design and implement the policy as intended. The IPI is not able to assess whether different types of failure are properly addressed or whether policy remedies are aligned to diagnoses. However, the IPI can measure whether there is a ‘best match’ to existing institutional capabilities.

The index considers four types of innovation policy implementation capabilities: general administrative preconditions for innovation policy; policy coordination capabilities; implementation capabilities – operational, technical, political; and monitoring & evaluation capabilities.

### 8.1. General innovation policy administrative capabilities

#### **General administrative preconditions**

First, we measure capacity for innovation policy implementation indirectly using established international indicators.

- See World Bank Governance indicators<sup>26</sup> and institutional indicators provided in WEF *Global Competiveness Reports*.<sup>27</sup> These should be used as a first approximation for and background to assessment of the capacities for innovation policy implementation.
- Highlight those indicators in which your country ranks highest and those where it ranks lowest. Evaluate how these assessments affect the viability of the proposed individual policy instruments?

#### **Administrative preconditions for implementing innovation policy**

- Are the public administration staff who will be involved in the implementation of policy measures sufficiently skilled and remunerated to perform these tasks?

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<sup>26</sup> <https://info.worldbank.org/governance/wgi/>

<sup>27</sup> <https://www.weforum.org/>

- Is their employment stable/ guaranteed?
- Are there any performance incentives?
- Is there high turnover of public administration personnel? How might this affect implementation of policy measures?
- Assess which policy measure might be significantly affected by a lack of administrative preconditions for industry policy implementation?

### **Financial preconditions**

- Is there a dedicated budget for innovation policy implementation?
- In the case of insufficient budget, are there supplementary funds that could be used? What are the sources of these supplementary funds?
- In the case of an allocated budget for the implementation of innovation policy, is this funding secure?

## 8.2. Strategy setting capabilities

Strategy setting capabilities refer to the capacity to design strategic innovation policy documents and policy instruments.

- Is there analytical capability to allow identification of local innovation constraints and opportunities? If yes, is this capability formalized in a dedicated ministerial department or is it derived from external R&D and other organizations?
- Are these analytical capacities used regularly to produce background analyses and for the design of innovation policy?
- Are strategic policies influenced by the partial interests of the scientific community or other stakeholders?
- Are there frequent changes to strategic policies related to innovation?

## 8.3. Policy coordination capabilities

We assess whether public-private, public-public and private-private consultation bodies hinder or facilitate implementation of innovation policy.

- Are external organizations, such as public-private councils, business councils, industry associations, chambers of commerce, supplier associations, professional associations, regularly consulted about the design of innovation policy and specific instruments?.
- If yes, are do these coordinating bodies have permanent staff with in-depth knowledge about their respective sectors or areas of activity?
- Are these coordinating bodies close to other organizations engaged in implementing policy measures?

Implementation capacities – operational, technical, political

1. **Technical capabilities** comprise all the knowledge and expertise required to implement innovation policy instruments. Examples of technical capacity are business plans, design of R&D tax incentives and incentives for cluster development.

- Do the technical capabilities required to implement individual policy measures exist?
- In the case of lacking technical capabilities, are agencies or ministries able to collaborate with external public and private organizations that provide these services?

2. **Operational capabilities** include managerial skills and capabilities to run a professional and efficient organization to high professional standards and achieve results

- Do implementation bodies enjoy adequate and stable funding?
- Are they protected from political interference?
- Are administrative procedures that involve limited or not discretion usual practice?
- Do ministries and agencies have the freedom to 'hire' (transfer resources) other organizations to implement specific innovation policy instruments?
- Is the organizational structure of innovation agencies independent or influenced by beneficiaries or the appointing authority?

3. **Political capabilities** include the ability to both secure political support to accomplish the mission and safeguard against political capture (Crespi et al., 2014). They include securing the support of relevant authorities.

- Do responsible policymakers have the capacity to protect implementation of policy measures from different vested interests?
- Are the organizational structures of innovation agencies, departments and other implementation bodies independent or influenced by beneficiaries or the appointing authority?

#### 8.4. Monitoring & evaluation capacity

Monitoring and Evaluation (M&E) is an essential aspect of the institutional organization and implementation capacity of innovation policy. M&E ensures that policymakers learn systematically from issues that arise during policy implementation.

- Are there dedicated M&E units within government or agencies? If such units exist, do they have the capacity to be partially or fully engaged in M&E of innovation policies and instruments?
- Does the status of M&E bodies ensure that evaluation is objective and free of political influence?
- Do implementation agencies or departments assess the work of M&E departments and do they take corrective action if it is insufficient?
- Are there examples of programmes that have been discontinued due to poor evaluations?
- Are evaluations fully disclosed, that is, publicly available
  - Is M&E confined to checking for formal compliance or does it assess motivation, inputs, activities, outputs, outcomes, beneficiaries and impacts?

##### *Monitoring of performance*

Monitoring of performance and expansion or withdrawal of measures are essential for best practice innovation policies.

- Have any policy instruments been introduced on a pilot basis?

- Are there policy measures that have been withdrawn due to poor results?

#### 8.5. Overall qualitative assessment of institutional capacity for innovation policy

Assessments need to pay attention not only to the presence of administrative, coordination and implementation capacities but also to their appropriateness in relation to the objectives of innovation policy and whether they match the other dimensions of innovation policy (governance, instruments, process).

### 9. CALCULATING THE INNOVATION POLICY INDEX

The IPI is the average of the scores for the innovation governance structure, policy instruments, policy process and institutional implementation capacities. Institutional capacity acts as a correction by assessing the match between the other three components and the capacity for implementation. The first three factors provide an average score for the focal country compared to existing best practice; the fourth corrects it by including institutional implementation capacity, which provides a picture of the 'best match' between normative policy and the process and capacity for policy implementation.

#### *Pillar weights and dimensions*

Our working proposal is that each of the four pillars carries an equal weight (0.25) and that the weight of the individual dimensions should be proportional to their number, although this can be amended based on the results of pilot projects.

The selection of weights can be a contentious issue since there may be differing views regarding the weights assigned to different indicators. OECD (2008) reminds us that 'indicators should be aggregated and weighted according to the underlying theoretical framework'. Composite indicators usually exhibit correlation and compensability. A correlation exists when different indicators measure similar underlying phenomena. In that case, similar indicators can be assigned different weights. In our case, the indicators measure qualitatively different aspects of innovation policy.

Compensability is allowed in composite indicators where poor performance on one indicator is compensated by better performance on another indicator. In our case, implementation capacity can compensate for poor performance in the other three dimensions (governance, instruments, process). However, implementation capacity can also be an additive factor. We do not have a basis for measuring or judging to what extent this compensatory or additive dimension should be weighted differently. In our view, we believe

it is appropriate to treat implementation capacity as an additional dimension, which, similar to other dimensions, can reduce or increase the index.

Given that weights essentially are value judgements we have no clear theoretical rationale for valuing different dimensions or sub-dimensions differently. So, deciding whether weights are derived using statistical methods or based on expert opinion (to reflect policy priorities) can be based only on accumulated experience. Finally, we would point out that most composite indicators rely on equal weightings (OECD, 2008).

In contrast to composite indicators, which use a combination of hard and soft data, our indicators are based on the subjective assessments of peer-reviewers. However, the advantage of the IPI is that it is based on a conceptual framework derived from innovation studies and, thus, is grounded empirically and theoretically.

Again, in contrast to composite indicators, we have no issues related to different normalization methods, since all our indicators are assessed on the same scale. Also, the IPI is unlikely to be applied to large numbers of countries, which avoids the issue of reference values.

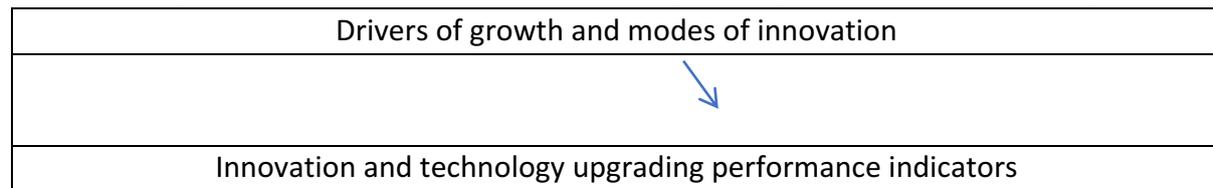
However, provided that we have data on a sufficiently large number of countries, we should be able, in the future, to conduct sensitivity analysis. This would involve the inclusion and exclusion of individual indicators and possibly different weighting schemes. However, we believe that aggregation should remain linear since it has been shown that use of linear aggregation yields meaningful composite indicators if all of the data are expressed on a comparable interval scale (OECD, 2008).

The critical final point is that individual dimensions and sub-dimensions might be more relevant for policy formulation than an aggregate Index. OECD (2008) argues that aggregate indices, by positioning a country relative to its peers, can be useful to justify action. Therefore, an aggregate index can act as a motivation device, but the real policy implications are hidden within the individual dimensions and sub-dimensions.

## 10. BACKGROUND ANALYSIS

The process of construction and interpretation of the IPI requires contextual or background analysis to depict significant national drivers of growth and national modes of innovation. Analysis of generic drivers should be supported by a detailed assessment of innovation and technology upgrading performance indicators which go beyond R&D.

The following schemes outline the two methodological steps involved in such analysis.



*Step 1: Assessing the drivers of growth and modes of innovation*

In catch-up and EMEs, the innovation process is based on the adoption and implementation of improvements to existing technologies rather than being based solely on R&D investments. Also, specific to these types of economies is the diversity of their technological levels and the diversity of the drivers of their economic growth. World Economic Forum Global Competitiveness Reports, and others based on composite indicators, such as the Global Innovation Index and the European Innovation Scoreboard, should be used as first proxies to contextualize innovation policy indices in catching up and EMEs.

*Step 2: Assessing innovation and technology upgrading performance indicators*

The broader analysis that comprises the first step, should be followed by a detailed analysis based on the following indicators, suggested as being relevant for catching-up and EMEs (for a theoretical and empirical justification for using these indicators see Radosevic and Yoruk (2016)(2018).

- ISO9001 certification Per Million Inhabitants - pmi)
- Trademark applications, pmi
- On the job training (WEF Global Competitiveness Report)
- Firm-level technology absorption (WEF Global Competitiveness Report)
- Patent applications to national office pmi
- Patent applications to the United States Patent and Trademark Office (USPTO) pmi
- Patent applications to the European Patent Office (EPO) pmi
- Industrial design counts pmi
- R&D capability
- Business Enterprise Sector R&D expenditures (% of GDP)
- R&D expenditure (% of GDP)
- Researchers in R&D pmi
- Scientific and technical journal articles pmi
- Science citations pmi
- Quality of scientific research institutions (WEF Global Competitiveness Report)
- University-industry R&D collaboration (WEF Global Competitiveness Report)
- Average years of schooling for those aged 25+

- Quality of maths and science education (WEF Global Competitiveness Report)
- Availability of research and training services (WEF Global Competitiveness Report)
- Availability of scientists and engineers (WEF Global Competitiveness Report)
- Fixed broadband Internet subscribers (per 100 people)
- Gross fixed investment as a % of GDP
- Buyer sophistication (WEF Global Competitiveness Report)
- Availability of state-of-the-art technologies (WEF Global Competitiveness Report)
- Licensing receipts as a % of GDP
- Licensing payments as a % of GDP
- Share of complex industry products in total exports (SITCRev3 5 71-79 87 88)
- FDI, net outflows (% of GDP)
- FDI, net inflows (% of GDP)

However, given the rapid increase in the availability of different indicators we can expect this part also to change with the greater availability of new types of data on various dimensions of technology upgrading, in relation, especially, to automation, the environment and public health innovations.

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## 11. Annex: ASSESSMENT FRAMEWORK

### INNOVATION GOVERNANCE

<ul style="list-style-type: none"> <li>• Provide a list of legal documents that facilitate or regulate innovation activities. Explain which of these documents cover which of five dimensions of innovation capacity (knowledge generation, knowledge absorption, linkages, diffusion and demand for knowledge).</li> <li>• Provide a list of policy documents and assess their coverage of different dimensions of innovation capacity.</li> <li>• Provide a list of organizations that facilitate or regulate innovation activities?</li> <li>• Provide the list of intermediary organizations and inter-organizational bodies in innovation policy</li> </ul>							
		Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
1.1.	<b>Legal framework</b>	The legal framework covers only R&D, IPR and some standard-setting activities	In addition to L1 legal framework covers FDI and technology transfer	In addition to L2 legal framework covers venture capital	In addition to the L3 legal framework covers public procurement	In addition to L4 legal framework covers vocational training	In addition to L5 legal framework covers monitoring & evaluation
1.2.	<b>Policy framework</b>	Policy framework addresses only R&D activities	Policy framework addresses innovation policy	Policy framework addresses issues under L2 and FDI as a separate policy area	Policy framework addresses issues under L3 and quality infrastructure	Policy framework addresses issues under L4 and vocational skills formation	The policy framework is quite comprehensive addressing all dimensions of innovation capacity
1.3.	<b>Organizational framework</b>	Minimal number of governmental and non-governmental bodies primarily focused on R&D	A limited number of governmental and non-government	A limited number of bodies that facilitate innovation activities of which	Several bodies that facilitate innovation activities but with minimal impact	Numerous bodies that facilitate innovation activities but with uneven impacts	Numerous and coordinated governmental and non-governmental bodies who facilitate a wide

			al bodies but with a broader scope of responsibilities	only some have an impact			range of innovation activities
1.4.	<b>Inter-organizational links</b>	Very weak inter-ministerial coordination of innovation policy issues	There is inter-ministerial coordination of innovation policy issues	In addition to L2 public-private collaboration in innovation activities is allowed but not present	In addition to L3, public-private collaboration in innovation activities are present	In addition to L4, there are public-private collaborative bodies engaged in innovation policy issues	Established and functioning public-private consultative bodies engaged in innovation policy activities

Please, justify given scores							

#### INNOVATION GOVERNANCE INSTRUMENTS

<b>List existing schemes to support training, development of technical and business services which assist enterprises on the commercial or semi-commercial basis and productivity-enhancing activities? How widely spread they are, i.e. available to the business enterprise sector?</b>							
		Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
2.1	<b>Promotion of technology absorption</b>						
2.1.1.	<b>Instruments to support training</b>	Not yet in the domain of policy	Plans under development for either	Approved scheme(s) but not yet	Very rudimentary developed scheme(s) with symbolic funding.	Several schemes for vocational training including	A variety of public-private firms well-funded schemes for the

			publicly finding programme of vocation training or student exchange	implemented primarily due to limited public funds	The issue is given importance, but activities are of a minimal scope	international student exchanges but with limited funding and in need of either expansion or improvements	training of labour force including student exchange programmes
2.1.2.	<b>Instrument to support the development of technical and business services</b>	This area is not yet of concern to public policy	The area is recognized in policy documents, but there are not yet supporting mechanism	There is a legal document which envisages support, but there is not yet implementation document	Programme for support is formally established but does not operate	Programme of public support is established and functions but on a minimal scale	Developed and functioning programmes co-funded by public funds
2.1.3	<b>Instruments supporting productivity-enhancing activities (quality standards, productivity improvement techniques, adoption of new technologies)</b>	There are not instruments addressing this area	There is recognition of the area in policy documents but not supporting instruments	The area is recognized, and there are plans for the introduction of supporting instruments	There are approved measures but not implementation	There are functioning support schemes but of limited scope	There are support schemes to quality standards and productivity improvement techniques and the adoption of specific technologies
Please, justify given scores							

List instruments to support R&D, collaborative R&D, indirect (fiscal) instruments to support R&D, creation of NTBFs, mobility in R&D system, ST&E post-doc and post-graduate education and R&D infrastructures (Centres of excellence, Competence centres, technology incubators, science parks)

2.2.	<b>Promote innovation and knowledge generation</b>						
2.2.1	<b>Individual R&amp;D support measures (subsidies, loans, etc)</b>	There are not instruments supporting R&D except limited public budget grants for public research organizations	There are several instruments supporting R&D but limited to public sector organizations	There are several instruments supporting R&D which are open to both public and private organizations	In addition to L3, there are quite diverse instruments supporting R&D	There is a broad portfolio of measures supporting R&D but with limited funding	There is a full portfolio of measures supporting R&D, from public grants to loans for innovation with relatively significant budgets
2.2.2.	<b>Collaborative R&amp;D projects</b>	There are not collaborative R&D programmes or plans	There plans for introducing collaborative R&D programmes	There are collaborative R&D programmes between public R&D organizations	There are collaborative R&D programmes as in L3 and between industry and academy/universities /PROs	There are collaborative R&D programmes as in L4 and between enterprises but with limited funds	There are collaborative R&D programmes of all three types with significant budgets
2.2.3	<b>Indirect support to R&amp;D</b>	There are no fiscal incentives or plans to support R&D	There are plans for introducing R&D fiscal incentives in policy documents	Fiscal incentives in preparation	There are approved fiscal incentives measures but not yet implemented	There are fiscal incentives to support R&D but of limited significance	There are several significant financial incentives to support R&D
2.2.4	<b>Supporting new technology-based</b>	There are no measures or	There are plans for introducing	Measures to support NTBFs	There are approved measures to support	There are several measures to	There are several financially significant

	<b>firms' (NTBF) creation</b>	plans to support NTBFs	measures to support NTBFs	are in the process of being approved	NTBFs but not yet implementation	support NTBFs but of limited significance	measures to support NTBFs
2.2.5	<b>Supporting mobility in R&amp;D system</b>	There are no measures or plans to support mobility in R&D	There are plans for introducing measures to support mobility in R&D	Measures to support mobility in R&D are in the process of being approved	There are approved measures to support mobility in R&D but not yet implementation	There are several measures to support mobility in R&D but of limited significance	There are several financially significant measures to support mobility in R&D
2.2.6	<b>R&amp;D Specific Education Policies</b>	There are no measures or plans to support ST&E post-docs and post-grads	There are plans for introducing measures to support ST&E post-docs and post-grads	Measures to support ST&E post-docs and post-grads are in the process of being approved	There are approved measures to support ST&E post-docs and post-grads but not yet implementation	There are several measures to support ST&E post-docs and post-grads but of limited significance	There are several financially significant measures to support ST&E post-docs and post-grads
2.2.7	<b>Support for R&amp;D infrastructures (Centres of excellence, Competence centres, technology incubators, science parks)</b>	There are no measures or plans to support R&D infrastructures	There are plans for introducing measures to support R&D infrastructures	Measures to support R&D infrastructures are in the process of being approved	There are approved measures to support R&D infrastructures but not yet implementation	There are several measures to support R&D infrastructures but of limited significance	There are several financially significant measures to support R&D infrastructures
Please, justify given scores							

List instruments to support linkages between R&D sectors (universities, public R&D and business enterprise sector), linkages within the business sector, and co-location of firms (S&T parks, innovation spaces, clusters, business networks, clusters)

2.3	<b>Promote intra-country linkages in the innovation system</b>						
2.3.1	<b>Linkages between R&amp;D sectors</b>	There are not instruments or plans to support linkages between R&D sectors	There are plans for introducing measures to support linkages between R&D sectors	Measures to support linkages between R&D sectors are in the process of being approved	There are approved measures to support linkages between R&D sectors but not yet implementation	There are measures to support linkages between all three R&D sectors but of limited significance	There are financially significant measures to support linkages between all three R&D sectors (university, public R&D and enterprise)
2.3.2.	<b>Innovation linkages within the business sector</b>	There are no measures or plans to support innovation linkages within the business sector	There are plans for introducing measures to support innovation linkages within the business sector	Measures to support linkages within the business sector are in the process of being approved	There are approved measures to support innovation linkages within the business sector but not yet implementation	There are measures to support innovation linkages within business sectors but of limited significance	There are financially significant measures to support linkages within the business sector
2.3.3	<b>Supporting co-location schemes (S&amp;T parks, innovation spaces, clusters, business networks, clusters)</b>	There are no measures or plans to support co-	There are plans for introducing measures to support co-	Measures to support co-location of firms are in the process of	There are approved measures to support co-location of firms but not yet implementation	There are measures to support co-location of firms	There are financially significant measures to support co-location of firms

		location of firms	location of firms	being approved		but of limited significance	
<p><b>List instruments to support technology transfer and trade (Special Economic Zones/Export Processing Zone; transport terminals, storage, cargo system improvements), to promote FDI and inclusion in international supply chains (match-making services, support to meet requirements of GVC) and Diaspora networks</b></p>							
2.4	<b>Promote international innovation linkages</b>						
2.4.1.	<b>Infrastructure to enhance technology transfer and trade (Special Economic Zones/Export Processing Zone; transport terminals, storage, cargo system improvements)</b>	There are no measures or plans to support technology transfer and trade infrastructures	There are plans to support technology transfer and trade infrastructures	Measures to support technology transfer and trade infrastructures are in the process of being approved	There are approved measures to support technology transfer and trade infrastructures but not yet implementation	There are measures to support technology transfer and trade infrastructures but of limited significance	There are financially significant measures to support technology transfer and trade infrastructures
2.4.2.	<b>FDI promotion</b>	There are no measures or plans to support FDI promotion	There are plans for introducing measures to support FDI promotion	Measures to support the promotion of FDI are in the process of	There are approved measures to support the promotion of FDI but not yet implementation	There are measures to support the promotion of FDI but the limited significance	There are financially significant measures to promote FDI

				being approved			
2.4.3.	<b>Promoting inclusion in international supply chains (match-making services, support to meet requirements of GVC)</b>	There are no measures or plans to promote inclusion in international supply chains	There are plans for introducing measures to promote inclusion in international supply chains	Measures to support inclusion in international supply chains are in the process of being approved	There are approved measures to support inclusion in international supply chains but not yet implementation	There are measures to support inclusion in international supply chains but of limited significance	There are financially significant measures to support inclusion in international supply chains
2.4.4.	<b>Diaspora networks</b>	There are no measures or plans to support diasporas networks	There are plans for introducing measures to support diasporas networks	Measures to support diasporas networks are in the process of being approved	There are approved measures to support diasporas networks but not yet implementation	There are measures to support diasporas networks but of limited significance	There are financially significant measures to support diasporas networks
Please, justify given scores							

List instruments designed to enhance quality and productivity (standards, testing and certification instruments; Industrial technology assistance programmes/extension services/; Promotion of Activities on Productivity and Quality; Technology management support schemes), to embed FDI into the economy (investment aftercare FDI programmes for already established investors; Supplier upgrading programmes), to promote restructuring towards green growth (Credit guarantees for green energy producer; Preferential loan towards green technology upgrading), Information and brokerage schemes for technology upgrading, support services for technology diffusion in SMEs, investment programmes that explicitly support innovation diffusion (in existing high-tech sectors, in new high-tech sectors, in low to medium-tech sectors) and instruments which promote entrepreneurship education

2.5.	<b>Promote technology diffusion</b>						
2.5.1.	<b>Enhancing quality and productivity (standards, testing and certification instruments; Industrial technology assistance programmes/extension services;/ Promotion of Activities on Productivity and Quality; Technology management support schemes)</b>	There are no measures or plans to support activities in promoting quality and productivity	There are plans for introducing measures to promote quality and productivity	Measures to support to promote quality and productivity are in the process of being approved	There are approved measures to promote quality and productivity but not yet implementation	There are measures to promote quality and productivity but of limited significance	There are financially significant measures to promote quality and productivity
2.5.2.	<b>Embedding FDI into the economy (investment aftercare FDI programmes for already established investors; Supplier upgrading programmes)</b>	There are no measures or plans to support the integration of FDI in the local economy	There are plans for introducing measures to support the integration of FDI in the local economy	Measures to support to support the integration of FDI in the local economy are in the process of being approved	There are approved measures to support the integration of FDI in the local economy but not yet implementation	There are measures to support the integration of FDI in the local economy but the limited significance	There are financially significant measures to support the integration of FDI in the local economy
2.5.3.	<b>Promoting restructuring towards green growth (Credit</b>	There are no measures or plans to	There are plans to promote	Measures to promote technology	There are approved measures to promote technology upgrading	There are measures to promote	There are financially significant measures promote technology

	<b>guarantees for green energy producer; Preferential loan towards green technology upgrading)</b>	promote technology upgrading towards green growth	technology upgrading towards green growth	upgrading towards green growth are in the process of being approved	towards green growth but not yet implementation	technology upgrading towards green growth but of limited significance	upgrading towards green growth
2.5.4.	<b>Information and brokerage schemes for technology upgrading</b>	There are no measures or plans to support information and brokerage schemes for technology upgrading	There are plans to support information and brokerage schemes for technology upgrading	Measures to support information and brokerage schemes for technology upgrading are in the process of being approved	There are approved measures to support information and brokerage schemes for technology upgrading but not yet implementation	There are measures to support information and brokerage schemes for technology upgrading but of limited significance	There are financially significant measures to support information and brokerage schemes for technology upgrading
2.5.5	<b>Support services for technology diffusion in SMEs</b>	There are no measures or plans to support the technology upgrading of SMEs	There are plans to support technology upgrading of SMEs	Measures to support technology upgrading of SMEs are in the process of being approved	There are approved measures to support technology upgrading of SMEs but not yet implementation	There are measures to support technology upgrading of SMEs but of limited significance	There are financially significant measures to support technology upgrading of SMEs
2.5.6.	<b>Investment programmes that explicitly support innovation diffusion (in existing high-tech sectors, in new high-</b>	There are no measures or plans to promote innovation diffusion in	There are plans to promote innovation diffusion in specific sectors	Measures to promote innovation diffusion in specific sectors are in the process of	There are approved measures to promote innovation diffusion in specific sectors but not yet implementation	There are measures to promote innovation diffusion in specific sectors	There are financially significant measures to promote innovation diffusion in specific sectors

	<b>tech sectors, in low to medium-tech sectors)</b>	specific sectors		being approved		but of limited significance	
2.5.7	<b>Entrepreneurship education</b>	There are no measures or plans to promote entrepreneurship education	There are plans to promote entrepreneurship education	Measures to promote entrepreneurship education are in the process of being approved	There are approved measures to promote entrepreneurship education but not yet implementation	There are measures to promote entrepreneurship education but of limited significance	There are financially significant measures to promote entrepreneurship education
Please, justify given scores							

<p><b>Indicate which of the following instruments exist as implicit or explicit part of innovation policy: Public procurement for innovation (of R&amp;D; for innovative firms; with domestic linkage requirement); Local content requirement and other performance requirements instruments); Competition for innovative technology (Innovation prizes); Voucher for innovation services; and measures which stimulate demand for new technologies (tax incentive for firms with high development costs; for firms with a patent box; for firms investing in new technology; for renewable energy technologies; ‘Feed-in tariffs’ for renewable energy)</b></p>	
2.6.	<b>Stimulating demand R&amp;D and innovation</b>

2.6.1.	<b>Public procurement for innovation (of R&amp;D; for innovative firms; with domestic linkage requirement)</b>	There are no measures or plans to promote public procurement for innovation	There are plans to promote public procurement for innovation	Measures to promote public procurement for innovation are in the process of being approved	There are approved measures to promote public procurement for innovation but not yet implementation	There are measures to promote public procurement for innovation but of limited significance	There are financially significant measures to promote public procurement for innovation
2.6.2	<b>Local content requirement and other performance requirements instruments</b>	There are no measures or plans to introduce local content requirements or any other performance requirements in relation to foreign investments	There are plans to introduce local content requirements or any other performance requirements in relation to foreign investments	Local content requirements or other performance requirements in relation to foreign investments are in the process of being approved	There are approved local content requirements or other performance requirements in relation to foreign investments but not yet implementation	There are local content requirements or other performance requirements in relation to foreign investments but of limited significance	There are extensive local content requirements or other performance requirements in relation to foreign investments
2.6.3.	<b>Competition for innovative technology (Innovation prizes)</b>	There are no measures or plans to introduce innovation prizes	There are plans to introduce innovation prizes	Measures to introduce innovation prizes are in the process of being approved	There are approved measures to introduce innovation prizes but not yet implementation	There are innovation prizes but of limited public significance	There are financially significant innovation prizes of noticeable public recognition
2.6.4.	<b>Voucher for innovation services</b>	There are no measures or plans to introduce	There are plans to introduce vouchers or	Measures to introduce vouchers or similar	There are approved measures to introduce vouchers or similar	There are measures to introduce vouchers or	There are financially significant vouchers schemes or similar programmes

		vouchers or similar programmes	similar programmes	programmes are in the process of being approved	programmes but not yet implementation	similar programmes but of limited significance	
2.6.5	<b>Stimulating demand for new technologies (tax incentive for firms with high development costs; for firms with a patent box; for firms investing in new technology; for renewable energy technologies; 'Feed-in tariffs' for renewable energy)</b>	There are no measures or plans to introduce tax incentives for new technologies	There are plans to introduce tax incentives for new technologies	Tax incentives for new technologies are in the process of being approved	There are approved tax incentives for new technologies but not yet implementation	There are tax incentives for new technologies but of limited significance	There are financially significant tax incentives for new technologies
Please, justify given scores							

**Before assessing diversity and coherence of policy mix establish the following:**  
**Do policy instruments address all five dimensions of innovation capacity? Do they include a mix of vertical and horizontal instruments? Are they mix of public goods and market interventions instruments? Is policy mix a set of un-related instruments, with opposite/ synergistic effects, administratively in/appropriate,**

<b>with limited or large scope for administrative discretion, do instruments require single or multiple agencies for implementation? Do they require public-private collaboration?</b>							
2.7.	<b>Policy mix assessment</b>						
2.7.1	<b>The diversity of policy mix instruments</b> (Do they address all five dimensions of innovation capacity? Do they include a mix of vertical and horizontal instruments? Are they mix of public goods and market interventions instruments?)	Innovation policy is the emerging activity with a minimal number of instruments, primarily oriented towards public R&D system.	Innovation policy is emerging out of R&D policy and is confined to R&D based innovation activities related to the public sector.	Policy mix is emerging with much-skewed orientation and oriented towards R&D and linkages.	Policy mix has been developed which goes beyond R&D and linkages (L3) and embraces other dimensions (absorptive capacity, demand) and types of support	Policy mix is developed but with biases towards specific types of instruments. It does not address all dimensions of innovation capacity	Policy mix represents a coherent portfolio of instruments which addresses all five dimensions of innovation capacity. It is a balanced mix of vertical and horizontal instruments. Instruments are an appropriate mix of public goods and market intervention based instruments.
2.7.2	<b>Coherence and complexity of policy mix</b> (portfolio of un-related instruments, with opposite/ synergistic effects, administratively in/appropriate, the scope for administrative	Policy mix has emerged as an outcome of unrelated initiatives with different objectives.	Policy mix is a portfolio of instruments which capture mainly upstream (R&D) parts of innovation value chain	Policy mix is a portfolio of instruments which is oriented towards both upstream and downstream parts of innovation	Policy mix is a mixture of instruments which is oriented towards both public and private sectors but does not but does not cover all stages of innovation value chain.	Policy mix represents a coherent set of policy measures appropriate to country's innovation capacity which covers all stages of innovation	Policy mix represents a coherent set of policy measures which are appropriate to the innovation capacity of the economy. Measures cover all stages of innovation value chain. They are complementary and with

	discretion, single or multiple agencies involved)			value chain but strongly oriented towards the only public sector		value chain, but there are gaps in the management of some of these programmes.	appropriate administrative and collaborative arrangements which reflect institutional features of a country's public policy.
Please, justify given scores							

### INNOVATION POLICY PROCESS

<b>Before assessing agenda setting and prioritization, decision making about the programmes and policies, policy implementation and policy evaluation use examples of the three most important policy measures to document and illustrate whether policy process conforms to good practice standards.</b>							
3.1.	<b>Agenda setting and prioritization</b>	Innovation Policy (IP) does not exist as standalone policy	IP exists as part of R&D policy. It is narrowly focused on commercialization of R&D	IP policy exists as a standalone policy. It is narrowly focused but is defined in	IP policy exists as a standalone policy. It is broadly defined and is derived in consultation with a broader range of stakeholders including the business community and	IP policy exists as a standalone policy and is among government priorities. It is broadly defined.	IP is among top priorities of government as evidenced from a continuous stream of policy efforts. Policy agenda is shaped by a broad range of

			results from public R&D system. It is narrowly defined and defined by the Ministry of Science. Priorities are de facto R&D priorities.	consultation with the R&D sector. Also, the process of prioritization involves stakeholders outside of government but mainly from the science community.	NGOs. Priorities are derived through a broader consultation process.	Priorities are defined with active involvement of the business community. Foresight is used as a tool in assisting decision making on priorities.	stakeholders. IP is broadly defined. Priorities are derived in a combined and transparent manner
3.2.	<b>Decision making about the programmes and policies</b>	Policy measures are designed in an <i>ad hoc</i> manner. Rules and conditions for implementation of measures are not transparent. Selection decisions are based on non-transparent criteria.	Policy measures are introduced based on policy documents. Rules and conditions for implementation of measures as well as selection criteria are partly transparent.	Policy measures are designed through a limited consultation process confined on ministries. Rules and conditions for implementation of measures are publicly available and transparent. Selection decisions are	Policy measures are designed through a broader consultation process. Rules and conditions for implementation of measures are publicly readily available and transparent. Selection decisions are based on evaluations by external and independent peer reviewers.	Policy measures are designed through a broader consultation process. Rules and conditions for implementation of measures are publicly readily available and transparent. Selection decisions are based on evaluations by external and independent peer reviewers. Policy	Policy measures are designed through a broader consultation process. Policy impact assessment procedures are employed in the selection of measures. Rules and conditions for implementation of measures are publicly readily available and transparent. Selection decisions are based on evaluations by external and independent peer reviewers. Policy measures have clear rules and procedures in

				based on evaluations which are not publicly available		measures do not have clear rules and procedures in the case of complaints and conflicts of interests	the case of complaints and conflicts of interests. Public support funds are given based on performance requirements.
3.3.	<b>Policy implementation</b>	Implementation of policy measures suffers from frequent corrections and unforeseen circumstance. Administrative procedures are not transparent and based on the discretion of administrators. Changes are introduced without clear explanations and in a non-transparent manner.	Implementation of policy measures is not planned, and changes are frequent but explained. Administrative procedures for the use of funds are transparent but overly bureaucratic without clear rationales.	Implementation of policy measures is planned, and changes are transparent and explained. Administrative procedures for the use of funds are transparent and explained. Measures are funded in significantly smaller amounts than initially envisaged.	Implementation of policy measures is planned, and changes are transparent and explained. Administrative procedures for the use of funds are transparent and explained. Measures are funded in amounts smaller than initially envisaged. Subsequent adaptations are on ad hoc basis and without clear justification.	Implementation of policy measures is well planned. Planned allocations are usually fulfilled. Subsequent adaptations are introduced based on evaluations but without consideration of their impact.	Implementation of policy measures is well planned. Planned allocations are usually fulfilled. Subsequent adaptations are introduced based on evaluations and analysis based on an assessment of their effectiveness and impact.

3.4.	<b>Policy evaluation</b>	Policy evaluation does not exist as an activity.	Ex post evaluations are administrative and not compulsory and conducted by implementation bodies.	Ex post evaluations are administrative and compulsory and conducted by implementation bodies.	<i>Ex post</i> evaluations are compulsory and substantive and conducted by implementation bodies. However, measures are not necessarily (dis)continued or modified based on evaluations.	Some measures are introduced based on the ex-ante evaluation. <i>Ex post</i> evaluations are compulsory and substantive and conducted by independent organizations. Measures are not always (dis)continued or modified based on evaluations.	Measures are often introduced based on the ex-ante evaluation. <i>Ex post</i> evaluations are compulsory and substantive and conducted by independent organizations. Measures are (dis)continued or modified based on evaluations.
Please, justify given scores							

### THE CAPACITY FOR IMPLEMENTATION OF INNOVATION POLICY

Before assessing the capacity for implementation of innovation policy use examples of the three most important ministries and/or agencies policy measures to document and illustrate the levels of administrative capacities for innovation policy, for strategy setting capabilities, policy coordination capabilities, technical, operational and political capabilities and M7E capabilities.

4.1.	<b>Administrative preconditions for innovation policy</b>	The country ranks well below the expected level in international governance indicators. Public administration personnel is poorly rewarded, and its turnover is well above the country average. There is not a dedicated innovation policy budget	The country ranks low in international governance indicators. Public administration personnel is not rewarded, and capacity gaps are sizeable. The budget for innovation policy is part of the R&D budget	The country ranks well in some governance indicators. Public administration personnel is comparatively rewarded, but capacity gaps are sizeable. The budget for innovation policy exists but is of limited significance	The country ranks well in many governance indicators. Public administration personnel are appropriately rewarded, but there are some capacity gaps. Innovation policy budget is usually allocated as planned in the budget	The country ranks relatively high on international governance indicators. Public administration personnel are of appropriate quality and appropriately rewarded. Innovation policy budget is protected and as rule funds are allocated as planned in the budget	Given its innovation capacity level country ranks relatively high on international governance indicators. Public administration personnel are of appropriate quality and appropriately rewarded. Turnover of personnel is similar or lower than the country average. Innovation policy budget is protected and as rule funds are allocated as planned in the budget
4.2.	<b>Strategy setting capabilities</b>	There are not analytical capacities for innovation policy within public administration	Analytical capacities for innovation policy do not exist within public administration	Analytical capacities for innovation policy do not exist within public administration.	Some analytical capacities for innovation policy exist within public administration, and some are regularly outsourced from external organizations. Strategic	Some analytical capacities for innovation policy exist within public administration, and some are regularly	Analytical capacities for innovation policy exist within public administration and are appropriately organized. They are regularly used in producing background

		n. Strategic policies are determined by partial interests of either scientific or business community. Changes in strategic policies are frequent.	n. These are capacities ad hoc involved from external parties. Strategic policies are determined by partial interests of either scientific or business community. Changes in strategic policies are frequent.	They are outsourced on a regular basis from external organizations. Strategic policies reflect a variety of different interests in an unsystematic manner. Changes in strategic policies are frequent.	policies are derived through an organized consultation process involving a variety of stakeholders. Changes in strategic policies are infrequent.	outsourced from external organizations. There are dedicated departments within ministries involved in formulating and implementing innovation policy. Strategic policies are derived through an organized consultation process involving a variety of stakeholders. Changes in strategic policies are infrequent.	analysis and in the design of innovation policy. Strategic policies are not determined by partial interests of either scientific or business community. Changes in strategic policies are infrequent.
4.3	<b>Policy coordination capabilities</b>	There are not coordinating bodies involved in innovation policy process.	There are public- public consultation bodies involved in innovation policy process. However, coordinating	There are a public-private and public-public consultation bodies involved in innovation policy process. External	There are a variety of public-private, public-public and private – private consultation bodies involved in innovation policy process. External organizations are often consulted in the design of innovation policy	There are a variety of public-private, public-public and private – private consultation bodies involved in innovation policy process. External organizations are	There are a variety of public-private, public-public and private – private consultation bodies involved in innovation policy process. External organizations are regularly consulted in the design of innovation

			bodies are not equipped with permanent staff with knowledge of their respective sectors or area of activity.	organizations are infrequently consulted in the design of innovation policy and specific instruments. Coordinating bodies have limited capacities to engage actively in innovation policy.	and specific instruments. Coordinating bodies have some permanent staff with knowledge of their respective sectors or area of activity.	regularly consulted in the design of innovation policy and specific instruments. Coordinating bodies are equipped with permanent staff with knowledge of their respective sectors or area of activity.	policy and specific instruments. Coordinating bodies are equipped with permanent staff with knowledge of their respective sectors or area of activity, and they are engaged in all stages of innovation policy process. Coordinating bodies are located near other organizations which are engaged in the implementation of policy measures
4.4.	<b>Implementation capacities – operational, technical, political</b>						
4.4.1.	<b>Technical capabilities</b>	Technical capabilities required to implement innovation policy instruments do not exist within the public sector.	There are some technical capabilities within the public sector to implement innovation policy instruments	There are some technical capabilities within the public sector to implement innovation policy instruments. Some policy measures have been designed or/ and implemented	There are some technical capabilities within the public sector to implement innovation policy instruments. Often policy measures have been designed or/ and implemented by external organizations.	Technical capabilities required to implement innovation policy instruments exist within the public sector. Often policy measures have been designed or/ and implemented by external organizations.	Technical capabilities required to implement innovation policy instruments exist within the public sector.

				by external organizations.			
4.4.2.	<b>Operational capabilities</b>	Innovation policy measures are implemented by public organizations with no experience and minimal staffing. They are not independent	Innovation policy measures are implemented by public organizations with some experience but with limited staff resources. They are under the direct supervision of Ministries.	All innovation policy measures are implemented by public organizations which operate at below-required standards. They are not independent and apply administrative procedures that involve excessive discretion	Innovation policy measures are implemented by public organizations with not operational autonomy though organizationally they are autonomous. Organizations have satisfactory administrative capacities	Innovation policy measures are implemented by public organizations which operate with appropriate professional standards. They are organizationally autonomous but have limited real autonomy.	All innovation policy measures are implemented by public organizations which operate with high professional standards, efficiency and results. They are independent and apply routinized administrative procedures that involve limited discretion
4.4.3	<b>Political capabilities</b>	There are not required administrative capabilities to accomplish the missions. There is strong political capture of innovation	Responsible policymakers have minimal capacity to protect and insulate the implementation of policy measures from different	There are very uneven political capabilities to accomplish the missions and safeguard against political capture	There are political capabilities to accomplish the missions and safeguard against political capture, but also there are exceptions. Organizational structures of innovation agencies, departments and other implementation bodies are also often influenced by	Responsible policymakers can protect and insulate the implementation of policy measures from different vested interests. However, organizational	There are required political capabilities to accomplish the missions and safeguard against political capture. Organizational structures of innovation agencies, departments and other implementation bodies are not influenced by

		policy measures	vested interests	Organizational structures of innovation agencies, departments and other implementation bodies are as a rule influenced by beneficiaries and by appointing authority	beneficiaries and by appointing authority	structures of innovation agencies, departments and other implementation bodies are sometimes influenced by beneficiaries and by appointing authority	beneficiaries and by appointing authority
4.5.	<b>Monitoring &amp; evaluation (M&amp;E) capacities</b>	M&E activities do not exist as formalized activity expects as regular technical reporting on budgetary expenditures.	M&E activities do not exist as formalized activity expects as regular technical reporting on budgetary expenditures. Exceptionally and funded by foreign sources there evaluation studies which are used in	M&E activities do not exist as formalized activity expects as regular technical reporting on budgetary expenditures. However, external evaluations are often used in ex-post evaluations of programmes.	M&E activities are the responsibility of departments for innovation policy but without staff dedicated only to this activity. External evaluations are regularly used in ex-post evaluations of policy measures. Evaluations are objective and free of political influence.	There are dedicated M&E units within government or agencies with capacities to be engaged partially or fully in M&E of innovation policies and instruments. Implementation agencies or departments assess their work and take corrective actions when it falls short	There are dedicated M&E units within government or agencies with capacities to be engaged partially or fully in M&E of innovation policies and instruments. Their status ensures that evaluation is objective and free of political influence. Implementation agencies or departments assess their work and take corrective actions when it falls short of its goals. Programmes get closed based on poor

			innovation policy			of its goals. Evaluations are not confined on checking of formal compliance but assess motivation, inputs, activities, outputs, outcomes, beneficiaries and impacts.	evaluations which are fully disclosed, i.e. publicly available. Evaluations are not confined on checking of formal compliance but assess motivation, inputs, activities, outputs, outcomes, beneficiaries and impacts.
Please, justify given scores							