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STATUS OF PROGRAMME IMPLEMENTATION

**CREATING A SUPPORTIVE ENVIRONMENT FOR INNOVATIVE DEVELOPMENT
AND KNOWLEDGE-BASED COMPETITIVENESS.**

**SYNOPSIS OF GOOD PRACTICES IN FACILITATING THE
GENERATION AND DIFFUSION OF INNOVATION**

Note by the secretariat

Summary

This Synopsis aims to provide policy guidance on good practices in creating a supportive environment for innovative development and knowledge-based competitiveness in the UNECE region. It draws on the findings of the Comparative review on “Creating a conducive environment for higher competitiveness and effective national innovation systems. Lessons learned from the experiences of UNECE countries”, which was compiled on the basis of policy documents and other materials submitted by members of the Team of Specialists on Innovation and Competitiveness Policies, as well as other publicly available documents and materials.

The Synopsis addresses issues such as the rationale for policy intervention to support innovation, the importance of setting long-term policy objectives, the role of innovation governance in national innovation systems and some specific aspects of the related policy mix in formulating policies targeting different components of the national innovation capacity such as the absorptive capacity, the generation of knowledge, the diffusion of innovation, the demand for innovation. It also contains some general policy conclusions on facilitating the generation and diffusion of innovation.

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INTRODUCTION

1. In accordance with the Programme of Work of the UNECE Committee for Economic Cooperation and Integration (CECI) for 2007-2008 in focus area “Creating a supportive environment for innovative development and knowledge-based competitiveness” and the conclusions of the first meeting of the Team of Specialists on Innovation and Competitiveness Policies (TOS-ICP) held in Geneva on 8-9 March 2007, the Team agreed on an Implementation plan for its main outputs in 2007:

(a) Comparative Review on “Creating a conducive environment for higher competitiveness and effective national innovation systems. Lessons learned from the experiences of UNECE countries”; and

(b) “Synopsis of good practices in facilitating the generation and diffusion of innovation”.

2. The Comparative Review was compiled on the basis of policy documents and other materials submitted to the UNECE by members of the TOS-ICP, as well as other publicly available documents and materials. The full text of the Comparative Review is available on the CECI website (<http://www.unece.org/ceci/>) and will be published as an official UNECE publication.

3. This Synopsis largely draws on the findings of the Comparative Review with the aim of providing policy-relevant conclusions on good practices in creating a supportive environment for innovative development and knowledge-based competitiveness in the UNECE region. In view of the nature of the document, the Synopsis only provides a summary of these practices and the related country experiences. More detailed information can be found in the Comparative Review.

4. The UNECE region includes countries at very different levels of their innovative capability. In accordance with the CECI mandate, this Synopsis is mostly focused on the catching-up UNECE economies.¹ Nevertheless, it has a broader focus on transnational learning, that is to say the transfer of good experiences and best practices across the whole UNECE region. It thus aims to facilitate further this process and contribute to an improved level of policymaking in policies for promoting technology and technology-based catching up.

I. THE RATIONALE FOR POLICY INTERVENTION

5. The traditional arguments for public support to research policy are those of “market failure” or “public goods”. The rationale for public intervention in innovation policy is wider as

¹ Throughout this Synopsis, the term “catching-up economies” is used to define the group of ten new Member States of the European Union (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia), the countries of South-East Europe (Albania, Bosnia and Herzegovina, Croatia, Montenegro, Serbia and The former Yugoslav Republic of Macedonia) as well as the countries of Eastern Europe, the Caucasus, and Central Asia (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan).

innovation has strong public and private elements. As innovation is a systemic activity rather than one just confined to an individual firm, this raises the possibility of network or system failures. The policy rationales thus include possible failures in institutions like universities, patent offices, financial systems and other public and private bodies.

6. The rationale for policy intervention as well as the importance of the related policies have been changing and growing with the evolution and growing sophistication of the innovation processes in the modern, globalized economy. Modern innovation emerges from a continuous interaction between firms, their suppliers and buyers and external actors like universities or research and development (R&D) organizations. Firms are not isolated in their innovation activities but rather perform them in networks; these activities are highly dependent on the external environment at the sectoral, regional and national levels. The term “national innovation system” (NIS) characterizes the systemic interdependencies within a given country, which influence the processes of generation and diffusion of innovation in that economy.

7. The interactive nature of the modern innovation process requires the widespread use of systemic instruments that target simultaneously different components of the NIS. These systemic instruments address newly emerging functions in managing the innovation process such as the management of interfaces; construction and organizing the innovation systems; providing a platform for learning and experimenting; providing an infrastructure for strategic intelligence; stimulating demand articulation, strategy and vision development. The implementation of such instruments requires a considerable degree of coordination among agents and hence calls for public intervention.

8. Another key rationale for policy intervention to support innovation, especially in the catching-up UNECE economies, is that their national innovation systems exhibit some common structural weaknesses. Among the most important weaknesses are the following:

(a) Innovation activity is restricted to a few large domestic enterprises which invest comparatively high shares of their revenue into innovation;

(b) Small and medium-sized enterprises (SMEs) are the weakest part of the national innovation system as demonstrated by a very small share of innovative SMEs;

(c) Foreign firms are investing comparatively more in R&D and innovation than domestic firms; and

(d) There are very weak linkages between domestic large and small firms, and weak horizontal links between firms dominated by foreign direct investment (FDI) and domestic firms.

9. Successful catching up requires both the adoption of existing technologies in established industries, and innovation proper. Building the potential for high and sustained long-term economic growth in the catching-up economies calls for actions to reduce these structural weaknesses in order to establish the basis for technology-based growth.

10. A lesson learned from national experiences is that innovation policy per se cannot compensate for failures of poor business environment and poor investment climate. There should be a balance between the background conditions that ensure the working of competitive market

mechanisms and specific activities which fall within the scope of innovation policy. Innovation policy will be effective only if it can rely on a favourable investment climate and a market-friendly business environment.

11. Innovation policy is not a quick fix to be employed within electoral cycles. To be successful, it requires a long-term view and broad consensus of various stakeholders. As demonstrated by the experiences of both the developed and the catching-up UNECE economies, this policy is easier to establish in periods of growth rather than recession. However, this also reduces pressure for its development and effectiveness.

II. GOOD PRACTICES IN INNOVATION AND COMPETITIVENESS POLICIES

12. The traditional innovation policy was primarily oriented towards R&D, that is to say, the supply side of innovation. A current mainstream is the second generation of innovation policy which is oriented towards systems and clusters. The emerging third generation of innovation policy assumes that there is a potential for innovation which is embedded in other sectors or policy domains. This potential can be realized by ensuring cross-sectoral optimization of the components of various sectors' innovation policy through coordination and integration.

13. Good practices in innovation and competitiveness policies can be defined as those public interventions or policy measures that enhance synergies and weak links in the innovation system. Among the most important targets is the horizontal coherence of different policies which ensures that individual, or sectoral, policies build on each other and minimize inconsistencies in the case of possibly conflicting goals.

14. A major lesson learned from national experiences is the overwhelming importance of the institutional context and specific conditions for the creation of a supportive environment for innovative development and knowledge-based competitiveness. It is essential to ensure autonomy and relevance of R&D and knowledge-based services for the economy but also linkages and synergies to the global economy. An institutional system that nurtures openness, but which also fosters technology-based competition, should thus be the key aim of national innovation and competitiveness policies.

15. From this perspective, the notion of good practice in innovation policy is somewhat ambiguous as the direct transfer of a "high performance element" from one country or system to another may not necessarily have an impact similar to that in the system of origin. Also, there is no single "optimal" pattern of innovation governance as identical functions could be undertaken by different institutions.

16. Hence, while there is a lot to learn from intelligent comparisons across national systems (learning-by-comparing), mechanical benchmarking of narrowly defined areas while neglecting the systemic context cannot be considered as "good practice". In a national policymaking context, one should always bear in mind that the relations between framework conditions and public support for innovation are country-specific.

III. THE NEED FOR A LONG-TERM VISION

17. Broadly agreed national priorities in the form of strategic, long-term policies and visions facilitate coordination by providing a consensus and mutual understanding. In order to be successful, priority setting should be embedded in a broader process of innovation and competitiveness policy formation using an inventory of strategic intelligence tools like foresight, benchmarking, monitoring, evaluation, and assessment. Coordination in priority setting should also involve consultations and activities with key stakeholders and the public at large.

18. In order to be effective, this embodiment of priorities has to be present at two levels – institutional and strategic intelligence. At the institutional level, policy councils are important in the priority-setting process, but may not be sufficient to develop comprehensive, horizontal policies for innovation and sustainable economic growth. At the strategic intelligence level, it is essential to establish close links to the priority setting process and use tools like foresight in policy learning.

19. The main purpose of long-term vision is to ensure the coherence of the related actions by public bodies and private actors. Country experiences suggest as a good practice embedding the shaping of this long-term vision into an institutionalized policy process involving key stakeholders and incorporating a process of generating long-term visions (foresight) of the technological and economic development.

20. Well-designed foresight exercises can enhance the coordination capability of the national and local innovation systems and their ability to respond to external challenges. They can also facilitate coordination among policy bodies dealing with innovation and innovation stakeholders. Foresight helps in generating new insights which are not available to individual stakeholders unless they embark on the process of such collective exercises.

21. An effective foresight exercise should achieve the following main objectives through a participatory process:

(a) Achieve a better common understanding of the desirable and feasible visions of the future; and

(b) Bring together different stakeholders that are expected to be involved in the implementation of these visions into a functioning network.

22. The foresight objectives are mutually related: better common understanding is needed for networking but also better networking is a precondition for generating common understanding. Addressing them simultaneously is an important challenge for foresight practitioners. The Technology Roadmap process in Canada, which is led by industry and facilitated by the Government, and the United Kingdom foresight exercise could serve as good examples of how to address these challenges.

IV. IN SEARCH OF AN ADEQUATE POLICY MIX

23. National policy portfolios and their effectiveness can only be judged and assessed in the context of the national innovation system, including its strengths and weaknesses. The institutional context within which the innovation policy objectives are defined explains why in most countries these objectives are still defined very ambiguously. A number of countries still do not set clearly defined objectives and do not link them to measures leading to the achievement of these objectives.

24. The heterogeneity of countries in terms of the development of their NIS also suggests the need for differentiated policy approaches and different policy mixes in the search of a balance between public support for specific innovation interventions or in the requisite institutions that support innovation (framework conditions). There is no general answer to this question that could be used as a criterion to follow one or another approach. Any answer should be country- and context-specific and should be based on systematic evaluation.

25. A specific policy focus in the catching-up economies is the closure of the so-called “implementation gap”, i.e. the gap between sources and users of innovation. In view of this, the experience of more developed countries with policies to bridge the sources and users of innovation may be relevant.

26. The policy mix in the catching-up economies is still overly R&D-focused and traditional in the sense that there is a strong bipolar policy model or separation of policy responsibilities between education/science and innovation/industry. The forward-looking policy design, especially in the context of the recent evolution in the understanding of innovation and competitiveness policies, should therefore also strike a balance between different principles and objectives.

27. Another key policy challenge for the catching-up economies is how to strike a balance between different conflicting principles and objectives in innovation and competitiveness policies, such as the balance between institutional and competitive funding or the balance between world quality and local relevance. In general, there is a need to shift to a greater reliance on competitive allocation of public R&D funds and project-based funding. Also the NIS should contribute to the generation of new knowledge but equally to the diffusion of knowledge throughout the economy.

28. Finding an effective policy mix is not a trivial task. In this process it is useful to bear in mind the following principles and prerequisites:

(a) The development of specific innovation-support instruments should be undertaken within the context of an overall strategy that is coherent and well coordinated within a well balanced and feasible policy mix;

(b) Specific innovation policy programmes should be treated as learning experiments and hence external monitoring and evaluation of programmes are crucial. Ideally, programmes should be introduced on a pilot basis and then closed if failed or scaled up if proven successful; and

(c) It is essential not to overload strategies with too large a number of under-funded projects.

29. If the ultimate objective of the innovation and competitiveness policy mix is to create an environment conducive to innovation-based growth, then the policy mix needs to ensure synergies between framework conditions and the key elements of the national innovation capacity. The four dimensions of the innovation capacity – absorptive capacity, knowledge generation, diffusion and demand – interact with each other through the systems of innovation. National innovation systems, which are able to create synergies between different dimensions of innovation capacity, are better in promoting innovation and economic growth based on innovation capacity.

30. Framework conditions shape each of the elements of the national innovation capacity but they are not sufficient to establish a positive relationship between growth and innovation. Favourable framework conditions therefore need to be coupled with an efficient NIS proper, that is, with developed elements of the national innovation capacity.

V. POLICIES TARGETING THE ABSORPTIVE CAPACITY

31. The economy's capacity to absorb innovation at the macro level crucially depends on micro-level competences and competence building in workplaces. The catching-up UNECE economies have a relatively high level of education but inadequate systems of training and retraining programmes. Human capital development is thus a key priority area for policymakers. Enterprises also have a responsibility for training more of their employees in-house; this is an investment which will produce returns in the form of productivity gains.

32. The existing systems for vocational training and re-training need to be reformed. In particular, government schemes should be targeted in priority towards adults with low or obsolete skills. It is important to generate training capacity in enterprises and increase the propensity for workers to undertake training. Governments could consider establishing a more effective training culture by directing existing subsidies on a competitive basis and according to provider performance. Employers should be closely involved in the governance of re-training programmes. In turn, enterprises and employer associations should have meaningful inputs into the design of the government policies so that the training system is responsive to their needs and those of other key stakeholders. Policies should be designed to increase competition in training provision from all providers, both public and private including the employer.

33. Universities should become key drivers and promoters of human capital development in the knowledge-based economy. Advanced formal training and a strong science base should become the basis for “learning by doing” and advanced “life-time learning” in the knowledge-based economy. This requires establishing a new balance between the universities' three main functions: teaching, research and commercializing knowledge. In countries where universities have been traditionally weak in R&D, greater efforts are needed to stimulate research activities within universities.

34. A number of countries in the UNECE region have adopted policy programmes targeting the absorptive capacity, mostly through human capital development measures. Examples include,

but are not limited to, recent programmes in Belarus, Denmark, Estonia, Israel, Italy, Kazakhstan, Lithuania, Russian Federation, Slovakia, Slovenia, etc. Wider sharing of this experience and learning from other countries' success and failure could provide fertile ground for further improvements in policies and raising their efficiency.

VI. POLICIES TARGETING THE GENERATION OF KNOWLEDGE

35. The catching-up UNECE economies need to increase the general level of R&D expenditures which are relatively low in relation to gross domestic product and are still dominated by public budgetary spending and low participation of in-house funding by firms. Achieving this target – which implies raising both public and private R&D spending – calls for coordinated joint efforts by the public and private sector in accordance with mutually agreed national innovation priorities.

36. Raising the level of R&D expenditure also requires reform and transformation of national R&D systems. The main direction of this reform should involve a movement towards a mostly enterprise-based R&D system and a shift towards diffusion-oriented activities within the R&D system. A movement towards an enterprise-based R&D system should shift the supply of innovation towards the actual demand for R&D and other knowledge related services of local firms. A shift towards diffusion-oriented activities within the R&D system reflects the importance of adaptation for the catching-up economies.

37. The reforms of national R&D systems in the catching-up UNECE economies should also involve support to the nascent sector of new technology-based firms which should become an important segment of R&D activities. These firms operate in a regime of technology-based competition where marketing, technical and financial barriers are higher than in the case of cost-based competition. The innovation and competitiveness policy mix should include measures to reduce such barriers for new technology-based firms in catching-up economies.

38. The systems of knowledge production in the modern industries entail important roles for users in the innovation process. Changes in policies are therefore needed, in particular in the catching-up economies, to increase support to users as sources of innovation. Policy should encourage user-led innovation, both by publicizing its possibilities and by removing barriers to its introduction. Policy could also encourage users' role in standard-setting processes which contribute to the shaping of newly developed technologies.

39. Knowledge generation also involves a large set of activities which go beyond R&D, in particular improvements in products and production techniques, software, design and marketing, and active use of new knowledge and new technologies developed elsewhere. The innovation activities that are not reflected in traditional indicators such as investments in formal R&D or patents awarded (the so-called "hidden innovation") should be assigned due priority in the innovation and competitiveness policy mix. These types of activities require more sector-specific insights and are greatly affected by framework conditions and broader public policies.

VII. POLICIES TARGETING THE DIFFUSION OF INNOVATION

40. The systemic nature of innovation and the related linkages and networks imply an increasing importance of the process of diffusion of innovation, its channels and transmission mechanisms. Among the most important linkages in these processes in the catching-up UNECE economies are those between foreign and local firms, the links between large and small local firms, those between Research and Technology Organizations (RTOs) and industry as well as the linkages established through innovative clusters. Public policies seeking to establish new linkages and strengthen existing ones should be assigned due consideration in the innovation and competitiveness policy mix.

41. Facilitating the diffusion of new knowledge through the economy calls for policies focused on different forms of partnerships. In R&D, this requires different forms of public-private partnerships which promote knowledge circulation and matching of business needs and R&D expertise. There are different practices in this regard in the catching-up UNECE economies such as joint R&D centres (Poland), long-term cooperation agreements (like the competence centres in Estonia or the cooperative R&D centres in Hungary), networks and clustering schemes (Czech Republic, Hungary), national technology platforms (Poland) and mega- and business-stimulated projects (Russian Federation). Good practices of this sort could be developed further and other countries could learn from this experience.

42. In today's globalized economy, an important policy challenge related to FDI is to link value-chain foreign-investment firms and national innovation systems. Policy should seek to ensure coupling between FDI and the national innovation process, for example through programmes for fostering innovation-based FDI and local linkages. Among the positive examples in this respect are the Hungarian Integrator Programme and the Israeli Global Enterprise R&D Cooperation Framework whose objective is to encourage industrial R&D cooperation between Israeli firms and multi-national corporations.

43. The formation of clusters, a critical mass of companies over a certain territory, interlinked by a web of supply and demand interrelations, provides a solid foundation for the emergence of competitive advantages. Cluster policies should focus on the establishment of close relations between all relevant stakeholders from both the public and private sectors. The related public interventions should support the efforts of the private sector to improve performance, in an integrated strategy to build a competitive advantage. There is also a great need for cluster facilitators who could work in regions, raise cluster awareness and improve the culture of cooperation among entrepreneurs. In recent years, programmes for supporting clusters have been introduced in a number of catching-up economies, for example in the Czech Republic, Hungary, Lithuania, Poland, Romania, Slovenia. However, many cluster policies have a strong focus on identifying and linking actors but put less emphasis on the dynamic aspects of such interlinked structures.

44. There is also a pressing need to reform the sectoral R&D units inherited from the past which are still much higher in number in some UNECE catching-up economies (among others, Poland, Romania, Russian Federation, Ukraine) compared to developed market economies. One possible direction of reform is towards transforming them into networks of innovation support centres offering mainly training, counselling and information services. There is a wide scope for

transnational learning in this area based on examples of countries that have developed successful models of competence centres.

45. Another related policy issue is the introduction of policy measures seeking to improve the effectiveness of supporting organizations (such as incubators, centres for support to innovation, etc.) and their connectedness into one efficient and effective system. In some cases these measures should seek to transform inefficient supporting organizations from sites of subsidized rents to drivers of knowledge generation and diffusion. In other cases, these measures should convert them from places of general support to business to places of innovation-based growth. The main thrust of these reforms should be to make support organizations demand-driven and relying as much as possible on private sector expertise and skill. Eventual public co-funding should be long-term in nature and based on transparent performance criteria.

46. There is also significant scope for direct diffusion-oriented policy programmes in the catching-up economies, especially in downstream activities related to production capability. Demonstration projects in areas like quality management, computer-aided design and computer-aided manufacturing (CAD/CAM) systems, or business information systems in specific sectors are worth supporting due to their strong demonstration effects and learning potential. Such projects could be co-funded on the condition that the results of these demonstration projects are made available to other enterprises.

VIII. POLICIES STIMULATING THE DEMAND FOR INNOVATION

47. Robust economic growth does not translate automatically into demand for R&D and innovation. For this to materialize, some necessary conditions must be in place, in particular, stable macroeconomic framework, conducive business environment, well functioning and competitive markets, efficient and developed financial system, well protected intellectual property rights, transparent regulations and public procurement, among others. The establishment of an environment stimulating the demand for innovation calls for targeted public policies.

48. Governments could consider specific policy measures contributing to the development of the financial sector in the catching-up economies into an intermediary of innovation driven growth. In this regard they could consider introducing incentives to mobilize funds for innovation, in particular for SMEs. The public sector could also be instrumental in designing and supporting schemes for sharing the financial risk of innovative activities among various stakeholders.

49. Reforms are needed to improve the efficiency of the fiscal incentives for R&D and innovation which should target innovation-related activities in a neutral way, and not seek to support specific sectors or groups of enterprises. Public policies in the UNECE region have undergone, and are still undergoing, important reforms in the scope and nature of fiscal support measures and the related policy instruments. Thus recently there has been a trend towards increased importance of R&D fiscal measures in the European Union, especially among the old Member States but also in other countries such as Russia and Israel. Fiscal R&D support measures traditionally play an important role in the United States. There is a scope for UNECE countries to learn from each other in this respect, especially in terms of administrative

requirements, forms of incentives, target groups, definition of R&D activities, treatment of foreign firms, etc.

50. Achieving sustainable development requires increased cooperation between the innovation and environmental policy. Increasingly firms understand that they have to move from regulation compliance and cost reduction to the exploitation of the profit potentials that lies in environmental innovativeness. Equally, innovation policy should give greater attention to environmental innovation both to strengthen economic growth and to reduce the impact on the environment. Given the systemic interdependencies of the firms' innovation processes, harmonizing the environmental demands could improve the introduction and diffusion of environmental innovations. This implies that policies should target value chains and networks rather than individual firms.

IX. MEASURES TO IMPROVE INNOVATION GOVERNANCE

51. The multidimensional and multisectoral nature of innovation activities calls for coordination and collaboration in a large number of different policy areas: economic, financial, industrial, education and science, employment, regional, social and health, and environmental policies. This implies targeted reforms in innovation governance, especially in the catching-up economies, at many levels of the public sector and in different organizations, including interfaces with the business sector and society at large. The main directions of these reforms should be towards contributing to the generation and implementation of integrated innovation and competitiveness policies.

52. A specific direction of these reforms is related to the improvement of the policy coordination mechanisms, especially in the catching-up economies. An effective coordination process should encourage active participation of all relevant stakeholders, including the business sector, and taking due account of the interests of these stakeholders. Stakeholder participation in all key phases of the coordination process will contribute not only to better designed policies and policy mixes but also to their more efficient implementation.

53. There is a wealth of country experience in policy coordination in the UNECE region. Examples of establishing successful coordination mechanisms include, among others, the institutional role of the Office of the Chief Scientist at the Ministry of Industry, Trade and Labour in Israel, policy coordination practices in Denmark and Germany and similar experiences in Slovakia and other countries. Learning from these experiences could provide valuable further guidance to policymakers in the whole UNECE region.

54. Country experiences also suggest that there is not a single "optimal" pattern of innovation governance. There is a range of practices in supporting good overall innovation governance that can possibly be adapted to national specificities. Also, experience shows that governance mechanisms differ over time in accordance with the changing national needs.

55. An important challenge for the catching-up UNECE economies is to eliminate the existing fragmentation in their national innovation systems and to strengthen both horizontal and vertical coordination. There is also a need for integrating more systematically the different

functionally organized public policies and develop a better understanding of how different policy areas shape the innovation performance.

56. Foresight exercises could also be instrumental in shifting national innovation systems in the catching-up economies from their dominant focus on knowledge generation towards diffusion, absorptive capabilities and improving their relevance to local users (demand component). This does not mean that science foresight is not necessary in the catching-up economies but only that foresight should also address more downstream type activities like innovation and supporting activities as well as knowledge-based services.

57. The quality of implementation of innovation and competitiveness policies is often more important than the design of policies. The catching-up UNECE economies generally still have a poor implementation record and therefore need to introduce a range of measures to improve the implementation of individual policy instruments in innovation and competitiveness policies.

58. An increasing number of countries in the UNECE region have assigned the responsibility for implementation of policies to specialized agencies. However, country experiences in the role of innovation agencies differ. Some countries have small ministries and big agencies while others have bigger ministries and do more policy and programme design inside those ministries. A traditional agency form is the mono-principal: an agency, which works for one ministry (for example, Enterprise Ireland, the National Technology Agency (TEKES) in Finland, among others). Another agency model is the “multi-principal”, which acts as an intermediary for several sponsoring ministries.

59. In the developed UNECE economies, the role of the innovation agencies is changing as they are becoming more like a partner than a regulator or referee. A leading model in this respect is the Swedish innovation agency VINNOVA whose mission is to promote sustainable growth by developing effective innovation systems and funding problem-oriented research.

60. While a number of catching-up economies have established agencies and organizations in charge of innovation, they still face a number of challenges in this respect. Thus innovation agencies should be delegated sufficient freedom and a strategic role in the national innovation system, especially in policy coordination. In addition, agencies should achieve decentralization, accountability and flexibility needed for coordinating a variety of intersectoral programmes. They should also enjoy more operational freedom to ensure that managing and implementing policies can be relatively independent from day-to-day policymaking and annual fiscal constraints. Other catching-up economies are yet to embark on the path of establishing innovation agencies.

61. An organized national innovation constituency is another ingredient of an effective innovation governance system. Such a constituency ensures a strong stakeholder involvement in the formulation of innovation policy, including the formulation of long-term objectives, and facilitates consensus-building in policy formulation and implementation. Examples of successful practices of organized national innovation constituencies include, among others, the Globalization Council in Denmark, the institutionalization of German innovation constituency within the national innovation governance system, the Polish Entrepreneurship Council, the Council on Competitiveness in Ukraine, etc. Governments in the UNECE region have a vested

interest in such participatory practices and could provide further support to the establishment and strengthening of organized national innovation constituencies.

X. MAIN POLICY TRENDS AND CHALLENGES

62. There are a number of emerging common trends – and challenges – in policies promoting innovation and competitiveness in the UNECE region:

(a) A significant policy effort is being undertaken in a number of countries in human capital development aiming to increase the availability and competencies of skilled innovative people;

(b) Policies seek to address the challenges related to the intensified national and international linkages and knowledge flows, in particular through national and international partnership-based initiatives, clusters, competitiveness poles, etc., and new platforms for policy design and delivery;

(c) The role of sub-national regions in the implementation of innovation and competitiveness policy initiatives has also been growing, which implies a greater need for coordination with national targets and initiatives;

(d) An important recent trend has been the thrust to increase the economy-wide intensity of innovation activity through stimulating private enterprises to invest more in R&D, specifically, and in other forms of innovation, more generally;

(e) Public policy is also placing an increasing emphasis on the role of regulations, public procurement and other factors associated with the business environment influencing the performance of the national innovation systems; and

(f) In the catching-up UNECE economies, policies have been affected by additional factors related to the ongoing transformation processes and driven by pressures to overcome historical legacies. In particular, this relates to the gradual – but sometimes uneven – transformation towards enterprise-based R&D system and the gradual shift towards diffusion-oriented activities within the national innovation systems.

63. Many catching-up economies have developed a range of innovation and competitiveness policy instruments but their effects in terms of innovation performance are not yet fully visible. In a number of these countries, national policy mixes are still largely dominated by the public funding of research activities. More efforts are therefore needed to move towards a wider range of funding schemes, going beyond the traditional elements of institutional funding of public research institutes and subsidies for project-based research towards instruments such as funding competitions and tenders, loan and guarantee schemes, equity financing, fiscal incentives, instruments such as the procurement of R&D services, etc.

64. A newly emerging trend in innovation and competitiveness policies is towards a greater role of policy evaluation. The policy push toward more transparent and visible evaluation

practices reflects an increasing concern by societies about the role of innovative development in the knowledge-based economy.

65. While there exist quite elaborate evaluation methodologies, especially in the developed UNECE economies, until recently they were rarely used in practice, and when used, it was mostly in a retrospective vein. Evaluations should become an integral part of a learning-based approach to policymaking and programme formation. To ensure coordination and integration and achieve better governance, policy learning needs to be built into the whole cycle of policymaking. An example of good practice in this area is the United Kingdom, where the initial business case for proposed measures includes indicators facilitating evaluation through this cycle.

66. An important specificity of the catching-up economies is a stronger need for evaluation of RTOs. This applies not only to the regular annual or medium-term assessments of RTOs but also to an institutional assessment with the objective of restructuring the RTO system by altering the structure and organization of research institutes and their research activities.

67. A key policy challenge, especially for the catching-up economies, is that of combining the effectiveness of individual policy instruments with and overall coherence of the policy mix. Two main issues need to be borne in mind in addressing this challenge:

(a) The effectiveness of individual policy instruments should be considered in the context of the national innovation systems, their specific objectives in this system and the wider policy portfolio in which they operate. Such a consideration should seek to identify synergies and interactions that increase the efficiency of individual policy instruments and make for an effective policy package; and

(b) While appropriate governance systems are necessary (or, at least, helpful) for a good performance of the national innovation system, they are not sufficient to guarantee successful performance. Overall innovation performance is the outcome of a broader range of factors and conditions that go beyond innovation policy proper and encompass framework conditions and a variety of non-technological factors.

68. Raising the overall effectiveness of the innovation and competitiveness policy mix and its relevance to the long-term policy goals and objectives entails the need to address some additional policy challenges:

(a) It is increasingly necessary to conduct more and more comprehensive systemic evaluations of innovation and competitiveness policies in order to gain a better understanding of their interactions and impacts;

(b) The agencies and organizations in charge of innovation should be well equipped with strategic and intelligence functions to better coordinate governance levels; and

(c) Governments should pay more attention to improving mutual understanding of innovation-related issues across ministries as fragmented governance structures often represent a loss of strategic capacity.

69. In the globalized economy, which is abundant in the complexity of linkages between different social and technical subsystems, policymaking for promoting innovation and competitiveness increasingly needs “strategic intelligence”. Country experiences convincingly suggest that whatever is considered as good practice in innovation and competitiveness policies usually rests on good strategic intelligence. Better innovation and competitiveness policymaking thus calls for a greater role of and significant improvements in strategic intelligence.

70. In turn, this implies a greater role of and significant improvements in the main strategic intelligence instruments like foresight, innovation indicators, benchmarking, systematic evaluation cycle, and transnational policy learning. Better strategic intelligence instruments can contribute to a more effective policy process, in particular, in aspects such as:

- (a) Understanding the underlying determinants of R&D and innovation;
- (b) Providing possible clues to some immediate policy questions;
- (c) Outlining trends and future developments related to innovation policy;
- (d) Monitoring progress in policy areas and understanding the impact of policy measures; and
- (e) Adapting agencies and other institutions to a changing environment and changing forms of policy measures.

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