ECONOMIC COMMISSION FOR EUROPE

COMMITTEE ON ECONOMIC COOPERATION AND INTEGRATION

Seventh session
Geneva, 5-7 December 2012
Item 3(a) of the provisional agenda

Substantive Segment: Multi-stakeholder policy discussion on the main outcomes of the Innovation Performance Review of Ukraine

INNOVATION PERFORMANCE REVIEW OF UKRAINE

Draft Conclusions and Recommendations

Conference room paper submitted by the Secretariat

Introduction

The objective of this document is to present the draft conclusions and recommendations of the Innovation Performance Review of Ukraine, which will be discussed at the Substantive Segment of the seventh Session of the Committee on Economic Cooperation and Integration. The Innovation Performance Review is a policy oriented document seeking to provide advice to policy-makers and other stakeholders on possible policy actions aimed at stimulating innovation activity in the country, enhancing its innovation capacity and improving the overall efficiency of the national innovation system. The Review has been prepared by a Team of international and national experts on innovation policy mobilized by the UNECE Secretariat in consultation with the national authorities.

National innovation system and innovation governance

The importance of innovation is recognised in many different legal documents as well as policy papers, including at the highest level. However, a holistic consideration of the national innovation system as a whole, looking at its various components and the relations between them, is still missing. A narrow interpretation of innovation, which emphasises technological aspects, prevails. The sub-systems of science and innovation intermediaries receive more policy attention but there is less emphasis on the need to encourage innovation in the business enterprise sub-system, particularly on the importance of SMEs as a factor of economic dynamism. There is insufficient consideration to the linkages between sub-systems, including between the science and business sector which are key for the definition of a science, technology and innovation strategy.

Recommendation 2.1

Innovation policy would benefit from an integrated consideration of the various components of the national innovation system. This holistic approach should result in the identification of weak elements and an emphasis on linkages between different sub-systems as important policy targets.
The notion of innovation should be broadened, recognising that technology is only one dimension of the innovation process. The authorities should give special attention to:

- The business enterprise subsystem, in particular the promotion of innovative SMEs;
- The commercialisation of science (e.g. technostarters);
- The linkages between science and industry through policy measures that target collaboration between these two subsystems; and
- The role of innovation intermediaries, with due consideration to the particular needs of small innovative enterprises.

There have been multiple innovation-related initiatives in Ukraine over the last years, which reflect the continued importance attached to innovation as a driver of growth and competitiveness. However, many of the legal and policy documents remain at a conceptual level, insufficiently defining concrete policy measures and not giving clear instructions for further implementation. There is insufficient attention to the appropriate sequencing of different proposed interventions.

**Recommendation 2.2**

The effectiveness of Ukraine’s policy efforts in the area of innovation has been undermined by the lack of a consistent vision that included concrete steps to implement it. The authorities should consider the development of a National Innovation Strategy of Ukraine as single comprehensive document that would integrate and replace many of the existing policy initiatives. Such a document would encourage a consideration of the impact of any measures in the national innovation system as a whole. This National Innovation Strategy would:

- Set up clearly national priorities in the promotion of innovation and identify the policy measures to realise this strategy; and
- Define how the strategy will be implemented, monitored and evaluated as well as assign well-identified resources and responsibilities for these tasks.

Effective coordination is one of the main challenges in innovation governance. Despite the progress made by administrative reforms, the responsibilities of key actors are not yet clearly defined. Allocated resources are often not in line with the mandates received. Innovation-related activities are distributed across different public organizations but there is not a single coordinating body. While there is vertical coordination (from agencies to ministries and to the government), horizontal coordination mechanisms are weak or missing.

**Recommendation 2.3**

Innovation policy involves many different ministries and agencies, which requires a concerted effort to coordinate actions in an effective way. The authorities could consider the establishment of a National Innovation Council, in order to promote a cross-sectoral and cross-departmental approach in the design and implementation of innovation policies. In the organization of the work of the National Innovation Council:

- In addition to ministries and government agencies, representatives from the business and academic sectors could also be included as members;
- The chairmanship role could be performed by a figure with wide national support to ensure wide awareness and visibility of innovation initiatives in the country; and
- The State Agency on Science, Innovation and Informatization (SASII) could act as the Secretariat of this Council and coordinating unit in the policy implementation process.
Framework conditions, innovation policies and instruments

Innovation thrives in a favourable environment, where there is a shared perception of its importance and a general understanding of what innovation requires. A vibrant innovation culture is an important factor in the success of public initiatives promoting innovation and should be also a policy target in itself. However, despite some favourable conditions, including a well educated population, this is an issue that does not receive sufficient attention in Ukraine.

Recommendation 3.1

The authorities should strengthen their efforts to encourage the development of an innovation culture, in particular through awareness, dissemination and communication initiatives, which could include:

- Support to popular scientific radio and TV programmes and other forms of media to encourage interest on science and technology and their commercial applications;
- Promotion of innovative entrepreneurship as a positive role model through awards, TV programmes and other forms of social recognition;
- Training managerial staff in public agencies on innovation issues; and
- Educational programmes at different levels that underline the importance of innovation and intellectual property for economic development.

Innovation is a multifaceted process where multiple government agencies and units have an influence. In Ukraine, there is not a clear governance structure which can arbitrate conflicts, ensure the integration of different goals and define consistent agendas. This absence contributes to the proliferation of inconsistent and poorly funded initiatives and an inefficient complexity of legal rules.

Recommendation 3.2

Given the multiple government actors involved in innovation-related areas and the difficulties in tracking effective implementation, the authorities should strengthen their efforts to:

- Streamline policymaking and improve the definition of functions and responsibilities of ministries, agencies and other parties; and
- Strengthen control over implementation through the creation of new mechanisms or the reinforcing of existing structures. This could include an enhanced role for the State Agency on Science, Innovation and Informatization (SASII), which could be given more extensive powers, increasing its independence and providing it with specific performance indicators and budgetary resources to carry out these monitoring tasks (See recommendation 2.3).

Ukraine has adopted many innovation initiatives in the past. However, implementation has been uneven, due to the lack of necessary follow-up steps to give concrete expression to some general goals, including the provision of financial resources. The lack of engagement of key innovation actors in the design process has also undermined implementation. In addition, no systematic evidence has been collected on the innovation impact of past programmes to assess its performance.

Recommendation 3.3

The authorities should aim to improve the effectiveness of innovation policies by reinforcing key aspects of the policy cycle. In particular, they should consider:
A closer involvement of the private sector in the design of policies and programmes through well-established consultative processes, which could include clear communication regarding sources of finance in order to increase the credibility of policy actions; and

Reinforcing monitoring and evaluation procedures, which should be built into the design of public programmes, including through the appropriate provision of the necessary resources to carry these procedures. The outcome of the assessments should serve to take corrective measures regarding existing programmes and should be used to make improvements in the design of new ones.

Ukraine is a large country, with different resources and needs at the regional level. There have been some attempts in the past to incorporate an innovation dimension in regional policies but progress has been limited so far. Tapping into the potential for regional development demands more focussed efforts. Innovation-based regional strategies require the creation of a basic infrastructure that increases the absorption capacity of less developed regions and facilitates collaboration and exchanges.

**Recommendation 3.4**

In order to enhance the contribution of innovation to regional development, the authorities should ensure that innovation policies and related programmes incorporate a regional dimension and that this is supported by appropriate financial and coordinating mechanisms. In particular, the authorities could consider:

- A well-defined consultation process that facilitates the alignment of national and regional policy objectives and the incorporation of regional aspects in the design of the overall national innovation strategy;
- The creation of institutional structures that facilitate the coordination between regional and central interventions, including mechanisms for consultation and sharing of information; and
- The provision in central plans for the development of necessary infrastructures to support the implementation of regional strategies.

**Knowledge generation and absorption**

Public support for R&D is both low and not focused enough, which results in an inefficient dispersion of efforts and resources. The relative importance of state goal programmes is limited and they are not equivalent to thematic Research, Development and Innovation (RDI) programmes. The mobilization of private sector resources through coordinated public initiatives could provide an effective instrument for industrial restructuring in specific sectors, in line with state priorities defined in strategic policy documents.

**Recommendation 4.1**

Focused R&D efforts to address specific priorities and the problems of particular sectors would increase the effectiveness of public initiatives and the ability to attract resources from the private sector, including through concerted actions that rely on consultations between major stakeholders. Priority areas could include the food industry, energy efficiency, renewable energies and the ICT industry. The authorities should consider:
Allocating future increases in public R&D funding to thematic RDI programmes based on criteria of technical excellence and local relevance; and

Developing technology platforms linked to sectoral working parties for restructuring. These technology platforms should be led by industry and define research priorities and action plans on a number of technological areas. State support could be confined to a coordination role through a secretariat as well as thematic R&D and innovation programmes co-funded by the budget.

FDI is a main conduit for innovation through importing and adapting foreign technologies and business models. Ukraine has received significant amounts of FDI but these inflows have not been associated with important structural changes or technological upgrades, given the sectoral composition of these investments. For an economy like Ukraine, the ability to absorb and diffuse foreign technologies is a key innovation driver. However, the potential of FDI to encourage innovation remains largely untapped.

**Recommendation 4.2**

Ukraine’s FDI promotion policy is generic and not focused on promoting innovation. The possibilities opened by the establishment of the State Agency for Investment and National Projects could be used to ensure that sector-specific FDI promotion is integrated into sector- or technology-specific R&D and innovation support programmes. In particular, the authorities could consider:

- Linking FDI leading to the reduction of energy intensity to sector-specific diffusion programmes of new energy technologies, as increased energy efficiency has been identified as a key priority;
- Encouraging foreign companies to set up R&D facilities in Ukraine, through closer alignment between FDI and innovation policies; and
- Facilitate linkages between foreign companies and SMEs, including through actions aiming to enhance capacity in the domestic business sector.

Knowledge-generation institutions, such as research institutes and universities, lack sometimes commercial orientation. For SMEs, the costs of developing relations with these organisations are rather high. Rigid frameworks for interaction do not fit their constant changing needs.

**Recommendation 4.3**

The gap between ex-branch institutes and universities on the one hand and enterprises on the other hand could be bridged with the introduction of innovation vouchers. These would be given to enterprises and would allow them to purchase different types of innovation services; including innovation audit, training, new business and service development, knowledge transfer projects and many others (See recommendation 5.4).

The design of appropriate policy measures aiming to reform the academic sector requires a thorough analysis of existing capacities and programmes. While there are some areas of strength, there is also duplication and dispersion of efforts that should be addressed.

**Recommendation 4.4**

In order to strengthen the effectiveness and coherence of R&D policies, the authorities should take stock of the current situation and devise a robust evaluation system. The Ukrainian authorities could consider:
• Conducting an international benchmarking of Ukrainian R&D, as a whole and at the level of the major institutions (institutes of the Academy of Sciences; major universities and selected ex-branch institutes) to facilitate comparison with other countries in the region and the EU members; and

• Establishing different systems of project evaluation and selection for various types of projects and programmes (basic, applied, cooperative, innovation based programmes and others). The appraisal methodologies should be clear and known to prospective applicants.

Supply-oriented interventions, which seek to increase the amount of R&D, whether in the academic or in the business sector, have clear limitations as long as demand for innovation remains low, which, as in other countries with economies in transition, is a key constraint for Ukraine.

**Recommendation 4.5**

In order to reduce the barriers to innovation created by the weakness of demand for RDI, public procurement could be used to induce increased technological development. This would stimulate technological innovation while at the same time provide government agencies with new, cost-effective, technical and scientific solutions to meet their needs. Procurement programmes designed to stimulate the demand for innovation should:

• Specify the goals to be met without pre-judging the technological ways through which these goals could be achieved;
• Be open to both established companies and new ones;
• Include a grant element and other forms of support for innovative companies to help them overcome potential problems with raising financing to develop technologies;
• Involve single company contracts with no requirement for collaboration;
• Allow companies to retain the rights to intellectual property developed through the use of public funds, with no royalties owed to the government, which will retain free use for a specified period; and
• Be run through open competition under rules that are suited to the risky nature of innovation projects.

**Industry-science linkages and collaboration in the innovation process**

A systemic evaluation of the current system of practices regarding industry-science linkages (ISL) is the starting point to identify barriers and opportunities, understand the impact of actions and measure changes over time. This comprehensive evaluation, which should be considered a learning, not a judging process, is still missing.

**Recommendation 5.1**

In order to gain the necessary knowledge to design effective policy interventions and facilitate the activities of innovation stakeholders, the authorities should promote a comprehensive evaluation of ISL. The following principles should be observed:

• The evaluation should be internal (at the level of key organisations) and external, carried out on a periodical basis and the results widely disseminated, so innovation stakeholders can assess their relative position within the system and the effectiveness of supporting public measures; and
The results of the evaluation should provide the rationale for future policy changes, so these are understood by innovation stakeholders and a shared vision of future direction can emerge.

The commercialization of academic research faces upfront costs and requires developing a complex range of skills, which are expensive to acquire. Given the uncertainty of the expected returns and the financial constraints faced by these academic organizations, public support is required to overcome these difficulties.

**Recommendation 5.2**

The creation of dedicated institutional structures to support research commercialization is necessary to address the challenges faced by research organizations trying to commercialize their outputs. Given the limited innovation budgets of these organizations, public funding of technology transfer and commercialization activities is needed, as significant time is required before these activities can generate a profit. The authorities could consider:

- Granting subsidies for research commercialization activities. These could take the form of knowledge transfer grants or be provided as a small share of total research budgets;
- Subsidizing the costs of obtaining patent and other forms of intellectual property rights protection, or allow grant recipients to use research funds to pay for IP-related costs;
- Providing training to technology transfer offices, in particular on a variety of IP-related issues, including patent application, copyright and industrial design registration, and the negotiation of licensing contracts with companies; and
- Facilitating access to legal and patent services providers when these functions are outsourced.

The collaboration between science and business is hampered by the lack of information on opportunities and the high costs faced by organisations in the search for partnerships. The involvement of the public sector can facilitate the coordination of private initiatives and encourage closer links between industry and research.

**Recommendation 5.3**

The authorities should actively promote collaboration measures between different innovation actors, seeking permanent changes in their behaviour. Public intervention could have different scope, involving varying resource commitments and targeting different areas, including:

- Strategic collaboration between different organizations, where a condition for funding is that both science and industry stakeholders are involved. This type of intervention may target a key technology or promote competence centres that support the development of joint research structures between firms and industry;
- Cluster-based interventions, which aim to strengthen linkages between start-ups, companies, and research organizations in a particular sector or region. Support measures may include funding for joint projects or the improvement of framework conditions, including physical infrastructure, human capital and internationalization platforms;
- Development of matchmaking and other intermediary services; and
Platforms for interaction between research organisation and providers of finance and business, through information services, exhibitions and support to the formation of networks (see Recommendation 6.3).

Small-scale projects that aim to encourage relations between industry and science with limited resource requirements but potentially large demonstration effects, are particularly appropriate for Ukraine, given financial constraints and governance challenges. Innovation vouchers are a useful instrument, given the limited administrative burden involved in their administration and their ability to target SMEs.

**Recommendation 5.4**

The authorities could address weak collaboration between the science sector and small companies with the introduction of a voucher scheme, which should target small and medium sized enterprises that have difficult access to external expertise or which do not consider such expertise as beneficial enough. Vouchers for the purchase of innovative solutions to the problems of SMEs should be allocated on the basis of the following principles:

- Simple and clear eligibility criteria for companies to participate;
- Selection rules to deal with the possibility that the number of applications is higher than available vouchers should be very specific. To simplify administration, a lottery system could be considered;
- Reporting requirements to both the company demanding the services and the research organization providing them should be minimal;
- Support to cooperation through the pooling of vouchers between different companies on larger innovation projects; and
- Non-technological forms of innovation (e.g. organisational, marketing, management, etc.) could also be considered as services that can be purchased by a voucher.

**Financing of innovative entrepreneurs**

Ukraine has entrepreneurial talent and a relatively strong risk-taking attitude. These are major ingredients for any policy intervention seeking to promote innovative entrepreneurship. However, the survival rate of start-ups is very small in comparison to advanced countries. Effective policy actions that improve this rate would create employment, diversify the industrial structure and stimulate competition.

**Recommendation 6.1:**

Overall framework conditions have a strong influence on the development of start-ups and SMEs and the impact of other policy interventions. The authorities should carry out focused and sustained efforts in improving the legal and regulatory environment for these companies. Within this overall effort, the authorities could consider the following actions:

- Emphasise quick interventions with a large potential impact, including easing administrative regulations, rather than time-consuming legal reforms;
- Target female entrepreneurs, who are less likely to start a business but display high success rates;
Reform company laws in line with international experiences, so it is easier for entrepreneurs and venture capital firms to set up business in Ukraine, reversing the observed trend to be established abroad; and

Document these actions in an annual report to track progress.

Innovative companies and SMEs in general face particular difficulties when trying to raise finance, which remains a critical obstacle when starting a business. However, support programmes for SMEs are very limited and there are no public interventions targeting start-ups. Limited public resources and past unsuccessful attempts to stimulate innovation by offering financial incentives contribute to explain the current absence of financial mechanisms to encourage the development of innovative enterprises.

Recommendation 6.2

Public support is necessary to address the financing problems of innovative companies. A new innovation fund, although limited in size, would have positive effects on facilitating the development of start-ups and help them to attract private financing. To increase the potential beneficial impact of this innovation fund, the authorities could consider the following principles and actions:

- The innovation fund should be initially of a limited size. Once it has a proven track record of successfully supporting innovative SMEs, resources could be increased. A fund that is run well, with stringent but transparent criteria to select companies, would attract a good quality deal flow and would also encourage private sector interest in the companies that are being financed;
- As innovation is always beset with risk, it is crucial that there is a tolerance for failure. Funding should be stable, preferably in the form of a contribution to the capital of the fund, so risks can be managed on a portfolio basis, without requiring a positive outcome for all projects financed; and
- Given the limited resources available and the need to enhance the credibility of interventions in this area, it would be useful to engage international know-how in the administration of the fund. An option would be that the set-up of the fund is carried out under a twinning agreement with a well-established European funding organisation.

Ukraine has an emerging venture capital scene, which indicates the presence of entrepreneurial opportunities in the country. While this form of financing caters only for the financial needs of a small fraction of innovative SMEs, it is an important ingredient of the innovation system. However, the development of the venture capital industry requires the presence of other financial intermediaries and business services and a continued stream of opportunities that could be financed.

Recommendation 6.3

The authorities could provide further impetus to the development of the venture capital industry in Ukraine by considering the following actions:

- Paying continued attention to the improvement of framework conditions for SMEs in order to increase potential investment opportunities;
- Engage the private sector in public technology programmes, so venture capitalists can have better information on possible commercialization possibilities; and
- Encourage the emergence of business angel financing as a way to explore small scale opportunities that can later be developed further by venture capital firms. This could be done through support to the formation of business angels networks and the creation of platforms for communication with research organisations and universities.
Innovation and international economic integration

Access to international knowledge plays a critical role in modernizing the Ukrainian economy. External markets can provide critical demand for innovative Ukrainian companies. Facilitating participation in the global networks through which information flows and ensuring that researchers, students and companies have full access to the mechanisms of international cooperation helps create the framework conditions for innovation to flourish.

**Recommendation 7.1**

Ukraine has a well educated population, but continued improvement of human capital and the ability to retain local talent are ongoing challenges. The authorities could consider a number of actions to foster these aims, including:

- Building on existing initiatives, introducing new measures to facilitate the international mobility of graduate students, young researchers and educators. These could include taking advantage of existing EU programmes, developing new forms of cooperation through regional integration initiatives and establishing mechanisms of collaboration with the private sector through shared sponsorships;
- Developing R&D programmes, including with the participation of foreign partners and private investors, to create long run employment opportunities for returning students and researchers; and
- Introducing appropriate mechanisms for attracting foreign experts and leading scholars to work with Ukrainian partners especially on projects of high priority for the country (national projects).

Participation in global innovation networks and regional partnerships are important to have access to the knowledge necessary to advance the country’s competitive position and ensure the relevance of domestic efforts. Ukrainian scientists are increasingly engaged in various research collaboration initiatives within bilateral, regional and international frameworks. However, the potential for collaboration has yet to be fully realized due to bottlenecks in existing capacity regarding skills and access to information.

**Recommendation 7.2**

International cooperation in science can be encouraged by strengthening coordination mechanisms and the circulation of information. Engaging in these exchanges requires specific linguistic and managerial skills that can be developed through appropriate training. Building on current efforts, the Ukrainian authorities could consider measures to:

- Develop Internet-based platforms to enhance skills in international research collaboration, including managerial and administrative aspects related to grant applications, research collaboration and commercialization of research projects;
- Support existing services and establish new ones to provide foreign language translation and other assistance with research articles and manuscripts for publication in international academic journals; and
- Promote the emergence of a network of private business and non-profit NGOs to provide training services in preparation for grants and fellowship competitions and legal, managerial and administrative aspects of international collaboration.
Ukraine has a favourable geographic location and well developed cultural and economic relations with CIS countries. This creates a significant potential for cooperation opportunities, which could be exploited more fully. Despite a raft of ongoing initiatives, there remains scope for actions to provide a more solid institutional basis for common projects in various fields.

**Recommendation 7.3**

The authorities should build on existing initiatives and common traditions to derive greater benefits from bilateral and regional economic cooperation in areas related to innovation, including through a number of possible actions such as:

- Strengthening R&D and S&T links with similar programmes in the CIS, and champion those programmes and projects where Ukrainian institutions and scientists have potential to become regional leaders and centres of excellence;
- Facilitating the integration of the emerging innovation infrastructure into various regional and international networks in the CIS, EU and BSEC; and
- Promoting the establishment of joint educational and training programmes in the field of higher education by establishing dual diploma/degree programmes or joint graduate programmes with major international universities.

International visibility of innovation efforts is important to attract the interest of foreign partners and engage them in domestic initiatives. However, this requires coordinated efforts that present a coherent view of public programmes and allow synergies.

**Recommendation 7.4**

The authorities should build on the growing network of cooperation with international partners to ensure increased recognition of the potential for cooperation by implementing new measures that could include:

- Identifying or developing a single national flagship project that would be promoted internationally, as a rallying point and catalyst for the interest of foreign partners;
- Improving coordination between different R&D and innovation programmes, identifying elements that would benefit from international cooperation, so these can be communicated in a consistent way to foreign partners; and
- Developing a strategy for the promotion of national goals and priorities among key partners, which defines a specific role for international cooperation in the achievement of these goals.