R&I-LINKS2UA

STRENGTHENING R&I → LINKS TOWARDS UKRAINE

Policy brief on how to accelerate the process of bringing knowledge to the market including promising practices from EU and Ukraine and recommendations

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Contributors	Andrea Di Anselmo
Quality Assurance	Igor Yegorov, NASU

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Content

List of Abbreviations

RI-LINKS2UA	Strengthening Research and Innovation Links towards Ukraine
DoW	Description of Work
WP	Work Package
R&D	Research and Development
R&D&I	Research and Development and Innovation
MESU	Ministry of Education and Science of Ukraine
MEDTU	Ministry of Economy of Economic Development and Trade of Ukraine
NGO	Non-governmental organisation
SME	Small and Medium Enterprise
S&T&I	Science, Technology and Innovation
PSF	Policy Support Facility
GERD	Gross Domestic Expenditure on Research and Development
GBAORD	Government Budget Appropriations or Outlays for R&D
GDP	Gross Domestic Product
GCI	Growth Competitiveness Index
WEF	World Economic Forum
NASU	National Academy of Sciences of Ukraine
UA	Ukraine
HR	Human Resources
RIS 3	Regional Innovation Strategy

S3	Smart Specialisation Strategy
JRC	Joint Research Centre of the European Commission
ESIF	European Social and Investment Fund
ERDF	European Regional Development Fund
EFT	European Training Foundation
EaPTC	Eastern Partnership Territorial Cooperation
CBC	Cross Border Cooperation
EIB	European Investment Bank
EIF	European Structural and Investment Fund
ENI	European Neighbourhood Instrument
FDI	Foreign Direct Investment
NIF	Neighbourhood Investment Facility
MIRRIS	Mobilising Institutional Reforms in Research and Innovation Systems
EURADA	European Association of Regional Development Agencies
EBN	European Business Network
ERRIN	European Regions Research and Innovation Networks
EARTO	European Association of Research and Technology Organisations
TII	Technology Innovation International
APRE	Agency for Promotion of European Research
IASP	International Organisation of Science Parks and Innovation Areas
EIRMA	European industrial research management

	Association
STP	Science and Technology Park
BIC	Business Incubator
TT	Technology Transfer
GVA	Gross Added Value
IP	Intellectual Property
EFT	European Training Foundation
EaPTC	The Eastern Partnership Territorial Cooperation

1 FOREWORD

A favourable ecosystem is a precondition for fostering research and innovation, therefore the aim of this policy brief is to introduce policy measures, funding models and activities that shall support the knowledge transfer between EU and Ukraine to accelerate innovation processes by bringing academic knowledge to the market. In lieu of the current reform of the research and innovation (R&I) system in Ukraine that are aimed at the decentralisation of the current R&D system, creation of the knowledge-based economy with a focus at the regional development (through building of capacities to create conditions for the implementation of the smart specialisation (S3)) and revisions of current Law on Science and Technology (S&T), the objective of this brief, is to provide input on relevant European practices that shall serve as a guidance and inspiration to the Ukrainian stakeholders in designing of policies and measures under the current reform. The proposed European policies, practices and measures are also in line with the identified priorities of the Horizon 2020 Policy Support Facility (PSF), which has assessed the Ukrainian Research and Innovation System and has noted the following: "*The PSF Panel recommends to the Cabinet of Ministers of Ukraine to develop a National Innovation Strategy, based on the work of the National Board and its working groups. It should aim to identify the overall role of innovation for development in Ukraine, assess the present situation highlighting assets and constraints for Ukraine as an innovation-driven economy, and present ways forward in terms of priorities for supporting innovation. Priorities should include both thematic priorities (such as raising awareness of innovation in SMEs, improving access to innovation finance, etc.) and the domains where Ukraine holds the most promising assets for innovation-based development. The Strategy should include an Action Plan that translates the broad directions into operational instruments, indicating goals and responsibilities for each of them (funding, implementation) and highlighting the priority fields. Attracting private funds for innovation should constitute an important component of this Strategy".*

Quick facts: Where does the country stand regarding the R&I performance?

1. Key players in R&I in UA: Committee for Education and Science of the Parliament, MESU, NASU, MEDTU, other academies etc.

2. Amendment of law on S&T foresees establishment of a new „National Council of Ukraine on the Development of Science and Technology" (approved by the Cabinet of Ministries of Ukraine on August 9th, 2017, ref.: http://mon.gov.ua/usi-novivni/novini/2017/08/09/kabmin-zatverdiv-sklad-naczradi-z-pitan-rozvitku-nauki-i-texnologij,-shho-matime-klyuchovij-vpl/) -> developing a new vision and restructuring the existing R&I system.

3. GBAORD: 2014 0.31% of GDP, 2015 0.23%, 2016 0.20% (projection). (GERD was approximately 0.6% during these years)

4. Ranking in the GCI by WEF: 2013-2014, 93; 2014-2015, 81; 2015-2016, 54; 2017, 50.

5. GCI Ranking in "University-industry collaboration in R&D": 2013- 2014, 77; 2014-2015, 74; 2015-2016, 74.

6. UA enterprises conducting "innovative activities" (data provided by MESU self-assessment report): 2012-17.40% (of total), 2013- 16.80%, 2014 -16.10%.

2 INTRODUCTION

2.1 CURRENT REFORMS OF THE SCIENCE, TECHNOLOGY AND INNOVATION SYSTEM OF UKRAINE

As already noted in the foreword, Ukraine is currently in the process of conducting systematic reforms, with the overall aim of improving country's science, technology and innovation system. The related national priorities of the latter are not addressed in the common national strategy but are stipulated by the Law. The Law on Scientific and Technical Activity (adopted on 26 November 2016) is a starting point for endorsement of the reforms as well as for setting the conditions for building of the

Figure 1: Source: Ministry of Science and Education of Ukraine

research and innovation eco system in Ukraine. The above noted Law foresees the creation of a National Council on the Development of Science and Technology (pursuant to Art.20ff) and of the National Research Foundation (pursuant to Art.49ff) [1]. The envisioned functions of the above noted National Council shall provisionally focus at implementation of the following activities:

- Preparation of proposals for the policy frameworks development in the field of scientific and technological activities and submitting appropriate recommendations to the Cabinet of Ministers of Ukraine;
- Preparation of proposals for the integration of national science into the international science (by taking national interest into account);
- Evaluation of reports on usage of funds for scientific and technical activities and obtained results submitted by the National Research Fund of Ukraine, National Academy of Sciences, central executive authorities, etc.

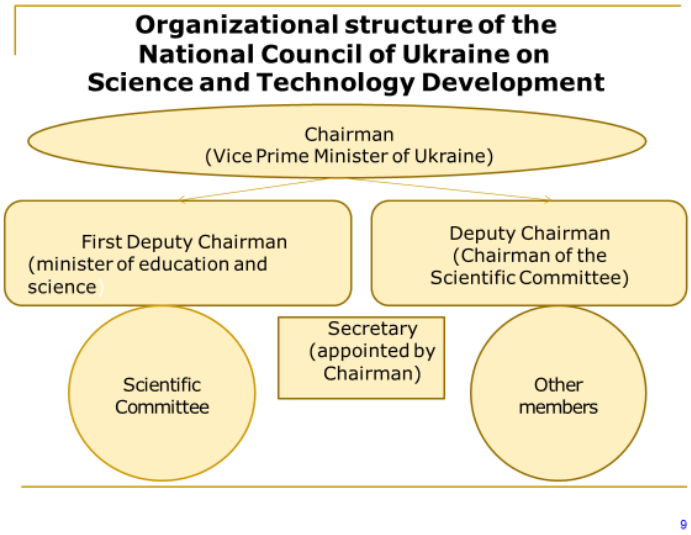


Figure 2: Source: Ministry of Science and Education of Ukraine

[1] European Commission, Directorate-General for Research & Innovation, H2020 Policy Support Facility, Peer Review of the Ukraine Research and Innovation System (2016)

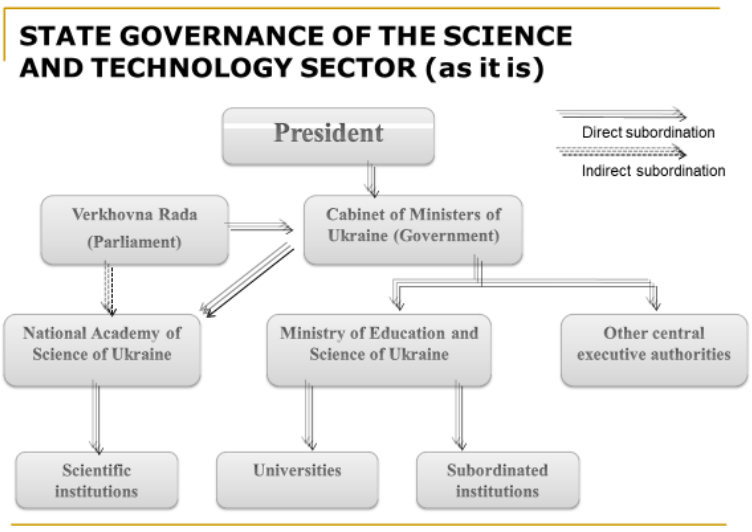
Furthermore, the Law addresses issues related to research promotion at the National Academies of Sciences (pursuant to Art. 17ff) and in the higher education system (pursuant to Art.19) and other research organizations.

The latter addresses assurances for higher education institutions (HEI) and academic staff whereas HEI (universities, academies, institutes), which have passed state certification of their research activities, are covered by assurances for conducting researches, established by this Law for research institutions, while Academic staff of such institutions are covered by assurances for research activities, established by this Law for researchers. The Law also provides suggestion and input on how to ensure and retain growth of the science talent pool (pursuant to Art.61) and it stipulates that the public expenditures on research and development (R&D) should be at least 1.7% of GDP (pursuant to Art. 48).

Other two Laws adopted by Verkhovna Rada of Ukraine that are addressing national Science, Technology and Innovation (STI) priorities are the Law of Ukraine on the Priority Directions of Science and Technology (2001), which defines the national S&T priorities for the period 2010-2020 and the Law of Ukraine on Priorities in Innovation Activities in Ukraine (2011). Only two State Targeted Funding Programmes aimed at implementation of the national priorities are currently in force:

- State Target Science and Technology Programme on realisation of research in the Antarctic 2011 – 2020;
- State Target Scientific and Technical Space Programme. However, some other S&T programs had state support (for instance, Nanotechnology academic program) these years.

Another forthcoming Law is the Law on Innovation (this Law will have the title Law on Support of Innovation Activities, as in the draft, submitted by the MESU), which is currently still under preparation. Ukrainian scientific community agrees that the reforms are essential and welcomes the proposed measures. However, lessons learnt from the past lead towards an open scepticism regarding its actual implementation. These concerns are related to the fact that there have been multiple innovation-related initiatives in Ukraine over recent years, which were pointing out importance of innovation as a driver of competitiveness, growth and jobs. Furthermore, many of the legal and policy documents remained at a conceptual level, without providing practical policy measures or instructions for their further implementation, which could have been overcome if key innovation actors were engaged in the design process from its very beginning.



Source: Ministry of Science and Education of Ukraine

Figure 3: Ukraine

Effective governance and coordination of the main policy making actors in the country is yet another cornerstone towards sustainable STI eco system. Despite the progress made by administrative reforms, the responsibilities of key actors have not been clearly defined. Moreover, there is no coordination body established to oversee the innovation related activities that are distributed across different public organizations.
While there is a vertical coordination (from agencies to ministries and to the government), the horizontal coordination mechanisms are either weak or non-existent. Hopefully this gap will be overcome in a very near future by the envisioned restructuring of STI governance, as above mentioned in this paragraph.

2.2 POSITIONING OF UKRAINE ACCORDING TO WORLD RANKINGS ADDRESSING COUNTRY'S CAPACITY TO INNOVATE

According to the Global Innovation Index Report 2017, Ukraine has been positioned at number 50 out of 127 countries in the ranking of the most innovative economies in the world, headed by Switzerland, followed by Sweden, Netherlands, United States of America, United Kingdom, Denmark, Singapore, Finland, Germany and Ireland. In comparison to 2014 of the above noted ranking, Ukraine is still lagging behind the Russian Federation, Poland, Bulgaria, however, it improved its position towards Serbia, FYR Macedonia, Belarus and Moldova.

Ukraine ranks 80 in the World Bank's Doing business 2017 report (one place up compared to 2016).

Figure 4: Source: Ministry of Science and Education of Ukraine

Ukraine has taken some steps to provide an enabling environment for private business growth and investment, but still a lot remains to be done.

These ratings reflect substantial barriers for doing business including:

- overly bureaucratic processes,
- lack of transparency in tax administration,
- corrupt judicial system.

The World Bank highlighted several recent positive changes in Ukraine that made doing business easier:

- starting a business: ranked 30 in 2016, up for 40 places compared to 2015,
- registering property: ranked 61 in 2016, up for 4 places compared to 2015.

According to the World Bank Group – Ukraine Partnership: Country Program Snapshot dated April 2017, the economy grew modestly by 2.3% in 2016, with a bumper agriculture harvest leading to stronger growth of 4.8% in the fourth quarter. Decisive reforms in the face of unprecedented shocks in 2014 and 2015 helped to stabilize confidence.

According to EBRD, Ukraine's economy stabilized in 2016 and embarked on a moderately-paced recovery, driven by a rebound in domestic demand from the low base of the previous two years. However, foreign direct investment (FDI), bank lending and public infrastructure spending has remained weak. Economic growth is projected to remain modest at 2% in 2017 due to headwinds from the global economic environment and the coal and trade blockade on the Donbas region in Eastern Ukraine. Reforms to bolster investor confidence and competitiveness are needed to help growth pick up to 4% in the medium term.

The IMF expects that Ukraine's economy will grow by 3.2% in 2018 and the EBRD projects it at 3%. The IMF also confirmed its inflation forecast for Ukraine in 2017 at 10% and 7% in 2018. The Fund has slightly improved its assessment of Ukraine's current account deficit for this year to 3.6% of GDP from 3.7% of GDP and to 2.9% from 3% of GDP for next year.

Ukraine's government has committed itself to further deregulation and improvements in trade, tax and customs policies, as well as for further harmonisation in lieu of EU requirements. However, these improvements represent only a first step in plethora of reforms to be implemented. Feedback from domestic and foreign enterprises indicates that the overall business environment in Ukraine is still weakened by corruption, macroeconomic instability, often burdensome regulations, weak rule of law and protection of property rights, lack of competition in number of sectors, and a shortage of affordable and long-term finance.

3 TOWARDS BUILDING OF THE NATIONAL INNOVATION ECOSYSTEM IN UKRAINE FOR DEVELOPMENT OF HIGH-TECH ECONOMY

The previous paragraphs already gave a notion what is the current "state of the art" of Ukraine's efforts towards building of the national innovation eco-system as well as the identified gaps and barriers. The overall observation is that there is no national consensus and effective coordination built with a leading thought of giving high-level priority in the policy agenda for establishment of the country's effective innovation ecosystem. Building of the favourable environment to strengthen the country's capacity to innovate and recognition of its overall importance has not been recognized by the public either, despite the fact the population in Ukraine is very well educated. All the noted observations speak in favour of "innovation policy making" in Ukraine being at very early stages. Moreover, based on the lessons learnt from the past, there is an ongoing scepticism among key STI actors that the above noted reforms and envisioned measures will remain at the conceptual stage and will never enter into force of the actual implementation.

The outcome of the planned measures stipulated by the above noted new legislation is yet to be seen, however, there are further efforts invested on behalf of the Ukrainian Office of Reforms under the Ministry Cabinet with regards to establishment of the National Innovation Ecosystem to be governed by the Council of Innovations, presiding by the Prime Minister of Ukraine.

Based on the conducted analysis of the innovation ecosystem of Ukraine, gaps and barriers have been identified to which solutions have been aligned.

Identified strengths:

❑innovation potential of R&D Institutions

❑ capacity to implement innovations

❑ quality of technical education

❑ access to EU grant resources for innovations (Horizon 2020)

❑ potential demand from Ukrainian business and EU SMEs, Global value chains

Identified barriers:

❑ gap between supply (R&D) and demand (Industry)

❑ insecure IPR

❑ challenging investment climate

❑ unwillingness to take risks connected to innovations

❑ lack of financial infrastructure

❑ regulatory barriers in specific industry sectors

❑ low entrepreneurship culture

❑ poor marketing of innovations

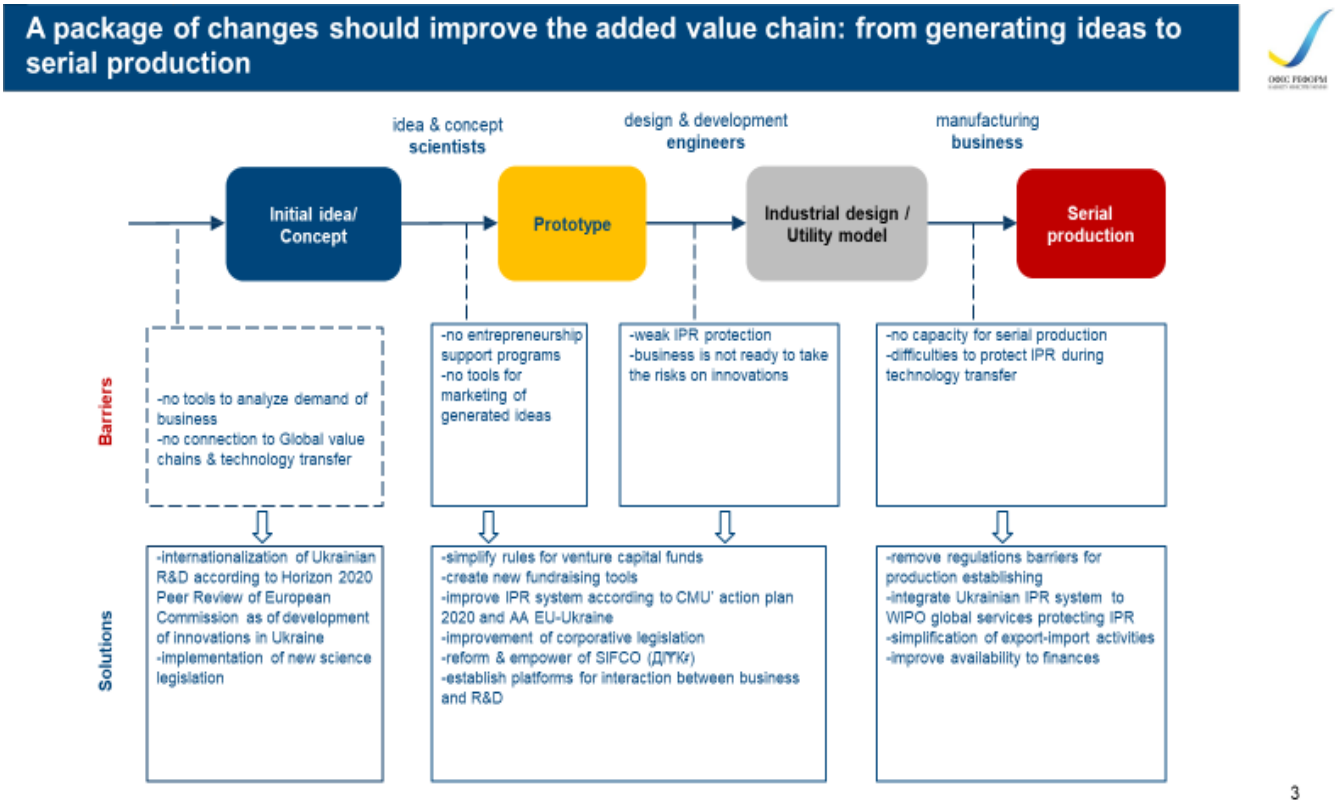


Figure 5: Source: Office of Reforms, Ukrainian Cabinet of Ministries, 2017

As already above noted, the National Innovation Ecosystem of Ukraine shall be governed by the Council of Innovations, comprised of the following Ministries/State Agencies:

❑ **Ministry of Economic Development and Trade of Ukraine (MEDTU)** to oversee:

- Providing support for realization of innovations in the real economy and promotion of start-ups and innovative enterprises;
- Development of cluster programs and smart specializations;
- Creating conditions for improving the national intellectual property rights protection system and promotion of the export of innovations;
- Improvement of innovation and business climate;
- Creating conditions for financing innovative projects in the real economy.

❑ **Ministry of and Education and Science of Ukraine (MESU)** to oversee:

- Creating conditions for the development of innovation and industrial parks;
- Development of EU programs on innovation and research Cooperation (Horizon 2020);
- Creating conditions for technology transfer;
- Support for Ukraine's integration into the European Research Area;
- The development of scientific parks as a platform for interaction between education and business;
- Development of a grant approach to funding research with the involvement of the National Council on Science and Technology Development.

❑ **State Agency for E - Governance of Ukraine (SAEU)** to oversee:

- Increasing the level of digitization of Ukrainian economy;
- Digital agenda of Ukraine’s Digital regulation.

Ukraine’s Council of Innovation shall also establish Innovations Development Office that will oversee implementation of the activities and measures assigned by the Innovation Council as well as all the related operations.

To endorse needed set of changes in several current Laws and proper utilization of existing framework to affect the innovation and business climate in Ukraine, the following steps are envisioned to be undertaken:

1. Establishment of a working group compiled of representatives of the Ministry of Economic Development and Trade, Ministry of Education and Science, R&D Institutes and businesses that shall act as a joint force working on the finalization of a set of changes;

2. Brand a set of changes that shall be further promoted by the designated communication strategy;

3. Create a set of amendments in lieu of Ukraine’s 2020 programme and EU recommendations;

4. Create a strategy and action plan for its implementation in coordination with the World Bank;

5. Conduct regular meetings of the Cabinet of Ministers to follow up on the latest developments;

6. Interact with Verkhovna Rada on all the relevant issues with regards to the changes of Laws and amendments as well as of implementation of the envisioned activities.

Furthermore, Pilot projects with businesses shall be launched during 2017, with a focus at:

❏ Innovation and Techno parks: Pilot Innovation, Science Park "Kyivska Polytechnika," Tech Innovation

❏ Clusters and Smart Specializations: Automotive, Agrifood, Logistic South via EU Danube region

❏ R&D: EU programmes (H2020, COSME), R&D centers of global and Ukrainian companies

Steps to support and create pilot projects

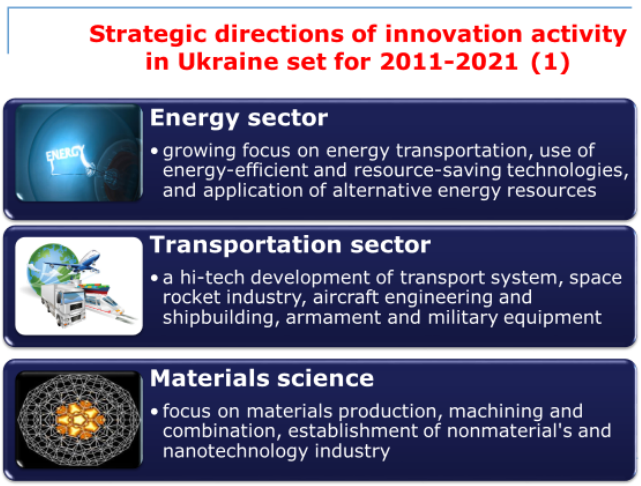
Table 1: Source: Office of Reforms, Ukrainian Cabinet of Ministries, 2017

Pilot on innovation Park	EU technical and financial programs, the Law on innovation and technology parks
Science Park **Kyivska Polytechnika**	Attracting international companies from R&D centers, changes to the Science Parks Law
AgTech Innovation	Establishing links with the EU (in particular with the Netherlands), support for funding from H2020, COSME
Automotive	Promoting the creation of a cluster with Germany, financial support and cluster programs of the European Commission
Agri-food	Participation in JRC platform of smart specialization, involving pilot funding from EU funds
Logistic South via EU Danube region	Fundraising through the Danube Region EU Program, inclusion in the European Commission's Smart Specializations Projects
H2020, COSME	MEDTU and MESU programs to increase support projects via EU funds such as H2020, COSME
R&D centers of companies	Creation of joint projects with universities, science parks and business on the opening of R&D centers

Figure 6 and 7: Source: Ministry of Science and Education of Ukraine

To progress with the implementation of the envisioned activities, the Office of Reforms of the Ukrainian Cabinet of Ministries set the tasks, actions and the responsible bodies in charge. The timeline set for completion of the tasks is period of June-December 2017.

Task	Actions	Responsible body	Timeline
1. Creation of the Council of Innovations of the Cabinet of Ministers of Ukraine and the Innovations development office	Decrees of the Cabinet of Ministers "On the Establishment of the Council for Innovations", "On the creation of Innovations development office"	Cabinet of Ministers	June 2017
2. A package of changes concerning innovation and Techno parks	Working group with high-tech business, Ministries. Development of the Changes to the Laws on Techno parks	Cabinet of Ministers MESU MEDTU	June - August 2017
3. Strategy for the development of high-tech industries	Cabinet of Ministers decree "On approval of the strategy for the development of high-tech industries"	MEDTU	June – August 2017
4. Law of Ukraine "On supporting of Innovation activities"	Development and submission to the Cabinet of Ministers of the draft Law "On Supporting Innovation Activity" for consideration by the CMU	MESU MEDTU	June-July 2017
5. Law of Ukraine "On the National Intellectual Property Protection System in Ukraine"	Development and submission to the Cabinet of Ministers of Ukraine of the draft Law of Ukraine "On the National Intellectual Property Protection System in Ukraine"	MEDTU	June-July 2017
6. Law of Ukraine «On Startups»	Development and submission to the Cabinet of Ministers of Ukraine of a draft law "On the support of Startups"	MESU MEDTU MinFin NCSE	July- October 2017
7. Creation of the Roadmap of integration of Ukraine to the European research area	Develop and approve the Roadmap for Integration to the ERA (including Horizon 2020)	NRNT MESU	June- December 2017



8. Law of Ukraine "On the Settlement of Certain Issues of Stimulating Activities in the Sphere of Technology Transfer"	Development and submission to the Cabinet of Ministers of Ukraine of the Law "On the Settlement of Certain Issues of Stimulating Activities in the Sphere of Technology Transfer	MESU MEDTU MinFin	June-August 2017

3.1 TECHNOLOGY TRANSFER IN UKRAINE

State Statistical Service of Ukraine (SSSU) collects data on technology transfer, with a focus at industrial companies only. According to the SSSU, in 2015, Ukrainian companies bought 1131 new technologies, while sold only 98 technologies. Less than 20% of these technologies were bought from abroad, the rest – from domestic organizations. 44% of new technologies were received in the form of new equipment, 38% - in the form of R&D results. Only 11% of the cases of technology transfer are associated with the purchasing of patents and obtaining the licenses. This means that technology transfer practice differs from the practice of developed countries, where this practice is related to the transfer of IPR. Another feature of Ukrainian situation is low level of technology transfers from foreign countries. This could be partially explained by the lack of financial resources and information about the possibilities, which exist abroad.

4 DONOR PROGRAMMES AIMED AT PROVIDING FUNDING TO SUPPORT INNOVATION PROGRAMMES IN UKRAINE

Traditionally, international donors are present in countries facing political and economic turmoil providing technical assistance and funding to support reforms towards stabilisation of the country and its economic development. The same applies to Ukraine, whereas 18 international financial institutions, donors, facilities and programmes are active in providing support in different areas:

1. European Bank for Reconstruction and Development (EBRD)	10. European Investment Bank (EIB)
2. KfW	11. Nordic Environment Finance Corporation (NEFCO)
3. Nordic Investment Bank (NIB)	12. World Bank (WB)
4. Eastern Europe Energy Efficiency and Environmental Partnership Program (E5P)	13. International Development Norway (IDN)
5. Deutsche Gesellschaft für Internationale Zusammenarbeit, GmbH (GIZ)	14. Global Climate Partnership Fund
6. Global Environment Facility (GEF)	15. Swiss Cooperation Office (SECO and SDC)
7. Swedish International Development Agency (SIDA)	16. U.S. Agency for International Development (USAID)
8. IFC Ukraine Residential Energy Efficiency Project	17. Sustainable Urban Demonstration Projects – SUDEP
9. United States Agency for International Development-USAID	18. EU Horizon 2020 programme

Ukraine has also established successful STI cooperation with the following international organisation and funds:

Ukraine-EU	Ukraine-NATO
International European Innovation Scientific and Technical Program "EUREKA"	U.S. Civilian Research and Development
European Organization for Nuclear Research (CERN)	
Organization of Black Sea Economic Cooperation (BSEC)	
International Centre for Scientific and Technical Information (ICSTI)	Joint Research Centre (JRC), European Commission

4.1 UKRAINE IN LIEU OF THE EU PARTNERSHIP

The cooperation in between EU and Ukraine has been established within the framework of the European Neighbourhood Policy and its eastern regional dimension, the Eastern Partnership, which key goal is to bring Ukraine closer to the EU. The European Neighbourhood Instrument (ENI) is the EU financial instrument dedicated to the Neighbourhood for the period 2014-2020. Other funding sources are the thematic programmes, focused on human rights and civil society. As part of the EU's €11 billion package supporting Ukraine in April 2015 over period of seven years (referring to all measures combined coming from the EU budget and EU based international financial institutions (IFIs) in addition to the significant funding being provided by the IMF and World Bank)[2], the European Commission has adopted a €70 million Special Measure for Private Sector Development and Approximation, which shall notably help SMEs across the regions of Ukraine. This measure is complemented by a €40 million loan guarantee facility channelled through the Neighbourhood Investment Facility (NIF), which will also ease access to finance for Ukrainian businesses. EU assistance to Ukraine takes the form mainly of country Action Programmes funded every year under the ENI. Ukraine also benefits from regional and multi-country Action Programmes, which have also been funded under the same above noted programme.[3]

Action Plan of Ukraine on participation in Horizon 2020

1. Establishment of a joint commission on the program implementation coordination with the participation of responsible central executive authorities, NASU, etc.
2. Establishment of a structural unit responsible for Horizon 2020 implementation
3. Functioning of Program Committees Delegates; selection of the delegates
4. NCP activities' support
8. Development of a Horizon 2020 National Portal (www.h2020.com.ua)
9. Raising awareness of society on Horizon 2020 programs and activities
10. (Promotion, Information Campaign on the permanent basis)
11. Peer review of National science and innovation system
12. Adjustments of the national legal framework to European standards, improvement of R&D legislation (taxes, obligatory currency exchange, etc.)
13. Development of Science & Business partnerships
Involving Ukrainian scientific diaspora in Ukrainian R&D activities

Figure 8: Source: Ministry of Science and Education of Ukraine

Furthermore, the EU supports the integration of Ukraine into the European Research Area (ERA) through the association of Ukraine to the H2020 and the EURATOM research programmes. Such association allows Ukrainian researchers, businesses and innovators to apply to all funding schemes of both programmes, across the whole research and innovation value chain, from fundamental research up to pre-commercialization activities, on equal terms with their EU counterparts.

[2] European Commission, Support package for Ukraine, http://ec.europa.eu/archives/commission_2010-2014/president/news/archives/2014/03/pdf/20140306-ukraine-package_en.pdf

[3] European Commission, European Neighbourhood Policy And Enlargement Negotiations web pages, https://ec.europa.eu/neighbourhood-enlargement/neighbourhood/countries/ukraine_en

EU is providing support to the integration of Ukraine into the European Higher Education Area and to restructure and modernise the education system by engaging Ukrainian's key actors in EU capacity-building and academic mobility programmes such as Tempus and Erasmus+. Such programmes are enabling international and intercultural experiences of students and staff, familiarisation with new learning and teaching methods, and strengthening of competences and networks, which Ukraine is actively utilising.

In September 2016, the European Commission's Joint Research Centre signed a Research Framework Agreement with the National Academy of Sciences of Ukraine, aimed at strengthening scientific cooperation, in particular in the following areas: smart specialisation, the Danube Strategy, nuclear safety and security, remote sensing, food security and food safety, energy.

It is worth to mention that 18-22% of Ukrainian R&D were financed from abroad in recent years. Official statistics does not provide distribution of these money by the source countries but substanial part of funding was provided by the EU on bi-lateral or multi-lateral basis.

4.1.1 EXAMPLE OF A COUPLE OF ONGOING INITIATIVES AIMED AT SUPPORTING INNOVATION IN UKRAINE

4.1.1.1 Juncker Plan: EUR 820 million for SMEs as EIF and ProCredit double support for innovative companies

The European Investment Fund (EIF) and ProCredit Group are providing an additional EUR 450 million to innovative small and medium-sized companies (SMEs), bringing a total of EUR 820 million to companies in eleven countries.

The EIF-backed financing is now available through ProCredit banks from Germany to Georgia and targets companies using new technologies and producing new products in one of the eleven countries where the facility is available (Germany, Albania, Serbia, FYROM, Bosnia and Herzegovina, Bulgaria, Greece, Romania, Moldova, Ukraine and Georgia). To date, agreements with ProCredit have already supported more than 1,000 innovative SMEs and many more will be financed in the coming years.

These agreements were signed under the European Commission's InnovFin initiative, backed by the EU's research and innovation programme H2020. The InnovFin initiative enables participating banks to provide loans to innovative companies with the support of a guarantee provided by the EIF. The agreements signed in EU member state countries were made possible by the support of the European Fund for Strategic Investments (EFSI). The EFSI is the central pillar of the European Commission's Investment Plan for Europe, also known as the "Juncker Plan".

4.1.1.2 EBRD promotes innovation and low-carbon postal logistics in Ukraine

In the previous paragraph the transport sector has been noted as one of the strategic sectors Ukraine has chosen to further develop and innovate. EBRD, being the largest international donor in Ukraine in terms of the provided level of funding and investment (to date, the Bank has made a cumulative commitment of almost €12 billion through 369 projects since the start of its operations in the country in 1993), extended a US$ 10 million loan to Ukraine's TC Meest Express LLC (Meest Express), a leading provider of postal and logistic services for worldwide delivery to Ukraine, eastern Europe and the CIS region. The loan is part of the EBRD's Direct Financing Framework designed to provide easier access to funding with longer maturities for local businesses. Up to US$ 1.8 million of the loan is provided under the Green Logistics Programme (GLP) initiated by the EBRD and the Global Environment Facility (GEF) and represents a strategic approach to decarbonise the logistics sector across the Bank's countries of operations. The GLP encourages private sector players to introduce best practices in carbon reduction to combat the highly inefficient energy use the region is known for.

4.1.1.3 UNINI fora building the Innovation ecosystem in Ukraine

Ukraine Norway Innovation Networking Initiative (UNINI) of the International Development Norway aims to contribute to the competitiveness of the economy in Ukraine by promoting and supporting innovation infrastructure and networks, SMEs development and investment opportunities in SMEs and start-ups with innovative business idea. The project purpose is to develop innovation ecosystem with an interplaying set of local, national and international services and infrastructure to secure sustainable support to innovation and entrepreneurship in Ukraine. This is a 3-year (2014-17) project funded by the Norwegian Ministry of Foreign Affairs.

4.1.1.4 World Bank Boosts Support for Ukraine Export Development

The World Bank approved a US$ 150 million loan for the Access to Long Term Finance Project that will support Ukraine's export-oriented small and medium enterprises (SMEs). Many obstacles limit Ukraine's ability to export and lack of quality financing is one of them. Access to longer term finance for small and medium enterprises shall help the country grow its exports and contribute to reviving economic growth in Ukraine.

5 CONCLUSIONS

Ukraine has **started the process of reforms** of the **R&D&I** system **aimed at the decentralisation** of the current system and developing of the capacities and conditions for building the competitive advantage at the European scale and beyond. The reforms are closely interconnected **aimed at endorsing of a culture of a change** that requires a broad multi-stakeholder engagement and coordination followed by **a firm commitment** and **a sense of ownership.** The envisioned regulations, measures, tasks and **actions** that shall be **implemented by the end of 2017** towards **establishment of national innovation ecosystem** in Ukraine **represent an important step** towards realisation of the set goals.

The **effective governance and coordination** of all **relevant R&D&I actors** is crucial for implementation of the envisioned activities and its sustainability. **Policy making** with the tradition of endorsing ambition plans that **usually remains at the conceptual level** shall become legacy of the past. **More effective and strategy oriented policy making** shall become **a common practice in Ukraine** to shorten the process from its endorsement to adoption and actual implementation.

Without a clear strategy build based upon notion on a single country strengths, looked from the perspective of a competitive advantage for competing in the international markets, **little progress can be achieved long-term** and the efforts and resources invested will be wasted. **Smart specialisation is a tool** for building the above noted competitive advantage, more effective STI strategies **towards inclusive, sustainable growth.**

To aspire EU membership and strengthen stability, security and well-being, **EU has recognised that neighbouring countries shall be supported and take participation in EU initiatives** helping them modernising and transforming their own economies. Therefore, **EU neighbourhood and enlargement policies** are putting **more attention to the smart specialisation. The Joint Research Centre** of the European Commission (JRC) has been **implementing Enlargement and Integration Action (E&IA)** in lieu of **support to new member states and Horizon 2020 associated countries**, by conducting specialised workshops, conferences, advanced training courses, peer reviews and other activities **facilitating the participation of non-EU partners** into the **EU smart specialisation community.**

In lieu of **establishment of the national innovation ecosystem**, Ukrainian policy makers are **putting a focus at high-tech economy**, meaning, the innovation development shall be built on foundations of the high technology. However, **innovation is not only about high technology** as innovative enterprises can be found in low as well as high technology industries. Therefore, it is essential **to understand the drivers of innovation in all enterprises** and policy should focus on all potential innovators.

Even though **it was hard to access information** related to **the latest development** in the field of **Technology Transfer in Ukraine**, the overall conclusion is that **creation of technology transfer centres** similar to the **existent in the European Member States** shall be a high priority on the Ukraine's government agenda, including intellectual property rights **(IPR) related issues and practices.**

For **transferring of the good practices**, there are **three EU instruments** available. **The first instrument** is the **European Training Foundation (EFT),** which is **focusing at the capacity building**

and the development of the human capital through endorsing reforms in systems of education, training and labour market and providing of a technical advice on the same topic (in the case of technical advice, **ETF is carried out through EU's Instrument for Pre-Accession, the European Neighbourhood Instrument and Development Cooperation). Secondly**, the E**astern Partnership Territorial Cooperation EaPTC Programmes**, which **brings together six Eastern partnership countries** aimed at broader stakeholder **collaboration joining forces for solving common challenges. And thirdly**, **participation to S3 Platform of the JRC** and all related activities in terms of further sharing of best practices, strengthening of the knowledge base, capacity building and partnerships.

The participation to European association and networks brings lot of value as it enables access to particular expertise and knowledge base developed, exchange of practices, access to information, experts, networks and funding. In Annex 1 of this brief, **several of the European associations have been identified as matching peers for Ukraine** as they play **a relevant role in terms of the regional development in the field of R&I,** smart specialisation, successful establishment and management of S&T parks, incubators and accelerators, access to EU and other type of funding.

The links with scientific diaspora abroad shall not be neglected, but on the opposite, they **shall be used as ambassadors** by which **country's excellence will be further promoted** and by leveraging on their **knowledge, influence and networks** they would **actively contribute toward** building a bridge **bringing knowledge to the market.**

Furthermore, **R&I-LINKS2UA project will continue to support the transition of Ukraine towards the knowledge-based economy** and building of the innovative eco-system **through sharing of the relevant expertise aligned with target capacity building actions** that shall help Ukrainian stakeholders to accelerate the process of bringing knowledge to market.

6 RECOMMENDATIONS

Based on the conducted research summarised in this brief and the above noted conclusions, the following recommendations are proposed for further consideration aimed at long-term outcomes resulting in 1) quality of R&D/STI outputs and impact; 2) capacity to exploit international donor and H2020 funds; 3) knowledge exchange with the international R&D community and the private sector; and 4) traction towards talents and members of the diaspora:

- Through the active coordination of all relevant STI actors, the envisioned Laws (Law on Scientific and Technical Activity, Law on supporting Innovation activities, Law on the National Intellectual Property Protection System in Ukraine, Law of Ukraine on Start-ups, Law of on the Settlement of Certain Issues of Stimulating Activities in the Sphere of Technology Transfer) and supporting measures shall be endorsed as planned and moreover, implemented, pursuant to the Action Plan 2017 (so called 8 QUICK WINS for support of innovation in Ukraine) of Ukraine's Office of Reforms of the Cabinet of Ministries;
- The effective governance is crucial to secure successful implementation as well as sustainability of the innovation ecosystem, hence the envisioned restructuring of the current state STI governing body is strongly supported. Furthermore, the establishment of the Innovations Development Office within the framework of National Council of Innovations in

Ukraine shall contribute to more effective and operational implementation of envisioned activities driven by a sense of ownership;

- The above noted bodies shall secure involvement of all relevant STI actors in the policy making process from very early stages, from initial public discussions about changes that are planned to be endorsed, to design, adoption and implementation of the measures to be able to understand all the drivers of innovation in the system and how to properly address gaps and strengths. As already above noted in conclusions, innovation is not only about high technology as innovative enterprises can be found in low as well as high technology industries. Therefore, it is essential to understand the drivers of innovation in all enterprises and policy should focus on all potential innovators;
- Ukraine government shall stimulate creation and support of technology transfer centres, including more active involvement of Ukrainian organisations in the activities of the corresponding European networks (EEN, for instance). Joint initiative with the EU on establishing technology transfer centres in the key regions of the country shall also be considered;
- The state shall support the process of patenting abroad the most promising domestic patents on competitive basis;
- Numerous international organisations have been active in Ukraine for many years now. To maximise the impact, practise and knowledge exchange, one of the new established STI bodies shall be in charge of organising regular coordination meetings and further follow up activities;
- Consideration for allocation of competitive funding is strongly recommended, which shall also include criteria related to the "international opening" of the applicants to promote the "culture of excellence" in the national research community;
- Mobilise members of the scientific diaspora to market the country's excellence and incentivise them to actively contribute toward building a bridge bringing knowledge to the market;
- Identify competitors and profile of the STI actors to better market country excellence and develop stronger links and collaborations with other organisations abroad;
- Incentivise participation in EU professional associations and peer clubs (more information about relevance to join networks and well as provided list of some considered as relevant can be found in Annex 1 of this document);
- Reinforce/establish the presence in Brussels at national or organisation level to be able to access pre-information on trends and to develop intelligence on funding opportunities and policies;
- To improve access to finance, consider endorsement of fellowship, grant and innovation voucher schemes to make further step towards exploitation of results and to progress in innovation activities. Grants and vouchers shall be integrated in an intervention value chain. Beneficiaries of grants can benefit from vouchers, which are faster to get and easier to managed;
- With regards to the above noted access to finance, consider join Business Angel Networks and Clubs that would help foster the investment climate as well as establishment of a venture capital/private equity ecosystem in the country offering not just the funding tools but also mentoring to innovative SME's as well as access to global networks and markets;
- Consider ongoing competence building actions. Proposed topics to be covered (training) could include: exploitation of R&D results at international level, communication, marketing

of R&D results, public speaking and project preparation. Summer and winter schools could be organised in the regions, in different locations across the country;

- Organisation of an annual event to showcase regional/national excellences and facilitate matchmaking. A competition could be organised to reward researcher teams/innovators from the region providing solutions to relevant challenges selected at regional level. The winning team shall be awarded with funds to allow them to make a step forward in the implementation of the proposed solutions. The award could be part of a larger international event providing opportunities to present the latest results to an international audience of scientists, innovators, representatives of enterprises, investors and multinational companies. The possibility to support more events shall be considered based on the outcomes of the first pilot event;
- Endorsement of Regional/National Excellence Award.

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Annexes

Use annexes to provide supporting information, such as statistics, questionnaires, agendas, list of participants, etc. if applicable.

Annex I – Proposed list of the European associations to be joined by Ukrainian organisations

Relevance of membership to European association and networks

Active participation to European networks and associations gives an access to the knowledge base, partners, practices, experts, institutions and furthermore, builds a visibility and an opportunity for *„raising a voice"* and providing an input either via thematic papers, events or other aimed at reaching the target group of policy makers or broader group of stakeholders. The membership to the above noted networks is often observed and analysed from the perspective of the membership fee, however, apart from the above noted added value of becoming a member, there are saving of costs associated, which are often not taking into consideration such as:

- Reduced (or no) fees to participation to number of events
- If there is no possibility to participate at events or relevant meetings, the main information and conclusions will be shared with members on behalf of the association (hence, saving of costs of travels applies)
- Free access to relevant journals and thematic readings
- Free advertisement through the association and many other.

Moreover, the analysis of the European Association of the Regional Development Agencies (EURADA), which was conducted for MIRRIS project (Mobilising Institutional Refoms in Research and Innovation Systems, http://www.mirris.eu/SitePages/default.aspx) showed how an active participation to the EU networks matters as organisations that exploited such networks were awarded with more EU projects. Based on a survey of FP7 beneficiaries conducted by EURADA, it became evident that European associations and networks based in Brussels are involved in more than 450 projects, they have been awarded by approximately €450 million, i.e. an average of nearly €1 million per project. More projects result in additional partnerships, more funding, better conditions and increased know how. All of this creates more motivation and ultimately visibility and appreciation at the international level.

The proposed list of the European associations that are considered relevant for the Ukrainian stakeholders for achieving the goals noted in this brief are as follows:

NAME OF ORGANISATION	MISSION	CONTACT PERSON AND INFORMATION	WEB PORTAL
European Association of Regional Development Agencies (EURADA)	Connects members with other Regional Development Agencies (RDAs), business partners and authorities through their network of 69	Esteban Pelayo, Director Avenue des Arts 12 Bte 7 1210 BRUSSELS – BELGIUM Tel: +32 2 218 43 13	http://www.eurada.org/

	members throughout 21 countries in the European Union and beyond. EURADA promotes members' initiatives and policies but also informs and helps with anything related to EU policies and ways of funding.	Fax: +32 2 218 45 83	
European Business Network (EBN)	EBN is a network of around 150 quality-certified EU|BICs (business and innovation centres) and 100 other organisations that support the development and growth of innovative entrepreneurs, start-ups and SMEs. EBN is also a community of professionals whose day-to-day work helps these businesses to grow in the most effective, efficient and sustainable way.	Robert Sanders, Head of International office Avenue de Tervuren, 168, 1150 BRUSSELS, BELGIUM Tel: +32 2 772 89 00 Fax: +32 2 772 95 74	http://ebn.be/
European Regions Research and Innovation Network (ERRIN)	Founded in 2001, ERRIN is a unique Brussels-based platform of more than 120 regional stakeholders organisation most of whom are represented by their Brussels offices. ERRIN promotes knowledge exchange between its members, focusing on joint actions and project partnerships to strengthen regional research and innovation capacities. Through these actions ERRIN seeks to contribute to the implementation of the Europe 2020 Strategy, the Innovation Union flagship initiative and Smart Specialisation strategies.	Richard Tuffs, Director Rue du Luxembourg 3, 1000 BRUSSELS, BELGIUM Cell: +32 496 305 436 Tel: +32 250 33 554	http://www.errin.eu/about-us
European Association of Research and Technology Organisations	EARTO is a non-profit international association established in	Muriel Attané, Secretary General Rue Joseph II, 36-38	http://www.earto.eu/about-earto.html

(EARTO)	Brussels, where it maintains a permanent secretariat. EARTO Mission: to promote and defend the interests of RTOs in Europe by reinforcing their profile and position as a key player in the minds of EU decision-makers and by seeking to ensure that European R&D and innovation programmes are best attuned to their interests. The Association represents the interests of about 350 RTOs from across the European Union and "FP-associated" countries (91 direct members, some of which are associations regrouping several RTOs).	B-1000 BRUSSELS, BELGIUM Tel: +32.2-502 86 98 Fax: +32.2-502 86 93	
Technology Innovation International (TII)	TII brings together innovation and technology consultants, technology brokers and intellectual asset advisors, university and research centre transfer offices, regional development agencies and chambers of commerce, science parks, innovation centres and incubators, contract research organizations and engineering consultants, government ministries and agencies and sectoral professional organizations.	Christine Robinson, Secretary General 44, rue des Palais B-1030 BRUSSELS, BELGIUM Tel: 352-28 48 78 20 24	http://www.tii.org/index2.php?m=tii_en-1-home
International Association of Science Parks and Areas of Innovation (IASP)	IASP is the worldwide network of science parks and areas of innovation. They connect professionals managing science, technology and research parks (STPs)	Luis Sanz, Director General C/ Marie Curie, 35, (PTA) - 29590 - Campanillas - Málaga (Spain) Tel: +34 95 202 83 03	http://www.iasp.ws/

	and other areas of innovation and provide services that drive growth and effectiveness for our members. Their members enhance the competitiveness of companies and entrepreneurs of their cities and regions, and contribute to global economic development through innovation, entrepreneurship, and the transfer of knowledge and technology.	Fax: +34 95 202 04 64	
Informal Group of RTD Liaison Offices (IGLO)	IGLO is an informal association of Brussels-based non-profit R&D Liaison Offices. The aim of IGLO is to facilitate and enhance the interaction, information exchange and co-operation between Members of IGLO, their national research systems and the European institutions on issues related to EU RTD the Framework Programme.	Yngve Joseph Foss, IGLO Secretariat Rue du Trône, 98 1050 BRUSSELS, BELGIUM Tel: + +32 (0)2 549 0 980	http://www.iglortd.org/
European industrial research management association (EIRMA)	EIRMA aims to provide Best Practices and Networking on R&D and Innovation Management for its member companies. It is a peer-to-peer learning organisation for R&D and Innovation professionals. The Association was founded in 1966 with the support of OECD.	Michel Crispi, Secretary General Rue de la Loi 81 A - 1040 BRUSSELS, BELGIUM Tel: +32 (0) 2 233 11 80 Fax: +32 (0) 2 231 08 35	http://www.eirma.org/

NOTE. Poltava State Agrarian Academy is already a member of EURADA. Ukraine has established a liaison office and is a member of IGLO since June 2017.