

# INDUSTRY-SCIENCE LINKAGES AND COLLABORATION IN THE INNOVATION PROCESS

## COMMON CHALLENGES AND DIFFERENCES

### BETWEEN 5 COUNTRIES

**International Conference "Better Policies for More  
Innovation: Assessment - Implementation -  
Monitoring,,**

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Annamária Inzelt DSc  
*IKU Innovation Research Centre at FR Co. and  
University of Szeged, Hungary*

Email: [annamaria.inzelt@uni-corvinus.hu](mailto:annamaria.inzelt@uni-corvinus.hu)  
[inzelt.annamaria@penzugyutato.hu](mailto:inzelt.annamaria@penzugyutato.hu)



Member of  
Financial  
Research Corp.  
H-1023  
Budapest,  
Felhévizi út 24.



# Influencing factors of recommendations

Year of Mission

Armenia (2013)

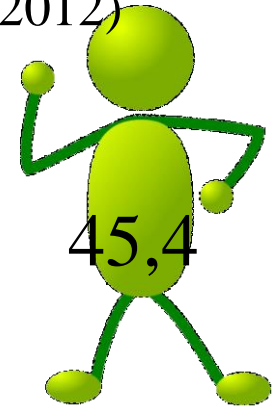
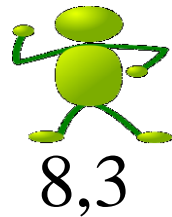
Tajikistan (2015)

Belarus (2010)

Kazakhstan (2011)

Ukraine (2012)

Population



GDP/ Capita



<b>R&amp;D/GDP</b>	0.27	0.12	0.70	0.16	<b>0.74</b>
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<b>Patent Applications</b>	125	2	1,489 (3)	1,824 (2)	<b>2,856 (1)</b>
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<b>Patent / capita</b>	41.7	0.2	<b>156,7 (1)</b>	105,4 (2)	62,9 (3)
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# Main topics of recommendations for ISLs and collaboration in NIS

- I. Policy focus
- II. Mechanisms and incentives for implementation
- III. Instruments for informed policy-making
- IV. Intellectual Property Matters
- V. Technology transfer



# I. Policy focus 1/5

common

Key roles of innovation policy are

- to formulate policy targets,
- to set rules, institutional framework
- to provide incentive structure

Innovation policy targets and mechanisms should emphasize the importance of ISLs and introduce relevant programmes

- Strengthen the production of science by reaching the *critical mass of financial resources for research in priority fields*
- Employ the tools for *informed policy-making*



## Policy focus 2/5

common

For better STI policy-making has to broaden the *participating actors*

- involvement of *other ministries* for matching the policies
- wider participation of *business actors*

The governments have difficulty in appreciating the *distinction* between

- (1) an autonomous institution supported by the government, using state resources, and
- (2) an institution under the direct command of the government currently in the office.

**The autonomy of science organisations is crucial**

Absolutely worthwhile to invest in science in all investigated countries, with a focus on nurturing ISLs, developing TT and commercialization capabilities.



## Policy focus 3/5

<b>Belarus</b>	Undertake a critical assessment of the <i>barriers to the emergence of new technology-based firms</i> (e. g. academic spin-offs) and to the <i>growth</i> of existing ones
<b>Kazakhstan</b>	<ul style="list-style-type: none"><li>• <i>Raise the attractiveness</i> to private entities of participating in government financed projects or cooperation arrangements</li><li>• The widening of the <i>scope of horizontal policies</i> and instruments at the expense of the narrowing of vertical ones.</li><li>• <i>Identify bottlenecks and barriers</i>, concerning the interaction of actors from different institutional sectors and their motivations.</li></ul>



## Policy focus 4/5 - Armenia

- Promoting *cross-border linkages* between Armenian science and innovative foreign companies, thus creating a source of income and facilitating access to global networks of knowledge
- Co-designing FDI policy and STI policy to *attract more foreign investors employing Armenian scientific assets*
- *Sufficient autonomy* to HEIs
  - *Harmonizing the Law* on HEI and the Law on state non-commercial organizations to remove legal barriers to ISLs;
  - *Providing equal opportunities* to HEIs to revise their Charters (engage in entrepreneurial activities)



# Policy focus 5/5 - Tajikistan

Innovation policy should

- seek to *strengthen adaptation-based* innovation capabilities by encouraging ESLs, and support the demand for novelty.
- devote attention to *foreign technology transfer related ESLs* as well as commercialization of domestic scientific results
- *Developing new strategies* for important fields for the Tajikistani economy, where current *physical research infrastructure is outdated but with good intellectual capacities*
- *Reclassifying techno parks* from non-commercial organizations to not-for-profit organizations (rights to sell their products)
- *Developing new legal and organizational forms* for research institutes to transform into TSIs in either a for-profit or not-for-profit form





## II. Mechanisms and incentives for implementation 1/4 common

Government agencies can and should *facilitate businesses* to arrange linkages with science but *cannot replace* them with orders from ministries

- The authorities should establish policy mechanisms that *stimulate direct collaboration* between industrial and science actors *without passing through* the ministries / state S&T programmes, and allocating public funds in support of linking R&D activities

*Transparency is crucial to the success of programs and calls for tender.*



# Mechanisms and incentives for implementation 2/4

common

- The authorities should introduce *specific measures*
  - to develop the *capabilities* (infrastructure, STI management) of HE and PROs to perform well different missions;
  - to support and facilitate the development of *appropriate strategies* in relevant organizations
  
- The authorities should *develop instruments that target ISLs*, where the provision of *public financing depends* on the existence of collaboration
  
- *Development of matchmaking* and other intermediary *services*



# Mechanisms and incentives for implementation 3/4

Belarus	<ul style="list-style-type: none"><li>• Design targeted policy measures <i>to improve economic conditions</i> for the development of <i>new technology-based companies</i></li><li>• Introduce instruments for targeted <i>support for innovative start-ups</i> to facilitate their growth and integration in the economy</li></ul>
Kazakhstan	<p>Introduce <i>horizontal</i></p> <ul style="list-style-type: none"><li>• policy instruments that specifically target ISL, such as <i>technology platforms</i>;</li><li>• actions targeting <i>young knowledge-based small firms with high potential</i> for linking science and markets, and to the development of innovative networks and <i>local industry clusters</i></li></ul>
Ukraine	<ul style="list-style-type: none"><li>• Facilitating <i>access to outsourced</i> legal and patent service-providers</li><li>• Strategic I-S collaboration <i>with co-funding</i> of stakeholders</li><li>• <i>Cluster-based interventions</i> for strengthening linkages between start-ups, established companies, and research organizations</li><li>• Small-scale projects to encourage ISLs with limited resources but potentially large <i>demonstration effects</i>.</li><li>• The introduction of a <i>voucher scheme</i>, for innovative solutions to SME problems</li></ul>



# Mechanisms, incentives for implementation 4/4

Armenia	Encouraging <i>HE graduates to establish start-ups</i> , so new firms linked to science emerge
Tajikistan	<ul style="list-style-type: none"><li>• University professors should be encouraged <i>to lecture at companies</i>, and discuss topics of mutual interest;</li><li>• Providing specific support to ESLs <i>to lead to successful adaptation</i>, and penetration of foreign technology.</li><li>• Relevant ministries can organize a series of <i>workshops for E-S actors to discuss</i> relevant topic and can <i>obtain information</i></li><li>• Expanding <i>competitive funding</i> for R&amp;D and making it conditional on the establishment of <i>collaborative ESLs</i></li><li>• Offering special incentives for <i>FDI to use local science capabilities</i></li></ul>



### III. Instruments for informed policy-making 1/3

common

*Evidence-based policy making and the development of a strategy for research organizations requires good data, indicators, evaluation initiatives. – Some seeds are present.*

The authorities should

- introduce internationally comparable *data collection* methods and *indicators measuring capabilities, performances and linkages*
- *go beyond traditional R&D indicators* include the measurable effects of external linkages, commercialization and TT activities, and others



# Instruments for informed policy-making 2/3

common

The authorities should promote both *internal and external evaluation* on a periodic basis by international standards *on*

- *government agencies*
- *research organizations*

*Evaluation criteria* for research organizations has to cover

- scientific performance,
- scientific assets,
- physical and human capabilities,
- governance and management,
- **linkages with industry.**

**The results of evaluation should**

- **widely *disseminate***
- **lead to *decisions on strategy* formulation and policy changes, with clear impact on the allocation of *financial support***



## Instruments for informed policy-making 3/3

<b>Kazakhstan</b>	<ul style="list-style-type: none"><li>• Annual <i>cross-sectoral evaluation of ISL</i> could be linked to the NIF carried evaluation on the NIS and <i>combine self-assessment</i> of the key organizations and institutions and their activities.</li><li>• The evaluation should seek <i>what motivates</i> and what hinders motivations and linkages among innovation stakeholders</li></ul>
<b>Armenia</b>	State supported <i>technology transfer offices</i> should be <i>evaluated</i> periodically to assess whether such assistance should continue.
<b>Tajikistan</b>	On the base of a thorough evaluation Tajikistan has to <i>shift resources away from low priority areas of weak performance.</i>



## IV. Intellectual Property Matters 1/2 common

Legal regulation ✓

Internal regulation

The *granting autonomy* to research institutions with respect to IPRs is crucial

- Develop and put in place *guidelines for R&D performing organizations* that help them to develop their own intellectual property guidelines
- The *internal intellectual property policies* have to
  - provide clear and strong *incentives to the inventor* (individual or teams) ensuring that can share of the rewards (royalties)
  - *regulate the ownership of research results*, engagement with third parties in employee contracts;
  - support *training* of researchers and staff involved in the research process and commercialization of IPRs in R&D performing organizations





## Intellectual Property Matters 2/2

<b>Kazakhstan</b>	The authorities should clearly define the options for <i>transferring of ownership of publicly funded research</i> results from the state to the agent performing the research, down to the level of the individual inventor;
<b>Armenia</b>	<ul style="list-style-type: none"><li>• Strengthening the <i>capacity of the IP Agency</i> to offer broader services to its clients.</li><li>• Designing a scheme to <i>support patenting</i> that includes advice on whether to seek <i>international protection</i> and grants to partly cover the associated costs</li></ul>
<b>Tajikistan</b>	<ul style="list-style-type: none"><li>• Increasing <i>IPR awareness</i> among researchers, professors, students and scientific organizations</li><li>• <i>Training support</i> for specialists in IP, including patent attorneys</li><li>• Support for domestic inventors for <i>patenting abroad</i></li></ul>



## V. Technology transfer... 1/2 common

... requires the creation of *dedicated support institutions* & a system of incentives that encourages the *involvement of academic staff in the commercialization* of research outputs.

- *Support the development of intermediaries* (TTOs and stand alone innovation brokers) that facilitate ISLs.
- Provide *initial public funding* at the early development stages before technology transfer activities can become profit making.
- Introduce measures to *increase knowledge transfer capacity*, by promoting effective intermediating services and skills, and initiatives to encourage internal development
- *Specific training efforts*
  - for upgrading technology transfer management capabilities
  - on licencing and research contracts and intellectual property related issues



## Technology transfer 2/2

<b>Belarus</b>	Expanding the <i>scope of professional TT services</i> and developing <i>model contracts</i> and related decision-making support tools to R&D organizations.
<b>Ukraine</b>	Granting subsidies for research commercialization activities <ul style="list-style-type: none"><li>- in the form of <i>knowledge transfer grants</i> or</li><li>- small share of total research budgets</li></ul>
<b>Tajikistan</b>	Facilitating the employment by scientific organizations of <i>experienced (foreign) technology transfer managers</i> on a temporary basis to organize on-the-job training, and develop revenue sources to upgrade their physical and personnel capabilities and improve their commercial attractiveness



**Thank you for your kind  
attention!**

Email: [annamaria.inzelt@uni-corvinus.hu](mailto:annamaria.inzelt@uni-corvinus.hu)  
[inzelt.annamaria@penzugykutato.hu](mailto:inzelt.annamaria@penzugykutato.hu)

[www.penzugykutato.hu/en/iku](http://www.penzugykutato.hu/en/iku)