Innovation Research Centre

INDUSTRY-SCIENCE LINKAGES AND COLLABORATION IN THE INNOVATION PROCESS

COMMON CHALLENGES AND DIFFERENCES BETWEEN 5 COUNTRIES

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Influencing factors of recommendations

Year of Mission	Armenia (2013)	Tajikistan (2015)	Belarus (2010)	Kazakhstan (2011)	Ukraine (2012)
Population	3.0	8,3	9,5	17,3	45,4
GDP/ Capita	3,620	1,114	8,040	12,267	3,083
R&D/GDP	0.27	0.12	0.70	0.16	**0.74**
Patent Applications	125	2	1,489 (3)	1,824 (2)	**2,856 (1)**
Patent / capita	41.7	0.2	**156,7 (1)**	105,4 (2)	62,9 (3)

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

Belarus	Undertake a critical assessment of the *barriers to the emergence of new technology-based firms* (e. g. academic spin-offs) and to the *growth* of existing ones
Kazakhstan	• *Raise the attractiveness* to private entities of participating in government financed projects or cooperation arrangements • The widening of the *scope of horizontal policies* and instruments at the expense of the narrowing of vertical ones. • *Identify bottlenecks and barriers*, concerning the interaction of actors from different institutional sectors and their motivations.

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	• Design targeted policy measures *to improve economic conditions* for the development of *new technology-based companies* • Introduce instruments for targeted *support for innovative start-ups* to facilitate their growth and integration in the economy
Kazakhstan	Introduce *horizontal* • policy instruments that specifically target ISL, such as *technology platforms*; • actions targeting *young knowledge-based small firms with high potential* for linking science and markets, and to the development of innovative networks and *local industry clusters*
Ukraine	• Facilitating *access to outsourced* legal and patent service-providers • Strategic I-S collaboration *with co-funding* of stakeholders • *Cluster-based interventions* for strengthening linkages between start-ups, established companies, and research organizations • Small-scale projects to encourage ISLs with limited resources but potentially large *demonstration effects*. • The introduction of a *voucher scheme*, for innovative solutions to SME problems

Mechanisms, incentives for implementation 4/4

Armenia	Encouraging *HE graduates to establish start-ups*, so new firms linked to science emerge
Tajikistan	• University professors should be encouraged *to lecture at companies*, and discuss topics of mutual interest; • Providing specific support to ESLs to *lead to successful adaptation*, and penetration of foreign technology. • Relevant ministries can organize a series of *workshops for E-S actors to discuss* relevant topic and can *obtain information* • Expanding *competitive funding* for R&D and making it conditional on the establishment of *collaborative ESLs* • *O*ffering special incentives for *FDI to use local science capabilities*

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

Kazakhstan	• Annual *cross-sectoral evaluation of ISL* could be linked to the NIF carried evaluation on the NIS and *combine self-assessment* of the key organizations and institutions and their activities. • The evaluation should seek *what motivates* and what hinders motivations and linkages among innovation stakeholders
Armenia	State supported *technology transfer offices* should be *evaluated* periodically to assess whether such assistance should continue.
Tajikistan	On the base of a thorough evaluation Tajikistan has to *shift resources away from low priority areas of weak performance.*

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

Kazakhstan	The authorities should clearly define the options for *transferring of ownership of publicly funded research* results from the state to the agent performing the research, down to the level of the individual inventor;
Armenia	• Strengthening the *capacity of the IP Agency* to offer broader services to its clients. • Designing a scheme to *support patenting* that includes advice on whether to seek *international protection* and grants to partly cover the associated costs
Tajikistan	• Increasing *IPR awareness* among researchers, professors, students and scientific organizations • *Training support* for specialists in IP, including patent attorneys • Support for domestic inventors for *patenting abroad*

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

Belarus	Expanding the *scope of professional TT services* and developing *model contracts* and related decision-making support tools to R&D organizations.
Ukraine	Granting subsidies for research commercialization activities - in the form of *knowledge transfer grants* or - small share of total research budgets
Tajikistan	Facilitating the employment by scientific organizations of *experienced (foreign)technology transfer managers* 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!

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