



# **Why should we care about financing risky innovative projects?**

## **Lessons from international good practice**

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**United Nations Economic Commission for Europe**

**Expert seminar on “Financing high-risk innovative projects”**

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# **Structure of the Presentation**

**A. The Rationale for Policy Intervention in Support of Risky Innovative Projects**

**B. The UNECE Innovation Performance Review of Belarus: Some Recommendations**

**C. From Recommendations to Implementation**



# **The Rationale for Policy Intervention in Support of Risky Innovative Projects**



# Innovation in the modern economy

## ■ Innovation

- Commercial exploitation of new ideas which are successfully brought to market by offering more effective alternatives to existing arrangements
- Types of innovation: product innovation; process innovation; marketing innovation and organisational innovation

## ■ Invention and innovation

- Innovation always target the market: "invention" alone is not "innovation"
- Innovation = theoretical idea + technical invention + commercial exploitation

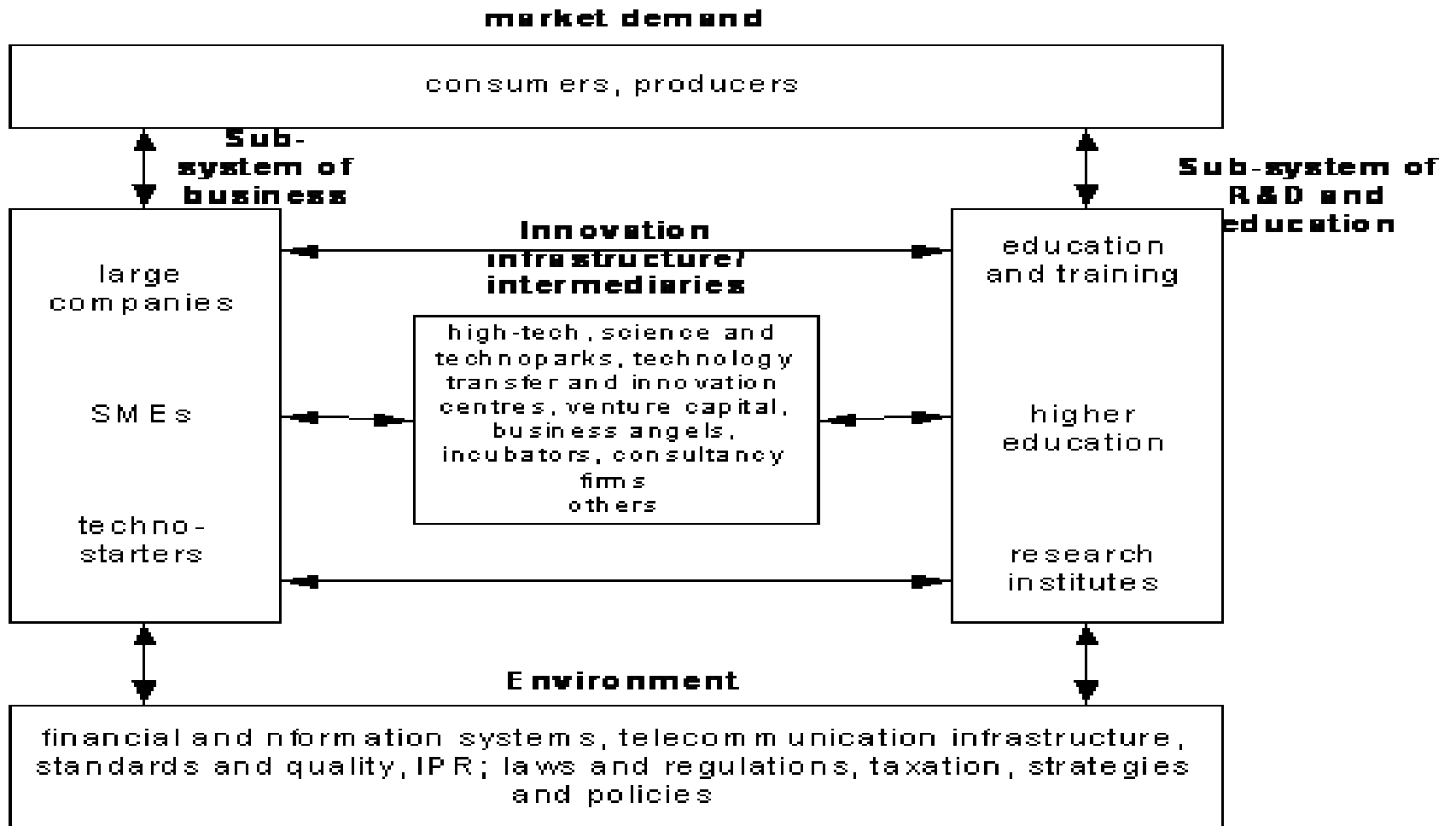
## ■ Innovation involves the interactions of many "actors" (stakeholders): academic and R&D institutions, firms, public bodies, financiers, users, etc.



# The National Innovation System (NIS)

- **NIS:** the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies
- **NIS agents:** knowledge institutions (universities, research institutes, technology-providing firms), firms and government bodies
- The **interactions and linkages** between the elements of the NIS are also part of the system
- The **flows of ideas and knowledge**, as well as **the ability to learn** are also part of the NIS

# NIS structure





# **The rationale for policy intervention in support of innovation**

- **Innovation is a highly complex phenomenon with uncertain outcomes: policy needs to address a multitude of agents/ stakeholders and their interactions to facilitate the process**
- **Risks of market failure due to high uncertainty of innovative projects and “knowledge spillover”. As a result - underinvestment in the production of new ideas and products: needs to be addressed by policy**
- **Risk of “systemic failures”:** needs to be addressed by policy
  - Failures in social institutions
  - Network failures
  - Capability failures in firms and other stakeholders
  - Framework failures



# The design of policies for innovation in the knowledge-based economy

- **The understanding of the nature of the innovation process should be embodied in the innovation policy mix:**
  - Systemic nature: policy (already in the design phase) needs to incorporate multiple innovation agents/stakeholders and their interactions
  - Innovation is a risky venture with uncertain outcomes – failure can be a “normal” outcome of the drive for innovation: we need policy instruments that incorporate this understanding
  - The state does not possess superior knowledge than market agents; it is only one of many “stakeholders” with whom it needs to work together
  - But: the state has superior capacity to coordinate and policy should draw on this – instruments that focus on the coordinating role of the state.





# Recent trends in public funding of R&D and innovation (good practices)

- Most of the financing is project-, not institution-based and project financing is allocated on a competitive principle
- Project financing is often contingent on systemic networking among the participants
  - requires that specific linkages be established for the project to start (e.g. between R&D institutions and industry)
  - the project outcome is the result of cooperation among these partners/stakeholders
  - these requirements are embodied in the policy instruments
- Apart from project financing, specific instruments involving a financing component have been developed exclusively to promote and support networking, linkages, partnerships, cooperation and connectivity among stakeholders;



# Specific features of policy instruments supporting high-risk innovative projects

- Most such instruments support start-up firms, not established and running businesses
- Public grant financing is especially instrumental in the pre-investment phase when the uncertainties are the highest
- The provision of funding is organized on a competitive principle
- Financial support is of one-off nature (to avoid a lock-in into unviable ventures)
- Most financing instruments contain market elements and incentive structure (to prepare the grantee for self-sustained entry to the market)
- Usually they also support connectivity with other stakeholders
- Instruments where the state acts as a coordinator, helping in bringing together private stakeholders and in pooling financial resources for projects of joint interest (joint fundraising)



# Why should governments support start-up innovative firms?

- Commercializing an innovation can be extremely difficult and cumbersome for start-up innovating entrepreneurs
- Start-up entrepreneurs often need to overcome additional barriers (compared to established firms) in the spheres of financing, technological, managerial, regulatory, administrative, etc.
- Innovating entrepreneurs are weak and often find it difficult to reap the benefit of their innovation due to poor protection of their intellectual property rights
- The main role of public policy in this regard is to establish a conducive environment that supports innovating entrepreneurs in bringing their innovation to the market
- This includes both direct support through various public agencies and also public support for the establishment of private innovation support institutions



# Traditional vs. contemporary innovation policy

Traditional (industrial) policy	Contemporary innovation policy
Support R&D <u>institutions</u>	Support specific R&D and innovation <u>projects</u>
Target the <u>agents</u> of R&D and innovation	<u>Systemic coordination</u> of the innovation process. Support <u>linkages</u> among innovation stakeholders. Policies to bridge <u>sources and users</u> of innovation. Promoting <u>collaborative models</u> .
Direct involvement of the state in “ <u>big science</u> ” and <u>large-scale</u> technological projects	Provide catalysts for the emergence of <u>networks of stakeholders</u> of large-scale projects
Intellectual property/knowledge spillover: <u>Legal protection of IPRs</u>	Policy differentiates between <u>frontier innovation</u> and <u>imitation</u> . Frontier innovation: a <u>range of options</u> to deal with IPR protection. Imitation: support the <u>diffusion of innovation</u> and internalization of knowledge/technology spillover\$2



# **The UNECE Innovation Performance Review of Belarus: Some Recommendations**



# Innovation Performance Review of Belarus

- **Objectives:**
  - a critical assessment of the Belarusian NIS
  - recommendations for policy actions to stimulate innovation activity, enhance national innovation capacity and improve the efficiency of the NIS
- **Joint project** by UNECE/international and Belarusian experts in 2010; Results presented in Minsk in 2011.
- Content followed an **agreed Outline** between UNECE and the Government of Belarus
- The **Eurasian Development Bank** supported the project financially





# **Structure of the Review**

- 1. Recent economic and innovation performance**
  - 2. National innovation system and innovation governance**
  - 3. Framework conditions, innovation policies and instruments**
  - 4. Knowledge generation**
  - 5. Industry-science linkages and collaboration in the innovation process**
  - 6. Innovation support institutions**
  - 7. Financing innovative entrepreneurs**
  - 8. Innovation and international economic integration**
- Annex. Prospective innovation-driven investment projects**



# Innovation Review Belarus: Types of recommendations (continued)

- **Framework conditions:**
  - Developing the National Innovation System; Removing barriers to entrepreneurship; expanding favoured «technological enclave» conditions to the whole economy
- **Policy instruments:**
  - Incentivizing the commercialization of Intellectual Property Rights; wider application of grant schemes; introducing instruments accounting for the types of risk; removing penalties for risk-taking





## **Innovation Review Belarus: Types of recommendations (continued)**

- **Policy evaluation and assessment**
- **Awareness raising**
- **Network building**
- **Capacity building**
- **Institution building**

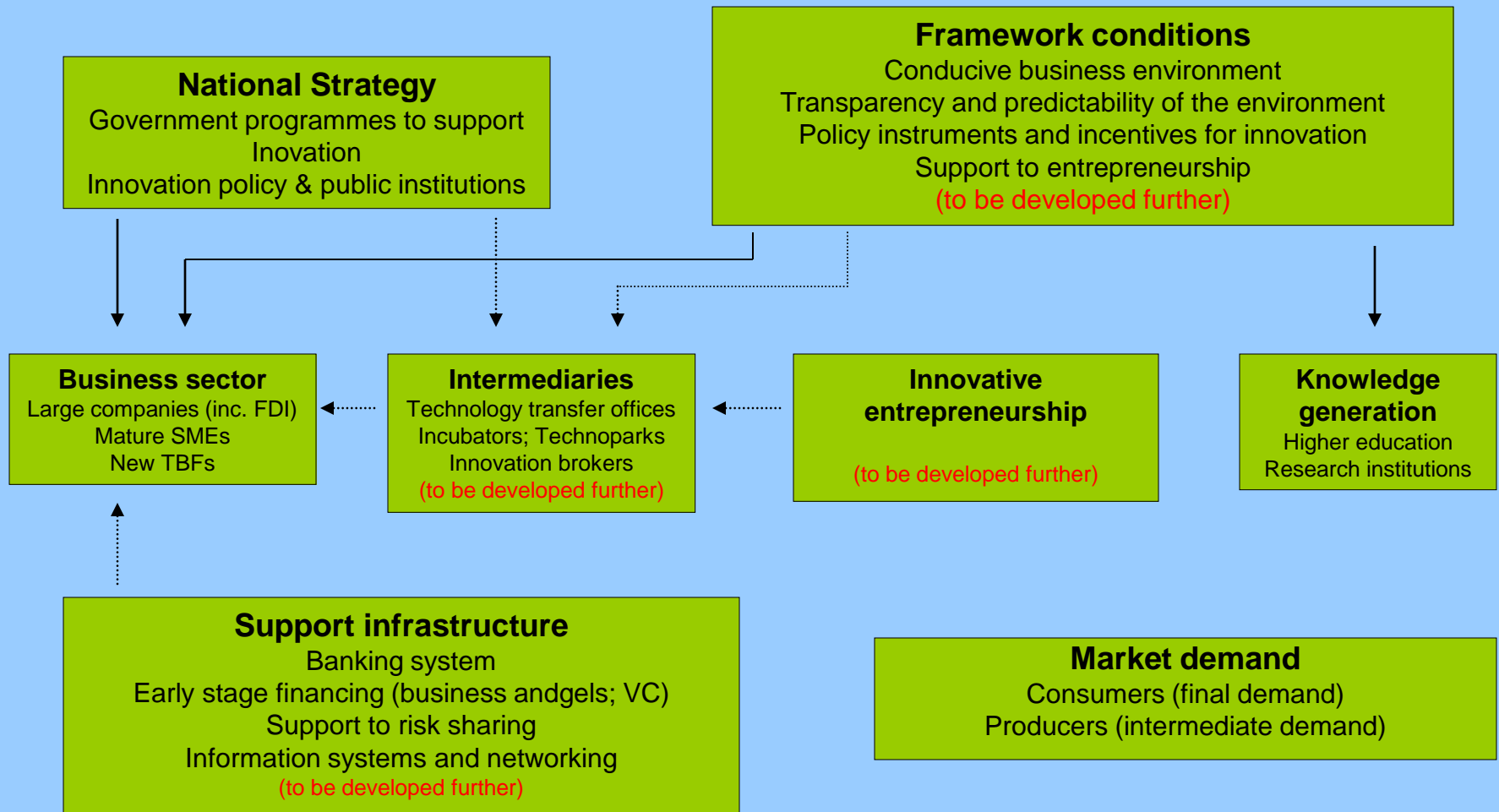


# Innovation Review Belarus: conclusions and recommendations

- The existing National Innovation System is incomplete (especially as regards SMEs, but also other “actors”, linkages in the system, variety of interactions, etc.)
- **Undertake steps to complement the National Innovation System:**
  - identify missing links and elements
  - ensure interconnectedness of actors and stakeholders
  - target a shift from a “linear innovation model” to a fully interconnected multi-linkage NIS
  - apply a gradualist approach in such changes

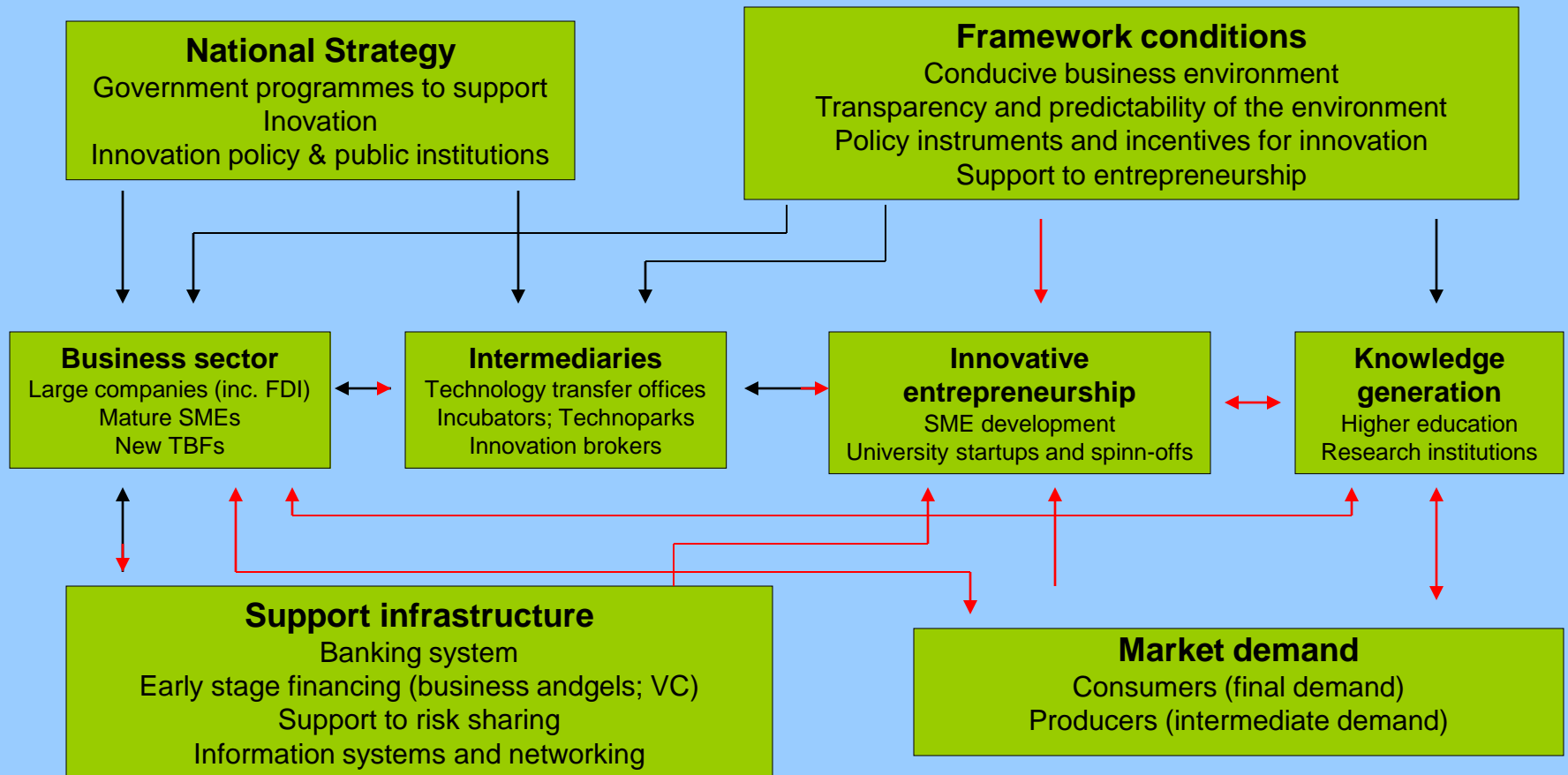


## The National Innovation System (NIS): today ...





## ...and in the future





# Innovation Review Belarus: conclusions and recommendations (continued)

- The entrepreneurial sector/SMEs is one of the weak parts of the NIS
- **Widen and broaden the range of measures to stimulate the entrepreneurial sector:**
  - undertake an assessment of existing barriers to entrepreneurship the emergence and growth of SMEs
  - targeted policy measures to address these in consultations with SMEs and entrepreneurs
  - encourage Universities, R&D institutions, large enterprises to be sources of innovative entrepreneurship through spin-offs and other startup companies



# Innovation Review Belarus: conclusions and recommendations (continued)

- The system of public support to innovation and provision of entrepreneurial finance in Belarus has a built-in feature of strong risk aversion. To be more effective in promoting innovation, the system of public support for innovation activities in Belarus needs to accept increased levels of risk and be more tolerant of possible failures of individual projects.
  
- **Introduce measures incorporating higher risk tolerance in the system of public support for innovation:**
  - non-repayable grant schemes, which provide financing to explore new ideas, irrespective of the outcome of the innovation process
  - acceptance that not all individual projects which are approved for public funding will necessarily be successful ->specify concrete conditions under which now existing penalties for failure would not apply
  - modifications in evaluation procedures to incorporate well specified criteria for tolerance of possible failure for highly innovative and prospective projects.



# Innovation Review Belarus: conclusions and recommendations (continued)

- The current system of policy instruments in Belarus contains strong incentives for technical modernization but is weaker in the promotion of genuine innovation (high-risk projects).
  
- **Review existing schemes and instruments and diversify the instruments for support to genuine innovation projects**
  - Policies and instruments need to clearly separate support to innovation activities (where risk is an inherent component of the process), from support to investment in modernization;
  - Introduce a greater variety of diversified policy instruments drawing on international good practices;
  - In particular, new instruments need to be introduced that recognize that risk taking is an inherent feature of the innovation process – failure in undertaking risky innovation projects has to be tolerated, not penalized





# Innovation Review Belarus: conclusions and recommendations (continued)

- The existing instruments for public support to innovation do not fully take into account the different types of risks involved in different types of projects.
- **Review and reconsider existing schemes and instruments plus steps to diversify the instruments for support to genuine innovation projects**
  - public support to modernization through new investment (low risk projects) could be restricted to SMEs only (due to difficult access to banking finance)
  - the criteria for extending public finance to (high risk) genuine innovation projects to be clearly spelled out (the risk involved being an inherent feature of such a specification)
  - instruments of public support to genuine innovation projects need to take into account factors such as size, duration, type and level of risk, etc.
  - the running of a greater number of such public support schemes could be entrusted to specialized financial institutions (rather than to public bodies) -> e.g. through further development of the Belarusian Innovation Fund





# Innovation Review Belarus: conclusions and recommendations (continued)

- Some innovation activities are disconnected from the needs of industry; the agendas/ plans of R&D institutions are not closely linked to industry demand; collaboration between science and industry is suboptimal.
- **Review existing policy instruments; design/introduce new ones to enhance industry-science collaboration in risky innovative projects** (risk sharing through project partnerships)
  - Establishing policy mechanisms that stimulate direct channelling of industry demand into the work plans of R&D institutions, and allocating public funds in support of such R&D activities
  - Introduce industry-science collaboration as eligibility criteria for funding high-risk innovation projects
  - Introduce science-industry IP and knowledge transfer also as a criterion in rewarding the academic participants in such projects



# Innovation Review Belarus: conclusions and recommendations (continued)

- It is important that policies reward cooperative arrangements in risky innovation projects, in particular, with the participation of SMEs.
- **Strengthen public support to cooperative arrangements with the participation of SMEs:**
  - Design special policy instruments to facilitate the access of innovative SMEs to state science and technology programmes
  - Stimulate and facilitate partnerships between SMEs and other innovation stakeholders, including state-owned enterprises, R&D and academic institutions;
  - Introduce instruments for targeted support for the emergence of innovative start-ups (including academic spin-offs);
  - Remove existing barriers and facilitating their growth and integration in the economy



# **From Recommendations to Implementation**



# Review recommendations on financing high-risk innovation projects: summing up

- **Policy instruments have to accept risk as an inherent feature of the innovation process**
- **Risk tolerance needs to be incorporated in the policy instruments**
- **Existing policy instruments need to be modified and new instruments need to be designed and introduced**
- **To avoid misuse of instruments/public funds there must be full transparency regarding the design, functioning and implementation of instruments targeting high-risk projects**



## **Review recommendations on systemic sharing of risk: summing up**

- **Innovation involves many stakeholders; risk-sharing among them facilitates the innovation process**
- **Policy instruments need to take into account this systemic features of innovation**
- **Encouraging collaboration and risk sharing can and should be incorporated in the policy instruments**
- **Funding of high-risk project can be made conditional on a prior commitment by key stakeholders to cooperate in project implementation.**



# Form recommendations to implementation: before starting

- It is about CHANGE and about MANAGING change
- Change is difficult: it affects interests; it requires efforts.
- Change happens when there is sufficient leadership/managerial push to undertake it
- For this to happen, the respective decision-making levels have to be motivated and convinced to pursue change
- But it also requires a "champion of change" – a person or a group that coordinates the whole process





## **Form recommendations to implementation: the first steps**

- **A gradualist approach (sequenced in time) may be preferable to a “big-bang” approach (all change at once)**
- **Prioritize the issues to be addressed and sequence in time**
- **Be realistic about objectives and targets: systems have a limited capacity to undergo change without major turbulence**
- **Develop a constituency among policy-making constituency in support of change**
- **Awareness raising is key: often important decisions are not taken due to lack of awareness at key decision-making levels**



## **Form recommendations to implementation: the next steps**

- **Discuss the suggested solutions as widely as possible to develop a core supporting constituency**
- **Involve in the discussions those who will benefit from the change (they will join the supporting constituency) but also those who will be negatively affected (stressing the justification of the change)**
- **Select the proper decision-making mechanism to implement the change (new law? new state programme? new regulation? establishing a new institution? ...)**
- **Mobilize the supporting constituency to facilitate the relevant decision-making process**





# UNECE

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## **Thank you!**

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