Final Report



2016/17 Knowledge Sharing Program with Bulgaria

Governance, Operation and Funding Instruments of A New Promotion Agency for Research and Innovation

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Governance matters, because

- Governance relates
 - to "the processes of interaction and decision-making among the actors involved in a collective problem that lead to the creation, reinforcement, or reproduction of social norms and institutions.
- Well-structured governance is necessary, because of (OECD 2005)
 - Competing rationales over individual policy domains
 - Short-termism in resource allocation, undermining log-term strategy
 - Different views and understanding of innovation policy
 - Fragmentation ad segmentation, etc.
- Well-structured governance and efficient R&D management would increase
 - Rationality
 - Transparency
- Eventually, increases R&D investment
- Brings more technological innovation





Conceptual framework of STI governance (OECD)







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GDP and economic development in Korea







R&D investment and changes in STI governance







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STI governance in Korea





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PIMEF system at ministerial level





S&T coordination and policy-making

NSTC

- Chaired by the Prime Minister
- Members are S&T related ministers (13) and civilian experts (11)
- Functions: decision-making
 - Proposed S&T policies and plans
 - Coordination of national R&Ds
- Steering Committees
 - Chaired by Minister of MSIP
 - Members are S&T related deputy ministers and civilian experts
 - Functions
 - Pre-screening and coordinating proposed agenda to NSTC, including S&T budget allocation, public R&D investment, etc.
- Planning and Coordination Committee by Areas
 - Chaired by selected civilian member
 - Functions
 - S&T policy-making in early stage
 - S&T foresight
 - S&T census, analysis and evaluation





Office of S&T Strategy

Bureau	Division	Missions
Science and Technology Policy Bureau	 Science and Technology Policy Division 	 Synthesizing and planning of national policy for science and technology Short- and medium-term directions an targets for S&T development Management of laws and regulations related to science and technology Implementation plans for the 5-year basic plan of science and technology Secretarial mission for S&T coordination
	Future Strategy & Planning Division ;	 Future S&T strategy Strategy for government R&D investment Assessment of S&T levels S&T forecasting
	Science & Technology Strategy Division	 Promotion of R&D investment in private sector Regulation and deregulation related science and technology Planning and coordination for Regional R&D Technology assessment, and assessment of technological capacity/technology trends S&T performance and others
	Science & Technology Policy Coordination Division	 Management of NSTC and its sub-committees Synthesizing, planning and coordinating for S&T-based social-issue-solving R&D Dual technology for military and private uses Management of Presidential Advisory Council on Science and Technology (PACST)
	 Performance Evaluation Innovation Coordination Division 	 Performance Evaluation of government R&D, and management of laws and regulations related to S&T performance Evaluation of government R&D at the level of upper governance Evaluation of GRIs at the level of upper governance Feasibility study for government R&D programs Management of government R&D performance
	Research System and Institution Division	 Management of laws and regulations on government R&D Management of government R&D (expenses) system Management of National Technology Information System (NTIS) R&D statistics and related surveys

Bureau	Division	Missions
R&D Investment Coordination Bureau	 R&D Budget Coordination Division 	 Directions and portfolio for national R&D investment Targets and implementation of government R&D programs Coordination and allocation of government R&D budget Management of S&T specialty committees
	R&D Investment Planning Division	 Inter-ministerial R&D investment strategy and coordination Budget allocation and coordination for GRIs in science and engineering Budget for the national R&D equipment
	 Public and Energy R&D Budget Coordination Division 	 Budget allocation and coordination for the areas of aerospace, energy/resources, land/transportation/marine, environment/meteorology, disaster, dual technology and so on.
	 Manufacturing and ICT R&D Budget Coordination Division 	 Budget allocation and coordination for the areas of materials/machinery, ICT·SW/convergence, Budget allocation and coordination for SMEs Budget allocation and coordination for the areas of culture/contents and service Budget allocation and coordination for regional R&D
	 Biotechnology R&D Budget Coordination Division 	 Budget allocation and coordination for biotechnology Medium-term plan for national R&D in biotechnology Investment direction of R&D in biotechnology Priority-setting and coordination of duplication of R&D Management of specialty committees in biotechnology



Korea's funding instrument: National Research Foundation (NRF)







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Life-cycle of a research project





Options for governance of new funding instrument, PARI

We recall

- Smart Specialization Strategy 2014-2020 → National strategy
 - National goals: economic development ← industrialization
 - Science and technology is necessary for industrialization
 - Supposed that there are two versions of 3S; industrial version and S&T version for the same goal
- Smart Growth Council
 - Creation of SGC is the key policy for innovation and research in Bulgaria and it does integrate all domains— vertically and horizontally, that relate to innovation, technology, research, including technological commercialization.
 - MES and ME are the key actors in this strategy.
 - ME supposes to play a role as the secretariat to SGC.
- PARI is defined as
 - Funding instrument
 - Under the influence of MES
 - Replace NSF





Assumptions

- No change in current science policy;
 - particularly distribution of research funds for the universities and Bulgarian Academy of Science
- No merger of NSF and NIF
 - Leave them separately because they have different purposes ans rationale.
- Our focus is placed on the increase in rationality and transparency of S&T policy by enhancing the planning capacity.
 - Then, create a new program, and win the additional budget/fund.
- There are two policy domains in RDI system
 - Industrial policy
 - S&T policy
- Innovation takes place only if
 - S&T opportunity meets social and industrial needs





World Bank's suggestion for improving Bulgaria's governance



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- There will be no changes at the ministerial level and above. There will be nothing but reorganization of NSF.
 - PARI will replace NSF.
 - The purpose of reorganization is to develop the planning capacity, to be capable of pursuing new programs.
 - PARI will establish its own work frame of "planning implementing monitoring evaluating feedback."

The strength of the Option #1 lies in

- Effective when R&D activities are executed separately by each ministry, little need of coordination.
- Governance can be established with only small changes.
- The weakness of the Option #1 lies in
 - Cannot solve the coordination issues between various STI ministries, if there are duplications of R&D projects
 - Without strong intervention of MES, PARI cannot implement R&D policy in accordance with the national strategy effectively.







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- There will be no coordination function in the cabinet, regarding S&T policy. Only MES is responsible for the strategic S&T policy, and overlooks the newly created PARI. For the strategic approach, MES creates the "Office of S&T Strategy" within the ministry.
- Office of S&T Strategy:
- Head will be one of the vice ministers.
- Expand and reorganize the current science directorate.
- OSTS may have three or more directorates such as S&T policy, R&D policy, HRST and others
- New function for S&T planning in regard to Smart Specialization and Horizon 2020.
- For example, if the development of ICT industry is strategically recognized in Bulgaria, MES will make a R&D plan, which targets to develop critical technologies that the firms can use in 3-5 years. This will signal to the private sector and increase awareness of the importance of technological innovation. It can be thus expected that the industry will eventually increase R&D investment.
- Basically, PARI will play a role as an implementing agency under the "Office of S&T Strategy."





Continued.

The strength of the Option #2 lies in

- Governance can be easily changed without changing legal frameworks at the cabinet level.
- Strengthen planning functions by only creating OSTS within MES

The weakness lies in

- Impossible to coordinate STI related issues among STI related ministries when coordination is necessary.
- Inefficient when the National R&D Programs (NRDP) are actively executed by various ministries → cannot avoid duplications of R&D investment.
- Not easy to provide advisory functions to Prime Minister at the national (strategic) level









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- The governance structure will have the function of coordination across the S&T related ministries. The SGC is supposed to play a role of coordination for S&T policies across ministries, if this is the case;
- SGC:
 - Chair: Prime Minister
 - Member: STI related ministers (only for coordination of S&T policy and R&D investment, not for industrial policy)
 - Secretariat: ME (or MES)
 - Agency for implementation: PARI
- Suppose that the policy domain is well defined for industrial and S&T policy, an then MES is responsible only for S&T policy, not industrial policy. MES will be responsible for coordination of S&T policy across S&T-related ministries. For this matter, MES might play a role as a secretariat to SGC. (different mission from that of ME).
 - ME is already a secretariat to SGC in regard with industrial policy.
 - Note that R&D pursued by ME and MES may be different.
- The Office of S&T Strategy (OSTS) created within MES plays a role of secretariat to SGC, as long as S&T policy is concerned.
 - The OSTS collects and analyze the information about S&T policies of the S&T related ministries; and prepare the agenda for SGC. (Or it will pass the agenda over to ME).
- PARI will be the agency to implement the S&T policy, following decisions made by SGC.





Continued.

The strength of the Option #1 lies in

- Possible to efficiently coordinate between STI related ministries by SGC
- Can strengthen advisory roles to PM by establishing Advisory Committee of S&T through the merger of NCSR and NIC
- Allow SGC to have power by chairing of Prime Minister instead of President.
- SGC can be efficiently supported by either ME or MES as a secretariat organization

The weakness lies in

- Needs the biggest changes in the existing funding instruments and in legal framework at the cabinet level.
- Takes long time for new council system to work effectively and efficiently
- Conflicts for the policy domains pursued by ME and MES might be created.





About the management of R&D project ...







Concluding remarks

- The importance of PIMEF system is emphasized at each level of the governance: both ministerial and agency levels
 - Planning-implementing-monitoring-evaluating-feedback
- Positioning of PARI:
 - Implementing agency under the Ministry of Education and Science as a funding instrument
 - Planning capacity is most important; Manpower / budget
- Further consideration about "Science Directorate" in Ministry of Education and Science
 - Creating "Office of S&T Strategy → improve the capacity for S&T policy in accordance with the national strategies.
 - Would require several directorates for S&T policy, R&D investment, HRST and others
 - Identification of the policy domain with regard to innovation







Thank you !

Different rationale of PARI and NIF







Smart Growth Council





