



Bulgaria

Public Expenditure Review for Science, Technology, and Innovation

Project Progress and Results
June 30, 2021

Agenda

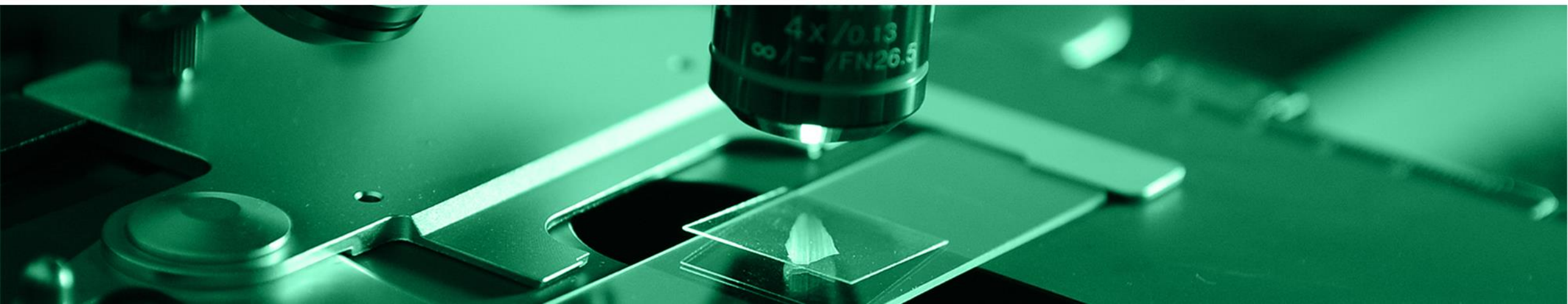
Introduction

1. Country Needs Assessment
2. Functional and Governance Analysis

Next Steps



Introduction to the Bulgaria Public Expenditure Review on Science, Technology, and Innovation (PER STI)



The Bulgaria PER STI has three primary components

Country Needs and Policy Mix Assessment

- Macro-level assessment of country needs and performance in the areas of research and innovation
- Overview of the flow of funds in the system, the budget structure and policy mix and how well they respond to the country's needs.
- Portfolio mapping of all the STI support programs, as well as analysis of the collected information.

Functional and Governance Analysis

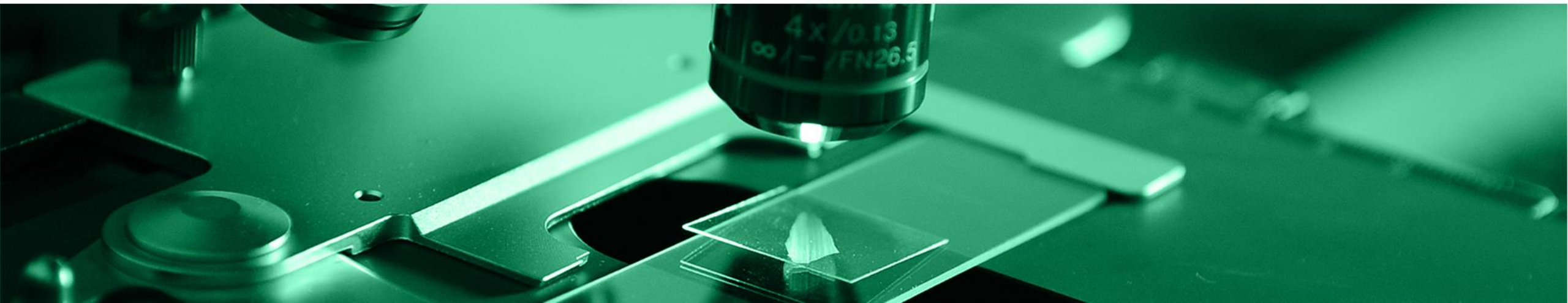
- In-depth assessment of the design, implementation and governance among instruments, institutions and position within the policy mix.
- Extensive field work and data collection through semi-structured interviews.
- Includes capacity building component focused on monitoring and evaluation.

Efficiency Analysis

- Analysis of outputs and outcomes for selected programs, examining the programs' ability to produce the expected outputs given the inputs and resources used.



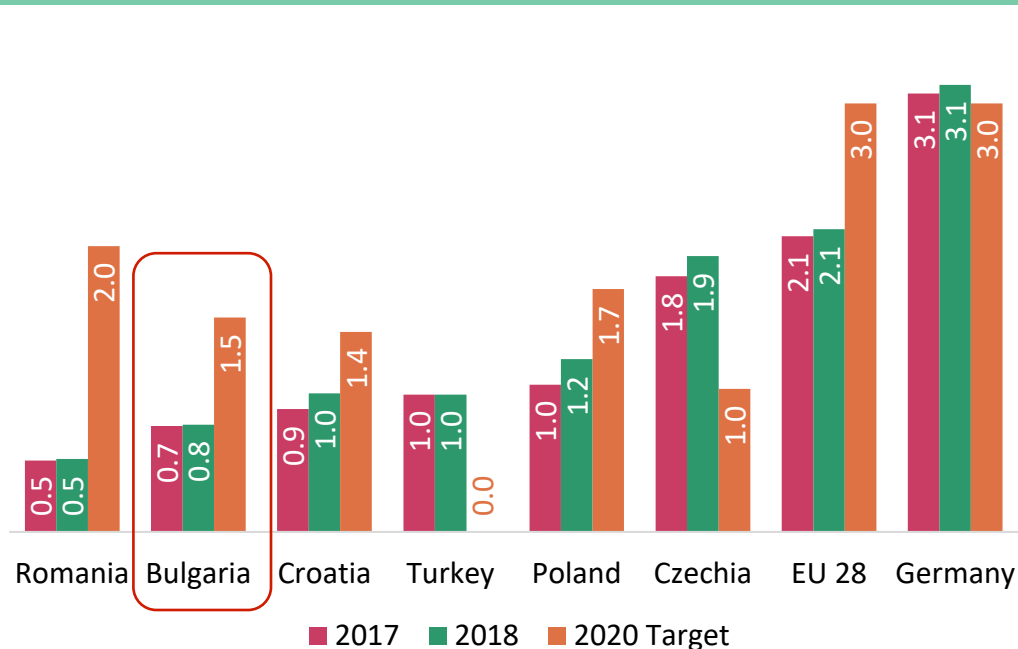
1. Country Needs and Policy Mix Assessment



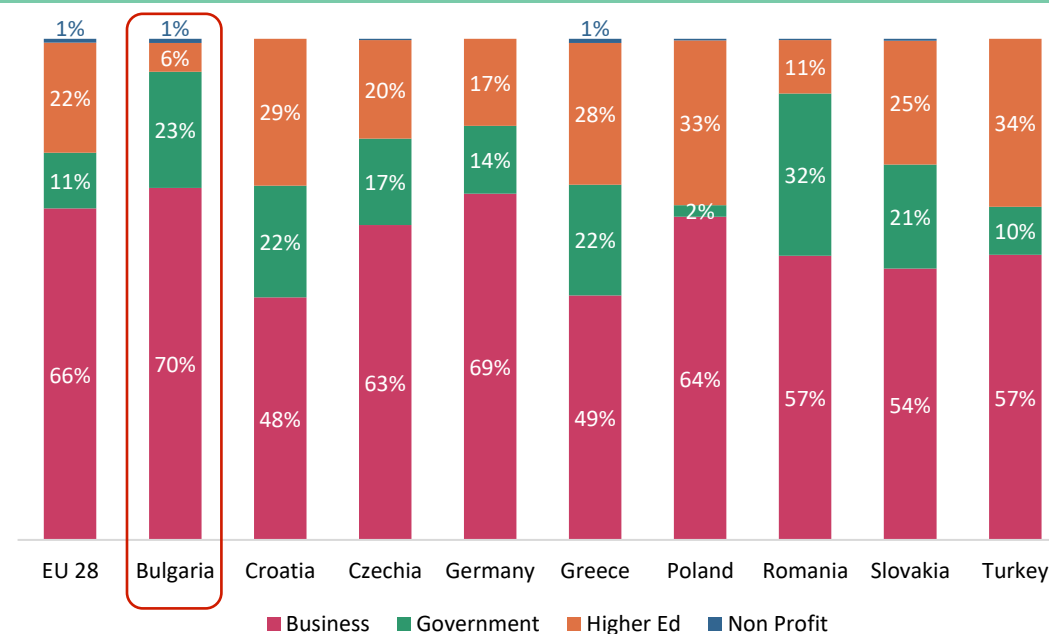
Bulgaria lags behind its peers in R&D expenditures, and the public sector plays a relatively minor role in performing R&D nationally

- Investments in R&D are very low when compared to peers – with Romania, Bulgaria had the lowest levels of gross expenditures on research and development (GERD) as a percentage of GDP among peers. R&D investments will need to dramatically increase to reach the new Bulgaria 2030 GERD target of **3 percent of GDP**.
- Bulgaria's institutions of **higher education only performed six percent of GERD in 2017**, the lowest rate among peers by far and less than a third of the EU average.

GERD as a percentage of GDP, 2017, 2018, and 2020 target



GERD by sector of performance (2017)



Challenges in the public research system: findings from public research survey

- There is a **clear need to modernize the national research system**, particularly in the public sector, to improve the performance of public research organizations, with a focus on research excellence, market-oriented research agendas, and technology transfer.
 - **Research capabilities are a major issue:** Half of survey respondents said that research capabilities are insufficient to engage in impactful research or tech transfer
 - **Lack of alignment with industry demand:** Lack of communication channels with industry is a major barrier.
 - **A reliance on institutional funding creates performance and governance issues:** performance-based funding has been introduced, but makes up a small portion of overall funding
 - **Public institutions lack sustainable funding and resources for tech transfer activities**

Recommendations from the Country Needs and Policy Mix Analysis

Improve STI policy coordination

- Activate communication and coordination channels among STI policy actors for setting R&I vision and strategic objectives through existing consultative bodies.
- Streamline and monitor the results of the implementation of STI policy through the envisioned R&I Agency.
- Ensure that STI strategies consider both research and innovation.

Introduce reforms to modernize the public research system

- Establish channels to allow industry involvement in the strategic definition of public research and innovation agendas
- Continue reforms to make a larger share of research funding to public institutions competitive and gradually increase the performance-based component for public research activities with focus on research excellence and industry orientation
- Introduce robust project evaluation mechanism to improve quality of funded proposals with focus on internationalization
- Review public researcher remuneration scheme in view of comparative CEE countries. Introduce incentive framework for researchers who produce high-quality outputs

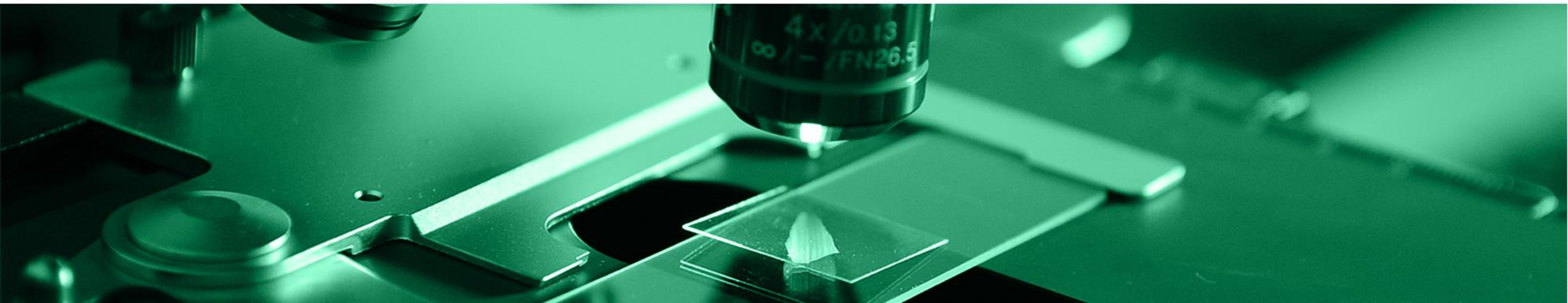
Recommendations from the Country Needs and Policy Mix Analysis

Improve the incentive framework and resources for tech transfer and commercialization of public research

- Promote the third mission of Bulgarian universities through sustained financial support for HEI research collaborations, contract research, and commercialization.
- Make commercialization outcomes part of researchers' career development paths to incentivize spinoff creation.
- Improve the performance of existing technology transfer offices and non-academic intermediaries through technical support and sustainable funding for their activities.

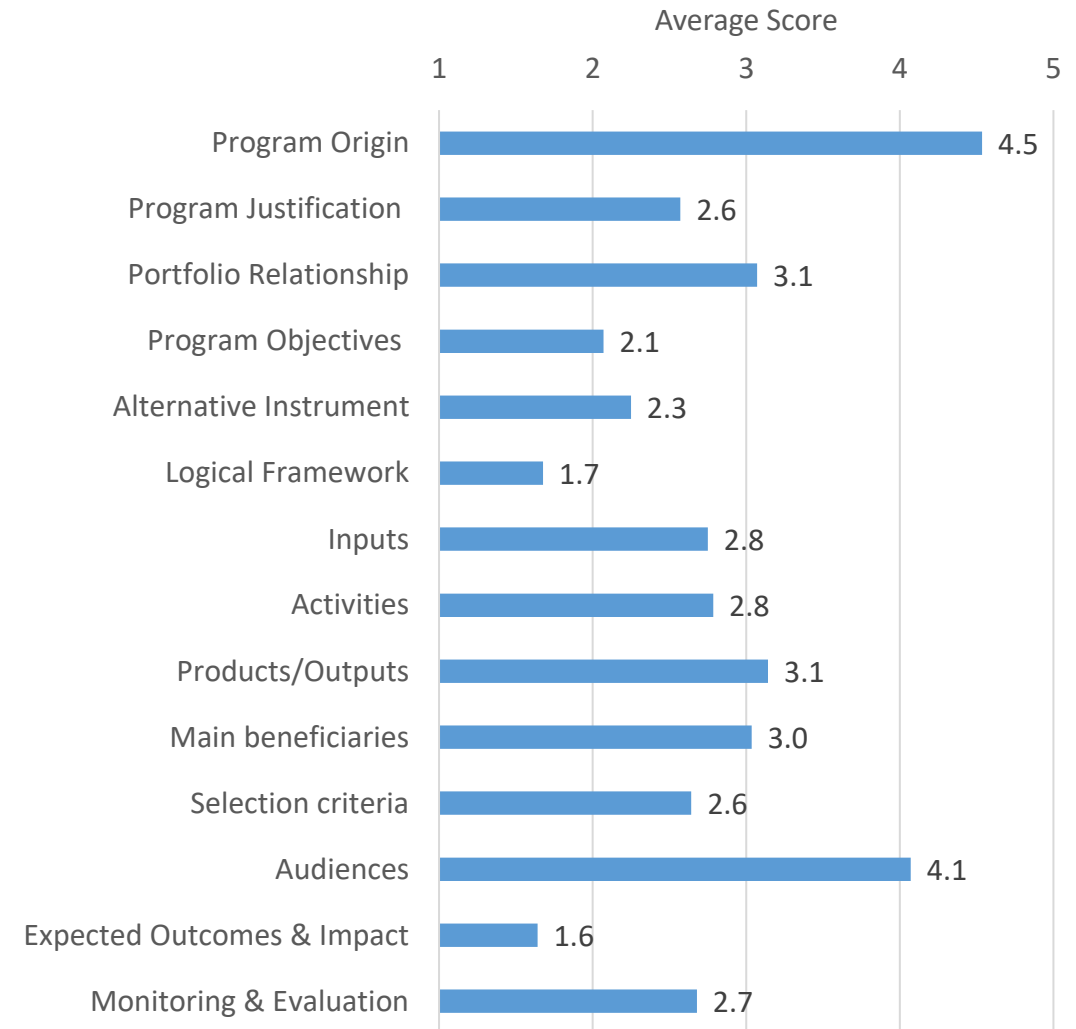


2. Functional and Governance Analysis



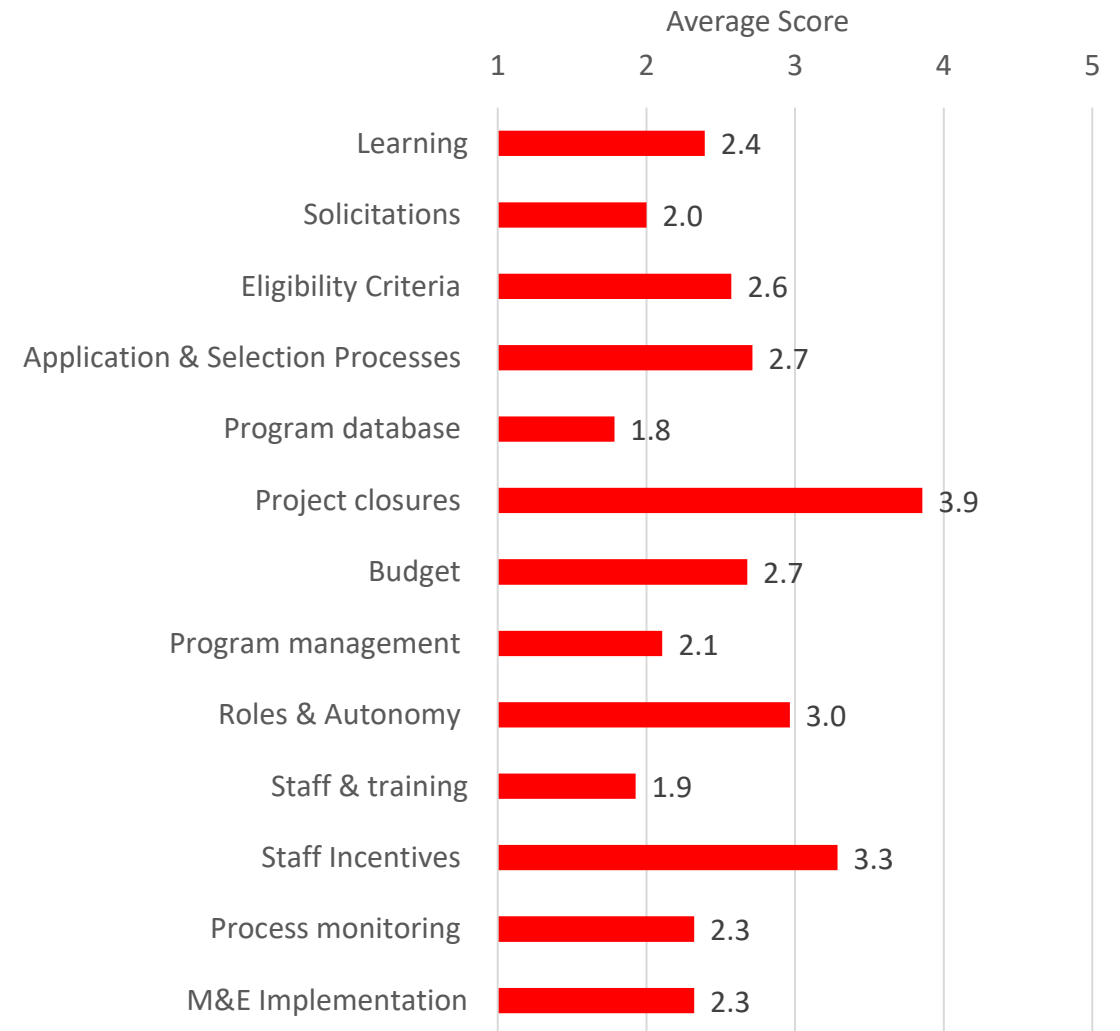
Instrument Design

- Many STI instruments suffer from a **disconnect between program objectives** (what instruments are trying to accomplish) **and program activities** (what instruments actually do).
- Almost no instruments have an explicit **theory of change** or **logic model**, which contributes to poorly defined and disconnected **program indicators**.
- **M&E frameworks** tend to focus on monitoring and compliance, with almost no evaluation taking place.
- **Stakeholder engagement** is an area of strength.



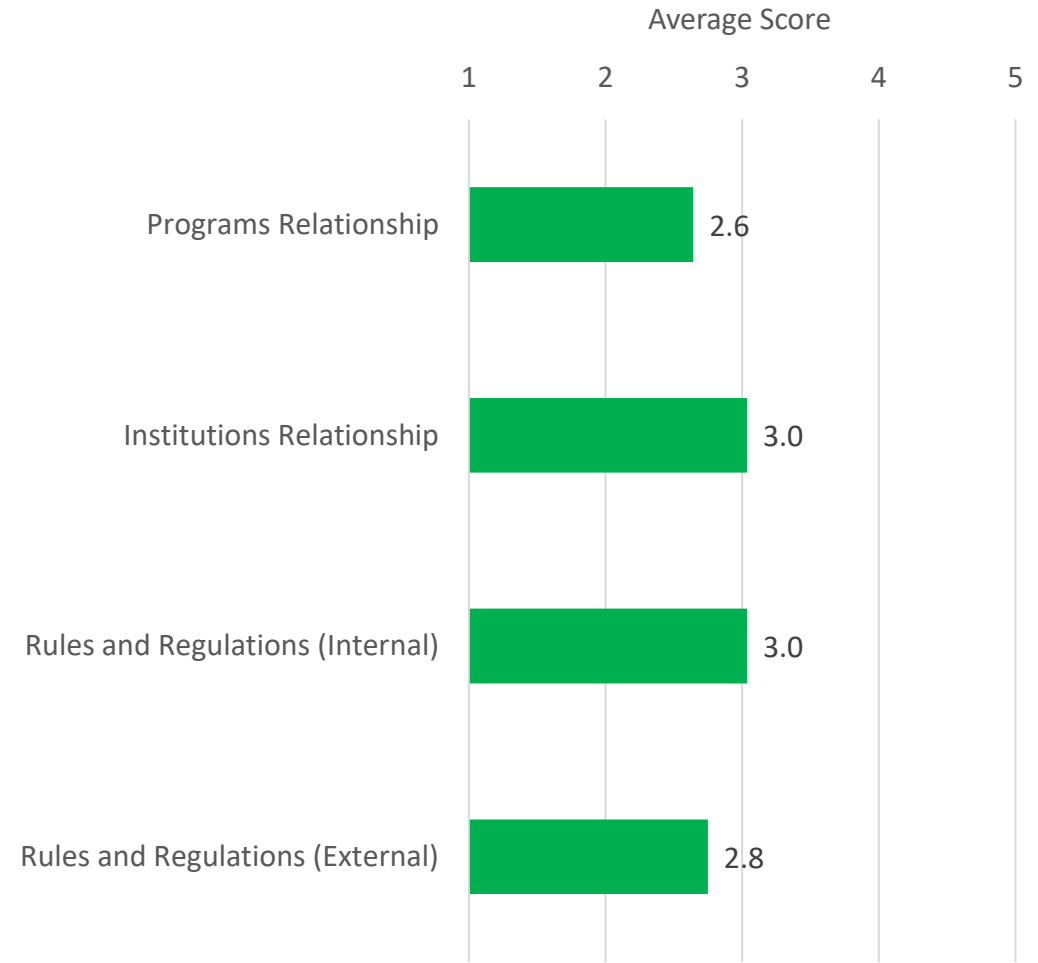
Instrument Implementation

- **Organizational capacity and human resource management** are pervasive challenges, especially for non-OP instruments. These capacity issues have impacted other areas of implementation – particularly M&E.
- There are few formal **knowledge management systems** in place; adjustments to instruments are generally ad hoc and not well documented.
- **Selection criteria and selection processes** could be improved for greater impact



Instrument Governance and Coordination

- **Formal coordination mechanisms** between STI institutions are largely in place, although very little coordination or collaboration occurs that is relevant to individual instruments' implementation.
- There are few examples of **designed synergies or “handoffs”** that enable beneficiaries to graduate from one program to another as they mature.



Improving Instrument Design

Utilize evidence-based policy design processes

- Strengthen analytical capabilities of implementing agencies to define and quantify market failure to be addressed by instruments.
- Consider full range of alternative instrument designs, taking into account beneficiaries, resources, and capacity.

Develop theories of change for *each* instrument

- Articulate a theory of change (and related indicators) for each instrument
- Develop results frameworks, defining indicators for inputs, activities, outputs, and outcomes, along with targets and data collection protocols for each indicator.

Improve M&E practices and build M&E capacity

- Design an evaluation strategy for each STI instruments that include clear objectives, theories of change and results frameworks, evaluation plan, supporting systems, and protocols.
- Strengthen M&E capabilities of implementing bodies, including additional specialized staff and training of existing staff

Improving Instrument Design

Develop eligibility and selection criteria that maximize impact

- Review the rationale for excluding private research organizations as potential beneficiaries for some research infrastructure and grant programs
- Selection criteria should focus on the projects that will maximize the impacts of public investments. Improved program justifications and solicitation practices would help strengthen targeting.

Improve the budgets for national institutions and programs

- Increase budgetary support to functioning and scalable national programs and organizations to accumulate institutional capacity and bridge the divide with OP-funded programs.
- Allocate budgets based on justification for intervention, with flexibility for changes in funding if necessary

Improve human resource management and capacity of STI implementors

- Increase program staffing across the STI system, both for full-time and part-time positions (including professionals with private sector experience where relevant).
- Reassess staffing needs of key programs transferred to State Agency for R&I.
- Establish incentive, evaluation, and training frameworks tied to STI staff's program duties.

Improving Governance and Coordination

Improve coordination of the STI agenda

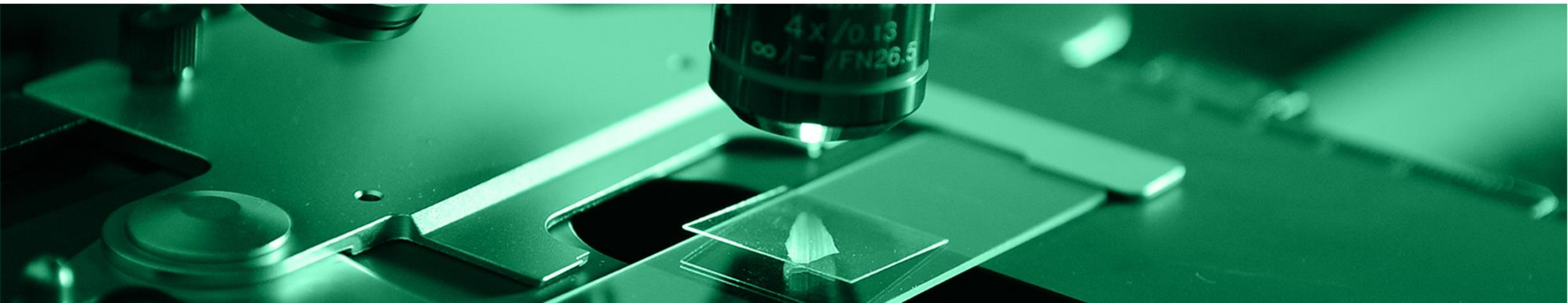
- Activate existing coordination channels to set and coordinate a commonly agreed upon R&I vision and strategic objectives among national and regional STI actors.
- Consult with and include innovation system actors (beyond public sector institutions) in the STI articulation of the vision, as well as the design of the implementation plans.

Empower the new R&I Agency to monitor and coordinate the STI agenda

- The new R&I Agency should take on the mission of monitoring and coordinating the implementation of the national R&I agenda through collection and management of data on the progress of STI programs.
- Technical assistance should be provided to the founding team of the new agency through knowledge sharing, training, and partnerships to ensure that the design, governance, and operations of the organization build on international good practice.



Next Steps



Analysis of instrument outputs and outcomes vs. implementation costs

- Surveys of over 1,000 beneficiaries (firms and researchers) from April-July
- Report will be delivered in Sept. 2021
 - Recommendations related to implementing regular efficiency analyses of STI portfolio
 - Recommendations for improving the efficiency of support instruments
 - Templates for beneficiary surveys (for firms and researchers) and collecting implementation cost data.

Bulgaria PER STI outputs to date

- [*Bulgaria: Country Needs and STI Policy Mix Assessment*](#) (September 2020)
- [*Enhancing the Contribution of Bulgaria's Public Research to Innovation: A Survey-based Diagnostic*](#) (November 2020)
- [*Bulgaria Functional and Governance Analysis*](#) (March 2021)



THANK YOU

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