CROATIA PER IN STI: FUNCTIONAL AND GOVERNANCE ANALYSIS

DESIGN, IMPLEMENTATION AND GOVERNANCE OF SUPPORT PROGRAMS FOR SCIENCE, TECHNOLOGY AND INNOVATION[1]

Summary

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1 Note: This brief is based on the findings presented in the World Bank report "Functional and Governance Analysis" produced as part of the Croatia Public Expenditure Review in Science, Technology, and Innovation.

This brief presents a summary of findings and recommendations resulting from a detailed program-level review of support programs for science, technology, and innovation. The review is based on a semi-structured interview process with program managers and focuses on three areas in each program: design, implementation and governance. For more details on the methodology, results, and recommendations please refer to the report "Functional and Governance Analysis" (World Bank 2020).

OVERALL RESULTS

What is a functional and governance analysis?

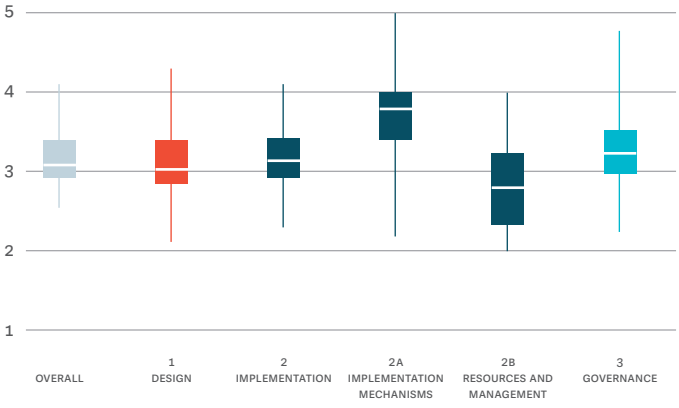
The functional and governance analysis is a methodological approach designed by the World Bank to assess the processes and functioning of research, development, and innovation (RDI) support programs. Through a semi-structured interview format, programs are assessed in 14 categories of program design, 13 categories of implementation, and 4 categories of governance. Each program is assigned a score from 1 to 5, where 5 denotes international best practice and 1 denotes the absence of best practices. This summary brief first presents overall results, and then provides more details on findings in each of the three areas of analysis.

There is ample room for improvement in all aspects of program design, implementation, and governance

Results vary from program to program, indicating that there is scope for learning within the system. Scores in program design, implementation, and governance are, on average, roughly similar (Figure 1). Within the implementation dimension, implementation mechanisms (such as application information, project finalization and follow-up) are characterized by overall relatively good practices. Conversely, program elements related resources and management (e.g. staff and training, staff incentives, process monitoring, and program management) are not as close to good practices.

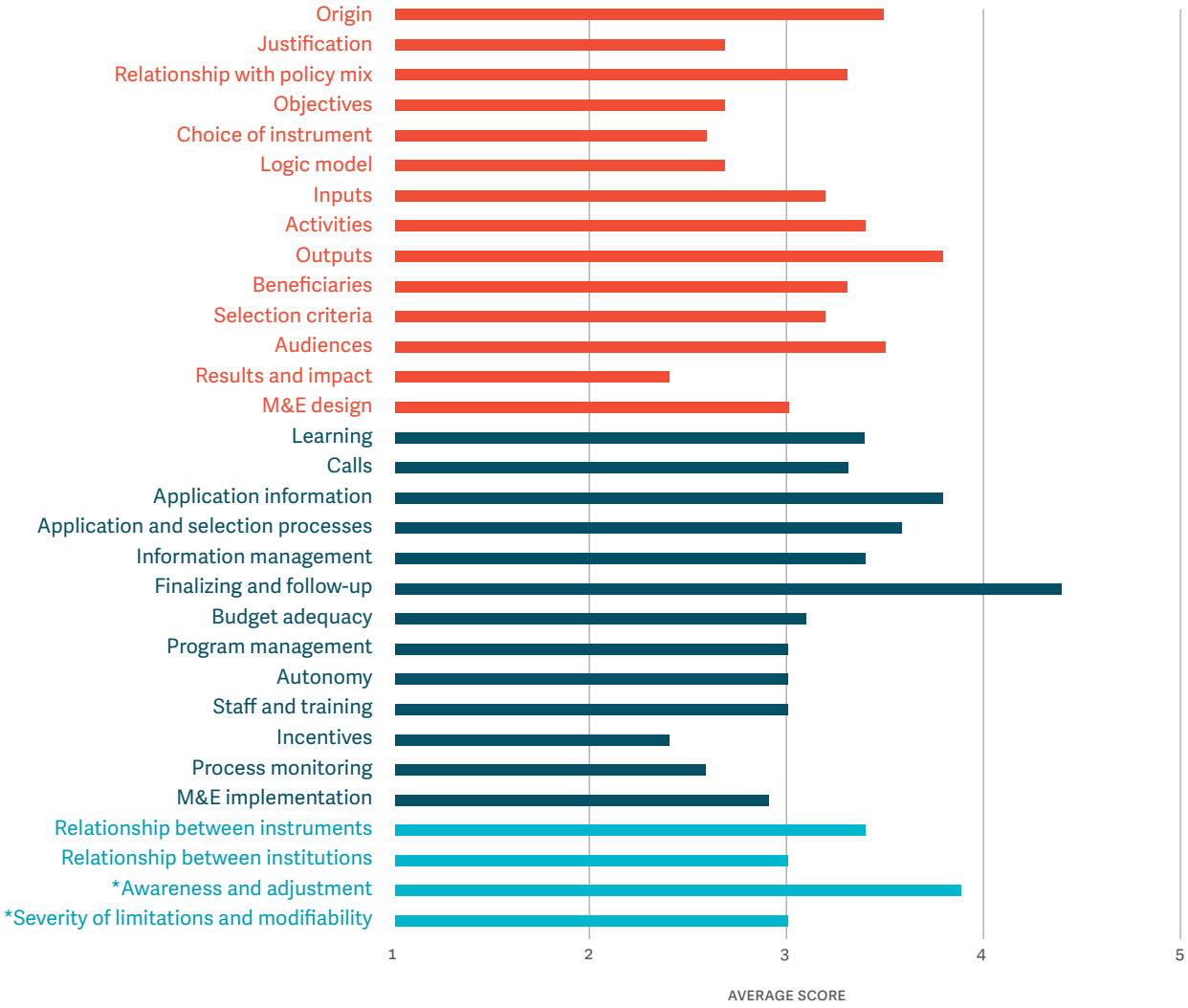
Looking at individual categories within each area, staff incentives, program justification, and results and impact should be improved in the majority of programs (Figure 2). At the same time, project closures, internal response to other policy areas, program origination processes, and identification of program outputs are strong in most programs. Only a handful of programs within the system have well-developed logical frameworks, appropriate objectives, and well-defined outcomes and impacts. These cases can serve as examples for learning within and across institutions.

Figure 1 Scores in program design, implementation, and governance are roughly at a similar level



Note: The vertical lines represent the top and bottom 25 percent of data points. The colored boxes represent the middle 50 percent of the distribution in each category, and the horizontal line represents the median score.
Source: Staff elaboration.

Figure 2 Most areas of program design, implementation, and governance fall behind best practices



Source: Staff elaboration.

The funding source has an important bearing on the functionality of programs

One of the starkest differences in scores can be observed when classifying programs by source of funding (Figure 3). Programs funded from the European Regional Development Fund (ERDF) score noticeably lower than programs funded from the national budget, bilateral agreements, or World Bank loans. These programs face the longest implementation delays.

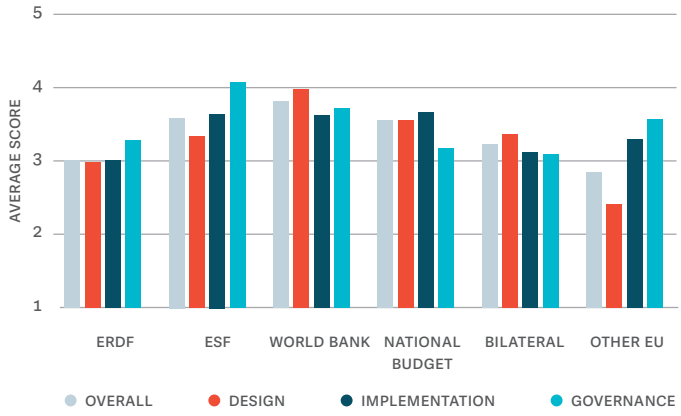
As European Structural and Investment Funds (ESIF) in Croatia are administered, more layers of administrative capacities for managing the funds are required. Some design and implementation flaws may be traced back to the Operational Programme Competitiveness and Cohesion (OPCC), which is used as the basis for designing every program. Programs must have an explicit link to OPCC, which sometimes results in lack of clarity in program objectives and lack of focus. The Common National Rules (CNR) are perceived to leave little room for flexibility and customization necessary to design and implement effective RDI support programs.[2] This is not an issue in programs funded by the national budget, bilateral agreements, or the World Bank, which do not have such requirements.

R&D programs and programs aimed at industry-science collaboration appear more challenging to design and implement

On average, both R&D and non-R&D programs perform moderately well. At first sight, no significant differences appear between the performance of R&D compared to non-R&D programs. R&D programs have a much higher variability, however, ranging from 2.5 to 4.1, while overall average scores for non-R&D programs are concentrated in a narrower range (Table 1). This may be because non-R&D programs are managed by only two institutions (MEEC and HAMAG-BICRO), while R&D programs are implemented by multiple institutions.

Programs aimed at industry-science collaboration are particularly challenging to design and implement, compared to programs aimed solely at businesses or researchers. Within programs supporting businesses and researchers there is a high degree of variation in scores: some programs are close to international best practices, while others have many areas for improvement. This could be an opportunity for learning between programs and expanding good practices to the whole system.

Figure 3 Scores vary depending on the source of funding



Note: The ESF category consists of only three programs: PZS, DOK1 and STEM scholarships.
Source: Staff elaboration

Table 1 Distribution characteristics of overall scores by investment type

	R&D	NON-R&D
Average	3.1	3.1
Standard deviation	0.4	0.2
Median	3	3.1
Minimum	2.5	3
Maximum	4.1	3.9
Range	1.5	0.9

Source: Staff elaboration.

2 A summary of the analysis of the CNR is presented in a separate brief.

DESIGN

Program design often relies on unverified assumptions, which leads to suboptimal selection of the type and scale of policy intervention

A high-quality justification will contain a documented analysis of the gap that must be addressed through government intervention. This is typically a market or system failure – a situation in which the allocation of goods, services, and capital by a free market is inefficient and leads to a social welfare loss.

In Croatia, the analysis and description of the market failure are often informal and lack sufficient detail to justify the particular program, including its design and choice of instruments. In many cases, the justification focuses on symptoms (e.g., Croatian firms lag EU peers in productivity), rather than on the reasons behind these symptoms (which require a deeper analytical dive to discover). The most commonly used instruments are grants, which is not always the most effective choice; for some interventions financial instruments could more effectively address market failures.

A higher level of awareness is needed regarding the usefulness of an explicit theory of change

A logic model connects all resources (inputs) and activities to the products (outputs) and results (outcomes) expected from an intervention. Without a logic model, the intervention mechanism and underlying assumptions may not be fully developed, leading to unintended consequences or unforeseen problems.

Very few programs are supported by fully developed theories of change and logic models, which would help inform design and resource planning and manage expectations for the program's impact.

Objectives are not set appropriately

A precise definition of objectives is necessary to determine the desired outcomes and impacts of a program. Best practice is to define objectives in such a way that they reduce ambiguity and conflict. To accomplish this, goals must be clearly articulated, realistic, observable, and measurable, as opposed to abstract, implicit, and generic.

In some programs, objectives are set at the level of activity outputs, without connection to broader expected outcome and impacts. In other cases, programs serve multiple objectives, making it difficult to maintain focus during implementation and assess their effectiveness. More targeted programs that tackle one or two specific objectives would help tailor program elements to desired changes in the economy.

The monitoring function prevails with little attention paid to evaluation

In ESIF-funded programs, basic monitoring is done at the level of the OP, with a core set of indicators that are sometimes confused with activities and outputs. Programs do not have built-in impact evaluation mechanisms at program level. Without the evaluation function, it is difficult to obtain evidence of program effectiveness and impact. This, in turn, impedes program learning and adjustments.

IMPLEMENTATION

Eligibility and selection criteria are mostly clear and transparent, but the application process is burdensome

The burden on applicants and beneficiaries, from application to implementation, is high, and the help of consultants is often required to navigate the process. Applicants and beneficiaries lack clarity on the process in part because not all procedural aspects are made publicly available (for example, the Common National Rules) or are covered by the public consultation process (for example, selection methodology).

The selection process is complex and has contributed to implementation difficulties

Agile and quick project proposal processing and funding predictability are crucial for effective spending and for achieving results. This is especially important in the context of keeping abreast with the fast-paced global research and innovation environment.

The quality of application and selection processes is inconsistent across programs. Some programs, mostly funded by the national budget, have fast, agile, and effective selection procedures. Others struggle with delays in the selection process. The selection process in ERDF-funded programs typically involves multiple institutions, and appeals may be submitted at any of the five stages of selection, which can further slow the process. Finding reviewers in advanced fields has been challenging. This is compounded by the requirement that all reviews be conducted in Croatian, which significantly restricts the pool of potential reviewers. Delays in the selection process have contributed to a lack of predictability and irregular call publication.

Human resource management practices are not conducive to staff autonomy and performance

Managing innovation policy requires significant analytical capacity with flexibility and autonomy to fine-tune policies to meet changing demand and conditions.

The responsibility for programs is very diluted. In some institutions program managers are allowed very little discretion and autonomy to introduce necessary changes. Some institutions struggle with staff turnover and lack of training opportunities. Staff has limited performance incentives and few prospects for career development.

The monitoring and evaluation process is not utilized to its full potential

A continuously operational M&E system is necessary to collect data for indicators at all levels and make necessary adjustments to the program. Further, both external and internal evaluation are necessary for accountability and learning.

While monitoring and tracking outputs is more widespread, it is not efficiently implemented, with parallel online and offline tracking that doubles the work for the program officers maintaining the data. Further, there is no process to anticipate impact evaluations at program level. Instead, performance assessments are typically conducted to measure progress towards achievement of targets. Only one impact evaluation was conducted, as part of the Proof of Concept program.

GOVERNANCE

Most programs explicitly acknowledge the link with other complementary programs, but interinstitutional coordination is challenging

The fragmented governance and insufficient coordination of STI policy reflects on program functionality. Fragmentation is apparent both from a horizontal and a vertical perspective. From a horizontal perspective, the split of the innovation agenda between private and public creates gaps in areas that fall between, such as industry-science collaboration and research commercialization, which have no clear ownership. Issues with the vertical perspective relate to managing EU structural funding, which involves many institutions with different roles. This complex institutional setup to work well requires a high degree of coordination and clear communication between institutions that have not always been forthcoming.

When programs face limitations related to external policies or regulations, the difficulty of removing the constraint tends to be quite high

In many cases, regulations inhibit instrument effectiveness and are difficult to change. External regulation and constraints can significantly hamper program impact and are very difficult to overcome.

In the research sector, these constraints relate to systemic issues such as high institutional fragmentation and inadequate incentives for researchers to pursue excellence, collaborate with the private sector, or transfer or innovate its technology. This adversely affects not only programs targeting researchers but also programs designed to foster industry-science collaboration. Issues such as complex state aid regulations and procurement rules place a significant burden on beneficiaries and applicants, but they are almost impossible to change.

RECOMMENDED ACTIONS

Policy governance and coordination

Coordination of innovation policies should be upgraded by strengthening the role of the National Innovation Council. In addition, the role of institutions involved in EU structural funding should be reexamined with a view toward streamlining the institutional setup. Over the medium term, establishing an innovation agency would lead to a focused approach and greater streamlining in the national innovation system.

Program design

Correctly identifying market failures and finding the optimal solution to address them should be the first step in designing a program. Each design should be supported by an explicit logic model, including a full catalogue of inputs, activities, and administrative costs.

Interactions with beneficiaries

Decreasing burdens on beneficiaries should be a priority, including by fully digitalizing the application process, reducing procurement burdens, and minimizing liquidity pressures on beneficiaries. It would also be helpful for beneficiaries and potential beneficiaries to increase transparency in the process by publishing the Common National Rules and expanding the scope of public consultations.

Selection process

Research and innovation programs require more flexibility in setting selection criteria, which would allow better targeting of market failures. To make the selection process more agile, it is necessary to facilitate the procurement of expert reviewers, including from abroad, and streamline the selection and appeals processes. A quicker, more agile selection process would allow authorities to commit to publishing more calls at regular intervals.

M&E design, implementation and learning

Monitoring and evaluation require developing technical capacities to design and interpret results, particularly when it comes to rigorous quantitative evaluations. To inform decision making and learning, evaluation plans should be created for the most important programs.

Human resources

Hiring, retaining, and training professionals specialized in innovation policy and management should be priorities over the next several years. Appropriate incentives and training opportunities should be provided.

Work in progress

Authorities are already addressing some of the issues raised in the functional and governance analysis, including through ongoing work on developing theories of change and conducting an analysis of outputs and outcomes as part of the PER in STI.

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