Analysis of Design and Implementation of Croatian S3 Governance

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NOTE

Contents

Acknowledgments

Acronyms and abbreviations

CCI Project	Strategic Project for Support to Competitiveness Clusters Initiatives
CHF	Swiss Franc (currency)
CPR	Common Provisions Regulation
ERDF	European Regional Development Fund
ESIF	European Structural and Investment Funds
EU	European Union
EUR	Euro (currency)
GVC	global value chain
HAMAG-BICRO	Croatian Agency for SMEs, Innovations and Investments
HRK	Croatian Kuna (currency)
IB	Intermediate Body
IB1	Level 1 Intermediate Body
IB2	Level 2 Intermediate Body
ILC	innovation life cycle
INI Project	Strategic Project for Support to the Establishment of Innovation Network for the Industry and Thematic Innovation Platforms
M&E	monitoring and evaluation
MIS	management information system
OPCC	Operational Program Competitiveness and Cohesion 2014–2020
OPEHR	Operational Program Efficient Human Resources 2014–2020
RDI	research, development, and innovation
RIS3	Research and Innovation Strategies for Smart Specialisation
S3	Smart Specialization Strategy 2016–2020
SFI	Strategy for Fostering Innovation 2014–2020
SMEs	small and medium enterprises
SO	specific objective
STI	science, technology, and innovation
STPA	S3 sub-thematic priority area
TPA	S3 thematic priority area

Executive summary

This report assesses the governance of the Croatian Smart Specialization Strategy (S3). The assessment involves reviewing the institutions engaged in designing and implementing the S3 and their roles, responsibilities, and decision-making processes. The analysis is structured around three modes of governance observed in Croatia: policy governance, entrepreneurial discovery process governance, and implementation governance. Policy governance refers to policy design, adoption, and revision processes, strategic management, and M&E. Entrepreneurial discovery process governance refers to the structures and activities related to collective decision-making between governmental and non-governmental stakeholders. Implementation governance refers to the structures and processes needed to implement S3 programs and projects.

The design of S3 governance in Croatia is highly ambitious. As a newcomer to smart specialization policy, Croatia had limited time to accumulate sufficient experience for policy planning and management. The S3, unlike the conventional policy cycle, involves non-governmental stakeholders in policy co-creation through a continuous entrepreneurial discovery process. This complexity of the S3 has been a significant challenge not only for Croatia but also for comparable Central and East European economies.

The S3 has a multi-layered governance structure that creates coordination challenges. The Ministry of Science and Education and the Ministry of Economy and Sustainable Development co-chair the National Innovation Council, which is the top governance body of the S3. Consisting of 17 members, the National Innovation Council is supported by an Inter-ministerial Working Group, a Technical Secretariat, and three advisory councils. The system is complemented by additional entrepreneurial discovery process governance structures grouped into Thematic Innovation Platforms, which include Thematic Innovation Councils, Priority Action Groups, and Croatian Competitiveness Clusters. Additionally, the implementation of S3 instruments, mainly funded through the European Structural and Investment Funds (ESIF), is governed by a separate set of institutions and relationships. This complex structure led to overcrowding of bodies with duplicate responsibilities in both the design and the implementation of policy instruments.

Delays and lack of clarity regarding roles and responsibilities interfered with the central coordination of policy governance. A two-year delay in establishing the top governance and advisory bodies hampered policy governance. The absence of the top decision-making authority resulted in a significant gap in S3 policy governance. The Inter-ministerial Working Group attempted to fill this gap as the inter-institutional operational coordination point for S3 stakeholders. However, the operational nature of the Inter-ministerial Working Group's work limited its authority. It thus could not fully compensate for the absence of the top decision-making authority. The National Innovation Council, which is formally the top coordinating body for the S3, needs to have a more effective coordinating role. Its effectiveness has been diminished partly by its late establishment and partly by lack of clarity on its role in the national innovation governance. It is also yet to fulfill its strategic role of enabling joint decision-making of governmental and non-governmental stakeholders.

The role of monitoring in learning about and adjusting policy is yet to materialize. The critical challenge in this respect has been to treat monitoring data as an active tool for decision-making rather than a passive flow of information. Another challenge is related to integrating different monitoring systems (S3, ESIF, and non-ESIF instruments), which requires harmonization of results frameworks and reporting protocols. Data collected by implementation bodies need to be consolidated to track progress on the S3 level. Coordination is particularly difficult for data on thematic priorities because there is no common approach to collecting this data or the instruments for which it is being collected.

The entrepreneurial discovery process had some limitations during the preparation of the strategy, with the understanding that it would mature during implementation. During S3 preparation, the entrepreneurial discovery process consisted of identifying thematic priorities without delving into the appropriate policy mix for each priority. The S3 envisaged entrepreneurial discovery process governance as an ongoing activity (a "work in progress") and laid out several milestones in its development. The milestones included establishing and operationalizing entrepreneurial discovery process governance structures that were not in place at S3 adoption. (The needed governance structures included Thematic Innovation Councils, Thematic Innovation Platforms, and others.) The milestones also included engaging these governance structures in preparing research, development, and innovation (RDI) strategies for each of the S3 thematic priorities, action plans for their implementation, and monitoring frameworks. The S3 envisaged that so-called "institutional instruments" (projects implemented by government stakeholders to facilitate the establishment of entrepreneurial discovery process governance structures and provide the analytical basis for entrepreneurial discovery process activities) would support this process.

Overall, the entrepreneurial discovery process has not generated a critical mass of activities and momentum for collective action. Partly due to the delayed establishment of entrepreneurial discovery process structures, their activities have been much more limited than envisaged. Thematic Innovation Councils remain without a clear and active role in the entrepreneurial discovery process. Aside from their establishment, other entrepreneurial discovery process milestones expected during implementation have stalled as the "institutional instruments" meant to support them did not produce the expected results. The activities of the Thematic Innovation Councils have been limited to the re-prioritization of activities for two Ministry of Economy and Sustainable Development programs. These changes were accomplished through direct interaction between the Ministry of Economy and Sustainable Development and the Thematic Innovation Councils. There were no similar reprioritization initiatives at the overall S3 level.

The ESIF governance structure has a strong influence on S3 implementation progress. ESIF are the predominant funding source for S3 instruments. Therefore, ESIF governance structures have a significant influence on S3 implementation. The Coordinating Body, the National Coordinating Committee, the Monitoring Committee, the Managing Authority, and two tiers of Intermediate Bodies form a complex governance structure with overlapping responsibilities and hierarchical relations. Within that complex structure, the Ministry of Regional Development and EU Funds—together with the Ministry of Science and Education and the Ministry of Economy and Sustainable Development—is ultimately responsible for the implementation of over 90 percent of the value of S3 instruments. The role of the

Ministry of Regional Development and EU Funds as Managing Authority and Coordinating Body for the whole ESIF governance system puts it in this position. Bodies involved in the ESIF system have decision-making authority over S3 implementation instruments. Thus, ESIF governance should align closely with the S3 policy governance system. However, there is a misalignment between these two systems. The misalignment arises because the top policymaking bodies in S3 (the Ministry of Science and Education and the Ministry of Economy and Sustainable Development) have subordinated roles in the ESIF system, while the Ministry of Regional Development and EU Funds as Managing Authority retains the key decision-making power, both strategically and operationally.

Excessive fragmentation of operational functions and processes introduces inefficiencies in the implementation of S3 instruments. Excessive fragmentation of functions is particularly evident in the selection process, especially when tasks and responsibilities alternate between different institutions. For example, different institutions may be responsible for assessing the quality of project proposals and for determining the eligibility of costs. This often means that those institutions have two separate processes to procure experts to conduct such assessments, when both assessments could be done in one step.

Institutional capacity is uneven across the S3 policy process. The institutional capacity for implementation, particularly as it relates to absorption, is more developed than the capacity for policy design, co-creation, and monitoring and evaluation (M&E). S3 implementation capacity has developed primarily under the influence of the ESIF implementation system. Having absorption as a clear objective, the ESIF system drives decision-making, specific roles and responsibilities, and incentives and training opportunities for staff. The adequacy and capacities of ESIF governance bodies are assessed ex ante by the European Commission before they can receive accreditation to perform implementation functions. As a result, there is a heightened focus on that type of capacity. In contrast, capacity for policy design is uneven across different institutions. Capacity for policy co-creation dwindled after having good initial momentum. Capacity to steer and adjust during implementation is also underdeveloped. M&E capacity is limited, partly due to fragmentation of responsibilities for S3 policy design, implementation and monitoring, which does not facilitate the detection and resolution of bottlenecks. Coordination between policy design, implementation, co-creation, and M&E is underdeveloped, especially since the function of the National Innovation Council as a strategic coordinating and decision-making authority is underutilized.

The new programming period presents an opportunity to upgrade S3 governance. S3 governance now meets regulatory and other requirements, but it remains very much a "work in progress." Adjustments in the S3 governance system are required for S3 to induce significant transformative changes in the national innovation system and transition from a government-led approach toward a stakeholder-driven participatory process. The report proposes several changes for the re-organization of the governance system, which are summarized visually in section 5, Figure 5.2. The recommendations focus on improvements that are feasible given the S3 policy timeframe, existing institutional capacities, and political economy considerations. The necessary adjustments include the following:

1. In terms of *policy governance,* it is necessary to integrate policy, implementation, and entrepreneurial discovery process governance actors by:

    a. *Establishing an S3 policy delivery unit*—An independent body with strong authority over the individual ministries should facilitate coordination of different stages of the policy cycle, improve M&E, and ensure that the strategic decisions of the National Innovation Council are implemented. The policy delivery unit could be formed by pooling and upgrading existing capacities—to perform policy planning and coordination, M&E, administrative, and technical support functions—currently scattered across various institutions.

    b. *Strengthening the role of the National Innovation Council*—Croatia should strengthen the position of the National Innovation Council by (i) empowering it to steer the overall national science and innovation policy and (ii) strengthening its role in coordinating S3 policy. Strengthening the National Innovation Council would enable better integration of science, technology, and innovation (STI) funding sources and create opportunities for streamlining STI policy governance.

    c. *Involving the National Innovation Council more directly in strengthening entrepreneurial discovery process governance*—The National Innovation Council should be more directly involved in the design and implementation of institutional instruments, which are relevant for overall S3 governance. The National Innovation Council itself could hold more frequent and in-depth discussions about the design and implementation of instruments. It could also interact more with the Inter-ministerial Working Group and the Thematic Innovation Councils to ensure that the entrepreneurial discovery process produces results.

    d. *Strengthening M&E reporting and utilization*—M&E should serve a more purposeful, strategic learning role, which requires streamlining and harmonizing M&E systems and strengthening the capacity for conducting effective M&E. The policy delivery unit (recommendation 1a) could take on the responsibility and resources for conducting M&E. It would then be able to use the data it collects to advocate for policy and implementation adjustments.

    e. *Establishing a real-time adjustment mechanism*—The bodies involved in S3 governance should establish an M&E network as a structured discussion platform that would detect issues in the entrepreneurial discovery process and in implementation as they emerge. The network would then resolve them to the extent possible or escalate them to other bodies in the S3 governance hierarchy. The network should comprise middle-level administrators who can identify issues in real time and have the authority to correct them or propose remedies.

    f. *Strengthening institutional capacities*—Institutional capacities should be increased by investing more resources for capacity development, particularly for policy design, implementation management and adjustment, and M&E capabilities. Capacity development may consist of advanced training, staff retention policies, additional hiring, work (re)organization, or other activities. Any investment in capacity building should include a plan for knowledge dissemination and retention within the institution.

2. In terms of *entrepreneurial discovery process governance*, strengthening participatory forms of governance should be a priority by:

    a. *Facilitating the bottom-up approach in structuring the entrepreneurial discovery process*—Thematic Innovation Councils should take the initiative in steering S3 policy. Program managers could help by defining broad parameters of Thematic Innovation Councils' engagement, including their objectives and purpose, but without creating unnecessary administrative burdens and without influencing the substance of the outputs produced in the Thematic Innovation Councils.

    b. *Increasing the involvement of Thematic Innovation Councils in policy co-creation*— Thematic Innovation Councils could provide inputs to other strategic documents or legislation related to STI and sectoral policies connected with the S3. Thematic Innovation Councils should also be involved earlier in program planning and design, focusing primarily on program contents and strategic aspects of the program. Their involvement should extend beyond the scope of the Ministry of Economy and Sustainable Development's policy authority by, for example, providing inputs on instruments targeting the research sector.

    c. *Engaging the Thematic Innovation Councils in developing RDI strategies and policy mixes for each thematic priority*—The Thematic Innovation Councils should be supported in developing RDI strategies and corresponding policy mixes with tailored instruments addressing the specific circumstances and challenges of each thematic priority. Their responsibilities should include instruments and activities beyond the disbursement of grant financial aid. For example, they should be responsible for identifying regulations that need to be modified, procurement procedures, pilots, and demonstration projects that need to be initiated, and other opportunities to support their thematic priorities.

3. In terms of *implementation governance*, Croatia should streamline the governance structure to improve absorption and increase agility by:

    a. *Streamlining implementation governance*—The role of non-sectoral Managing Authorities should be limited to ensuring compliance of interventions with ESIF regulation without delving into policy and sectoral matters. Having sectoral Operational Programs with sectoral Managing Authorities with no Intermediate Bodies (or a single Intermediate Body) would achieve even better streamlining. This option would allow for more flexibility in program design and selection criteria instead of having a one-size-fits-all solution for different policy areas.

    b. *Organizing the policy implementation agenda around the stages of the innovation life cycle*—Based on the scope of the Ministry of Science and Education's policy authority, its policy should be more focused on lower-TRL levels and pre-commercial research. The Ministry of Economy and Sustainable Development should manage the highest-TRL development activities and support for innovativeness capacities. This division of responsibilities would allow for better coordination of the policy mix and better use of different funding sources (ESIF, national budget, and others).

c. *Reducing fragmentation in key implementation processes*—The selection processes could be streamlined by arranging matters so that one institution performs several consecutive steps in the process or by reorganizing the governance structure in ESIF implementation. The current system has three tiers: Managing Authority, Intermediate Body Level 1 (IB1), and Intermediate Body Level 2 (IB2). A more straightforward system would have only two tiers: Managing Authority and Intermediate Body.

d. *Introducing the regulatory guillotine approach and tailor-made procedures for RDI projects*—To radically reduce lengthy procedures and redundant documentary requirements for applicants, Croatia should apply the regulatory guillotine approach to ESIF regulations. One option would be to define a separate set of rules and procedures that would apply to RDI support instruments. Another possibility would be to have a separate Operational Program covering RDI instruments with tailor-made rules and procedures for RDI support.

Introduction

Croatian smart specialization policy is part of the EU-wide initiative to promote place-based development of European countries and regions. The aim of Research and Innovation Strategies for Smart Specialisation (RIS3)[1] is to bring policy makers and other stakeholders (academia, private sector, civil society, consumers, and so on) together in the process of design and implementation of innovation policy (Cvijanović, et al. 2020). The effectiveness of this process depends on the system of governance and how it contributes toward a more inclusive, transparent, and responsible STI system in a country (Paic and Viros 2019).

Smart specialization is the primary activity in the Croatian innovation system, and its governance has a major effect on the performance of the whole system. The financial dominance of smart specialization instruments has a major influence on the behavior and strategies of actors in the innovation system. Funding based on the Croatia Smart Specialization Strategy 2016–2020 (S3) dominates Croatian science, innovation, and industrial policy governance both financially and institutionally. Maximizing the financial and behavioral effects of the S3 on the Croatian innovation system would require integrating it closely with the national innovation policy. This report explores the extent to which this is the case, identifies governance challenges, and proposes improvements.

The RIS3 approach provides a major opportunity to apply and adapt an integrated approach to national RDI priorities, but S3 governance may be challenging. The RIS3 approach is based on thematic priority areas (TPAs). Compared to the conventional horizontal approach to innovation policy, a TPA-driven approach requires public support that is more focused. The RIS3 approach can be more effective if done right. It opens opportunities for the design and implementation of a much more effective and efficient innovation policy. However, this approach comes with many challenges. It requires well-developed innovation governance and good vertical and horizontal coordination across policy areas. The governance challenges arise because each TPA is unique in terms of its economic structure, market characteristics, challenges, and opportunities (Wostner 2017). A 2018 survey showed that 48 percent of decision-makers involved in RIS3 in European countries and regions have major difficulties in governance, defined as ensuring participation and ownership (Guzzo, Gianelle and Marinelli 2018).

The policy agenda and priorities should link closely with decisions about instruments and implementation. The purpose of the entrepreneurial discovery process embedded in the RIS3 framework is to bridge the gap between (i) policy setting and (ii) governance of implementation as two autonomous processes. However, the extent to which the

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1 RIS3 refers to the framework set out by the European Commission for developing smart specialization strategies and processes. The text refers to the Croatia Smart Specialization Strategy 2016–2020 as the "Croatian S3" or simply the "S3."

entrepreneurial discovery process has taken place across the European Union (EU) varies significantly (Radošević, Curaj, et al. 2017). Also, the extent to which the entrepreneurial discovery process has been incorporated into the strategy design and actual decision-making on the allocation of structural funds differs starkly across the EU (Capello and Kroll 2016).

The RIS3 process goes beyond government-led action towards collective action realized through the entrepreneurial discovery process. Within the S3 activities, the interaction amongst so-called "quadruple helix" stakeholders should be entrepreneurial, geared toward transforming the economy, and built around a motivation to innovate and change. This sort of interaction requires going beyond traditional forms of governance dominated by a single agent (usually government). The entrepreneurial discovery process aims to ensure that policy priorities reflect the true priorities of innovation actors, generate a continuous interaction between design and implementation, facilitate the self-organization of business and research communities, and strengthen their capacity for collective action. Self-organization is enhanced through support for clusters, activities such as technology and skill foresight, and by organizing "triple helix" actors into governance bodies (Thematic Innovation Platforms). Improving the capacity for collective action should lead to the transformation of existing ecosystems and the emergence of new ones. Improved innovation ecosystems, in turn, should improve technological competitiveness and produce tangible impacts on the economy and society.

The S3 governance structure in Croatia is not fully integrated with national innovation policy, which creates coordination and implementation challenges. In a preliminary assessment of the institutional landscape for STI policy in Croatia, the World Bank (2019) study "Analysis of the Quality and Coherence of the Policy Mix" points to a mismatch between the governance system for innovation policy and the one for the S3 implementation. This mismatch may be damaging in the long term. The effective absorption of EU cohesion funds for innovation requires operational alignment among numerous coordinating and implementation bodies. Hence, the quality of the governance system has a decisive influence on the country's overall innovation policy and its future innovation capacity.

The Croatian S3 envisaged support for improving the entrepreneurial discovery process and governance through several instruments. This unique feature of the Croatian S3 was a sign of the intent to embed entrepreneurial discovery process governance into the national innovation system. The implicit aim was to use the entrepreneurial discovery process to initiate the collective action of major stakeholders in specific TPAs or produce outputs such as analyses or other deliverables relevant to the entrepreneurial discovery process itself.

The adequacy of innovation policy depends crucially on the country's policy implementation capacity. In general, the scope of policy instruments and the resources allocated to innovation policy need to align with the capacities of the institutions tasked with the design, implementation, and M&E of innovation policy. Overly ambitious innovation policy that significantly surpasses institutional capacity for its implementation wastes resources without producing the desired effects.

The assessment of S3 governance will primarily be useful for the next planning period. The adoption of the S3 evaluation plan and initiation of the S3 interim evaluation are steps in the right direction. They are indispensable bases for the revision of the S3. However, the evaluation activities started with a significant delay. Consequently, the interim evaluation is being performed at the end of the period covered by the strategy. The analysis and assessment will therefore be useful for improving the design and governance system of the S3 in the upcoming financial period.

This report consists of five sections. Section 1 presents the analytical framework used to assess S3 governance and introduces the three main modes of S3 governance observed in Croatia: policy governance, entrepreneurial discovery process governance, and implementation governance. Section 2 provides an analysis of each mode of governance as envisaged in the S3. Section 3 examines how Croatia has implemented these modes of governance in practice. Section 4 presents an assessment of institutional capacity based on semi-structured interviews with S3 stakeholders. Section 5 provides recommendations for improving the S3 governance system. Throughout, the report provides specific examples of S3 governance design and implementation in other EU countries. Appendix I presents additional examples, while Appendix II provides a detailed list of S3 policy instruments in the context of the overall STI landscape. Appendix III explains the approach to assessing institutional capacity, and Appendix IV presents the questionnaire used for the institutional capacity assessment. Appendix V provides more details for a proposed real-time M&E mechanism.

01

Analytical framework
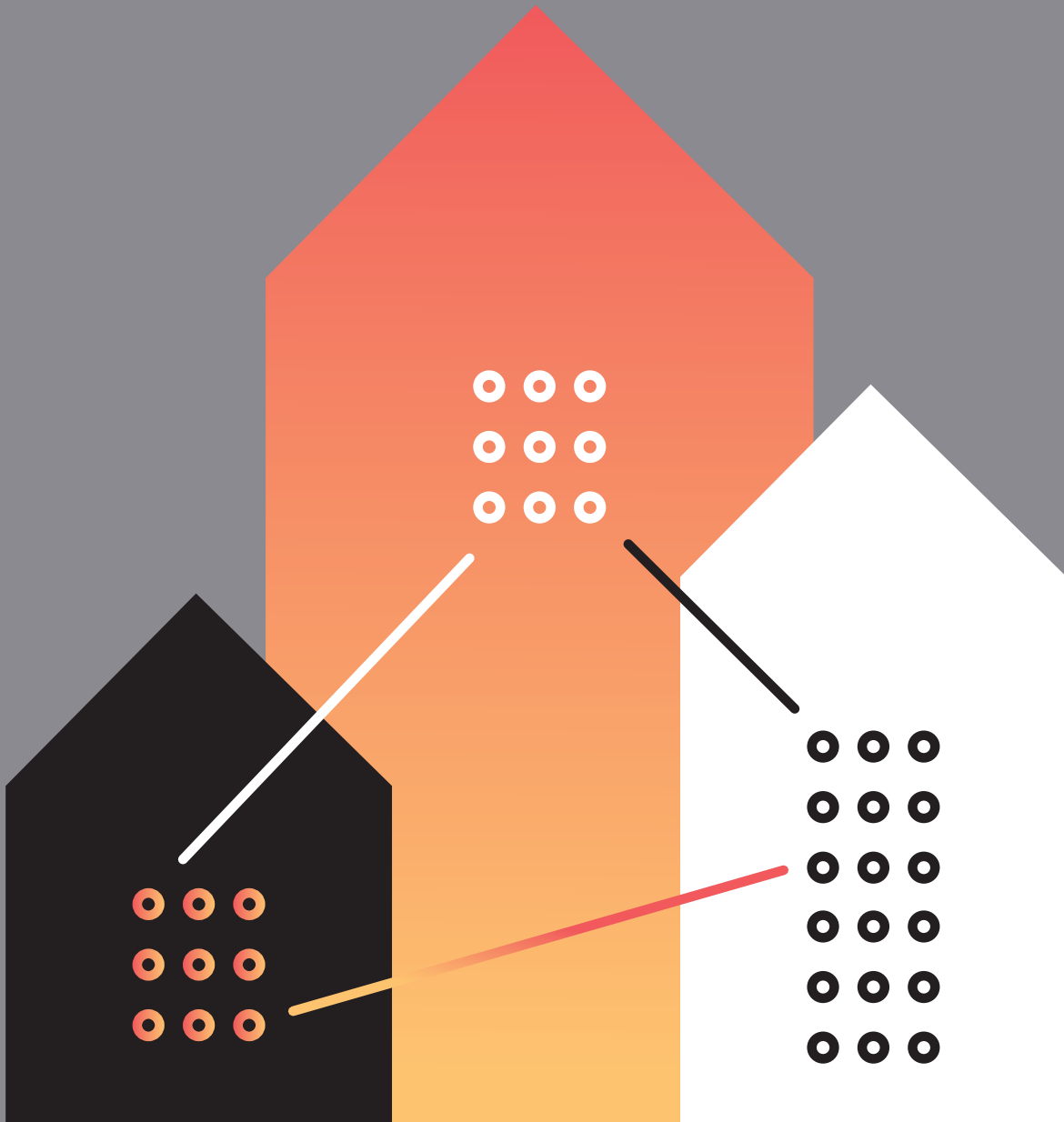
01
Analytical framework

- The concept of governance in the RIS3 framework refers to the whole process of designing and implementing the S3, "including who is involved, the structures that are put in place and how decisions are taken" (Gianelle, et al. 2016).

- Croatian S3 governance is a mix of three modes of governance: policy governance, entrepreneurial discovery process governance, and implementation governance.

- The analysis also reviews horizontal and vertical coordination issues and the ability of the system to generate collective action and correct course based on reliable and timely M&E.

This report aims to assess Croatian S3 governance, focusing on the stakeholders' roles, responsibilities, and functioning. The concept of governance in the RIS3 framework refers to the whole process of designing and implementing an S3, "including who is involved, the structures that are put in place and how decisions are taken" (Gianelle, et al. 2016). This report's analytical framework rests on a conceptualization of the innovation policy process or how the policy cycle is managed and influenced. It differentiates between four stages in the policy cycle: agenda-setting and prioritization; decision making about policies and programs; implementation of policies and programs; and policy evaluation, including monitoring. Also, it is common practice that the design and legitimation of policy—and decisions about the design of programs—not be conducted by the same actors who are implementing programs. Hence, the framework distinguishes between policy governance and implementation governance.

The analysis presented in the report draws on a desk review of available documentation, interviews with stakeholders, and previously conducted analyses. The report's findings build on desk review and analysis of publicly available documents, regulations, minutes of meetings, and data. Further, the report uses information collected in interviews with officials, public servants, and other stakeholders involved in S3-sponsored activities. The study also builds on the results of the Functional and Governance Analysis (World Bank 2020), which analyzed the governance of individual STI support programs.

The notion of governance used in the analysis is broader than the state hierarchy or apparatus. Innovation policy requires a broad understanding of governance in which government is only one of the actors involved in an interactive process involving various forms of partnership, collaboration, competition, and negotiation (OECD 2005). This broader understanding stems from the nature of innovation processes as activities where

boundaries between and within the public and private sectors are blurred. Sole inventors do not drive innovation. Instead, it derives from interactions between individuals and organizations involved in collective action. In that context, the government does not have the power to make things happen by command or authority. Rather, its role should be to steer and guide. This perspective on governance enables us to address innovation more directly than from within the narrower perspective of traditional public administration.

In the S3 framework, policy co-creation between governmental and non-governmental stakeholders is a key element called the entrepreneurial discovery process. The non-governmental stakeholders of the innovation ecosystem, including representatives of the business sector and academia, should be actively involved in setting and adjusting the S3 priorities, formulating sectoral diagnostics, and defining the sectoral intervention logic and delivery instruments. Such participation constitutes a bottom-up approach to shaping the sectoral dimension of the strategy and steering its priorities.

The analysis thus also addresses the design, establishment, and performance of entrepreneurial discovery process governance, a novel mode of governance for Croatia that goes beyond state governance. S3 design and implementation require the coordination of many innovation stakeholders. State bodies must facilitate the engagement of nonstate stakeholders in all stages of the policy process. At the same time, state administration bodies are ultimately accountable for responsible spending of the funds and proper running of the programs. Given these two roles, the Croatian governmental stakeholders face formidable challenges. The task of designing and implementing conventionally run programs at this scale would already be a significant challenge. It is even more complex because the process requires the active engagement of potential beneficiaries in prioritizing and designing programs.

To address multiple aspects of the analysis of S3 governance, we conceive a threefold governance framework composed of policy governance, entrepreneurial discovery process governance, and implementation governance. This framework points to both the relative autonomy and the interdependence of the three modes of governance. Figure 1.1 illustrates the three modes of S3 governance in Croatia.

"Policy governance" refers to the S3 policy design, adoption, and revision processes, S3 strategic management, and S3 M&E. Most prominently, this refers to the National Innovation Council, which is the top institution in the S3 policy structure. As an inter-institutional coordination authority, the National Innovation Council should be the final decision-making authority for all strategic decisions on the S3 level.

Policy governance overlaps with "entrepreneurial discovery process governance," which refers to the structures established for realizing and generating collective action between governmental and non-governmental stakeholders. In Croatia, the critical structures were initially the Croatian Competitiveness Clusters and later the Thematic Innovation Councils. As illustrated in Figure 1.1, collective action realized through collaboration in the entrepreneurial discovery process should influence both policy governance (most notably top-level decisions regarding selection and revision of S3 priorities) and the design and implementation of the strategy's delivery instruments.

Figure 1.1 Analytical framework of S3 governance
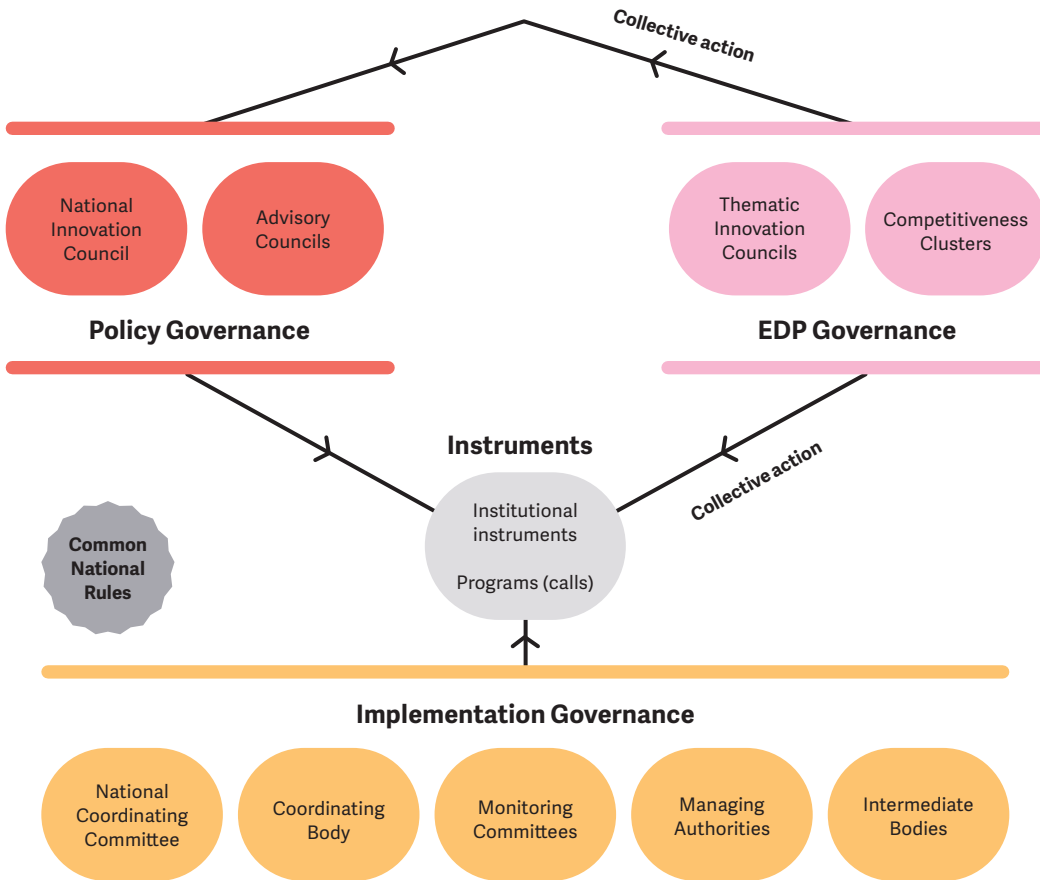
Source: Staff elaboration.
Note: EDP = entrepreneurial discovery process.

The third mode of governance is "implementation governance," which refers to the institutions and processes involved in implementing S3 programs and projects. In most cases, it refers to the institutions managing the Operational Programs for the ESIF, which provides by far the largest share of funding for S3 delivery instruments. As illustrated on the bottom of Figure 1.1, ESIF Operational Programs have implementation governance structures in addition to S3 policy governance structures. As described in more detail in the main sections of the report, the institutions involved in implementation governance are mostly the same as those involved in policy governance. However, the hierarchical relations among these institutions are not necessarily the same on the policy level as on the implementation level.

An effective governance system requires credible commitment, coordination, and cooperation among different organizations (World Bank 2017). Innovation governance has three subcomponents: the institutional (legal and policy) framework, the organizational framework, and the interorganizational framework for promoting innovation and technology upgrading (Radošević 2020). There can be mismatches among these three components

when organizations do not interact to improve their mutual understanding of innovation-related issues. In that case, we observe fragmented innovation governance. Governance is fundamentally about interdependence, linkages, networks, partnerships, co-evolution, and mutual adjustment (De La Mothe 2001). The key to a sound governance system is the interplay between the various actors: how the whole system works together (Pollitt and Bouckaert 2000). This holistic perspective applies to all stages of the policy cycle, not only to policy design but also to implementation. To achieve commitment, coordination, and cooperation, any governance system requires bargaining and delegation of authority (power) across a governance hierarchy or network. Poorly executed governance systems can suffer from a lack of accountability, a lack of transparency, and poor representation of stakeholders. Coordination and cooperation are essential to reduce inconsistencies and goal conflicts among policies and actors, divide roles among stakeholders effectively, and decrease fragmentation of effort while empowering actors to do their jobs effectively.

The analysis accounts for vertical and horizontal dimensions of good governance. Vertical coordination involves "steering," where an organization at one level instructs one at a lower level what to do and receives an upward flow of information in return. However, steering alone is not sufficient for good governance unless the objectives of different bodies align. Horizontal coordination is required to ensure that innovation policy is coherent and coordinated across institutional boundaries. Horizontal coordination, in turn, requires understanding where failures or mismatches in the governance system are. Therefore, governance systems need to be sufficiently reflexive to allow such failures to be identified and acted upon. Delegating aspects of policy implementation to intermediary bodies, which reduces the need for ministries (as policy makers) to be all-knowing, can reduce the knowledge gap.

Another critical feature of good governance is its ability to generate collective action. The essential function of governance is to generate collective action resulting in outcomes that individual organizations could not achieve without being part of the governance system (Risse 2012). Achieving collective action requires distributing rights and authority between government and non-government actors.

Good governance requires a distributed intelligence capability or a system for monitoring, detecting, and remedying failures. Good governance requires gathering and analyzing data and exploiting it to support policy analysis and deployment. Therefore, a governance system needs to have built-in "strategic intelligence" or knowledge of when and where the system is malfunctioning. Additionally, a system cannot rely on only one source of intelligence; instead, intelligence needs to be distributed across different layers of the policy hierarchy. Also, there is a strong argument for some balance in strategic and operational intelligence capabilities between different layers of the implementation hierarchy. Finally, the information produced and exchanged should be open so that it can be debated.

Coordination across different layers of policy hierarchy is a vital element of S3 M&E. A practical and impactful evaluation of S3 rests on a close integration of diverse types of monitoring activities. An integrated assessment of S3 activities would require (i) coordination between the assessment of outputs, outcomes, and impacts across programs funded from different funding sources; and (ii) an independent M&E system that would allow for consolidation between programs with different systems and procedures.

02

Setting the stage:
S3 governance design
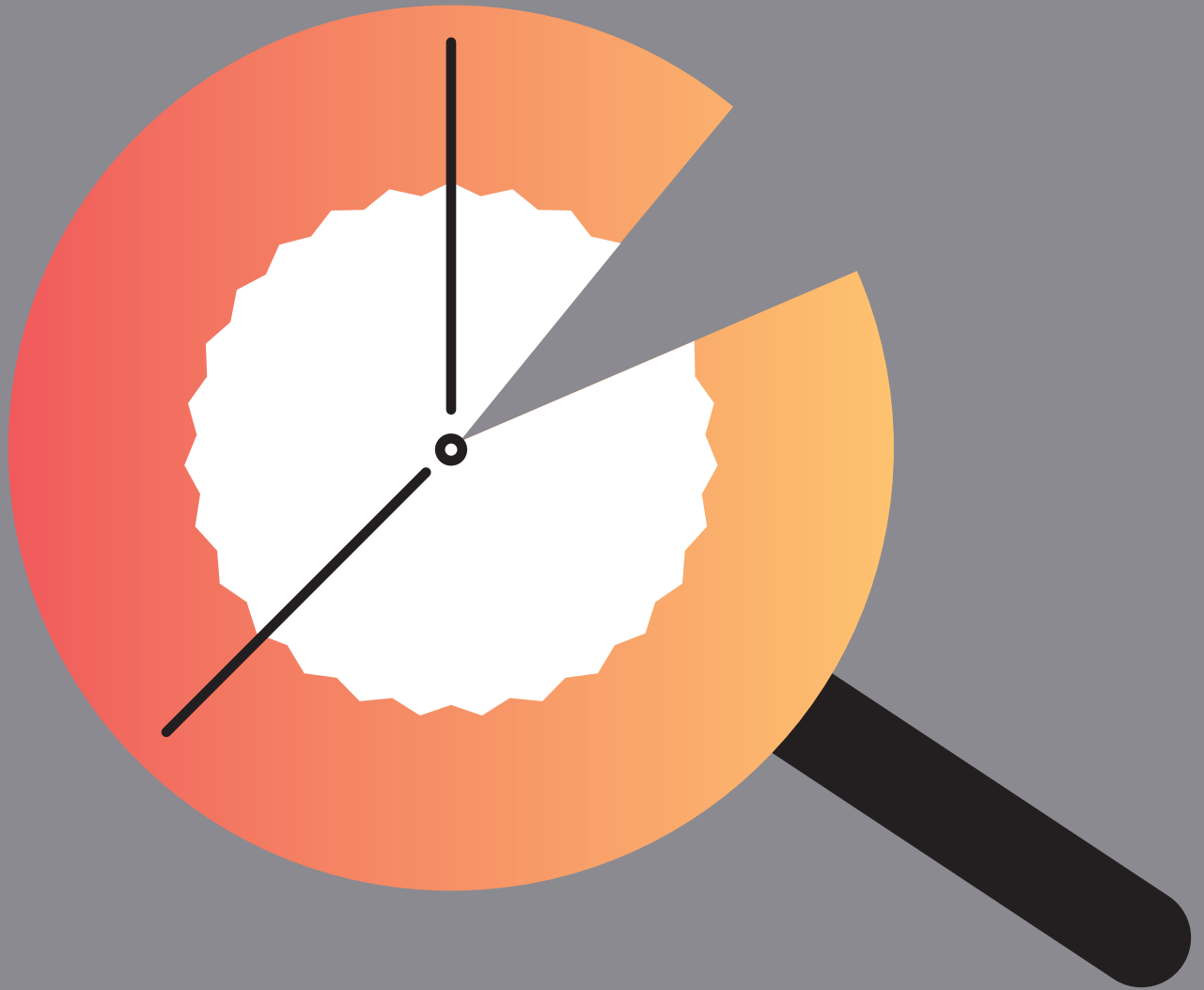
02
Setting the stage: S3 governance design

- Croatia envisaged its S3 policy governance as an ambitious multi-layered structure for policy co-creation and shared implementation. However, the authorities of some of the top governance bodies—particularly those involved in implementing the Strategy for Fostering Innovation—may overlap.

- The S3 entrepreneurial discovery process involved extensive consultations to help select priorities for smart specialization. However, the quality of these consultations varied due to a lack of analytical context for participants, an ad hoc discussion format, and constraints limiting the consultation process to selecting priorities.

- S3 implementation governance is strongly influenced by ESIF governance because ESIF is the most important funding source for S3 instruments. The parallel nature of the S3 and ESIF governance systems and the different hierarchical positions of institutions within each of them may give rise to coordination challenges.

- Croatia designed ESIF mechanisms for S3 instruments before setting the S3 strategic direction, creating a mismatch in the policy cycle.

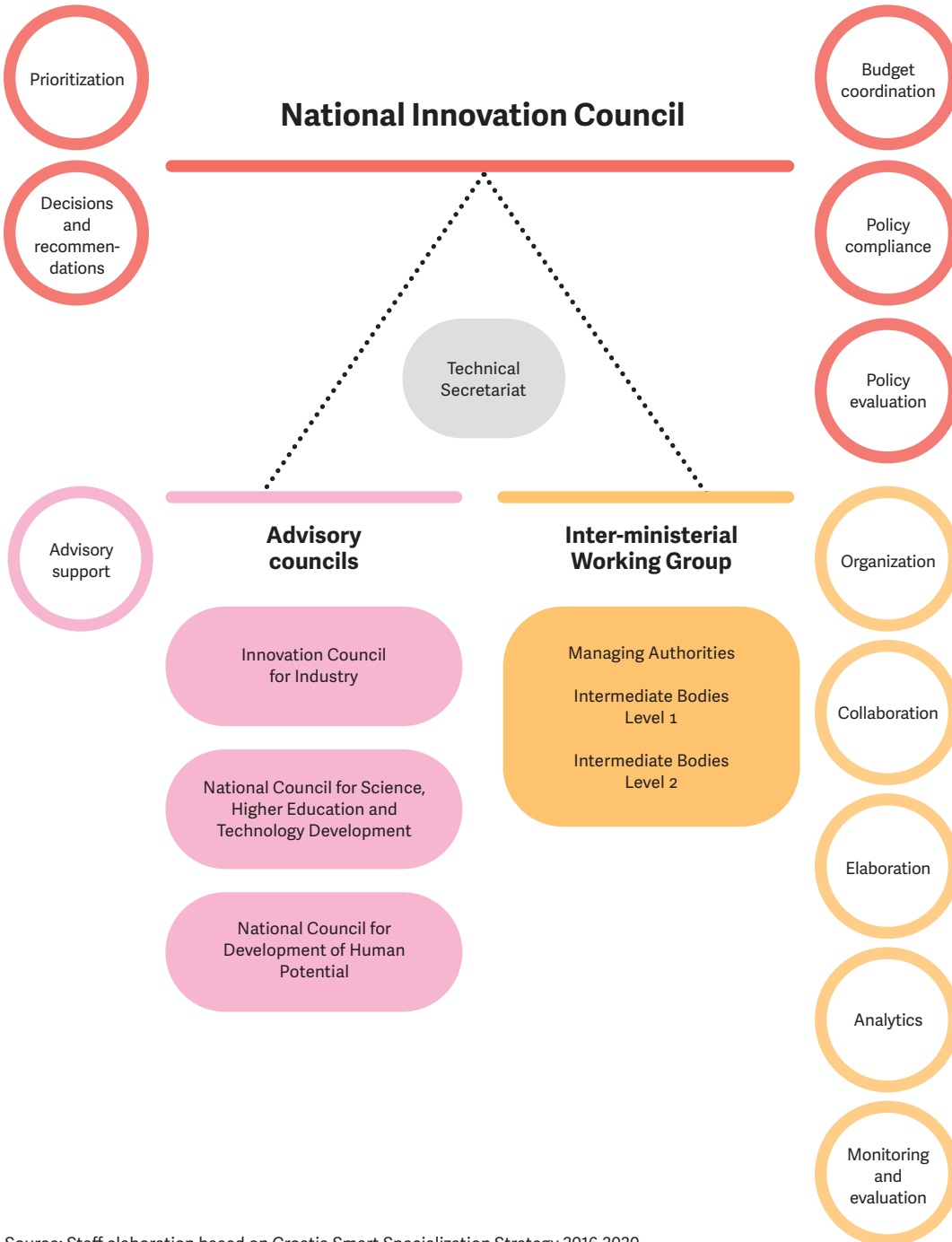## 2.1 The architecture of S3 policy governance

Preparing the S3 involved the efforts of multiple policy makers and stakeholders. The Ministry of Economy and Sustainable Development led the S3 preparation. An Inter-ministerial Working Group representing the main governmental stakeholders operationalized it.[2] Aside from the Ministry of Economy and Sustainable Development, the Inter-ministerial Working Group included other STI policy and sectoral authorities related to the S3. Most notably, these other authorities included the Ministry of Science and Education as the policy authority for science and research and the Ministry of Labor, Pension System, Family and Social Policy as the policy authority for the smart skills aspect of the S3. The Inter-ministerial Working Group also included the Ministry of Regional Development and EU Funds as the fundamental institution of the ESIF governance system in Croatia. The culmination of S3 preparation was the adoption of the strategy in March 2016.

Croatia envisaged the S3 governance structure as a mechanism for policy co-creation and shared implementation. Figure 2.1 depicts the main actors in S3 policy governance. The National Innovation Council, comprising top-level representatives of the institutions involved, is the highest S3 strategic policy authority. The plan was to establish the National Innovation Council immediately upon S3 adoption and for the Ministry of Economy and Sustainable Development and the Ministry of Science and Education to co-chair it, positioning them as the two institutions leading S3 policy. The Inter-ministerial Working Group, which Croatia established during the preparation of the S3, was tasked with coordinating the system operationally. The strategy envisaged the S3 Technical Secretariat as a support body to the National Innovation Council and the Inter-ministerial Working Group. The planned governance structure also includes three advisory councils to the National Innovation Council, namely the Innovation Council for Industry; the National Council for Science, Higher Education and Technology Development; and the National Council for Development of Human Potential.

Key elements of the envisaged S3 policy governance system were not in place at the time of S3 adoption, and some were established very late in the process. The National Innovation Council was not established at the time of S3 adoption in March 2016 and thus did not exist when the S3 system was established. The same goes for the Technical Secretariat designated to support it, although the S3 indicates that this body would reside within the Croatian Agency for SMEs, Innovations and Investments (HAMAG-BICRO). The Innovation Council for Industry was also not established when the S3 was adopted.

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2 Since the S3 adoption in March 2016, Croatia has reorganized the state administration system several times. These reorganizations introduced changes in terms of the ministries involved and the scope of their authority. For instance, the Ministry of Economy and Sustainable Development was operating as the Ministry of Economy in 2016, whereas a different ministry was responsible for energy and sustainable development policies. Furthermore, the Ministry of Entrepreneurship and Crafts was operating as a separate institution that was represented in the S3 Inter-ministerial Working Group but later merged with the Ministry of Economy. For the sake of clarity, the bodies listed in this paragraph follow the current organization of the state administration system and the ministries involved. Later sections of the report refer to these frequent changes when they are directly relevant to the S3 system.

Figure 2.1 S3 policy governance based on S3 document

Prioritization

Budget coordination

Decisions and recommendations

Policy compliance

National Innovation Council

Technical Secretariat

Policy evaluation

Advisory support

Advisory councils

Inter-ministerial Working Group

Organization

Innovation Council for Industry

Managing Authorities

Intermediate Bodies Level 1

Intermediate Bodies Level 2

Collaboration

National Council for Science, Higher Education and Technology Development

Elaboration

National Council for Development of Human Potential

Analytics

Monitoring and evaluation

Source: Staff elaboration based on Croatia Smart Specialization Strategy 2016-2020.

Although the S3 envisaged the Innovation Council for Industry as an advisory body to the National Innovation Council, their authority may overlap. The Strategy for Fostering Innovation 2014–2020 (SFI), the innovation policy framework preceding the S3, envisaged the Innovation Council for Industry as its main governance body. However, the line between the

S3 and SFI policy frameworks is often blurred. Croatia adopted the SFI in 2014, before the adoption of the S3. The two strategies cover the same implementation period, have very similar objectives, and share implementation instruments.[3] The overlapping content of the two strategies translates into potential overlap in the authority of the National Innovation Council and the Innovation Council for Industry as their central governance bodies. As the main governance body of the SFI, the Innovation Council for Industry has authority over the implementation of the SFI policy mix, in the same sense that National Innovation Council has over the S3 policy mix. Table 2.1 shows that the tasks and responsibilities of the two councils are strikingly similar.

Table 2.1 Comparison of the roles of the National Innovation Council and the Innovation Council for Industry

	INNOVATION COUNCIL FOR INDUSTRY (REFERRING TO THE SFI)	NATIONAL INNOVATION COUNCIL (REFERRING TO THE S3)
TASKS AND RESPONSIBILITIES	Coordinates and directs the operational implementation of the identified priorities and measures of the SFI through giving recommendations and adopting decisions on the implementation of national innovation priorities aimed towards specific bodies or organizational units within the identified innovation system.	Adopts the Action Plan, revises it as necessary, coordinates the implementation of the Action Plan for the implementation of S3 through identified and defined delivery instruments, and monitors the achievement of indicators of the S3 delivery instruments and additional related measures and programs.
	Approves annual reports on innovation performance.	Approves Annual Implementation Reports and Evaluation Reports of the S3 and examines reports prepared based on M&E.
	Issues binding recommendations to stakeholders in the innovation system who are not implementing the established measures and those for which there are delays and deviations in implementing the prescribed measures of the strategy.	Adopts proposals for corrective decisions for stakeholders implementing S3 measures and programs, based on Annual Reports on S3 Implementation, Reports on S3 Evaluation, and other information received from the Inter-ministerial Working Group.
	Adopts recommendations related to improving and revising the objectives and priorities of innovation policy.	Responds to changes and trends in implementation by providing recommendations and proposing and approving revisions to the S3 following the interim evaluation, the activities of the Thematic Innovation Platforms, and foresight projects.
	Adopts proposals for measures to improve the innovation system.	Coordinates the implementation of foresight projects to ensure complementarity of RDI capacities between science and the business sector.

Sources: Government Decision on National Innovation Council establishment (5 July 2018), Government Decision on Innovation Council for Industry establishment (OG 129/17, 36/19, 25/20).

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3   For details and a comparison of instruments in the S3 and the SFI, see Appendix II.

The S3 governance structure implies that innovation policy is subordinate to the S3, rather than the S3 being integrated into innovation policy. While the Innovation Council for Industry is a governing body of the SFI, it is an advisory body to the National Innovation Council. This arrangement suggests that the SFI is subordinate to the S3. The seniority of the leadership of each council also reflects this subordination. The head of the Innovation Council for Industry (and ex-officio National Innovation Council member) is a State Secretary (in the Ministry of Economy and Sustainable Development). By contrast, the co-chairs of the National Innovation Council are ministers (Ministry of Economy and Sustainable Development and Ministry of Science and Education). Box 2.1 shows how Slovakia integrated S3 governance into its national STI policy.

Box 2.1 Integration of S3 governance into national STI policy: The example of Slovakia

The S3 administration in Slovakia is fully integrated into national STI policy governance. The Government Council for Science, Technology and Innovation is equivalent to the Croatian National Innovation Council. However, its responsibility goes beyond the S3, integrating it into national STI policy activities. In addition to being the top S3 authority, it is an advisory body to the Slovak government for science and innovation. The Council for Science, Technology and Innovation includes representatives of the public sector (ministries), the academic sector (universities), and the private sector (employers' organizations and associations). It submits to the government proposals and recommendations concerning the implementation of RIS3 and its evaluation and recommendations to ensure the sustainable growth of RDI and related areas relevant to S3. The Council evaluates the implementation of programs, projects, plans, actions, and calls and controls and monitors their implementation. The Council's role was enhanced, and the Deputy Prime Minister's Office for Investments and Informatization now chairs it. This Office is also a coordination authority for the ESIF Operational Programs and is in this sense equivalent to the Croatian Coordination Body. This coordination role is also an example of a higher degree of integration of the S3 policy and implementation governance because the same body leads both the S3 and implementation governance.

The Permanent Committee for RIS3 implementation is the main executive operational mechanism of the Council for Science, Technology and Innovation. This Committee is an inter-sectoral coordination and communication body of the Council, formed on the principle of the quadruple helix. It consists of representatives from academia, the business sector, and state bodies representing education, human resources, research, development, innovation, and informatization. The Committee's role is to monitor S3 implementation; coordinate at the inter-ministerial level of S3; comment on the coherence, timing, and resource delivery of calls in terms of their contribution to the S3 objectives; assess S3 implementation; and propose measures to improve it to the Council.

Source: Staff elaboration based on Research and Innovation Strategy for Smart Specialisation of the Slovak Republic (RIS3 SK).

The National Innovation Council and the Innovation Council for Industry also share similar membership structures. The key stakeholders of the innovation ecosystem are represented on both councils, but the Innovation Council for Industry includes a broader group of stakeholders than the National Innovation Council (Table 2.2). Moreover, the presidents of the Thematic Innovation Councils are members of both the Innovation Council for Industry and the National Innovation Council. HAMAG-BICRO supports both councils as Technical Secretariat. Box 2.2 describes the more streamlined structure adopted in Slovenia.

Table 2.2 Stakeholders represented in the National Innovation Council and the Innovation Council for Industry

	NATIONAL INNOVATION COUNCIL	INNOVATION COUNCIL FOR INDUSTRY
CHAIRED BY	Ministry of Science and Education, Ministry of Economy and Sustainable Development	Ministry of Economy and Sustainable Development
MEMBERS	Government/Prime Minister's office	
	Ministry of Science and Education	
	Ministry of Economy and Sustainable Development	
	Ministry of Regional Development and EU Funds	
	Ministry of Labor, Pension System, Family and Social Policy	
	National Council for Science, Higher Education and Technology Development	
	Croatian Chamber of Economy	
	Croatian Employers' Association	
	Five Thematic Innovation Councils	
	National Council for Development of Human Potential	Croatian Science Foundation
	Innovation Council for Industry	Ministry of Judiciary and Public Administration
	Croatian Chamber of Crafts	Ministry of Finance
	Labor Unions	Ministry of Agriculture
		HAMAG-BICRO
		Central Finance and Contracting Agency
		Croatian Bank for Reconstruction and Development
		Croatian Academy of Sciences and Arts
		Croatian Association of Innovators
		Croatian Association of Counties
		Croatian Association of Cities
TECHNICAL SECRETARIAT	HAMAG-BICRO	

Sources: Government Decision on National Innovation Council establishment (5 July 2018); Government Decision on Innovation Council for Industry establishment (OG 129/17, 36/19, 25/20).

Box 2.2 S3 policy governance structure: Example of Slovenia

Slovenian S3 governance has a more streamlined structure in which one government office plays a role in all three governance areas: policy, entrepreneurial discovery process, and implementation. The Government Office responsible for Development and European Cohesion Policy acts as the primary stakeholder in the policy system, as the facilitator of the entrepreneurial discovery process, and as the Managing Authority for the Operational Program. This arrangement significantly simplifies the governance structure, although it may raise public accountability issues because the Office is not directly accountable to innovation stakeholders except through the government. The Government Office coordinates the Slovenian S3 (also known as "S4") implementation by cooperating with (i) ministries responsible for economy and science that are responsible for the area of RDI; (ii) other ministries relevant to S4 objectives; and (iii) representatives of implementing agencies, in particular, the Slovenian Research Agency; the Agency for Promotion of Entrepreneurship, Innovation, Development, Investment and Tourism; the Slovenian Tourist Board; and so on. The Government Office is also the Managing Authority for the Operational Program for the Implementation of the EU Cohesion Policy. Within the Government Office, there is a special unit, the Smart Specialization Coordination Division, in charge of technical and substantive support of the implementation working group and the coordinated implementation of the Slovenian S3.

Source: Staff elaboration based on Slovenian Smart Specialization Strategy.

2.2 Entrepreneurial discovery process leading up to S3 adoption

ENTREPRENEURIAL DISCOVERY PROCESS DURING S3 PREPARATION

During S3 preparation, the Ministry of Economy and Sustainable Development led the entrepreneurial discovery process through the establishment and operation of Croatian Competitiveness Clusters. Croatian Competitiveness Clusters are top-down structures established by the Ministry of Economy and Sustainable Development in 2012 and 2013, gathering triple-helix stakeholders from various industrial sectors.[4] The Ministry of Economy and Sustainable Development envisaged Croatian Competitiveness Clusters as the nucleus

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4   Twelve Croatian Competitiveness Clusters were established in 2012 and 2013. A thirteenth, covering personalized medicine, was established at the end of 2015. Given that the S3 was adopted in March 2016, it is reasonable to assume that the latter was not deeply involved in the S3 process. Thus, most of the analysis in this report refers to the initial twelve Croatian Competitiveness Clusters.

of the entrepreneurial discovery process before the adoption of the S3 document. During S3 preparation, Croatian Competitiveness Clusters were used to mobilize stakeholders in the entrepreneurial discovery process. The S3 document asserts that Croatian Competitiveness Clusters were the backbone of the entrepreneurial discovery process during its preparation and served as the main link for engagement and direct involvement of the triple helix stakeholders. The Croatian Competitiveness Clusters generated strategic guidelines for the 2013–2020 period for the sectors they represented. These documents set the vision and mission and identified priority areas for development and enhancing competitiveness in each sector. However, because the Croatian Competitiveness Cluster strategic guidelines are very generic, it is unclear to what extent the S3 process could have used them.

The consultation process included four rounds of extensive stakeholder engagement activities. First, a series of consultations took place through five regional workshops in which participants had a chance to highlight their priorities for S3. The second group of consultation activities consisted of six regional workshops based on thematic areas to narrow down the initial list of priority areas. The workshops led to the redefinition of thematic priority areas and the selection of five areas. The third round of consultations aimed to elaborate thematic areas in greater detail, including setting sub-thematic areas. Participants responded to a questionnaire and provided comments on the draft text of the thematic area section. A fourth and final round of consultations consisted of four workshops on sub-thematic priority areas (STPAs). The focus was on funding opportunities and envisaged instruments. An overview of the workshops and consultations, together with a list of changes in S3 priority areas discussed and amended, is provided in the final S3 document as Table 21: Changes during the process of EDP.

Despite the extensive and inclusive consultations, the entrepreneurial discovery process had some limitations. Overall, the S3 entrepreneurial discovery process involved many stakeholders and participants. In that respect, it was relatively successful. However, according to experts involved in the process, the quality of the process had three shortcomings. First, the background analysis was not available to participants. As a result, participants naturally expressed their personal or institutional views rather than seeing their situations in the broader analytical context. Second, the consultations followed a conventional format with an introductory presentation followed by an ad hoc discussion with varied moderation. The overall aim of the consultation was not always precise. Thus, the whole experience was mixed and unsystematic. Third, the meetings were mostly about defining priorities and their scope, without discussing instruments or portfolios of instruments suitable for specific thematic areas. It was only in the last round of consultations that participants were informed about already designed policy instruments. Reducing the issue to priorities motivated participants to express their wish lists, that is, to promote their particular thematic or sub-thematic areas. The open character of consultations was in some respect an advantage because participants could express different views in what was sometimes a quite critical discussion. However, vested interests were inevitably better able to articulate their positions. In that respect, "discovery" was confined to the views of established stakeholders. A comparative analysis of the entrepreneurial discovery process in ten Central and Eastern European countries and regions placed Croatia in the most numerous group, wherein "the RIS3 design process was narrower, often burdened with coordination and cooperation problems and thus hindered the inclusion of all groups of stakeholders" (Cvijanović, et al. 2020). Box 2.3 suggests an alternative method.

## Box 2.3 Alternative models of consultations: Example of Romania

A possible alternative to the conventional model of consultations is the "Romanian model," where the process was entirely objective and anonymous. Romania conducted its consultation process through an extensive Delphi method–based foresight exercise that involved several thousand experts and drew on in-depth background analyses. The Delphi method consists of experts responding to anonymous questionnaires, after which they see a statistical representation of the responses. The process repeats until the responses start converging. This approach allows expert consensus to emerge organically rather than being guided by a moderator or coordinator. The first round in Romania targeted several thousand respondents, out of which 448 fully completed the questionnaire. In the second Delphi, conducted online, an even more complex questionnaire was dispatched to around 44,000 potential respondents—researchers and academics, doctoral students or recent PhDs, and members of the scientific diaspora. The drawback of this model is that it excluded government stakeholders, which meant that policy makers did not acknowledge or implement the outcome of the process. The solution would be to implement an intermediate model combining an analytical basis, expert-based foresight, and an extensive public consultation exercise.

Sources: Gheorghiu et al. 2017; Gheorghiu, et al. 2014.

PLAN FOR ENTREPRENEURIAL DISCOVERY PROCESS CONTINUATION

According to the S3 document, the leading role in the entrepreneurial discovery process after S3 adoption was to move from Croatian Competitiveness Clusters to Thematic Innovation Platforms. Figure 2.2 illustrates the structure of entrepreneurial discovery process governance. The planned setup was the following: for each of the five S3 TPAs, Croatia would establish a Thematic Innovation Platform. Each Thematic Innovation Platform would comprise one TPA-level Thematic Innovation Council, two or three Priority Action Groups (one for each STPA), and the Croatian Competitiveness Clusters relevant for the sectors covered by the TPA. The S3 envisaged Thematic Innovation Councils as the main instrument for smart specialization in the years following S3 adoption. One of the critical tasks of Thematic Innovation Councils, as defined in the S3, is to bring together stakeholders to discuss and approve a long-term vision of development through coherent private sector RDI strategies for each of the TPAs. Within the scope of these strategies, through entrepreneurial discovery process work, the Thematic Innovation Councils would identify and approve the growth path and trends, along with in-depth profiles of the selected TPAs and STPAs. The Thematic Innovation Councils would establish Priority Action Groups to prepare these TPA strategies. The Croatian Competitiveness Clusters' role in the Thematic Innovation Platforms would continue through their representation in the membership of the Thematic Innovation Councils and their ability to nominate other Thematic Innovation Council members.

Figure 2.2 Envisaged S3 entrepreneurial discovery process governance structure
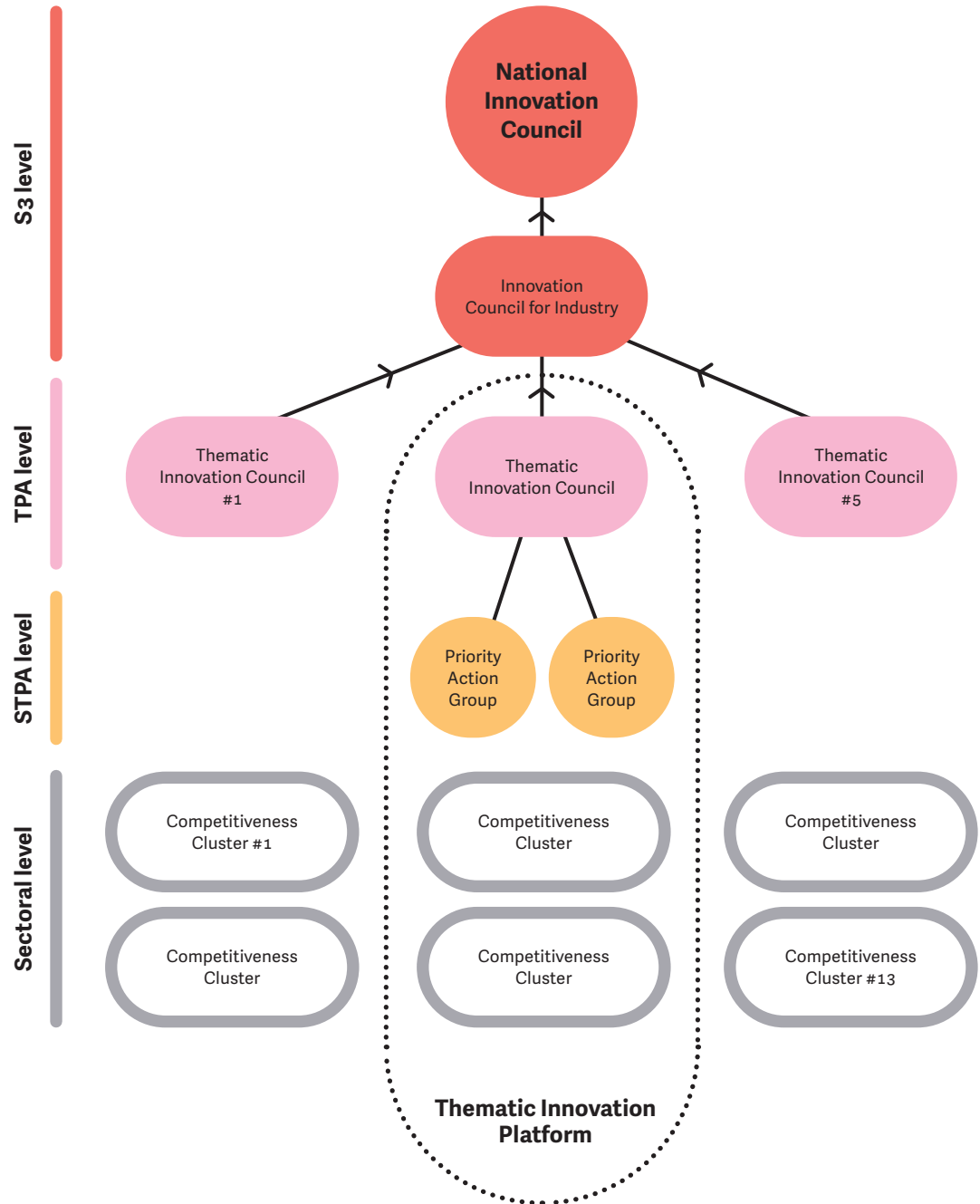
Source: Staff elaboration based on Croatia Smart Specialization Strategy 2016-2020.

The Innovation Council for Industry has a critical coordinating role in the entrepreneurial discovery process, but this may create additional overlaps with the National Innovation Council and redundancy in entrepreneurial discovery process governance. Although it is branded as one of the National Innovation Council's advisory councils, the Innovation Council for Industry's most prominent role is as the designated coordinator of the S3 process (Figure 2.2). In this context, the role of the Innovation Council for Industry is to establish the Thematic Innovation Councils, appoint their members, and coordinate their work. Finally, the Innovation Council for Industry links the Thematic Innovation Councils to the National Innovation Council and facilitates translating the entrepreneurial discovery process into policy decisions. As shown in Table 2.2, Thematic Innovation Council presidents are members of both the National Innovation Council and the Innovation Council for Industry. In other words, the Thematic Innovation Councils are directly represented in the National Innovation Council. Therefore, the role of the Innovation Council for Industry in vertical coordination of the entrepreneurial discovery process (acting as an intermediary to the National Innovation Council) may be redundant. Regarding horizontal coordination (that is, across Thematic Innovation Councils), it is unclear whether involving a council separate from the National Innovation Council is the most efficient model for the entrepreneurial discovery process.

Although the SFI laid out the process for establishing the Innovation Council for Industry and the Thematic Innovation Councils, they were not created in time for the S3 adoption. One of the main instruments of the SFI was the establishment of the Innovation Council for Industry and the Thematic Innovation Councils to "set the stage" for the upcoming smart specialization process. However, just like the National Innovation Council, the Innovation Council for Industry and the Thematic Innovation Councils were not in place at the time of S3 adoption. Consequently, the S3 declares that the Thematic Innovation Councils are to be established as soon as possible upon S3 adoption.

The planned division of responsibilities between the Croatian Competitiveness Clusters and the Thematic Innovation Councils in the lower-level entrepreneurial discovery process is somewhat ambiguous and redundant. The S3 did not clearly envisage the division of responsibilities between Croatian Competitiveness Clusters and Thematic Innovation Councils. The S3 envisaged that the Croatian Competitiveness Clusters would be represented in Thematic Innovation Councils and play a role in Thematic Innovation Council member selection. It also indicated that the Croatian Competitiveness Clusters would be part of the Thematic Innovation Platforms. However, it is not clear which Croatian Competitiveness Clusters exactly are part of which Thematic Innovation Platforms or how Croatian Competitiveness Clusters and Thematic Innovation Councils are supposed to interact in practice. For example, different sections of the S3 attribute both structures a role in developing RDI strategies and assessing the relevance of projects as an eligibility criterion in the Ministry of Economy and Sustainable Development program IRI2.

The S3 lays out several milestones for the continuation of the entrepreneurial discovery process beyond the adoption of the S3. Figure 2.3 depicts the envisaged process for the development and implementation of Croatia's entrepreneurial discovery process. Upon establishing and operationalizing the bodies in the Thematic Innovation Platforms, the next step was preparing RDI strategies for each of the S3 TPAs and STPA-level action plans for their implementation. According to the S3 document, RDI strategies and related action

plans should include a vision, key objectives, activities, defined TPA-specific indicators and targets (output, outcome/result, and context), timelines, stakeholders identified as responsible for implementation, and support for implementing actions planned. They were to provide a basis for focusing activities of the business sector in STPAs. Following the development of RDI strategies and action plans, Thematic Innovation Councils should prepare project pipelines stemming from sectoral strategies co-defined by industry, academia, and government. Finally, the Thematic Innovation Platforms were to develop STPA-level monitoring frameworks.

Figure 2.3 Key milestones in Croatia's entrepreneurial discovery process as envisaged by the S3 document
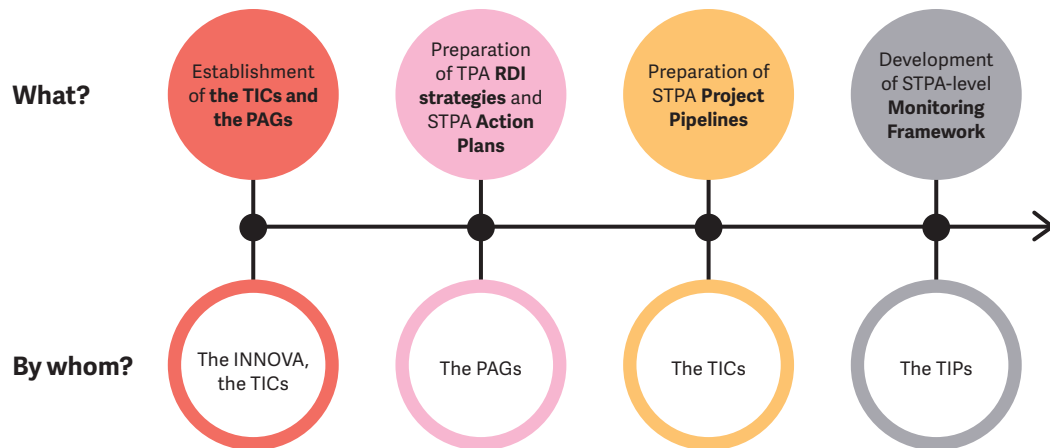
Source: Staff elaboration based on Croatia Smart Specialization Strategy 2016-2020.
Note: The bottom part of the figure attributes responsibility for entrepreneurial discovery process milestones to particular actors or structures. Due to inconsistencies and ambiguities in the S3, this attribution is, to an extent, based on the authors' interpretation. For instance, the S3 does not clearly state who is in charge of developing the STPA monitoring frameworks, the extent of the Thematic Innovation Platforms' involvement, or how they should interact with other S3 monitoring actors (i.e., the Inter-ministerial Working Group and the Technical Secretariat). INNOVA = Innovation Council for Industry; PAG = Priority Action Group; RDI = research, development, and innovation; STPA = sub-thematic priority area; TIC = Thematic Innovation Council; TIP = Thematic Innovation Platform; TPA = thematic priority area.

UPGRADING S3 GOVERNANCE AS AN IMPLICIT S3 OBJECTIVE

The S3 implies that establishing and upgrading its governance is an ongoing activity or "work in progress," envisaging several instruments to support it. As noted previously, most of the bodies designated to govern S3 policy and the entrepreneurial discovery process did not yet exist at the time of S3 adoption. Correspondingly, the S3 includes several actions aimed at establishing and supporting the designated structures to improve the governance of the whole RDI system. These actions are in the S3 policy mix as strategic projects for the institutions in the governance structure to implement. The projects primarily consist of external advisory services. The S3 envisages policy makers (that is, the Ministry of Economy and Sustainable Development and the Ministry of Science and Education) as direct beneficiaries of these services. It envisages Croatian Competitiveness

Clusters, Thematic Innovation Councils, and other S3 stakeholders as final beneficiaries. The S3 envisaged that such instruments would support the establishment of S3 governance structures, strengthening the capacity of institutions and actors or producing results to support the entrepreneurial discovery process.

In this report, we label these "institutional instruments" for two reasons. First, the S3 governance bodies themselves implement them. Second, they are in one form or another targeting S3 governance, M&E, and entrepreneurial discovery process frameworks. Institutional instruments include the Strategic Project for Support to Competitiveness Clusters Initiatives (CCI Project), the Strategic Project for Support to the Establishment of Innovation Network for the Industry and Thematic Innovation Platforms (INI Project), and the Strategic Project for Science and Technology Foresight (Foresight Project).[5] Box 2.4 outlines the projects and their purposes.

Box 2.4 A closer look at strategic projects to improve and facilitate S3 governance

STRATEGIC PROJECT FOR SUPPORT TO COMPETITIVENESS CLUSTERS INITIATIVES (CCI PROJECT)

The CCI Project aimed to identify promising strategic segments in which "clusters" (that is, the 13 STPAs) could compete and integrate into global value chains (GVCs). The project consisted of advisory services to the Ministry of Economy and Sustainable Development as the primary beneficiary and the Croatian Chamber of Economy as a partner. The project used an inclusive process based on triple-helix stakeholders within Croatian Competitiveness Clusters. Its general objective was to enhance competitiveness and improve the position of Croatian companies within global value and supply chains. It envisaged doing so by implementing cluster initiatives focused on fostering innovation, increasing productivity, and diversifying economic activities. By those means, the project aimed to increase competitiveness and specialization of the Croatian economy following the S3, its transformation, and structural changes of the industry, as well as to encourage innovation and the internationalization of the business sector by strengthening smart skills. The analytical work produced as part of the project was to be used by Thematic Innovation Platforms and S3 governance bodies to support further specialization and continuation of the entrepreneurial discovery process.

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5   The Ministry of Labor, Pension System, Family and Social Policy also directly implements two projects, but they make no direct reference to S3 objectives or TPAs. These activities will be examined in more detail as part of a separate upcoming report on smart skills.

STRATEGIC PROJECT FOR SUPPORT TO THE ESTABLISHMENT OF INNOVATION NETWORK FOR THE INDUSTRY AND THEMATIC INNOVATION PLATFORMS (INI PROJECT)

The INI Project aimed to provide advisory support for establishing Thematic Innovation Platforms and the key entrepreneurial discovery process outputs they were supposed to produce. Its beneficiary is the Ministry of Economy and Sustainable Development, and implementation is conducted in partnership with the Croatian Chamber of Economy. The project was to support the development of critical elements of the entrepreneurial discovery process (as outlined in Figure 2.3), including the development of RDI strategies for the business sector for identified S3 TPAs and preparation of the RDI project pipeline of the business sector. Other project activities include defining and preparing M&E reports for innovation programs, educating innovation system stakeholders, mapping business sector capacity for RDI, preparing periodic expert analyses and studies to evaluate RDI results based on S3 TPAs, designing specific communication tools to connect all stakeholders of the innovation system, defining methodologies and processes for rapid decisions to improve the innovation system, conducting technological mapping and foresight of technological development of the business sector, establishing an international advisory council for innovation, promoting the innovation policy of the business sector, and strengthening its RDI knowledge and skills.

STRATEGIC PROJECT FOR SCIENCE AND TECHNOLOGY FORESIGHT (FORESIGHT PROJECT)

The Foresight Project aims to support the science and technology mapping of the Croatian public RDI sector and prepare science and technology foresight based on the mapping results. The S3 envisaged the project as advisory support to the Ministry of Science and Education, implemented in partnership with the Computing Center SRCE of the University of Zagreb. Before the mapping and the foresight study itself, the project will propose a legal framework for handling data on Croatian scientific activity (collection and management of RDI data in research organizations) and develop an information system on Croatian scientific activity (CroRIS). Given that the Foresight Project and the INI Project include mapping the public RDI system and the business sector RDI system, respectively, the S3 envisaged coordinating the implementation of the two projects between project teams and responsible institutions.
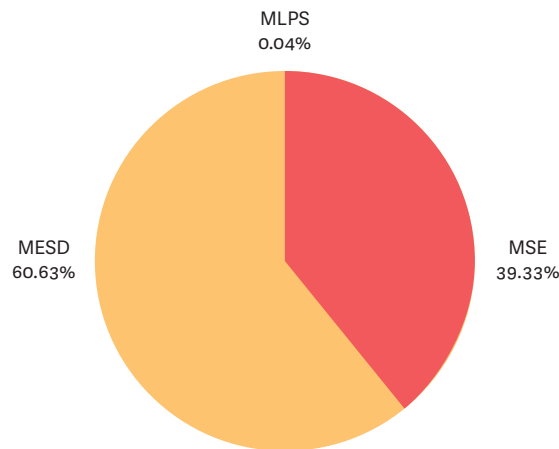
Source: Staff elaboration.

Improving the governance system was an implicit focus area in the S3, which lacked a mechanism to monitor progress in this area. The S3 links instruments contributing to enhancing S3 governance capacity to various strategic objectives rather than making them part of a separate (possibly horizontal) objective. The INI Project, which is de facto the key instrument to support the entrepreneurial discovery process and the functioning of its structures, is linked to the second specific objective (SO2) of the S3—"Overcoming the fragmentation of innovation value chain and the gap between the research and business sector." By contrast, the CCI Project, which aims to mobilize actors towards collective action or self-organization, is the single instrument supporting SO4—"Upgrading in global value chain and promoting internationalization of the Croatian enterprises." The Foresight Project is one of the many instruments supporting SO1—"Increasing capacities of the RDI sector to perform excellent research and serve the needs of the economy." Because institutional instruments cut across different specific objectives (SOs), there is no specific monitoring of progress in establishing and upgrading the governance system through indicators and targets. The lack of monitoring makes it more difficult to assess progress in upgrading governance later on during implementation.

2.3 The architecture of S3 implementation governance

The S3 policy mix, which dominates the STI landscape, is mostly funded through ESIF. The initial S3 policy mix had an allocation of around EUR 833.83 million divided across three institutions, as shown in Figure 2.4. The Ministry of Science and Education and the Ministry of Economy and Sustainable Development, as sectoral policy makers, hold almost the entire policy mix, whereas the Ministry of Labor, Pension System, Family and Social Policy holds less than a tenth of a percentage point of the total policy mix value. All but one of the S3 delivery instruments in the original S3 policy mix rely on ESIF funding. Similarly, S3 instruments dominate the STI landscape. A rough comparison of the S3 policy mix with the STI portfolio of programs[6] provided in Appendix II shows that the main S3 instruments (those exclusively targeting S3 TPAs) make up around 60 percent of the budget of STI programs in 2014–2020. All S3-related instruments (including those that partially contribute to S3 objectives) represent over 78 percent of the budget of all STI instruments.

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6   Data on the STI portfolio is based on the portfolio mapping created as part of the World Bank report *Analysis of the Quality and Coherence of the Policy Mix* (2019).

Figure 2.4 Distribution of S3 budget, by institutions responsible for S3 instruments (sectoral authorities)

MLPS
0.04%

MESD
60.63%

MSE
39.33%

Source: Staff elaboration based on Croatia Smart Specialization Strategy 2016-2020.
Note: The budget amount and the shares in the chart refer to ESIF funding attributed to each instrument listed in Annex 5 of the S3, plus the mandatory national budget contribution to ESIF funding. Although Annex 5 also includes the expected contributions of private beneficiaries as part of the S3 budget, the figure does not include these amounts. In practice, private contributions may vary considerably compared to initial estimates, depending on the type of projects supported and state aid regulations applied. In any case, they are not public funding allocated toward S3 instruments by policy makers and are thus not included in this overview of the S3 budget. MESD = Ministry of Economy and Sustainable Development; MSE = Ministry of Science and Education; MLPS = Ministry of Labor, Pension System, Family and Social Policy.

As a result, S3 governance, and consequently ESIF governance, have dominated national STI policy governance rather than being part of it. Even though the S3 policy mix as revised during implementation has added instruments funded from the national budget, the National Innovation Council has not explored in-depth how Croatia could leverage this funding to increase the effectiveness of ESIF funding. For example, Croatia could use the national budget for new pilot initiatives that respond to the needs of innovation actors and challenges. ESIF would then allow for scaling up programs and supporting parts of the policy mix aimed at specific TPAs that have demonstrated high feasibility and potential for growth. In that respect, the National Innovation Council would facilitate the integration of the STI policy system.

ESIF GOVERNANCE

ESIF funding is deployed through Operational Programs with inter-institutional governance systems of their own that must be set up in accordance with EU regulation. ESIF management and control involves a complex system of institutions for program management and implementation. EU legislation defines the essential elements of the ESIF governance structure. For the 2014–2020 period, management and control of ESIF were subject primarily to the EU Common Provisions Regulation (CPR)[7] and its amending regulations. The CPR names obligatory and optional bodies to be included in the system and describes their roles.

A designated Managing Authority manages each ESIF Operational Program. The Managing Authority is directly responsible for setting up the management and control system for an Operational Program, which defines the institutional structure of the Operational Program, including the bodies, functions, duties, monitoring and reporting systems, and rules and procedures applicable for Operational Program management and implementation. Based on management statements and audit opinions, the Managing Authority analyzes the weaknesses of the management and control system and coordinates the implementation of corrective measures and accompanying activities. The Managing Authority ensures that evaluations are carried out for each program and ensures that each evaluation is subject to appropriate follow-up. The Managing Authority also draws up and submits the annual and final Operational Program implementation reports to the European Commission.

The implementation of ESIF Operational Programs is subject to supervision by a Monitoring Committee. The CPR requires the establishment of a Monitoring Committee for each Operational Program.[8] The Monitoring Committee is chaired by the Managing Authority and composed of representatives of institutions involved in ESIF governance, other public authorities, economic and social partners, and bodies representing civil society, including environmental partners and non-governmental organizations. The Monitoring Committee name may be misleading, however, because its functions go beyond monitoring the implementation of the Operational Program and the achievement of its objectives. The Monitoring Committee examines all issues that affect Operational Program performance and monitoring actions taken as a result of its observations, approves Operational Program evaluation plans and its amendments, and examines evaluation progress and findings.

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7   Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development, and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006.

8   The analysis in this report focuses on bodies in the ESIF structure that are involved in strategic planning, program design, implementation, and M&E. The Certifying Authority and the Audit Authority, which are also obligatory parts of each ESIF management and control system according to the CPR, are not covered by the analysis as they perform functions which are entirely executive, i.e., they are not elements of the governance system involved in performing the previously listed functions.

The Monitoring Committee also approves any amendments to the Operational Program and criteria for project selection within ESIF-funded programs. The Managing Authority establishes, chairs, and supports the work of the Monitoring Committee and provides it with the information it requires to carry out its tasks, in particular data relating to the progress of the Operational Program, financial data, and data relating to indicators and milestones. In conclusion, the Managing Authority and the Monitoring Committee are the final decision makers, adopt relevant procedures, and hold ultimate responsibility for managing and implementing a particular Operational Program. The role of the Managing Authority is to prepare and propose all key decisions regarding the Operational Program over which the Monitoring Committee has authority.

The Croatian ESIF governance system introduced additional coordination bodies that go beyond the requirements of EU regulation. The applicable national legislation[9] specifies the functions of the Monitoring Committees and Managing Authorities. It also introduces other bodies whose establishment is, according to the CPR, optional and subject to EU Member States' own initiatives. Figure 2.5 illustrates the structure of the Croatian ESIF system. The central elements are the Managing Authorities and Monitoring Committees, one of each for every Operational Program. Additionally, Croatia introduced a Coordinating Body and a National Coordinating Committee for ESIF and EU Instruments (hereinafter, National Coordinating Committee) at the highest strategic level, overseeing the overall ESIF system. For particular SOs of an Operational Program, the Managing Authority may delegate specific tasks to one or more Intermediate Bodies. In most cases, those Intermediate Bodies are sectoral authorities in charge of a particular implementation area covered by an SO. In Croatia, the Ministry of Regional Development and EU Funds is simultaneously the Coordinating Body, chair of the National Coordinating Committee, and Managing Authority for the largest Operational Program (Box 2.5).

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9   Most notably, the Law on establishment of the institutional framework for implementation of European Structural and Investment Funds in the Republic of Croatia in the financial period 2014—2020 (OG 92/14) and the Regulation on the bodies in Management and Control Systems (MCS) for use of the European Social Fund, the European Regional Development Fund and the Cohesion Fund, concerning the objective of "Investment for Growth and Jobs" (OG 107/14, 23/15, 129/15, 15/17 and 18/17—Corrigendum).

Figure 2.5 Croatian ESIF governance system (part of the structure that is relevant for the S3 instruments)
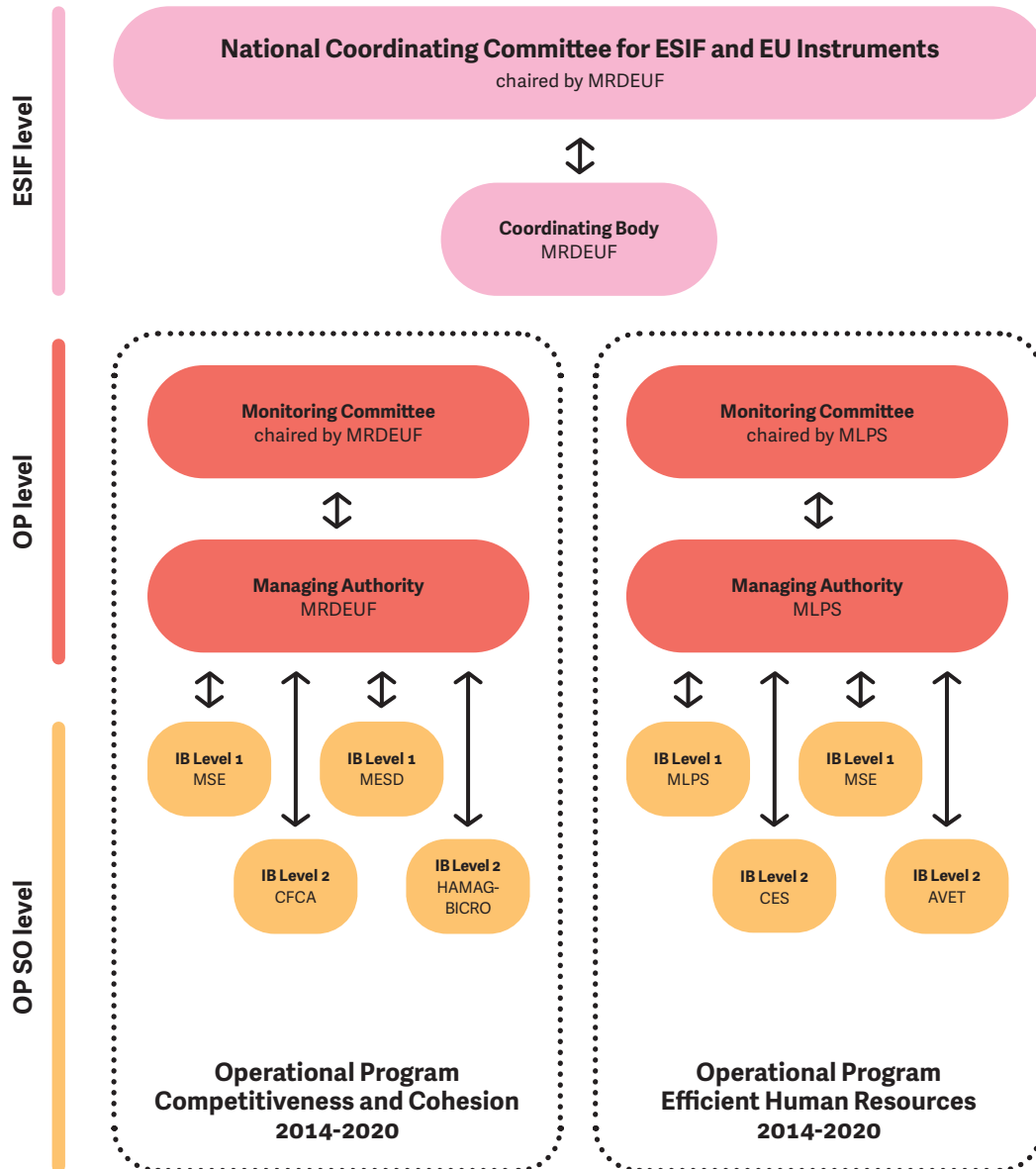
Source: Staff elaboration.
Note: AVET = Agency for Vocational Education and Training; CES = Croatian Employment Service; CFCA = Central Financing and Contracting Agency; ESIF = European Structural and Investment Funds; HAMAG-BICRO = Croatian Agency for SMEs, Innovations and Investments; IB = Intermediate Body; MESD = Ministry of Economy and Sustainable Development; MRDEUF = Ministry of Regional Development and EU Funds; MSE = Ministry of Science and Education; MLPS = Ministry of Labor, Pension System, Family and Social Policy; OP = Operational Program; SO = specific objective.

Box 2.5 The role of Managing Authority in the ESIF governance system in comparative perspective

The Ministry of Regional Development and EU Funds plays a central role in the ESIF governance system in Croatia. The Ministry of Regional Development and EU Funds is the designated Coordinating Body. Accordingly, it establishes and chairs the National Coordinating Committee. It also serves as Managing Authority for by far the largest ESIF Operational Program of the current financial perspective: Operational Program Competitiveness and Cohesion 2014–2020 (OPCC). As such, it chairs the OPCC Monitoring Committee and delegates some of its functions to Intermediate Bodies. The OPCC is thus a multi-objective Operational Program managed by the Ministry of Regional Development and EU Funds as a non-sectoral authority and with sectoral authorities acting as Intermediate Bodies.

As Managing Authority, the Ministry of Regional Development and EU Funds performs both strategic decision-making functions and granular implementation-level activities. For example, it is ultimately responsible for and approves not only the design and implementation of the Operational Program (although the Ministry of Science and Education and the Ministry of Economy and Sustainable Development as IB1s have critical roles in the process) but also the documentation of individual calls for proposals. Although these functions reside in different organizational units within the Ministry of Regional Development and EU Funds, they are ultimately performed within a single institution with the same state official (minister) in charge. A concentration of tasks of distinct levels within one organization may facilitate and speed up the decision-making process. However, this can also slow it down due to internal organizational bottlenecks and blurred accountabilities.

In Slovakia, the Deputy Prime Minister's Office coordinates ESIF governance. The central coordinating authority in Slovakia is the Deputy Prime Minister's Office for Investments and Informatization. The Office coordinates and guides bodies involved in the management of Structural Funds, including the supervision of Managing Authorities. This arrangement is different from the Croatian system. In Croatia, a single ministry (the Ministry of Regional Development and EU Funds) simultaneously has the coordinating role, chairs the relevant coordinating inter-ministerial committee (the National Coordinating Committee), and acts as Managing Authority for one of the Operational Programs.

In the Slovenian ESIF system, the Managing Authority is at the governmental (not ministerial) level. The Government Office for Development and European Cohesion Policy is the Managing Authority for ESIF-funded support programs organized into a single Operational Program for 2014–2020. Calls for proposals are prepared and launched by ministries as Intermediate Bodies. There is also a second Intermediate Body level that includes public institutes and agencies implementing the measures and programs. The two Intermediate Body levels are similar to the Croatian system. However, the difference is that in Slovenia, the Managing Authority role is located directly in the government, not in the ministry. This arrangement allows the Managing Authority to have a broader view of programs and how they are implemented, giving it a more prominent strategic role. Its strategic role and scope can be exercised more easily due to the broader, government-level scope of authority, primarily due to its multiple functions and integration of the Government Office into all three S3 governance levels. For instance, the Government Office was

quite active in establishing strategic partnerships that are the Slovenian equivalent of thematic innovation councils (Wostner 2017).

The Czech ESIF system is significantly simpler. A non-sectoral ministry is the coordination authority, sectoral ministries act as Managing Authorities, and one or no Intermediate Bodies are involved. The National Coordination Authority is the Ministry of Regional Development. The ministry performs roles such as setting up minimum general standards and rules in the planning, strategic management, implementation, and evaluation of results. The Working Group of the National Coordination Authority coordinates the various operational programs by gathering all ministries performing the Managing Authority roles. The line ministries either have implementing agencies acting as Intermediate Bodies or carry out the entire fund management implementation themselves. In the current programming period, two Operational Programs cover RDI: (1) Operational Program Enterprise and Innovation for Competitiveness, with the Ministry of Industry and Trade as the Managing Authority and Agency for Entrepreneurship and Investment as the Intermediate Body, and (2) Operational Program Research, Development and Education, for which the Managing Authority is the Ministry of Education, Youth and Sports.

Source: Staff elaboration.

In Croatia, ESIF coordination bodies have significant authority in program design and management. The ESIF coordination bodies comprise the Coordinating Body and the National Coordinating Committee. The Coordinating Body liaises with and provides information to the EC regarding the overall ESIF system (that is, for all Operational Programs), coordinates activities of other relevant bodies, and promotes the harmonized application of relevant laws. Furthermore, the Coordinating Body plays a crucial role in establishing the ESIF system and nominates institutions to participate in the structural funds governance system. The Coordinating Body designates the Managing Authority for each Operational Program. The Coordinating Body also establishes the National Coordinating Committee, and the head of the Coordinating Body chairs it. The National Coordinating Committee consists of representatives of state administration bodies and legal entities with public authority involved in implementing Operational Programs. The National Coordinating Committee is responsible for the overall coordination and monitoring of ESIF in Croatia and coherence between ESIF, other EU, and national financial instruments, and EIB financing. The National Coordinating Committee is poised to play an even more important role in the 2021–2027 financing period. According to amended regulation defining the National Coordinating Committee authority,[10] the National Coordinating Committee will be able to propose the number and scope of Operational Programs, coordinate and harmonize between state administration bodies in drafting programming documents, provide opinions and recommendations related to the institutional framework for the implementation of funds.

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[10] Government Decision on NCC establishment from January 2020 (OG 7/2020).

The functions of the ESIF coordination bodies overlap with those of the Managing Authority and Monitoring Committee. For example, the Coordinating Body is an overall ESIF coordinating body, but it also coordinates the development of and amendments to individual Operational Programs. Similarly, according to the regulation defining its role, the National Coordinating Committee is involved in monitoring the implementation of not only the overall ESIF system but also individual Operational Programs. The National Coordinating Committee may provide opinions and recommendations on measures for improving the implementation of Operational Programs and adopting measures related to improving the use of other co-financing sources. The Monitoring Committee performs the same function.

The Managing Authority retains the ultimate approval and responsibility for the design and implementation of Operational Programs. For particular SOs, or even for individual support programs within an Operational Program, the Managing Authority may delegate some of its tasks to Intermediate Bodies based on formal agreements between the Managing Authority and each Intermediate Body. Agreements with the Managing Authority set out the roles of individual Intermediate Bodies in particular stages of preparation and conducting project selection and award procedures. Agreements are usually made at the level of SO within an Operational Program but may include various exceptions or special cases, under which the roles may be defined differently for particular schemes. The Managing Authority, however, retains full responsibility for managing the Operational Program and performing all functions.

Having a non-sectoral Managing Authority could lead to inefficiencies during implementation. Having a non-sectoral Managing Authority leads to a two-tier system of delegation of tasks to Intermediate Bodies. Such a two-tier system further increases complexity and requires careful attention to the division of roles between IB1 and IB2. For example, although the IB1s play a key role in developing program documentation and designing selection criteria, the Managing Authority coordinates and approves the process. When it comes to program implementation, both Intermediate Bodies participate in M&E, with the IB2 monitoring the grant contract execution in direct communication with the beneficiaries and the IB1 monitoring output and outcome indicators and aggregating data on target achievement across programs. Again, the Managing Authority is the overall authority that consolidates and approves the Intermediate Bodies' work.

The indirect regulation of the interaction between IB1 and IB2 interferes with clarity and accountability. Interactions between IB1 and IB2 are regulated indirectly, through individual agreements with the Managing Authority. The function of IB1 is usually performed by sectoral authorities in charge of relevant policies under which the intervention falls. IB2s are usually agencies or other bodies oriented toward implementation. Typically, the IB1 designs and, upon Managing Authority approval, launches individual support programs. Both IB1 and IB2 can be involved in project selection and award procedures, as well as monitoring of contracted projects.[11] Despite their frequent and direct interactions, the mutual obligations of IB1 and IB2 are regulated exclusively through their separate agreements

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[11]   The Functional and Governance Analysis (World Bank 2020) provides a detailed analysis of the award procedure and the roles of different institutions in the process.

with the Managing Authority. Having a formal agreement between IB1 and IB2 institutions would "bring clarity and ownership to their collaboration and, ultimately, accountability for their performance" (World Bank 2020).

INTERACTION OF S3 AND ESIF GOVERNANCE

The parallel S3 and ESIF governance systems create challenges. "External" (EU & national) rules and regulations that determine the rules of conduct of ESIF implementation bodies are an important feature of S3 governance. The management and control system is the institutional structure in charge of particular Operational Programs. The Common National Rules[12] are the operational procedures that guide the management and control system. Together, the management and control system and the Common National Rules form the "outer" layer of regulations that determine rules of engagement of implementation bodies with ESIF. Countries have to contend with this outer layer of regulations as well as their own "inner" layers of regulations for managing their S3. In Croatia, several institutions have dual roles in (a) managing S3 and connected strategies and (b) participating in ESIF management and control systems that manage the funding of S3 instruments. For example, in the S3 structure, the Ministry of Science and Education and the Ministry of Economy and Sustainable Development have leading roles in policy governance as co-chairs of the National Innovation Council. In the ESIF system, by contrast, they are subordinated to the Managing Authority, which holds the final decision power about implementation, including the implementation of S3 instruments. Challenges may arise from these dual roles.

Almost all of the S3 policy mix is concentrated in one Operational Program. OPCC 2014–2020 funds 99.4 percent of the public budget for S3 instruments. As the Managing Authority for OPCC, the Ministry of Regional Development and EU Funds holds responsibility and acts as the final decision maker over the majority of S3 instruments (Figure 2.6). S3 instruments are funded under two Priority Axes (PA) of the OPCC: PA1—Strengthening research, technological development and innovation; and PA3—Enhancing the competitiveness of small and medium-sized enterprises. While sectoral authorities play an important role in the design and implementation of instruments, the ultimate responsibility and authority rests with the Ministry of Regional Development and EU Funds as the Managing Authority. A very small share of the S3 budget (0.6 percent) is funded through the Operational Program Efficient Human Resources 2014–2020 (OPEHR). This imbalance reflects insufficient focus on the topic of skills development in the context of the S3.

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12 Common National Rules is the name for procedures applied for the OPCC. Equivalent rules are also in place for other Operational Programs.

Figure 2.6 Distribution of public S3 budget, by institutions responsible for S3 instruments (managing authorities)
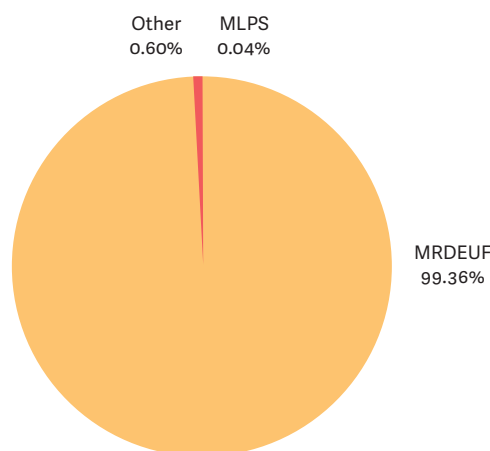
Source: Staff elaboration based on S3.
Note: MLPS = Ministry of Labor, Pension System, Family and Social Policy; MRDEUF = Ministry of Regional Development and EU Funds.

The programs came before the policy. The two Operational Programs funding the S3 instruments were already in place at the time of S3 adoption. Croatia adopted the OPCC and the OPEHR in December 2014, well ahead of S3 adoption in March 2016, and especially the establishment of the National Innovation Council in 2018. In other words, the policy instruments were designed before the policy itself was formulated and approved. This difference in timing created a mismatch in the policy cycle.

As a result, the process was not sufficiently bottom-up-driven. The S3 was adopted after the instruments were already outlined within the Operational Programs. Consequently, S3 structures were not included in the outlining of S3 instruments in the OPCC. Instead, the designated authorities for the ESIF Operational Programs did so. In particular, Operational Program preparation is under the authority of the Ministry of Regional Development and EU Funds, in its role as the Coordinating Body. The Ministry of Regional Development and EU Funds also leads amendments of OPCC, in its role as the Managing Authority. Sectoral authorities (including the Ministry of Science and Education and the Ministry of Economy and Sustainable Development) were involved in the process of ESIF programming as IB1s. However, the S3 policy governance bodies did not exist at the time, nor did the Thematic Innovation Platforms. There is a possibility that, to some extent, the instruments may have been presented during the entrepreneurial discovery process. Nevertheless, it remains unlikely that the policy mix was influenced by the entrepreneurial discovery process to a significant degree.

The governance structure described in the S3 oversimplifies the linkages between bodies governing the policy and the implementation of the Strategy. The S3 document presents the Inter-ministerial Working Group as the main channel connecting the implementation bodies with the National Innovation Council. In reality, the underlying relations are much more complex, as institutions play multiple roles in the process, requiring strong intra- and inter-institutional coordination. Although implementation bodies can and should

coordinate on S3 matters through the Inter-ministerial Working Group, coordination is also crucial within the parallel governance structures for ESIF, which provides funding for S3 delivery instruments. These structures also have decision-making authority over all stages, from planning and preparation to implementation of S3 instruments. For instance, any decisions of the National Innovation Council (such as revision of S3 priorities or delivery mechanisms) need to be examined and approved by the relevant ESIF authorities (primarily the Managing Authority) to be applied to particular programs.

The S3 document does not sufficiently acknowledge the vital role of Managing Authorities in designing S3 programs. As the ultimate body responsible for designing and implementing the S3, the National Innovation Council is co-chaired by the Ministry of Economy and Sustainable Development and the Ministry of Science and Education. It also includes the Ministry of Regional Development and EU Funds as a member. However, the responsibility for designing and implementing S3 instruments, including the program approval authority, ultimately rests with the Managing Authority due to its strategic and operational powers in the ESIF governance structure. The S3 document does not clearly acknowledge the implications, nor does it emphasize the importance of the Managing Authority as one of the key actors in the system.

03

Governance in practice: Review of performance during S3 implementation

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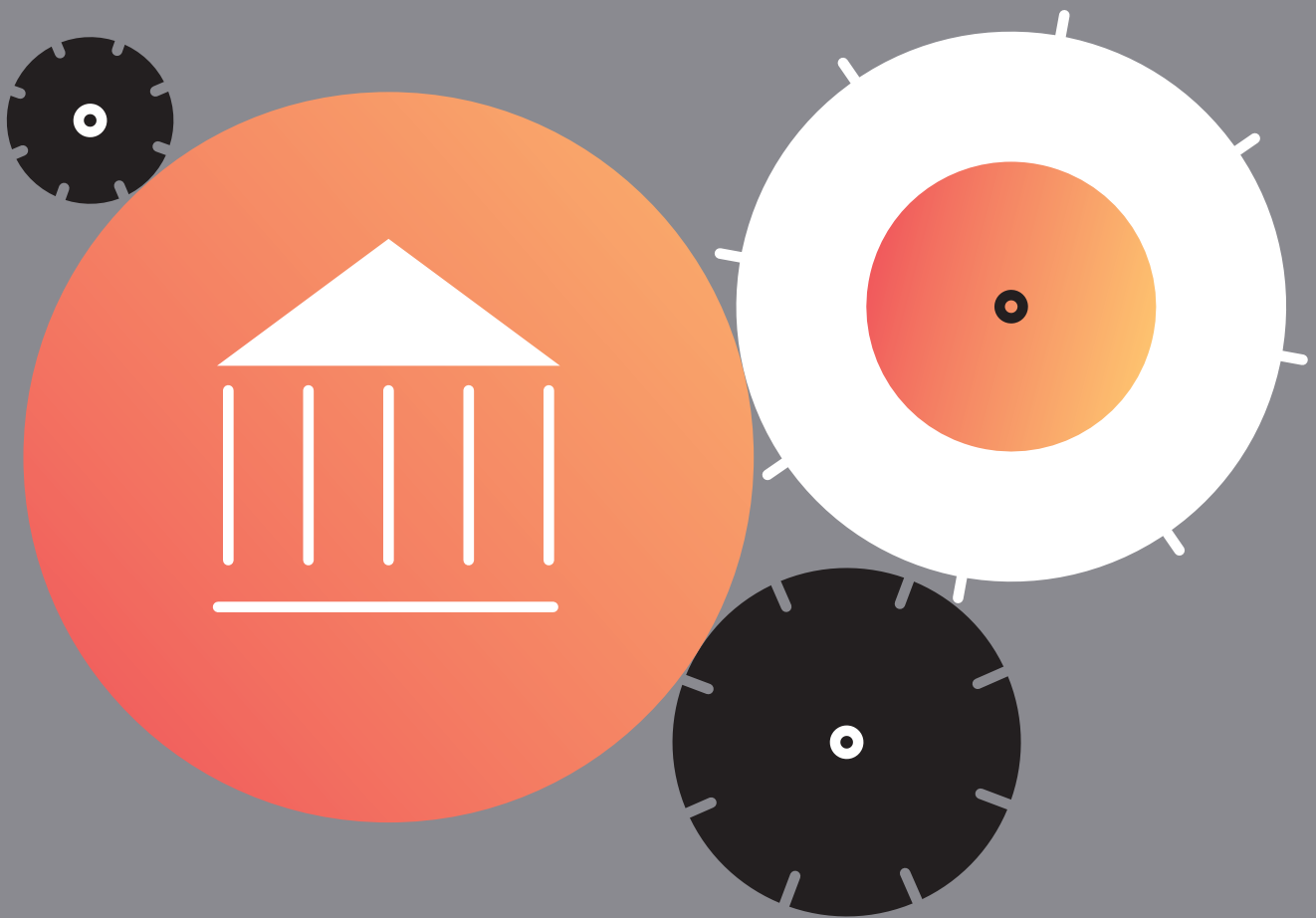
Governance in practice: Review of performance during S3 implementation

- Due to extended delays in establishing the top S3 decision-making and advisory bodies, their role in practice has been much less active than envisaged. Despite being the top coordinating body for S3, the National Innovation Council has an insufficient coordinative role due to its late establishment and lack of clarity on its role in the overall national innovation governance.

- Implementing the entrepreneurial discovery process has been a major challenge. Support for entrepreneurial discovery process governance structures (Croatian Competitiveness Clusters and Thematic Innovation Councils) was scaled back. They mostly remain without an articulated and active role in the entrepreneurial discovery process.

- Croatia is unique in the sense that several institutional instruments in the S3 policy mix were expected to contribute to the improvement of the entrepreneurial discovery process and provide inputs for the work of entrepreneurial discovery process governance structures. However, due to delays and a variety of challenges, these mechanisms have not sufficiently contributed to improved S3 governance.

- S3 implementation governance faces numerous challenges due to overlaps of authority across institutions coupled with significant fragmentation of processes, especially at the level of individual instruments.

3.1 S3 policy governance

LEADERSHIP GAP AND DELAYED ESTABLISHMENT OF GOVERNANCE STRUCTURES

The National Innovation Council was established almost two years late. According to the S3 document, the National Innovation Council was supposed to be established by the end of 2016. However, it was formally established in July 2018 and held its first meeting in November that year. By that time, there was no decision-making authority that could steer implementation and coordinate the S3 process because the top element of the governance system was missing. While creating the S3 governance system was always envisaged as a gradual process, it did not foresee an almost two-year-long governance vacuum.

The Inter-ministerial Working Group (serving as the main S3 coordination body in the interim) lacked decision-making authority. According to minutes of Inter-ministerial Working Group meetings and interviews with representatives of S3 stakeholders, the Inter-ministerial Working Group began to work informally in late 2017 to prepare for the establishment of the National Innovation Council. The understanding was that the National Innovation Council would formally appoint the Inter-ministerial Working Group as envisaged in the S3 document. Together with the S3 Technical Secretariat, the Inter-ministerial Working Group prepared the documentation for the Croatian government to formally adopt a decision on establishing the National Innovation Council. (The preparations included drafting legal documents such as a decision on the National Innovation Council appointment, an operational rulebook for the National Innovation Council, and so on.). During this period, the informal Inter-ministerial Working Group was de facto the main point of coordination across the S3 system because it was the only inter-institutional body operating at the time. However, in the absence of an S3 "champion," the Inter-ministerial Working Group lacked decision-making authority and capacity to agree on possible corrections or improvements to S3 governance or adopt formal decisions to be introduced in practice.

The delay in establishing the National Innovation Council also postponed the formal appointment of the Inter-ministerial Working Group. The National Innovation Council formally established the Inter-ministerial Working Group in December 2018. The composition of the Inter-ministerial Working Group is appropriately inclusive but raises challenges related to inter-institutional coordination. It has 11 members. Representatives of the Ministry of Regional Development and EU Funds, the Ministry of Economy and Sustainable Development, and the Ministry of Science and Education are co-chairs. Institutions responsible for additional S3 instruments, such as the Ministry of Agriculture, are also represented. In addition, it includes representatives of sectoral policy makers and ESIF implementation bodies.

Establishing the Innovation Council for Industry also took longer than expected, delaying the launch of Thematic Innovation Councils. At the initiative of the Ministry of Economy and Sustainable Development, the Innovation Council for Industry was established in December 2017, three years after the adoption of the SFI that first envisaged it. It met for the first time in September 2018. The delay in the establishment and operations of the Innovation Council for Industry caused a delay in the formation of Thematic Innovation Councils because their members were to be appointed by the Innovation Council for Industry.

Frequent changes in the Croatian state administration system contributed to a lack of continuity in policy. The Ministry of Economy and Sustainable Development is one example. During S3 preparation, the Ministry of Economy and the Ministry of Entrepreneurship and Crafts operated as two separate ministries. Upon S3 adoption, the two ministries merged into the Ministry of Economy, Entrepreneurship and Crafts. In 2019, this ministry merged yet again, this time with the Ministry of Energy and Sustainable Development, forming the currently operating Ministry of Economy and Sustainable Development. All these changes occurred in a period of five years, between 2016 and 2020. Changes in management usually accompanied the organizational changes. In some cases, management changes were even more frequent than organizational changes. This churn caused additional administrative frictions (e.g., new member appointment procedures). More importantly, it affected the continuity of the S3 governance structures. Changes in decision-making officials and modifications to the scope of work of institutions require adjustment periods and administrative efforts to adapt the system (e.g., revision of official decisions due to revised names and scope of authority of institutions involved). Most crucially, changes in strategic vision often accompany new management. Frequent shifts in the focus and domain of operation of institutions can be detrimental to policy continuity, institutional learning, and implementation performance.

LIMITED ROLE OF POLICY GOVERNANCE STRUCTURES

The National Innovation Council utilized its decision-making authority to a limited extent. Agendas and minutes of National Innovation Council meetings show few substantial decisions concerning S3 policy governance. National Innovation Council agenda items included implementation reports presented by the Technical Secretariat and Inter-ministerial Working Group, experiences of project beneficiaries, information on progress on the institutional instruments, and so on. However, in most cases, it appears that there was no deeper discussion on the items presented, nor were additional topics or initiatives brought up or proposed by National Innovation Council members. Moreover, there is no record of decisions taken or recommendations issued for further action and follow up. The role of the National Innovation Council thus appears to be rather passive. This was partially confirmed in interviews with representatives of S3 stakeholders. Some of them described its authority as a formality. More precisely, they described the main work of the National Innovation Council as formally adopting the prepared materials. However, stakeholders also noted some improvement over time in inter-institutional collaboration, especially between the co-chairs. The challenge is perhaps how to clarify duties and streamline that cooperation.

The National Innovation Council did not reprioritize any of the S3 TPAs. The S3 is supposed to be a living document. As such, it is logical and expected that its priorities would be continuously re-examined and potentially revised during implementation. The strategic role of the National Innovation Council is to initiate diagnostic analyses, corrective measures, or revisions of S3 priorities. However, there have been no National Innovation Council activities related to the revision of S3 priorities.

The work of the National Innovation Council appears disconnected from the work of the Thematic Innovation Councils. The presidents of the Thematic Innovation Councils

are National Innovation Council members, and they initially presented their purpose and planned work to the National Innovation Council. However, the National Innovation Council has not subsequently discussed the work of the Thematic Innovation Councils nor produced any outputs or conclusions that consider the results of their activities.

The top S3 governance structures were not involved in the design of the S3 policy mix. The National Innovation Council and the Innovation Council for Industry were formed after the implementation was well underway and most of the S3 instruments were already launched. For those instruments, there were not many opportunities to provide inputs for program design. There were opportunities to provide inputs for flagship instruments that were not yet launched or not planned at the time of S3 adoption, but these were not taken. For example, the National Innovation Council did not discuss the second edition of the IRI program launched in December 2019 even though it is the flagship S3 R&D program targeting the business sector. In general, the National Innovation Council should not be involved in operational matters related to instruments. Yet, its involvement may be warranted for issues of strategic importance related to flagship instruments or when significant issues arise that may affect large portions of the policy mix. (Examples would include repeated delays in design and launch of calls or lack of tangible implementation results.)

The use of institutional instruments has been very limited. Institutional instruments were supposed to generate a solid analytical basis and facilitate coordination and steering of the S3 policy. The implementation of the three institutional instruments, however, has been seriously delayed. They produced only a limited share of their expected results, with some of the key elements missing. As a strategic body, the National Innovation Council is one of the primary beneficiaries of these instruments. The Competitiveness Clusters project presented its results to the National Innovation Council, but there were no further actions or follow up based on the results. The National Innovation Council did not discuss the activities of the other two projects or request reports on their progress. According to some S3 stakeholders, critical outputs of the projects may not be produced. The Inter-ministerial Working Group could raise this issue for discussion at the National Innovation Council. Also, the institutions implementing the institutional instruments are directly involved in the National Innovation Council. Thus, they could have raised those issues themselves.

The National Innovation Council has heard operational issues regarding the implementation of ESIF-funded RDI programs, but they have not been addressed. Current or former beneficiaries of RDI schemes funded through OPCC, including representatives of research organizations and enterprises, have regularly presented their implementation experiences at National Innovation Council meetings. The OPCC is not an RDI-specific program and is not managed by a sectoral authority. As a result, the ESIF system did not immediately recognize many implementation issues specific to RDI programs. The National Innovation Council was the only channel that could identify these issues. Based on the inputs presented, the National Innovation Council formulated a list of frequently reported issues and identified possible measures to implement solutions. While this was useful, the authority of the National Innovation Council to enact changes related to the ESIF system has been limited. The relevant Managing Authority involved in implementing the ESIF programs should address operational S3 implementation issues. Although Managing Authorities

of both Operational Programs are represented at the National Innovation Council, there is no evidence of any further steps to address the implementation issues it identified.[13]

The recent inactivity of the S3 policy governance bodies is worrisome. None of the critical S3 policy and entrepreneurial discovery process governance bodies—including the National Innovation Council, the Inter-ministerial Working Group, and the Innovation Council for Industry—had any activity in 2020. Interviews with representatives of institutional stakeholders provided suggested two possible reasons for the dormancy of these bodies at the end of the official S3 implementation period.[14] First, the COVID-19 pandemic impedes the regular operation of these inter-institutional bodies. Second, frequent organizational and managerial changes in the Croatian state administration system caused a discontinuity in their operation. The recent re-organizations of the state administration system and the related management changes triggered a new cycle of administrative work, namely appointments of new council members.

FEEDBACK MECHANISMS BETWEEN POLICY GOVERNANCE AND IMPLEMENTATION GOVERNANCE

There is friction between S3 policy governance and implementation governance. This friction arises from the existence of two parallel governance systems: the S3 strategy line of vertical coordination (via the National Innovation Council) and the ESIF line of vertical coordination (via the Ministry of Regional Development and EU Funds). Within the National Innovation Council line of coordination, the Ministry of Economy and Sustainable Development and the Ministry of Science and Education are the central responsible bodies; the Ministry of Regional Development and EU Funds is a participating member. Within the ESIF line of coordination, the Ministry of Regional Development and EU Funds is the main responsible body; the Ministry of Economy and Sustainable Development and the Ministry of Science and Education have some delegated functions as IB1s. In this role, they are subordinate to the Ministry of Regional Development and EU Funds as the Managing Authority. This configuration is known in the literature as "interlocking directorates," where members of different corporations' boards of directors or management serve on each other's boards. This arrangement by itself is not unfavorable because it enables a good flow of information and mutual responsibility. However, it can also be used to avoid direct responsibilities because boundaries of duties are not clearly demarcated.

Implementation is steered more by ESIF governance bodies than by S3 policy bodies. Part of the reason is the delay in establishing S3 governance bodies, which translated to delayed decision-making on S3 implementation. Further, up to and including 2018, the S3 did not have a clear Action Plan with delivery instruments, institutions responsible for their management and implementation, and timeframes for implementation. The initial S3 Action Plan (Annex 5 of the S3 document) covered the implementation period until the end of 2017. Still, it was not always instrument based and sometimes listed specific

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13   Key points raised by the beneficiaries are presented in section 3.3, Box 3.7.
14   Although the strategy states that the period covered is 2016-2020, implementation of the delivery instruments can extend to 2023, according to implementation rules of ESIF-funded instruments.

activities regarding establishing the governance system or entrepreneurial discovery process continuation instead. The Action Plan was revised in 2019, covering the 2019–2020 period. TPA-based action plans, which the Thematic Innovation Platforms were supposed to develop, were not introduced. At the same time, the implementation of ESIF instruments, including all of the S3 policy mix, was regularly coordinated and planned independently from S3 governance. In other words, Managing Authorities and Monitoring Committees effectively approved which S3 instruments to launch and when, with limited input from S3 governance bodies.

Fragmentation of functions within institutions raises additional coordination challenges for policy governance. As elaborated in Box 2.5, the Ministry of Regional Development and EU Funds performs vital functions in both policy governance and implementation. A similar situation exists in the Ministry of Science and Education and the Ministry of Economy and Sustainable Development, which have policy units that deal with sectoral policy (including the S3) and separate units that perform ESIF implementation (IB1) functions. Because both units are involved in policy governance (for instance, both have separate representatives in the Inter-ministerial Working Group), they need to collaborate to translate policy objectives into particular instruments through their design and implementation. However, according to stakeholders from the three institutions, the degree of intra-institutional collaboration is very limited. The units coordinate on an ad hoc basis, and no regular communication is present. For the time being, collaboration is entirely in the hands of individuals and individual organizations involved in the policy cycle. Problem-solving is also performed on an ad hoc basis, whereas the aim should be to build "reflection points" throughout all phases and levels of the program cycle (Dexia 2020). Reflection on experience is often more useful than the mere accumulation of experience (ibid., p. 26).

INVOLVEMENT OF ADVISORY COUNCILS IN THE S3 PROCESS

In general, the three advisory councils have not been deeply engaged in S3 policy governance. The disconnect between national STI policy governance and S3 policy governance is most visible through the role of the advisory councils (the Innovation Council for Industry; the National Council for Science, Higher Education and Technology Development; and the National Council for Development of Human Potential) in the S3 policy process. There was no official inter-organizational communication (such as joint meetings, correspondence, and similar) between the advisory councils and the National Innovation Council. The only communication was through part of the members sitting in both an advisory council and the National Innovation Council. In any case, these councils do not seem to be very involved in S3 management. Some of the interviewed stakeholders stated that they did not interact at all with advisory councils.

The Innovation Council for Industry merely reports to the National Innovation Council. Nominally, the Innovation Council for Industry is an advisory body to the National Innovation Council. In fact, the Innovation Council for Industry mainly reports on its work to the National Innovation Council. In the past, this work oriented around the establishment and final appointment process of Thematic Innovation Councils. However, it did not go further, and there were no significant initiatives or decisions of the Innovation Council for Industry that would be related to S3 governance.

The National Council for Science, Higher Education and Technology Development has been more focused on certain aspects of the policy mix, while its role in S3 policy governance has been limited. In accordance with its designated role in the Croatian STI landscape, the National Council for Science, Higher Education and Technology Development is authorized to propose the establishment of Centers of Research Excellence, which were financed through OPCC to conduct research activities in S3 TPAs. (A similar scheme was envisaged for the establishment of science and technology parks, but it did not materialize.) According to S3, however, the National Council for Science, Higher Education and Technology Development was also expected to contribute to work of the National Innovation Council by recommending measures for fostering research excellence, international cooperation, knowledge and technology transfer activities, and maximizing impact of research on economic growth and societal wellbeing. However, it seems that such cooperation was absent which points to poor inter-organizational communication. The National Council for Science, Higher Education and Technology Development was also expected to provide thematic expertise in national foresight exercise (within the Foresight Project), but project implementation faced serious delays and the foresight exercise is not yet prepared.

The involvement of the National Council for Development of Human Potential as the advisory council for smart skills development is unclear. Its contribution to the work of the National Innovation Council was envisaged in programs for development of smart skills as one of the critical areas of human resource development. The National Council for Development of Human Potential is also responsible for the functioning of the Croatian Qualification Framework mechanism which is the main instrument for developing new skills matching labor market needs. The apparent lack of involvement of the National Council for Development of Human Potential may be a reflection of the disconnect between S3 smart skills objectives and OPEHD activities.

POLICY M&E

One of the essential functions of the National Innovation Council should be strategic intelligence to analyze deficiencies in the innovation system and propose improvements. This should be part of a broader pattern of distributed strategic intelligence, in which others also gather and analyze data and exploit them in support of policy analysis and deployment (Arnold, Mahieu and Horvath 2013). The information produced and exchanged should be open so that it can be debated. This, in turn, requires that the National Innovation Council has adequate analytical support.

The flow of monitoring data to the National Innovation Council has been sporadic. Upon its establishment, the National Innovation Council was presented with several S3 implementation reports, including quarterly S3 progress reports, and progress of implementation of the Action Plan 2016-2017. However, no regular annual reporting is done, as it was planned in the S3. Furthermore, the National Innovation Council did not yet discuss S3 implementation progress covering the whole implementation period which would give it insight on the status of S3 implementation. Although such report was prepared for period of 2016-2019, the National Innovation Council did not meet in 2020, so it has not reviewed it yet.

The S3 Inter-ministerial Working Group, supported by the Technical Secretariat, is assigned with the task of policy monitoring. The official S3 document has envisaged the Inter-ministerial Working Group as the central body whose role will be "collection, analysis, reporting and advising based on indicators." The Inter-ministerial Working Group should thus ensure an appropriate availability and flow of information for S3 implementation reports and the National Innovation Council. The Technical Secretariat role includes technical and administrative support to both the Inter-ministerial Working Group and the National Innovation Council, and the institutions chairing it. According to the S3, the tasks of Technical Secretariat include data collection and drafting implementation reports and evaluation plans, as well as to act as a single informational point on S3 implementation and complementary strategies and programs (funded both from EU and national funds). The role of Technical Secretariat is assigned to a dedicated unit within HAMAG-BICRO.

The key challenge of S3 monitoring is the integration of different systems in place into a coherent M&E system at the S3 level. Due to parallel nature of the S3 monitoring system and different M&E systems in place for individual instruments (see Box 3.1), the lack of clearly established roles and procedures may contribute to the duplication of reporting requirements by the bodies involved. In their IB1 role, the Ministry of Science and Education and the Ministry of Economy and Sustainable Development already have quarterly and annual reporting obligations towards the Ministry of Regional Development and EU Funds as the Managing Authority. The same tasks should be clearly defined for S3 monitoring, in a manner that eliminates the replication of tasks and demands on stakeholders, minimizes the flow of documents, and reduces burdens on staff. This is further complicated by the fact that S3 instruments have different M&E frameworks depending on the source of funding and institutions involved in their management and implementation. For example, non-ESIF instruments do not have uniform structures and monitoring systems in place. Additionally, S3 monitoring is also linked to SFI monitoring. HAMAG-BICRO also performs the function of Technical Secretariat in the SFI governance framework, which allows for combined monitoring of the S3 and the SFI. The dual Technical Secretariat role of the HAMAG-BICRO, in theory, enables synergies in the monitoring of both strategies.

Box 3.1 Interactions between the ESIF and S3 monitoring processes

ESIF and S3 monitoring are inextricably intertwined, but in practice they are two disconnected processes running in parallel. The institutions represented in the Inter-ministerial Working Group are the Managing Authorities and the IB1s, which are at the same time the ESIF monitoring bodies. In the context of monitoring, the Inter-ministerial Working Group is thus the link between the two systems. The institutions represented should feed the S3 monitoring with ESIF data, to be consolidated by the Technical Secretariat. In the ESIF structure, the IB1s together with the IB2s report to the Managing Authorities on the implementation progress and achievement of indicators. In the S3 system, the process is replicated, with the same institutions collecting and gathering the same data to be consolidated by the Technical Secretariat. The two processes are done in parallel, however, and do not capitalize on potential synergy between them. For instance, ESIF and S3 implementation reports are not aligned in terms of frequency and timing.

The ESIF management information system (MIS) is not utilized in S3 monitoring as planned. The S3 document describes the monitoring process as a very streamlined one. It states that the Managing Authorities (or IB1s, if deemed appropriate) should use the ESIF MIS to deliver to the Technical Secretariat the indicator data on an annual or ad hoc basis. According to stakeholders involved, in practice, the process does not function like that at all, but relies on efforts of individual institutions, primarily the IB1s, to deliver data from their own domain of operation, for it to then be harmonized and consolidated by the Technical Secretariat. Stakeholders cited several reasons for this. First, not all relevant S3 data on indicator achievement is tracked in the ESIF system. Second, the MIS data is not always in a form that can be easily verified, and some of the Intermediate Bodies keep separate tracking systems that they deem more reliable, or at least a necessary mechanism of data verification, that is introduced in parallel to the MIS. Third, there are currently two parallel MIS systems in place at the OPCC Managing Authority. The new "eFondovi" system includes the data for programs launched after 2018. In parallel, the "old" MIS system, covering programs launched before 2018, is still running. Data from the two systems needs to be merged manually because the two systems are completely separate. All of these appear to be valid reasons for the S3 monitoring process being implemented as a separate process. Nonetheless, the S3 system did not capitalize on the ESIF monitoring elements that it could have, for example, using it for part of the data that is actually available through the MIS or aligning data collection processes in the S3 and ESIF systems.

Source: Staff elaboration.

In practice, the process of coordinating data collection has been very challenging, particularly for TPA data. Most recently, collecting data on the status of original and revised indicators as part of the analysis of the S3 intervention logic (World Bank 2021) required additional joint efforts of the Ministry of Science and Education; the Ministry of Economy and Sustainable Development; the Ministry of Labor, Pension System, Family and Social Policy; HAMAG-BICRO; and the World Bank, and still a number of indicators have missing TPA values. The S3 does not have any TPA-specific instruments and estimating the contribution of horizontal instruments to particular TPAs is challenging, especially given the fact that no TPA target values were set to begin with. The monitoring system was not further developed at the TPA level, as was planned in the S3. Moreover, according to the S3, HAMAG-BICRO, in its role as Technical Secretariat, was supposed to interact with the Thematic Innovation Platforms, including the Croatian Competitiveness Clusters, to review their conclusions and progress, and to incorporate such information within the reports and recommendations of the National Innovation Council. Additionally, HAMAG-BICRO was supposed to conduct annual surveys on the policy mix. However, it is not evident that these plans materialized in practice.

The numerous tasks delegated to HAMAG-BICRO require adequate capacity and a strong organizational setup. The coordinating roles assigned to HAMAG-BICRO policy governance require independence, particularly in light of its role in other related policies (as the principal innovation agency in the SFI) and policy implementation (as IB2 for the OPCC). Additionally, the sheer volume of tasks requires strong institutional capacities to be in place in order to deliver on all its obligations. While the question of the administrative capacities of the Technical Secretariat was raised at the National Innovation Council, it was not followed up by any specific actions to resolve the organization of different activities or roles of HAMAG-BICRO.

Institutional instruments, in particular the INI Project, were expected to contribute to upgrading the M&E framework. In this context, one of the expected outputs of the INI Project is an IT system for joint monitoring and reporting of the S3 and the SFI. Some of the other relevant deliverables include definition of key indicators for the S3 and the SFI, definition of context indicators for the S3, methodology for data collection, initial report on S3 and SFI implementation, methodology for S3 and SFI evaluation, and preparation of guidelines and template for annual reporting. However, a common opinion among stakeholders is that the delivered IT solution cannot solve the monitoring issues at all and should be further developed in order to be useful and add value in conducting S3 and SFI monitoring. The same goes for other outputs of the INI Project, which are in general not utilized.

In recent years, some upgrades of the S3 governance and monitoring system were introduced, but important shortcomings persist related to the quality and quantity of data collected. The S3 Action Plan 2019-2020 introduced a revised organization of the S3 policy mix, providing a more coherent and updated overview of S3 instruments compared to the one in the original S3 document. The S3 monitoring framework was improved with a revised set of output and outcome indicators. However, monitoring practices remain a worrisome element of the S3 governance and it is unclear whether progress is monitored satisfactorily. Not all revised indicators are directly linked to the original ones, and tracking progress is thus distorted. The emphasis in monitoring is very basic, tracking the

number of projects funded, the number of enterprises provided with grant support and the amount of contracted and disbursed funds.[15]

Coordination is also required in the measurement and harmonization of indicators. Indicators tracked for different programs contributing to same S3 objectives should be harmonized to the extent possible and the Inter-ministerial Working Group and the Technical Secretariat should perform the key role in doing so. They should ensure that indicators, their definitions, and measurement specifications are uniformly introduced, interpreted, and applied across the system. The main challenge is to do so across programs from different funding sources. At the same time, the S3 monitoring should inevitably be broader than the tracking of indicators that are already in place due to ESIF reporting obligations. For instance, ESIF programs already have indicators defined based on the Operational Programs they are funded through. In the S3 context, the monitoring should go beyond them and define additional specific indicators to be tracked on the S3 level and set appropriate mechanisms to track them, with harmonized practice among the S3 stakeholders.

A revision of monitoring practices has been announced but not yet fully implemented. The revised monitoring framework envisaged the introduction of new practices, including questionnaires for beneficiaries in the post-implementation period, for purposes of estimating program outcomes.[16] Such questionnaires were implemented for a very limited set of programs. Overall, however, some stakeholders say that there is no actual implementation plan for such exercises and it is not always entirely clear who shall execute them. Additionally, according to stakeholders, a large majority of programs do not qualify for this planned data collection yet, since data collection points (one, three and five years after project completion) have not been reached.

3.2 Entrepreneurial discovery process governance

The value of the entrepreneurial discovery process should not be limited to identifying thematic priorities. In a survey of S3 stakeholders in the EU, more than two-thirds of the respondents indicated that the performance of a bottom-up process had triggered the introduction of "new elements of governance" into the regional policy process and more than 90 percent assert that these will be maintained (Kroll 2015). The primary value is much less in "discovery" of TPAs and much more in the introduction of bottom-up consultation processes which are seen as a substitute to "state-centric repertoire of policies" (Morgan 2017) and as welcome change to administrative routines that the need for broad-based consultations had prompted (Kroll 2015). This particularly applies to a need for strong entrepreneurial discovery process governance in the implementation stage and not only in the design stage.

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15   The report "Analysis of the Croatia Smart Specialization Strategy: Logical Framework, Instruments, and Indicator Results" (World Bank 2021) contains a deeper analysis of S3 results indicators and their current status.
16   Additionally, a revised set of harmonized indicators and data collection protocols have been produced as part of the "Analysis of Theory of Change and Results Framework" (World Bank 2020), which could serve as a basis for further harmonization and improvement of the overall M&E system.

The complex design of the S3 entrepreneurial discovery process continuation was realized to a limited degree and with extended delays. From a comparative perspective (Box 3.2), the S3 entrepreneurial discovery process governance in Croatia was ambitiously designed. Based on the design outlined in the S3 document, the Croatian entrepreneurial discovery process governance is probably one of the most ambitious and comprehensively described activities among all regional and national S3 documents. It is probably the only strategy that has envisaged instruments to support a continuous entrepreneurial discovery process. However, as elaborated earlier, the ambition in design was not followed up by timely implementation. In this context, Croatia faces challenges that are also present in other EU regions. An analysis of the entrepreneurial discovery processes in the EU regions has concluded that the government played a leading role in the RIS3 process in the majority of cases (Aranguren, et al. 2019). In most countries/regions which have been able to involve new stakeholders in their strategy design, "the entrepreneurial discovery process has proved to be difficult to continue during policy implementation."

Box 3.2 Implementation of entrepreneurial discovery process in Slovenia

A closer connection between policy, implementation and entrepreneurial discovery process governance in Slovenia is achieved through strategic partnerships. Strategic Research & Innovation Partnerships were formed at the end of 2016 in each of the nine priority areas of S3. They are long-term partnerships between companies, the research sector, the State and municipalities, and facilitators, users and the non-governmental organizations. The Government Office responsible for Development and European Cohesion Policy is also closely engaged in strategic partnership activities. However, the process and activities are driven by business sector stakeholders. The bottom-up nature of Slovenian strategic partnership and its engagement in S3 related activities is in contrast to Thematic Innovation Council activities and clusters in Croatia, which have been more top-down driven (see also section 4.3). Slovenia appears to have higher engagement of stakeholders in S3 activities, while Croatia has more robust top-down representation on the policy level.

In practice, there appears to have been a significant engagement of stakeholders in entrepreneurial discovery process S3 activities which continued afterwards. Nine Strategic Research and Innovation Partnerships (one per priority domain of the S3) were formed in 2016, designed as long-term quadruple helix bottom-up-led partnerships. Around 500 key actors involving business and research organizations, facilitators, innovation users, NGOs, the State and municipalities operating in a specific S3 priority domain are engaged in these bottom-up initiatives and networks. The Government acts as a facilitator and supports these business-innovation ecosystems through its Implementation Working Group. The Partnerships adopt road maps and action plans approved by the Working Group and serve as the basis for implementing the RDI programs.

Source: Staff elaboration based on Slovenian Smart Specialization Strategy (S4) and Wostner (2017).

The policy capacity to realize collective action by public and private sector actors appears to be insufficient. Key to entrepreneurial discovery process governance is the ability to link stakeholders from different sectors, match their interests, reach agreements, and find complementarities. This "networking capacity" is crucial to S3 governance, which, by definition, extends beyond state governance and includes triple or quadruple helix actors. The lack of "networking capacity" of entrepreneurial discovery process governance bodies in Croatia, including the governmental stakeholders involved, appears to be a substantial limitation to collective action within TPAs.

Due to implementation problems and delays, key entrepreneurial discovery process milestones were not reached. Thematic RDI strategies and related action plans were planned to be prepared until the end of 2016. However, Thematic Innovation Platforms, which were supposed to lead this process, started to operate only at the beginning of 2019. As of December 2020, RDI strategies, action plans, project pipelines, and STPA monitoring frameworks with specific STPA indicators have not been developed. This suggests that there is no policy mix directionality or link between policy orientation on the TPA level and their conversion into an appropriate portfolio of instruments geared to each TPA. This is not only a Croatian feature but a feature of all undeveloped S3 governance systems (Magro and Wilson 2019).

In practice, institutional instruments did not manage to facilitate the entrepreneurial discovery process. They either have not produced the expected deliverables yet, or the results produced were utilized to a limited extent only. The INI Project faced serious delays and produced a very limited set of outputs. The key activities of the project, including support to development of TPA RDI strategies and project pipelines, have not yet been initiated. The Foresight Project experienced very long delays and is yet to deliver results. On the other hand, the CCI project did deliver STPA analyses that could have been used in S3 policy and entrepreneurial discovery process continuation.

Table 3.1 Key commitments for the set-up of S3 policy and entrepreneurial discovery process governance from the S3 document and status of their realization

CLAIM OR COMMITMENT	REALIZATION
"Institutionalization of the S3 monitoring and evaluation system through establishment of the National Innovation Council will become a priority after adoption of the S3 by the Croatian Government and is planned to be finished by the end of 2016."	The establishment of the governance structure faced critical delays, and the main bodies did not become operational until 2019.
"Based on information collected through the monitoring and evaluation system, activities of the Thematic Innovation Platforms (through which the [entrepreneurial discovery process] will be continued), results of foresight projects and new rounds of partnership consultations, as well as ongoing socio-economic changes, corrective actions related to the S3 implementation or revisions of the S3 will be prepared."	No corrective measures regarding S3 implementation, or S3 revisions, were prepared. The foresight projects which were supposed to support the S3 process are implemented with significant delays.

CLAIM OR COMMITMENT	REALIZATION
"The [Thematic Innovation Councils] will discuss and approve long-term visions to address specific challenges and new potentials in particular TPAs. They will be the highest advisory and decision-making bodies in creation of coherent RDI strategies, focused on business sector needs and steering the implementation of agreed programs and activities towards optimizing the benefits for all stakeholders. Preparation of RDI project pipeline of the business sector will form a key part of the implementation strategy. The [Thematic Innovation Councils] will be the main instrument for continuation of the process of smart specialization in the following years and they will enable continuous [entrepreneurial discovery process] through formation of Priority Action Groups for each S3 STPA and preparation of thematic RDI strategies. (...) It is planned that thematic RDI strategies and related action plans will be prepared until the end of 2016."	Due to the delays in setting up the S3 governance, the entrepreneurial discovery process was hindered. As of April 2021, the RDI strategies, action plans and project pipelines were not prepared.
"Complementarity of the [Croatian Competitiveness Clusters'] operation with S3 governance bodies will be assured through connection of the HAMAG-BICRO and the [Croatian Competitiveness Clusters] in annual S3 reporting and their inclusion in work of [Thematic Innovation Platforms]."	The involvement of the Croatian Competitiveness Clusters in entrepreneurial discovery process and their interaction with the Thematic Innovation Councils is unclear. Nominally, the Croatian Competitiveness Clusters are represented in Thematic Innovation Council membership and included in the Thematic Innovation Platforms. However, a stronger engagement of Croatian Competitiveness Clusters in S3 entrepreneurial discovery process and interaction with HAMAG-BICRO is not evident.
"Interim evaluations will enable a detailed insight into the planned measures and progress in achievement of objectives, and the first revision of the S3. Interim evaluations will also provide a basis for possible S3 revisions in a way in which some projects or programs can be extended or withdrawn, depending on the evaluation results. Evaluation plan, including also the list of planned interim evaluations, will be developed and interim evaluations will be conducted during 2017."	Evaluation activities commenced close to the completion of the S3 reference period. Nonetheless, evaluation results should be applicable also in preparations for the upcoming financial perspective.

Source: Croatia Smart Specialization Strategy 2016-2020 and staff elaboration.

HAVE CLUSTERS BECOME THE MECHANISM OF THE ENTREPRENEURIAL DISCOVERY PROCESS?

Upon S3 adoption, cluster policy revolved around the implementation of the CCI Project.
Box 3.3 presents an overview of the CCI Project. From S3 adoption in March 2016 until early 2019, the implementation of the CCI Project was the single activity that could be considered as an entrepreneurial discovery process type of activity. These activities were implemented in 2016-2018. The project assessed promising strategic segments in which "clusters," as defined by 13 STPAs, could compete and integrate into global value chains (GVCs). The aim was to design an action plan with concrete steps and reforms to improve the competitiveness performance of Croatian firms in the areas covered by the STPAs. This aim would have required improved capacity of the Ministry of Economy and Sustainable Development and the Croatian Chamber of Economy staff to monitor the progress of actions taken, to monitor trends and conditions in the business environment, and to autonomously continue the process of supporting the competitiveness of clusters in Croatia to compete in GVCs. The second part of the initiative, which is still ongoing, includes the implementation of action lines and pilot projects based on the results of the first part.

Box 3.3 Overview of Strategic Project for Support to Competitiveness Clusters Initiatives (CCI Project)
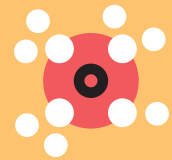
PROJECT IMPLEMENTATION PERIOD	May 2016—May 2020*
BENEFICIARY	Ministry of Economy and Sustainable Development
PARTNER	Chamber of Economy
TOTAL PROJECT VALUE	HRK 67,494,068 (EUR 8.9 million)
GRANT VALUE (OPCC)	HRK 57,369,957 (85%)

*Extended until November 2021.

GENERAL OBJECTIVE

- to provide support to efforts of Croatian Competitiveness Clusters to enhance competitiveness and to improve the position of Croatian companies within global value and supply chains through the implementation of cluster initiatives focused on fostering innovation, increasing productivity, and diversifying economic activities

- to increase competitiveness and specialization of the Croatian economy following the S3, its transformation and structural changes of the industry, as well as to encourage innovation and the internationalization activities of the business sector by strengthening smart skills

SPECIFIC OBJECTIVES

- to enhance the position of the Croatian Competitiveness Clusters in selected global value chains (GVCs) and encourage the development of smart skills in the business sector

- to encourage the internationalization of the business sector through a proactive approach to FDI and the development and implementation of an export strategy for defined strategic segments and emerging industries under the S3 STPAs

- to encourage territorial and production branding of the Croatian economy and promote the concept of competitiveness clusters

EXPECTED OUTPUTS

- 15 cluster initiatives implemented (pilot projects and similar activities aiming at competitiveness enforcement)

- 100 enterprises provided with non-financial support through the development of smart skills related to GVCs and strengthening competitiveness

- 12 internationalization activities implemented (visits to fairs, exhibitions, B2B meetings and similar activities)

- 13 new brands developed (within S3 STPAs)
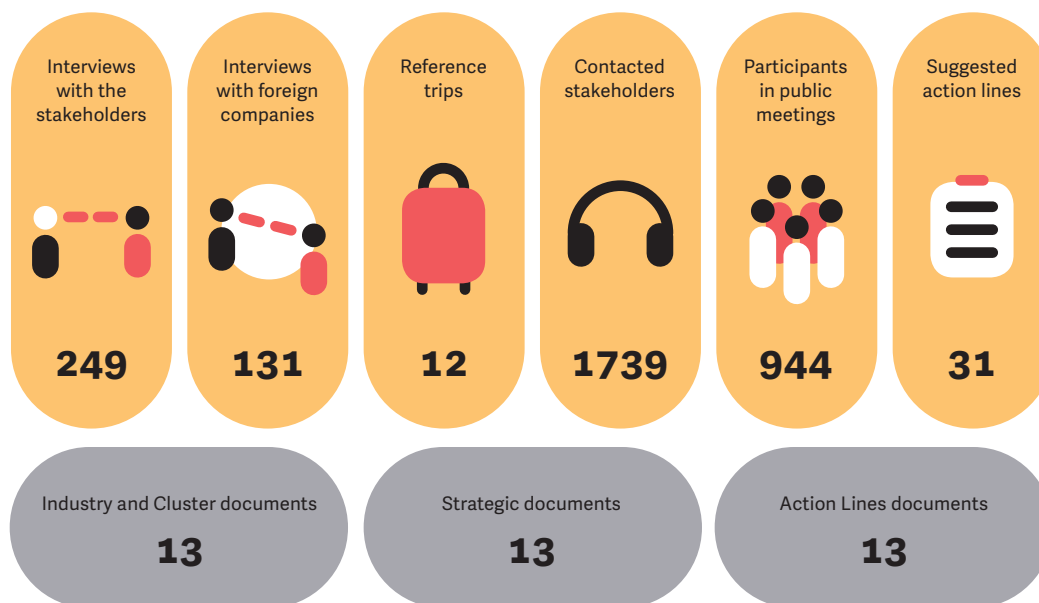
EXPECTED OUTCOMES

- Increased Gross Domestic Product (GDP) per capita (EUR, PPS)

- Increased value of FDI per capita (EUR)

- Increased share of FDI in GDP

- Increased export of medium and high-tech products as a share of total product exports

- Export growth

Source: Staff elaboration based on Croatian Chamber of Economy and strukturnifondovi.hr data.

The CCI Project utilized Croatian Competitiveness Clusters so that they, to some extent, remained to serve as the entrepreneurial discovery process vessels and fill the gap resulting from the absence of Thematic Innovation Platforms. The advisory services provided through the project were designed to produce deliverables with the purpose of being used by the Thematic Innovation Platforms and S3 governance bodies to support further specialization and continuation of the entrepreneurial discovery process. However, the CCI Project based its outputs on the S3 STPAs, and not the sectors covered by the Croatian Competitiveness Clusters. The Croatian Competitiveness Clusters represent the more conventional, sector-based approach. In most cases, they are covering specific NACE sub-categories of manufacturing (e.g., Competitiveness Cluster for Wood Manufacturing). On the other hand, the STPAs are defined as "application areas," which are not exclusive to particular NACE sectors. The Croatian Competitiveness Clusters were again used as a platform to ensure the involvement of the triple-helix actors. The project provided a bridge from the Croatian Competitiveness Cluster sectors to the STPAs emerging from them and, correspondingly, to the Thematic Innovation Platforms designated to govern them.

The CCI Project delivered STPA analyses with the potential to be used in S3 policy and entrepreneurial discovery process governance. The deliverables were produced following the "cluster initiatives" methodology (World Bank 2009). The outputs produced for each STPA include an analysis of the industries and the Croatian Competitiveness Clusters attributed to an STPA. These documents include sectoral data, information on relevant legislation, global supply and demand trends, exports and imports, key players in the market, industry evolution analysis, cluster members and their activities, value chain and Porter's Diamond analysis. Based on the study, strategic segments are identified for each STPA, that could be attractive for the underlying industries, with references to possible growth opportunities and key areas of improvement for Croatian companies. Finally, action lines are proposed to start the process of changes in targeted industries, along with an investment plan, action plan to improve the position of firms in GVCs, FDI Strategy, Export Strategy, Territorial and Product Branding for the STPAs. The involvement of stakeholders identified for each STPA was ensured through joint public meetings, engagement in working groups for action line development, direct contact and one-on-one interviews, etc. (see Figure 3.1).

The use of project outputs by the policy makers through follow up activities, however, was very limited. The project could be considered quite successful in the first stage of building the basis for the collective action in individual sectors. However, this has not been followed up by further activities in generating a series of public-private sector coordinating activities to pursue the S3 objectives. Only two examples of the utilization of the project results are evident. The Ministry of Economy and Sustainable Development program IRI 2 states the results of the CCI Project was one of the bases for the "narrowing down" of S3 STPAs, although without explaining how this was done. The other example is the Integrator program that applied the strategic segments described in the CCI Project deliverables as an eligibility criterion for project funding. Such utilization of project results for a single grant scheme, however, is limited compared to the scope of the outputs provided, and the general ambition of the project. Also, apart from the Ministry of Economy and Sustainable Development, the application did not involve other S3 policy governance bodies. The project results were eventually presented to the Thematic Innovation Councils and the National Innovation Council, but no follow-up is evident. The possibility to do so exists particularly in the development of the RDI strategies on the TPA level.

Figure 3.1 Activities and stakeholder involvement in the CCI project

Interviews with the stakeholders	Interviews with foreign companies	Reference trips	Contacted stakeholders	Participants in public meetings	Suggested action lines
249	131	12	1739	944	31

Industry and Cluster documents	Strategic documents	Action Lines documents
13	13	13

Source: Croatian Chamber of Economy and World Bank

According to a survey conducted among members of the Croatian Competitiveness Clusters, their own perceived performance was, in general, low. Anić, Bačić and Aralica (2018) surveyed the perceptions of 250 members of the 13 Croatian Competitiveness Clusters regarding their objectives, processes, setting and performance. The results indicate that the progress of Croatian Competitiveness Clusters was not visible, and they perceived to be lagging behind successful cluster initiatives. The most important reasons for underperformance from the perspective of Croatian Competitiveness Cluster members included in the survey, are weaknesses inherited in cluster development framework, poor implementation of activities, inadequate resources for pursuing more ambitious objectives, lack of consensus and defects in strategy formulation. The majority of respondents strongly agree that Croatian Competitiveness Clusters did not provide benefits for cluster members (i.e., higher sales, employment, exports, innovations, process upgrading, etc.). On the other hand, networking activity and promotional activities were more favorably ranked, although still by a minority of respondents, as 38.4 percent of them agreed that Croatian Competitiveness Clusters have led to closer industry-academia ties and 25.6 percent have attracted new firms to the sector or industry. Finally, there are outliers, as for example the Wood Processing Sector cluster whose performance according to the majority of members was evaluated as high.

Only a few Croatian Competitiveness Clusters have continued to operate successfully. Some of the Croatian Competitiveness Clusters are active in seeking opportunities for funding and fostering collaboration among their members. Examples include the Creative Industries Cluster and the Defense Cluster.[17] However, most of the other Croatian Competitiveness Clusters appear to be a little or not at all active.

The performance of Croatian Competitiveness Clusters appears to mostly be self-guided, as support from the government is less evident compared to the period preceding the S3. The Croatian Competitiveness Clusters were envisaged as active participants in the work of the Thematic Innovation Councils and Thematic Innovation Platforms, but the initial promising activities were not followed up. Aside from the CCI Project, which itself provided potential benefits to the Croatian Competitiveness Clusters that were indirect, there appears to be lackluster support provided for the Croatian Competitiveness Clusters from the relevant authorities in recent years. The financial support to Croatian Competitiveness Clusters disbursed through annual calls which existed before S3 adoption was discontinued. Furthermore, the Agency for Investments and Competitiveness, which served as a technical secretariat to the Croatian Competitiveness Clusters and provided them with non-financial technical and administrative assistance, was discontinued in 2019 and integrated into the Ministry of Economy and Sustainable Development. No significant activities of policy makers related to cluster policy were since then, which is a missed opportunity for collective action in specific TPAs in this planning period.

The future of Croatian Competitiveness Clusters remains unclear. The CCI Project did not ensure sustainability of the cluster initiatives. Project results were used to a limited degree, given the project financial value and general ambition. This was also confirmed during interviews with the S3 stakeholders. The majority of stakeholders do not have any insight on the current activities of the Croatian Competitiveness Clusters. The Ministry of Economy and Sustainable Development, as the institution overseeing the cluster policy, does not appear to have a strategy on how the Croatian Competitiveness Clusters will continue their operation in the upcoming period. The work of the Croatian Competitiveness Clusters has not been evaluated at all so far. Appropriately, some stakeholders noted that future Croatian Competitiveness Cluster policy should be based on valid cluster evaluation, based on RDI investments performance through S3 priorities and supporting them in effort to boost their administrative and operational capacities (potentially in the form of Innovation clusters), to prepare project pipelines and educate cluster members on various synergies and funding potential of different national, EU, and regional funding resources.

HAVE THEMATIC INNOVATION COUNCILS BECOME DRIVERS OF THE SECOND STAGE OF THE ENTREPRENEURIAL DISCOVERY PROCESS?

The Thematic Innovation Councils began to operate late in the implementation of the S3, close to three years after its adoption. The Thematic Innovation Councils started to operate at the beginning of 2019 when the majority of the programs envisaged by the S3 had already been initiated. Therefore, from the start they did not have many opportunities

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17   More information on recent activities available on the clusters' websites: hkkkki.eu; hkkoi.hr.

to get involved in program design. Eventually, they were established and confirmed by the Innovation Council for Industry, comprised of membership dominated by private sector representatives, as it was planned in the S3.

The establishment and operations of Thematic Innovation Councils appear to be highly procedural. The Thematic Innovation Councils were established by a highly formal selection procedure, by a formal decision of the Innovation Council for Industry and with an official public call for expression of interest in Thematic Innovation Council membership, and a thorough methodology for selection of members that was adopted by the Innovation Council for Industry. On the one hand, this was beneficial in ensuring that an appropriate membership structure is achieved. On the other hand, too much bureaucracy should be avoided in order to ensure Thematic Innovation Councils' efficiency and to retain the interest of its members. For instance, the Thematic Innovation Councils have a rulebook on their operation that was adopted by the Innovation Council for Industry. Furthermore, Thematic Innovation Council memberships and mandates are limited, and require a re-appointment procedure. Again, the Innovation Council for Industry needs to be involved to confirm these members. Based on minutes of the meetings, a lot of the Thematic Innovation Councils' operations focus on administration and management, such as formal establishment of the Priority Action Groups, and the appointment of Thematic Innovation Council presidents. More substantial agenda items are unfortunately scarce.

The engagement of Thematic Innovation Councils was steered top-down, instead of bottom-up. Based on perspectives of Thematic Innovation Council representatives, as well as some representatives of the institutions, the Thematic Innovation Councils generally did not themselves raise topics and issues to be discussed in their meetings. On the contrary, the meetings were initiated by the Ministry of Economy and Sustainable Development, that also proposed the topics they discuss. In this sense, the role of Thematic Innovation Councils was passive. Although Thematic Innovation Council representatives in general assessed their interaction with the Ministry of Economy and Sustainable Development and the Croatian Chamber of Economy as adequate and satisfactory, some of the institutional representatives pointed out that the entrepreneurial discovery process management is not enough bottom-up driven (see also section 4.3). The Croatian Chamber of Economy was envisaged from the start as the Thematic Innovation Council secretariat, primarily so that it is disconnected from the state administration, and to enhance the bottom-up component. However, in practice the Innovation Council for Industry and the Ministry of Economy and Sustainable Development appear to steer the Thematic Innovation Council operation, instead of the other way around.

The Thematic Innovation Councils did not manage to fulfil their designated role as entrepreneurial discovery process leaders. As of April 2021, the RDI strategies and Action Plans for the S3 TPAs were not prepared. This delay is severe since RDI strategies, and related Action plans were envisaged to supply the S3 TPAs with vision, key objectives and specific TPA indicators and targets, as well as specific actions, timelines and responsible entities for their execution. Given that these RDI strategies were supposed to set strategic goals for each priority area, the purpose was to provide policy makers with a rationale to additionally focus the remaining RDI funds, which did not happen. Considering that it is the end of the implementation period, such strategies, if they manage to be completed, can only serve in preparation for the S3 process in the post-2020 period.

In general, there is little evidence of revision of sectoral priorities after the adoption of the S3 document. The final version of S3 contains 13 sub-thematic priority areas, with an additional two cross-cutting themes (KET and ICT), which was quite a change compared to the initial 76 areas. However, each of priority sub-areas contains many indicative RDI themes which has reduced the selective power of the S3. This was recognized, albeit quite late in the process, with the establishment of Thematic Innovation Councils whose one of the priority tasks was to reduce the number of indicative themes for R&D and innovation projects. This task has been undertaken within the scope of preparation of the few of the remaining S3 grant schemes of the current financial perspective. As previously described, revision of S3 priorities was done to be applied exclusively for the purposes of two programs of the Ministry of Economy and Sustainable Development. Given that such steps towards re-prioritization were introduced on OPCC instruments, the Ministry of Regional Development and EU Funds was actually the institution that had the last say on how these were introduced, which again brings out the question of the relationship between Managing Authority and National Innovation Council (see also section 2.3).

Box 3.4 Corrective actions in the Lithuanian entrepreneurial discovery process

Although stakeholders' involvement in S3 design in Lithuania was initially lacking, corrective actions were taken to supplement the entrepreneurial discovery process structures and utilize monitoring and stakeholder consultations to reformulate priorities. Non-governmental stakeholder groups (private sector, academia, civil society) were not extensively included in the policy design process. Although no innovation platforms or strategic partnerships were envisaged in the S3 structure, the entrepreneurial discovery process was re-established along the S3 mid-term evaluation conducted in 2018. The mid-term assessment helped to gain meaningful insights and set the direction for the next period. A total of 42 workshops were organized with 130 relevant stakeholders from research and business fields. Their involvement led to reformulating the S3 priorities, and other improvements such as revision of the project selection criteria, which now also address societal challenges.

Source: Cvijanović, et al. (2020).

The Thematic Innovation Councils participated in the re-prioritization of only two Ministry of Economy and Sustainable Development programs. First, for the purposes of the IRI2 program, the Thematic Innovation Councils established Priority Action Groups with the main task of "narrowing down" the supported S3 STPAs. The list of indicative RDI topics for each STPA from the S3 document was narrowed down and used as an eligibility criterion for the projects to be funded through the program.[18] Out of 141 topics from the S3, close to half of them was excluded, and the list was narrowed to 73. To qualify for funding, project proposals were required to be in line with one of the RDI topics from the revised list provided for each STPA. The second example of S3 re-prioritization is the Ministry of Economy and Sustainable Development program Integrator[19]. In this case, eligibility criteria directly reference the strategic segments for STPAs that were identified through the CCI Project.[20] The program documentation again references the Croatian Competitiveness Clusters as one of the sources of such prioritization, but in this case the Thematic Innovation Councils are not mentioned as one of the sources. Nonetheless, the exact approach and the degree of the Croatian Competitiveness Cluster engagement is again unclear.

One of the main activities of Thematic Innovation Councils has been to tag relevant projects for S3 prioritization, but in practice this was not used as planned. The Thematic Innovation Councils established Validation Committees (VC), which collected and validated project ideas**.** The idea was to give preference to such projects in project selection procedures of RDI schemes by awarding the tagged projects with extra points in the quality assessment process. Five VCs processed around 300 project ideas valued at close to HRK 6 billion, out of which 70 percent of proposals received a positive assessment of relevance.[21] When the IRI2 program was launched in December 2019, the tags of relevance could not be used as an additional selection criterion. The Ministry of Regional Development and EU Funds, as the Managing Authority, disagreed with the process of giving preference to these projects in grant award procedure. Although this is an example of a direct intervention of the non-sectoral Managing Authority in the entrepreneurial discovery process, some of the Thematic Innovation Council members agree with the Ministry of Regional Development and EU Funds and think that Thematic Innovation Council involvement should be

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18   A most radical example of the TIC involvement in re-prioritization for IRI 2 is the activity of the TIC for TPA Security. In their activity of narrowing down the RDI topics, this TIC removed the STPA Mine Action Program completely, and provided rationale for such revision. According to reports on the TIC's work, the reasons for the exclusion of the STPA Mine Action Program are attributed to (1) a lack of interest from the private sector to apply projects in the area, (2) World Bank analyses characterizing it as a declining industry and re-organization of Croatian public administration system and discontinuation of the work of the Croatian Mine Action Center as of 2019, (3) possibility to integrate, to some degree, the relevant indicative RDI topics from the STPA Mine action program into the topics of STPA Defense and dual-use technologies and products, and (4) no project ideas submitted to the VCs from the area.

19   According to the program documentation, Integrators are medium and large enterprises that are present in multiple markets, have structured supply and value chains, and provide their products to end users.

20   More details on the S3 strategic projects are provided in the following section.

21   However, this call for project ideas did not constitute a TPA project pipeline as envisaged as one of the main tasks of the TICs and steps in the EDP continuation, as they were limited to short project ideas and not mature projects ready to apply for funding.

intensified in earlier program development instead of project selection. Ultimately, the work of VCs, i.e., the RDI topics referenced in the collected project ideas, was used as one of the inputs to narrow down the RDI topics eligible for funding through IRI2.

Engagements of Thematic Innovation Councils were disconnected from the policy governance authorities, most notably the National Innovation Council and the Inter-ministerial Working Group. The mentioned examples were exclusively utilized by the Ministry of Economy and Sustainable Development which provided initial guidance to the Thematic Innovation Councils on how to perform the task. This is understandable, as these revisions did not aim to revise the S3 document, i.e., the prioritization of indicative RDI topics would only apply to two Ministry of Economy and Sustainable Development instruments. There were no other instances of similar Thematic Innovation Council engagement with other institutions, nor of any discussions on the revision of priorities at the S3 level.

The delineation of the role of Thematic Innovation Councils and that of the Croatian Competitiveness Clusters is not fully clear. Nominally, both are part of the Thematic Innovation Platform for each TPA, comprising one Thematic Innovation Council and the Croatian Competitiveness Cluster relevant for the sector. The presidents of Croatian Competitiveness Clusters are members of Thematic Innovation Councils, and Croatian Competitiveness Clusters nominate companies to become Thematic Innovation Council members. The difference in the roles between the two is not entirely clear, as revealed in interviews with stakeholders (see section 4.3). The S3 envisaged the preparation of RDI strategies and project pipeline by both Croatian Competitiveness Clusters and Thematic Innovation Councils. Different sections of the S3 refer to both the Croatian Competitiveness Clusters and the Thematic Innovation Councils as the bodies that were supposed to tag projects of relevance in the IRI 2 program. During the preparation of IRI2 in 2019, this role was initially intended to be performed by the Thematic Innovation Councils. Ultimately, this was done by the Thematic Innovation Councils, but as described earlier, the results were not used to set either eligibility or selection criteria.

The inter-institutional dimension of the entrepreneurial discovery process was also not achieved. Although the Ministry of Science and Education is represented in the Thematic Innovation Councils, no significant involvement of the Ministry of Science and Education in Thematic Innovation Council activities or use of their results is evident. The same goes for other public institutions represented. Based on interviews with S3 stakeholders, except for the Ministry of Economy and Sustainable Development, institutions have very little or no information at all on any entrepreneurial discovery process activities, or the institutional instruments that are being implemented or the results that they produced.

The Thematic Innovation Councils were involved in the development of the National Development Strategy 2030 and the start of the ESIF programming process for the post-2020 period. Representatives of the Thematic Innovation Councils were involved in the development of proposals for strategic projects, for structural reforms and implementation mechanisms for the Working Group on Competitiveness and Industrial Development and the development of entrepreneurship and crafts within the process of the preparation of National Development Strategy 2030. Thematic Innovation Council members also reported being involved in working groups for "Smart Croatia" and "Green Croatia" as part of the preparation of the next ESIF programming period.

For most of 2020, the Thematic Innovation Councils were dormant and now await re-appointment of their members. Upon launching the two mentioned Ministry of Economy and Sustainable Development calls, the Thematic Innovation Councils did not have any other significant activities. The Thematic Innovation Council members need to be formally re-appointed, as well as their presidents. This is under authority of the Innovation Council for Industry, which also needs new appointments, including a new president, due to organizational and managerial changes in the institutions involved. No activities to engage in such process have been noted so far.

Establishment of the S3 entrepreneurial discovery process governance system was to be facilitated through the INI Project, which had significant delays in its implementation. Box 3.5 provides an overview of the INI Project. The plan was to launch the CCI Project and the INI Project simultaneously, immediately after S3 adoption (March 2016), as well as to establish the Thematic Innovation Councils right away, so they can interact with both projects. However, in practice, while the CCI Project launched in May 2016, the implementation of the INI Project effectively started over a year later in September 2017. Furthermore, the Thematic Innovation Councils were established in September 2018, Thematic Innovation Council members were appointed in December 2018, and first Thematic Innovation Council meetings were held in January 2019.

Box 3.5 **Strategic Project for Support to the Establishment of Innovation Network for the Industry and Thematic Innovation Platforms (INI Project)**

PROJECT IMPLEMENTATION PERIOD	May 2016*—November 2021
BENEFICIARY	Ministry of Economy and Sustainable Development
PARTNER	Croatian Chamber of Economy
TOTAL PROJECT VALUE	HRK 66,294,768 (EUR 8.8 million)
GRANT VALUE (OPCC)	HRK 56,350,552 (85%)

*While the implementation of the project officially started in May 2016, project activities started in September 2017, after the completion of the public procurement process for advisory services.

GENERAL OBJECTIVE

- to establish an efficient and self-sustainable framework for supporting and stimulating business investments in R&D

- to raise awareness of the importance of RDI investments in the business sector for identifying new potentials for industrial growth and creating employment, enhancing competitiveness, modernizing, and to diversify the Croatian economy

SPECIFIC OBJECTIVES

- to map RDI capacities of the business sector and to create an efficient institutional set-up and a web platform for RDI as part of the national innovation system

- to create long-term focused RDI strategies of the business sector for identified S3 TPAs

- to prepare an RDI project pipeline

- to strengthen RDI knowledge and skills of the business sector

EXPECTED OUTPUTS

- 50 enterprises received non-financial support

- 5 Thematic Innovation Councils established

- 1 Innovation Web Platform established

- 25 identified strategic projects within each Thematic Innovation Platform

- 5 RDI strategies for the business sector prepared (one for each S3 TPA)

EXPECTED OUTCOMES

- Increase of business sector R&D investments as percentage of GDP

- Increased number of new firms in S3 areas

- Increased employment in knowledge intensive sectors

- Increased trade of middle/high technology goods

- Increased sale of innovations

Source: Staff elaboration based on Croatian Chamber of Economy and strukturnifondovi.hr data.

Delays in the implementation of the INI Project are attributed to administrative issues. According to the reports on INI Project implementation, delays occurred due to the preparation and implementation of public procurement procedures. Also, according to interviews with stakeholders, reasons for delays can partially be attributed to changes in the internal organization of the Ministry of Economy and Sustainable Development, i.e., transfer of authority over the project from one organizational unit to another, which took place in 2017. Nonetheless, prolongation of the project implementation period was requested and approved, and the project is expected to finish in November 2021, instead of May 2020. How to avoid similar delays in the next planning period remains a challenging issue. It is not clear whether the administrative capacities were upgraded, or if there is a plan to do so.

The INI Project failed to deliver its key expected results. The INI Project was expected to contribute to the realization of the critical activities related to the set-up of S3 governance and continuation of the entrepreneurial discovery process. The first component of the project, which includes the support activities regarding the establishment and operation of the Innovation Council for Industry and the Thematic Innovation Councils, appears to have been implemented successfully. However, substantial components of the project, namely the support services for the preparation of the TPA RDI strategies and project pipelines, was not implemented. The delay in this activity has a significant consequence for the S3 entrepreneurial discovery process since as of today, these strategies have not been prepared yet.

HAS THE FORESIGHT PROJECT BECOME PART OF THE ENTREPRENEURIAL DISCOVERY PROCESS IN SERVICE OF THE THEMATIC INNOVATION PLATFORMS?

The Foresight Project was envisaged as one of the instruments supporting the entrepreneurial discovery process from the perspective of the public sector. Box 3.6 provides an overview of the project. Its aim is to "increase efficiency and effectiveness of RDI programs and structures, during the process of preparation of thematic RDI strategies for the business sector." The Foresight Project was designed to be complementary to the INI Project. The Foresight Project primarily focused on public scientific organizations and mapping of the science system as well as establishing long-term trends of its development. In contrast, the INI Project focused on identifying and mapping the needs of the business sector, with the final goal of encouraging and facilitating business sector investments in RDI. So, the implementation of both projects is envisaged as a simultaneous and coordinated activity.

Box 3.6 Strategic project "Science and Technology Foresight" (Foresight Project)

PROJECT IMPLEMENTATION PERIOD	December 2017—December 2021
BENEFICIARY	Ministry of Science and Education
PARTNER	University of Zagreb, University Computing Centre (Sveučilišni računski centar—Srce)
TOTAL PROJECT VALUE	HRK 15,494,132.14 (EUR 2 million)
GRANT VALUE (OPCC)	HRK 13,170,012.32 (85%)

GENERAL OBJECTIVE

- to create a coherent and comprehensive system for setting priorities for RDI policies in Croatian research area—this will be achieved by establishing a legal framework, creating an Information System on Croatian scientific activity and implementing mapping and forecasting activities

SPECIFIC OBJECTIVES

- to regulate the obligations and responsibilities of stakeholders in the science and technology system, related to dealing with data on scientific activity

- to connect Croatian public research organizations through a publicly available information system, and to provide visibility of their scientific activities

- to identify strengths and weaknesses of the Croatian science and technology system, and to define directions for further development of science and technology policies

- to facilitate collaboration between bodies of state and public administration, research and business sectors, to build a network of stakeholders

PROJECT COMPONENTS

- Preparation of a document proposing a legal framework for handling data on Croatian scientific activity (collection and management of RDI data in research organizations)

- Creating an Information system on Croatian scientific activity (CroRIS)

- Science and Technology Mapping

- Preparation of the Foresight study

Source: Staff elaboration based on SRCE and strukturnifondovi.hr data.

The Foresight Project has not produced the expected outputs yet and had to be scaled back due to delays. The delays are attributed to administrative and personnel changes and prolonged public procurement procedure for the engagement of external professional services. According to the revised project, the mapping and forecasting are planned to be conducted only for a single TPA (Energy and Sustainable Environment), as it was deemed not feasible to carry out mapping and forecasting in all five TPAs as initially planned. The reason is attributed to an increase in prices of professional services for conducting such mapping, due to which the project does not have sufficient funds allocated to implement the activities as originally planned.

Coordination between the Foresight Project and the INI Project came late in the process. Implementation of both projects was planned to start by the end of 2016. The plan was to sign a cooperation agreement between the Ministry of Science and Education and Ministry of Economy and Sustainable Development to coordinate across projects and to ensure coherent methodologies and tools for mapping and exchange of data and results from both projects, including dissemination of their results to the broader public. However, according to the interviews with stakeholders, preparation of such an agreement started in 2020 and has not yet been finalized. In any case, no coordination at the National Innovation Council level was conducted.

3.3 S3 implementation governance

HORIZONTAL AND VERTICAL COORDINATION BETWEEN THE SECTORAL AUTHORITIES

STI governance is, by definition, an inter-ministerial and inter-agency issue, which makes coordination all the more important. The issue of coordination is endemic to complex and multi-objective activities like smart specialization. The ministerial ownership of specific programs leads inevitably to "silos" mentality as noticed by external assessments. Supporting disjointed and isolated segments of the innovation value chain increases coordination failures and weakens the impact of funding mechanisms. So, both horizontal and vertical coordination across the portfolio of innovation policy instruments are likely to generate much more significant effects than patchy and uncoordinated policy support. Vertical coordination would require coordination of upstream research-oriented activities with downstream innovation and commercialization activities. Horizontal coordination requires coordination among similar programs to reduce duplication and enhance complementarities or synergies.

The risk of policy dissonance arises from the division of authority between Ministry of Science and Education and Ministry of Economy and Sustainable Development, as the two IB1s in charge of the majority of the S3 programs. In the past, the Ministry of Science and Education has focused on supporting public research and other research organizations, while the Ministry of Economy and Sustainable Development supported projects in the private sector. This indirectly led to gaps in the policy mix, particularly in the areas of commercialization of public research (on the side of the Ministry of Science and Education) and early-stage R&D in the private sector (on the side of the Ministry of

Economy and Sustainable Development), as each institution tended to gravitate towards their "natural" competences (World Bank 2019). In the context of S3 objectives, coordination frictions may arise in cases where different institutions are in charge of instruments which contribute to the same objective.

Additional coordination challenges arise with the integration of additional instruments in S3 policy during implementation. The official S3 document refers to additional RDI programs, that are not exclusively S3 instruments, but also contribute to S3 objectives. Later on, in the S3 Action Plan 2019-2020, some of these programs were integrated into the policy mix, while other remained in the "additional instruments" category. The new instruments included add another layer to coordination challenges, as they introduce additional institutions, including the Croatian Science Foundation and HAMAG-BICRO.

**A program-level review of supported innovation life cycle stages further illustrates the need for both horizontal and vertical coordination.** Figure 3.2 presents programs based on the stage in the innovation value chain that they support.[22] S3 programs and instruments are grouped based on TRLs, which correspond to different innovation life cycle (ILC) stages (Table 3.2). All four institutions (the Ministry of Science and Education, the Ministry of Economy and Sustainable Development, the Croatian Science Foundation, and HAMAG-BICRO) manage programs that cover the first two ILC stages, and three of them (the Ministry of Science and Education, the Ministry of Economy and Sustainable Development, and HAMAG-BICRO) cover all four ILC stages. This requires strong horizontal coordination among them to minimize overlaps. From a vertical perspective, programs designed by the Ministry of Science and Education and the Croatian Science Foundation are aimed more toward the early stages of the ILC, while Ministry of Economy and Sustainable Development programs are oriented towards downstream steps or commercialization. This difference highlights the need for a more integrated approach to the innovation policy cycle. Because the RDI agenda is divided not in terms of ILC stages, but in terms of beneficiary type (research organizations vs. private sector), lack of vertical coordination is likely to create gaps in the policy mix.

Programs that support public-private collaboration require particularly careful horizontal coordination. Fostering such collaboration from the perspective of supporting the business sector would perhaps be oriented towards enhancing RDI capacities of enterprises. On the other side, from the perspective of the public sector, the objective might be shifting the focus of public research organizations towards applied research, technology transfer, and enhancing capacities for provision of contractual research. For example, flagship grant schemes of the Ministry of Science and Education and the Ministry of Economy and Sustainable Development (STRIP and IRI) both support collaborative applied research projects between research organizations and enterprises. It is crucial that such programs are coordinated timewise across institutions, as well as that their M&E framework is harmonized. The institutional division should not be an obstacle for conducting joint impact evaluations to assess the effects of such programs at the policy level.

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22 The figure covers 24 programs supporting RDI activities, out of the 42 S3 instruments in total that are listed in the S3 Action Plan 2019-20. The programs not covered refer to either RDI infrastructure, or institutional instruments, for which the TRL classification is not applicable.

Figure 3.2 Croatian S3 programs based on TRL
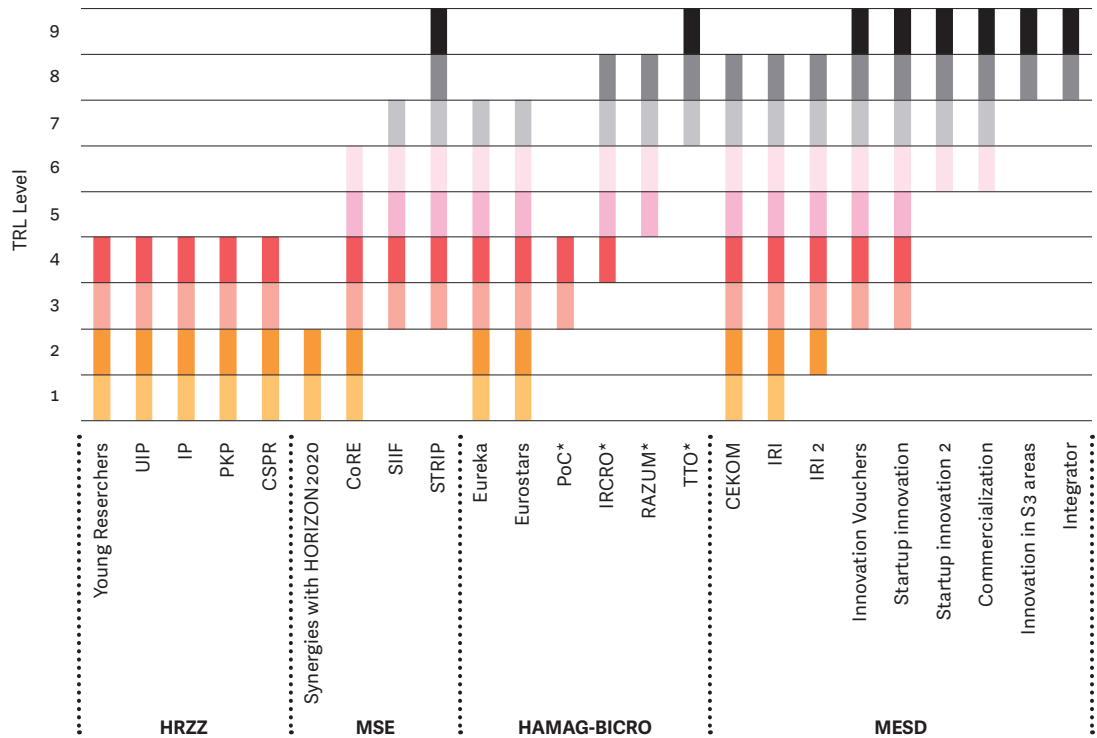
Source: Staff elaboration based on Analysis of Quality and Coherence of the Policy Mix (World Bank 2019).
Note: * denotes programs led by the Ministry of Science and Education and implemented by HAMAG-BICRO. HRZZ = Croatian Science Foundation; MESD = Ministry of Economy and Sustainable Development; MSE = Ministry of Science and Education.

Table 3.2 Correspondence of TRL stages to ILC stages

TRL STAGE	TRL 1	TRLs 2, 3 AND 4	TRLs 6, 7, 8	TRL 9
ILC activity	Basic (fundamental) research	Exploratory development (technological research)	Development for manufacture (product demonstration)	Production capability (Competitive manufacturing)
ILC stage	1	2	3	4

Source: Staff elaboration.
Note: ILC = innovation life cycle; TRL = Technology Readiness Level.

FUNCTIONAL OVERLAPS AND FRAGMENTATION

The roles and functions of the Managing Authority in the ESIF context overlap with the roles of national policy makers. When a program is launched, the Managing Authority approves the call documentation. This includes, among other things, definition of target groups, for example, eligible sectors, beneficiaries, eligible activities, allocations and amounts of co-funding, selection criteria, etc. Although some of these elements are technical, the authority of the Managing Authority extends also to the policy aspects for which the Intermediate Bodies are national sectoral policy authorities. According to some stakeholders, sometimes the non-sectoral Managing Authority goes into examining and even defining the program contents. One such example was already mentioned in the context of the entrepreneurial discovery process, where the Managing Authority limited the use of Thematic Innovation Councils' inputs in the program IRI2 (see section 3.2). The involvement of the Managing Authority as the approver, resolver of complaints in the selection process and irregularities during implementation, was also rated as significantly contributing to the length of the procedures.

The ESIF governance system is highly fragmented. The functions of the ESIF system are divided across a large number of different stakeholders, with a high degree of functional fragmentation. Table 3.3 provides an overview of selected sub-functions (tasks) of the system and the involvement of each of the bodies in the governance structure. Bolded fields in the table denote which body is ultimately responsible for the activity. Usually, multiple bodies are involved in the execution of individual task or activity. This points to considerable functional fragmentation across different organizations in all four stages of the policy process, which may negatively affect the efficiency and the effectiveness of the policy process.

To some extent, the fragmentation stems from a system that has a non-sectoral Managing Authority and sectoral IB1s. IB1s participate not only in the implementation of tasks delegated by the Managing Authority, but also in strategic tasks at both ESIF and Operational Program level (as they should, given that they are the actual policy makers for the underlying policies). With a non-sectoral Managing Authority, as is the case with the Ministry of Regional Development and EU Funds, it makes sense that the policy authorities should be deeply involved in the programming process. For example, the Ministry of Economy and Sustainable Development performs the role of IB1 in the OPCC system while it is also in charge of the overall innovation policy. The Ministry of Science and Education, as one of the IB1s of OPCC, has the authority over the policy areas of education, science, and technology. Both are of course at the same time sharing the role of the key S3 policy makers.

Table 3.3 Overview of tasks and responsibilities in the ESIF implementation governance system

| | | ESIF LEVEL | | OPERATIONAL PROGRAM LEVEL | | |
		NCC	CB	MC	MA	IB1
PROGRAMMING	PROGRAM DESIGN	**coordinates preparation and approves number, scope and final versions of Operational Programs for 2021-2027 before submission to Government and EC**	coordinates preparation of programs			participates in the programming process and drafts parts of the PA and Operational Program
	FULFILMENT OF EX-ANTE CONDITIONA-LITIES [23]		assesses fulfilment of the ex-ante conditionalities	monitors progress of fulfilment of ex-ante conditionalities	implements actions to fulfil the applicable ex-ante conditionalities	implements actions to fulfil the applicable ex-ante conditionalities
	DEVELOPMENT OF CRITERIA FOR SELECTION OF OPERATIONS			**approves selection methodology and criteria**	pre-approves selection methodology and criteria	prepares selection methodology and criteria
	PROGRAM AMENDMENTS	gives opinions and recommendations regarding proposals for amendments (PA and Operational Program level)	coordinates preparation of program amendments (PA and Operational Program level)	**approves program amendments**	initiates and prepares program amendments	participates in the preparation of program amendments
MONITORING AND IMPLEMENTATION	PROGRAM-LEVEL MONITORING	monitors implementation (PA and Operational Program level)	monitors implementation (PA and Operational Program level)		monitors implementation (Operational Program level)	monitors implementation (Operational Program SO level)
	PREPARATION OF IMPLEMENTATION REPORTS		coordinates preparation of implementation reports (PA level)	**approves annual and final implementation reports (Operational Program level)**	prepares implementation reports (Operational Program level)	prepares implementation reports (Operational Program SO level)

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[23]   Includes S3 as the ex-ante conditionality for Thematic Objective 1.

		ESIF LEVEL		OPERATIONAL PROGRAM LEVEL		
		NCC	CB	MC	MA	IB1
EVALUATION	EVALUATION STRATEGY		**prepares the evaluation strategy**		participates in the preparation of the evaluation strategy	participates in the preparation of the evaluation strategy
	EVALUATION PLAN			**approves the evaluation plan**	prepares the evaluation plan	participates in the preparation of the evaluation plan
	IMPLEMENTATION OF EVALUATION		**supervises the implementa-tion of the evaluation strategy**	examines evaluation progress	implements and monitors the evaluation plan	participates in the implementation and monitoring of the evaluation plan
SYSTEM SETUP, SUPERVISION AND CORRECTIVE MEASURES	SYSTEM SETUP AND SUPERVISION	monitor the functioning of the management and control system (Operational Program level) and **provides opinions related to the establishment of an institutional framework for the implementation of funds in the period 2021–2027**		examines issues affecting Operational Program performance	establishes and supervises the management and control system and adopts the Common National Rules	performs functions delegated to them by the Managing Authority
	PROPOSAL AND IMPLEMENTATION OF CORRECTIVE MEASURES	gives opinions and recommendations on actions related to improving the implementation (PA and Operational Program level)	proposes the legal solutions for the efficient and correct use of ESI Funds		coordinates the implementation of corrective measures and accompanying activities	

Source: Staff elaboration.
Note: CB = Coordinating Body; IB1 = Intermediate Body Level 1; MA = Managing Authority; MC = Monitoring Committee; NCC = National Coordinating Committee.

Fragmentation is even more evident at the level of individual instruments. Table 3.4 shows that there is no sub-task or activity which does not involve at least two organizational levels. As a result, as pointed by the Functional and Governance Analysis (World Bank 2020), "relationships vary widely between programs (…) from informal, sparse, and sporadic efforts at communication across institutional boundaries to partial and formal coordination at the tactical level." Overall, the implementation governance setup of STI funding is "fragmented, with duties and responsibilities spread out across different institutions. This fragmentation goes all the way to the program level, with many institutions involved in different steps of the process" (World Bank, 2020). IB1 and IB2 are jointly involved in the majority of sub-tasks at the instrument level, which may have contributed to lengthy procedures and significant delays in the process. Since the Managing Authority

carries ultimate responsibility for the implementation of programs, it is understandable that it remains the "final approver". However, it raises questions whether having three levels involved is the most efficient way to set up the system. For some stakeholders, the involvement of the Managing Authority into operational matters significantly affects the duration of procedures and time needed to execute a particular process.

Table 3.4 Overview of instrument-level tasks in ESIF implementation governance system

	INSTRUMENT LEVEL	MA	IB1	IB2
PROGRAM DESIGN AND LAUNCH	**Preparation of program documentation and project selection criteria**	approves program documentation and project selection criteria	prepares program documentation and project selection criteria	participates in the preparation of program documentation and project selection criteria
	Launching calls for proposals	approves launching calls for proposals	launch calls for proposals and provides funding	
	Program amendments	approves program amendments	prepares program amendments	
AWARDING FUNDS	**Project selection and grant award procedure**	remains a second-degree approver and resolves complaints	participate in project selection and award procedure (details in a separate table)	
M&E	**Project-level monitoring**		monitors the achievement of objectives and results	ensures compliance with grant contract provisions
	Preparation of program-level implementation reports	prepares implementation reports	participates in the preparation of implementation reports	participates in the preparation of implementation reports
	Evaluation	implements and monitors the evaluation plan	participates in the implementation of the evaluation plan	participates in the implementation of the evaluation plan

Source: Staff elaboration.
Note: IB1 = Intermediate Body Level 1; IB2 = Intermediate Body Level 2; MA = Managing Authority.

The degree of fragmentation varies significantly across different programs, even within the same institution. Table 3.5 shows the responsibilities in the award process, which are divided between IB1 and IB2. This division is defined through the agreements on delegation of functions that the Managing Authority has with each Intermediate Body. It should still be noted that the Managing Authority stays involved in the process, as a second-instance body for, e.g., resolving complaints from applicants that were not selected for funding. The table lists the steps of the project selection and grant award procedure for five OPCC calls for proposals, with an addition of a one non-ESIF program (PoC). The two Ministry of Science and Education programs (SIIF and STRIP) have the same division of tasks, which is different compared to Ministry of Economy and Sustainable Development programs (IRI and CEKOM). However, the second call of the same program (IRI2) has a different division of tasks compared to both IRI and CEKOM. Within the same institution one can observe very fragmented functions, with tasks alternating from IB1 to IB2, to a very streamlined process where a single institution is in charge of all functions. The table also shows that programs with a more streamlined division of tasks had a shorter award time, though this may be influenced by other factors too (for example, delays due to difficulty in finding reviewers for quality assessment or cost eligibility checks).

Table 3.5 Division of responsibility for phases of the grant award procedure in selected S3 programs

	INSTRUMENT LEVEL	SIIF	STRIP	IRI	IRI2	CEKOM	POC
PROJECT SELECTION AND GRANT AWARD PROCEDURE	Administrative check and eligibility check of applicants and partners	IB1	IB1	IB2	IB2	IB2	HAMAG-BICRO
	Project and activities eligibility check and quality assessment	IB1	IB1	IB1	IB2	IB1	HAMAG-BICRO
	Checks of eligibility of expenditures	IB2	IB2	IB2	IB2	IB2	HAMAG-BICRO
	Decision on financing	IB1	IB1	IB1	IB1	IB1	HAMAG-BICRO
	Contracting	IB2	IB2	IB1	IB1	IB2	HAMAG-BICRO
	Days between program start and award of funds	861	538	380	202	1.159	197

Source: Staff elaboration.
Note: IB1 = Intermediate Body Level 1; IB2 = Intermediate Body Level 2.

The sequencing of tasks introduces inefficiencies into the selection process, especially when they alternate between different institutions. For example, the expenditure eligibility check is performed after the quality assessment of the project proposal. However, the quality of the project and its budget are inextricably linked–should some costs be deemed ineligible, this may significantly affect the quality of the proposal. Further, when the quality assessment and cost eligibility check are split between two institutions, both have to go through separate procedures to procure experts. Finally, when the responsibility for different parts of the selection process is scattered between independent institutions, it is difficult for any single institution to have control, and therefore accountability, for the process as a whole. Some of the stakeholders confirmed that having a single institution executing the grant award procedure is crucial for the process to be executed in an appropriate timeframe, i.e., avoiding operational delays.

Lack of flexibility in procedures for program management may also contribute negatively to implementation performance. The Managing Authority defines procedures and supervises how they are applied by the Intermediate Bodies that perform the delegated functions. For OPCC, the procedures are officially adopted in the form of the Common National Rules. Given that the OPCC is a multi-sectoral Operational Program, the same procedures are applicable to drastically different interventions. For instance, the same rules and procedures apply to S3 instruments (that is, RDI projects and infrastructure) as for transport infrastructure and healthcare projects. The differences inherent in each type of intervention require more flexibility in the rules applied. The Common National Rules were recognized as an issue by a significant number of stakeholders, who stated they are a major impeding factor to the programs' implementation. Box 3.7 also presents some operational issues stemming from the Common National Rules raised by beneficiaries at the National Innovation Council. Stakeholders also stated that IB1s and IB2s are still not consulted in the development and revisions of the Common National Rules, despite the fact that this was introduced as mandatory in a recent version of the Common National Rules (version 6.1).

Box 3.7 Experiences of beneficiaries of ESIF RDI programs

Beneficiaries of ESIF RDI programs voiced their concerns over clarity of processes and administrative burdens. The experiences of beneficiaries in the implementation of ESIF RDI programs were presented at several sessions of the National Innovation Council. The National Innovation Council then also held a session with a dedicated agenda item for two-sided dialogue between the beneficiaries and the relevant authorities was conducted. Some of the opinions of beneficiaries on the issues they faced in preparation and implementation of such projects were:

- poor adherence to published pre-announcement of calls, which is exceptionally costly to technology-based small and medium enterprises (SMEs), which rely on support programs to drive their innovation;

- poor quality of calls and unclear criteria for selection;

- extensive and redundant administrative certificates and proofs;

- poor coordination between IB1 and IB2, resulting in delays in assessment of project applications;

- low quality of selection process (quality of evaluators; conflict of interest);

- relatively complicated procedures, especially for SMEs, despite the attempts to be simplified;

- lengthy review processes of procurement procedures;

- public procurement rules which are applied to RDI calls are not always relevant or applicable, lack flexibility, and require detailed ex-ante specification of required material, equipment and labor which is not completely possible to predict in advance in the case of R&D projects;

- poor communication with beneficiaries, although some of these issues have been resolved by online portal.

The Thematic Innovation Councils also examined the same issues. The challenges they raised were related to the quality of the RDI programs funded through ESIF. There were also concerns about the competence of technical evaluators working on projects. The Thematic Innovation Councils proposed following solutions:

- use of international evaluators to increase the quality of the evaluation and to avoid any potential conflict of interest;

- formation of an expert team from various institutions that will review the procedures for ESIF-funded RDI projects from other EU countries, or an expert working group which would consist of representatives of the Managing Authority, the IB1, the IB2, and the Agency for the Audit of European Union Programmes Implementation System, to propose improvements in the issues of implementation, including simplifications and to operate as a platform for sharing experiences in implementation.

Source: Minutes of National Innovation Council meetings.

Some stakeholders believe that smaller sectoral Operational Programs would facilitate their management and in general allow for more flexibility. Having a single multi-objective program with a non-sectoral Managing Authority is novelty in the Croatian system, compared to the period of managing EU pre-accession instruments. Before joining the EU, Croatia was using the Instrument for Pre-Accession assistance (IPA). In case of IPA Component 3, three separate Operational Programs were in place: Operational Program Regional Competitiveness, Operational Program Transport and Operational Program Environment. The three Operational Programs were managed by the sectoral authorities of that time, i.e., ministries that were responsible for the economy, for transport, and for environment, respectively. This allowed sectoral specificities to be reflected in the procedures, as opposed to having generic ones that are not tailored to mirror the scope, type and area of intervention. An additional advantage of having a smaller Operational Program is a smaller number of stakeholders involved, allowing more involvement of Intermediate Bodies into development of procedures. For example, the operating structures used to hold regular monthly meetings to discuss and develop appropriate procedures together, allowing the sectoral authorities to be more directly involved in the process. In this context, a multi-sectoral Operational Program is less flexible. However, stakeholders also pointed out that, from a financial management perspective, it is easier to shift the available funding across priorities when they are part of the same Operational Program.

04

Institutional capacity assessment

04

Institutional capacity assessment

- The institutional capacity assessment includes the analysis of capacity for policy design, policy co-creation, implementation, and M&E. The assessment is primarily based on insights from semi-structured interviews with S3 stakeholders.

- Institutional capacity is unevenly developed. The capacity for policy implementation is focused on absorption due to the influence of the ESIF system, but capacity for policy design, co-creation and M&E are relatively less developed.

Smart specialization is a new type of innovation policy that requires developed institutional capacity for its implementation. Institutional capacity goes beyond the state capacity and involves multiple stakeholders involved in policy co-creation. The interactive and collaborative nature of S3 requires capable implementation bodies able to coordinate the activities of multiple stakeholders with different roles, capacities and objectives. These capacities may be expected to evolve over time. However, when initial capacities for S3 implementation are inadequate, the learning process may be long and burdensome.

Croatia did not have prior experience and administrative tradition for an S3 type of policy. Innovation policy instruments have usually been compartmentalized within ministries and agencies responsible for science and economy or entrepreneurship and with very limited inter-institutional coordination. Silo mentality has burdened communication and interaction among different governmental bodies. Furthermore, in previous policies the overall approach has often been top-down, with inputs from stakeholders having been sought at later stages of policy development, and without participatory structures in place, such as the entrepreneurial discovery process bodies planned for the S3. Such specific policy features also generate additional challenges regarding M&E, for which capacities have not been developed systematically. Hence, many of the issues related to S3 design, implementation and monitoring in Croatia may be related to a mismatch between institutional capacities and the conceptual complexity of the S3 framework.

The institutional capacity assessment is structured into four areas. These include institutional capacity for policy design, institutional capacity for policy co-creation, implementation capacity and M&E capacity. Institutional capacity for policy design refers to the capacity to design the S3 and its policy instruments. Institutional capacity for policy co-creation

refs to joint formulation and negotiation of policy objectives and instruments between public and private stakeholders. Implementation capacities refer to the capacity of stakeholders involved in the S3 (managing authorities, Intermediate Bodies, and beneficiaries) to administer available funds effectively and efficiently. M&E capacity refers to the capacity to systematically collect and analyze information and use it to assess project, program or policy performance. The approach employed in this section is described in greater detail in Appendix III.

The analysis draws primarily on interviews with S3 governance stakeholders. The findings are based on 22 semi-structured interviews with representatives of key stakeholders,[24] which have provided their particular perspectives on S3 policy governance, S3 implementation governance and entrepreneurial discovery process, as practiced in Croatia. Appendix IV presents the questionnaire which was used to guide the discussions.

4.1 Overall capacities for S3 governance

Organizational capacities differ substantially between institutions, which reflects differences in the perceptions of the roles of each institution in the broader innovation system. In some institutions policy governance is covered by several organizational units. In others, the participation in the S3 policy governance process is limited to participation of their staff in the Inter-ministerial Working Group. This reflects differences in the perception of authority and responsibility of each institution in the broader innovation system. Some stakeholders emphasized the coordination and implementation roles of their institutions, with the National Innovation Council as the key governance body. Others recognized the limitations of the current system and highlighted the need for more direct and active participation of their organizational unit or institution in policy design.

None of the institutions covered by the analysis have separate organizational units or staff engaged exclusively to perform S3-related tasks. Job descriptions of staff engaged in S3 governance include other activities, which are not directly related to S3 governance. For example, policy units of the ministries are involved in the governance of both S3 and other related strategies (such as the SFI), while implementation units are involved in implementation of both S3 and non-S3 instruments. Information collected during interviews indicates that the organizational structure usually follows specific groups of activities, rather than a specific priority area or program. For example, the organizational unit for monitoring within a ministry will be responsible for monitoring of all strategies/programs in governance of which the given ministry participates in. According to some stakeholders, however, a clearer division of responsibilities between positions and departments within the institution would be beneficial to the raising institutional capacities in the S3 context.

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24   The interviews were conducted February 4–24, 2021. Representatives of the following institutions were interviewed: the Ministry of Science and Education; the Ministry of Economy and Sustainable Development; the Ministry of Regional Development and EU Funds; the Ministry of Labor, Pension System, Family and Social Policy; HAMAG-BICRO; HRZZ; the Croatian Chamber of Economy; and Thematic Innovation Councils.

Stakeholders perceived technical and operational competencies of staff to be satisfactory. Although the responses regarding staff capacities were mostly positive, the need for continuous education of staff has been emphasized by interviewees as well. Some indicated the need to monitor the efficiency of employees in larger departments or sectors. Some of the interviewees also indicated that staff sometimes lack perspective on the overall system and are solely focused on activities and parts of the system which are directly linked to their job.

When it comes to employment of staff, there are some challenges regarding availability of adequate personnel and their retention in the system. There are difficulties in replacement of absent staff (e.g., due to maternity leave) and filling vacant positions due to lengthy employment procedures, as well as difficulties in attracting experienced staff. Workload is usually distributed among the remaining staff, which should not be considered as a permanent solution. Adequate staff retention policies would minimize the turnover of staff and their transfer to the private sector.

The continuity of activities is put at risk by frequent organizational and key personnel changes. The longer-term strategic policy perspective requires continuity that can be impeded by different changes in the organizations involved. That may include replacement of decision-making staff (e.g., heads of sectors or higher management), restructuring and mergers of departments, etc. A significant part of the S3 implementation period, and the recent years in particular, was characterized by several re-organizations of institutions involved in the governance system, such as merging ministries, establishment or abolishment of ministerial departments, turnovers of staff in decision-making positions, etc. These changes result in discontinuity of activities and changes of responsible personnel, which also contributes to delays and additional administrative burden in the work of National Innovation Council and the Innovation Council for Industry. The most recent reorganization of ministries following the 2020 parliamentary elections is reportedly one of the main reasons why the National Innovation Council is currently not operational, as new appointments are needed due to changes in personnel and scope of authority of the bodies involved. By creating such administrative burdens, organizational changes can significantly decrease the efficiency of the overall S3 governance system.

Self-assessment of competencies for managing and implementing the S3 policy has not been performed by the interviewed institutions. There are mechanisms in place related to assessing civil servants, but this is primarily an administrative requirement and is performed to a basic standard. Within the process of accreditation of the management and control system for the implementation of the EU programs, processes related to education of staff, workload analysis and assessments of capacities have been formalized, as indicated by the interviewees. However, no assessments have been performed when it comes to S3 management and implementation. There is no indication of systematic setting of key performance indicators for individuals or organizational units, nor the evaluation of staff performance.

Insufficient capacities have been identified primarily in the areas of human resources and M&E. The main issues with human capacities are related to the availability of experienced experts and their retention, frequent staff turnover in many institutions, excessive workloads, etc. M&E capacities are generally considered as basic when it comes to S3 policy and its implementation.

Interviewees mostly recognize a substantial need for education and training, but specific areas for which training is required differ from institution to institution. Training needs are logically correlated with areas of expertise and involvement in the S3 governance. Main education areas highlighted by the interviewees as areas they would like to be trained in include advanced strategic planning, M&E mechanisms and tools, best practices in S3 policy design and implementation, statistics (including use of public databases), innovation activities and technology readiness levels, strategic foresight and planning. Some of the interviewees indicated that, even when training of interest is available, they do not have the time to attend them due to their workload, which significantly decreases their capacities in the area of S3 governance.

4.2 Capacity for policy design

The capacity for S3 policy design appears to be underdeveloped and fragmentary. This is due to a lack of relevance ascribed to policy design in most institutions and to insufficient policy design capacities of specific institutions. General knowledge of administrative aspects of policy processes is often satisfactory. However, there is a significant gap in understanding of industrial and innovation policy issues and instruments and their role in economic transformation and technology upgrading. Insufficient in-house expertise in policy design is sometimes supplemented by technical assistance and external experts, but more permanent solutions are required. In the current period, when strategy planning and policy design activities are the most intensive, limited availability of experienced staff could result in repetition of delays and other problems which occurred in the last programming period. Furthermore, fragmentation of responsibilities and the lack of a central institution with the capacity, knowledge and authority to steer S3 policy in "real time" makes the whole system unresponsive to internal and external changes and challenges.

The existing knowledge to improve policy design is dispersed and fragmented across institutions and bodies. The administrative complexity of the system and the legacy of top-down policymaking hinder organizational and inter-organizational learning and policy innovations. The strategic projects which were expected to build policy design capacities will not leave a lasting and sustainable legacy of improved institutional capacity for policy design. Therefore, in the new programming period new interventions will be needed in order to foster S3 policy design capacities at relevant institutions.

4.3 Capacity for policy co-creation

The institutional capacity for policy co-creation was partially developed but has lost momentum over time. The entrepreneurial discovery process was initiated at the time of S3 design and was expected to continue during S3 implementation. However, entrepreneurial discovery process has not evolved into a legitimate process of policy co-creation supported by a broad range of stakeholders and enabled by adequate institutional capacities. After

the initial delay in their establishment, the first 2-year mandate of Thematic Innovation Councils (from 2019 until 2021) was marked by sporadic activity interrupted by COVID-19. With a few notable exceptions, clusters of competitiveness have not found their *raison d'etre* and therefore have not evolved into policy actors. The focus on S3 implementation (i.e., allocation of RDI resources from ESIF), rather than on policy design and co-creation has hindered the evolution of entrepreneurial discovery process. S3 TPA RDI strategies have not yet been developed, which is a missed opportunity to foster policy co-creation and demonstrate its importance for focusing RDI activities and resources towards most promising S3-related niches. Therefore, institutional capacity for policy co-creation will largely need to be rebuilt in the future.

STATE INSTITUTIONS

The implementation of strategic projects aimed at improving entrepreneurial discovery process governance faced challenges related to coordination and competences for implementation. These primarily included the INI Project, the CCI Project, and the Foresight Project, but, as elaborated in section 3.2, they did not yield the expected results. Responses from interviewees indicate that the implementation of strategic projects lacked both horizontal and vertical communication, coordination, and clear descriptions of roles and expectations from participating institutions. Projects were designed very ambitiously, without sufficiently considering the risk factors such as delays in public procurement of external services, coordination between service providers and responsible bodies, and implementation capacities of responsible bodies. Implementation of strategic projects was initiated without realistic plans and clear division of roles and responsibilities in project implementation. Interviewees considered the expertise and competencies for successful implementation to be limited and were further diminished by turnover of personnel and changes of responsible departments within managing institutions.

The initial momentum for policy co-creation has slowed down in recent years. Cooperation with representatives of the business sector was initially intensive and assessed as valuable, but the interest of entrepreneurs dwindled due to implementation delays and limited results of their engagement in the process. For example, entrepreneurs were very interested and involved in the first phase of the CCI Project, which contributed to quality of its outputs and provided valuable insights to state administration on the needs of the business sector. However, there was reportedly no systematic collaboration with other institutions of the S3 system within the project. Generally, the entrepreneurial discovery process currently lacks continuity, efficient planning of activities and clear communication of its purpose and expected results. Therefore, it is uncertain whether the capacities built within these projects will be sustainable; it seems is more likely that some of the capacities will need to be rebuilt in the future.

Even though the establishment of Thematic Innovation Councils was perceived by the interviewees as a positive initiative, their work so far has been limited. The general opinion is that Thematic Innovation Councils could significantly contribute to the entrepreneurial discovery process and overall quality of the S3, but their involvement should be strengthened, and concrete follow-up activities should be designed and implemented based on their work. As described in section 3.2, the most notable engagement of Thematic

Innovation Councils upon their establishment was the revision of indicative RDI themes within the S3 thematic priority areas, however solely for purpose of preparing two RDI calls managed by Ministry of Economy and Sustainable Development. Mandates of Thematic Innovation Council representatives expired in December 2020, so currently the Thematic Innovation Councils are inactive, as is the case with the Innovation Council for Industry (whose members include presidents of Thematic Innovation Councils).

Views regarding the role of the Croatian Chamber of Economy and the Ministry of Economy and Sustainable Development in the activities of Thematic Innovation Councils differ. The Thematic Innovation Councils were established by the Ministry of Economy and Sustainable Development and supported by the Croatian Chamber of Economy as the Technical Secretariat for the Thematic Innovation Councils. However, according to the perspective of some interviewees, Ministry of Economy and Sustainable Development has taken a coordinating role in the work of Thematic Innovation Councils and has significant influence over the activities of the Thematic Innovation Councils. As a result, Thematic Innovation Council activities reportedly remain more driven top-down, rather than bottom-up. Some of the interviewees believe that the influence of the Ministry of Economy and Sustainable Development on Thematic Innovation Councils' management should be significantly reduced and re-shifted to the Croatian Chamber of Economy, as it would benefit their bottom-up nature.

BUSINESS AND ACADEMIA

Interviewed Thematic Innovation Council representatives consider the interaction with the Thematic Innovation Council managers and Technical Secretariat as generally positive and well structured. Some interviewees noted that the interaction with the Ministry of Economy and Sustainable Development and the Croatian Chamber of Economy covered discussion topics that were relevant to their designated role. Cooperation is based on the combination of bottom-up and top-down approaches, which is considered as appropriate by the interviewees. They especially emphasized positive experience of cooperation with the Croatian Chamber of Economy, which provided quality technical and administrative support to the work of Thematic Innovation Councils and organized useful workshops for Thematic Innovation Council members based on their proposals.

However, the expectations of the interviewees were significantly higher when it comes to operationalization of the conclusions from Thematic Innovation Councils' meetings. After the intensive initial period which ended in revision of indicative RDI themes for the IRI-2 call, activities of Thematic Innovation Councils have been significantly reduced in 2020. Besides the COVID-19 pandemic, the interviewees also attribute this course of events to reorganization of state administration in the post-election period, as well as to expiration of the mandates of Thematic Innovation Councils members. Discontinuity of activities, lack of visible results of work in Thematic Innovation Councils and information on implemented activities caused decrease in the members' interest for participation in the work of Thematic Innovation Councils.

Participation in the National Innovation Council during the initial period was assessed positively by the interviewees. They perceived it as an opportunity to communicate their

opinions and recommendations directly to policy makers. However, the National Innovation Council meetings have been described by some interviewees as lacking interactive participation, while others believe that the private sector is generally underrepresented in both the National Innovation Council and the Innovation Council for Industry. The role of the Innovation Council for Industry within the S3 system seemed unclear to some interviewees, who concluded that discussions at Innovation Council for Industry meetings have not resulted in any concrete actions or results. There were no activities initiated by the National Innovation Council or the Innovation Council for Industry that involved the engagement of Thematic Innovation Councils.

Collaboration between Thematic Innovation Councils and Croatian Competitiveness Clusters was mostly based on informal interactions between their members. Communication between Thematic Innovation Councils and Croatian Competitiveness Clusters was predominately based on personal contacts of their members since some of the Thematic Innovation Councils members also represent their organizations in Croatian Competitiveness Clusters. Collaboration between the two structures was not promoted nor initiated by the Ministry of Economy and Sustainable Development and the Croatian Chamber of Economy. According to some interviewees, the specific roles of Thematic Innovation Councils and Croatian Competitiveness Clusters and their differences should be presented more clearly to their members.

The main benefits of participation in Thematic Innovation Councils, as expressed by interviewees, included:

- Participation in the National Innovation Council (as presidents of Thematic Innovation Councils are also members of National Innovation Council);

- Opportunities to contribute to policy design (e.g., revision of indicative S3 RDI themes, response to COVID-19 pandemic and related crisis);

- Participation in policy design working groups (e.g., National Development Strategy 2030);

- Networking with other organizations and initiation of new collaborations with other Thematic Innovation Council members; and

- Availability of information regarding future initiatives and plans.

Despite the general positive assessment on the Thematic Innovation Council initiative, interviewees provided some proposals to improve their performance. Some of the proposals include:

- More active involvement of Thematic Innovation Councils in programming for the period 2021–27;

- Greater engagement of Thematic Innovation Councils in the entrepreneurial discovery process, including their participation in technology foresight;

- Greater focus on RDI tax reliefs, in addition to grants which have been in main focus so far;

- Engagement of Thematic Innovation Councils in earlier phases of policy design;

- Participation of the Ministry of Finance, given the importance of the tax system;

- Increasing the number or private sector representatives in the National Innovation Council and the Innovation Council for Industry; and

- Reducing the formality of Thematic Innovation Councils to increase the efficiency of their discussions.

The membership structure of Thematic Innovation Councils is generally considered to be satisfactory. Some of the interviewees believe that structure of Thematic Innovation Councils is too formal, and that the opinions of the business sector and academia should be considered to a higher degree. The purpose of the Thematic Innovation Councils should be presented more clearly to their members, as well as expected goals and outputs of their activities. Several interviewees have indicated that they do not fully understand the purpose and roles of Thematic Innovation Councils, as well as the envisaged differences in the roles of Thematic Innovation Councils and Croatian Competitiveness Clusters.

When it comes to strategic projects, interviewees were best informed about the CCI Project and the INI Project, which were also closest to their areas of interest. Analyses of 13 STPAs developed within the CCI Project were used in the activities of Thematic Innovation Councils and are considered as quality and useful materials. However, there were no initiatives for cooperation between Thematic Innovation Councils and Croatian Competitiveness Clusters, which could considerably increase the effectiveness of the entrepreneurial discovery process, when it comes to operational Croatian Competitiveness Clusters. Most of the interviewees had limited information on the Foresight Project, which could be attributed to delays in its implementation and weak links of Thematic Innovation Councils with the Ministry of Science and Education.

The initial enthusiasm for participation in Thematic Innovation Councils has decreased over time. As previously mentioned, decreased interest for participation in Thematic Innovation Councils is a direct consequence of the inactivity of Thematic Innovation Councils and other S3 bodies since the beginning of 2020, as well as lack of visible results of implemented activities. Finding time for voluntary work was mentioned by several interviewees as the main problem when it comes to participation in Thematic Innovation Council. However, the interviewees generally consider their participation in Thematic Innovation Councils to be beneficial to their organizations and the overall system, and most of them plan to participate in their work in the future as well.

4.4 Implementation capacity

Institutional capacity for implementation of S3, as it relates to distributing funds according to rules and procedures envisaged by the Common National Rules and ESIF rules, has been developed to a satisfactory degree. When compared to other components of institutional capacity, implementation capacity is the most developed. That is due to both external and internal factors. ESIF absorption is the most visible aspect of S3 implementation, and both policy makers and (potential) beneficiaries form expectations and exert pressures on the relevant institutions. Moreover, national and EU rules and regulations lead to a relatively clear allocation of roles and responsibilities within and between relevant institutions. Employees in these institutions are incentivized via higher salaries and training support is also provided.

Capacity to steer and adjust policy implementation is less developed, as the complexity of the system and the applicable rules pose challenges to effectiveness and efficiency. Most stakeholders believe that incremental improvements (such as simplification of some rules, rather than a major reform) would be sufficient to improve performance in the future programming period. However, given the long period of implementation of policy instruments (including some delays), their outcomes and impacts still remain to be observed and evaluated. Widespread emphasis on the administrative compliance in S3 policy implementation may also lead to neglecting the "big picture." Therefore, the capacity to steer policy implementation in order to contribute to S3 policy objectives still largely needs to be acquired.

Human capacities dedicated to implementation of the S3 instruments vary between institutions within the system and are generally perceived to be sufficient. Most of the interviewees think that human capacities are satisfactory in number. However, they also expressed significant education and training needs to further strengthen the capacities for efficient implementation and monitoring of S3 (and other) instruments.

Excessive workloads and staff turnover were recognized as a problem by some interviewees. This is especially challenging when considering complex and lengthy employment procedures, as well as employment bans, which apply to public sector institutions. Due to complex procedures and specific competencies required from staff, when employees are absent (e.g., parental leave) or leave the institution, their workload is redistributed among other employees within the organizational unit. This directly increases the workload of staff, which is excessive in the opinion of some interviewees. The retention of employees is facilitated through wage supplement for work on EU programs and projects, as well as travels and education, which seem to have significant importance to employees.

Interviewees are aware of delays and challenges in the implementation of S3 instruments. Stakeholders identified several factors influencing implementation:

- *Initial delays in preparation and adoption of the S3 strategy*, which automatically postponed design and implementation of planned instruments.

- *Complex and inflexible rules and procedures*, which are predominately defined by the Common National Rules. The Common National Rules are unified rules and procedures for management and control of the OPCC 2014–2020, regardless of the sector the specific instrument is implemented in. Given the specific nature of RDI projects and processes, the application of inflexible "umbrella" regulations and procedures to RDI projects further complicates and lengthens the design and implementation of specific RDI instruments.

- *Fragmentation of activities between Managing Authority, IB1 and IB2*. While the distribution of procedures further lengthens the evaluation of project proposals, it also complicates communication and coordination of mutually linked activities in design, implementation and monitoring of instruments. Some interviewees have expressed the opinion that relations between IB1 and IB2 require a redefinition, because currently Intermediate Bodies do not have agreements between them, they coordinate their activities with Managing Authority, and have the same authority within the system. Therefore, if IB1 does not agree with the decision of the IB2, it does not have the authority to influence this decision, regardless of the fact that IB1 is usually more familiar with specificities of the beneficiaries and their processes.

- *Inefficient and limited information systems*. Currently, there are several information systems in place for management and monitoring of the EU-funded projects which are not integrated nor support management of data specific for the S3 strategy, since these are primarily designed for EU-funded projects in general. Moreover, the current information system does not enable data collection for qualitative assessment of progress and achievement of results, and represents mostly an administrative management system, rather than a platform for qualitative and quantitative data management. In this situation, data management often comes down to manual collection of data in various spreadsheets, which significantly reduces the quality of data and efficiency of monitoring activities. There is a significant need for integrated information system which can serve as analytical and evaluation service to enable drawing policy and management implications from its reports.

- *M&E is performed on an ad-hoc basis, it is fragmented between institutions and based on information systems that do not meet users' needs.* Even when there are concrete ideas and recommendations on how to increase the efficiency of the implementation, these are not implemented in the system. There are no structured mechanisms to facilitate regular updates of programming documents (Operational Programs, S3, etc.) to ensure compliance of policy instruments with changing needs of beneficiaries.

- *Insufficient quality management systems*. Several interviewees have emphasized that their proposals to improve the efficiency of the implementation have not resulted in any kind of action by the Managing Authority. This is also the case when it comes to proposals regarding the Common National Rules, on which the Intermediate Bodies are obligated to notify the Managing Authority. Communication with beneficiaries is intensive, but there are no embedded mechanisms for collection of feedback from beneficiaries, e.g., through questionnaires or focus groups.

A self-assessment of competencies for management and implementation of programs sponsored by the European Regional Development Fund (ERDF) and the Cohesion Fund[25] **was not conducted**. This is a tool to support Member State administrations in their efforts to improve their administrative capacity for management of the ERDF and Cohesion Fund. So far, evaluation of staff competencies was performed through an ad-hoc survey conducted by the Managing Authority, which collected information on human resources engaged in the OPCC activities and the estimation of their competencies.

There is a significant gap between available training programs and actual needs of employees for specific skills. Although the institutions regularly prepare and execute training plans for the employees engaged in the ESIF governance system, significant number of interviewees stated that there are very limited number of programs that go beyond covering basic sets of skills, and that would provide more advanced trainings and education. The most commonly mentioned training areas include:

- public science sector processes for institutions operating outside the sector to increase the communication and cooperation efficiency;

- S3 instruments, including design, implementation and evaluation;

- best practice examples in S3 design and implementation;

- advanced knowledge and skills for specific positions and activities (e.g., technology mapping and foresight, public procurement, etc.);

- strategic planning; and

- M&E.

In some cases, there is a lack of awareness of the specific knowledge needed to design and implement S3 instruments. Some of the interviewees, do not consider knowledge on RDI or S3 to be required or necessary in their work. This should be taken into consideration during capacity assessment and education planning, given that staff involved in design and implementation of S3 instruments require quite specific knowledge on S3 and the national innovation system as a whole. Additionally, some of the interviewees stated that their workload impedes them from attending training events, even when they are available. This suggests that there is no strategic approach to training (though this cannot be generalized to all institutions). Establishing a more strategic approach to training could significantly increase the implementation capacities of the overall system.

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25   The Competency Framework includes competencies needed by administrations managing or implementing the ERDF/Cohesion Fund (https://ec.europa.eu/regional_policy/en/policy/how/improving-investment/competency/)

4.5 M&E capacities

The S3 governance system has a weak M&E capacity, while the overall system has an undeveloped capacity for self-monitoring and adjustment. The weakness of M&E capacity is related to fragmentation of responsibilities for S3 policy design, implementation and monitoring. Ministries and agencies focus on the policy instruments for which they are responsible and gather the relevant data. The Technical Secretariat at HAMAG-BICRO collects the data and produces indicators within its monitoring system. However, these data and indicators are not regularly used for analysis and evaluation purposes in the context of S3 policy governance. They are also insufficiently complemented by other sources of data and feedback from users and other stakeholders. Moreover, the current institutional setup is inadequate to meet these requirements. There is a lack of a central institution with the authority to develop and implement M&E capacities and facilitate self-monitoring and adjustment. When it comes to M&E, the capacities, roles and responsibilities of Technical Secretariat, Inter-ministerial Working Group and National Innovation Council are not aligned in a way which would facilitate efficient problem detection and resolution.

The M&E system at the S3 level would benefit from restructuring and optimization. The M&E role at the S3 level is shared between the Inter-ministerial Working Group and the Technical Secretariat, instituted as an organizational unit within the HAMAG-BICRO. The Intermediate Bodies collect data with a focus on their policy areas and manually enter it into spreadsheets that are consolidated by the Technical Secretariat, which collects data from all institutions and prepares reports. In practice, however, the Technical Secretariat did not serve as the single contact point when performing data collection for purposes of S3 evaluation. Additional efforts and data collection directly from the institutions involved were needed, referring primarily to tracking TPA progress and collecting TPA-level data on indicator progress.

Currently, the monitoring system operates as an information service but not as an analytical and evaluation service, which can draw policy and management implications from its reports. "In-house" capacities in that respect are below the required standard due to understaffing, institutional position and lacking demand. The S3 implementation reports are designed to present data, indicators and some trends, but contain no recommendations with respect to policy design, implementation processes, etc. In other words, the reports are more focused on presentation of current situation rather than providing recommendations to increase the efficiency of policy delivery. This significantly decreases the S3 governance capacities, and the overall system lacks mechanisms required for self-correction and long-term planning. M&E capacities will require a major overhaul if the next programming period is to have "eyes and ears." There are no mechanisms in place to systematically collect feedback from beneficiaries or monitor qualitative information on projects and policy instruments.

There are significant challenges in the utilization of the existing individual information systems and consolidating data to perform monitoring at the S3 policy level. According to interviewees, two reasons stand out. First, several information systems are currently being used covering different S3-related instruments, which are not integrated and do not support data exchange and consolidation. This additionally hinders collaboration

within the innovation system and complicates collection, retrieval, and analysis of data necessary for efficient M&E. Second, currently used IT solutions are tailored primarily to reporting requirements towards the European Commission, and do not support collection of other specific data related to S3 policy, which also includes additional indicators introduced during S3 implementation.

Going beyond ESIF instruments, M&E challenges on the S3 level become even more pronounced. The M&E system is primarily focused on serving EU-funded projects, which is logical as these are the main S3 implementation instruments. However, the S3 policy mix involves some non-ESIF instruments, and the recent revision of the S3 Action Plan shows ambition to enhance their role in the S3 system even further. At the same time, the EU funds management information system is not integrated with other sources of information and monitoring. There is no information system in place which could serve as a quality database for M&E of all innovation policies, including the S3, and enable collection of information from the Inter-ministerial Working Group and feedback from users.

Recently introduced M&E software does not seem to have solved the issues of data collection and its consolidation across institutions. The new system was supposed to facilitate the overall S3 M&E and connect it with M&E of SFI, as these strategies overlap to a significant extent when it comes to their delivery instruments. The ambition was to streamline the system through joint monitoring of the two strategies by utilizing a common M&E software developed by the INI Project. Although this system was recently completed, a significant number of interviewees are skeptical that the system produced will successfully facilitate that cause.

There is a general agreement among the interviewees that the Technical Secretariat in its current form objectively has very limited human resources. The Technical Secretariat consists of four persons in total and seems significantly under-capacitated, considering the comprehensive set of activities and workload of the Technical Secretariat role. In general, there is agreement among interviewees that Technical Secretariat has limited capacities in terms of human resources which consequently limits its performance and diminishes its envisaged role in S3 governance.

The understanding of the Technical Secretariat role, however, varies among the S3 stakeholders. The Technical Secretariat believes that the support it is designated to provide should be more technical and that their M&E role should go beyond consolidation of data from different institutions. Other stakeholders believe that the Technical Secretariat scope of activities should be more focused on administrative support, while M&E activities should rely more on the Inter-ministerial Working Group. In any case, there is a general agreement that M&E activities should be performed by an independent body with comprehensive knowledge of science and economy systems and processes. Several interviewees went further to say that the Technical Secretariat should be separate from HAMAG-BICRO to ensure its complete independence and to strengthen its capacities to serve its main functions as technical and administrative support to the Inter-ministerial Working Group, the National Innovation Council, and the institutions chairing it.
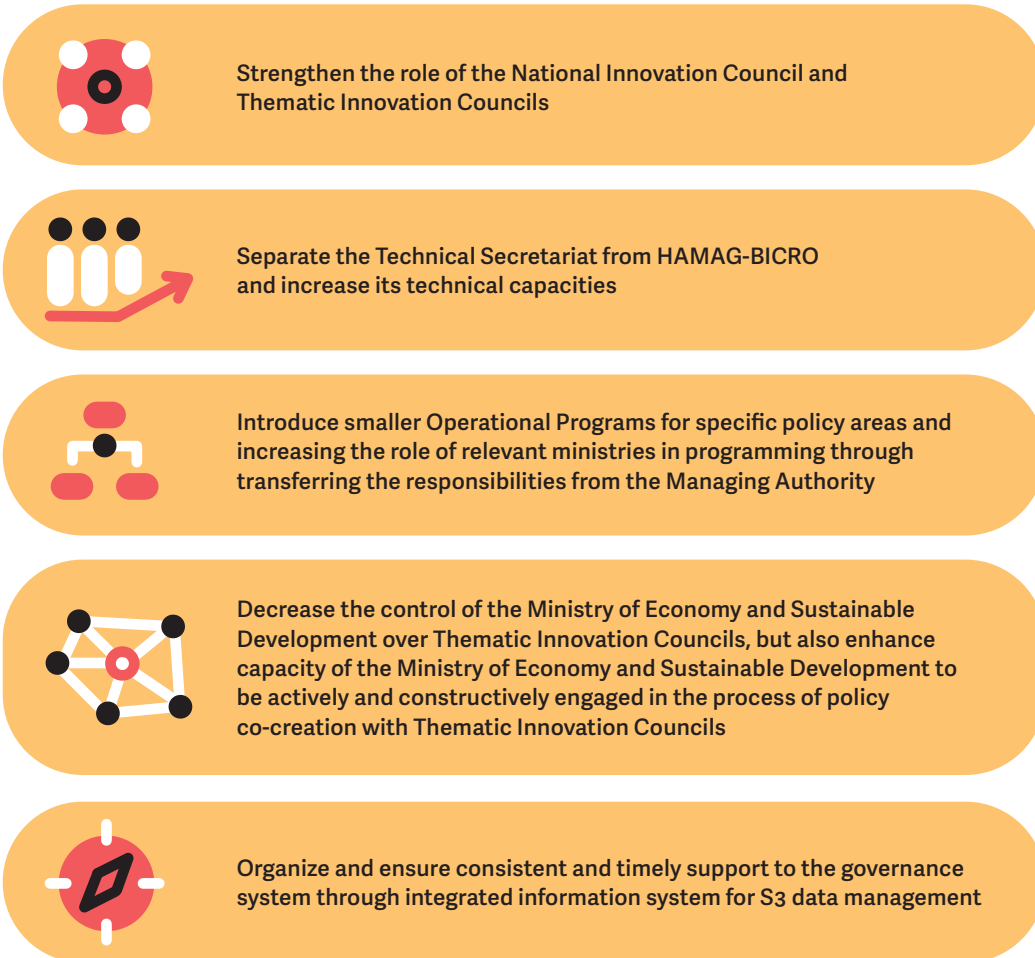
4.6 Coordination and collaboration

INTER-INSTITUTIONAL COORDINATION AND COLLABORATION

The S3 governance structure is perceived to be highly complex with coordination challenges, although some improvements have been made recently. According to interviewees, communication at all levels has gradually improved over the last several years, especially between IB1s. However, significant areas for improvement remain. Interviewees indicated that exchange of information between institutions is not satisfactory, and that communication between institutions is generally sporadic and often based on personal contacts. More open approach is required when it comes to sharing information and data on projects and other activities between institutions. Interviewees were not familiar with activities and projects under responsibility of other organizations within the system. Even the roles and scope of activities of individual institutions are not always clear to interviewees from other institutions. Interviewees usually have access to information related to a narrow scope of their activities, while the availability of information outside the scope of their work is limited and often transferred through personal contacts rather than made available in a structured and transparent manner. Further, the main bodies of the S3 governance system are currently inactive, which decreases opportunities for inter-institutional cooperation within the system.

The role of the Inter-ministerial Working Group is perceived as very positive initiative by most of the interviewees. The establishment of the Inter-ministerial Working Group has contributed significantly to efficiency and continuity of inter-sectoral collaboration. Interviewees indicate that cooperation within Inter-ministerial Working Group is efficient and that discussions often result in concrete proposals for improvement of different areas of the system. However, their impression is that conclusions and recommendations are not adequately taken into consideration in decision-making processes. Some interviewees have also indicated that collaboration between Inter-ministerial Working Group and Thematic Innovation Councils should be strengthened, and obligatory reporting of Thematic Innovation Councils to National Innovation Council introduced.

The lack of a comprehensive information system hinders inter-institutional coordination. There are several information systems currently in place and they are not integrated, which decreases the efficiency of information and data sharing both horizontally and vertically. Data is collected and managed by Intermediate Bodies, which focus on policy instruments under their jurisdiction and use the information system in place within their institution. In some cases, staff manually enters data in Excel spreadsheets which decreases both data availability and usage.

The general perception is that the S3 governance structure would benefit from simplification. This would, in turn, facilitate coordination and cooperation within the system and decrease overall system fragmentation. Some of the proposals made by interviewees are summarized in Figure 4.1.

Figure 4.1 Stakeholders' suggestions for improving the S3 governance structure

Strengthen the role of the National Innovation Council and Thematic Innovation Councils

Separate the Technical Secretariat from HAMAG-BICRO and increase its technical capacities

Introduce smaller Operational Programs for specific policy areas and increasing the role of relevant ministries in programming through transferring the responsibilities from the Managing Authority

Decrease the control of the Ministry of Economy and Sustainable Development over Thematic Innovation Councils, but also enhance capacity of the Ministry of Economy and Sustainable Development to be actively and constructively engaged in the process of policy co-creation with Thematic Innovation Councils

Organize and ensure consistent and timely support to the governance system through integrated information system for S3 data management

Source: Interviews with stakeholders.

Collaboration between the Managing Authority and Intermediate Bodies could be stronger. The role of Managing Authority in elaboration of the contents of public calls has been raised by some of the interviewees, which indicates that division of responsibilities should be clearer to avoid overlaps and delays in implementation. Interviewees also noted that cooperation and communication between Coordinating Body, Managing Authority, and Intermediate Bodies should be improved as well.

COORDINATION BETWEEN STAGES OF THE POLICY CYCLE

Intra-institutional collaboration is generally perceived as weak by the interviewees, especially when it comes to relations between policy design and implementation. Within individual institutions, policy design is mostly isolated from implementation and performed

by separate organizational units, with little coordination or communication between the two. This is partially attributed to the strict hierarchical system of public institutions. The reliance on vertical communication which flows in the organizational hierarchy slows down exchange of information and weakens cooperation. Horizontal communication is mostly scarce and occasional, with no regular and formal mechanisms in place. Both horizontal and vertical communication within the observed institutions is mostly informal, which also applies to some aspects of communication between institutions within the system.

Similar issues of coordination between policy design and implementation arise in the interaction between institutions. Coordination is usually sporadic and information flows are predominately informal, in some cases even based on personal contacts rather than structured intra- and inter-institutional processes. The implementation level has limited access to data on activities and progress on the policy design processes. The M&E system does not facilitate policy design, given that there is no integrated information system which would support decision-making processes and implementation of lessons learned in previous programing periods.

The Inter-ministerial Working Group is the main channel for collaboration and communication between policy design and implementation. Participation in the Inter-ministerial Working Group has been perceived as a positive initiative towards increased participation of stakeholders from different levels in S3 governance and its role in facilitating the intra- and inter-institutional coordination was recognized by the interviewees. In practice, however, this interaction is not translated into concrete strategic actions by the National Innovation Council. Efficiency of the policy governance process is further decreased by the weak mutual links between the Inter-ministerial Working Group, the National Innovation Council, the S3 advisory councils and the Thematic Innovation Councils, as well as by the gaps in the M&E system.

However, the National Innovation Council is underutilized as a strategic coordinating and decision-making authority and is currently inactive. As indicated by some of the interviewees, the National Innovation Council did not effectively take on its designated role as the central body that would supervise the overall S3 system. Such central body should have capacities to detect problems and risks within the system, as well as the authority to undertake mitigating and corrective measures. When performing its role fully, this body would coordinate policy design, implementation and monitoring, as well as M&E mechanisms, which would also ensure availability of relevant information to all the stakeholders and increase the efficiency and effectiveness of the overall S3 governance system. However, the National Innovation Council has not been active recently, and the reasons are attributed to COVID-19 pandemic and post-election reorganization of the state administration, which requires new appointments due to changes in management and operational staff.

Most of the interviewees assess their involvement in the S3 policy governance in practice to be lesser than initially expected. Vertical and horizontal data sharing is still very limited and should be significantly improved, which could be resolved through introduction of a robust information system that would allow qualitative and quantitative monitoring of S3 activities and operations. Overall communication between different bodies and institutions should be streamlined and planned to ensure efficient participation of all relevant stakeholders in S3 governance.

S3 policy design is clearly disadvantaged in comparison to S3 policy implementation—both at individual and organizational levels of institutional capacity. The comparison between the two is summarized in Table 4.1. The first observation is related to a systematic difference in individual capacities between S3 policy design and S3 policy implementation. The dimensions of individual performance include clear job description, access to the corresponding skills and training opportunities, availability of feedback, financial and other incentives. In all relevant dimensions of individual performance, the position of employees of institutions tasked with S3 policy implementation is more advantageous in comparison to their colleagues responsible for policy design. These conditions are reinforced when considering organizational capacity. S3 policy implementation is organized within self-contained units with appropriate management support, whereas policy units tend to be isolated, burdened with other tasks, prone to day-to-day decisions and suffer from a of lack support.

Table 4.1 Differences between dimensions of institutional capacity for design and implementation of S3

	POLICY DESIGN CAPACITY	POLICY IMPLEMENTATION CAPACITY
JOB EXPECTATIONS	Not clearly designed tasks. Ad hoc activities driven entirely by daily needs	Clearly defined by the nature of the activity
PERFORMANCE FEEDBACK	As objectives and expectations are not clearly defined, there is no feedback	Proximity to end users gives prompt feedback on performance
ENVIRONMENT AND TOOLS	No understanding of the best practice or professional standards	Available technical tools and handbooks serve as the standard or reference
ORGANIZATIONAL SUPPORT	Isolated units within ministries, which also have other responsibilities	Self-contained units with appropriate management support
INCENTIVES	Chronically 'understaffed' and inadequately remunerated	EU 'top up' makes huge differences in retention of staff
SKILLS AND KNOWLEDGE	Few training opportunities (e.g., within strategic projects)	On the job training / Not strategic approach to training
OVERALL OUTCOME	**Undeveloped and fragmentary capacity for policy design**	**Satisfactory or very good administrative capacity**

Source: Staff elaboration based on the framework by USAID (2011).

Institutional capacities decrease as the uncertainty and coordination needs associated with specific policy activity increase. Institutional capacity is relatively higher in S3 policy implementation. Despite the administrative complexity and knowledge-intensity of this process, it is relatively well-specified and endowed with resources. On the other hand, policy design is much less specified and the process through which an individual or a unit within an organization develop their capacities in that area is much less structured, whereas the allocated resources are often scarce or dependent on external sources (e.g., capacity building projects). Given the overall emphasis on vertical communication within organizations, the lack of horizontal linkages within and across organizations, and sporadic consultations with stakeholders, fragmentation and gaps in institutional capacity in policy design are not surprising. Furthermore, policy co-creation suffers from an additional set of challenges which decrease institutional capacity. Silo mentality affects collaboration among different governmental bodies, whereas top-down approach leads to reluctant relationships with stakeholders. Finally, M&E capacities depend on the ability of the S3 system to measure its performance, reflect upon it and seek path corrections where necessary. Consequently, its capacity building may depend upon capacity improvements in aforementioned policy activities.

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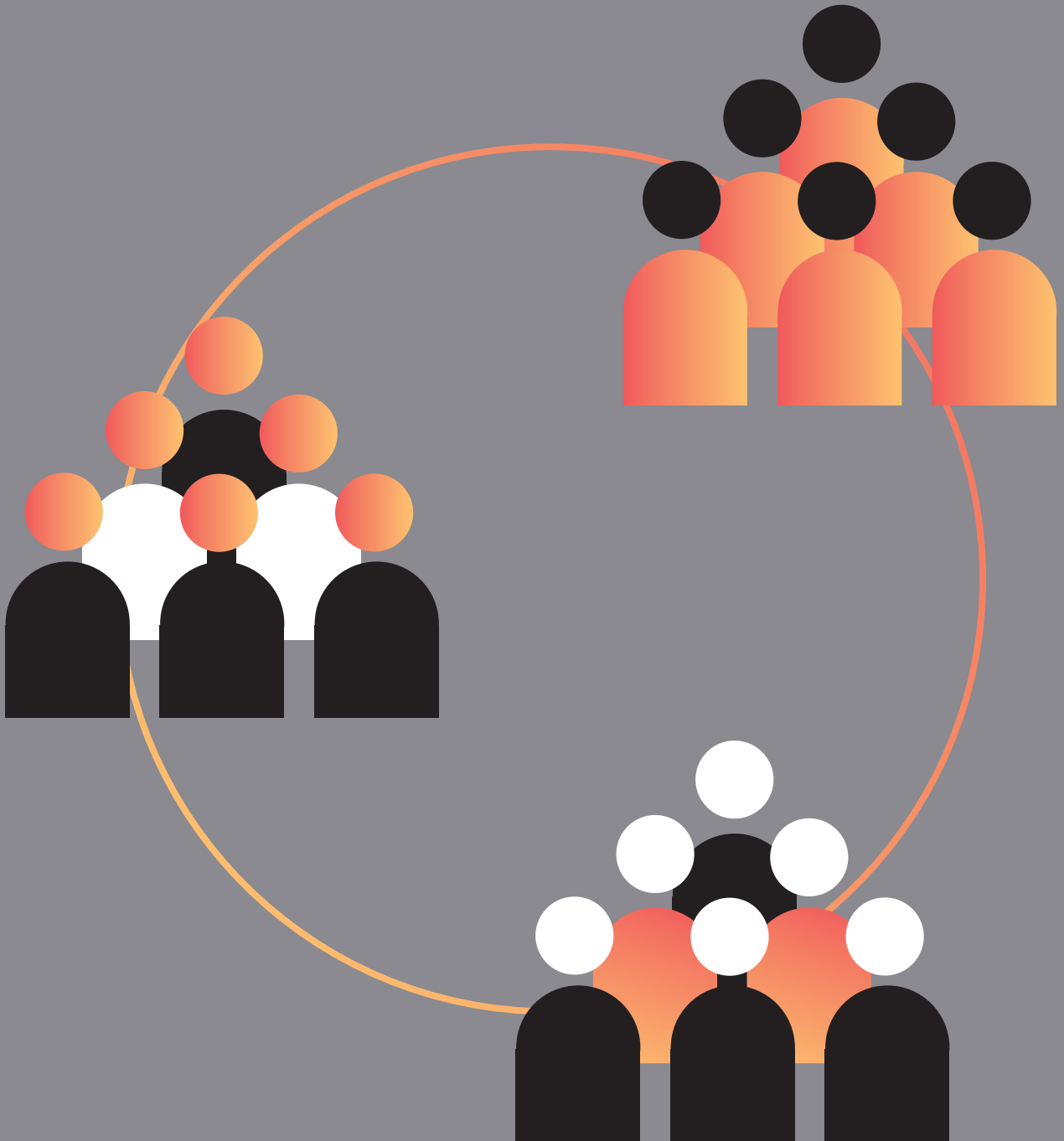
Recommendations

05
Recommendations

S3 governance is a complex task that inevitably faces numerous challenges. Including a wide array of actors in decision-making for smart specialization programs and coordinating them vertically and horizontally is not trivial. In general, countries have successfully identified objectives and priorities but experienced major challenges in implementation (coordinating M&E, deploying instruments, and seeking funding from the private sector) (Guzzo, Gianelle and Marinelli 2018). Difficulties relate to liaising S3 bodies to other government bodies, that is, to integrating S3 governance structures into national policymaking. Also, obtaining commitment from the private sector is difficult. Private sector financial contribution is possible only if there are well-functioning S3 institutions and partnerships within the triple or quadruple helix (Wostner, 2017).

Croatia shares governance challenges with peer countries while having comparatively less experience with EU Cohesion support. S3 governance now meets regulatory and administrative compliance requirements for absorption. However, effective and efficient absorption is still very much "work in progress." Croatia is having difficulties similar to those of other EU countries, especially countries from South and Central and Eastern Europe. Also, as a newcomer to the EU Cohesion policy, Croatia had limited time to accumulate sufficient policy knowledge. The recommendations for improving S3 governance in Croatia should be viewed in this broader context.

The recommendations aim to close the gap between different modes of governance of S3 and make the system more responsive to changes and challenges. Table 5.1 summarizes the recommendations, which aim to address weaknesses in the sequencing, design, and implementation of S3 activities. The recommendations focus on improvements that are feasible given the S3 policy timeframe, existing institutional capacities, and political economy considerations. Significant changes in the S3 governance system are required for S3 to have a transformative effect on the national innovation system and to transition from a predominantly government-led process to a more participatory approach. Priority Area 1 relates to policy governance and addresses the interaction of S3 governance with the governance of other national strategies, the roles of the National Innovation Council as the top S3 coordination body, and the M&E and feedback mechanisms within the S3 governance system. Priority Area 2 aims to strengthen the bottom-up dimension of entrepreneurial discovery process governance, particularly the role of Thematic Innovation Councils. Priority Area 3 proposes clarifying responsibilities and streamlining processes related to implementation governance.

Table 5.1 Summary of recommendations

PRIORITY AREA 1 POLICY GOVERNANCE	
A	Establish an S3 policy delivery unit
B	Strengthen the role of the National Innovation Council
C	Involve the National Innovation Council more directly in strengthening entrepreneurial discovery process governance
D	Strengthen M&E reporting and utilization
E	Establish a real-time monitoring and adjustment mechanism
F	Strengthen institutional capacities
PRIORITY AREA 2 ENTREPRENEURIAL DISCOVERY PROCESS GOVERNANCE	
A	Facilitate the bottom-up approach in structuring the entrepreneurial discovery process
B	Increase the involvement of Thematic Innovation Councils in policy co-creation
C	Engage the Thematic Innovation Councils in developing RDI strategies and policy mixes for each thematic priority
PRIORITY AREA 3 IMPLEMENTATION GOVERNANCE	
A	Streamline implementation governance
B	Organize the policy implementation agenda around the stages of the innovation life cycle
C	Reduce fragmentation in key implementation processes
D	Introduce regulatory guillotine and tailor-made procedures for RDI projects

Croatia can improve the governance system in different ways. Figure 5.1 shows the current governance structure. The recommendations provide several options for streamlining and strengthening the linkages between policy governance, entrepreneurial discovery process governance, and implementation governance. They are sequenced from less to more ambitious.

Figure 5.2 shows an example of a revised governance structure that takes into account a more ambitious set of proposals. The functions of the Innovation Council for Industry would be integrated into the National Innovation Council because these two bodies have significant duplication in both function and composition. A proposed policy delivery unit would pool and upgrade existing institutional capacities to ensure the translation of S3 policy into implementation. The unit could also act as Technical Secretariat for the National Innovation Council. The entrepreneurial discovery process would be substantially streamlined to Thematic Innovation Councils and Priority Action Groups as policy co-creation bodies. Self-organized Croatian Competitiveness Clusters and other interest groups may be involved in individual issues as needed.
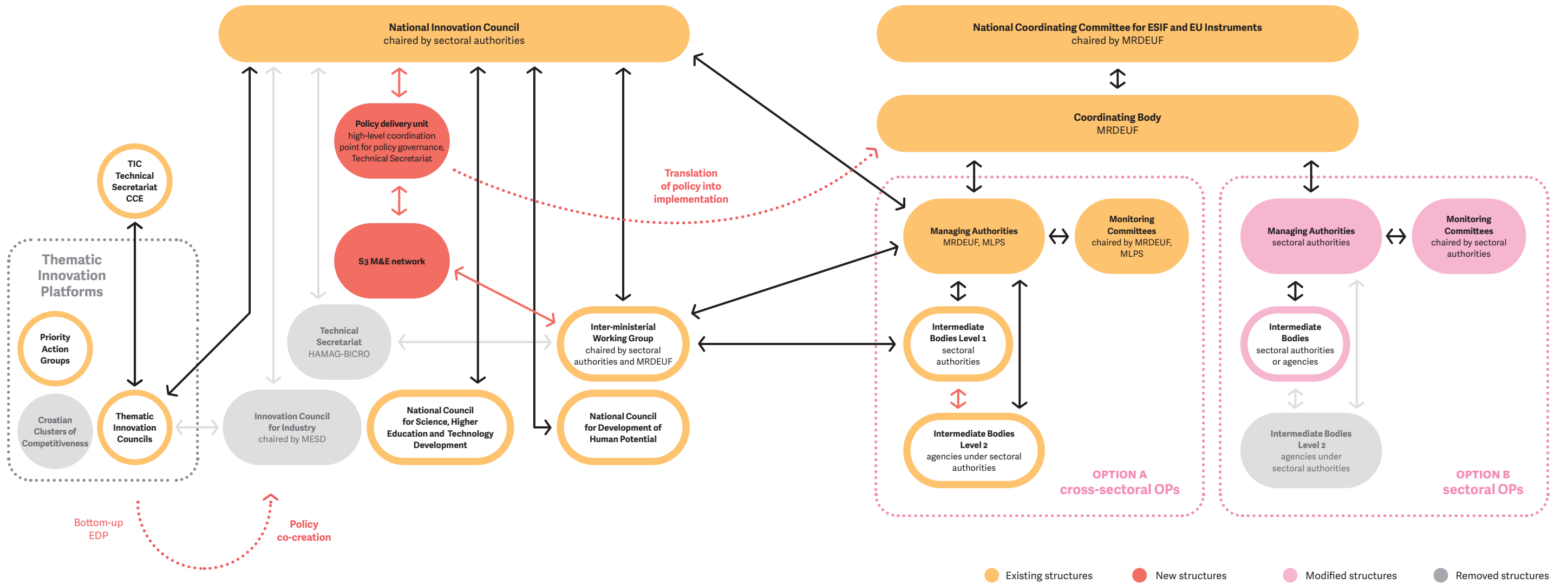
Figure 5.1 Current S3 governance structure
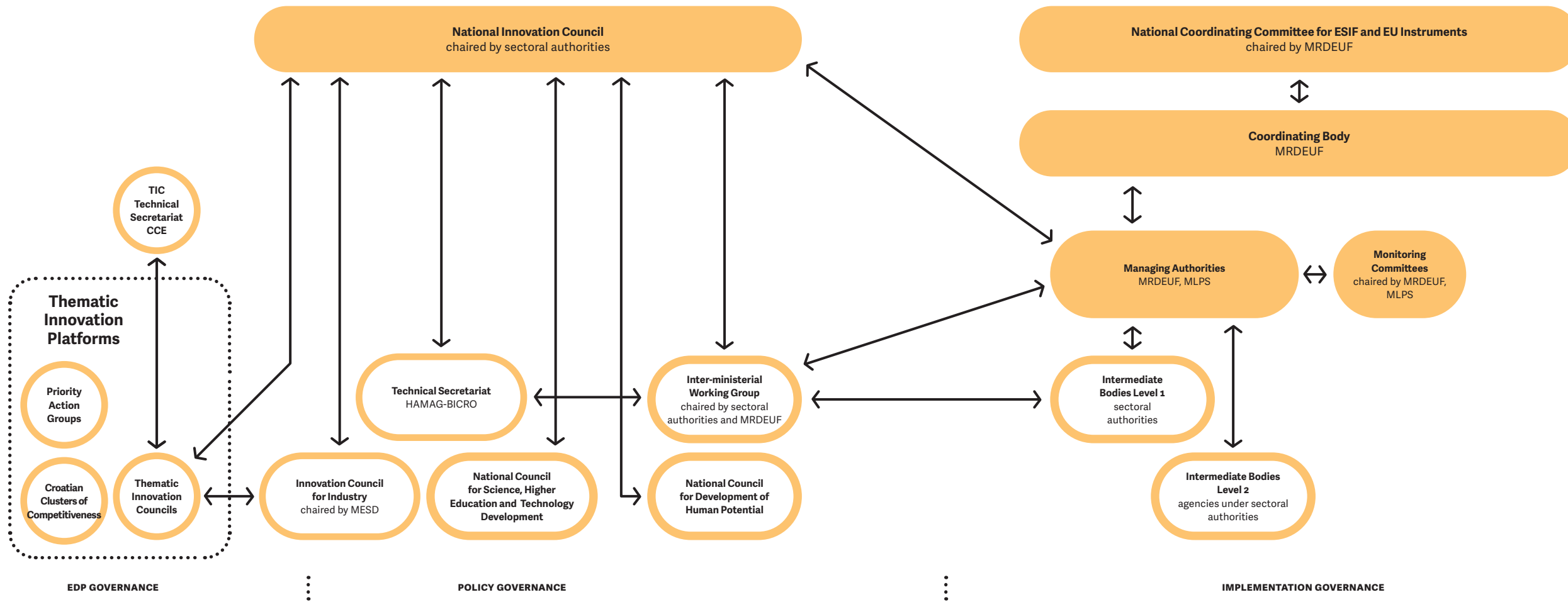
Source: Staff elaboration.
Note: CCE = Croatian Chamber of Economy; EDP = entrepreneurial discovery process; ESIF = European Structural and Investment Funds; MESD = Ministry of Economy and Sustainable Development; MLPS = Ministry of Labor, Pension System, Family and Social Policy; MRDEUF = Ministry of Regional Development and EU Funds; TIC = Thematic Innovation Council.

The figure also shows two options for organizing implementation governance. Option A mostly retains the status quo, with cross-sectoral Operational Programs, non-sectoral Managing Authorities, and two levels of Intermediate Bodies. The only difference would be establishing a more direct relationship between IB1 and IB2 through an agreement between them. Option B provides more room for streamlining. It proposes sectoral Operational Programs and consequently sectoral Managing Authorities, with only one Intermediate Body level or without an Intermediate Body. The Ministry of Regional Development and EU Funds would still coordinate the sectoral Operational Programs as the Coordinating Body and chair of the National Coordinating Committee.

The chosen solution must enhance linkages between policy governance, entrepreneurial discovery process governance, and implementation governance. Figure 5.1 shows plainly that policy governance, entrepreneurial discovery process governance, and implementation governance are fragmented and loosely connected. While these reflect three processes that occur within the system, a good S3 governance system should be more integrated, enabling closer linkages among them. The example presented in Figure 5.2 aims to emphasize these linkages by highlighting the policy co-creation and adjustment aspect between the entrepreneurial discovery process and government stakeholders and the link between policy and implementation, both of which have been underdeveloped.

Figure 5.2 Options for improving S3 governance

Source: Staff elaboration.
Note: CCE = Croatian Chamber of Economy; EDP = entrepreneurial discovery process; M&E = monitoring and evaluation;
MESD = Ministry of Economy and Sustainable Development; MLPS = Ministry of Labor, Pension System, Family and Social Policy;
MRDEUF = Ministry of Regional Development and EU Funds; OP = Operational Program; S3 = smart specialization strategy;
TIC = Thematic Innovation Council.

5.1 Policy governance

The strategic aim of S3 governance reform should be to integrate the actors and activities of policy governance, entrepreneurial discovery process governance, and implementation governance. The crux of a sound STI governance system is its capacity to convert STI policy into viable and transformative programs and projects. Evidence presented in this report confirms that there is a disconnect between these three governance processes in Croatia. The top, S3 policy level should aim to strengthen these connections.

An adequate governance system also requires a built-in mechanism for collaboration, learning, and adjustment. Due to functional fragmentation, the number of actors and the need for mutual interaction overburden Croatia's current S3 governance system, excessively slowing down the system and making it inefficient. Also, the system does not have a mechanism for quickly identifying and resolving problems—it lacks systems for collaboration, learning, and adjustment.

RECOMMENDATION 1A | ESTABLISH AN S3 POLICY DELIVERY UNIT

WHY
The fragmentation of the STI policy agenda has led to an accountability vacuum and coordination challenges at several policy levels. Different S3 governance processes (policy governance, entrepreneurial discovery process governance, and implementation governance) operate almost independently, resulting in coordination and implementation challenges. For example, given that most S3 instruments are ESIF funded, ESIF rules and procedures shape S3 funding. Neither the National Innovation Council nor the Inter-ministerial Working Group has authority over all stages of the policy cycle. They, therefore, have been unable to overcome challenges arising during implementation.

HOW
To strengthen the linkages between policy governance, entrepreneurial discovery process governance, and implementation governance, the governance structure requires a body that can steer the S3 at all stages of the policy cycle and ensure the implementation of the strategic decisions of the National Innovation Council. This body should be independent of individual ministries and have a strong position within the government to facilitate and speed up actions. A coordinating authority superordinate to individual ministries could provide more efficient coordination across the S3 stakeholders and ensure that the relevant institutions implement National Innovation Council decisions. Some international examples of similar systems with top-level coordination points are provided throughout the report.

Such a top-level coordination point could be an independent policy delivery unit that would deal with strategic coordination at the national level, with a State Secretary (or equivalent level of public official) as its head. The unit would relocate, pool, and upgrade existing institutional resources. It could be directly responsible to the Government of Croatia and the Prime Minister. Capacities and resources in existing institutions could be relocated to the new unit, further strengthened and supported by the central IT system for M&E. The unit could then serve as the Technical Secretariat for the overall innovation policy. It could be organized into several subunits, primarily a strategic planning and coordination unit, an M&E unit, and an administrative support unit.

The role and authority of the policy delivery unit would need to be clearly defined and communicated to all stakeholders, and formal mechanisms for collaboration with the National Innovation Council would need to be established. The National Innovation Council would remain as the main policy-making body in the structure. The policy development unit would be involved in M&E processes and detecting strategic and operational issues. It would discuss entrepreneurial discovery process results, perform M&E functions, provide analytical and expert support, and prepare materials as a basis for the Council's decision-making process. Upon adoption of National Innovation Council decisions and recommendations, the policy delivery unit would supervise and follow up on their implementation. To facilitate the process, the policy delivery unit would have authority over the bodies designated to implement National Innovation Council decisions and recommendations. Direct coordination and communication between the policy delivery unit, the Inter-ministerial Working Group, and Thematic Innovation Councils should also be established to ensure the efficient flow of information and feedback from stakeholders. When appropriate (for example, when issues are operational), the Inter-ministerial Working Group would be directly involved in implementing the corrective measures.

RECOMMENDATION 1B | STRENGTHEN THE ROLE OF THE NATIONAL INNOVATION COUNCIL

WHY

i) The National Innovation Council (as the main body governing the S3) and the Innovation Council for Industry (responsible for the SFI) have significant duplication in their responsibilities, functions, and membership. The two bodies have very similar objectives and share significant portions of their delivery mechanisms. As a result, there are potential overlaps of authority between the two governance bodies.

ii) The insufficient coordinating function of the National Innovation Council is partly a consequence of a lack of clarity regarding its overall role. It is also a consequence of the stakeholders not utilizing the National Innovation Council as a discussion venue for all S3-related issues. The National Innovation Council is where the entrepreneurial discovery process and the ESIF systems have the opportunity to discuss S3 policy issues jointly because the key actors of both structures participate in its sessions.

HOW

i) Croatia should reposition the National Innovation Council as a strategic council covering the overall national STI policy. Doing so may require reconsidering its composition (for example, by adding a representative of the Croatian Science Foundation to its membership). Expanding the role of the National Innovation Council to the coordination of overall STI policy would enable better integration of S3 policy into STI policy while also creating the opportunity to streamline the governance structure. As a higher-level body, the National Innovation Council would absorb the functions of the Innovation Council for Industry. Eliminating the Innovation Council for Industry would remove overlaps in the governance and memberships of the S3 and the SFI. Expanding the role of the National Innovation Council would also facilitate more robust integration between national and ESIF funding sources. To achieve this, the National Innovation Council could endorse a policy mix that would maximize the synergies between national budget funding and ESIF.

ii) Croatia should also strengthen the role of the National Innovation Council in coordinating S3 policy. The government should explicitly authorize the National Innovation Council to adopt changes in the S3 system without necessarily going through a formal procedure of re-adopting the S3 for each change introduced.[26]

Such changes could include revisions of S3 priorities and other changes such as revisions of the objectives and monitoring framework. However, changes during implementation must be consensus-based and accompanied by notification of all stakeholders. One way of going about that would be to have a web portal that would summarize all such changes, accompanied by formal acts adopted by the National Innovation Council. It should also have a section on the operation of Thematic Innovation Councils explaining their work and their purpose and providing information on how stakeholders can join. The existing web innovation platform (www.inovacijskaplatforma.hr) can be leveraged to establish such a portal. Additionally, as part of implementing the S3 process, the National Innovation Council should examine high-level strategic issues beyond distributing financial aid through S3 instruments. It should examine and propose corrective measures for S3 policy, such as recommending relevant changes in legislation. Such proposals, however, should be based on appropriate diagnostics backed up by the work of other bodies in the structure: the Inter-ministerial Working Group, the Thematic Innovation Councils, the newly proposed policy delivery unit, and the S3 M&E network.

RECOMMENDATION 1C | INVOLVE THE NATIONAL INNOVATION COUNCIL MORE DIRECTLY IN STRENGTHENING ENTREPRENEURIAL DISCOVERY PROCESS GOVERNANCE

WHY So far, Croatia has not taken advantage of the opportunity to improve entrepreneurial discovery process governance through institutional instruments. The results produced by the projects are either limited or not utilized by the relevant authorities. This lost opportunity may be due partly to complexity in the design and lack of clarity of the programs themselves and partly to insufficient understanding of what improved entrepreneurial discovery process governance should entail. The coordination aspect of such projects was also not realized during implementation. Although some presentations on projects' status and results were on agendas of the National Innovation Council, there was no detailed discussion of their implementation, potential risks, factors that might impede the production of results, or possible corrective measures.

HOW In the future, for interventions such as institutional instruments, broader discussion on the National Innovation Council would be advisable, both in the planning and design stages and during implementation. The National Innovation Council should regularly discuss institutional instruments, given that they target the S3 level, instead of partially focusing on individual institutions. Closer collaboration and greater involvement of the S3 policy governance bodies in implementing the instruments would improve inter-institutional cooperation. These instruments should include a more comprehensive set of stakeholders beyond the institutions that are their direct beneficiaries.

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26 Nonetheless, a formal government adoption procedure would be appropriate if major changes are introduced by, for example, revising the strategy at the end of its implementation period or at the beginning of a new EU financial perspective.

In preparation of such instruments, the National Innovation Council should ensure that the views of a broad array of stakeholders are taken into account, particularly the views of non-governmental stakeholders regarding the relevance of such projects to their needs. During implementation, the National Innovation Council should have an explicit role in regular tracking of the progress of such instruments.

At the operational level, the Inter-ministerial Working Group can contribute by providing inputs, opinions, and a place for discussing such projects. The Inter-ministerial Working Group could also be more directly involved in preparing relevant documents, such as RDI strategies. Doing so would require occasional joint meetings or work with Thematic Innovation Councils. Through these interactions, the Inter-ministerial Working Group could guide the Thematic Innovation Councils in performing their entrepreneurial discovery process responsibilities.

RECOMMENDATION 1D | STRENGTHEN M&E REPORTING AND UTILIZATION

WHY
The capacity of the M&E system is insufficient to anticipate potential implementation risks and bottlenecks and to design and implement mitigation measures and actions. M&E is primarily performed from the perspective of specific instruments (programs). M&E processes continue to rely on the efforts of individual institutions, especially when it comes to TPA-level monitoring.

Although they could be harmonized and streamlined, the M&E systems at the ESIF and S3 levels currently run in parallel. Plans to streamline processes by introducing an online M&E system for joint monitoring of both strategies, as the INI Project suggested, do not seem to satisfy the needs of both bodies fully.

HOW
Strengthening M&E reporting and utilization could be tackled in different ways:

i) M&E capacities should be significantly strengthened, especially in the Technical Secretariat as the central point of contact for S3 M&E reporting. The changes made to the S3 M&E framework during implementation are a step in the right direction. Still, more work is necessary to (a) strengthen TPA-level reporting and (b) streamline and harmonize different M&E systems and information systems (S3, ESIF, and non-ESIF). These activities can be done in cooperation with the Inter-ministerial Working Group and under its direct guidance because its members are involved in M&E activities on an operational basis.

ii) Another possibility would be to assign M&E responsibilities to a higher-level policy delivery unit that would operationally coordinate and support the National Innovation Council, as proposed in recommendation 1a. The advantage of this approach would be that the M&E system would be independent of policy implementation. At the same time, the policy delivery unit would be in a position to use M&E to push for adjustments and steer S3 policy, moving the M&E system from a compliance role to a more strategic learning and adjustment function. The policy delivery unit would perform its work on M&E in close cooperation with the Inter-ministerial Working Group, whose member institutions also perform M&E functions in their own domain.

RECOMMENDATION 1E | ESTABLISH A REAL-TIME MONITORING AND ADJUSTMENT MECHANISM

WHY

The role of M&E in learning is quite limited, as discussed in section 3.1. The S3 system is not sufficiently responsive to internal and external changes and challenges. The standard M&E system with interim and final assessment does not allow correction in real time. By the time M&E reports are completed and verified, it is often too late to implement the lessons learned and introduce any improvements.

HOW

The S3 requires an M&E system that operates as much as possible in real time. Building a real-time M&E system requires establishing an S3 M&E network that provides a mechanism for feedback, learning, and correction beyond regular reporting. The S3 M&E network would detect issues in the entrepreneurial discovery process and in implementation as they emerge and try to resolve them through its members. The network should regularly report to the National Innovation Council. Reports should cover issues identified and proposals for corrective measures to be sent onwards to the relevant bodies for action. Appendix V outlines the organizational model of the S3 M&E network as a learning mechanism that would improve the effectiveness of the overall policy process and provides additional details on its proposed relations with other bodies in the structure.

The S3 M&E network should be a regular and formally organized network of stakeholders with specified roles and responsibilities in the learning process. They should not only focus on detecting specific issues and sharing experiences but also have the authority to either correct some of the problems or suggest solutions to those higher up in the hierarchy. The network should be composed of middle-level administrators who have a good overview of the situation and can correct or propose remedies. They may also consult external stakeholders (for example, through Thematic Innovation Councils). This group can be closely linked to both the National Innovation Council and individual ministries or Intermediate Bodies with authority to propose and implement remedies to implementation problems.

RECOMMENDATION 1F | STRENGTHEN INSTITUTIONAL CAPACITIES

WHY

Institutional capacity is an overlooked issue in S3 policymaking, with the partial exception of implementation. The S3 is a dynamic policy that requires active steering and management, demanding specific and in-depth knowledge, experience, and initiative by all governance stakeholders. Formal administrative compliance and bureaucratic rule-following are not sufficient to successfully design, implement, and adjust S3 policy.

Institutional capacities are unbalanced throughout the policy cycle. They are stronger in S3 implementation (particularly through the ESIF system) because investments in capacity are built into the ESIF governance system. However, those capacities focus almost entirely on absorption rather than managing for results. Maximizing the effect of the S3 on the RDI system and the Croatian economy as a whole requires a coherent and simultaneous upgrade of institutional capacity throughout the whole S3 policy cycle.

HOW

Institutional capacity-building efforts should focus on improving policy design capacity and programming capacity, implementation management capacities, and M&E capacities. The areas that need institutional capacity building include job design, new employment (where necessary), staff retention, advanced training, work (re)organization, resource availability, and networking. Further, M&E should contribute to the identification and tackling of emerging institutional capacity gaps that may develop over time.

Sufficient resources should be made available for these activities. Capacity building should be a compulsory component of administrative costs of all future S3-funded programs. A small share of funding could be set aside for investments in capacity building depending on the individual features of each program.

The sustainability of capacity-building interventions should be addressed. Any intervention should contain a plan for knowledge dissemination leading to increased in-house capacities within institutions involved in S3 policy. Outsourcing of policy design should be limited or should include a component of local capacity building.

5.2 Entrepreneurial discovery process governance

The entrepreneurial discovery process requires participatory forms of governance. The challenge of establishing the entrepreneurial discovery process and continuing it in the implementation stage is one of the crucial difficulties of the S3 approach, particularly in countries and regions with inadequate policy governance (Radošević, Curaj, et al. 2017). Smart specialization makes unprecedented demands on public sector bodies to nurture more collaborative forms of innovation policy governance and craft more inclusive forms of regional governance (Morgan 2017). Central to this is the development of entrepreneurial discovery process governance and its close integration with the other elements of the governance system. The ambition to develop a continuous entrepreneurial discovery process governance is fully in line with the main goal of the S3, which is to induce more participatory forms of governance. The current entrepreneurial discovery process governance structures were not extensively utilized to form an inclusive governance system and facilitate collective action. As a result, the STI governance system requires significant changes if the S3 is to have transformative effects on several TPAs' innovation ecosystems.

RECOMMENDATION 2A | FACILITATE THE BOTTOM-UP APPROACH IN STRUCTURING THE ENTREPRENEURIAL DISCOVERY PROCESS

WHY The key aspect of the entrepreneurial discovery process is its bottom-up nature. However, the Ministry of Economy and Sustainable Development continues to drive the operation of the Thematic Innovation Councils, as evident from the following:

i) As confirmed through interviews with representatives of Thematic Innovation Councils, the initiative and agenda items for Thematic Innovation Council meetings came mostly from the policy maker. Thematic Innovation Councils generally did not raise topics and issues to be discussed in their meetings, and their role has been relatively passive.

ii) The Thematic Innovation Council establishment process, including selection and appointment of Thematic Innovation Council presidents and members, was bureaucratic. The Ministry of Economy and Sustainable Development ensured that the Thematic Innovation Council membership structure was realized entirely as the S3 envisaged it. However, the whole process was highly formal and rigid. Creating processes that mimic the procedures in governmental institutions can contradict the very idea of having bottom-up entrepreneurial discovery process structures with non-governmental stakeholders.

HOW Croatia should facilitate the bottom-up nature of the entrepreneurial discovery process through the following actions:

i) Enhancing capacities for collective action through a careful balance between (a) facilitating the Thematic Innovation Councils' work with some procedures and general guidelines and (b) not creating unnecessary administrative burdens or making the process overly prescriptive. Program managers could initially define the areas and frequency of Thematic Innovation Council involvement, with regular and predictable intervals and touch points. The Thematic Innovation Councils should be made aware that they can take the initiative in proposing discussion topics

with the governmental stakeholders. Program managers should also make Thematic Innovation Councils aware that they can propose additional areas of involvement and provide feedback on how appropriate they think their involvement is. This is where the involvement of the program managers should stop. They should not influence the substance of the outputs produced in the Thematic Innovation Councils. The Croatian Chamber of Economy, serving as the Thematic Innovation Councils' secretariat, can raise awareness among Thematic Innovation Councils about their expected role. It can encourage them to be proactive in jointly steering S3 policy.

ii) The process of joining Thematic Innovation Councils, the appointment of presidents, and other aspects of their operation should be simplified. Thematic Innovation Councils should be provided with general guidelines, for example, that they need to nominate a president and the duration of a single mandate. Program managers do not need to prescribe other operational details. The expected distribution of the Thematic Innovation Council membership, such as the expected prevalence of the business sector, should also be communicated to them. However, minor variations of the membership structure should not raise any alarms, as long as their general orientation and purpose remain unchanged and clear to all. Ideally, both the Thematic Innovation Councils' work and the involvement of the program managers should be evaluated periodically (for example, annually).

RECOMMENDATION 2B | INCREASE THE INVOLVEMENT OF THE THEMATIC INNOVATION COUNCILS IN POLICY CO-CREATION

WHY   The Thematic Innovation Councils have played a limited role in policy co-creation. Their work focused entirely on two programs of the Ministry of Economy and Sustainable Development. The Ministry of Economy and Sustainable Development established the Thematic Innovation Councils and has directly steered their work. Other institutions have very little information about the Thematic Innovation Councils, as confirmed in interviews with S3 stakeholders.
Croatia considered involving the Thematic Innovation Councils in project selection. Eventually, however, they were not used to avoid potential conflicts of interest. Isolating the Thematic Innovation Councils from project selection not only diminishes the bottom-up perspective of the S3 but also discourages engagement by non-governmental stakeholders.

HOW   Croatia should significantly expand the involvement of Thematic Innovation Councils in policy co-creation. In this context of expanding the work of the Thematic Innovation Councils, two important points arise. First, representatives of institutions other than the Ministry of Economy and Sustainable Development should become more directly involved in the Thematic Innovation Councils' work. For example, Thematic Innovation Council representatives could occasionally participate in Inter-ministerial Working Group meetings or joint discussions and work on operational issues such as preparing RDI strategies and action plans. It is also crucial that program managers actually consider and utilize the outputs produced by the Thematic Innovation Councils. It would be advisable to properly document the whole process (for example, through systematic logs and records of inputs provided by Thematic Innovation Councils). Second, Thematic Innovation Councils should have up-to-date information on the work of S3 governance bodies (e.g., on planned programs or any other information relevant for the S3) so they can identify specific opportunities to get involved. The National Innovation Council can play a vital role in this context because both the Thematic Innovation Councils and all relevant institutions directly participate in its work.

Specific areas where the involvement of Thematic Innovation Councils could be intensified include the following:

i) Thematic Innovation Councils could provide, for example, opinions on other strategic documents or draft legislation related to STI and sectoral policies connected with the S3. For example, the Thematic Innovation Council Energy and Sustainable Environment could explore how to integrate and connect the TPA with the sectoral strategic framework (e.g., the national strategy for energy).

ii) Thematic Innovation Councils should become more involved in topics beyond the policy scope and programs of the Ministry of Economy and Sustainable Development. They could, for example, provide inputs and opinions on instruments targeting the research sector. Representatives of academia could suggest interventions they would benefit from. Business sector representatives could network and stay abreast of the activities of the researchers. The Ministry of Economy and Sustainable Development could also induce new ideas and dialogue on how to realize potential collaborations and joint ventures between academia and the private sector, as well as on which types of government intervention could facilitate them.

iii) Thematic Innovation Councils should be involved earlier in program planning and design, rather than confining their involvement to the selection procedure. Such engagement should be focused primarily on program contents and strategic aspects of the programs. In later stages of program development, the online public consultation process that is already in place is appropriate and welcome. These consultations should be promoted to a broad range of the interested public. The Thematic Innovation Councils can disseminate information on the process and encourage their members to get involved. Although the Thematic Innovation Councils should be involved in defining the policy mix and setting up particular instruments, they should not directly influence the final decisions about which projects to fund.

RECOMMENDATION 2C | ENGAGE THEMATIC INNOVATION COUNCILS IN DEVELOPING RDI STRATEGIES AND POLICY MIXES FOR EACH THEMATIC PRIORITY

WHY

i) TPA-level RDI strategies and Action Plans, two essential expected outputs of Thematic Innovation Councils, never materialized. The INI Project, which was supposed to provide advisory support for these outputs, did not produce the expected results. When it comes to the strategic guidance of TPAs, the only influential role of Thematic Innovation Councils so far has been to reduce the initial number of indicative RDI themes within the S3 TPAs for two Ministry of Economy and Sustainable Development programs. Although this is a step in the right direction, it is limited progress in the bigger picture of S3 TPA evolution.

ii) Further, despite the central importance of TPAs in the S3, the ultimate logic of intervention is based on individual instruments rather than on TPAs. In other words, in its current form, the S3 policy mix is set exclusively horizontally and not at the level of individual TPAs, and there are no instruments in place that are TPA-specific.

HOW

i) The 2021–2027 programming period presents an opportunity for Thematic Innovation Councils to design TPA-specific RDI strategies. The outputs of the CCI Project could be a starting point for defining strategic priorities and the policy mix. The RDI strategies should take the regional perspective into account in analyzing the capacities and stakeholders involved in the S3 process.

This means that the RDI strategies should represent fairly the needs of the innovation ecosystem across Croatia. Such work could be facilitated with the support instruments for the entrepreneurial discovery process, which could, among others, provide a recent snapshot of the distribution of RDI capacities on a subnational level. In any case, involving the Thematic Innovation Councils in this way will require the close involvement of several ministries. The National Innovation Council should discuss and find the most appropriate way to support the Thematic Innovation Councils in the process, given that the INI Project did not manage to do so.

ii) The new programming period allows for an opportunity to significantly improve the entrepreneurial discovery process through which TPA-specific support mechanisms can be designed. Designing TPA-specific support mechanisms involves developing tailored instruments for each thematic priority and accompanying goals, moving towards a specific portfolio of instruments and financial allocations for each TPA. Providing the right balance of instruments for each TPA requires a policy mix design for each priority area that combines horizontal instruments for the whole economy with instruments addressing failures specific to individual TPAs (Magro and Wilson 2019). In this process, the work of Thematic Innovation Councils should also include delivery instruments that go beyond the disbursement of grant financial aid. Instead of focusing on individual programs, the aim is to build policy mixes where complementary programs and calls have the greatest effects on structural transformation and improved innovativeness of specific TPAs. These policy mixes would not only include RDI funding programs but also consider the competitive position of each TPA, including which regulations to modify and what procurement procedures, pilots, and demonstration projects to initiate. Customizing policy mixes this way would require that Thematic Innovation Councils start working on RDI strategies as soon as possible, but this time considering the priorities and instruments in parallel. The Inter-ministerial Working Group should liaise with Thematic Innovation Councils and work jointly on developing TPA-specific policy mixes.

TPA-specific policy mixes would also require new forms of M&E, which would include stakeholder-driven assessments. The process itself should be governed so that all parties see it as valid and leading to impartial strategic intelligence (Magro and Wilson 2019). In addition to an assessment framework for the strategy, there should be a consensus-built M&E framework for each TPA. The main aim should be generating collective knowledge on the contribution of policy mixes to the evolution of the different TPAs. However, this mode of M&E requires specific governance (which is similar to entrepreneurial discovery process governance), is process-focused, and is highly participatory. In essence, this would mean that Thematic Innovation Councils would need evaluation units to conduct M&E as part of their entrepreneurial discovery process activities.

5.3 Implementation governance

From an international perspective, institutionally simpler S3 governance systems seem to achieve better results in administrative absorption of EU funding. International comparison of S3 governance systems suggests that the Croatian governance structure is complex, influencing the absorption of funds. International experience with S3 implementation suggests that the fewer institutions involved in program management, the better the absorption (Wostner 2017).

RECOMMENDATION 3A | STREAMLINE IMPLEMENTATION GOVERNANCE

WHY

In the S3 context, the Ministry of Economy and Sustainable Development and the Ministry of Science and Education have crucial strategic roles by chairing the National Innovation Council. When it comes to STI policies, the two ministries share authority as policy makers. Simultaneously, in the ESIF structure, they perform the role of IB1. In that case, they are subordinate to the Ministry of Regional Development and EU Funds and the Ministry of Labor, Pension System, Family and Social Policy as the Managing Authorities. Although the Managing Authorities delegate some functions to the two ministries, the Managing Authorities retain the ultimate responsibility and approval function for any significant decisions on Operational Program implementation. However, the non-sectoral Managing Authority may not be as familiar with the specific details of program contents and the sector that covers as a policy authority would be.

HOW

There are several options for streamlining implementation governance:

i) In a system with a non-sectoral Managing Authority, the sectoral authorities acting as IB1 should have the last say on what the programs should support. The Managing Authority should focus on ensuring procedural compliance of the Operational Program operations with national and EU regulations and harmonizing such procedures across different implementation areas. In any case, in such a system, the role of the Managing Authority should not aspire to replace the policy makers. Quite the opposite, the Managing Authority should be in service of the policy makers by ensuring corrective actions regarding implementation of Operational Program instruments when recognized or requested by the policy makers or the National Innovation Council.

ii) An alternative option would be to have separate Operational Programs managed directly by the sectoral authorities. This option would enable more flexibility and allow for customizing the program design and selection criteria instead of having a one-size-fits-all solution for different policy areas. It would also potentially help avoid issues stemming from standardization of procedures and requirements from applicants and beneficiaries in RDI projects and other types of interventions because the responsible Managing Authority would have more flexibility and the option to tailor its approach. This solution would also ensure more efficient planning and harmonization across funding sources for a specific policy area. The sectoral Managing Authority would be in charge of the policy strategy. Still, it could delegate the design of individual programs (grant schemes) to an agency that would perform the Intermediate Body function. Another possibility is that the Managing Authority would not designate any Intermediate Bodies or delegate to only a single level Intermediate Body instead of having two. Reducing the number of Intermediate Bodies would also enhance the linkages between S3 policy governance and ESIF implementation because the same bodies would both act as the central policy authorities in the S3 governance system and oversee the interventions implementing the policies.

RECOMMENDATION 3B | ORGANIZE THE POLICY IMPLEMENTATION AGENDA AROUND THE STAGES OF THE INNOVATION LIFE CYCLE

WHY

The policy agenda is divided between the Ministry of Science and Education and the Ministry of Economy and Sustainable Development based on the type of beneficiary of public support programs (public vs. private) instead of on the natural competences existing in each institution. This division of the agenda results in gaps in the policy mix. Moreover, there appears to be no significant coordination or exchange between the two institutions regarding complementary instruments. The disconnect is also apparent from both the original and the revised S3 indicators, where the different institutions do not track the same indicators for relatively similar programs.

Similarly, Ministry of Labor, Pension System, Family and Social Policy instruments appear entirely disconnected from Ministry of Economy and Sustainable Development and Ministry of Science and Education interventions, and no evident complementarity is in place. This disconnect is likely the result of the division of responsibility in terms of funding. The Ministry of Science and Education and the Ministry of Economy and Sustainable Development manage ERDF funding of the OPCC, whereas the Ministry of Labor, Pension System, Family and Social Policy manages the OPEHR, which is funded by the European Social Fund.

HOW

Based on the scope of the two ministries' policy authorities, it would be logical for Ministry of Science and Education programs to focus on lower TRL levels and pre-commercial research, as well as facilitating the transition of public research organizations toward market-oriented projects and collaboration with the business sector. By the same token, it would make sense for the Ministry of Economy and Sustainable Development to manage the highest TRL development activities and support for innovation capacities. Using different funding sources (ERDF, European Social Fund, national budget) together can achieve synergistic effects on the interventions supported. For example, interventions aimed at upgrading smart skills may complement both lower- and higher-TRL research activities. The latter interventions may be more general and aim at, for example, technology transfer capacities in higher education institutions or public research organizations or managerial capacities and organizational innovations in enterprises. Similarly, specific skills required for conducting RDI activities connected with the S3 priorities may be supported.

In this context, the role of the National Innovation Council would be important in leveraging the national funding with the ESIF instruments and harmonizing across different funding sources. The broader dialogue through the National Innovation Council could contribute to better coordination across instruments and institutions.

RECOMMENDATION 3C | REDUCE FRAGMENTATION IN KEY IMPLEMENTATION PROCESSES

WHY

When it comes to project selection and grant award procedures, ESIF programs are fragmented. Due to the predominance of ESIF in funding S3 instruments, the selection procedure in most S3 programs is managed by the three-level system that includes the Managing Authority, IB1, and IB2. This system requires extensive coordination, which introduces complexity and inefficiencies (such as duplication of selection procedures for project assessors). An inefficient governance system may contribute to lengthy procedures that extend the duration of the selection process.

HOW There are several options to address the fragmentation of implementation processes:

i) It is necessary to reconsider the roles and sequencing of steps in the grant award process to increase its efficiency. Specific proposals for this, such as streamlining the selection process, were provided in the Functional and Governance Analysis (World Bank 2020). The least efficient solution appears to be switching back and forth between the institutions in the selection phases.

ii) An alternative option would be to replace the current three-level structure (Managing Authority, IB1, and IB2) with a two-tier system in which a sectoral authority would be in charge of all decisions related to the policy instrument. This option would lead to de facto abolishing the need for one Intermediate Body level. The Managing Authority would be in charge of the policy strategy and could delegate the design of individual programs (grant schemes) to an agency that would perform the Intermediate Body function.

iii) Finally, the most drastic solution would be making one institution responsible for all functions of the individual instrument policy cycle. Some non-ESIF programs (e.g., Proof of Concept) have already tested such a system. While this would assign clear responsibility for the effective implementation of programs, it would also require significant reorganization and capacity building in some institutions to handle the whole process.

RECOMMENDATION 3D | INTRODUCE REGULATORY GUILLOTINE AND TAILOR-MADE PROCEDURES FOR RDI PROJECTS

WHY The OPCC, as the largest Operational Program that includes the majority of the S3 instruments, is governed by rules that apply to all types of interventions. The extensive procedures may impede the selection and implementation of RDI projects. For example, the application form is generic and applies to both small voucher schemes and large infrastructure projects. The same goes for implementation procedures. Issues with procedures have been recognized almost unanimously by RDI project beneficiaries at National Innovation Council meetings.

HOW A regulatory guillotine could radically reduce current lengthy procedures and burdensome documentary requirements. The Functional and Governance Analysis (World Bank 2020) provides more specific findings and recommendations. The reduction of regulatory and administrative burdens could be operationalized through the following actions:

i) One solution is to define a separate set of rules and procedures that would apply to RDI support instruments. In that case, a full proposal with an action plan should be discussed at the National Innovation Council and formally submitted to relevant authorities. At the very least, the regulatory guillotine should start with a revision of required documentation at the application and contracting stages to reduce burdens on both applicants and program managers.

ii) An alternative solution is related to having a separate Operational Program covering RDI instruments that would have its own rules, tailor-made and modified according to the type of projects targeted. A non-sectoral ESIF authority, if in place, should deal exclusively with ensuring that the procedures comply with the relevant ESIF regulations. It should not be involved in either program design (that is, defining the program contents) or implementation.

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Appendix

Appendix I. S3 governance practices in other EU Member States

COUNTRY	DESCRIPTION
Lithuania	**The RDI policy in Lithuania is coordinated by the Strategic Council for Research, Development and Innovation formed by the Government.** This is a crucial difference with the Croatian system, where the National Innovation Council is a separate S3 strategy council. This could ensure better integration of S3 and national innovation policy whose separation weakens the link between S3 and national innovation policy in Croatia. The Council is chaired by the Prime Minister and comprises government members, university, research and business stakeholders. The Council is responsible for the development of RDI priority areas.
	Operationally, a separate S3 group is established and led by the Ministry of Education and Science and the Ministry of Economy. Like the Croatian case, in Lithuania, the Ministry of Education and Science and the Ministry of Economy are the key institutions responsible for the smart specialization implementation. Their measures are the basis for the implementation of the RDI priorities. In 2014 Ministries formed the Group for the Coordination of Implementation of the Research and (Socio-Cultural) Development and Innovation Priorities, the central coordinating body for implementing the S3. The Group members are all major stakeholders from the public administration related to innovation and representatives of industry and academia, with rotating half-year chairmanship by Vice Ministers of the two responsible ministries. Compared to Croatian S3, Lithuanian coordination group is a hybrid body between the National Innovation Council and Inter-ministerial Working Group. In this respect, the gap between implementation, entrepreneurial discovery process and policy governance is bridged much easier. Also, this body's higher status compared to the Croatian Inter-ministerial Working Group probably ensures better implementation and feedback from implementation to policy design.
Slovenia	**The Slovenian S3 governance is characterized by direct involvement of governmental institutions in the S3 governance system**. The Implementation Working Group as an inter-institutional body and the Government Office for Development and European Cohesion Policy are the institutions that coordinate S3 activities. The top coordinating body is above the ministerial level, as is the case in Croatia. The Implementation Working Group is supported by the Government Office and is chaired by the State Secretary of the Government Office for Development and European Cohesion Policy. The State Secretary of the Ministry for Science and State Secretary of the Ministry for the Economy are deputy heads of the Working Group. The members of the Inter-ministerial Working Group are also State Secretaries of ministries directly participating in S3 implementation. The Inter-ministerial Working Group ensures ministerial coordination of S3 implementation activities, monitoring and political guidance. When compared to Slovenia, the Croatian National Innovation Council membership better represents the interests of various stakeholders. However, this representation does not have a real impact on implementation. In Slovenia's case, the Government Office engages directly at the highest policy level into the operational structures that support S3. Presumably, this should convert into more substantial available administrative support.

Czech Republic	**The Czech system includes the National RIS3 Manager's role as the Chief Executive Officer for the management and coordination of the National RIS3 Strategy.** The S3 manager represents the Ministry of Industry and Trade and acts as Secretary of the RIS3 Steering Committee. Using the Analytical Team's capacities, the National RIS3 Manager prepare various proposals and implementation reports and implementation plan of the National RIS3 strategy for the RIS3 Steering Committee. It is also involved operationally in establishing the National Innovation Platforms, after their approval by the RIS3 Steering Committee, and transfer proposals and initiatives arising from the National Innovation Platforms to the RIS3 Steering Committee Managing Authorities of the relevant Operational Programs and national RDI support programs. Aside from the ministry staff, the Analytical team also includes regional S3 managers and coordinators.
Bulgaria	**Bulgarian S3 system includes an inter-institutional network established to implement measures for improvement of the governance system.** An administrative partnership network of 26 senior experts, representing 13 public institutions in total, was established to build administrative capacity with in-depth knowledge of the S3 and effective coordination of the issues and topics set for consideration by the Council for Smart Growth. The experts involved in the network participate in preparing information on the S3 implementation, including drafting S3 annual implementation reports, summarizing the information from all delivery instruments of the leading ministries financed by national and EU funds.

Appendix II. Integration of S3 policy mix in the Croatian S3 STI Landscape

The majority of the Croatian public STI programs in the period 2014-2020 are linked to the S3. Table II.1 lists STI instruments identified and included in the portfolio mapping as part of the Analysis of Quality and Coherence of the Policy Mix (World Bank 2019). The S3 instruments dominate STI funding. Instruments that relate to S3 only partially are marked with an asterisk. Although they are considered to contribute to the S3 objectives, such contribution is to a limited extent only, as they do not exclusively target S3 TPAs. These instruments are either considered as "additional funding sources" in the official S3 document or started being tracked as S3 instruments later during S3 implementation, as part of the revamped S3 Action Plan 2019-2020 and the pertaining revised monitoring framework.[27]

Most of these instruments are also linked with the SFI. The official SFI document does not have a clear list of implementation instruments, in terms of specific programs or projects that it includes. The reference to SFI in this table is based on the report on the strategy's implementation for the period 2015-2018. The programs directly referenced in the implementation report are marked here as SFI instruments.

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[27] Minor discrepancies in the stated budgets of the instruments may be present, when comparing to the S3 document. Potential reasons include changes in allocation during implementation, different exchange rates applied when converting allocation of programs launched with an allocation in EUR or CHF, to HRK. Furthermore, the difference in allocation value may be a result of a different time scope covered by the two overviews (2016-2020 for S3, 2014-2020 for PER Portfolio Mapping), which is relevant for the allocation of programs with multiple (sometimes yearly) editions launched with separate allocations. Also, the S3 policy mix includes an additional grant scheme, Integrator, that was launched after the PER Portfolio Analysis was completed and thus is not included in the table. Allocation of this instrument is around EUR 19.5 million. However, such discrepancies should not significantly distort the comparability and the ratios between the S3 and the STI instruments.

Table II.1 STI programs

N.	PROGRAM /INSTRUMENT FULL NAME	S3 INSTRUMENT	SFI INSTRUMENT	MANAGING AUTHORITY	MINISTRY (INTERMEDIATE BODY 1)	IMPLEMENTING AGENCY (INTERMEDIATE BODY 2)	SOURCE OF FINANCING	ORIGINAL CURRENCY	BUDGET (TOTAL WITHIN FINANCIAL PERSPECTIVE) IN ORIGINAL CURRENCY	BUDGET (TOTAL WITHIN FINANCIAL PERSPECTIVE) IN EUR [28]
1	Strategic project: Science and Technology Foresight Project	Yes		MRDEUF	MSE	CFCA	OPCC	HRK	16,575,500	2,154,815
2	Centres of Research Excellence performing excellent science	Yes		MRDEUF	MSE	CFCA	OPCC	HRK	380,000,000	49,400,000
3	Investments into organizational reform and infrastructure of R&D&I sector	Yes		MRDEUF	MSE	CFCA	OPCC	HRK	760,000,000	98,800,000
4	Science and Innovation Investment Fund	Yes		MRDEUF	MSE	CFCA	OPCC	HRK	158,460,000	20,599,800
5	Preparation of RDI infrastructural project	Yes		MRDEUF	MSE	CFCA	OPCC	HRK	45,600,000	5,928,000
6	Strengthening capacities for research, development and innovation	Yes		MRDEUF	MSE	CFCA	OPCC	HRK	180,894,788	23,516,322
7	Enabling synergies with HORIZON 2020 initiatives for spreading excellence: Twinning and ERA chairs	Yes		MRDEUF	MSE	CFCA	OPCC	HRK	9,000,000	1,170,000
8	Major Project: Children Centre for Translational Medicine at the Children's Hospital Srebrnjak	Yes	Yes	MRDEUF	MSE	CFCA	OPCC	HRK	432,234,747	56,190,517
9	Providing Feasibility Study And CBA For Four (4) R&D&I Infrastructure Projects			n/a	MSE	n/a	STPII	EUR	3,804,443	3,804,443
10	Strategic project: HR_ZOO Croatian Science and Education Cloud	Yes	Yes	MRDEUF	MSE	CFCA	OPCC	HRK	196,802,600	25,584,338
11	Strategic project: Centre for advanced laser techniques - CALT	Yes	Yes	MRDEUF	MSE	CFCA	OPCC	HRK	121,304,417	15,769,574
12	Improved Access to Electronic Sources of Research and Technical Information - e-Sources			MLPS	MSE	Agency for Vocational Education and Training and Adult (ASOO)	OPEHR	HRK	133,760,000	17,388,800
13	Young Researchers' Career Development Project—Training of Doctoral Students	Yes	Yes	MLPS	MSE	Agency for Vocational Education and Training and Adult (ASOO)	OPEHR	HRK	81,090,000	10,541,700
14	Young Researchers' Career Development Project—Training of Doctoral Students	Yes	Yes	MLPS	MSE	HRZZ (Beneficiary) / DEFCO (IB2)	OPEHR	HRK	78,466,080	10,200,590
15	Young Researchers' Career Development Project—Training of Doctoral Students	Yes*	Yes	n/a	MSE	HRZZ	State budget MSE	HRK	216,960,000	28,204,800

[28] Exchange rates used to convert values to EUR are as follows: HRK/EUR=0.13; CHF/EUR=0.92.

N.	PROGRAM /INSTRUMENT FULL NAME	S3 INSTRUMENT	SFI INSTRUMENT	MANAGING AUTHORITY	MINISTRY (INTERMEDIATE BODY 1)	IMPLEMENTING AGENCY (INTERMEDIATE BODY 2)	SOURCE OF FINANCING	ORIGINAL CURRENCY	BUDGET (TOTAL WITHIN FINANCIAL PERSPECTIVE) IN ORIGINAL CURRENCY	BUDGET (TOTAL WITHIN FINANCIAL PERSPECTIVE) IN EUR [28]
16	Cooperation Programme with Croatian Scientists in Diaspora ´RESEARCH COOPERABILITY´		Yes	MLPS	MSE	HRZZ (Beneficiary) / DEFCO (IB2)	OPEHR	HRK	42,500,000	5,525,000
17	Croatian-Swiss Joint Research Projects - Call for Proposal 2017	Yes*	Yes	MRDEUF	MSE	HRZZ	Croatian-Swiss Cooperation Programme	CHF	4,203,000	3,866,760
18	Promotion of Tenure Track Model—the Tenure Track Pilot Programme		Yes	MRDEUF	MSE	HRZZ	Croatian-Swiss Cooperation Programme	HRK	4,524,627	4,162,657
19	Support to researchers for the application to the ERC programmes		Yes	n/a	MSE	HRZZ	European Research Council (ERC)	HRK	5,000,000	650,000
20	Installation Research Projects	Yes*		n/a	MSE	HRZZ	State budget	HRK	70,000,000	9,100,000
21	Partnership in Research			n/a	MSE	HRZZ	State budget	HRK	50,000,000	6,500,000
22	Research Projects	Yes*		n/a	MSE	HRZZ	State budget	HRK	210,000,000	27,300,000
23	Programme for financing Research and Development activities to fight Climate Change	Yes*		n/a	MSE	HRZZ	State budget	HRK	17,000,000	2,210,000
24	Connectivity Program, Gaining Experience Grant			n/a	MSE	HRZZ	STPII	HRK	800,000	104,000
25	Research Cooperability Program, Crossing Borders Grant			n/a	MSE	HRZZ	STPII	HRK	33,472,909	4,351,478
26	Research Cooperability Program, My First Collaboration Grant			n/a	MSE	HRZZ	STPII	HRK	3,600,491	468,064
27	Increasing the development of new products and services that result from research and development activities	Yes	Yes	MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	998,000,000	129,740,000
28	Support for development of centers of competence	Yes	Yes	MRDEUF	MESD	CFCA	OPCC	HRK	785,977,500	102,177,075
29	Commercialization of innovations in entrepreneurship	Yes*	Yes	MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	114,000,000	14,820,000
30	Innovations in newly established SMEs	Yes*	Yes	MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	74,000,000	9,620,000
31	Innovations in newly established SMEs - Phase 2	Yes*	Yes	MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	200,000,000	26,000,000
32	Innovations in S3 areas	Yes		MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	634,000,000	82,420,000
33	Increasing competitiveness and efficiency of SMEs in areas with special development needs through ICT			MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	110,000,000	14,300,000

N.	PROGRAM /INSTRUMENT FULL NAME	S3 INSTRUMENT	SFI INSTRUMENT	MANAGING AUTHORITY	MINISTRY (INTERMEDIATE BODY 1)	IMPLEMENTING AGENCY (INTERMEDIATE BODY 2)	SOURCE OF FINANCING	ORIGINAL CURRENCY	BUDGET (TOTAL WITHIN FINANCIAL PERSPECTIVE) IN ORIGINAL CURRENCY	BUDGET (TOTAL WITHIN FINANCIAL PERSPECTIVE) IN EUR [28]
34	Increasing competitiveness and efficiency of SMEs through ICT			MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	200,000,000	26,000,000
35	Innovation vouchers for SMEs	Yes*	Yes	MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	50,000,000	6,500,000
36	Reaching markets through product certification		Yes	MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	30,000,000	3,947,368
37	Quality labels			MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	7,500,000	975,000
38	Internationalization of SMEs through business support organizations			MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	38,000,000	5,000,000
39	Internationalization of SME operations		Yes	MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	56,000,000	7,280,000
40	Internationalization of SME operations—Phase 2		Yes	MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	134,000,000	17,420,000
41	Introduction of systems of management of business processes and quality (ISO and similar norms)		Yes	MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	38,000,000	4,940,000
42	Strategic project to support for cluster competitiveness initiatives	Yes	Yes	MRDEUF	MESD	CFCA	OPCC	HRK	67,494,068	8,774,229
43	Strategic Project for support of establishment of Innovation Network for Industry and Thematic Innovation platforms (INI Project)	Yes	Yes	MRDEUF	MESD	CFCA	OPCC	HRK	66,294,768	8,618,320
44	Law on State Support for Research and Development Projects	Yes*	Yes	MESD	n/a	HAMAG-BICRO	n/a	EUR	n/a	n/a
45	Public Procurement Law - Partnership for Innovation		Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
46	Establishment of Business Support Institution Network		Yes	MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	7,012,152	911,580
47	Eureka	Yes*	Yes	MESD	n/a	HAMAG-BICRO	State Budget	HRK	4,550,000	591,500
48	Eurostars	Yes*	Yes	n/a	n/a	HAMAG-BICRO	State Budget + EU + Switzerland	EUR	4,225,000	549,250
49	Smart Factory Hub Voucher scheme			n/a	n/a	HAMAG-BICRO	ERDF - Interreg, Danube Transnational Programme 2014-2020	EUR	15,000	15,000
50	"B Light"- Fostering value added business cooperation between SMEs operating on different sides of the Hungary-Croatia border		Yes	n/a	n/a	HAMAG-BICRO	ERDF - Interreg, Interreg V A Hungary Croatia Co operation Programme 2014 2020	EUR	7,650,000	7,650,000

N.	PROGRAM /INSTRUMENT FULL NAME	S3 INSTRUMENT	SFI INSTRUMENT	MANAGING AUTHORITY	MINISTRY (INTERMEDIATE BODY 1)	IMPLEMENTING AGENCY (INTERMEDIATE BODY 2)	SOURCE OF FINANCING	ORIGINAL CURRENCY	BUDGET (TOTAL WITHIN FINANCIAL PERSPECTIVE) IN ORIGINAL CURRENCY	BUDGET (TOTAL WITHIN FINANCIAL PERSPECTIVE) IN EUR [28]
51	Second Science and Technology Project (STPII), Component B1.1. Proof of Concept Program	Yes*	Yes	n/a	MSE	HAMAG-BICRO	STPII	EUR	3,285,490	3,285,490
52	Second Science and Technology Project (STPII), Component B1.1. Proof of Concept Program	Yes*	Yes	n/a	MSE	HAMAG-BICRO	STPII	HRK	16,346,154	2,125,000
53	Proof of Concept 8	Yes*	Yes	n/a	MESD	HAMAG-BICRO	State budget	HRK	21,968,750	2,855,938
54	Second Science and Technology Project (STPII), Component B1.2. RAZUM Program - Development of knowledge-based SMEs	Yes*	Yes	n/a	MSE	HAMAG-BICRO	STPII	EUR	2,787,181	2,787,181
55	Second Science and Technology Project (STPII), Component B1.3.IRCRO Program - Collaborative Research and Development	Yes*	Yes	n/a	MSE	HAMAG-BICRO	STPII	EUR	1,433,796	1,433,796
56	Second Science and Technology Project (STPII), Component B1.4.TTO Program - Technology Transfer Office Support Program	Yes*		n/a	MSE	HAMAG-BICRO	STPII	EUR	1,073,829	1,073,829
57	Measure I.1 Innovation	Yes*		Ministry of Agriculture	n/a	Paying Agency for Agriculture, Fisheries and Rural Development	European Maritime and Fisheries Fund 2014-2020 (EMFF)	EUR	3,333,360	3,333,360
58	Partnerships between scientists and fishermen	Yes*		Ministry of Agriculture	n/a	Paying Agency for Agriculture, Fisheries and Rural Development	European Maritime and Fisheries Fund 2014-2020 (EMFF)	EUR	3,333,360	3,333,360
59	Measure II.1 Innovation	Yes*		Ministry of Agriculture	n/a	Paying Agency for Agriculture, Fisheries and Rural Development	European Maritime and Fisheries Fund 2014-2020 (EMFF)	EUR	8,000,000	8,000,000
60	Support for establishment and operation of operational groups of European Innovation Partnership for agricultural productivity and sustainability	Yes*		Ministry of Agriculture	n/a	Paying Agency for Agriculture, Fisheries and Rural Development	Rural Development Program 2014-2020	HRK	1,140,000	148,200
61	Development of business infrastructure			MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	640,000,000	83,200,000
62	Business Services for SME through business support organizationss			MRDEUF	MESD	HAMAG-BICRO	OPCC	HRK	22,800,000	2,964,000
63	Integrated Territorial Investment - IT Park			MRDEUF	MRDEUF / ITI IB UA Osijek	CFCA	OPCC	HRK	30,384,615	3,950,000
64	Integrated Territorial Investment - Innovation Infrastructure Slavonski Brod			MRDEUF	MRDEUF / ITI IB UA Slavonski Brod	CFCA	OPCC	HRK	13,712,235	1,782,591

N.	PROGRAM /INSTRUMENT FULL NAME	S3 INSTRUMENT	SFI INSTRUMENT	MANAGING AUTHORITY	MINISTRY (INTERMEDIATE BODY 1)	IMPLEMENTING AGENCY (INTERMEDIATE BODY 2)	SOURCE OF FINANCING	ORIGINAL CURRENCY	BUDGET (TOTAL WITHIN FINANCIAL PERSPECTIVE) IN ORIGINAL CURRENCY	BUDGET (TOTAL WITHIN FINANCIAL PERSPECTIVE) IN EUR [28]
65	Integrated Territorial Investment - System of Startup Incubators Rijeka			MRDEUF	MRDEUF / ITI IB UA Rijeka	CFCA	OPCC	HRK	39,829,088	5,177,781
66	Integrated Territorial Investment - Development of Business Support Organisations Split			MRDEUF	MRDEUF / ITI IB UA Split	CFCA	OPCC	HRK	22,085,676	2,871,138
67	Croatian Venture Capital Initiative (Fil Rouge Capital)	Yes*	Yes	MRDEUF	European Investment Fund	Fil Rouge Capital	OPCC	EUR	39,550,000	39,550,000
68	Scheme for strengthening applied research for climate change adaptation measures			MRDEUF	Ministry of Environmental Protection and Energy	Environmental Protection and Energy Efficiency Fund	OPCC	HRK	34,200,000	4,446,000
								Total:		1,084,058,644
	651,585,281							S3 (main instruments):		651,585,281
								S3 (all related or tracked instruments):		848,273,744
	562,272,663							SFI:		562,272,663

Source: Staff elaboration based on S3, S3 Action Plan 2019-2020 (May 2019), Report on Implementation of the SFI 2015–2018 (September 2019).
Note: * denotes instruments that are listed in the S3 Action Plan as contributing to the S3 but are not limited to S3 TPAs. CFCA = Central Financing and Contracting Agency; ERDF = European Regional Development Fund; HRZZ = the Croatian Science Foundation; IB = Intermediate Body; ICT = information and communication technology; ITI = integrated territorial investment; MLPS = Ministry of Labor, Pension System, Family and Social Policy; MRDEUF = Ministry of Regional Development and EU Funds; MSE = Ministry of Science and Education; OPCC = Operational Program Competitiveness and Cohesion; UA = urban agglomeration.

Appendix III. What is institutional capacity, and how can we measure it?

Definitions of institutional capacity relate to the ability of organizations to achieve their objectives. In general, capacity is defined "simply as the ability to perform functions, solve problems, and set and achieve objectives."[29] The United Nations Development Programme (UNDP) and United Nations Disaster Risk Reduction Offices (UNISDR) define institutional capacity as "the capability of an institution to set and achieve social and economic goals, through knowledge, skills, systems, and institutions."[30]

Closing the gap between existing capacities and the institutional capacities required for improved or "optimal" S3 is not a trivial challenge. First, the current institutional capacity needs to be described and analyzed. Second, best practices related to S3 implementation need to be taken into consideration. Finally, recommendations for further development of different aspects of institutional capacity need to be elaborated and implemented, and their effects need to be monitored. S3 entails an interactive process of policy co-creation without a specified endpoint but with discernible effects on the performance of the national innovation system.

The S3 requires institutional capacity beyond the state capacity and involves multiple stakeholders involved in policy co-creation. State capacity denotes the capacity of individual ministries or agencies to credibly implement official goals by deploying a portfolio of policy instruments.[31] The S3 requires much more horizontal communication among state bodies. Moreover, the entrepreneurial discovery process, which is an essential component of the S3, requires policy to be designed in coordination with stakeholders in the process of policy co-creation. For this process to take place, state capacity alone is not sufficient. There is a need to coordinate policy activities across the range of stakeholders.

Consequently, the institutional capacity for S3 is not a simple summation of the capacities of individual organizations. It also includes inter-relationships among organizations, and rules and processes that prescribe roles for actors constrain activity and shape expectations.[32] The relevance of institutional capacity is widely acknowledged, but it is often difficult to define it in specific terms and measurable ways.

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29 Fukuda-Parr, S., Lopes, C. & Malik K., 2002, "Overview: Institutional Innovations for Capacity Development", in Fukuda-Parr, S., Lopes, C. & Malik K (eds.), *Capacity for Development, New Solutions to Old Problems*, New York: UNDP & Earthscan, pp.1-21. Available at: https://www.undp.org/content/undp/en/home/librarypage/capacity-building/capacity-for-development-new-solutions-to-old-problems-full-text.html

30 https://www.itdp.org/2016/04/01/the-secret-ingredient-institutional-capacity

31 Cingolani L., 2018, The Role of State Capacity in Development Studies, *Journal of Development Perspectives*, Vol. 2, No. 1-2, pp. 88-114.

32 Keohane, R., 1988, "International Institutions: Two Approaches." *International Studies Quarterly*, 32, pp. 379-396. In Willems, S. and Baumert, K., 2003, *Institutional Capacity and Climate Actions*, OECD Environment Directorate & International Energy Agency, OECD, Paris. Available at: https://www.oecd.org/env/cc/21018790.pdf

Five levels of institutional capacities are usually distinguished. These include individuals, organizations, and institutional context; the institutional context can be divided further into networking capacities, public governance and social norms, values, and practices (Figure III.1). The individual level is concerned with the skills and performance of individuals, including their workload, motivation, competencies to perform their jobs, availability of training, incentives, etc. The organizational level is related to management capacity, including their mission, internal organization, availability of resources, ability to respond to change, etc. Networking capacities are related to efficient horizontal linkages across organizations that transcend organizational hierarchies; networking activities should entail participation of key actors, clear rules, procedures and responsibilities, availability of resources, as well as adaptability. Public governance comprises the regulatory framework and public sector setting; applicable laws and regulations and the overall effectiveness of the public sector in fulfilling its functions also influence the institutional capacity in specific policy domains. This level covers issues ranging from the institutional setup and rule of law to the quality of public administration and the ability of citizens, associations, and other policy actors to voice their concerns. Finally, social norms, values, and practices provide the context in which all levels function and hinder or facilitate the institutional capacity.

Figure III.1 A holistic view of institutional capacity
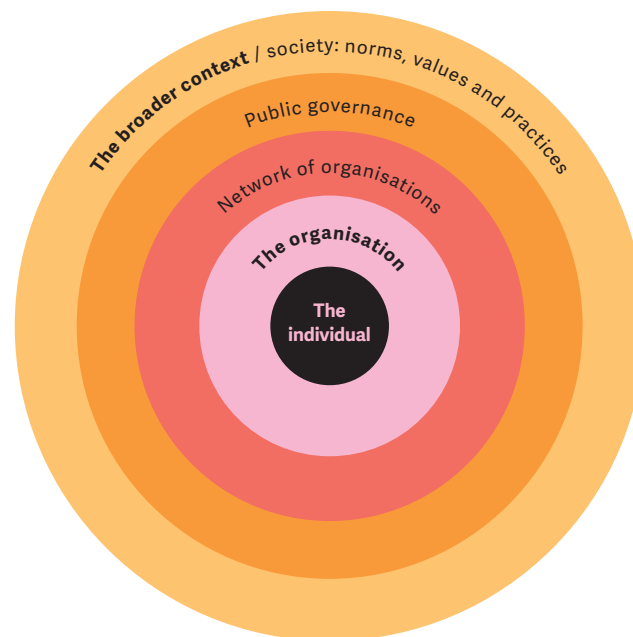
Source: Willems and Baumert (2003), adapted from Sagnestam et al., (2002).[33]

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33 Segnestam, L., Persson, Å., Nilsson, M. and Arvidsson, A., 2002, *Country Environment Analysis, A Review of International Experience,* Stockholm: Stockholm Environment Institute, draft.

In S3, each of these elements plays a vital role in generating the overall institutional capacity. As in other policy areas, individuals' performance depends on motivation, clear definition of jobs and corresponding skills, available training, the right incentives, etc. The performance of organizations depends on the clarity of their mission, on appropriate resources and management practices for such missions, on technical and organizational capacities.

Most crucially, the S3 also requires cooperation between the government and other public and private organizations, businesses, or other non-governmental organizations. S3 requires the active participation of business and academia in policy design, implementation, and evaluation. The ability to network—or cooperate—between different organizations within the national innovation system is paramount to S3 policy effectiveness. The activities of individuals, organizations, and networks are embedded in the regulatory framework or S3 governance rules determined at various levels of jurisdiction. Some rules and regulations are applied to the whole European Union, some are specific to particular countries, and some may only apply to specific sectors or individual organizations. The regulatory framework and public sector setting (i.e., public governance) may therefore inhibit or facilitate S3 activities and, consequently, contribute to or hinder the achievement of policy objectives. Finally, the administrative culture of the public sector and the attitude towards collaboration and participation are significant elements of institutional capacity for S3.

Institutional capacity can be assessed by setting criteria for each of its elements, which may be challenging. The challenge is to operationalize these criteria, especially as we climb up towards higher institutional capacity levels such as regulatory framework and social norms and practices; the relevant factors at these levels may be difficult to observe directly. Developing a comprehensive methodology that satisfies all these requirements is outside the scope of this report.

An alternative approach would be to analyze the policy process and the functions that need to be performed to achieve a policy objective. Institutional capacities for S3 include strategy-setting capacities, coordination, implementation (technical, operational, and policy capabilities), and M&E capacities.[34] Following this approach, we can assess the institutional capacity for implementing S3 policies, designing strategies, and setting policies.

There are some common mistakes related to capacity development in general and S3 institutional capacity in particular. It is common to focus efforts on capacity development to implement policies, with little capacity left for strategic assessment or policy design. As pointed in Willems and Baumert (2003: 15-16), "this may result in a lack of long-term view and in badly designed policies. (...) Also, lack of capacity in the monitoring and reporting may lead to difficulty to sustain policy efforts, as information is lacking to improve policies over time. (...) Also, it may be that a sophisticated strategy has been elaborated, yet there are no means of implementation." We conclude that the assessment of institutional

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34 Radošević, S., 2020, Benchmarking Innovation Policy in Catching Up and Emerging Economies: Methodology for Innovation Policy Index. UCL Centre for Comparative Studies of Emerging Economies Working Papers 2020/1. Available at: https://discovery.ucl.ac.uk/id/eprint/10098709/

capacities cannot be confined to implementation but also needs to include strategy design, M&E capacities, and in the context of S3, especially, policy co-creation capacities.

Assessment of institutional capacity is crucial to understanding the ability of organizations to achieve the objectives set out in the S3 policy. This is not limited to the capacity for implementation but also includes capacity for policy design. S3 is a new type of innovation industrial policy which is co-created or shaped through a continuous entrepreneurial discovery process (Radošević, Curaj, et al. 2017). Institutional capacity assessment should thus cover all these aspects.

Due to the complexity of its design and the number of stakeholders involved, the S3 governance structure requires significant efforts in both intra- and inter-institutional coordination. For most of the key institutions in the system, at least two separate organizational units are involved in governing different aspects of the S3. For example, implementation activities are often separated from activities related to programming and design. One organizational unit usually performs the designated ESIF role in managing the implementation of individual programs and instruments. At the same time, separate organizational units are in charge of the policy design aspect of S3 or other sectoral policies, interaction with S3 advisory councils, or the work of the entrepreneurial discovery process structures. Therefore, effective coordination is essential both within and among institutions.

The approach for the assessment of institutional capacities for S3 in Croatia is a combination of a functional ("horizontal") approach combined with elements of a "vertical" approach. The analysis of institutional capacities is structured across four areas:

- Institutional capacity for policy design,

- Institutional capacity for policy co-creation,

- Implementation capacity,

- Monitoring & evaluation capacity.

A modular semi-structured questionnaire (available in Appendix IV) was employed to gather information from policy makers and stakeholders. That has been the primary source of information and evidence on the individual, organizational, and inter-organizational (collaborative) capacities within each of the aforementioned areas. In the rest of this section, we briefly explain critical issues explored in each of the four functional areas of S3 institutional capacities.

Institutional capacity for policy design refers to the capacity to design S3 and its policy instruments. The main issue is the analytical capability required to identify innovation constraints and opportunities. Institutional capacity for policy design includes adoption, revision, S3 strategic management, the cooperation of institutions represented in the National Innovation Council and the Inter-ministerial Working Group, and their interaction with the S3 Advisory Councils. It is important to assess to what extent policy design capability is: a) properly institutionalized and resourced in ministerial departments; b)

derived from external organizations (e.g., international organizations or external advisors); or c) derived from a "combined approach," i.e., in-house but with the analytical support of external organizations.

Institutional capacity for policy co-creation refers to joint formulation and negotiation of policy objectives and instruments between public and private stakeholders. The entrepreneurial discovery process governance structure is the organizational arrangement for S3 policy co-creation, involving also non-governmental stakeholders. The development of the entrepreneurial discovery process capacity can be considered an implicit objective of Croatian S3, as several instruments, designated as strategic projects, were expected to facilitate the entrepreneurial discovery process. Such instruments, including the CCI Project, the INI Project, and the Foresight Project, are all aimed at either improved institutional capacity for policy co-creation or providing inputs to be utilized in the entrepreneurial discovery process, or both.

Implementation capacities refer to the capacity of implementation stakeholders to achieve policy objectives effectively and efficiently. This capacity includes the technical, operational, and policy capabilities of the institutions responsible for launching and implementing the S3 instruments. Technical capabilities comprise all the knowledge and expertise required to implement innovation policy instruments. Examples of technical capacity are selecting the best business plans, selection of R&D programs, design of R&D tax incentives, or managing cluster development. Operational capabilities include managerial skills, that is, the ability to run an organization with high professional standards, efficiency, and results. Policy capabilities include the ability to secure the relevant authorities' support and their capacity to ensure administrative and human resources for the independent implementation of tasks.

M&E capacity refers to the capacity to systematically collect and analyze information and use it to assess project, program, or policy performance. M&E capacity is an essential aspect of the institutional organization and implementation capacity of innovation policy. However, it is also an independent activity whose aim is to ensure that policy makers learn systematically from issues that arise during policy implementation.

Appendix IV. Institutional capacity questionnaire

MODULE I. S3 POLICY GOVERNANCE

This section aims to assess the capacities of institutions involved in S3 policy governance. Roles and responsibilities covered by the term "policy governance" include S3 policy design, adoption, revision, S3 strategic management, and S3-level M&E.

Institutions to be interviewed:
Ministry of Science and Education; Ministry of Economy and Sustainable Development; Ministry of Regional Development and EU Funds; Ministry of Labor, Pension System, Family and Social Policy; HAMAG-BICRO.

1. **Organizational capacities for S3 policy governance**
a. Do you have an organizational unit that is responsible for S3 policy governance?
b. If yes, does this organizational unit perform other tasks that are not S3 related?
c. If yes, can you estimate the average share of workload assigned to the S3 activities?

2. **Institutional capacity for strategic planning and policy design**
a. What is the number of staff positions allocated to strategic planning and policy design?
b. How many of these positions are filled? Explain.
c. Did you experience problems in recruiting personnel? Explain.
d. Were there any significant organizational changes relevant to the S3 process in recent years (e.g., in the number of staff or organizational units involved)? Explain.
e. According to your assessment, does the staff employed possess adequate technical and operational competencies (i.e., professional experience, training completed, managerial skills)?

3. **Coordination between policy design and implementation activities** [35]
a. Is the same organizational unit or staff involved in S3 policy governance tasks also engaged in the implementation (management) of S3 instruments? Why?
b. If the staff or unit responsible for S3 policy does not perform all the activities, but other units perform them, what are the usual nature, challenges, and frequency of cooperation between them?
c. Is your organization or unit involved in other policy design and implementation activities relevant to the S3 thematic priority areas? Explain.

4. **The involvement in the S3 process**
a. Compare your institution's expected involvement in the S3 policy governance with the actual participation so far. Explain.
b. How do you assess your institution's involvement in S3 policy coordination bodies (e.g., the National Innovation Council, the Inter-ministerial Working Group)?

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[35] Implementation activities in this context include designing and launching S3 programs, their implementation and monitoring at program and project levels (e.g., role of Managing Authority or Intermediate Body for RDI programs in the ESIF system).

5. Benefits, costs, and capacities of collaboration on the S3 activities

a. Has cooperation with other organizations/units on management and implementation of S3 policy improved or decreased the effectiveness and quality of your and their performance? Explain.

b. What are the main challenges in collaborative design and implementation of S3 policy? Explain.

c. Has your collaboration been affected positively or negatively by staff availability and quality? Explain.

6. Competencies for management and implementation

a. Have you performed a self-assessment of competencies for managing and implementing the S3 policy?

b. If not, why not?

c. If yes, what were the results?

d. Have you undertaken any further measures based on self-assessment?

e. If not, why not?

f. If yes, what were these measures? Explain.

7. Training needs

a. In which areas should your organization receive training which could help to perform better in performing tasks regarding S3 policy governance? Explain.

8. Institutional capacities and resources

a. In your opinion, does your organization/unit possess adequate capacity (resources) for conducting the following activities in S3 policy governance? Rate each item on a scale from 1 (low) to 5 (high) and explain.
   i. strategy setting capacities,
   ii. coordination,
   iii. implementation (technical, operational, and policy capabilities),
   iv. M&E capacities.

b. In your opinion, do the following factors negatively or positively affect the performance of your organization? Rate each item on a scale from 1 (negative) to 5 (positive) and explain.
   i. number of staff given workload,
   ii. staff salaries,
   iii. organizational conditions and management.

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MODULE II. S3 IMPLEMENTATION GOVERNANCE

This section aims to assess the capacities of institutions involved in implementing the S3 programs and projects. The questions cover design, implementation, and monitoring of S3 programs, at the level of individual institutions responsible for S3 instruments (e.g., managing authorities and Intermediate Bodies for ESIF OPs, program managers of S3 instruments funded from other sources).

Institutions to be interviewed:
Ministry of Science and Education; Ministry of Economy and Sustainable Development; Ministry of Regional Development and EU Funds; Ministry of Labor, Pension System, Family and Social Policy; Croatian Science Foundation; HAMAG-BICRO (IB2).

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1. **Alignment of the S3 implementation activities with the S3 policy**
   a. Is the same organizational unit or staff involved in *implementing* the S3 programs and their *programming and design*?
   b. If yes, explain.
   c. Are you cooperating with other organizations/units in the design or implementation of S3 instruments?
   d. If yes, what are the nature, challenges, and effectiveness of such cooperation?

2. **The performance in implementation of S3 instruments**
   a. Do you have a sufficient number of personnel to effectively manage (implement) the S3 instruments you are responsible for? Explain.
   b. Have you experienced difficulties due to the high turnover of personnel? Explain.
   c. Is the implementation of S3 instruments in the domain of your institution going according to the plan? Explain.
   d. Were there any significant delays or challenges in the implementation of these instruments? Explain.
   e. What are the main factors influencing the performance? Explain.
   f. Are there challenges in implementation due to lacking knowledge and expertise required to implement innovation policy instruments? Explain.
   g. Are there challenges in implementation due to managerial skills, that is, the ability to run an organization with expected professional standards, efficiency, and results? Explain.
   h. Are there challenges in implementation due to complex rules and procedures? Explain.
   i. Are there challenges in implementation due to the fragmentation of activities across several organizations? Explain.

3. **Competencies for management and implementation**
   a. Have you performed a self-assessment of competencies for managing and implementing the ERDF and Cohesion Fund sponsored programs? (The Competency Framework includes competencies needed by administrations managing or implementing the ERDF/Cohesion Fund[36])
   b. If not, why not?
   c. If yes, what were the results?
   d. Have you undertaken any further measures based on self-assessment?
   e. If not, why not?
   f. If yes, what were these measures? Explain.

4. **Training needs**
   a. In which areas should your organization receive training that could help it perform better in performing tasks regarding S3 implementation governance? Explain.

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[36] https://ec.europa.eu/regional_policy/en/policy/how/improving-investment/competency/

5. **Institutional capacities and resources**
a. In your opinion, does your organization/unit possess adequate capacity (resources) for conducting the following activities in S3 implementation governance? Rate each item on a scale from 1 (low) to 5 (high) and explain.
    i.   strategy setting capacities,
    ii. coordination,
    iii. implementation (technical, operational, and policy capabilities),
    iv. M&E capacities.
b. In your opinion, do the following factors negatively or positively affect the performance of your organization? Rate each item on a scale from 1 (negative) to 5 (positive) and explain.
    i.   number of staff given workload,
    ii. staff salaries,
    iii. organizational conditions and management.

MODULE III. INTER-INSTITUTIONAL COLLABORATION IN THE S3 GOVERNANCE SYSTEM

This section's questions refer to the overall functioning of the S3 governance and the inter-institutional cooperation of institutions represented in the National Innovation Council, Inter-ministerial Working Group, and the S3 Advisory Councils. It also looks at capacities and challenges in intra-institutional collaboration for institutions that perform multiple functions in the S3 system.

Institutions to be interviewed:
Ministry of Science and Education; Ministry of Economy and Sustainable Development; Ministry of Regional Development and EU Funds; Ministry of Labor, Pension System, Family and Social Policy; HAMAG-BICRO (Technical Secretariat and IB2).

1. **Assessment of the overall functioning of the S3 governance structure?**
a. What are the major weaknesses in the governance system of S3? Explain.
b. Which are the well-functioning activities in the S3 governance system? Explain.
c. Which are the well-functioning organizations in the S3 governance system? Explain.
d. Is interaction (communication) among the governance bodies involved in the S3 system effective? If not, explain.
e. Is vertical communication between the National Innovation Council and other bodies satisfactory? Explain.
f. What changes in the S3 governance system in the past planning period do you consider positive or negative? Explain.
g. Is there a space for improvement of the S3 governance system? If yes, explain.
h. At the overall S3 level, how would you assess technical capacities (knowledge and expertise for implementation) for strategy development and priority setting? Explain.
i. At the overall S3 level, how would you assess operational (managerial) capacities for strategy development and priority setting? Explain.

2. **Inter-sectoral collaboration**
a. How do you assess cooperation between S3 managing bodies and other national science and innovation policy bodies? Explain.
b. How do you assess cooperation between public administration with business and academic organizations in the governance of S3?
c. Could you specify positive and negative examples of the cooperation?
d. Assess the role of Thematic Innovation Platforms in the S3 governance system. Explain.
e. What were the key contributions of Thematic Innovation Councils in the S3 process?
f. How have the Croatian Competitiveness Clusters been involved in S3 processes? Explain.

3. **Intra-institutional (inter-unit) collaboration**
a. Are different or the same units/staff in your organization involved in policy governance and implementation?
b. Are the same units also involved in implementing institutional projects (i.e., INI Project, Cluster Project, Foresight Project)?
c. How do you assess the degree of collaboration among different units in your institution involved (for instance, in policy design, implementation, evaluation, etc.)?
d. Is your collaboration informal or formal? Explain.

4. **Inter-institutional collaboration**
a. Assess the degree and nature of collaboration of your unit with policy governance bodies?
b. Assess the degree and nature of collaboration of your unit with implementation governance bodies?
c. Is your collaboration informal or formal? Explain.
d. Did you have any collaborative activities with Thematic Innovation Council? Explain

5. **Collaboration in data collection, monitoring, and evaluation**
a. What are the main challenges of S3 monitoring in practice?
b. What are the strong and weak points of the monitoring process?
c. How do you assess collaboration in data collection and monitoring? Explain.
d. How are outputs and outcomes monitored at the TPA level? Explain
e. Were there any measures introduced to upgrade the monitoring and evaluation system on the S3 level, or are there plans to do so in the future?
f. How do you assess the quality and relevance of evaluations performed at the level of individual S3 instruments or programs (e.g., OPCC evaluations)? Are they coordinated with the S3 evaluations (in terms of their timing, evaluation questions and contents, etc.)?
g. Are achievement indicators consolidated across different institutions' instruments or various funding sources or monitoring systems (i.e., instruments from ESIF, state budget, etc.)? Explain.

6. **Inter-institutional collaboration in the post-2020 period?**
a. How do you assess your institutional capacity for preparing the upcoming financial perspective and S3 revision?
b. Do you plan any significant changes (such as organizational)?
c. Please indicate some examples of policy learning from S3 implementation in the current period relevant to continuing the S3 process. Explain.
d. Do you plan to execute the forthcoming process of S3 planning with your own resources or with the involvement of external experts? Explain.

MODULE IV. EDP GOVERNANCE (FOR STATE INSTITUTIONS)

EDP governance is about institutions' involvement in the entrepreneurial discovery process (EDP) and interaction with triple-helix S3 stakeholders, continuity and outputs of the EDP, and use of EDP results. It includes the institutional strategic projects designed to support the S3 process, namely the Strategic Project to Support Competitiveness Clusters Initiatives (CCI Project), the Strategic Project to Support the Establishment of Innovation Network for the Industry and Thematic Innovation Platforms (INI Project), and the Strategic Project Science and Technology Foresight (Foresight Project).

Institutions to be interviewed:
Ministry of Science and Education; Ministry of Economy and Sustainable Development; Ministry of Labor, Pension System, Family and Social Policy; Croatian Chamber of Economy.

1. **EDP activities in post S3 adoption period**
   a. What was your involvement in the EDP activities after the S3 adoption? Explain.
   b. Compare planned with the realized achievements of the EDP activities of your organization?
   c. If you were not directly involved, are you familiar with EDP activities conducted after S3 adoption? Explain.
   d. Has your institution had any interaction with the Thematic Innovation Platforms? Explain.

2. **The S3 institutional strategic projects**
   a. Has your institution been involved in the S3 institutional strategic projects (CCI Project, INI Project, Foresight Project)? Explain.
   b. What are the main challenges involved in implementing the S3 institutional strategic projects? Explain.
   c. Are there challenges in implementation due to lacking knowledge and expertise required to implement these instruments? Explain.
   d. Are there challenges in implementation due to managerial skills, that is, the ability to run these projects with expected professional standards, efficiency, and results? Explain.
   e. Are there challenges in implementation due to lack of support or lack of administrative and human resources for implementing the S3 institutional strategic projects? Explain.
   f. Are there challenges in implementation due to the fragmentation of activities and/or poor coordination across several organizations? Explain.

3. **Training needs**
   a. In which areas should your organization receive training which could help to *design* the EDP activities better? Explain.
   b. In which areas should your organization receive training that could help perform better in *implementing* S3 institutional strategic projects?

4. **Institutional capacities and resources**
   a. In your opinion, does your organization/unit possess adequate capacity (resources) for conducting the following activities in EDP governance? Rate each item on a scale from 1 (low) to 5 (high) and explain.
      i. strategy setting capacities,
      ii. coordination,
      iii. implementation (technical, operational, and policy capabilities),
      iv. M&E capacities.
   b. In your opinion, do the following factors negatively or positively affect the performance of your organization? Rate each item on a scale from 1 (negative) to 5 (positive) and explain.
      i. number of staff given workload,
      ii. staff salaries,
      iii. organizational conditions and management.

MODULE V. EDP GOVERNANCE (FOR THE BUSINESS SECTOR AND ACADEMIA)

This module seeks to assess the quality of the EDP process by the non-governmental stakeholders involved in the S3 process. Non-governmental stakeholders are the representatives of the business sector and academia involved in the work of the five Thematic Innovation Councils established for the S3 thematic priority areas.

Stakeholders to be interviewed: Thematic Innovation Councils.

1. **Collaboration with policy managers and other S3 stakeholders (businesses and academia)**
   a. How do you assess the Thematic Innovation Council interaction with the Thematic Innovation Council managers (the Ministry of Economy and Sustainable Development) and Thematic Innovation Council secretariat (the Croatian Chamber of Economy)?
   b. Has your Thematic Innovation Council contributed to the generation of trust between participants from the business sector, academia, and public sector institutions? Explain.
   c. How do you assess your involvement in the National Innovation Council and the Innovation Council for Industry? Explain.
   d. Do you have any interaction with the Croatian Competitiveness Clusters? Explain.

2. **Motivation and benefits**
   a. What is the main benefit for your organization from the Thematic Innovation Council involvement?
   b. Has your engagement in the Thematic Innovation Councils fulfilled your expectations? Explain.
   c. To what degree are the Thematic Innovation Councils' activities and objectives aligned with your organization's goals and activities? Explain.
   d. Do you expect a significant, moderate, or minor impact on your RDI capacity and performance as a result of your Thematic Innovation Council involvement (e.g., introducing new products, increased sales, exports, employment, future RDI investments, etc.)?
   e. Do you intend to be involved in the future in the Thematic Innovation Council activities? Explain.
   f. If not, what would motivate you to be involved?

3. **Perceived performance**
   a. In general, how do you assess the Thematic Innovation Council activities so far? Explain
   b. In your opinion, to what extent have the Thematic Innovation Councils achieved the following:
      i. Identification of priorities of TPAs,
      ii. involvement in the S3 consultation in the design of S3 instruments,
      iii. in the allocation of funding on the TPA level,
      iv. in the revision of S3 priorities,
      v. generation of cooperation and joint projects funded through S3 sponsored programs,
      vi. generation of new collaborative activities not directly related to S3 or funded through S3 programs.
   c. Does Thematic Innovation Council have an adequate membership structure for the sector's strategic leadership role(s)? Explain.
   d. Does Thematic Innovation Council have adequate administrative and other support? Explain

4. **The S3 institutional strategic projects**
   a. How do you assess the support to the Thematic Innovation Councils provided by the INI Project? Explain.
   b. Are you familiar with other institutional strategic projects currently implemented (Strategic Project to Support Competitiveness Clusters Initiatives and Strategic Project Science and Technology Foresight)? Explain.
   c. If yes, have you had any interaction with them or used the outputs they produced? Explain.

5. **Future engagement**
   a. Has your Thematic Innovation Council been involved in any strategic planning and programming activities for the upcoming planning period? Explain.
   b. How do you see the future role of the Thematic Innovation Council? Explain.
   c. What are the requirements or preconditions for such a role of the Thematic Innovation Council? Explain.

Appendix V. Organizational model for real-time M&E of S3 policies and funded programs

Establishing an S3 M&E network would allow for a more responsive and agile M&E system. Actors involved in conventional policy processes learn about weaknesses in either policy design or process only ex-post. Traditional M&E mechanisms focus on compliance, with a linear process of design, followed by implementation, allowing for "lessons" only at the end programming period, when it is already too late to make adjustments. The purpose of the S3 M&E network would be to override this traditional process by providing a mechanism for continuous and real-time adjustments based on available data and information. The S3 M&E network should enable those designing and implementing programs to identify gaps, simplify processes, enable synergies, and find new solutions. Hence, the S3 M&E network would enable improvements and adaptations to previously agreed processes and procedures as challenges become apparent and new solutions are needed.

The S3 M&E network is an institutionalized organizational platform that is a permanent structure for identifying gaps, challenges, and areas for improvem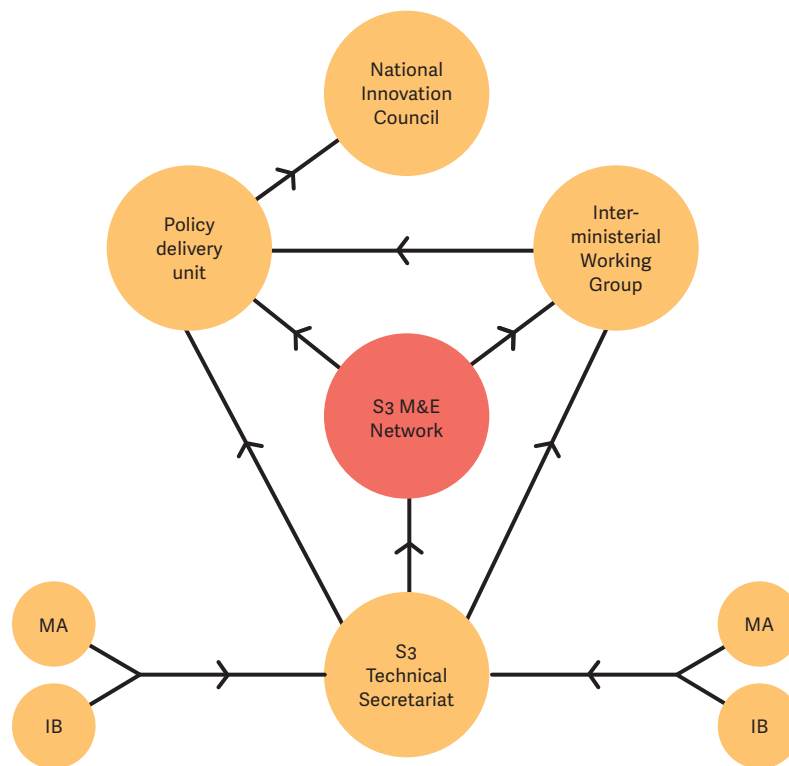ent in the S3 design and implementation process. The S3 M&E network explores these issues through a structured deliberation process facilitated and moderated by external neutral representatives (moderator and facilitator) and assisted when required by invited experts. The S3 M&E network would be a formal part of the governance system. Its members would have the responsibility and authority to adjust procedures as the network detects issues and identifies solutions. Meetings take place monthly on fixed days and times. The S3 M&E network is composed of the following members:

- **Moderator**: Manager and coordinator of the process. Knows well the respective policy area and commands the respect of the network members. Received training in learning networks.

- **Facilitator**: Trained methodologist whose duty is to structure deliberations of the network. Received training in learning networks.

- **Network members**: Managing Authorities, Intermediate Bodies, users (beneficiaries), the policy delivery unit, other stakeholders. Appointed individuals are representing an organization (stakeholders) - with executive power. Maximum 15 people can form one network.

- **Invited experts**: Individuals with extensive experience and qualifications invited to provide inputs, depending on the issue.

Members of the S3 M&E network may resolve issues directly or escalate to other S3 governance bodies as needed. Figure V.1 presents the position of the S3 M&E network in the context of other governing bodies. Members of the S3 M&E network should be individuals with executive power who have the authority to initiate changes in their organizations' procedures to resolve issues identified by the network. When network members

cannot resolve issues, they should be addressed to the Inter-ministerial Working Group (for operational issues) or the proposed policy delivery unit (for issues related to program design). Given that members of the Inter-ministerial Working Group are also likely to be members of the M&E network, most operational matters should be resolved within the M&E network. Strategic issues identified by the M&E network can be escalated to the National Innovation Council via the proposed policy delivery unit (see recommendation 1a in section 5.1). The S3 Technical Secretariat would provide logistical and analytical support to the M&E network.

Figure V.1 Position of the S3 M&E network in the S3 governance landscape

Source: Staff elaboration.