

***Enhancing the sustainable development component
in the Action Plan of the STI for SDGs Roadmap in Serbia***



1. BACKGROUND

June 2022

Serbia is the first country to successfully adopt the Science, Technology and Innovation (STI) for Sustainable Development Goals (SDGs) Roadmap based on the smart specialisation approach as a part of the Global Pilot Programme on STI for SDGs Roadmaps, supported by the Joint Research Centre (JRC) of the European Commission and UNIDO.

Starting in 2017, Serbia launched its Smart Specialisation process, coordinated by an Inter-ministerial working group for the development of the Research and Innovation Strategy for Smart Specialisation established by the Ministry of Education, Science and Technological Development (European Commission, 2022).

Consequently, Serbia entered the UN Global Pilot Programme on STI for SDGs Roadmaps in the first group of pilot countries. Supported by JRC and UNIDO, Serbia committed to include sustainable development aspects into the Smart Specialisation Strategy of the Republic of Serbia for the period 2020–2027 (hereinafter: Serbia's Smart Specialisation Strategy - 4S) adopted in 2020. In 2021, the Action Plan for the period 2021–2022 for the implementation of the Smart Specialisation Strategy (hereinafter: Action Plan) designed as the STI for SDGs Roadmap, was developed and adopted (European Commission et al., 2021). Because of its successful design and implementation, the Roadmap itself and Serbia's experience can be effectively used as an example of best practice in the development of STI roadmaps for sustainable development and was included into the "Guidebook for the Preparation of Science, Technology and Innovation (STI) for SDGs Roadmap" (the Guidebook) (UN-IATT and EC/JRC, 2021).

Within the framework of the Global Pilot Programme, Serbia participated in the development of a pilot methodology for mapping Sustainable Development Goals in the context of Smart Specialisation Strategies, the result of this process was embedded in the current

SUMMARY

Serbia is one of the first countries to join the Global Pilot Programme on STI for SDGs Roadmaps. Supported in this process by the Joint Research Centre (JRC) of the European Commission and UNIDO, the country developed its roadmap using the smart specialisation approach. This policy brief provides an overview of the process and methodology adopted by Serbia to embed the Sustainable Development Goals into its Smart Specialisation Strategy. Additionally, it provides examples of research and innovation projects funded and implemented in line with national SDGs priorities. Finally, this brief provides recommendations to further strengthen the sustainability component of the stakeholders' dialogue process and the preparation of the new action plan.

Action Plan. Serbia is currently updating the Action Plan and plans to strengthen further the SDGs component.

This policy brief analyses the key stages and components of the development and implementation of the STI for SDGs roadmap. It provides an overview of the approach used to link STI priority areas to SDGs challenges in the Action plan, as well as the approach used for stakeholders' involvement in collaborative decision-making, and the implementation of the action plan. Finally, the policy brief provides recommendations for a possible approach to integrate further the SDGs into the Entrepreneurial Discovery Process¹ and the Action plan monitoring system. This brief provides a practical example of the development of an STI for SDGs Roadmap based on the smart specialisation approach. It is thus of relevance to policymakers worldwide, interested in the development of the STI for SDGs Roadmap.

¹ In Smart Specialisation methodology, it is the stakeholders' dialogue phase during which investments are prioritised based on an inclusive

and evidence-based process driven by actors' engagement and attention to market dynamics.



2. APPROACH AND METHODS

In this brief, we analyse the development of the [Serbian STI for SDGs Roadmap](#) based on the Guidebook for the preparation of STI for SDGs roadmaps and the JRC methodological framework for smart specialisation for SDGs². In addition, it draws on the [Pilot methodology for mapping Sustainable Development Goals in the context of Smart Specialisation Strategies](#) developed for Serbia and is based on the analysis of the Action plan implementation, including horizontal activities and key vertical projects to support concrete priority areas. Relevant information was obtained through expert interviews and fieldwork with the stakeholders working on the STI for SDGs Roadmap in Serbia.

- scientometric identification of the STI potential,
- identification of the national STI capacity gaps and partnerships.

The development of the Strategy and Action plan included creation of a unique policy framework at the intersection of the STI, SDG and smart specialisation policies, analysis of economic, innovative, technological and scientific potential to address the SDGs with further selection of priorities and corresponding policy measures, the monitoring and financial framework and the organisational framework for implementation. The complex and holistic nature of the mapping allowed an extensive elaboration of the existing SDGs challenges in the context of the priorities identified in Serbia's Smart Specialisation Strategy. The analysis resulted in the meaningful inclusion of the sustainability dimension in the Action Plan and a summary of the potential impact of the Smart Specialisation on the selected SDGs.

The mapping of the scientific, innovative and technological potential in SDGs context (Fig 1) allowed the identification of stakeholders and their networks that could be mobilised to address these challenges (Fig. 3) as well as the development of mechanisms to analyse how Smart Specialisation priority domains could contribute to the SDGs.



3. ELABORATION OF THE SERBIA'S SMART SPECIALISATION STRATEGY AND THE ACTION PLAN

In 2018, JRC started methodological reflection on development of the STI for SDGs Roadmaps based on the integration of the SDGs in Smart Specialisation Strategies, widely adopted and implemented in the EU member states and regions, as well as in enlargement and neighbourhood countries and economies (European Commission et al., 2021).

Following this approach, Serbia's pilot mapping of the SDGs in the context of Smart Specialisation Strategy included:

- Analysis of existing policy mandates based on the analysis of the national SDG framework. The analysis takes into account the main challenges indicated in official documents on SDGs
- Statistical analysis of sustainability challenges: a statistical assessment based on data available for the SDG indicators at goal and target levels
- stakeholder and expert validation of the SDGs challenges,

² See methodological background here: [Overview of the existing STI for SDGs roadmapping methodologies - Background paper](#)
[Progress Report of the Global Pilot Programme on STI for SDGs Roadmaps](#); [Addressing sustainability challenges and Sustainable](#)

[Development Goals via Smart Specialisation. Towards a theoretical and conceptual framework](#); [Smart Specialisation, Sustainable Development Goals and Environmental Commons](#)

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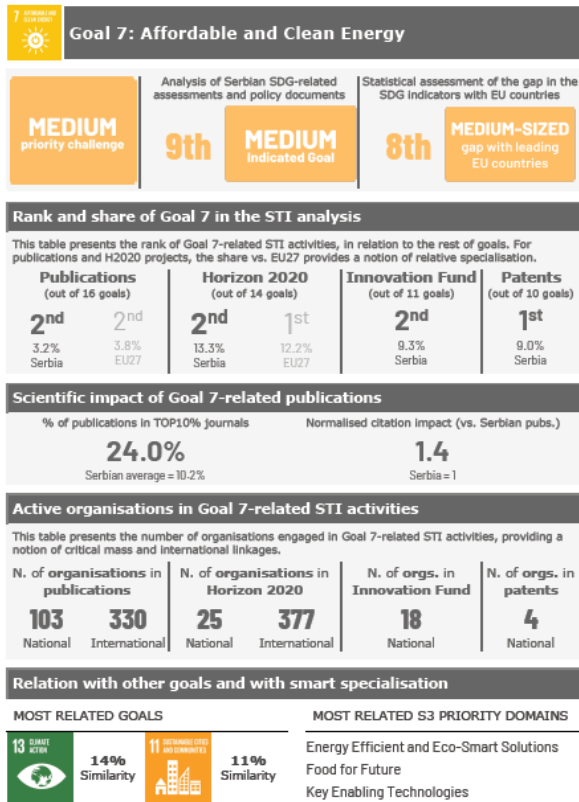


Figure 1 - Summary of mapping results for SDG 7

The results of the mapping included in the Action Plan give an overview of the preliminary impact analysis of Serbia's smart specialisation strategy (Fig. 2).

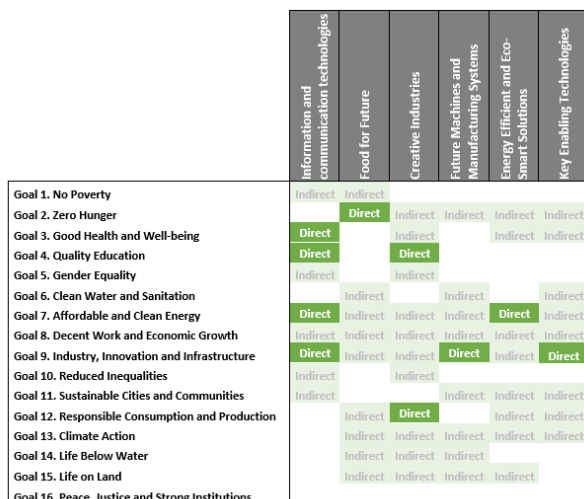


Figure 2 - Summary of the potential impact of the priority areas of the Strategy to the main challenges resulting from SDGs in Serbia, source: European Commission et al., 2021

As can be seen in Figure 2, five priorities were defined in Serbia's Smart Specialisation Strategy - four of them vertical:

- Information and communication technologies (ICT),
- Food for the Future,
- Machines and Manufacturing Systems and
- Creative industries,

as well as one horizontal priority: Key Enabling Technologies (KET). These priorities were analysed in accordance with their direct and indirect impact on the SDGs, as an integral part of the Action Plan. To further strengthen the sustainability component of the Action plan, the Government of Serbia together with JRC and UNIDO have been working on a pilot approach for the integration of SDGs into the entire Entrepreneurial Discovery Process (EDP), including the mobilisation of stakeholders key for specific SDGs and in the EDP's institutional set-up (described in detail in the next paragraph of this policy brief).

4. STAKEHOLDERS' INVOLVEMENT IN COLLABORATIVE DECISION-MAKING

Stakeholder involvement plays a key role in the effective implementation of the 2030 Agenda for Sustainable Development. According to the "Stakeholder Engagement and the 2030 Agenda: A Practical Guide" Developed by UN DESA and UNITAR, it is important to ensure involvement of the representation of the local Major Groups and other Stakeholders (MGoS) that took an active part in the development and adoption of the 2030 Agenda (United Nations, 2020).

Consistent with the JRC's smart specialisation approach, the EDP took place as the next stage of the strategy and action plan development, following the pilot mapping. The EDP allowed the dedicated Inter-ministerial working group to specify strategic priority areas through the inclusive evidence-based process based on the stakeholders' engagement.

During the design phase of Serbia's Action plan, EDP included 178 interviews and 17 EDP workshops with the total number of 550 workshop participants. Stakeholders

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in this bottom-up consultative EDP process were distributed across the quadruple helix model as follows: business sector (57%), government institutions (10%), academia (21%) and civil society (12%). According to the pilot mapping methodology, work with stakeholders in Serbia was additionally focused on the identification of STI collaboration networks on the national and international level, of potential value in addressing the SDGs challenges of Serbia (Fig. 3).

of the SDGs. Recommendations on further incorporation of the SDGs in the next version of the Action plan's monitoring system as a part of the continuous EDP are detailed in the recommendations section of this policy brief.

7 Affordable and Clean Energy

SDG-oriented STI collaboration networks

The following schema presents the collaboration network of the top 15 national and top 15 international actors engaged in Goal 7, classified by typology of organisation.

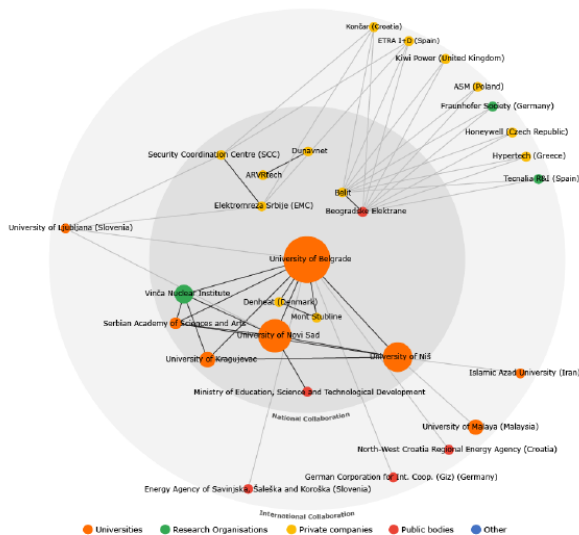


Figure 3 - Example of the STI collaboration network for Goal 7 identified during the mapping process

The continuous nature of the EDP implies that stakeholders are continuously involved in revising the priority areas, rethinking, and updating the policy instruments for implementing the strategy, and its governance and monitoring mechanisms. In this context, the revision and development of the new Action Plan, planned by the Serbian government for the end of 2022, is seen as an integral component of the continuous EDP.

The pilot mapping of the STI for SDGs methodology allows elaboration of the Strategy and its priorities in terms of the specified challenges resulting from the SDGs, followed by the definition of additional policy instruments and indicators, contributing to achievement



5. ACTION PLAN IMPLEMENTATION

The implementation of measures and activities of the Action Plan is key to the successful achievement of the goals of the Serbian Smart Specialisation Strategy in the SDGs context and follow up the pilot activities on mapping and stakeholder engagement.

The first Serbian Smart Specialisation Strategy Action Plan has been developed for the period 2021–2022. To support continuity, the revision of the goals and identified policy measures is already planned in the form of a new Action plan, in continuous dialogue with all stakeholders, implementing the measures and projects.

From an execution perspective, Serbia's Action plan sets the framework and targets for implementation of the Smart Specialisation Strategy following the logic of intervention across three levels. The Priority areas define four vertical and two horizontal priority domains for public investment in research and innovation. This level is accompanied by the strategic goals and corresponding monitoring indicators. The Policy measures level includes a set of concrete policy measures, activities and corresponding output indicators for each of the specific objectives (Fig.2).



Figure 4 - Intervention logic of the Action plan for the Serbia's Smart Specialisation Strategy

The intervention logic described above is accompanied by the policy mix – a set of public policy instruments that will implement the strategic goals and objectives of the Roadmap. It also includes dedicated budgetary measures. Most of the funding for the implementation of the Action plan comes from national public funds, with some contributions from international organisations. In total there are about 151 million euro allocated for the period 2020 – 2022. More than 110 million euro already have been invested to support the policy measures envisaged in the Action Plan. Preliminary analysis has shown that the policy measures implemented under the Action Plan in 2020-2022 are mostly supply-side, relating to financial, technological, human resources and infrastructure support to business and R&D to stimulate research and innovation activities on the business side, mainly through the direct financing of R&D costs of the enterprises. In line with this, the key institution for the implementation of the Action plan is the Innovation Fund of the Republic of Serbia (IF). The flagship programmes of the IF in terms of the Action plan implementation are the following:

- Collaborative Grant Scheme Programme, designed to incentivise private sector companies and public sector R&D organisations, to engage in joint R&D projects with the goal of creating new products and services, as well as innovative technologies with significant future impact in 4S areas.
- Matching Grants Programme, developed for enterprises in all priority areas of the Strategy who are seeking significant financial resources for the commercialisation of research and development, stimulating the knowledge-based development of innovative enterprises and encouraging the establishment of international partnerships.
- Mini Grants Programme, aimed at private young enterprises in 4S areas, which are engaged in the development of technological innovations, and designed to support Serbian entrepreneurs to build effective business capacities, and thus to launch their innovations on the market.
- 4S Voucher Programme, aiming to financially stimulate SMEs in all priority areas of the Strategy to collaborate with R&D institutions, thereby engaging SMEs in innovation activities and making their products more competitive on the market.

All the programmes described above were mainly targeting all priority areas horizontally. Taking into account that Serbia's Smart Specialisation Strategy defines four vertical priorities - ICT, Food for Future, Machines and Manufacturing Systems and Creative industries, as well as one horizontal priority - KET, some additional vertical instruments were also put in place as part the Action Plan implementation.

With regards to priority areas, particular support was provided within the Food for Future and ICT priority areas with the following flagship programmes for Food for the Future priority:

- Investments in physical assets of agricultural holdings, aiming to increase the productivity and competitiveness of the agri-food sector through technological improvement. By supporting new mechanisation and new technology, the programme also contributes to the mitigation of the climate change impact on the agriculture sector in Serbia.

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- Investments in physical assets related to processing and marketing of agricultural and fishery products, that supports the food processing industry and associated marketing in Serbia in the modernisation of technology, enrichment of assortment of products, strengthening of market chains and improvement of production efficiency and product quality.
- Diversification of agricultural holdings and business development aims at improving job opportunities in rural areas by addressing the major sustainable development social problems of rural areas - lack of job opportunities, high dependency on agriculture and decreasing quality and accessibility of basic services and infrastructure, via the provision of investment support to the expansion of economic activities in the field of rural tourism.

Within the ICT priority area, the Programme for the development of projects in the field of artificial intelligence can be highlighted. This programme aims to encourage excellence and the relevance of scientific research in the field of artificial intelligence and to encourage the application of the results in the development of the Serbian economy.

Among the activities supported by the Innovation Fund as a part of the Action Plan implementation, several flagship projects can be singled out. Especially noteworthy are those in which the integration of the sustainable development component is combined with cross-sectoral support for several strategy priorities at the same time. For the ICT and Energy efficiency priorities, the Smartcity – Energy management platform based on Artificial Intelligence project, aims to completely automate the search for optimal patterns in energy consumption and production connected with renewable energy sources and energy storage capabilities. It is supported by the Innovation Fund to the value of about EUR 294.000,00 and is implemented through cooperation between the University of Kragujevac and Noleko, a private company. Another flagship project “Increased sustainability of plant protection by innovative approaches in Bacillus-based biological plant disease and pest control” with cooperation between the University of Novi Sad and Bacillomix, has Innovation Funding of around EUR 272.000,00. It is connected with the Food For the Future and ICT priority areas. Among other multi-priority and sustainable projects, it is important to mention the Navsteer project, with an

autonomous and easy to install autopilot system with cloud data analytics for farmers, and the Strawberry Smart Board project, which moves beyond traditional outdoor seating infrastructure through the creation of sustainable digital furniture. These projects receive around EUR 300.000,00 and 294.000,00 of investment respectively.

With the approach of the pandemic, Serbia used the STI roadmap and funding to tackle the health crisis. The “Special research programme on COVID-19” to contribute to an effective STI response to the COVID-19 pandemic was launched under the Science Fund of the Republic of Serbia. This programme supports applied scientific research and the creation of interdisciplinary and multidisciplinary projects. In the framework of the programme, 14 projects were supported in total. In the period 2020-2022, 2 million euros were allocated for approved and implemented projects through the Serbia Accelerating Innovation and Growth Entrepreneurship Project, funded by a World Bank loan.

Despite a large number of horizontal and vertical instruments in the policy mix developed under the Action Plan, the limited amount of funds available remains a key challenge for the wider implementation of the STI for SDGs Roadmap in Serbia. In addition, there is the need to create mechanisms for deeper integration of the SDGs into all policy tools of the new action plan, which will be described in more detail in the final part of this policy brief.



Being strongly committed to the achievement of the SDGs, Serbia has become the first country, to develop the STI for SDGs Roadmap based on the Smart specialisation approach while participating in the United Nation’s Global Pilot Programme on STI for SDGs Roadmap. The methodological and policymaking efforts on Smart Specialisation for sustainable development resulted in the inclusion of the SDGs component in the Serbia’s Smart Specialisation Strategy and development of the STI for SDGs Roadmap in the form of the Strategy’s Action plan. In addition, the pilot methodology developed could be used by policymakers in other countries interested in

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developing STI for SDGs roadmaps based on the smart specialisation approach.

The methodology for mapping Sustainable Development Goals (SDGs) in the context of Smart Specialisation Strategies piloted in Serbia, allows the identification of priorities to achieve the Agenda 2030 and the definition of the key challenges connected with the SDGs priorities in the country. In addition, the methodology allows the mapping of the STI potential in the SDGs context, including identification of stakeholders that could be mobilised to address these challenges and mechanisms to identify how Smart Specialisation priority domains could contribute to the achievement of SDGs. As a result of the implementation of this approach in Serbia, key challenges associated with SDGs were identified and an analysis of the potential impact of Smart Specialisation Strategy priorities on these challenges was carried out. This included the identification of the SDGs that are directly and indirectly connected with the priorities.

The implementation approach and policy measures included in the Serbian Action Plan focus mainly on the supply side, stimulating research and innovation activities on the business side by focusing the financial, technological, human resources and infrastructure support to business and R&D to support Serbia's sustainable and innovative development and the achievement of the SDGs.

The key institution for the implementation of the Action plan is the Innovation Fund of the Republic of Serbia. Among the flagship projects of the Fund, putting in place cross-sectoral support for several Smart Specialisation Strategy priorities, the following project can be highlighted: the Smarticity, Increased sustainability of plant protection by innovative approaches in Bacillus-based biological plant disease and pest control", Navsteer, Strawberry Smart Board.

Serbia has also used STI funding to tackle the global pandemic and the resulting health crisis. In total, 14 projects were planned in the period 2020-2022 with 2 million euros budget, financed by a World Bank loan through the Serbia Accelerating Innovation and Growth Entrepreneurship Project.

This policy brief has summarised Serbia's current pilot methodology and approach in development and implementation of the STI for SDGs Roadmap in the form of the Serbia Smart Specialisation Strategy's Action plan.

It summarized how the Serbian experience could be used by other counties willing to develop STI for SDG roadmaps.

This process could be done by identifying:

- current national priorities to achieve the Agenda 2030,
- challenges resulting from SDG goals and targets
- areas of specialisation and excellence of the countries STI ecosystem that can be mobilised to respond to the challenges resulting from the SDGs,
- key knowledge gaps between the identified SDGs challenges and STI potentials
- international stakeholder STI collaboration networks and partnerships and matching the identified knowledge gaps and potentials,
- determining the extent to which the identified challenges, potentials and knowledge gaps relate to Smart Specialisation priority domains.

Based on the analysis of Serbia's Action Plan and the pilot SDGs' mapping methodology, it is recommended to further strengthen the SDGs components in the STI for SDGs Roadmaps through the EDP process while working on the new Action plan in 2022.

While the pilot methodology only mapped the SDGs at the level of the priorities of the Serbian Smart Specialisation Strategy, it is recommended that the new Action plan foreseen for the end of 2022, aims at a deeper integration of the SDGs component at goal and objectives levels, as well as in specific measures. THIS could be practically implemented via stronger integration of the SDG components into the EDP workshops, improvement of the stakeholder interaction approach and the Action Plan monitoring system.

Thus, the following methodological and policymaking steps are recommended:

1. Advancement of the SDGs Stakeholders' involvement in collaborative decision-making

Stakeholders should be involved throughout the policy cycle. In particular, it is recommended to use stakeholder dialogue to build consensus and sequentially embed logical connections between the relevant SDGs, Smart Specialisation Strategy's priorities, goals and specific objectives of the plan, as well as the deployment of

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dedicated measures related to the implementation of SDGs challenges.

Following the recommendation that iterative SDGs’ integration processes could be carried out as part of regular workshops planned for the development of a new Action Plan, it is important to ensure the integration of the additional stakeholders described below. Based on the UN DESA and UNITAR “Stakeholder Engagement and the 2030 Agenda: A Practical Guide”, it is recommended to identify and ensure the involvement of the representation of the local Major Groups and other Stakeholders (MGoS) (United Nations, 2020), that took an active part in the development and adoption of the 2030 Agenda in Serbia during the revision and development of the new Action plan. In practice, in the planning and design stages of the new cycle of EDP workshops, it is advised to ensure that stakeholder groups with the representative of the SDGs related MGoS groups, as well as governmental bodies and civil society representatives working on SDGs implementation and monitoring in Serbia, are integrated into the existing quadruple helix model (Fig. 3).

It is important that SDGs are reflected not only at the diagnostic or vision-setting stage, but also during implementation and monitoring stages. This means that the specific policy instruments, financing streams and monitoring indicators should have a clear link to priority SDGs. The synergies and trade-offs between the SDGs and Strategy’s priorities should also be clearly defined.

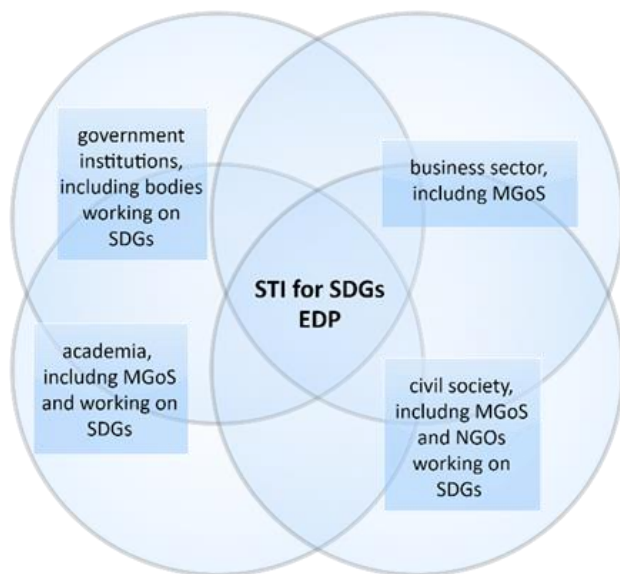


Figure 5 - Proposed stakeholders map for EDP in Serbia with enhanced [participation of the SDGs related stakeholders, source: Authors

Such activities would require further raising of the stakeholder awareness.

2. Further integration of SDGs at all levels of the Action plan

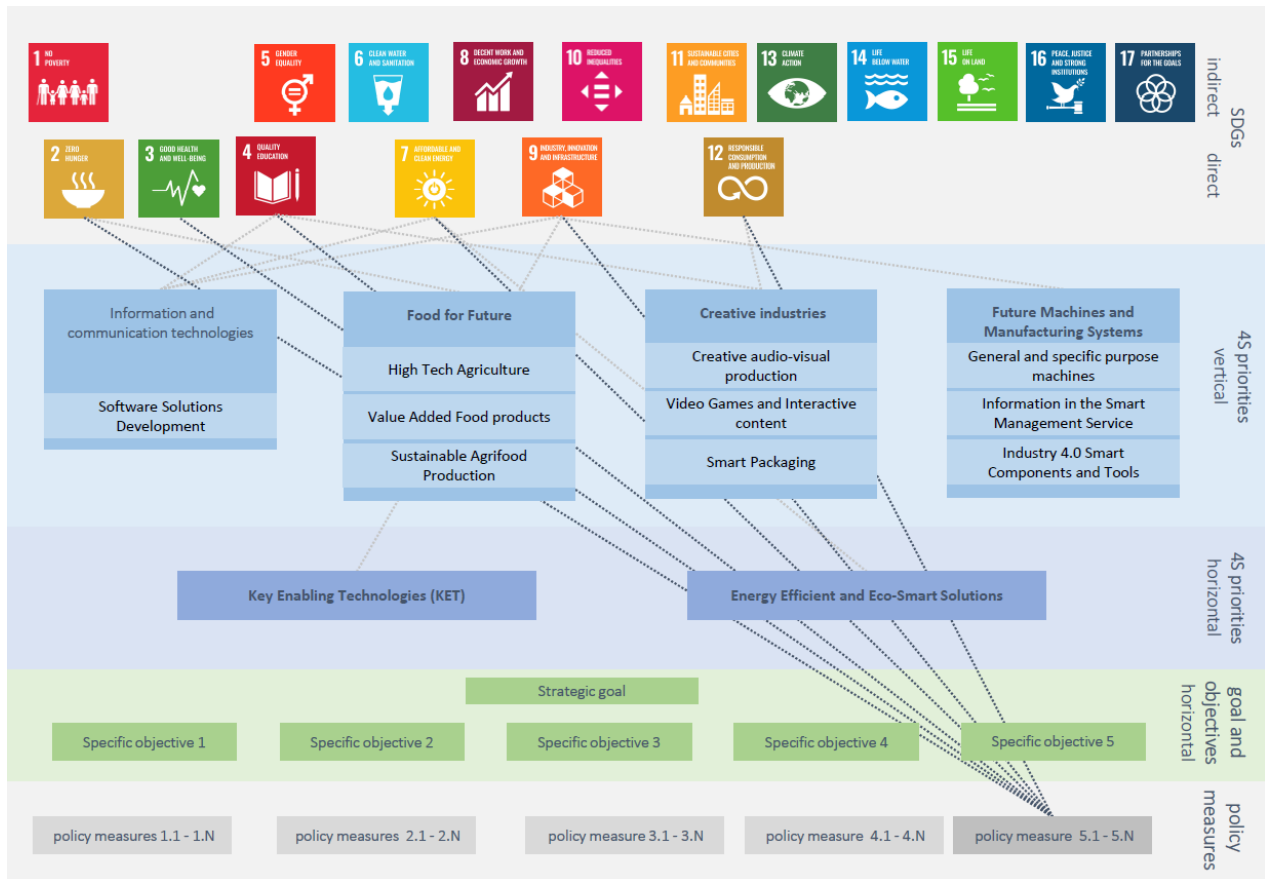


Figure 6 - EDP workshop's design process diagram, source: Authors

The policy mix can include SDGs calls, targeted programmes or other fiscal or non-fiscal tools.

3. Strengthen the SDGs component in the Action plan's monitoring system

Work on further integration of the SDGs component on the levels of goals and objectives requires the development and improvement of the monitoring indicators, included in the Action plan on these levels, defined during the EDP workshops.

Depending on the level and type of indicators, it is proposed to revise and supplement the existing pool of indicators in the context of the existing SDGs' targets. SDGs in Serbia have sufficiently developed and described targets for monitoring that are recommended for inclusion in the monitoring system via the development of additional indicators based on the SDGs' targets. For example, for output indicators, additional monitoring of

the number of SDGs related projects and applications implemented could be integrated into the Action plan.

The pilot methodology described in this policy brief can be used by countries and regions willing to improve their existing smart specialisation strategies to achieve SDGs, as well as by those interested to start developing STI for SDGs Roadmaps based on the smart specialisation approach.

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