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Exploring the potential of thematic Smart Specialisation Partnerships to contribute to SDGs

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Abstract

The European Union recognises the role of various forms of transnational and cross-organisational collaborative efforts in speeding up the transition towards a green, climate neutral and digital Europe, as well as making European industry more resilient and competitive. Various forms of collaboration and cooperation are increasingly considered and promoted as the answer to a range of challenges.

The focus of this paper is on thematic smart specialisation (S3) partnerships included in *The Partnerships for SDGs online platform*, which is the United Nations' global registry of voluntary commitments and multi-stakeholder partnerships, facilitating global engagement of all stakeholders in support of the implementation of the Sustainable Development Goals.

By exploring *thematic S3 partnerships* as an example of such interregional collaborative arrangements, this paper explores the extent to which these activities are able to contribute to the attainment of the Global Goals. This research supports the view that in order to track regions' contribution to SDGs and assess its impact, European policymakers should continue building in ways to collect consistently information about the extent to which various policy local/regional/national initiatives contribute to specific goals.

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Executive summary

This research develops a number of conclusions contributing to both practice and theory. The results of the study indicate that this type of interregional thematic S3 partnerships are well positioned to allow partner regions to combine their often-complementary strengths, exploit competences in research and innovation, get necessary research capacity, gain access to global value chains and overcome a lack of critical mass and fragmentation.

The authors examine the extent to which various S3 priorities are linked to the sustainable innovation, i.e. creating something new that improves performance across the three dimensions of sustainable development: social, environmental and economic ⁽¹⁾. Following this analysis, the authors will provide an overview of the thematic approach to smart specialisation and its implementation through thematic S3 partnerships across three thematic S3 platforms. This will be followed by a short description of the monitoring tool tested by the S3 Platform and its results showing a distribution of partnerships and their link to various SDGs. The authors will then discuss the results and define conclusions and policy implications

More specifically, this research argues that the smart specialisation approach facilitates the identification of strategic priorities that are increasingly aligned with the idea of sustainable development. While the EU overall has a good record of policy initiatives supporting various SDGs, this record is a result of work across many institutions and organisations across the Union. Given the currently high degree of dispersion and fragmentation of capabilities across EU regions, it is imperative that industrial modernisation efforts are even better aligned across regional, national and EU instruments in support of innovation, skills, and entrepreneurship. This is where *research and innovation strategies can help strengthen the sustainability dimension of industrial modernisation policies and effectively contribute to the attainment of the Sustainable Development Goals*.

A significant share of **S3 priorities (40%)** across the EU **directly relate to various sustainable innovation challenges, and this share is growing over time**. Regional and national policymakers are increasingly aware of the sustainable development agenda with a clearly observed shift to sustainability-related areas such as *waste management, climate change, sustainable agriculture, eco-innovations, and sustainable production & consumption*.

Furthermore, this research recognises the importance of the Eye@RIS3 database as the only existing source of information about smart specialisation priorities declared by Member States and regions. Given the growing relevance of the SDGs, the users of the database would benefit even more if the dataset included an additional way to analyse various priorities based on their links to individual SDGs.

Various forms of collaboration and cooperation are increasingly considered and promoted as the answer to a range of challenges. In practice, this view is based on the assumption that collaborative arrangements allow partners to gain results exceeding what could have been generated through alternative organisational configurations. The European Union highlights the role of partnerships (between the European Union, Member States and/or the industry) in speeding up the transition towards a green, climate neutral and digital Europe, as well as making European industry more resilient and competitive ⁽²⁾. It is also argued ⁽³⁾ that any such **ambitious objectives can only be achieved if all societal actors and stakeholders work together**. This does require new forms of partnerships that involve governments, the private sector and civil society. The activities of these partnerships would need to be clearly connected with the key principles, values, a shared vision and shared goals that are defined in public policies such as the European Union's Green Deal. It is possible to enable further investment by pioneering new strategic areas of growth while facilitating the integration of EU businesses in global value chains to boost their competitiveness and ensure access to global markets on more favourable competitive conditions.

⁽¹⁾ Kneipp, J.M., Gomes, C.M., et al., (2019)

⁽²⁾ See https://ec.europa.eu/commission/presscorner/detail/en/ip_21_702

⁽³⁾ See <https://www.un.org/sustainabledevelopment/globalpartnerships>

Significant *synergistic rewards* can be achieved through a more flexible and responsive form of interregional collaboration with a focus on joint investments in areas associated with high potential growth. This paper examines this new type of investment-focused interregional partnerships driven by shared or similar smart specialisation priorities in partner regions. These thematic S3 partnerships can be seen as a more *experimental form of interregional partnerships to align various S3 agendas to overcome capability failures hindering innovation*.

This research confirms that ***interregional collaborative arrangements have the potential to contribute to the delivery of the Sustainable Development Goals***. By selecting thematic S3 partnerships as an example of such interregional collaborative arrangements, this paper explores the extent to which these activities are perceived to contribute to the attainment of the Global Goals. The results indicate that a majority of all ongoing thematic S3 partnerships have the potential to contribute to the attainment of at least several SDGs in line with the UN drive towards the sustainable development. It is not surprising that thematic S3 partnerships have been included ⁽⁴⁾ in *The Partnerships for SDGs online platform*, which is the United Nations' global registry of voluntary commitments and multi-stakeholder partnerships, facilitating global engagement of all stakeholders in support of the implementation of the Sustainable Development Goals.

Furthermore, in line with the importance of reliable and relevant data to assess the 2030 Agenda ⁽⁵⁾ and in order to track interregional thematic S3 partnerships' contribution to SDGs and assess their impact, European policymakers should ***consider building in new ways to collect consistently information about the extent to which various policy local/regional/national initiatives contribute to specific goals***. For example, such a dimension could be built into various monitoring, evaluation and assessment forms used for managing any interregional or transnational collaborative arrangements such as the thematic S3 partnerships.

⁽⁴⁾ See <https://sustainabledevelopment.un.org/partnership?p=29692>

⁽⁵⁾ Siragusa, A., Vizcaino, M.P., 2020

1 Introduction

Sustainable development is a fundamental principle of the Treaty on European Union and a priority objective for the Union's internal and external policies ⁽⁶⁾. These principles and objectives continue to be supported by the European Union through a combination of policies and related tools ⁽⁷⁾.

Starting in 2014, a large number of European regions and countries have developed their first smart specialisation strategies (S3) for research and innovation. The concept of smart specialisation and related strategies were initially introduced by the Council of the European Union (EU) back in 2010. Under the regulation for the programming period from 2014 to 2020, smart specialisation was introduced as a legal precondition (ex-ante conditionality) for using the European Regional Development Fund (ERDF). Smart specialisation is a methodological process that helps regional and national administrations to define a limited number of research and innovation priorities to concentrate investments for knowledge-intensive growth. Over 120 smart specialisation strategies are being implemented across the European Union with a budget of over EUR 40 billion, while over EUR 65 billion (including national co-financing) was allocated to regions through the ERDF ⁽⁸⁾.

As an increasing number of territories across Europe develop and implement their smart specialisation strategies for research and innovation (RIS3), there is an ever-growing interest in various aspects of transnational and interregional cooperation ⁽⁹⁾. This study explores whether interregional collaborative arrangements such as thematic S3 partnerships supported by the European Commission are able to contribute to the attainment of the Sustainable Development Goals (SDGs) adopted by the United Nations' General Assembly ⁽¹⁰⁾.

The authors will first examine the extent to which various S3 priorities are linked to the sustainable innovation. Following this analysis, the authors will provide an overview of the thematic approach to smart specialisation and its implementation through thematic S3 partnerships across three thematic S3 platforms. This will be followed by a short description of the monitoring tool tested by the S3 Platform and its results showing a distribution of partnerships and their link to various SDGs. The authors will then discuss the results and define conclusions and policy implications.

⁽⁶⁾ See https://ec.europa.eu/info/strategy/international-strategies/sustainable-development-goals_en

⁽⁷⁾ See https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en#policy-areas

⁽⁸⁾ Mercey, L., 2020, Support to the Cultural and Creative Sectors through Cohesion Policy.

⁽⁹⁾ European Commission. 2016.

⁽¹⁰⁾ See <https://sustainabledevelopment.un.org/post2015/transformingourworld>

2 Focus on Sustainability: from Europe 2020 to the Green Deal

The Europe 2020 strategy ⁽¹¹⁾ was introduced in 2010 as a comprehensive economic policy agenda. This EU-level strategy was put in place to help deliver growth that would be (a) *smart*, through more effective investments in education, research and innovation; (b) *sustainable*, thanks to a decisive move towards a low-carbon economy; and (c) *inclusive*, with a strong emphasis on job creation and poverty reduction. The Europe 2020 strategy aimed to help EU countries to recover levels of employment, increase productivity and improve social cohesion in a way that would be *environmentally, financially and socially sustainable*. By building on these priorities, the European Union was hoping to overcome the consequences of the 2007-2008 crisis while building a stronger and more globally competitive economy.

In 2015, the UN's General Assembly adopted the Sustainable Development Goals (SDGs) as part of the UN 2030 Agenda for Sustainable Development. Through SDGs, the global community as a whole pledged to eradicate poverty, find sustainable and inclusive development solutions, ensure everyone's human rights, and generally make sure that no one is left behind by 2030.

The EU contributed ⁽¹²⁾ to the development of the 2030 Agenda and committed to implement the SDGs in all EU policies and encouraging EU countries to follow its lead. In January 2019, the European Commission presented a Reflection Paper ⁽¹³⁾ '*Towards a Sustainable Europe by 2030*', reaffirming the EU's commitment to delivering on the United Nations 2030 Agenda and its implementation. Later in 2020, Eurostat published its fourth report ⁽¹⁴⁾ examining the overall progress made by the EU Member States towards SDGs. According to this report, over a five-year period, the EU has advanced towards most SDGs. Progress in some Goals has been faster than in others, and movement away from the sustainable development objectives occurred in specific areas of a number of Goals.

In December 2019, the European Commission set out a European Green Deal ⁽¹⁵⁾ for the European Union and its citizens as a timely response to many pressing environmental challenges ⁽¹⁶⁾. In line with the EU focus on sustainability strongly established under the Europe 2020 strategy, the Green Deal aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use (see *Figure 1*).

More specifically, the Green Deal proposes a roadmap for making the EU's economy sustainable and encompasses a new sustainable growth strategy along with a set of legislative measures, policy actions and funding mechanisms. The proposed strategy has a triple objective with a clear link to sustainable development: that there are no net emissions of greenhouse gases by 2050, that economic growth is decoupled from resource use, and that no person and no place is left behind ⁽¹⁷⁾.

The Green Deal is clearly set ⁽¹⁸⁾ to be an integral part of this Commission's strategy to implement the United Nations' 2030 Agenda and the Sustainable Development Goals, and other priorities put forward in President von der Leyen's political guidelines ⁽¹⁹⁾. As part of the Green Deal, the European Semester process of macroeconomic coordination will now integrate the United Nations' Sustainable Development Goals, to put sustainability and the wellbeing of citizens at the centre of economic policy, and the sustainable development Goals at the heart of the EU's policymaking and action. In

⁽¹¹⁾ European Commission, 2010.

⁽¹²⁾ See https://ec.europa.eu/international-partnerships/sustainable-development-goals_en

⁽¹³⁾ European Commission, 2019

⁽¹⁴⁾ Bley, Simon Johannes, et al. (ed.) 2020: Sustainable Development in the European Union. Monitoring Report on Progress Towards the SDGs in an EU Context.

⁽¹⁵⁾ Hereafter, the Green Deal

⁽¹⁶⁾ See https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

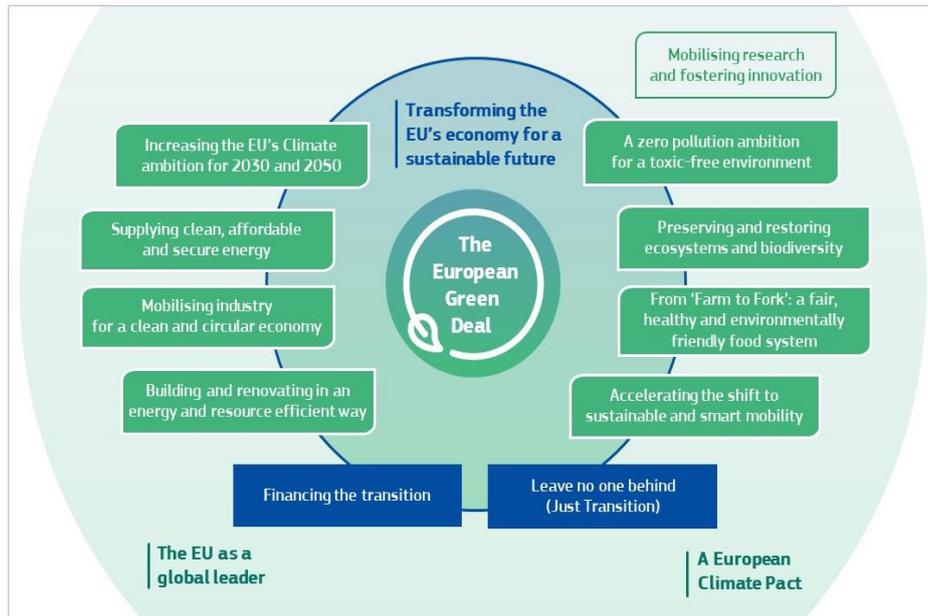
⁽¹⁷⁾ *ibid*

⁽¹⁸⁾ European Commission, 2019. Communication from the Commission. The European Green Deal. Brussels, 11.12.2019. COM(2019). 640 final.

⁽¹⁹⁾ Political Guidelines of President elect Ursula von der Leyen: Political guidelines for the next Commission (2019-2024) – 'A Union that strives for more: My agenda for Europe'.

this context, the EU's continues to stress the importance of international partnerships to support the implementation of the 2030 Agenda in the post-COVID-19 world ⁽²⁰⁾.

Figure 1: EU Green Deal



Source: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52019DC0640>

Despite the challenges posed by the COVID-19 crisis, the focus on sustainability in the European policymaking continues to attract additional support. In June 2020, the European Committee of the Regions launched ⁽²¹⁾ a new working group to ensure that cities and regions can bring the European Green Deal off the ground with concrete projects and direct funding to local and regional authorities. As a result of its first meeting, the working group declared the importance of investing together in order to accelerate the transition towards a clean, sustainable and carbon-neutral economy.

In its contribution to the Reflection Paper 'Towards a sustainable Europe by 2030', the SDG Multi-Stakeholder Platform calls on the EU to '*advocate a territorial approach for the delivery of the SDGs and allow a two-way dialogue where European and national strategies associate regional and local authorities as well as civil society and professional organisations in a multi-level and multi-stakeholders governance approach*' ⁽²²⁾. Furthermore, under its sector-specific recommendations, the SDG Multi-Stakeholder Platform points out Cohesion policy as a key EU investment instrument that should be utilised to facilitate the European efforts to achieve the SDGs. More specifically, the EU is invited to '*strengthen the localisation of the Goals by directly supporting subnational governments, support the Urban Agenda of the EU, further promote social objectives and better encourage investments towards greener, more sustainable infrastructure, including in rural areas*' ⁽²³⁾.

In February 2021, the European Commission committed ⁽²⁴⁾ to providing nearly 10 billion euros of funding to mobilise additional investments in support of the transitions, and create lasting positive impacts on employment, the environment and society. Ambitious objectives such as the ones set by the Green Deal require a well-developed ecosystem that is highly capable to support the

⁽²⁰⁾ European Commission, 2020. Delivering on the UN's Sustainable Development Goals – A comprehensive approach, Brussels, 18.11.2020, SWD(2020) 400 final.

⁽²¹⁾ See <https://cor.europa.eu/en/news/Pages/The-European-Green-Deal-is-Going-Local.aspx>

⁽²²⁾ European Commission, 2019b, p. 126

⁽²³⁾ *ibid*, p. 127

⁽²⁴⁾ European Commission, 23 February 2021, Press release. EU to set up new European Partnerships and invest nearly €10 billion for the green and digital transition.

implementation of key public policies. Finding new forms of workable and lasting Triple/Quadruple Helix partnerships that could help deliver the policy objectives under the Green Deal is a challenge in itself. This is one of the reasons why the European Commission proposed ⁽²⁵⁾ to put in place a new kind of European Partnerships involving the European Union, Member States and/or the industry. These partnerships are expected to speed up the so-called transition to a green, climate-neutral and digital European Union, while strengthening the EU industry.

This is not the first or only EU effort to mobilise its citizens by supporting collaborative arrangements such as these European Partnerships. In evaluation literature ⁽²⁶⁾, this is known as *synergistic rewards*, where such collaborative results are greater than the total sum of what individual partners contribute. This means that some of these objectives can be achieved through additional forms of interregional and/or transnational collaboration. The focus of this research is on the so-called *thematic S3 partnerships* that are a relatively new type of investment-focused interregional partnerships driven by shared or similar smart specialisation priorities in partner regions.

⁽²⁵⁾ See https://ec.europa.eu/commission/presscorner/detail/en/ip_21_702

⁽²⁶⁾ See J.H Dobbs (1999), Brinkerhoff (2002)

3 Methodological Approach

This section describes the methodology applied to collect the data which will be used to answer the questions posed in this paper. This research design is influenced by the objectives to understand and evaluate the relationship between thematic S3 partnerships and their potential to contribute to SDGs. As the phenomenon of interregional S3 partnerships is relatively new and the body of literature on it is limited and fragmented, this section will describe the methodology to address the objectives of this research. The first part of this section provides a discussion of the philosophical assumptions, which support the issues reviewed by this policy report. This discussion of methodological choice further guided the investigative focus of the second part of this section, which examines the details of how this research is carried out in terms of data collection and analysis.

Some researchers expressed concerns about the dominant positivistic research paradigm as well as the limits of quantitative data and positivistic methods ⁽²⁷⁾. While social sciences have become relatively dominated by positivism and postpositivism, their dominance has been challenged by interpretive constructivists and critical theorists who challenged the fundamentals of positivism by providing alternative approaches to research ⁽²⁸⁾. Researchers in the constructivist (also known as interpretative) camp maintain an assumption that scientific knowledge is constructed by researchers and it is not discovered from the world. Therefore, to understand the world one must interpret it. In contrast to positivists, they argue that there is no single valid methodology and there are other methodologies for social science: qualitative research. The underlying assumption of constructivism is that *realities can be learnt and understood through multiple intangible mental constructions*. These constructions depend on individuals or groups of individuals for their content and form. As these individuals change, they alter their construction and as a result the associated realities are changed ⁽²⁹⁾. Constructivists believe to be linked to the object of their investigation, and as a result, their research findings are created as they proceed with their investigation. To reflect this logic, constructivists tend to use ethnographic prose, historical narratives, first-person accounts, etc. ⁽³⁰⁾.

The authors of this study initially embraced the postpositivist stance as being closest to their own understanding of the philosophical questions of reality when analysed through dimensions of ontology, epistemology and methodology. This policy report is a study of evaluative nature, as it is particularly concerned with the evaluation of interregional S3 partnerships and their contribution to the attainment of SDGs. The design of the evaluation involves surveys and includes a form of '*user participation*' in an endeavour to reflect the level of analysis. Methodology generally associated with postpositivism allows involving some elements of *interpretive social science* (constructivism) such as the use of *heuristic insights*, but at the same time, this research leans towards a positivistic epistemological framework ⁽³¹⁾. Such a combined approach can be commonly found in evaluation research as it helps to take an advantage of different approaches by simultaneously including their respective strong aspects and concepts such as user empowerment and participation ⁽³²⁾. As discussed earlier, when deciding on whether to go for a quantitative or qualitative research, researchers should not be purely motivated solely by philosophical beliefs but by whichever design and methodology are best suited to tackle their research objectives. This policy report applies a survey methodology with a definition of the survey's purpose being to produce quantitative descriptions of some aspect of the population in question by asking interregional S3 partnerships structured and predefined questions using a sample of the population ⁽³³⁾. These assumptions also eventually lead the authors of this report into the boundaries of the positivist paradigm ⁽³⁴⁾.

⁽²⁷⁾ Swanson & Holton, 2005

⁽²⁸⁾ Gephart, 1999

⁽²⁹⁾ Guba & Lincoln, 1994

⁽³⁰⁾ Denzin & Lincoln, 2003

⁽³¹⁾ Denzin & Lincoln, 1998

⁽³²⁾ Parry et al., 2001; Pawson & Tilley, 1997

⁽³³⁾ King & He, 2005; Pinsonneault & Kraemer, 1993

⁽³⁴⁾ Lee & Baskerville, 2003

3.1 Research Outline

When deciding on the appropriate research design for this study the authors considered the questions raised by the research. This study intends not only to explore and evaluate the extent to which interregional S3 partnerships have the potential to contribute to the attainment of individual SDGs (at the level of an individual interregional S3 partnerships), but also to understand whether territorial S3 priorities (registered in the Eye@RIS3 database ⁽³⁵⁾) can confirm the ability of the smart specialisation approach and associated strategies to contribute to the objectives set under the Green Deal. Such studies often fall into a particular category of applied or evaluation research which generally applies non-experimental survey research design. The study takes the form of an exploratory evaluation research focused on investigation of the potential of S3 partnerships to contribute to the attainment of SDGs. A particular form of evaluation inquiry - values inquiry - can be helpful in the development of criteria for oversight and compliance (whether the programme is following specific rules or is meeting expectations). Values inquiry can also be suitable for programme improvement when there is uncertainty about programme mission or some disagreement over mission objectives ⁽³⁶⁾.

This qualitative evaluation research will employ a survey methodology. The study will collect data from a number of respondents (interregional partnerships). A number of surveys carried out over a period of two years (2018-2019) address the management representatives of the thematic S3 partnerships supported by the Industrial Modernisation Platform ⁽³⁷⁾. The data from these surveys was analysed and the analysis was further advanced by other data sources such as interviews, a review of available documentation and observation of the collaborative processes. The actual research process came through the following stages:

- A literature review, identification of the context (interregional partnerships in the S3 context); and secondary data collection and analysis;
- Close process observation to increase understanding of the thematic approach to S3 ⁽³⁸⁾ and partnership activities;
- Organisation of the surveys; primary data collection, including initial pilot survey;
- Initial data analysis (based on the data from the surveys)
- Combination of results from the conducted surveys (*Source 1*);
- Data collection and analysis – *Source 2* (S3 priorities in the Eye@RIS3 database and its categorisation in line with ‘sustainable innovation’ subcategories) ⁽³⁹⁾;
- Data collection and analysis – *Source 3* (Pilot and demo-activities planned and carried out by the thematic S3 partnerships and categorisation of these activities in line with ‘sustainable innovation’ categories);
- Availability and analysis of the final dataset and data results; Integration of the results and write-up.

Data collection for the proposed evaluation study also includes process observation and assessment. The study employs surveys of the interregional S3 partnerships supported under the Industrial Modernisation Platform. To increase the likelihood of the study, a pilot study was undertaken as a mini-version of a fully scaled study (although a pilot study does not guarantee success in the main study); and it also was used to detect possible weaknesses in design and instrumentation ⁽⁴⁰⁾.

3.1.1 Triangulation

While developing their studies, researchers build their research design in a way that enables them to ensure rich, unbiased data valid for further interpretation ⁽⁴¹⁾. The ultimate aim is to develop a study

⁽³⁵⁾ See <https://s3platform.jrc.ec.europa.eu/map>

⁽³⁶⁾ Mark et al., 2005

⁽³⁷⁾ See <https://s3platform.jrc.ec.europa.eu/industrial-modernisation>

⁽³⁸⁾ Rakhmatullin R., Hegyi F. B., et al., 2020.

⁽³⁹⁾ These *sources 2 and 3* are discussed in more detail in section 3.1.2 (page 13)

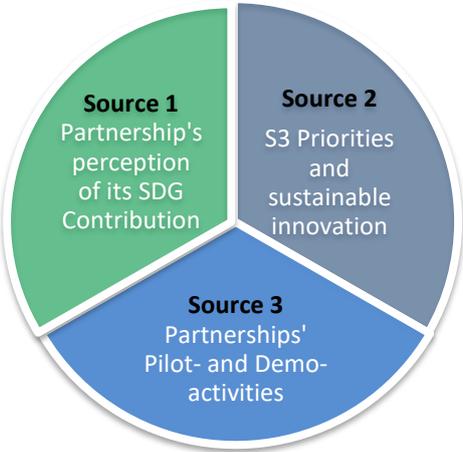
⁽⁴⁰⁾ Cooper & Emory, 1995; Teijlingen & Hundley, 2003

⁽⁴¹⁾ Breitmayer, Ayres, & Knafel, 1993

design and a number of procedures decreasing potential biases in order to ensure strong internal and external validity and reliability of their research ⁽⁴²⁾. Some argue that the influence of some of these potential biases can be decreases through the use of triangulation. One of the ways to deal with these potential biases is to use the triangulation approach ⁽⁴³⁾. Triangulation is the use of several approaches to the investigation of a research question in order to increase the level of confidence in the resulting findings. Triangulation can help improve validity by combining various techniques in one study ⁽⁴⁴⁾. In fact, various forms triangulation are also used to validate the research model/context and/or research findings generated with the use of one research method by another ⁽⁴⁵⁾. Triangulation can also be used when researchers collect their data and information from different groups, times or locations. By using different sources of data/information, groups (persons), times and locations one can further enhance the reliability of the study as it can potentially open up some irregularities in data or it can help to identify certain patterns ⁽⁴⁶⁾. Importantly, it is the nature and amount of data and information generated that constitute one of the main advantages of triangulation ⁽⁴⁷⁾.

One of the general arguments in favour of triangulation is that the same results confirmed by several methods or techniques can increase confidence in these results outcomes by decreasing the impact of potential biases. This suggestion to use triangulation is defended by some authors because through data triangulation a researcher can achieve its most ideal use as the measurements are be of the same nature and are based on the same ontology/epistemology ⁽⁴⁸⁾. As such, triangulation can be used as an important check for researchers to verify their results through the use of multiple sources, as a single one might be a source of reliable yet invalid information ⁽⁴⁹⁾. Through the collection of data about the phenomenon under review (interregional S3 partnerships), this research can crosscheck the results acquired in one data collection study with the data collected from other independent groups of respondents. The triangulation of multiple perspectives on the same phenomenon generally increases the chances of this policy study arriving to a more complete and whole picture and provides both a simple and powerful method of quality control in the analysis of the results ⁽⁵⁰⁾.

Figure 2: Triangulation of multiple perspectives



The primary research method for this policy study takes the form of a series of survey questionnaires aimed at the representative of thematic partnerships (lead regions). The results achieved from these

⁽⁴²⁾ Mitchell, 1986; Thurmond, 2001
⁽⁴³⁾ Denzin, 1970; Jick, 1979; Kimchi, Polivka, & Stevenson, 1991; Oppermann, 2000
⁽⁴⁴⁾ Murray, 1999
⁽⁴⁵⁾ Holloway, 1997
⁽⁴⁶⁾ Fielding & Fielding, 1986
⁽⁴⁷⁾ Thurmond, 2001; Banik, 1993
⁽⁴⁸⁾ Blaikie, 1991; Oppermann, 2000
⁽⁴⁹⁾ Crabtree & Miller, 1999
⁽⁵⁰⁾ *ibid*

surveys are complemented by some additional information acquired from the partnerships' observation and additional documentation analysis. In addition to survey data, this study further takes into account two additional sources of information described in more detail in the following section (see *Figure 2*).

3.1.2 Text analysis

As part of its triangulation approach and as mentioned earlier, this study collected and analysed two further sources of information in addition to data collected through surveys (**Source 1**):

- I. **Source 2**: Information about the existing S3 priorities (registered in the Eye@RIS3 database managed by JRC-Seville) and categorisation of these in line with a pre-determined set of 'sustainable innovation' subcategories; and
- II. **Source 3**: Information about specific pilot and demo- activities collected for all thematic partnerships under review).

The objective behind these analyses was to understand and define various elements of sustainable innovation in the context of smart specialisation; and then to validate this through a review of links between actual and planned activities (pilots and demo cases of thematic S3 partnerships) and a predetermined set of subcategories of sustainable innovation). These two sources of information include and codify S3-related activities across the European Union.

Source 2 consists of data on priorities defined under national and regional smart specialisation priorities and encoded in the Eye@RIS3 database set up and managed by the European Commission's JRC-Seville. Data in this database comes from various sources including national and regional public managers as well as from European Commission staff who encoded (over the past 9 years) relevant data collected from approved RIS3 documents ⁽⁵¹⁾. In the case of non-EU countries, existing national and regional innovation strategies are the source. In very few cases the data on envisaged priorities are based on S3P RIS3 Peer Review Workshops and expert reports. The ultimate aim of this open tool is that the regional/national authorities regularly update their RIS3 priorities in this tool accordingly with their respective on-going stakeholder involvement processes (Entrepreneurial Discovery Processes).

The Eye@RIS3 web interface offers a search option connected with a number of drop-down menus and search boxes allowing to search encoded S3 priorities. Each such priority includes data in the seven fields: i) *Name of region and/or country*; ii) *Title/Name of priority and its description*; iii), *Economic domains* classified by the NACE code to the second level; iv) *Scientific domains* with categorisation based on the NABS classification; v) alignment with the *EU Policy objectives*; vi) *Data source*; and vii) *Publication Date* of the document of which a certain priority is sourced from. The data for every country/region contains as many priorities as described in their RIS3 or in case of the Non-EU countries/regions similar R&I related strategic documents.

The database offers to carry out a direct search with the use of specific keywords by a 'refined' or 'Approximated' search at the right of the screen. When this mode is selected, the search is automatically enhanced also by the free text search of related keywords from the 'Priority Title' and 'Priority Description' sections of the encoded priorities as defined by the regions/countries across Europe. When using very specific keywords in this search mode, the user may risk missing quite a few regions/countries with otherwise closely related priorities (as many regions/countries have encoded very basic descriptions).

It is also possible to download the entire dataset as an Excel file. The authors of this policy study chose to extract text data from Eye@RIS3 and convert it into a document matrix. This research then applied a structural topic model. The authors then allowed the observed metadata to affect the frequency with which various terms linked to 'sustainable innovation' are defined in RIS3 priorities ⁽⁵²⁾. This allowed to carry out an analysis of the term frequency analysis and exclusivity (a univariate

⁽⁵¹⁾ See <https://s3platform.jrc.ec.europa.eu/map>

⁽⁵²⁾ Mikhaylov S., 2018.

summary statistic, FREX). The logic behind this measure is that these two elements are important factors in determining the semantic content and form a 2-dimensional summary of topical content⁽⁵³⁾. Nonexclusive words are less likely to carry topic-specific content, while infrequent words occur too rarely to form the semantic core of a topic. FREX is therefore combining information from the most frequent words in the corpus that are also likely to have been generated from the topic of interest to summarise its content. In practice, topic quality is usually evaluated by highest probability words. This research also examined both at FREX and highest probability words. This part of analysis allowed to validate the applicability of the subset of ‘*sustainable innovation*’ subcategories and their applicability in the context of RIS3 priorities encoded in the Eye@RIS3 database. Also, by creating a frequency list of terms (additionally selected based on the original list of policy categories), the authors analysed all priorities in the dataset. This resulted in a breakdown of priorities under ‘*Sustainable innovation*’. The authors additionally compared data in Eye@RIS3 from 2018 and 2020⁽⁵⁴⁾ as regards to the priority areas registered in the JRC database, to understand if there is a change in the total number of priorities that are linked to ‘*Sustainable innovation*’.

Finally, a similar 2-step analysis has been further applied to the data/information (*Source 3*) about all pilots and demo-cases reported by the Industrial Modernisation partnerships. This allowed categorising all thematic S3 partnerships under review in line with the subcategories (sustainable innovation). By analysing pilot projects and demo-cases by the S3P – Industry partnerships versus policy objectives, this research aims to estimate the share of all partnerships that have activities linked to the topic of sustainable innovation.

3.1.3 Study Overview and Survey Data

The actual research process proceeded through a number of steps that can be divided into two stages. In arguing for such a two-stage research approach, one can argue that it facilitates learning more about the problem before committing efforts and resources to it⁽⁵⁵⁾. The first stage had a clear objective to collect initial information about the phenomenon in question. The process involved the following procedures: an extant review of literature on the subject, process observation of the S3 partnerships’ activities, analysis of relevant documentation and initial field exploratory interviews with participants or experts in the field. The objective of this stage was to develop an initial understanding of the thematic approach to S3, of its underlying operational principles, as well as an understanding of the complexity of interregional collaboration in the S3 context and related interregional organisational structures. During this first stage, the authors of this report were able to gain first-hand experience in the field that has led to significant changes in the research focus. One of the important things the authors observed at that stage was that policymaking processes were often strongly influenced by anecdotal evidence of the perceived outcomes derivable from similar interregional collaborative arrangements. This lack of empirical evidence supporting the otherwise acclaimed impact of interregional cooperation in the S3 context (the relationship between the outputs of such interregional collaborative arrangements and their contribution to the attainment of individual policies) further re-focused the research questions of this research study. During Stage 1 the authors were able to develop research questions, and as a result of further literature analysis, a number of research propositions were developed. The re-focused study was set to investigate whether interregional collaborative arrangements such as thematic S3 partnerships in fact have the potential to contribute to the attainment of SDGs and (2) whether smart specialisation and associated priorities can be linked to the sustainability dimension associated with the Green Deal.

At this stage, the work was strongly influenced by a number of additional elements. During the process of the write-up, interactions with peers and researchers have further pushed this research to re-define its assumptions, chosen methods and other elements. Another objective for the second stage was to

⁽⁵³⁾ *ibid*

⁽⁵⁴⁾ The Eye@RIS3 has been developed as a tool to help strategy development rather than a source of statistical data. The purpose of the database is to give an overview of regions’ priorities in order to enable others to position themselves, to find their unique niches and to seek out potential partners for collaboration. The database has been updated in 2018 and some entries have been adjusted in line with a new taxonomy adopted by JRC-Seville. See <https://s3platform.jrc.ec.europa.eu/map>

⁽⁵⁵⁾ Cooper & Emory, 1995

identify the links between the existing S3 priorities across the European Union and various aspects of sustainable innovation. The authors employed categories of sustainable innovation developed by JRC Seville ⁽⁵⁶⁾ and this list was validated through consultations with the representatives of the thematic S3 partnerships under this study. The consultations with informants (partnerships' representatives) took the form of informal semi-structured interviews and confirmed what was already known, and provided the opportunity for learning, as well as allowing for comparisons. The results of these interviews were used to determine the baseline information and the set of values and value centres. The interviews encouraged participants to begin to reflect on the issues.

In collaborative research programmes, it is often a challenge to measure directly the actual programme outcomes and outputs and to quantify every impact of the participation in such programmes, the process has to be indirectly analysed by interviewing and surveying the people involved in these programmes as well as by analysing any related documentation and archival materials. As very little has been known about the relationship between interregional S3 partnerships, their pilot activities and their contribution to SDGs, data collection included a review of pilot documentation, reports, observation of partnership meetings, and analysis of all collected and relevant data. The assessment aspect included an initial summary and analysis, plus interactive feedback and interpretation sessions with partnership actors collectively (during the Steering Committee meetings organised by the Industrial Modernisation Platform every 6 months). Such sessions more directly addressed the developmental aspects of the assessment.

The next step included developing the actual surveys. The first drafts of questionnaires were first pilot-tested in a number of smaller pilot study and discussing the results with informants (partnership actors). The feedback from the pilot study was integrated with the results of the direct interviews with partnership participants and the overall findings lead to slight changes in the original questions. Once the questions were readjusted, a survey involving representative of lead regions behind each thematic S3 partnership (under the Industrial Modernisation Platform) was the first to take place in 2018. A subsequent survey in 2019 was informed by the results from the first survey, the earlier agreed questionnaire elements and the results of process observation and assessment.

Overall, two surveys (addressing the same group of informants: representatives of the lead regions behind each thematic S3 partnership) have been developed and administered as a part of an ongoing evaluation study carried out. The surveys consisted of open- and closed-ended questions, some which used quantitative ordinal scales. During the data collection stage, the data was collected in Microsoft Excel and during the data analysis stage both Microsoft Excel and NVivo (qualitative data and text analysis) were used. Data analysis involved reducing accumulated data to a manageable size, developing summaries and looking for patterns. Further, the study interpreted these findings in light of the research questions.

3.1.3.1 Pilot Phase

Even though the objectives of the study were defined and the questionnaires were specified, these initial questionnaires still needed to be adapted for the respondents. Pilot studies in survey methodology are seen as an important step since it aids not only with the phrasing of the questions but also assists with procedural matters such as the design of a letters of introduction, the order in which the questions are to be asked, and helps to minimise non-response ⁽⁵⁷⁾. While almost all aspects of a survey should be piloted, it was important to focus on the areas that had to receive greater priority. To address these priorities, the pilot survey was conducted in two stages. The first part took the form of a number of free style exploratory and generally unstructured discussions and interviews with the key informants and field experts ⁽⁵⁸⁾. These initial talks have been informed by the reviewed literature and resulted in what Oppenheim refers to as a 'hidden agenda', that is a flexible range of

⁽⁵⁶⁾ The JRC-Seville proposed to define the so-called '*EU Policy Objectives*' as a set of ten EU-wide policy areas - each with a set of various sub-categories - corresponding to the so called 'Societal Grand Challenges' identified in Horizon2020 and the headline policies in the Innovation Union Flagship Initiative, including Creative and Cultural Industries, KETs, Social Innovation and the Digital Agenda. Further methodological information can be found here: <https://s3platform.jrc.ec.europa.eu/map>

⁽⁵⁷⁾ Oppenheim, 1992

⁽⁵⁸⁾ *ibid*

issues that need to be addressed within the scope of these exploratory interviews ⁽⁵⁹⁾. These interviews were then analysed. The outcome of this stage was a better feel for the issues being investigated and for the different existing perspectives.

At the next step, the factual survey questions were piloted for their wording and the design of the answer-categories through a test questionnaire. An advantage of this step is that the participating respondents can further assist in fine-tuning the questions and answers categories by providing immediate feedback to the interviewer. This way, the respondents who are being questioned can suggest a different interpretation of the questions (in case the questions are ambiguous or vague), different phrasing of questions or even additional categories of answers, which have not been considered during the earlier stages of the questionnaire design. As the majority of informants were non-native English speakers, it was also important to ensure the phrasing of the questions was as clear and non-ambiguous as possible. Other aspects that were considered during this first stage of the pilot study concerned the layout of the questionnaires, their format, scales and the actual procedures involved in answering the questionnaires. Once the final draft questionnaires had been developed they were additionally tested for their overall coherence. The questionnaires were circulated to respondents. The results also indicate that a response rate for the main surveys would fall in the higher range of rates for such a type of surveys.

3.1.4 Main Instrument Surveys and Procedures

Once the final versions of the questionnaire had been prepared the main data collection stage was launched. To collect the data necessary for this study the design of questionnaire included several sections. The first section of the questionnaire (labelled as *Part I. Management Report*) focused on the formal progress associated with each partnership's activities in the preceding six months as well as their planned activities over the following six months.

The second section (labelled as *Part II. Progress Report*) recorded the perceived results achieved in the preceding 6 months. The respondents were asked to specify (open-ended questions) their results across the following categories:

- *Part II.A.* Innovation results that could be attributed to the Partnership' (specific examples of Results versus Objectives).
 - o Tangible short- and medium-term socio-economic impacts achieved or expected to be achieved (with specific examples);
- *Part II.B.* Inter-regional and inter-partnership collaborative results.
 - o Additional results obtained from working with other partnerships under the thematic S3 Platforms (with specific examples);
 - o Evaluation of the involvement of relevant business sector actors (clusters, SMEs, business associations, chambers of commerce, etcetera) in the Partnership activities (with specific examples);
 - o Evaluation of whether the level of inter-regional cooperation was sufficient to potentially provide practical and relevant social-economics impacts (with specific examples);
- *Part II.C.* New Activities.
 - o Involvement of regions from EU13 Member States in the Partnership with respect to scoping, mapping and/or matchmaking (In addition, a justification was required if no EU13 regions were involved);
 - o Involvement of regions/countries from outside of EU28 Member States.
 - o Advancement and promotion of the Partnership through publications and similar outreach outcomes/activities.

⁽⁵⁹⁾ *ibid*, p.52

- Activities and projects with partnerships under other S3 thematic platforms (Agri-Food and Energy);

In the third part (labelled as *Part II.D. Your Partnership and the UN 2030 SDGs*), the participants were asked to indicate to which SDGs and to what extent their partnership contributes. This section also attempted to capture data on whether each surveyed partnership believe their activities contribute to the attainment of individual SDGs, and the level of this contribution (a Likert scale ranging from 'Strongly Agree' to 'Strongly Disagree') ⁽⁶⁰⁾.

The next section of the questionnaire (labelled *Part II.E. Self-Assessment*) dealt with the self-assessment of each partnership's progress in line with the Thematic S3 Workflow ⁽⁶¹⁾.

Finally, the last part of the questionnaire included a number of open-ended questions in relation to each partnership's action plan/next steps as well as any perceived methodological and other type support needs. This part of the questionnaire collected data which indicates additional information describing in detail their pilot activities (to be analysed in the context of sustainable innovation).

⁽⁶⁰⁾ For the purpose of this research, the authors treat the Likert scale as ordinal as we can assume that the distance between the values on the scale are the same and therefore it is hard to argue that the scale is an interval variable.

⁽⁶¹⁾ Rakhmatullin R., Hegyi F. B., et al., 2020

4 Sustainable Innovation through Smart Specialisation

The principles and objectives focusing on sustainable development have been given embedded in a variety of Europe-wide policies and tools ⁽⁶²⁾. In particular, higher levels of investment in research and innovation became an important message from the Europe 2020 strategy. As part of this strategy, the European Commission adopted its 'Innovation Union' flagship initiative, which outlined a comprehensive innovation strategy to help Europe deliver smart, sustainable and inclusive growth. The flagship initiative proposed the *concept of smart specialisation* as an approach to achieving the ambitious Europe 2020 objectives. In parallel with the Europe 2020 strategy, the concept of smart specialisation was formally introduced by the Council of the European Union (EU) back in 2010. The concept of smart specialisation has also been promoted by the Communication 'Regional Policy contributing to smart growth in Europe 2020' ⁽⁶³⁾. In this 2010 document, the Commission encouraged the design of national/regional research and innovation strategies for smart specialisation as a means to deliver a more targeted Structural Fund support and a strategic and integrated approach to harness the potential for smart growth and the knowledge economy in all regions.

Additionally, under the regulations for the 2014-2020 programming period, smart specialisation was made a legal precondition (ex-ante conditionality) for using the European Regional Development Fund (ERDF). In line with the Europe 2020 strategy, the European Union countries and regions were invited to re-examine their own assets and R&I strengths in order to re-focus their development efforts on a limited number of strategic priorities. These ambitious yet realistic priorities were and are expected to help these territories develop excellence and compete in the global economy in a sustainable manner following the smart, sustainable and inclusive growth priority set by the Europe 2020 strategy ⁽⁶⁴⁾.

The European Union's cohesion policy is its main investment policy ⁽⁶⁵⁾ with a core mission to achieve economic, social and territorial cohesion by reducing disparities between the levels of development of the various regions. Furthermore, it has been argued that the smart specialisation approach is highly pertinent to all three priorities of Europe 2020 to promote smart, sustainable and inclusive growth (RIS3 Guide, p.8).

First of all, smart specialisation matters for the future of Europe because the development of an economy based on knowledge and innovation remains a fundamental challenge for the EU as a whole. Secondly, smart specialisation is relevant to achieve sustainable growth, as an important innovation effort and considerable investment is required to shift towards a resource-efficient and low carbon economy, offering opportunities in domestic and global markets. Finally, smart specialisation contributes to inclusive growth between and within regions by strengthening territorial cohesion and by managing structural change, creating economic opportunity and investing in skills development, better jobs and social innovation.

This potential ability of smart specialisation to contribute to the Europe 2020 objectives of smart, sustainable and inclusive growth is rooted in its methodology. In particular, the S3 methodology proposes to ensure a higher level of stakeholder engagement in line with the concept of Quadruple Helix (QH) ⁽⁶⁶⁾. The QH concept brings together four sectoral perspectives (academia, government,

⁽⁶²⁾ See https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

⁽⁶³⁾ See https://ec.europa.eu/regional_policy/en/information/publications/communications/2010/regional-policy-contributing-to-smart-growth-in-europe-2020

⁽⁶⁴⁾ European Commission. 2012

⁽⁶⁵⁾ See https://ec.europa.eu/regional_policy/en/policy/what/investment-policy/

⁽⁶⁶⁾ European Commission. 2012

industry and the civil society) with a focus on the institutional, regional and operational functionalities and complementarities of these sectors in the context of the knowledge economy.

The RIS3 Guide recognises the significance of and the need for the Quadruple Helix approach by proposing to include an additional fourth group of actors (civil society as innovation users) to a classical Triple Helix model (Carayannis and Rakhmatullin, 2014). This version of the Quadruple Helix framework suggests that national and regional innovation systems should facilitate the development of innovations that are relevant for and supported by users (civil society). Such an approach to innovation is better equipped to identify a broader spectrum of innovations going beyond those based on technology or science.

Since the introduction of smart specialisation as a legal precondition, authorities across the European Union have worked hard to define a limited set of smart specialisation (S3) priorities that would help transforming these economies and securing their competitiveness globally. To date, over 120 smart specialisation strategies are being implemented across the European Union with a budget of over EUR 40 billion, while over EUR 65 billion (including national co-financing) was allocated to regions through the ERDF.

A growing number of regions and countries have been developing and validating their S3 priorities in line with further criteria such as the environmental sustainability of these new strategic priorities. This particular focus is not a recent phenomenon. In September 2013, in line with the request from the regions under review, over 30 European regions have come together in Heraklion (Greece) to discover and discuss how to align ambitions S3 priorities with their equally ambitious environmental agendas⁽⁶⁷⁾. It can be argued that the environment presents a major externality that should be taken into account when designing smart specialisations strategies based on the Quadruple Helix approach⁽⁶⁸⁾. This Quadruple Helix Plus or QH+ model would ensure focusing policies and practices on a triple-bottom baseline (economic, social and environmental) driving the development and implementation of related initiatives, ecosystems, clusters and networks.

Since the launch of the S3 Platform (JRC-Seville, EC), a large number of S3 priorities have been recorded in the Eye@RIS3 database⁽⁶⁹⁾. It was envisaged that the database would provide an overview of regional and national RIS3 priorities and will help regions position themselves, find their unique niches and identify potential partners⁽⁷⁰⁾. As of June 2020, the database contains information about over 1,250 regional and national smart specialisation priorities. All entries are additionally classified according to several different categorisation systems.

One categorisation (*by policy objective*) proposed by the S3 Platform is based on a number of key EU strategy documents and outlining main policy objectives. Under this classification of priorities, over 60% of all entries fall into two technology-related categories: 'Digital Transformation' (34%) and 'Key Enabling Technologies' or KETs (31%) (See Figure 2 below). The largest category of priorities in the dataset is related to 'Sustainable innovation' (40%).

This research analysed the text data included in the description of RIS3 priorities (encoded in the Eye@RIS3 database) in order to understand the importance of sustainable innovation in the context of smart specialisation. Further details about the methods behind this analysis is covered in more detail in section 3.1.2 (p. 13). A breakdown of the priorities under 'Sustainable innovation' can offer further insights (see Figure 3 below). When comparing the change from 2018 to 2020⁽⁷¹⁾ as regards to the priority areas registered in the JRC database, there is an 18.4% increase in the total number of priorities that are linked to 'Sustainable innovation'. More importantly, there are significant changes across a number of subcategories of priorities in this category.

⁽⁶⁷⁾ See <https://s3platform.jrc.ec.europa.eu/-peer-review-workshop-in-heraklion-crete-gr->

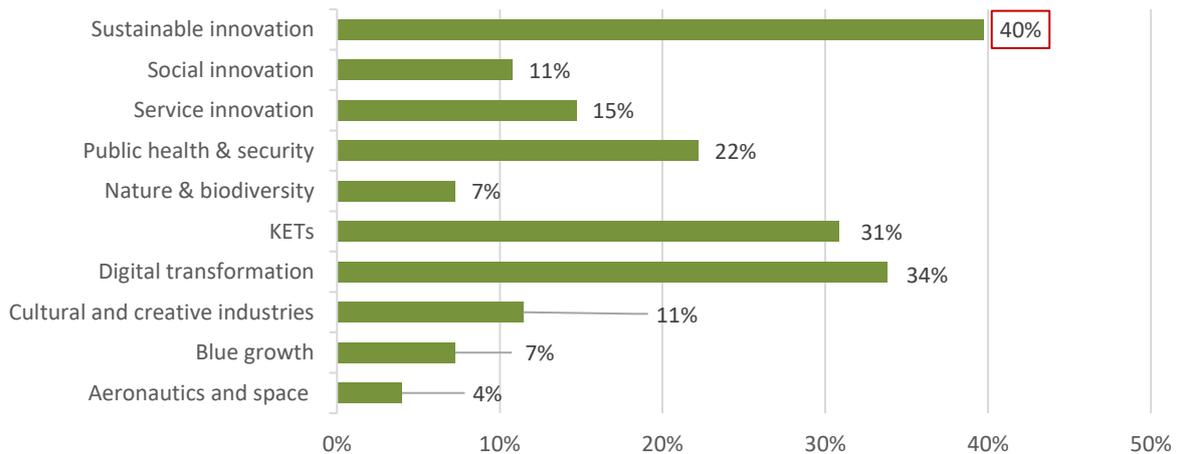
⁽⁶⁸⁾ Carayannis and Rakhmatullin, 2014

⁽⁶⁹⁾ See <https://s3platform.jrc.ec.europa.eu/eye-ris3>

⁽⁷⁰⁾ Mariussen A., et al., 2016

⁽⁷¹⁾ The Eye@RIS3 has been developed as a tool to help strategy development rather than a source of statistical data. The purpose of the database is to give an overview of regions' priorities in order to enable others to position themselves, to find their unique niches and to seek out potential partners for collaboration. The database has been updated in 2018 and some entries have been adjusted in line with a new taxonomy adopted by JRC-Seville. See <https://s3platform.jrc.ec.europa.eu/map>

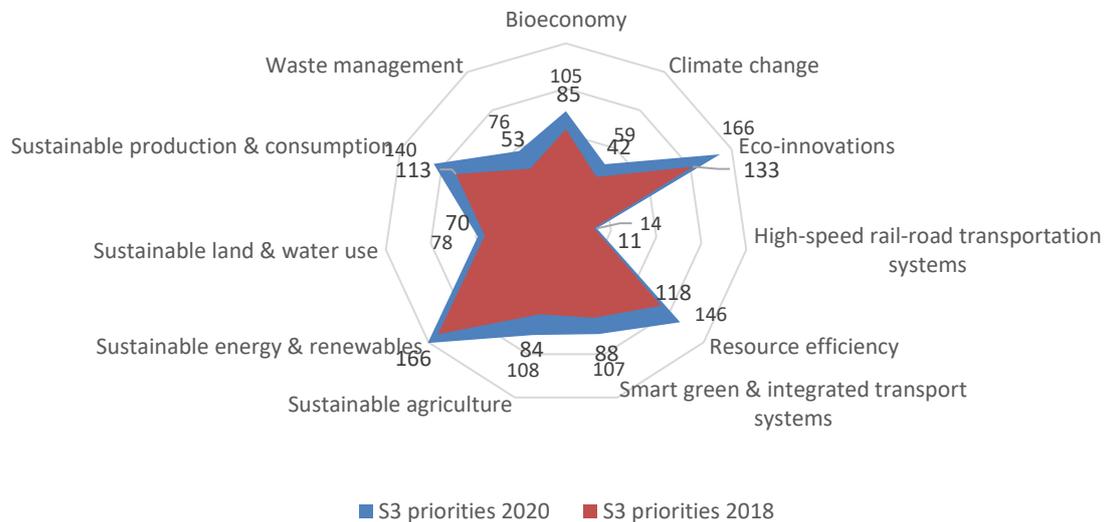
Figure 3: RIS3 priorities by Policy Objective



Source: Eye@RIS3 database, June 2020

The highest increases can be observed in two categories: ‘Waste management’ (+43%) and ‘Climate Change’ (+40%). There are also significant positive changes in several further subcategories: ‘Sustainable agriculture’ (+29%), ‘High-speed rail-road transportation systems’ (+27%), ‘Eco-innovations’ (+25%), ‘Bioeconomy’ (+24%) and ‘Sustainable production & consumption’ (+24%). While all subcategories have achieved at least some increase in the number of priorities, some categories show a slightly smaller increase from 2018: ‘Sustainable energy & renewables’ (+9%) and ‘Sustainable land & water use’ (+11%). This interest in topics linked to ‘Sustainable innovation’ continues to grow at a considerable rate across several categories (see Figure 4).

Figure 4: RIS3 priorities related to Sustainable Innovation & change from 2018 to 2020



Source: Eye@RIS3 database, June 2020

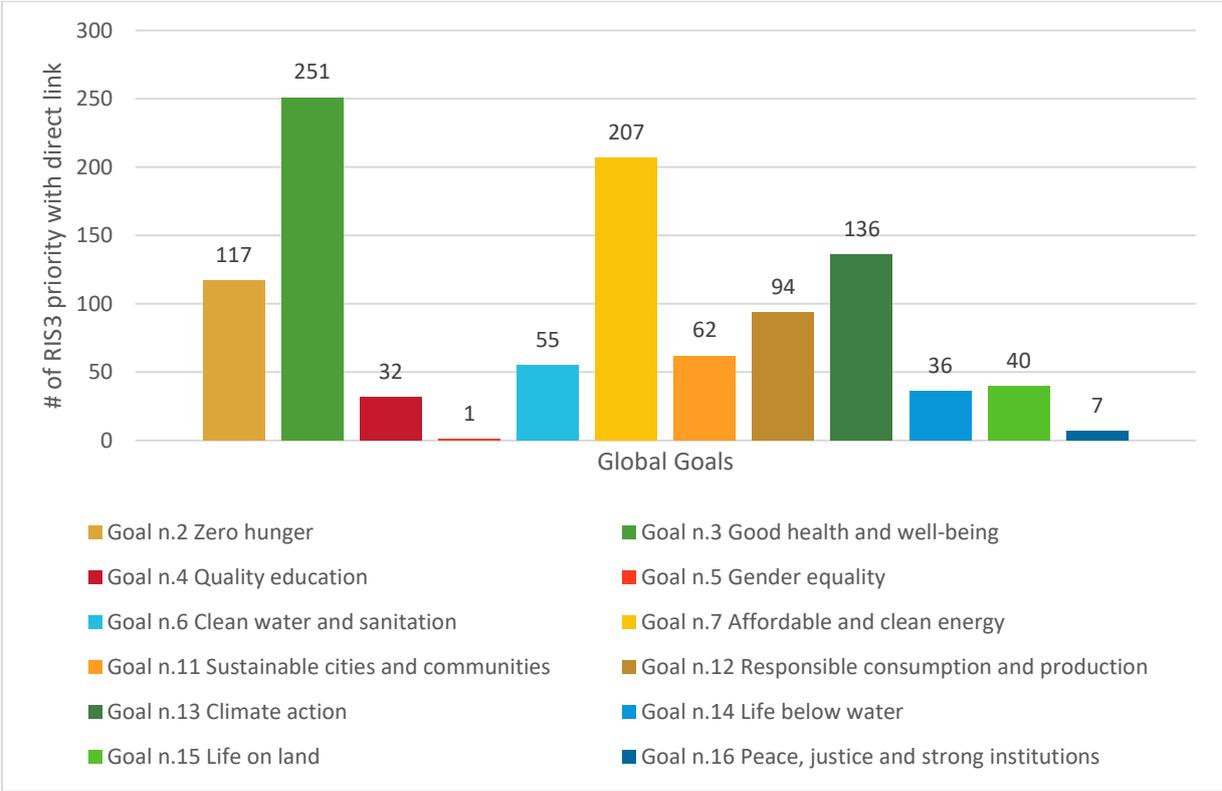
The Eye@RIS3 database does not classify data in line with the SDGs. Hence, the authors of this research have examined the S3 priorities in line with the Global Goals by examining the relationship between the description of each S3 priority and the targets of each SDG. The Goals on decent work and economic growth (SDG 8) and industry, innovation and infrastructure (SDG 9) are not included in the current analysis, due to the nature of Smart Specialisation and its inherent focus on smart,

sustainable and inclusive growth through research and innovation. The authors of this report make an assumption that most or even all S3 priorities are linked to these particular Goals.

Out of all S3 priorities encoded for the EU27 Member States (as of October 2020), about 80% of entries can be linked directly with one or more SDGs beyond SDG 8 and 9. This is in line with the findings by the European Commission suggesting that the EU cohesion policy contributes to most SDGs, if not all ⁽⁷²⁾. There is a small number of entries in the database that cannot be directly linked to any other specific Goals, except SDG 8 and 9.

Overall, 12 individual SDGs, beyond SDG 8 and 9, can be linked directly to one or more S3 priorities. More than 20% of all smart specialisation priorities in the JRC database have to have a direct link to *SDG 3 (Good health and well-being)*, while over 16% of entries can be linked to *SDG 7 (Affordable and clean energy)* (see Figure 5). A further 10% of all encoded priorities are related to *SDG 13 (Climate action)* and over 9% of priorities can be directly linked with *SDG 2 (Goal targeting zero hunger)*. No S3 priorities could be linked directly with *SDG 1 (no poverty)*, *SDG 10 (reduce inequalities)* and *SDG 17 (partnerships for the goals)*, while only one S3 priority has a direct link with *SDG 5 (gender equality)*.

Figure 5: Number of RIS3 priorities by Global Goal



⁽⁷²⁾ European Commission, 2019. Reflection paper: Towards a Sustainable Europe by 2030, COM (2019)22.

4.1 Partnering for Results

Many European regions are currently implementing their smart specialisation strategies in line with a common set of methodological principles initially proposed by the European Commission back in 2021⁽⁷³⁾ ⁽⁷⁴⁾. These guidelines were mostly formulated before the three thematic platforms were launched. With the first partnerships emerging under the then brand new thematic platforms back in 2015–2016, there was a limited number of documented good practices of how to go about putting together an interregional partnership with an explicit focus on co-investments into joint bankable projects. Hence, the European Commission attempted to define an initial set of guiding principles to help partner regions in their work setting up new interregional thematic S3 partnerships in the areas of agri-food, energy, and industrial modernisation. This set of guidelines was to a large degree inspired by the experiences of regions that were already working together under the umbrella of the Vanguard Initiative (VI).

Starting in 2015, the European Commission services launched three thematic Smart Specialisation platforms. These platforms were put in place to provide an interactive and participatory environment that would support interregional collaboration in the context of smart specialisation priority areas linked to Agri-Food, Energy, and Industrial Modernisation. The three platforms were expected to help EU regions generate collectively a pipeline of industrial investment projects following a bottom-up approach based on the idea of interregional cooperation and the involvement of industry and clusters.

The three platforms are joint initiatives supported by the European Commission (EC). By mobilising its services, the EC provides regions with a wide range of bespoke advice and support services. More specifically, the three platforms are supported by the following Directorates-General (DGs) of the European Commission: Agriculture and Rural Development (AGRI); Energy (ENER); Internal Market, Industry, Entrepreneurship and SMEs (GROW); Joint Research Centre (JRC); Regional and Urban Policy (REGIO); and Research and Innovation (RTD). The EC services have committed to supporting the thematic platforms with a specific objective to align their multi-level policies in order to support strategic areas explored by the thematic S3 partnerships.

As of March 2021, a total of 32 partnerships are supported by the three thematic S3 platforms. The platforms help all partner regions and their stakeholders overcome various obstacles related to the implementation of smart specialisation strategies. At the same time, by participating in thematic partnerships, regions can improve the regional knowledge base leading to new paths of development and a better position in global value chains and transnational joint strategies of innovation.

The existing thematic activities are expected to evolve into a new form of interregional innovation investments initiative⁽⁷⁵⁾ to be supported by the European Innovation Council and Small and Medium-sized Enterprises Executive Agency (EISMEA)⁽⁷⁶⁾.

Regional policymakers can rarely find a ready-to-use solution that would work for every region. What might have worked well for one group of regions might not be ideal for another group. The 4-step approach originally defined by the Vanguard Initiative⁽⁷⁷⁾ has since evolved to suit the new partnerships' needs. These needs are often determined by a variety of factors such as thematic areas tackled by new partnerships as well as specific regional preferences and previous experience.

Having supported a large variety of thematic S3 partnerships since 2015, the European Commission's S3 Platform (JRC) has accumulated a significant hands-on yet tacit knowledge of what is involved in this complex process of initiating, setting-up, and managing these interregional collaborative

⁽⁷³⁾ European Commission, (2012). Guide to Research and Innovation Strategies for Smart Specialisation (RIS3). European Commission.

⁽⁷⁴⁾ European Commission, (2016). Implementing Smart Specialisation: A Handbook, Brussels: European Commission.

⁽⁷⁵⁾ See https://eisma.ec.europa.eu/programmes/interregional-innovation-investments_en

⁽⁷⁶⁾ Established on the 1st of April 2021, EISMEA will continue creating strong synergies to support the recovery of the European economy, and in particular small and medium-sized enterprises, notably through innovation. See https://eisma.ec.europa.eu/about-eisma_en

⁽⁷⁷⁾ The Vanguard Initiative proposed a four-step approach: Learn, Connect, Demonstrate, and Commercialise. See <https://www.s3vanguardinitiative.eu/>

arrangements. Along the way, the European Commission and the regions involved in the activities of the three thematic platforms have learnt from what works and what does not work.

This work resulted in a recently published *methodological manual* ⁽⁷⁸⁾ for regions interested in the development of interregional partnerships in specific thematic areas of strategic growth. By documenting these unique experiences in this bespoke manual, the European Commission codified or translate this accumulated knowledge in the form of a methodological manual that provides a detailed description of the specific key elements and challenges associated with this new thematic S3 approach to initiating and managing interregional partnerships. It is anticipated that the methodological manual could be used by any region wanting to initiate a thematic S3 partnership or partnerships. Furthermore, it is expected to help the existing S3 partnerships review their progress and monitor their performance regularly ⁽⁷⁹⁾.

The thematic smart specialisation platform for industrial modernisation (S3P – Industry) offers opportunities to regional managing authorities with similar smart specialisation priorities to cooperate based on each other’s competences, share infrastructure, allow scaling up to larger impact and develop joint investment projects. The S3P – Industry brings together regions that are committed to generate joint industrial investment projects based on an exploratory process of linking innovation eco-systems, networks and complementing competencies. As of March 2021, 21 partnerships are supported by the S3P – Industry with three other partnerships with dual affiliations with the Agri-food and Energy platforms (see Figure 6).

Figure 6: Partnerships supported under the S3P – Industry platform



Source: S3P – Industry webpage, March 2021

Over 130 regions are participating in the activities of this platform and this growing number of partnerships and participating regions confirms the usefulness of the thematic S3 approach. It further signals the will and needs of partner regions to align innovation roadmaps across European policies and territories.

Analysing the pilot projects of the 24 S3P – Industry partnerships depicted on Figure 5 along the policy objectives presented in Figure 7, a large share of these partnerships have direct linkages ⁽⁸⁰⁾

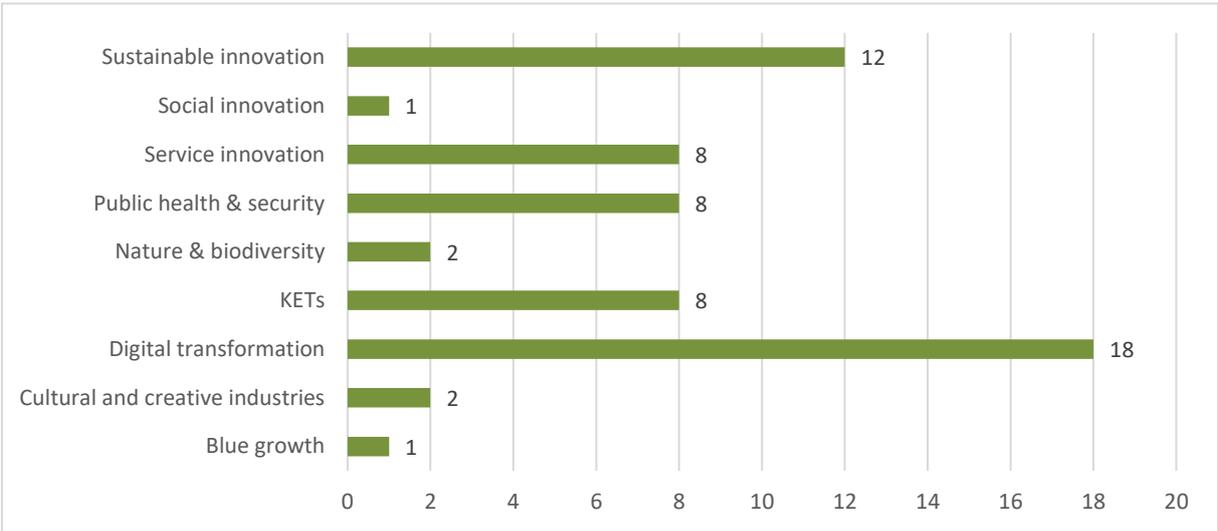
⁽⁷⁸⁾ Rakhmatullin R., Hegyi F. B., et al., 2020
⁽⁷⁹⁾ Hegyi F. B. and Rakhmatullin R., 2020
⁽⁸⁰⁾ See the methodological part of this paper.

with the digital transformation policy objective. Description of the pilot projects are available in the bi-annual monitoring report of each partnership developed by JRC ⁽⁸¹⁾ ⁽⁸²⁾.

Given the variety of ambitious areas that are tackled by the partnerships working under the Industrial Modernisation platform, it does not come as a surprise that this particular initiative featured as a good practice of a regional/local level policy initiative in a recent European Commission's *Reflection Paper 'Towards a sustainable Europe by 2030'* ⁽⁸³⁾.

By analysing pilot projects and demo-cases by the S3P – Industry ⁽⁸⁴⁾ partnerships versus policy objectives, this research shows that one half of all partnerships (12 out of 24) have pilot activities linked to the topic of sustainable innovation. In addition, 75% of the surveyed ⁽⁸⁵⁾ partnerships (18 out of the 24) are working on pilot projects linked to digital transformation. Eight partnerships are working on pilot projects linked to key-enabling technologies (KETs) (representing 30% of all S3P – Industry partnerships) and again 30% to public health and security, as presented in *Figure 7*.

Figure 7: S3P – Industry pilot projects by Policy Objective

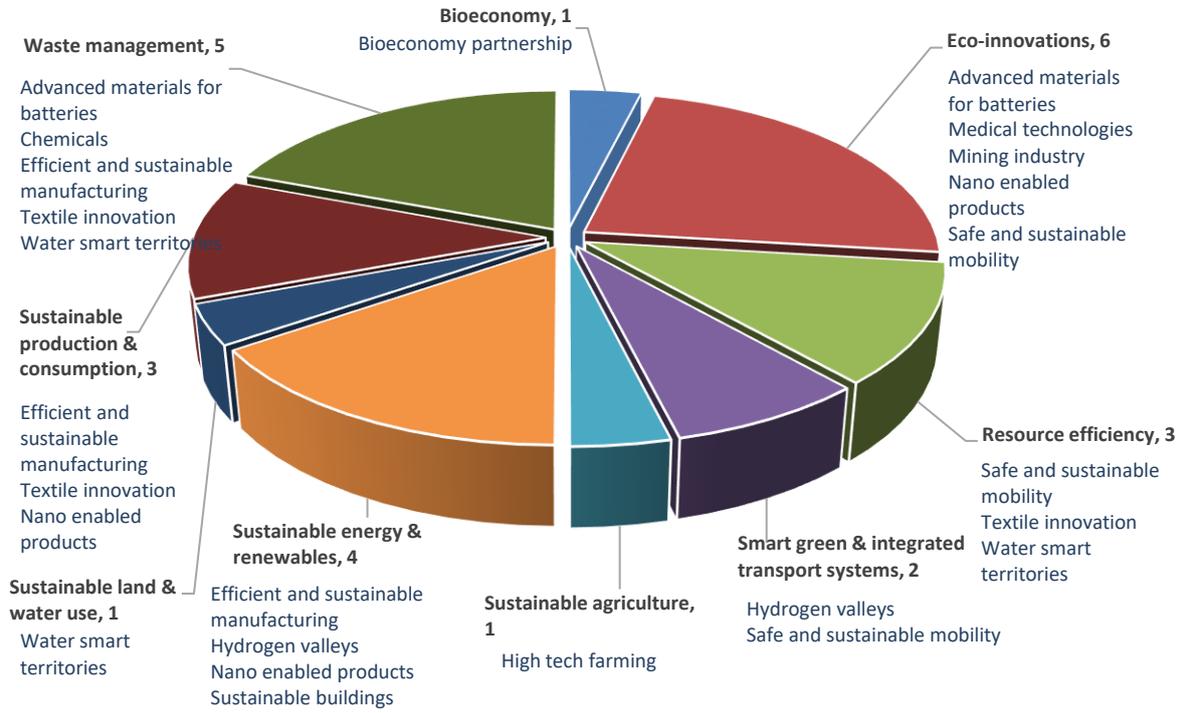


Following the line of analysis introduced in the earlier section of this paper on Sustainable Innovation through Smart Specialisation, a breakdown of the priorities under ‘Sustainable innovation’ offers additional insights into the pilot projects planned and implemented by the 24 S3P – Industry partnerships.

Out of the 24 partnerships, a significant number of partnerships work on pilot projects are linked to eco-innovations (6 out of the 24 partnerships) and waste management (5 out of the 24 partnerships) (see *Figure 8*).

⁽⁸¹⁾ Hegyi, Fatime Barbara and Ruslan Rakhmatullin, 2020. Developing an Evaluation Framework Integrating Results of the Thematic Approach to Smart Specialisation. 2020
⁽⁸²⁾ Monitoring reports can be accessed under each partnership page: <https://s3platform.jrc.ec.europa.eu/thematic-areas>
⁽⁸³⁾ See https://ec.europa.eu/info/publications/reflection-paper-towards-sustainable-europe-2030_en
⁽⁸⁴⁾ This paper focuses on the thematic S3 partnerships supported by the Industrial Modernisation Platform. The other two other platforms (Agri-Food and Energy) have not been included in the analysis due to as the two platforms had other objectives. Furthermore, the number of partnerships under these two platforms were not considered to be large enough to draw meaningful conclusions.
⁽⁸⁵⁾ Hegyi, Fatime Barbara and Ruslan Rakhmatullin, 2020.

Figure 8: S3P – Pilot Activities linked to Sustainable Innovation



4.2 Understanding the potential of thematic S3 Partnerships to contribute to SDGs

Earlier research has advocated the introduction of an evaluation framework allowing monitoring progress and evaluating outcomes and results of pilot projects of S3 partnerships (Hegyí and Rakhmatullin, 2020). Such a framework can allow assessing strategic activities and adjusting policy measures and instruments. In particular, the proposed evaluation framework ⁽⁸⁶⁾ examines the extent to which each thematic S3 partnership contributes to individual Sustainable Development Goals (SDGs). The results can then be interpreted to monitor the extent to which collective efforts of the existing thematic S3 partnerships have the potential to contribute to the attainment of the 2030 Agenda for Sustainable Development and its 17 SDGs.

A growing number of thematic S3 partnerships target various S3 priority areas linked to sustainability and/or resource efficiency. A total of 14 S3P – Industry partnerships have been included in the analysis that examines their links with specific SDGs. These are highlighted with a dashed red line in *Figure 9*. Those partnerships have been included in the pilot analysis from which data is available for four consecutive reporting periods from January 2018 to December 2019.

Figure 9: S3P - Industry partnerships included in the SDG analysis



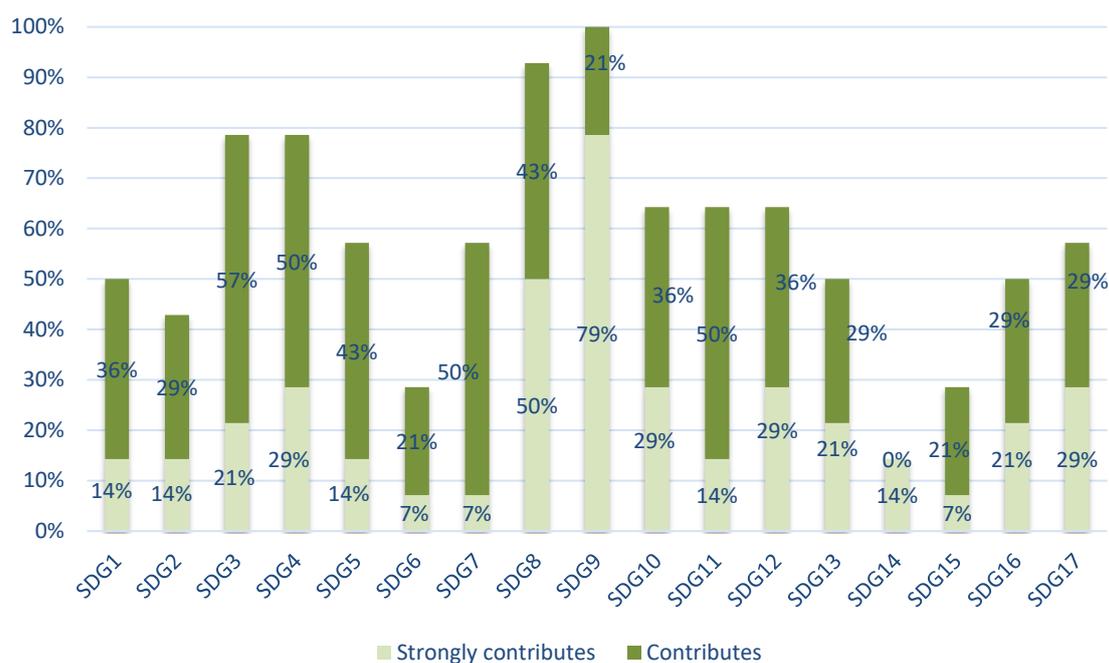
Out of the 14 partnerships that have participated in the first pilot assessment ⁽⁸⁷⁾ analysing the links between the partnerships' projects and SDGs, *Figure 10* presents the shares of the thematic S3P - Industry partnerships that contribute to individual SDGs.

According to this assessment, every thematic S3P - Industry partnership under review contributes to SDG 9 (*building resilient infrastructure, promote inclusive and sustainable industrialisation & foster innovation*). Significant shares of partnerships contribute to SDG 3 (*ensuring healthy lives & promote well-being for all at all ages*), SDG 8 (*promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all*), and SDG 4 (*Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*) (Hegyí and Rakhmatullin, 2020). The links with individual SDGs is being assessed biannually, thereby the links between SDGs and the work and objectives of the partnerships can be presented.

⁽⁸⁶⁾ Hegyi, F. B. and R. Rakhmatullin, 2020

⁽⁸⁷⁾ See the methodological section of this paper for more information.

Figure 10: Thematic S3P – Industry: Shares of partnerships with links to SDGs, 2018

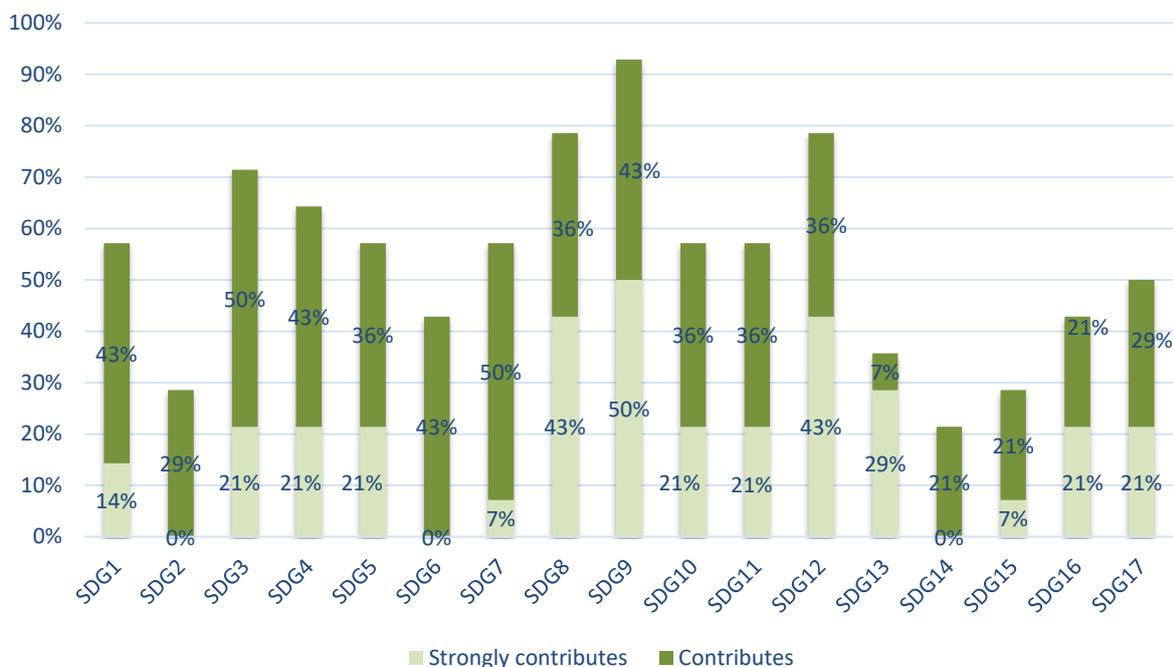


Source: Hegyi and Rakhmatullin, 2020

Similarly,

Figure 11 presents the links between the same 14 S3P – Industry partnerships with SDGs for the second semester of 2019.

Figure 11: Thematic S3P – Industry: Shares of partnerships with links to SDGs, 2019

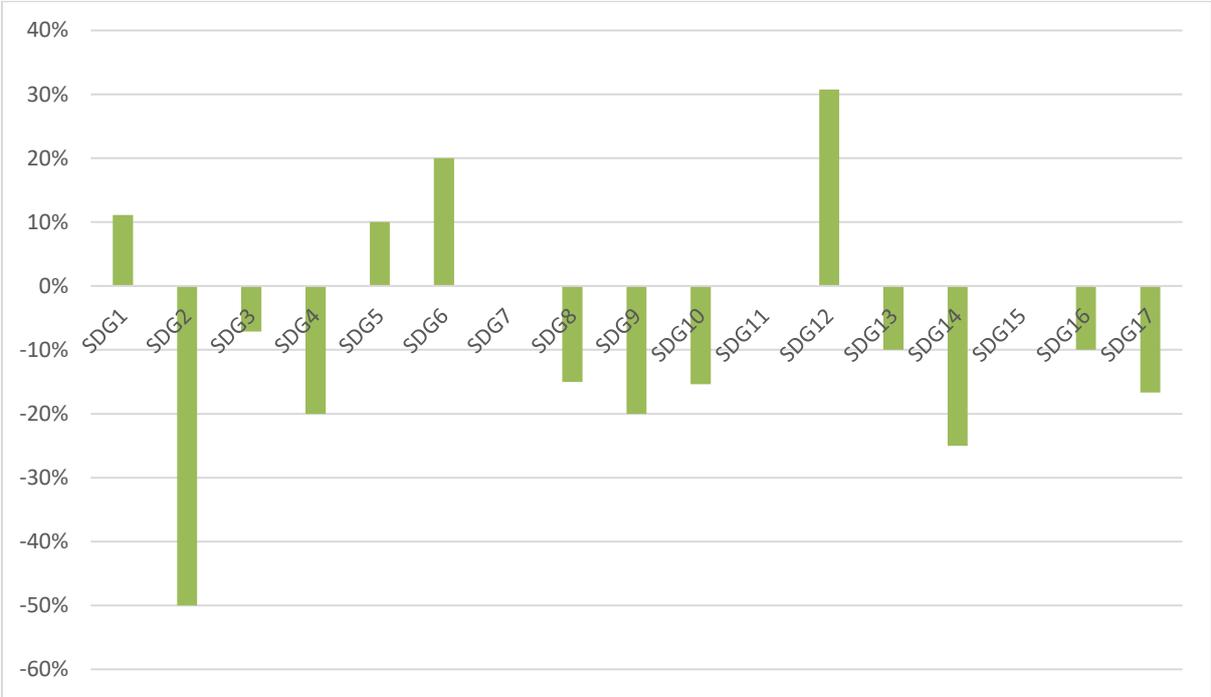


Source: Hegyi and Rakhmatullin, 2020

The use of an assessment framework proposed earlier ⁽⁸⁸⁾ could contribute to shaping the sustainability of the respective innovation systems. It could also allow for an early detection of future strategic areas of sustainable growth. The mid-2019 data confirms that the levels of commitment to individual Global Goals (see Figure 12) has changed from 2018. Specifically, for example there is an increase in the (stronger) levels of commitment to SDG 12 (ensuring sustainable consumption and production patterns). Figure 12 depicts the change in the 14 assessed S3P – Industry partnerships’ commitment towards Global Goals between the periods January 2018 and December 2019.

As shown in Figure 12, the levels of perceived contribution to the attainment of individual Global Goals tend to develop over time. From 2018 to 2019, the analysed partnerships have declared lower levels of commitment towards certain Goals and higher levels of commitment to other Goals. To estimate this change, this research calculates it as a total sum of all partnership commitments to each SDG declared. Each commitment is assigned a value of just one point, whereas each strong commitment is assigned a full two points. SDG 6 (Ensure availability and sustainable management of water and sanitation for all) and SDG 12 (Ensure sustainable consumption & production patterns respectively) have the highest increases in the level of commitment from thematic S3 partnerships.

Figure 12: Observed shifts in partnerships’ commitment towards Global Goals



In case of the 14 assessed S3P – Industry partnerships, there is a decrease by over a third (33%) in the perceived contribution of these partnerships to the attainment of SDG 2 (End hunger, achieve food security and improved nutrition & promote sustainable agriculture). Given the scale of these changes, it is possible to argue that the perceived commitment to specific SDGs can vary with time as policymakers have more time to review the outcomes and results of specific interregional partnerships. It is recommended to carry out similar analysis over a longer period to understand whether this trend will continue into the future. Slightly lower decreases can be observed in the commitments towards SDG 4 (Quality Education, -18%) and SDG 9 (Industry, innovation and infrastructure, -14%).

⁽⁸⁸⁾ Hegyi, F. B. and R. Rakhmatullin. 2020.

5 Discussion and Conclusions

In line with the European Union's commitment, the European Green Deal put a commitment to sustainability at the centre of its economic policy in line with the United Nations' 2030 Agenda and the 17 Sustainable Development Goals. To deliver a true industrial change in line with the ambitious Green Deal and boost the competitiveness of the EU economy, the EU needs to encourage instruments supporting a faster pace of development at the regional level ⁽⁸⁹⁾. This is increasingly important as Europe's competitive edge depends on its capacity to promote new regional level growth models, by targeting investments in innovative sectors with significant growth potential and high added value ⁽⁹⁰⁾.

In early December 2020, the EU legislators reached a provisional political agreement ⁽⁹¹⁾ on how EU countries would be able to spend EU regional, cohesion and social funds for 2021-2027. The new agreement outlines five simplified objectives: a more competitive and smarter Europe; a greener, low-carbon transitioning towards a net zero carbon economy and resilient Europe; a more connected Europe; a more social and inclusive Europe; a Europe closer to citizens. Furthermore, the European Parliament succeeded in specifying four overarching principles to adhere to in order to receive EU funding. One of these is linked to *the respect of the UN Sustainable Development Goals and the Paris Climate Agreement*. Strong legislative moves like this indicate that the European Union's cohesion policy will remain an important investment policy that will be now even more aligned with the objectives set by the UN SDGs. As one of the most transversal and crosscutting policies, the EU's cohesion policy continues to be positioned well to continue contributing to most, if not all, 17 SDGs ⁽⁹²⁾. Given its complexity, the implementation of specific instruments funded under the cohesion policy will require member states and regions to work together even closer than ever before. Collaborative arrangements such as the S3 partnerships are well positioned to contribute to the implementation of policies linked to the Green Deal on the ground ⁽⁹³⁾.

The existing and new thematic S3 activities are expected to evolve into a new form of interregional innovation investments initiative ⁽⁹⁴⁾ to be supported by the European Innovation Council and Small and Medium-sized Enterprises Executive Agency (EISMEA) ⁽⁹⁵⁾. Established on the 1st of April 2021, EISMEA will continue creating strong synergies to support the recovery of the European economy, and in particular small and medium-sized enterprises, notably through innovation.

Thematic S3 partnerships are an example of a practical way to visibly involve various societal actors in the SDG processes, making them conscious that global goals are relevant at local level and encouraging participation in the whole process ⁽⁹⁶⁾. This research reviews interregional thematic S3 partnerships that are well positioned to allow partner regions to combine their often-complementary strengths, exploit competences in research and innovation, get necessary research capacity, gain access to global value chains and overcome a lack of critical mass and fragmentation. This study develops a number of conclusions contributing to both practice and theory.

The authors examine the extent to which existing RIS3 priorities are related to the sustainable innovation, i.e. creating something new that improves performance across the three dimensions of sustainable development: social, environmental and economic ⁽⁹⁷⁾. Following this analysis, the authors

⁽⁸⁹⁾ Hegyi, F. B., and R. Rakhmatullin (2017). Implementing smart specialisation - thematic platform on industrial modernisation. EUR 28769 EN. doi:10.2760/312534

⁽⁹⁰⁾ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Strengthening Innovation in Europe's Regions: Strategies for resilient, inclusive and sustainable growth (SWD (2017) 264 final).

⁽⁹¹⁾ See <https://www.europarl.europa.eu/news/en/press-room/20201126IPR92516/deal-on-new-rules-for-eu-regional-cohesion-and-social-funds-over-next-7-years>

⁽⁹²⁾ European Commission, 2019. Annex I The Juncker Commission's contribution to the Sustainable Development Goals. ANNEXES to the Reflection paper Towards a sustainable Europe by 2030. Brussels, 30.1.2019 COM(2019) 22 final

⁽⁹³⁾ See https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en#policy-areas

⁽⁹⁴⁾ See https://eisma.ec.europa.eu/programmes/interregional-innovation-investments_en

⁽⁹⁵⁾ See https://eisma.ec.europa.eu/about-eisma_en

⁽⁹⁶⁾ European Committee of the Regions.

⁽⁹⁷⁾ Kneipp, J.M., Gomes, C.M., et al., (2019)

provide an overview of the thematic approach to smart specialisation and its implementation through thematic S3 partnerships.

More specifically, this research argues that the smart specialisation approach facilitates the identification of RIS3 priorities that aligned with the idea of sustainable innovation. Given the currently high degree of dispersion and fragmentation of capabilities across the European Union, it is imperative that industrial modernisation efforts are even better aligned across regional, national and EU instruments in support of innovation, skills, and entrepreneurship. This is where *research and innovation strategies can be further fine-tuned to strengthen the sustainability dimension of industrial modernisation policies and effectively contribute to the attainment of the Sustainable Development Goals*.

This research suggests that a large share of RIS3 priorities (40%) across the EU target directly various sustainable innovation challenges, and this share is evolving over time. It is possible that this is due to regional and national policymakers becoming increasingly aware of the sustainable development agenda with an observed shift to sustainability-related areas such as *waste management, climate change, sustainable agriculture, eco-innovations, and sustainable production & consumption*.

Furthermore, this research recognises the need to develop and maintain databases such as the Eye@RIS3 database that is currently the only source of information about smart specialisation priorities declared by Member States and regions. Given the growing relevance of the sustainability discourse, current and future users of the database could benefit further if the dataset included a way to analyse various priorities based on their links to various SDGs.

The European Union highlights the role of partnerships (between the European Union, Member States and/or the industry) in speeding up the transition towards a green, climate neutral and digital Europe, as well as making European industry more resilient and competitive⁽⁹⁸⁾. It has been suggested⁽⁹⁹⁾ that ambitious objectives can only be achieved if all societal actors and stakeholders work together. This requires new forms of partnerships that involve governments, the private sector and civil society⁽¹⁰⁰⁾. The activities of these partnerships also need to be clearly defined connected with the key principles, values, a shared vision and shared goals that are defined in public policies such as the European Union's Green Deal.

In line with the thematic approach to S3⁽¹⁰¹⁾, further investments can be enabled further by exploring new strategic niches while facilitating the integration of EU businesses in global value chains to boost their competitiveness and ensure access to global markets on more favourable competitive conditions. *Synergistic rewards* can be achieved through a flexible and responsive form of interregional collaboration with a focus on joint investments in areas associated with high growth. This paper examines this new type of investment-focused interregional S3 partnerships driven by shared or similar smart specialisation priorities in partner regions. In line with the experimental nature of the S3 approach, these thematic S3 partnerships can offer an experimental form of interregional partnerships to align various S3 agendas to overcome capability failures hindering innovation.

By selecting these partnerships as an example of such interregional collaborative arrangements, this paper explored the extent to which these activities are perceived to contribute to the attainment of the Global Goals. This research confirms that thematic S3 partnerships have the potential to contribute to the attainment of various SDGs. The results indicate that a majority of ongoing thematic S3 partnerships have such potential to contribute to the delivery of SDGs in line with the UN drive towards the sustainable development. Thematic S3 partnerships are now included⁽¹⁰²⁾ in *The Partnerships for SDGs online platform*, which is the United Nations' global registry of voluntary

⁽⁹⁸⁾ See https://ec.europa.eu/commission/presscorner/detail/en/ip_21_702

⁽⁹⁹⁾ See <https://www.un.org/sustainabledevelopment/globalpartnerships>

⁽¹⁰⁰⁾ European Committee of the Regions. 2019. A territorial approach for the implementation of the SDGs in the EU – The role of the European Committee of the Regions.

⁽¹⁰¹⁾ Rakhmatullin R., Hegyi F. B., et al., 2020

⁽¹⁰²⁾ See <https://sustainabledevelopment.un.org/partnership?p=29692>

commitments and multi-stakeholder partnerships, facilitating global engagement of all stakeholders in support of the implementation of the Sustainable Development Goals.

In line with the importance of reliable and relevant data to assess the 2030 Agenda ⁽¹⁰³⁾ and in order to track interregional thematic S3 partnerships' contribution to SDGs and assess their impact, European policymakers should continue their efforts aimed at building in new ways to collect consistently information about the extent to which various policy local/regional/national initiatives contribute to specific goals. For example, such a dimension could be built into various monitoring, evaluation and assessment forms used for managing any interregional or transnational collaborative arrangements such as the thematic S3 partnerships.

Finally, the practical implications of this study are in gaining further insights in understanding the connection between smart specialisation strategies developed by Member States and regions and SDGs, to understand the potential of thematic S3 partnerships to contribute to the attainment of these goals, and to understand how these contributions change over time. These insights can help EU policymakers, government departments and other professionals to understand the benefits and limitations of interregional S3 cooperation in the context of sustainable development.

⁽¹⁰³⁾ Siragusa, A., Vizcaino, M.P., 2020

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