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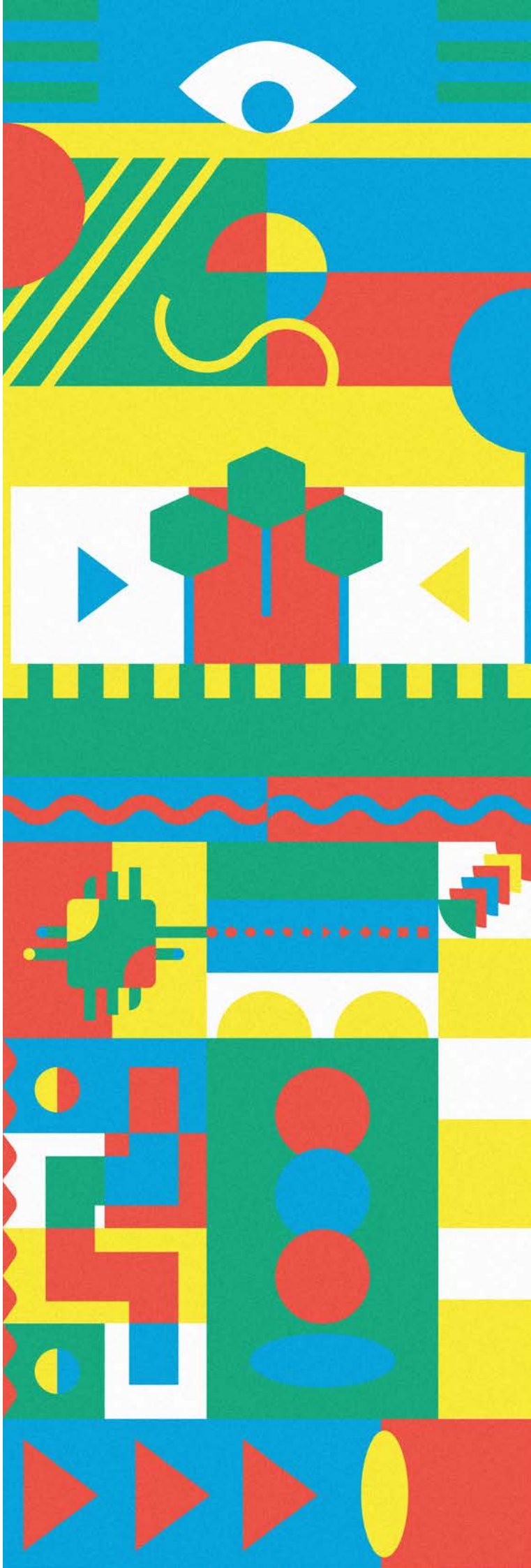

POLICY BRIEF

How to enhance the fulfilment of the S3 enabling condition in European regions

Lessons learnt from the WGs on innovation diffusion, industrial transition, and interregional cooperation.

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List of Acronyms

C4T	Cohesion for Transition
EC	European Commission
EDP	Entrepreneurial Discovery Process
ERDF	European Regional Development Funds
ESDE	Employment and Social Developments in Europe
EU	European Union
FDI	Foreign Direct Investment
I3	Interregional Innovation Investments
IC	Interregional Collaboration
ICT	Information and communication technology
MNCs	Multinational Companies
RDI	Research, Development and Innovation
RTO	Research and Technology Organisations
S3	Smart Specialisation Strategies
S3CoP	S3 Community of Practice
SDGs	Sustainable Development Goals
SMEs	Small and Medium Enterprises
STEM	Science, technology, engineering, and mathematics
TRL	Technology Readiness Levels
TSA	Targeted Support Assignments
WG	Working Group

Executive summary

The working groups (WGs) developed within the Smart Specialisation Strategies (S3) Community of Practice (S3CoP) aim to foster a learning process for relevant policy stakeholders on the fulfilment of the S3 enabling condition "Good governance of national or regional smart specialisation strategies" during the 2021-2027 programming period, focusing on **innovation diffusion, industrial transition, and interregional cooperation**.

This policy brief explores two **implementation challenges** selected in each WG by the participating regions and networks and summarises a series of key learnings and recommendations with the aim of upgrading the role and status of the three topics in the S3 policy mix and optimising and tailoring the efforts according to regional needs.

The WG on **Innovation diffusion** focuses on the analysis of how European regions address the challenges for innovation diffusion and digitalisation. The analysis of Innovation diffusion includes the process through which different organisations gather ideas from outside and use them to introduce an innovation (e.g. a new process of production, a new product itself or a new way of providing a service) and the process of adoption of existing technologies (e.g. purchasing machinery developed elsewhere or signing a license agreement for an existing patent). This WG analyses how new ideas, practices and innovation spread through a society. The two main challenges addressed were: a weak or absent systemic approach to innovation diffusion and a weak articulation of demand for innovation and innovation support services from business, notably SMEs.

The WG on **industrial transition** analysed how to make Europe more competitive by promoting innovative economic transformation. Innovative economic transformation implies the development and uptake of innovation capacities, digitalisation, greener investments, and skills for industrial transition. This WG discussed the following two key challenges: understanding and managing systemic change and achieving an inclusive industrial transition: leave no region behind.

Finally, the WG on **interregional collaboration** focuses on ways to foster interregional collaboration by building on the priorities set out in each S3, and seeking opportunities for international collaboration between research actors, innovation actors, private companies, territorial authorities, and citizens/civil society, in similar areas based on the mapping of complementarities. This WG focused on: how to build adequate capacity to engage in, sustain efforts and benefit from opportunities brought by interregional collaboration; access to adequate funding and long-term financial planning; and how to align individual and collective goals around priorities to foster outward-looking mindsets and to synchronise goals and actions across borders.

The core messages and key recommendations are summarised below:

Working Group	Key messages and policy recommendations
Innovation Diffusion	• Need for sustained commitment from local and national authorities, as well as tailored approaches to designing and delivering innovation diffusion policies and practices. • To generate transformational innovation responses, regional innovation systems need to consider the optimal engagement of their innovation communities. • Embedding innovation diffusion as a central component of regional innovation ecosystems can be supported by actions such as the 'mutualisation' of innovation diffusion intermediaries and the systematic capture of innovation demand. • Innovation diffusion can strengthen collaboration across innovation actors where a strategic approach is adopted such as: designing innovation support services according to prioritised sectors/niches and regional value chains; adopting an 'innovation pipeline' approach that coordinates the needs of innovation actors and support services according to technology readiness levels. • It is crucial to also strengthen the business-specific support elements. Tailoring business-specific support demands a more customised approach considering factors such as sector, maturity, size, technological capacity, and collaboration potential within the business community.
Industrial Transition	• Need for robust evidence-based policy making for diagnosis, monitoring, and evaluation of outputs/impacts. • Need to align industrial transition with the SDGs. • Need for comprehensive stakeholder mapping and engagement for effective multi-level governance and systemic change. • Need of industries committed to experimentation and peer learning. • Repurpose industrial settings of local economies. • Stimulate retention and attraction of higher skilled labour in areas with low population density, and where new industries may be attracted, including through improving the related infrastructure (schools, hospitals, etc). • Support to the local development of higher value adding industrial activities such as: e-government services, new energy management systems, new water management systems, new business models for bio-based economies, new inter-mobility systems, cultural management, and more. • Reduce economic disparities with new regional value chain programmes targeting regions that could risk being left behind. • Make the most of cluster organisations, innovation valleys, and industry networks to get a better understanding of the industrial needs, capabilities, and access to stakeholder with the potential to find innovative solutions to the local challenges.
Interregional Collaboration	• The value-added of interregional collaboration needs to be better understood and demonstrated to unlock support for interregional collaboration. • Articulate and communicate the case of the added value of interregional collaboration beyond short-term acquisition of funds. • Regions with lacking capacity and sub-critical size should be encouraged to make more use of relevant networks (e.g. ERRIN, Vanguard, existing TSSPs or any other existing interregional initiative) to gain expertise on interregional collaboration (e.g. reference networks, governance models, funding streams etc.). • To align the search for interregional collaboration funding to a sound territorial strategy, it would be necessary to avoid relying exclusively on EU funding sources and mobilise domestic funding too. • Strengthening the domestic innovation ecosystem around key priorities is a key 'entry condition' into international collaboration networks and projects, as it provides strong local nodes for interregional collaboration.

The 2021-27 S3 enabling condition has established a strong baseline for making innovation diffusion, industrial transition, and interregional collaboration key elements of the S3 policy mix. Based on the discussions and the analytical work developed during the first year of activity of the S3CoP WGs, a number of common elements need to be addressed:

- Regions should be encouraged to adopt a more strategic approach to connecting these elements with both the S3 EDP and monitoring and evaluation processes.

- Having a strong regional EDP, where the dominant actors in the regional ecosystem are identified as well as the connections among innovation actors, is crucial for deploying effective policies that support innovation diffusion, industrial transition and interregional collaboration. A more inclusive quadruple helix orientation to the EDP can facilitate how the community acts as a driving force for transformative innovation policies, guiding and steering transitions more effectively.

- Strengthening the domestic innovation ecosystem around key priorities and establishing S3 'strategic communities' act as a key 'entry condition' into international collaboration networks and projects, ensuring more impacts from those efforts.

- Monitoring and mapping progress towards objectives at regional level has also been identified as a key element by the three WGs.

- Innovation diffusion plays a key role in responding to innovation 'demand' and should be an integral element of innovation collaboration.

- It is necessary to improve the exchange of data and information on collaborative innovation programmes. For less developed regions, external expert assistance and capacity building through intermediaries can help to diffuse and embed learning and action within regional innovation ecosystems.

- Results and value articulation of the benefits and results of innovation diffusion, industrial transition and interregional collaboration is crucial.

- Regions should be encouraged to allocate time and funding for strengthening capacity building for interregional collaboration.

- Improving transparency and quality of information on funding opportunities, simplifying access to funding, and facilitating synergies with regional funding would incentivise stakeholders further to collaborate across regions, invest time and resources, and innovate.

- Addressing the challenges associated with long-term transformations requires active transition management by policymakers and key stakeholders in regions in industrial transition. The future S3 agenda should focus on the development of effective approaches to interregional innovation diffusion, to support EU territories in their capacity for the uptake of green technologies.

The benefits of interregional collaboration around regional S3 priorities should be widely communicated to promote a more outward-looking S3 seeking collaborative opportunities.

All the above recommendations require enhanced capacity, funding, time, skills, and a long-term vision and political support at the regional level.

1.Introduction and context

1.1 Scope and objectives of the WGs

The working groups (WGs) developed within the Smart Specialisation Strategies (S3) Community of Practice (S3CoP) aim to foster a learning process for relevant policy stakeholders on the fulfilment of the S3 enabling condition[1] for **innovation diffusion**[2], **industrial transition**[3], and **interregional cooperation**[4] during the 2021-2027 programming period. The three selected areas are part of the fulfilment criteria for the enabling condition "Good governance of national or regional smart specialisation strategies". More precisely, the criteria require European regions to **establish actions to support/manage industrial transition**, to develop an **up-to-date analysis of challenges for innovation diffusion and digitalisation**, and to adopt a **more explicit outward-looking dimension**.

The **purpose** of the WGs is fourfold: 1) to collect and document existing knowledge and good practices; 2) to identify common needs, problems, and challenges; 3) to co-develop with the regions potential solutions (new approaches, policies, instruments, and coordination mechanisms), and 4) to support and monitor the deployment of solutions and adapt them to regional specificities. The **target audience** for the activities and output of the WGs are regional (and where appropriate national) authorities involved in the implementation of the enabling condition.

Currently, there are 15 members in each WG, including a chair and a rapporteur, and a WG Leader from the S3CoP consortium partners. The WG participants are listed in Annex 1. In 2023, the WG activities adopted a bottom-up, iterative and peer learning approach to facilitate exchanges of experience among regional stakeholders. The S3CoP WGs kicked off in June 2023. During this first session, a fruitful discussion among participants helped delineate the regional challenges members face regarding industrial transition, innovation diffusion and interregional collaboration respectively.

The core of the kick off meetings consisted of a discussion of the implementation challenges and priorities for each of the three topics. The figures below summarise the challenges discussed in each WG.

1 The enabling condition "Good governance of national or regional Smart Specialisation Strategy" as set out in Annex IV of the Regulation (EU) 2021/1060 of the European Parliament and of the Council the proposal for the Regulation on Common Provisions of the European Funds for 2021-2027 (COM/2018/375 final) was approved by the European Parliament and the Council on 24 June 2021 and is known as (EU) Regulation 2021/1060[2] (CPR).

2 For more information on the Innovation Diffusion WG see: https://ec.europa.eu/regional_policy/policy/communities-and-networks/s3-community-of-practice/innovation_diffusion_en

3 For more information on the Industrial Transition WG see: https://ec.europa.eu/regional_policy/policy/communities-and-networks/s3-community-of-practice/industrial_transitions_en

4 For more information on the Interregional Collaboration WG see: https://ec.europa.eu/regional_policy/policy/communities-and-networks/s3-community-of-practice/interregional_collaboration_en

Figure 1 Implementation challenges identified in the kick off meeting of the WG on Innovation Diffusion

Adoption of new technologies, innovations, business practices and digital tools across SMEs	The role of universities and RTOs (to meet the needs of companies in their ecosystem)	The role of innovation agency and other public bodies in facilitating knowledge flows	Knowledge spillovers and innovation diffusion channels between large firms and local smaller enterprises
• Weak articulation of the demand for innovation and for innovation support-services • Digital skills shortages in SMEs & deficiencies in the digital infrastructure in SMEs • Lack of business development services for SMEs (training, mentoring, advisory and consultancy services, etc.) & difficulties to access finance for investments in digitalisation	• Mismatch between demand and supply of innovation support services (low understandings of the demand side from universities, different incentives, needs and capactities of companies and universities/research centres) • Poor technology and innovations transfer from universities and RTOs to companies	• Multi-level governance (coordination problems, etc.) • Lack of systemic approach (work in silos)	• Low absorptive capacity of local companies • Low connection between S3 in the regions with policies to attract and retain FDI

Source: Authors' own elaboration based on the concept note and WG discussions during the kick off meeting

Figure 2 Implementation challenges identified in the kick off meeting of the WG on Industrial Transition

Detecting bottom-up and potentially transformative innovation initiatives	Difficulties in understanding systemic changes	Difficulties in allowing space for failure in experimentation	Danger of perceiving industrial transition from a technology push only
• In a complex multilevel process, innovative actors may go unnoticed • Main obstacles: lack of direct communication and collaboration, and use of non-traditional methods	• Regions tend to adhere to "business as usual" approaches • This can hinder the understanding of systemic changes	• Research and experimentation involve trials and errors, with ground-breaking innovations as the exception rather than the norm • Investors hesitate to fund riskier projects	• Industrial transitions are not only driven by technological advancements, but also by consumer behaviour and societal habits • A changing demand influences innovation trends, sector prioritization, and resource allocation

The challenge of divided economies	Difficulties in monitoring and mapping progress at regional level	Inclusive industrial transition – leaving no region behind	Aligning S3 with SDGs
• The pilot action for regions in industrial transition highlighted an economic divide, particularly between rural and urban areas	• Data limitations exist at the regional and local level for specific industries	• Industrial transition strategies should account for regional variations and societal impact on lagging regions	• Aligning SFGs with regional S3 priorities is important to facilitate industrial transition

Source: Authors 'own elaboration based on the concept note and WG discussions during the kick off meeting

Figure 3 Implementation challenges identified in the kick off meeting of the WG on Interregional Collaboration

Challenge: BUSINESSES	Challenge: ORIENTATION	Challenge: POLICY
• Creating strong link with industry knowledge & SMEs • Attracting private investors for cross-border funding	• Lack of knowledgeable node with capacity (in each region) • How to find the right cooperation topic & win-win formula	• Inward-looking orientation • Lack of continuous and long-term political commitment beyond individual projects

Challenge: CAPACITY	Challenge: FUNDING	Challenge: ECOSYSTEMS
• Inadequate capacity and insufficient time and resources • Long term returns	• Funding access and long-term financial planning • Fragmented landscape of EU incentives – funding synergies • Funding beyond projects	• Aligning regional & individual interests and strategies • Interregional: synchronised goals & action plans • Granularity level

Source: Authors 'own elaboration based on the concept note and WG discussions during the kick off meeting

A more detailed description of the discussion points that emerged from the meetings are outlined in the kick off meeting minutes and the input notes, published on the S3CoP website.

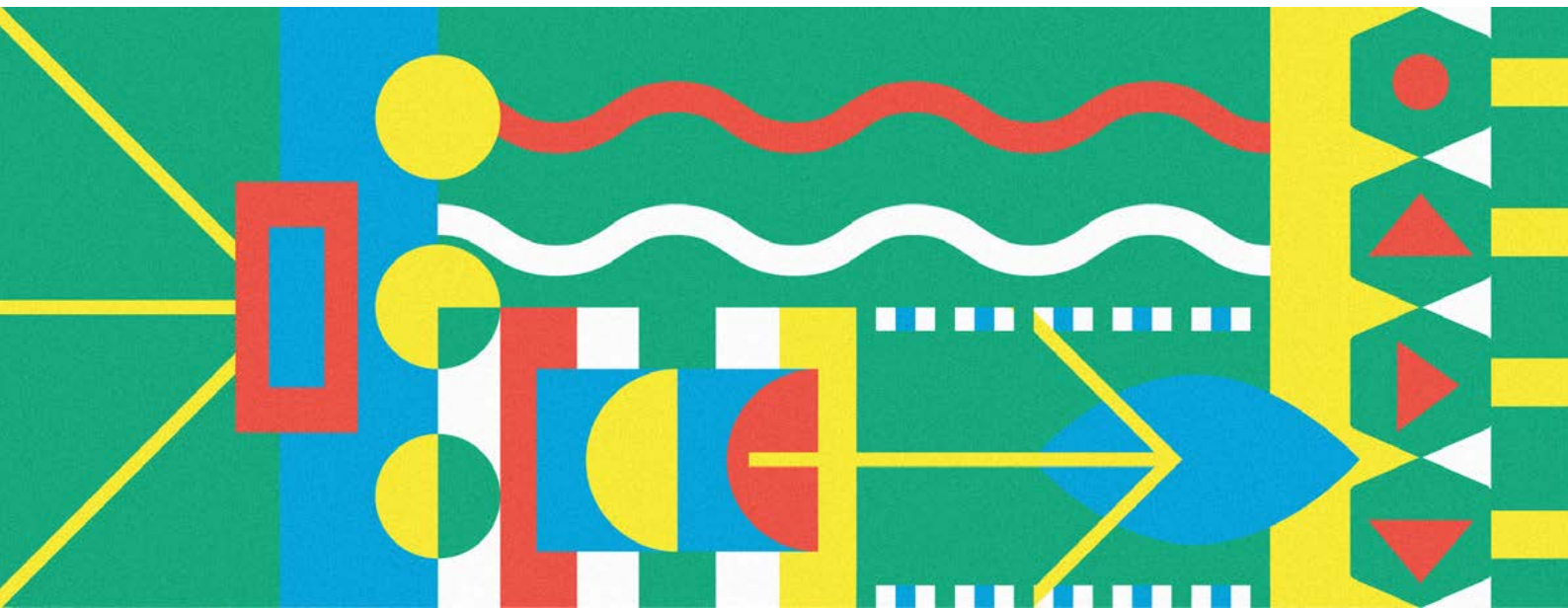
1.2. Implementation challenges addressed

During the kick off meetings, participants were invited to interact and rank the importance of the implementation challenges in their own regions discussed on a scale of 1-10 in their own regions on using mentimeter. The challenges selected were the focus of the next two WG meeting in September (online) and November (face to face in Barcelona) 2023 and are summarised in the table below.

The following chapters explore in more detail the challenges discussed and their impact on the regions and formulate a series of actionable recommendations with the aim of upgrading the role and status of innovation diffusion, industrial transition, and interregional collaboration in the S3 policy mix, and optimising and tailor the efforts according to regional needs.

The final chapter explores several cross-cutting issues and recommendations.

Working Group	Main implementation challenges selected
Innovation Diffusion	• Weak or absent systemic approach to innovation diffusion • Weak articulation of demand for innovation and innovation support services by SMEs
Industrial Transition	• Understanding systemic change • Inclusive industrial transition: leave no region behind
Interregional Collaboration	• Capacity: Inadequate capacity – insufficient time and resources • Money: Funding access and long-term financial planning – fragmented landscape of EU incentives – funding synergies - funding beyond projects



2.WG Innovation Diffusion

2.1 Main issues addressed

Innovation diffusion can be defined as the process through which different organisations gather ideas from outside and use them to introduce an innovation (e.g. a new process of production, a new product itself or a new way of providing a service) and comprises also the process of adoption of existing technologies (e.g. purchasing machinery developed elsewhere or signing a license agreement for an existing patent). It includes the analysis of how new ideas, practices and innovation spread through a society. In so doing, it is essential to involve SMEs, the backbone of the EU economy, who are extremely difficult to engage and yet are critical to understand innovations needs and dynamics across territories.

The innovation diffusion WG identified two key challenges during their meetings in 2023: **weak or absent systemic approach to innovation diffusion** and **weak articulation of demand for innovation and innovation support services** from business, notably SMEs.

A striking aspect to these selected challenges – drawn from a more extensive list of ideas and options related to innovation diffusion (see Figure 1), provided through a Concept Note[5] – is their fundamental relationship with core conditions that underpin effective regional innovation ecosystems. The challenges selected by the WG are related to **embedding and improving innovation diffusion as a central component of regional innovation ecosystems**. This suggests the need for clear EU Smart Specialisation policy guidance to emphasise and consolidate the role of Innovation Diffusion, since this is now a formalised element of the 2021-27 S3 enabling conditions. Working with a heterogeneous group of regions to explore the innovation diffusion theme has highlighted the **importance of place-based, tailored approaches to how regions design and deliver innovation diffusion policies and practices**.

There are many factors that influence the nature of innovation diffusion in different territories (e.g. innovation governance systems and the relative influence of national and regional policies; geographical characteristics; economic structure; and the specific design of S3 policies and practices).

Furthermore, it is **not the case that all identified challenges and gaps summarised in this Policy Brief are relevant to all regions** represented in the WG (or beyond). Indeed, a great deal of good practice and ongoing investment efforts are being made to optimise approaches to innovation diffusion. Nonetheless, we recommend that clearer guidelines for the innovation diffusion

5 See Elena, S. and Marinelli, E et at (2023), "Innovation Diffusion. Concept note for the S3CoP Working Group" available at https://ec.europa.eu/regional_policy/sources/policy/communities-and-networks/s3-community-of-practice/WG_Innovation_diffusion.pdf

component of S3 should be provided, with broad relevance to all regions, recognising that different and place-based solutions are needed.

The sections below summarise key messages from the input notes, based on follow-up discussions and practice sharing with WG members.

Challenge One: Weak or absent systemic approach to innovation diffusion

The following key points were emphasised[6]:

- The need to **identify and coordinate** (or 'mutualise') **supply-side innovation diffusion actors / bodies** (hereafter known as 'intermediaries') with the aim of improving quadruple helix cooperation and knowledge exchange across this group, both within regions and in interregional settings
- **Fostering and deepening trust across intermediaries** to improve collective capacity for working together, with the aim of maximising innovation diffusion efforts.
- The journey to **effective embedding of innovation diffusion** within innovation ecosystems requires a more 'conscious' recognition of the intermediary role in supporting innovation diffusion policies and activities. Communications across the innovation ecosystem should position innovation diffusion as a critical enabler of effective innovation collaboration.
- **Examples of actions** that can help to improve the perceived value of innovation diffusion and to embed it in the region's innovation ecosystem efforts were provided by WG members. They included:
  - Define innovation diffusion as an **integral element of innovation collaboration**, that can help to address regional innovation challenges and opportunities.
  - Ensure that innovation diffusion plays a **key role in responding to innovation 'demand'** (across the innovation community) through matching demand with intermediary support.
  - Disseminate to the innovation community **a detailed breakdown of innovation support services** (as these relate to different beneficiary communities, such as different size / maturity / innovation characteristics of companies), clarifying the role and contact details of related intermediaries.
  - **Build business capacity** to optimise engagement with intermediaries through training, workshops, and knowledge-sharing platforms, defining these connections as innovation diffusion processes / actions.
  - **Collect data and upgrade evaluation mechanisms** that help to demonstrate how innovation diffusion improves innovation performance and impact. While specific attribution can be challenging, data-driven findings can help to provide insights of the benefits delivered by intermediaries.

Challenge Two: Weak articulation of demand for innovation and innovation support services

The WG discussions emphasised the following key points:

- **Innovation demand articulation is a complex and highly dynamic process**, subject to bias, and constrained by capacity realities from both innovation demand-side (e.g. challenges in articulating and forecasting innovation needs) and supply-side perspectives (e.g. a lack of sufficiently skilled / experienced intermediaries to respond to innovation demand). Managing expectations about how innovation supply (support and services) meets demand requires a high degree of expectation management, given regional conditions and capacity constraints.

6 See input note 1 "The challenge of a weak or absent systemic approach to innovation diffusion" at: https://ec.europa.eu/regional_policy/sources/policy/communities-and-networks/s3-community-ofpractice/S3_COP__Working_Group_Innovation_Diffusion_Input_Note_1_Final.pdf

- **Gaps and weaknesses in the core functioning of regional innovation systems affect how innovation demand is captured and supported**. For example, fragmented innovation policies and practices within the region (and between the regional and national levels) impact on how innovation is articulated.

- Overall, **the local reality of innovation demand and supply often lacks a holistic and integrated perspective**. In turn, many regional innovation ecosystems offer innovation support for demand that does not always reflect the broad needs of the innovation community.

- Having a **strong regional Entrepreneurial Discovery Process** (EDP), with effective S3 monitoring and evaluation processes, was generally considered by the WG to offer solid foundations for how regional demand for innovation support and services is interpreted by regional actors, translated into intermediary support, diffused within and across the ecosystem, and reviewed. In turn, these conditions influence significantly whether and how systemic, coherent, and integrated approaches to innovation diffusion can be generated.

- For the **SME community**, the above reality can have considerable impacts on their innovation performance since they are more likely to rely on intermediaries (such as clusters) to connect them to and support the spread of innovation-related information flows and ideas. Value chain mapping exercises can offer a focused approach to better connect SMEs to this intelligence. This requires significant investment in planning and orchestration.

- The shift to '**green and digital innovation**', to deliver on Green Deal goals, entails complex transition challenges and requires that new innovation solutions and models are generated to meet economic, societal, and environmental needs. For the most part, regions tend to focus innovation demand articulation on their business and industrial sectors. However, the innovation needs of the wider quadruple helix perspective should not be overlooked. Harnessing collective capacity of this community will be critical to foster innovation and generate a more holistic perspective of the regional innovation ecosystem. A quadruple helix orientation to the EDP can facilitate how the community acts as a driving force for innovation diffusion, with respect to guiding and steering transitions. Clearly, different innovation challenges and opportunities require the mobilisation of different constellations of actors across the region.

- The latter underscores the crucial **connection between business competitiveness and sustainability**, reflecting consumer trends for more sustainability. Correspondingly, companies need to upgrade innovate in their processes and business models. Innovation support instruments need to be tailored to their specific needs and innovation maturity levels.

Overall, Innovation diffusion policies and practices are 'fed' and designed by innovation systems that are – in different ways - subject to a variety of constraints. Regions need to be alert to the opportunity costs that this can entail for innovation diffusion (e.g. the sub-optimal quality of intermediary support in an environment where innovation demand is only partially understood). These issues can have considerable impacts on regional innovation performance. Regions therefore require the adoption of a **highly proactive and strategic stance** in delivering effective innovation diffusion policies and practices across their ecosystems.

2.2 Lessons learnt and key policy recommendations

The following recommendations aim to reinforce the role and status of innovation diffusion in the S3 policy mix. The goal is to optimise and tailor innovation diffusion efforts according to regional needs. Overall, innovation diffusion requires a more systematic approach in regional **innovation ecosystems, building on and strengthening the guidance that exists in the 2021-27 S3 enabling conditions**.

Drawing on the **core messages and learning from exchanges with the WG**, it was established that:

- **Sustained commitment from the local and national administrative levels** is needed to support innovation diffusion, that champions place-based, tailored approaches to designing and delivering innovation diffusion policies and practices.
- In a growing quest to generate transformational innovation responses to transition-related and societal challenges, regional innovation systems need to consider the optimal **engagement** constellation of their innovation communities. In turn, this will influence innovation diffusion efforts, targeting different groups of actors (e.g. from the triple and/or quadruple helix) for their input and engagement, depending on the nature of the challenge and the characteristics of the innovation ecosystem.
- Innovation Diffusion can **strengthen collaboration across innovation** actors where a strategic approach is adopted such as: designing innovation support services according to prioritised sectors/niches and related regional value chains; adopting an 'innovation pipeline' approach that coordinates the needs of innovation actors and support services according to technology readiness levels (TRLs).
- Embedding innovation diffusion as a **central component of regional innovation ecosystems** can be supported by actions such as:
  - The 'mutualisation' of innovation diffusion **intermediaries**, targeting and directing innovation-related knowledge flows across the innovation ecosystem. Different constellations of intermediaries should be considered to address different challenges and opportunities (e.g. technology brokers leading efforts to connect business and science stakeholders).
  - The systematic capture of innovation demand is needed to drive the **translation of demand into innovation support services**.
  - **Connecting data about innovation demand and the uptake of support services through S3 monitoring and evaluation** can support understanding of the region's effectiveness in delivering innovation diffusion policies and practices.
  - To refine the existing model of innovation diffusion, it is crucial to **strengthen the business-specific support elements**. Tailoring business-specific support demands a more customized approach considering factors such as sector, maturity, size, technological capacity, and collaboration potential within the business community.

The 2021-27 S3 enabling condition has established a strong baseline for making innovation diffusion a key element of the S3 policy mix[7]. There is scope to deepen this guidance, not least by encouraging regions to adopt a more strategic approach to connecting Innovation Diffusion with both the S3 EDP and monitoring and evaluation processes. These issues merit deeper investigation in the forthcoming efforts of the WG. To date there have been strong signals in the following areas:

7 Presentation of DG Regio on fulfilment criteria of the enabling condition "Good governance of regional or national S3"

- **Adoption of new technologies at firm level**: the availability of new tech and business capacity to adopt it depends on the development of regions, their governance and ecosystem characteristics and economic structure. The relationship between innovation diffusion and firm adoption of new technologies requires further review to better understand if / how regions in the WG are targeting innovation diffusion efforts with a focus on new tech, not least in understanding the drivers of new tech adoption, and the extent to which the EU's increasing focus on strategic technologies[8] matches with regional specificities.

Insight on S3 and green innovation diffusion

Addressing Green Deal transition challenges calls for heightened investments in breakthrough innovations[9] to radically alter and upgrade how businesses and markets engage with and deploy new forms of innovation, especially those that are deep-tech oriented. There are multiple challenges to address here. EU capacity to invest in and develop green technologies and innovation to drive transitions is highly concentrated in innovation front-runner regions. Indeed, over three quarters[10] of EU territories produced no innovation-related patents in 2021. How the EU supports the spread and uptake of knowledge, intelligence and ideas about green and breakthrough innovations will significantly influence if and how the EU's current innovation divide evolves into a green innovation divide. It is therefore imperative that the future S3 agenda focuses on the development of effective approaches to interregional innovation diffusion, to support the capacity of EU territories for the uptake of green technologies.

- **How universities and RTOs serve the needs of local firms**: this topic has been a rather strong feature of the WG, especially the ongoing challenges in improving university/ business collaboration. Again, the specific governance conditions (e.g. some regions have limited influence on shaping the role of these organisations due to more centralised / highly regulated conditions in the national context) and economic structure of each region play key roles in if and how these organisations deliver integrated innovation diffusion support. There was a clear recognition that wider reforms of innovation ecosystems will be required in some member states and regions. This is also related to the WG´s recommendation for improved 'mutualisation' of the intermediary function.

Good practice examples on university-business collaboration focused on innovation diffusion processes

The **Loire Valley Innov'** (Centre-Val de Loire, France) aim to align and coordinate the actions of academic players across the region and to coordinate them with the actions of socio-economic players. This includes a 'connect-up' portal with the objective[11] to find relevant contact in 3-4 clicks, and an extranet reserved for network members.

The **Flemish Spearhead Clusters** (Belgium) are a key implementation feature of S3 in Flanders. This competence lies with Flanders Innovation & Entrepreneurship (VLAIO) which serves as the point of contact for all entrepreneurs in Flanders. VLAIO promotes and supports innovation and entrepreneurship, contributing to a positive business climate that enhances sustainable economic growth and job creation. VLAIO is also the agency that supports cluster

8 The EU's Strategic Technologies for Europe Platform (STEP) have become a recent feature of the EU policy landscape, aiming to improve investment and uptake in clean, bio and digital technologies: https://commission.europa.eu/strategy-and-policy/eu-budget/strategic-technologies-europe-platform/target-investment-areas_en.

9 https://www.oecd-ilibrary.org/docserver/dffb0747-en.pdf?expires=1702980343&id=id&accname=guest&checksum=9BD2F335F050AD5E9403CFF231A9989E

10 Taken from a speech given by Professor Andres-Rodriguez Pose at the 2023 Annual Research Conference, available at https://ec.europa.eu/economy_finance/arc2023/index.html

11 https://www.connectup-centrevaldeloire.fr/

operations (smart specialisation) in the Flanders region. Currently there are seven Spearhead clusters: Chemistry and plastics, Blue Economy, Energy, Materials, AgroFood, Logistics, and HealthTech that bring together companies, public organisations and academic partners They are subject to evaluation every 2 years, with attention to innovation diffusion.

The **Interreg Project INNO INFRA SHARE** (Sharing Strategies for European Research and Innovation Infrastructures) aimed to improve the accessibility and the exploitation of local Research and Innovation infrastructure (RII) assets by SMEs. The project focused on how regions can benefit from better access to RIIs and an increased collaboration with research organisations to improve innovation performance. The e-booklet[12] produced by the project provide policymakers, local companies, research and innovation actors, RII owners and the wider innovation community with insights into regional strategies, with 20 good practice examples on sharing research and innovation infrastructures.

- **Regional inefficiencies in facilitating knowledge flows**: different governance and coordination arrangements are in place regarding efforts to facilitate knowledge flows. Systematic reviews of knowledge flows are not a common feature, with a tendency for more ad hoc arrangements to be in place. Capacity (relating to expertise, authority to act and financial resources) has a bearing on how innovation-related knowledge flows are supported and overseen. As noted earlier, oversight of knowledge flows is complex due to the dynamics of innovation ecosystems. Regions would benefit from EU guidance in this area.

- **Regional innovation / S3 efforts that optimise quadruple helix engagement** can help to avoid the risk of a disproportionate influence in designing innovation support to serve the needs of a core set of companies. S3 principles warn against 'rent-seeking'[13] behaviour and policy capture, especially by incumbent businesses, which can serve to undermine efforts to upgrade innovation priorities. However, as a priority the EDP should be guided by the economic structure and ambitions for Green Deal-related transitions.

- **Knowledge transfer from multinational companies to domestic firms**: again, the specific regional context[14] is important regarding: the presence of multinational companies (MNCs); contractual arrangements in place that oversee / manage how MNCs collaborate with local firms; willingness, capacity, and supply chain relevance (from both domestic and MNC perspectives). National and regional governance arrangements for FDI differ across the EU-27 (e.g. including the role of investment promotion agencies) and influence how these efforts connect to innovation strategies, including S3[15]. Therefore, regional innovation diffusion efforts related to FDI are highly nuanced and could perhaps benefit from more detailed S3-related guidance.[16]

12 https://projects2014-2020.interregeurope.eu/fileadmin/user_upload/tx_tevprojects/library/file_1515070405.pdf

13 See for example: https://link.springer.com/article/10.1007/s11187-016-9707-z

14 See for example, reports relating to practices in Slovakia and Ireland : https://www.oecd.org/publications/strengthening-fdi-and-sme-linkages-in-the-slovak-republic-972046f5-en.htm and https://www.oecd-ilibrary.org/sites/66472c4f-en/index.html?_itemId=/content/component/66472c4f-en

15 OECD (2023), Rethinking Regional Attractiveness in the New Global Environment, OECD, Publishing, Paris, https://doi.org/10.1787/a9448db4-e

16 https://www.oecd.org/cfe/smes/fdi-sme.htm

3.WG Industrial Transition

3.1 Main issues addressed

Addressing the challenges associated with **long-term transformations** requires active transition management on the part of policymakers and key stakeholders in regions in industrial transition. A strong **place-based dimension** and a **tailored approach** to local conditions will be essential to raise productivity and well-being in regions. Promoting development models for successful industrial transition will require building on each region's past legacy and using policy experimentation to identify the tools that best fit the local context and assets.

Industrial Transition is one of the seven fulfilment criteria for the enabling condition "Good governance of national or regional smart specialisation strategy". The criterion asks European regions to establish actions to support/manage industrial transition and it is one of the main focuses of the S3 in the 2021-2027 programming period.

Regions need to analyse sectors and occupations challenged by globalisation, technological change, social and demographic patterns, and the shift to a low carbon economy, and identify actions to facilitate their industrial transition. To a certain extent, all industrial sectors can be considered at risk in this transitional moment, so innovation and investment (including accesses to finance) policies should be used to support or react to those long-term changes.

At territorial level, setting up and managing industrial transitions require objectives with **actionable plans for stakeholders** to support the green, digital, and resilient regional economy. It also requires action by multiple levels of government (local, regional, national and possibly supranational), and involvement of a wide variety of actors.

S3 focused on the industrial transition processes tend to encounter various challenges at planning and implementing phases. The WG identified a list of **implementation challenges** which, if not sufficiently addressed, risk to hinder the impact of S3 projects:

- Detecting bottom-up and potentially transformative innovation initiatives.
- Difficulties in understanding systemic change.
- Difficulties in allowing space for failure in experimentation.
- Danger of perceiving industrial transition as a technology push only.
- The challenge of divided economies.
- Difficulties in monitoring and mapping progress towards objectives at regional level
- Inclusive industrial transition – leaving no region behind.
- Aligning S3 with the SDGs.

Based on the discussions, the WG selected two key challenges focus on: **Understanding and managing systemic change** and **achieving an inclusive industrial transition:** leave no region behind.

Understanding and managing systemic change

Despite the challenges posed by the pandemic and war in Ukraine, Europe has continued the transition to a climate-neutral economy and establishing digital leadership. The European Industrial Strategy1[17] aims to ensure that European industry can lead the way in this new century. In implementing the strategy, there is very important to continue create a globally integrated and well-functioning European market, also with the strong leadership of industry alliances to develop eight strategic industrial value chains of EU, and finally support this transition with well-coordinated RDI activities of science, technology, and innovation communities.

Member States and the EC have taken unprecedented steps and approved wide-ranging financial impact schemes to preserve the international competitiveness of companies and jobs. Accordingly, the European Commission proposed an economic recovery and resilience plan for Europe and the EU Industrial Strategy included a list of actions supporting the green and digital transformation of EU industry. Many actions have already been adopted or started to be implemented. Companies committed to sustainability and digitization are likely to be among tomorrow's leaders. But the pandemic and geopolitical tensions have had a drastic effect on the speed and scale of this transformation.

It is very important that the public policy of science, technology and innovation carried out by the EU aims at long-term public investments in industrial transition goals, respectively: (i) to preserve and further strengthen the **international competitiveness** of companies, (ii) to strengthen the **innovative sovereignty** of the EU and Member states, (iii) to rapid and efficiently invest in the post-crisis recovery and growth of the economy of regions to transform it into a **sustainable, innovative**, and high **added value-creating** economy.

The WG on industrial transition understands that **systemic change** refers to fundamental changes that affect how the whole socio-technical system functions, going beyond innovation in products and services to consider changes in the dominant practices, business models and consumption patterns and behaviours, which take a great role in systemic change policies.

A crucial aspect of S3 strategies is **identifying local challenges and urgencies**, in connection with these systemic changes, mainly derived from societal challenges, that can open new economic avenues for place-based development. Local and regional development may be heavily influenced by their 'Business as Usual' approaches, which prevent stakeholders to detect and dissect local challenges and urgencies. This is especially the case when the effects of such challenges materialise mainly in the long term, when crises originate outside the region, or when impacts are seen beyond region's territory.

To understand and manage systemic change, it is necessary to **map the current status** of the system, identify possible areas of future development, or compare with previous status, and assess what has to be changed.

17 https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en

In this process, **all relevant stakeholders are needed**. Companies, civil society organizations, authorities, non-for-profit organisations, and various sectors' representatives are necessary for mapping sub-systems, and to understand interrelationships and functions in the system. Only then orientation, planning, and resources can be mobilised in a coherent way to support more sustainable and inclusive modes of production and consumption.

The WG work of understanding and managing systemic change identified the need to go to the ground and implement some policies. This includes **understanding and setting up transformative transition plans** in different industries, focusing on making the industrial sectors advance in the new value chains, and by considering the emerging sustainable consumption patterns, rethinking their business practices to implement new 'sustainable demand chains' which responds on key societal challenges. To map the current system with the objective of understanding systemic change, WG members reflected on their experience of **mapping regional industrial strategies**, the approach to industrial transition, the barriers to understanding and managing systemic change and the possible strategies to overcome them, the involvement of regional stakeholders, the existence of good practices of system mapping, and the influence of the S3 governance.

Across different regions, the key societal challenges encompass issues such as managing **transitions to green and digital economies**, addressing regional disparities, overcoming skills shortages, and fostering innovation. These challenges are being tackled through various approaches, including the development of S3 and the involvement of regional governments, economic development agencies, regional business and industry associations, consumer associations, and other stakeholders.

Key industrial players of 14 industrial ecosystems and providers of higher education, developers of renewable energy, and innovation support service providers, play a crucial role in addressing these challenges, and policies and initiatives are being implemented at both national and regional levels to support these efforts.

Inclusive industrial transition – leaving no region behind

As it is known, the mechanisms for the creation of added value and the structure of the economy of some EU countries have changed too slowly since joining the EU, so the further path of the EU's economic development will greatly depend on how focused the **EU Industry and RTD policy** will be and how focused the common goal of science and studies institutions, business enterprises, associations, non-governmental organisations, etc. communities will be.

According to WG experts, the compatibility of these two policies can become the fulcrum that would allow the EU regions to take advantage of the opened window of opportunities of digital and green technologies, and based on these technologies, it would be possible to strengthen the EU's traditional industrial companies.

In designing industrial transition strategies within the EU, it is crucial to account for the varying **needs of different regions**. The S3 can underscored sometimes societal impact of some regions to be left behind in the transition process. To achieve a more comprehensive and sustainable transition, strategies implemented should be flexible and tailored to the differing levels of innovation present across EU regions.

Inclusive industrial transition is growth within and between regions. WG underlined the need for accounting for each region's specific needs and varying innovation levels, avoiding one-size-fits-all strategies and involving stakeholders effectively. It was also emphasized that EU regions must embrace inclusive transition, prepare for change, and align with EU strategies. The understanding of the regional mechanisms and policies is crucial to prevent any region from falling behind. A truly inclusive regional industrial transition necessitates involving most affected local areas and industries, building consensus for alternative pathways, accompanying business-orient-

ed programs with social-employment-skills policies, and fostering inter-regional economic connections. The general summary of the contributions by WG members, based on the summaries provided below:

In many countries the **traditional sectors** e.g., agri-food, metal, machinery, construction sectors have strong challenges to modernise and, especially in rural areas, are at risk of lagging behind. This is mainly due to decarbonization costs and the lack of green and digital transformation of SMEs.

Different **policies and mechanisms** are implemented to support these regions and sectors. In the S3 framework, specific calls of the Regional Program and Just Transition Fund with geographical concentration have been opened. **Strategic Innovation initiatives** are created to develop bottom-up initiatives and mobilise the quadruple helix, at a regional scale. In addition, smart skills partnerships for priority niches of regional economies are formed.

3.2 Lessons learnt and key policy recommendations

Understanding and managing systemic change

According to the European Commission's Employment and Social Developments in Europe 2023 report (ESDE), the EU lacks highly **qualified workers** in sectors requiring higher skills. Particularly, construction, healthcare, and STEM (science, technology, engineering, and mathematics), ICT (Information and Communications Technology), were among the most affected in 2022, and there are signs of the shortages to increase by the year 2030, while low-skilled workers are not included in the rapidly changing labour market and cannot find suitable jobs due to the too slow retraining process[18].

The threat of the COVID-19 pandemic encourages the development of remote "contactless" technologies, automation and robotization of processes, which can lead to a faster decline in routine and low-skilled jobs. Many public and private services and activities are going digital. In response to these trends, it is important that all citizens of the EU know how to use **digital technologies** and that they are capable, after retraining, to move to sectors that have the potential to grow in the future.

The significant challenges faced by regions to navigate industrial transitions of the green and digital transformations are **regional disparities, skills gaps**, and the need for **innovation**. To address these complex issues, the WG emphasized the importance of breaking down silos and promoting policy mixes that encompass (among others) skills development, technology adoption, and public procurement practices. To achieve the EU's objectives towards sustainable transitions, the S3 strategies need to focus on clean technologies and not on polluting technologies. This suggests certain alignment with Sustainable Development Goals (SDGs) at the local level. The adoption of a whole-of-government approach is essential for planning and managing systematic change and achieving a paradigm shift.

The identified challenges of implementing S3, points toward several aspects that regions need to address for good governance of their industrial transition:

- Need for robust **evidence-based policy making** for diagnosis, monitoring, and evaluation of outputs/impacts.
- Need to **align industrial transition with EU's objectives**.
- Need for comprehensive **stakeholder mapping and engagement** for effective multi-level governance and systemic change.
- Need of industries committed to **experimentation** and **peer learning**.

18 European Commission (2023) Employment and Social Developments in Europe (ESDE) report 2023.

Inclusive industrial transition – leaving no region behind

S3 framework has an important role to support territories, sectors or industries which are lagging or at risk in the region to be developed. It is a methodology that allows regions to have a strategic analysis of the challenges and create shared agendas connecting different local pieces and policies in a more coordinated program. At any given time, regions phase the need to repurpose regional or local economies, based on the need to fill up gaps left by industries or companies that leave the region, and which had strong local economic effects. Even though local disparities exist, S3 strategies are implemented to:

- Repurpose **industrial settings** of local economies.
- Stimulate the **retention and attraction of higher skilled labour** in areas with low population density, and where new industries need to be attracted.
- To counter the decline in purchasing power in the local economies with heightened support to the local development of **higher value adding industrial activities** such as: e-government services, new energy management systems, new water management systems, new business models for bio base economies, new inter-mobility systems, cultural management, and more.
- **Reduce economic disparities** with new regional value chain programmes targeting regions that could risk being left behind.
- Make the most of **cluster organisations, innovation valleys**, and **industry networks** to get a better understanding of the industrial needs, capabilities, and access to stakeholder with the potential to find innovative solutions to the local challenges.

Thus, the S3 approach include a **quadruple helix perspective** to focus efforts on specific priority/ies, connecting local capacities with a future trend or market need. At the same time, they have both a **social and territorial view**, to allow spread knowledge and business opportunities evenly inside the region, and to develop interregional connections that can traction this regional bet with a more sophisticated demand. This framework is used for specific regional calls and ambitious programs or partnerships. In addition to the calls, countries have developed different policies and mechanisms to support lagging behind regions and sectors that can support and fund these initiatives. There are also specific support instruments at European level to connect companies and knowledge actors in interregional value chains (like the I3 instrument[19] and the Regional Innovation Valleys[20] initiative).

Addressing the challenges of industrial transition: the case of Croatia

To address the challenges of industrial transition, Croatia is implementing Plans for Industrial transition of Pannonian, Adriatic and North Croatia regions (PITs). The PITs follow an encompassing approach, as they are prepared with the input coming from a process of stakeholder involvement, and they are connected with the work of the newly established Regional Value Chains (RVCs), that are intended to manage industrial transformation and guide the regional economies to exploit their potential and focus on high-value sectors. An example is the automotive sector value chain in North Croatia, which is focusing on the industry transition towards green vehicles.

It will be important to **share the best practices of mechanisms and instruments** between regions and countries to bring the lagging areas to the same level as the other areas in the countries. This will strengthen the competitiveness and cohesion of the whole Europe.

19 https://eismea.ec.europa.eu/programmes/interregional-innovation-investments-i3-instrument_en

20 https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda/new-european-innovation-agenda-roadmap/flagship-3-accelerating-and-strengthening-innovation-european-innovation-ecosystems-across-eu-and_en

4.WG Interregional collaboration

4.1 Main issues addressed

The WG focuses on ways to foster interregional collaboration (IC) by building on the priorities set out in each S3, and seeking opportunities for international collaboration between research actors, innovation actors, private companies, territorial[21] authorities and citizen/civil society, in similar areas based on the mapping of complementarities.

There is a generally positive attitude towards IC in the territories represented in the WG. However, this is a new area of work for several of them, which is often hampered by a traditional inward-looking mindset. Furthermore, existing interregional partnerships experienced by the WG's members differ according to their level of maturity so the challenges for engaging in IC vary accordingly. Such heterogeneity is an asset to reflect the diversity of experiences at EU level. Amongst the many enabling factors towards more relevant and more effective interregional collaboration, the WG participants selected and worked on **three main issues** during two half-day meetings held in the second semester of 2023:

1. **Building adequate capacity** is seen as the first priority, as it enables regions to engage in, sustain efforts and benefit from opportunities brought by IC. It is a necessary - yet not sufficient - condition, at all levels of maturity in IC. Moving from a 'one-person game' to a more structured institutional framework for IC engagement as well as strengthening the engagement of regional stakeholders are two sides of the 'capacity' coin, where also governance matters.
2. **Funding sources** are needed to support IC efforts. However, the landscape of possible sources appears complex, fragmented, difficult to access and to reconcile with domestic funding sources. One of the missing pieces of funding identified was the 'coordination costs' of project development. Assessing relevance and simplifying access to sources explicitly dedicated to IC is one step forward, the second step is the achievement of synergies with 'normal' funding sources.
3. **Working with ecosystems**, aligning individual and collective goals around priorities at home is necessary to engage territories, not just individual actors, in IC, to foster outward-looking mindsets and to synchronise goals and actions across borders.

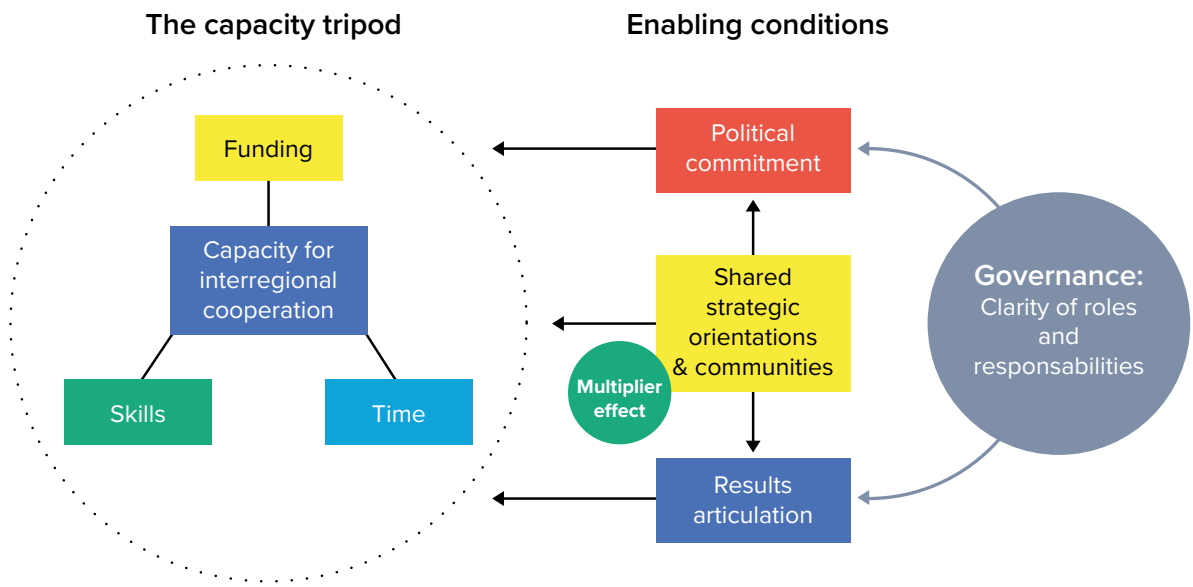
21 Territorial refers to local, regional or national level depending on countries' institutional settings.

Three key ingredients are necessary for achieving adequate capacity: IC will not flourish if one or more feet of the tripod are missing or too weak (see left side of Figure 4).

The elements of the 'capacity tripod' are: 1) **time allocation**: regions are threatened in their efforts when a 'one-person game' and a 'voluntary after-hours work on IC' situation is at play; 2) **funding**: this is necessary, on the one hand, for networks and partnerships coordination and, on the other hand, for concrete cross-border projects development; 3) **skills**: a variety of skills are necessary for IC: leadership - a subtle combination of top-down steering and encouragement of bottom-up participation as well as knowledge of the ecosystem along with management and communication skills. Three success factors - or enabling conditions - support the capacity tripod and ensure its longevity (see right side of Figure 4):

1. **Political commitment**: this is a key enabler to ensure structuration, continuity and availability of funding for IC.
2. **Shared strategic orientations and communities**: shared initiatives by an ecosystem of actors are more promising than fragmented projects because they open way to synergies and multiplier effects.
3. **Articulation of results**: clear and convincing recognition and communication of results (to be) expected from IC are capital to support political commitment, clear mandates, and the continuity of resources for IC.

Figure 4. The Capacity Tripod and Enabling Conditions for Interregional Collaboration



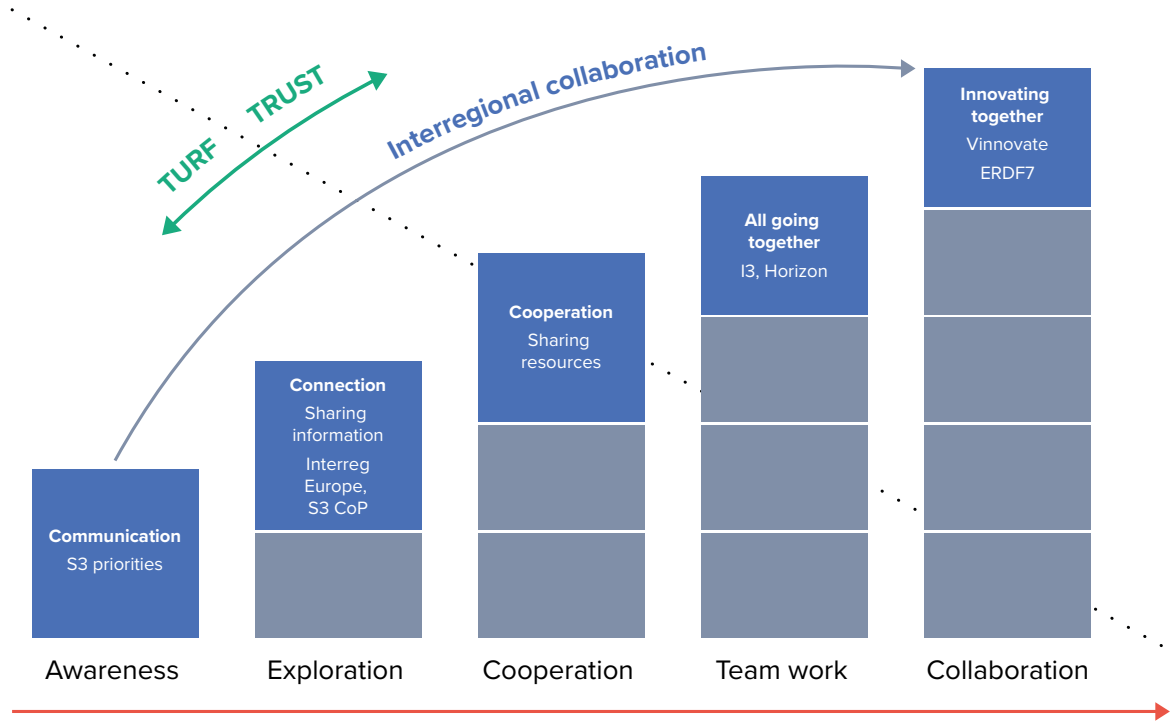
Source: Coordinating team based on WG members' input during the first meeting on 29th September

Fostering interregional collaboration can be seen as a double process, involving:

a. **Reinforcing the domestic innovation ecosystem(s)** and supporting their openness and outward looking orientation.

b. **Deploying a strategy towards interregional cooperation**, itself composed of various steps where different instruments can bring appropriate support (Figure 5).

Figure 5. The staircase of interregional cooperation



Source: Coordinating team based on WG members' input during the second meeting on 29th November

4.2 Lessons learnt and key policy recommendations

Articulate and communicate the case for value-added of IC beyond short-term acquisition of funds

The value-added of IC needs to be better understood and demonstrated. This is essential to raise credibility and legitimacy of this dimension in strategies and policy mixes. Political commitment and engaged stakeholders are key.

Benefits from IC go beyond project acquisition. All too often, the benefits to be gained from IC efforts are seen through the lens of acquiring project money from international funding sources, which then adds on to domestic sources. While this is welcome, it is a too narrow approach. Interregional collaboration brings benefits to individual regional innovation actors, first in terms of accessing complementary resources (e.g. specific facilities), skills and capabilities (e.g. technical skills for new solutions) and knowledge (e.g. top expertise in domains that complement regional expertise) that do not necessarily exist within their own regional ecosystem, and second in terms of connecting to larger communities of potential lead-users. The advantages of interregional cooperation tend to be higher for smaller actors, such as SMEs or research actors than for larger companies or universities that have easier access to international networks. Benefits at the level of regional ecosystems come from obtaining larger critical mass and economies of scale by connecting 'S3 communities' or other forms of organised regional actors to ecosystems in other regions. Being able to position one's own territory among other regions and countries is a pre-condition to identify own priority areas for competitive and sustainable growth and to increase the visibility of own ecosystem.

Sound evidence and positive narratives on added value are essential to unlock support for IC. There is a need for better tools to assess costs - in terms of resources and time devoted to access IC opportunities - compared to (expected) impact.[22] Expected impacts should be spelled out beyond just outputs such as size of activities, number of projects and membership in international networks. Impact expectations should cover business impacts reached through complementarity in value chains. The experience of regions involved in the Vanguard Initiative[23] demonstrates that making the 'business case' for interregional collaboration, in terms of concrete returns for the domestic economy, helps gain continuous political commitment, a stronger orientation of the policy mix towards this goal as well as the credibility of coordinators of IC initiatives. Positive narratives also extend beyond business stories to cover contribution to solving societal challenges. They are especially important for remote regions. Evidence and narratives go hand-in-hand: both are needed.

Build capacity for IC avoiding a situation of a 'one-person game'

Compensate for region's under-critical size by adding expertise. Small size often means lack of capacity to support IC efforts: the latter often depend on the work of a few key dedicated people, whose knowledge might not be properly relayed to other colleagues. Regions may address this barrier by making smart use of support sources targeted to regional and local authorities such as: Cohesion for Transitions (C4T)[24] for Managing Authorities; the support from S3CoP (Targeted Support Assignments- TSA[25]); support from Interreg Europe Policy Learning Platform[26]; support from the various EU Missions[27], etc. Even though these support schemes are not necessarily specifically oriented towards interregional cooperation, they can often be used for that purpose.

Make full use of relevant Brussels-based networks. An independent one-person office can be agile, possess a range of skills and contacts, especially within a Brussels setting, where the 'Brussels board game' provides opportunities for information sharing, lobbying, networking opportunities with a wide range of organisations in a small area of Brussels.

Look for funding to implement an IC strategy tailored to the territory's specificity

Align the search for IC funding to a sound territorial strategy. It is important to first define a strategy and then ensure that money will follow rather than the reverse. The case of Interreg was pointed out as a good example of relatively easy-to-access support - particularly the cross-border programmes - leading to positive experiences. For territories that are small recipients of mainstream ERDF this source can be relatively important. However, it was also noted that Interreg might be misused, as a source for 'survival' for domestic organisations, and also that a risk exists to generate stand-alone projects lacking synergies and leverage effects towards sustainable collaboration.

Do not only rely on EU funding sources for IC: mobilise domestic funding too. Domestic funding for IC is necessary since relying only on EU sources is risky, not necessarily sustainable, and creates problems when co-funding is unavailable domestically. A substitution effect between mainstream Cohesion policy and opportunities for IC is found in those territories that are largest recipients of the former. The relatively easy access to these funds - with an inward-looking set-up - may deter actors from engaging in more complex interregional

22 See 'Strengthening the role and impact of research and innovation in the policymaking process in the Union - Council conclusions (approved on 8 December 2023) 16450/23.

23 Vanguard Initiative (s3vanguardinitiative.eu)

24 Inforegio - Cohesion for Transitions (C4T) (europa.eu)

25 Inforegio - Targeted Support (europa.eu)

26 Policy Learning Platform | Interreg Europe - Sharing solutions for better policy

27 For example, for the Mission Climate Change Adaptation: About MIP4Adapt (europa.eu)

collaboration, notably Horizon projects. Ways forward might consist of: 1) maximizing synergies between ERDF and Horizon, e.g. improve possibilities to use ERDF to fund EU Partnerships or to fund valorisation of research projects; 2) engaging in bottom-up joint funding schemes mechanisms for transnational action (such as Vinnovate, see below); 3) deploying specific support instruments at the regional level to support interregional collaboration. Thus, support instruments could be on the one hand, financial mechanisms in the form of dedicated funding schemes or by integrating the international dimension in existing domestic schemes and on the other hand, soft support in the form of dedicated structures to incentivise and facilitate interregional collaboration (dedicated support offices or expanded mandates for regional development agencies).

Select the most appropriate EU funding source for IC. There is a multiplicity of EU-level funding sources for IC. The WG examined three sources available through EU level top-down initiatives (Regional Innovation Valleys and European Innovation Ecosystems[28]; Interregional Innovation Investments Instrument (I3)[29] and Interreg Europe[30]) and one source initiated by bottom-up voluntary initiative by a group of frontrunner regions (the Interregional Funding Mechanism Vinnovate[31]). Most relevant, according to the WG members are: I3 – with themes matching those under Thematic Smart Specialisation Platform, an advantage for finding partners - and Interreg Europe - relatively easy to access and a good opportunity for the development of interregional value chain approaches. For Regional Innovation Valleys and European Innovation Ecosystems, difficulties are experienced in practical implementation of synergies between Horizon Europe and ERDF funding. Vinnovate, today only accessible to the Vanguard partners, is well appreciated as an innovative bottom-up mechanism to bring an outward-looking dimension to inward-looking domestic funding channels, without dependency from EU funding source. However, this funding scheme has been developed within a network of regions established for ten years which has helped develop trust and confidence in partner regions. Possible barriers to deploy such a scheme beyond the pilot are the lack of political will to use domestic resources for actions extending beyond borders, as well as lack of understanding of benefits from interregional cooperation.

Big is better or small is beautiful? Large territories do have critical mass, but a bigger size can hide internal differences in potential that have to be taken into account. Small territories can experiment with strategies to compensate for their lack of critical mass and associated difficulty to be involved in larger projects: e.g. 1) taking a two-step approach: using funding sources with easier access for preparing large-scale international projects (e.g. from Interreg to Horizon); 2) engaging in bilateral agreements, easier to manage than multiple partnership agreements; 3) turning peripherality and isolation challenges into opportunities to deliver knowledge-based original solutions e.g. for resilient islands and remote territories.

Embark regional ecosystems in interregional collaboration

Strengthen the domestic innovation ecosystem around key priorities: a key 'entry condition' into international collaboration networks and projects. When regional strategic orientations are clearly stated and co-developed with inputs of the regional actors themselves, this can help stakeholders aligning (forming ecosystems) and engaging collectively in IC. S3 provides a methodological framework shared between regions with a common vocabulary (e.g. a standardised EDP helps territories understand other territories' priorities) and the opportunity of regions to work together in shared sectors or technologies, thus

28 European Innovation Ecosystems - European Commission (europa.eu)

29 Interregional Innovation Investments (I3) Instrument - European Commission (europa.eu)

30 Interreg Europe | Interreg Europe - Sharing solutions for better policy

31 The Vanguard Initiative celebrates its 10-Year Anniversary, leading by example to take European Regional Collaboration a significant Step Forward | Vanguard Initiative (s3vanguardinitiative.eu)

providing more focus to IC. History and trade connections matter in directing IC efforts: a way forward to escape a lock-in situation is for the territory to build its own distinctive profile and direct endogenous resources towards specific activities of critical interest opening ways to different partnerships beyond the restricted circle of traditional partners. Ensuring contribution from national-level priorities – possibly driven by research institutes' specialisations to bottom-up priorities emerging more organically at regional level, is an opportunity for 'ecosystem-based' interregional collaboration. Hence, reinforcing the awareness and credibility of S3 domestically appears as a way forward to embark into more effective IC strategies and initiatives.

Support strong local nodes for IC. Challenge-driven strategic orientations translated into 'strategic communities' are conducive to more cohesive territorial ecosystems. The creation of S3 'strategic communities' gathering actors of distinctive ecosystems, or the support to existing pro-active innovative clusters, may act as appropriate mechanisms to generate multiplier effects and activate a targeted search for foreign partners for IC. In very dense regions, creating networks of 'families of actors' (research institutes, incubators, technopoles) is a good way to build more effective ecosystems, with high visibility to potential foreign partners.

5.Cross-cutting conclusions and recommendations

Based on the discussions and the analytical work developed on the S3 enabling condition during the first year of activity of the S3CoP WGs, a number of common elements need to be addressed:

- The 2021-27 **S3 enabling condition has established a strong baseline for making innovation diffusion, industrial transition, and interregional collaboration** key elements of the S3 policy mix. Regions should be encouraged to adopt a more strategic approach to connecting these elements with both the **S3 EDP** and **monitoring and evaluation processes**.

- Having a **strong regional EDP**, where the dominant actors in the regional ecosystem are identified as well as the connections among innovation actors, is crucial for deploying effective policies that support innovation diffusion, industrial transition, and interregional collaboration. A more inclusive quadruple helix orientation to the EDP can facilitate how the community acts as a driving force for transformative innovation policies, guiding and steering transitions more effectively. It would be advisable to develop a more-challenge focused EDP which combines a top-down directionality such as the twin transition along with a bottom-up perspective linked to local challenges and resources.

- **Strengthening the domestic innovation ecosystem around key priorities** – at the heart of S3 – and establishing **S3 'strategic communities'** act as a key 'entry condition' into international collaboration networks and projects, ensuring more impacts from those efforts. In order to create strong ecosystems and develop networks, efforts need to focus on fostering strong and sustainable regional ecosystems that structurally foresee collaboration with other regions and ecosystems.

- **Monitoring and mapping progress** towards objectives at regional level has also been identified as a key element by the three WGs. Connecting data about innovation demand and the support services through S3 monitoring and evaluation mechanisms is necessary for a better understanding of the region's effectiveness in delivering innovation diffusion, industrial transition and interregional collaboration policies and practices, pledging political support and following up on announced agendas.

- **Innovation diffusion plays a key role in responding to innovation 'demand'** (across the innovation community) and should not be conceived as separate from wider innovation efforts. It should be considered as an **integral element of innovation collaboration**, that can help to address regional and interregional innovation challenges and opportunities, within a particular region and beyond. It is important to clearly communicate the added value of collaboration between partners and regions, ensuring that innovation diffusion plays a key role in responding to innovation 'demand' (across the innovation community).

- It is necessary to **improve the exchange of data and information on collaborative innovation programmes**. Some regions seek to diffuse such learning through interregional projects, facilitating the adoption of new knowledge and technologies by local businesses. For less developed regions, external expert assistance and capacity building through intermediaries can help to diffuse and embed learning and action within regional innovation ecosystems.

- Results and value articulation: clearly **communicating the benefits and results of innovation diffusion, industrial transition and interregional collaboration** is crucial. Prioritising clear storylines that demonstrate the long-term strategic advantages and benefits of investing resources will incentivise all relevant stakeholders more easily.

- **Enhancing capacity building for interregional collaboration**: strengthening capacities of regions to engage with relevant stakeholders in other regions, sustain their own efforts and benefit from opportunities across Europe. For this, regions should be encouraged to allocate time and funding. Experience and leadership skills are also necessary to effectively steer the efforts and encourage bottom-up participation and knowledge exchange.

- **Improving transparency and quality of information on funding opportunities** is needed. The landscape of regional and European funding is complex, fragmented, and difficult to access for many stakeholders. **Simplifying access to funding and facilitating synergies** with regional and/or structural funding would incentivise stakeholders further to collaborate across regions, invest time and resources, and innovate.

- Addressing the challenges associated with **long-term transformations** requires active transition management on the part of policymakers and key stakeholders in regions in industrial transition. Those challenges call for amplified **investments in breakthrough innovations** to radically alter and upgrade how businesses and markets engage with and deploy new forms of innovation, especially those that are deep-tech oriented. How the EU supports the spread and uptake of knowledge, intelligence and ideas about green and breakthrough innovations will significantly influence if and how the EU's current innovation divide evolves into a green innovation divide. Therefore, the **future S3 agenda should focus on the development of effective approaches to interregional innovation diffusion**, to support EU territories in their capacity for the uptake of green technologies.

All of the above recommendations require **capacity, funding, time, skills** and **a long-term vision and political support** at the regional level.

Annexes 1: WG members

WG on Innovation Diffusion

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WG on Industrial Transition

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WG on Interregional Collaboration

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