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CAN THE KEY ELEMENTS TO SUSTAINABLE TRANSITIONS BE FOUND AT THE INTERSECTION BETWEEN S3 AND NEW INDUSTRIAL POLICY? REFLECTIONS FROM THE BASQUE COUNTRY CASE

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ABSTRACT

The concept of smart specialisation strategies (S3) has dominated the regional policy panorama in the last decade, which implied a shift from neutral and horizontal regional innovation policies towards priority setting in research and innovation. Despite the focus of S3 on research and innovation, we can find some similarities between these strategies and the literature around new industrial policy. The socioeconomic crisis caused by the COVID-19 pandemic highlights the need to adopt a broader view of innovation and industrial policy in which the intertwined green and digital transitions should play a core role. However, this is not an easy task as it implies changes in policy rationales, new instruments, a more entrepreneurial role for government, and a broader, multi-domain and longer-term consideration of intertwined industrial and innovation strategies, among other issues. The aim of this paper is to reflect on the nexus of industrial policies and S3, and the potential that their combination offers for sustainable transitions in the context of experiences in the Basque Country.

RESUMEN

El concepto de estrategias de especialización inteligente (S3) ha dominado el panorama de política regional en la última década, lo que ha implicado un cambio en las políticas regionales de innovación desde políticas neutrales y horizontales hacia políticas que fijan prioridades en investigación e innovación. A pesar de que el foco de las S3 se sitúa en la investigación y la innovación, podemos encontrar semejanzas entre estas estrategias y las políticas industriales. La crisis socioeconómica causada por la pandemia de la COVID-19 subraya la necesidad de adoptar una aproximación más amplia de las políticas de innovación e industrial en donde las transiciones verde y digital desempeñen un papel central. Sin embargo, esto no es una tarea fácil, ya que conlleva cambios en los fundamentos de las políticas, nuevos instrumentos, un papel más emprendedor del gobierno, y una consideración más amplia, multidominio y a largo plazo de las estrategias industriales y de innovación. El objetivo de este artículo es reflexionar sobre el nexo entre las S3 y la política industrial, y el potencial que su combinación ofrece para las transiciones sostenibles, en el contexto de las experiencias del País Vasco.

LABURPENA

Azken hamarkadetako erregio-politiken muina Espezializazio Adimenduko Estrategietan (S3) oinarritua egon da hein handi batean. Honek erregio desberdinetako politikak, politika

horizontalak izatetik ikerketa eta berrikuntzako alor batzuk lehenestera eraman ditu. Nahiz eta S3-ak batez ere ikerketa eta berrikuntzan zentratu, antzekotasun bat baino gehiago daude politika hauen eta industria-politiken artean. COVID-19aren pandemiak eragindako krisi sozioekonomikoak berrikuntza eta industria-politiken hurbilpen zabalagoa egitea eskatzen du. Honetan trantsizio berde eta digitalak eragin nabarmena dute. Baina hau ez da lan erraza, politiken oinarrietan aldaketak, instrumentu berrien beharra, gobernu ekintzaile bat eta industria eta berrikuntza politiken ikuspegi zabalagoa, epe-luzeko begiradaduna eta domeinu desberdinak integratzen dituena eskatzen baitu. Lan honen helburua industria-politiken eta S3aren arteko loturen inguruko gogoeta egitea da honek trantsizio jasangarrirako duen potentziala kontutan hartuz eta Euskal Autonomi Erkidegoko esperientzietan oinarrituz.

1. INTRODUCTION

The concept of smart specialisation strategies (S3) has dominated the regional policy panorama in the last decade, not only in Europe but also beyond (Esparza Masana and Ipanaqúe, 2021). The S3 concept was first developed by Foray *et al.* (2008) and was rapidly adopted by the European Commission as a framework to guide innovation policy across all EU regions. It implied a shift from neutral and horizontal regional innovation policies towards priority setting in research and innovation. Indeed, S3 introduced three main novelties to previous regional innovation policies:

1. To ***concentrate resources in priority areas*** in which the region already has competences and capabilities.

2. To ***diversify the economy based on existing assets***, leveraging the concept of related variety (Frenken et al., 2007).

3. To place ***fundamental emphasis on the process of priority setting and strategy implementation*** (the so-called Entrepreneurial Discovery Process or EDP), which should involve not only the government but other actors from the triple helix (industry and knowledge organisations).

Despite the focus of S3 on research and innovation, we can find some similarities between these strategies and the literature around new industrial policy (Rodrik, 2004; 2008), in which the concept of *discovery* was first introduced to move beyond the picking winners approach associated with the old industrial policy. In this regard S3 operate in the nexus of innovation and industrial policies (Aranguren et al., 2017), although the discourse and precise focus of each policy is different. Indeed, one of the biggest criticisms of S3 are their narrow focus on science and technological innovation (Hassink and Gong, 2019; Benner, 2020), often leaving out the realm of social innovation that is critical in an era of grand societal challenges.

The socioeconomic crisis caused by the COVID-19 pandemic unveils/underscores/highlights the need to adopt a broader view of innovation and industrial policy in which the intertwined green and digital transitions should play a core role. This builds on arguments already well established in the European Commission's *European Green Deal* (2019) and *European New Industrial*

Strategy (2020, 2021), which have since been integrated in the European Recovery Strategy. In addition, the new European R&D programme Framework (Horizon Europe) has been configured around missions, explicitly to address grand societal challenges. These European trends, together with the wider adoption of the Sustainable Development Goals framework developed under the United Nations *Agenda 2030* (2015), and the emergence of an increasingly influential academic literature on sustainable transitions (Geels, 2004; Coenen et al., 2015), call for a different conceptualisation of S3 to guide the role that regions can play in these transformations. Thus, the objective of regional innovation policy should not only be focused on transforming the regional economy so that it is more competitive but should simultaneously tackle sustainability challenges.

This implies extending the S3 concept towards Smart Specialisation Strategies for Sustainability (S4) (Miedziski et al., 2021). However, this is not an easy task as it implies changes in policy rationales, new instruments, a more entrepreneurial role for government, and a broader, multi-domain and longer-term consideration of intertwined industrial and innovation strategies, among other issues. While the implementation of S3 has already developed some key elements in many regional cases that can be built on, fundamental adjustments will be required for the evolution to S4.

The aim of this paper is to reflect on the nexus of industrial policies and S3, and the potential that their combination offers for sustainable transitions in the context of experiences in the Basque Country. It is structured as follows. First, the evolution of industrial policies and their link to S3 are conceptualised. Second, the main European trends and challenges for recovery are briefly described. A third section then reflects on experience with S3 and industrial policy processes in the Basque Country over recent decades. This leads into a final section that explores opportunities and challenges facing the Basque Country in taking forward their S3 and industrial policy in the post-pandemic recovery era that can be useful for other regional contexts.

2. EVOLUTION OF INDUSTRIAL POLICIES AND THEIR NEXUS WITH S3

2.1. From traditional to new industrial policies

Traditional industrial policies emerged during the Cold War to strengthen national competitiveness and became a cornerstone of economic development policies. They were understood as “structural policies designed to strengthen the efficiency, scale and international

competitiveness of domestic industrial sectors", typically containing elements of promoting national champions and of self-reliance in fostering economic development (Soete, 2007, p. 273). Rationales for these policies were based on a neoclassical, market failure approach, leading in some cases to government failures. Indeed, these policies were largely questioned during the 1980s (Rodrik, 2004; Soete, 2007) at a time when many countries were suffering deindustrialisation and industrial policy remained strictly tied to manufacturing activities. The widespread adoption of the neo-liberal economic orthodoxy at this time led to a shift towards horizontal industrial policies (Bailey and Tomlinson, 2017), which focused on generic measures to foster competitiveness: support to education and training, infrastructure, R&D, incentives to promote entrepreneurship, etc. (Bailey et al., 2019). Industrial policy was therefore largely replaced by broad-based competitiveness policies aimed at improving the business environment or framework conditions rather than targeting specific industries.

Renewed interest in industrial policies emerged following the Great Recession of 2008 in the context of strategies targeting recovery and structural change (Wade, 2012) . However, the rationales for these strategies were not only based on market failures but also embraced systemic failures, which involve a focused on networks, institutions and learning. This combination justified policy measures directed to improving the business environment while promoting employment generation as a response to the decline of specific manufacturing sectors. At the same time the rise of societal challenges such as climate change and the need to advance towards a low-carbon economy have shaped the adoption of new industrial policies (Johnstone et al., 2021), giving them a role in transformation not only to new growth paths but also to more sustainable ones.

Another key feature of these new industrial policies as compared with the older generation is the stronger focus on the *how-process* as opposed to the *why-rationales* (Rodrik, 2004; Naudé, 2010; Warwick, 2013). The emphasis on process is especially relevant in responding to the classic industrial policy critique of government failure in defining policy (and selecting industries for priority treatment). New industrial policies are characterised rather by *self-discovery* and *experimentalism*, integrating a wider range of actors in the policy processes targeting structural change. Indeed, new industrial policies incorporate the idea of selectiveness, but in addition to horizontal measures and not necessarily aiming to target specific industries or sectors but rather activities or technologies (Rodrik, 2004; Warwick, 2013).

The process and rationales behind new industrial policies are not the only features that differ from the older generation of policies; different policy domains and instruments are also included in the new conceptualisation. Thus, industrial policies are not restrictive to manufacturing but include the intersection with other sectors such as agriculture or services (Rodrik, 2004; Naudé, 2010). In addition, their evolution has led to the incorporation of new tools and measures. Old industrial policies relied on hard and selective measures, mainly from the economic and trade policy domains, such as incentives, monetary policy or import tariffs. However, new industrial policies incorporate more systemic instruments such as cluster policies and collaborative innovation policies (Aranguren *et al.,* 2017; Wilson, 2019).

This evolution of industrial policies can also be associated with stages of economic development. Weiss (2015), for example, proposes a taxonomy of industrial policy measures for low-, middle- and high-income countries. In low-income countries industrial policy measures remain tied to the old approach, focused on measures to gain market scale, export more, attract foreign investment, support training, or guarantee financial support to companies. In a middle stage of development measures evolve towards promoting product innovation, technology, and more sophisticated training, whereas in a later stage of development the emphasis is on science, technology and innovation measures at the knowledge frontier, with a stronger focus on agglomeration economies.

In any case, it is important to acknowledge that territories are not homogenous building blocks and are characterised by different combinations of industries and sectors. This implies that some sectors and activities might need more defensive and traditional measures based on market failures whereas other sectors might require systemic measures. Therefore, the industrial policy-mix in a new approach is a combination of hard and soft measures responding to both market and systemic rationales.

2.2. S3 and their nexus to industrial policies

Smart Specialisation Strategies (S3) have been widely developed among European regions during the last decade. While considered a new approach to regional innovation policy, or in some regions a strategy for research and innovation, S3 incorporate some similar features to the new industrial policies. Indeed, smart specialisation is acknowledged to be “a new word to describe an old phenomenon: the capacity of an economic system (a region for example) to generate new specialties through the discovery of new domains of opportunity and the local concentration and agglomeration of resources and competences in these domains” (Foray, 2015,

p. 25). In this sense the underlying transformation associated with S3 is based on the related variety concept (Frenken et al., 2007; Neffke et al., 2009), which links new growth paths in regions to existing regional assets and industries, namely path renewal or path branching (Isaksen et al., 2018). In this context, two distinctive aspects of S3, in comparison with previous systemic approaches to innovation implemented by policymakers from the 1980s, converge with specific characteristics of the new industrial policies. First, the directionality of S3, which aims to concentrate resources in priority areas to transform them based on regional capabilities (Foray et al., 2009; Foray, 2019). Secondly, the EDP, which implies a discovery process involving actors from the quadruple helix (government, research organisations, industry and civil society).

The directionality and EDP central to S3 can act as drivers for change in regional productive structures and can also be directed towards missions and specific social challenges. However, the S3 approach has been criticised for not including a range of dimensions that are highly relevant for addressing societal challenges and sustainability (Hassink and Gong, 2019; Benner, 2020; Uyarra et al. 2020; Aranguren et al., 2022). Firs, they have a narrow focus on science and technological innovation, with limited attention to social innovation. Second, despite acknowledging the importance of including civil society, most S3 to date have not really integrated demand-side considerations or the incorporation of civil society into their EDPs. Third, they also frequently fail to effectively articulate strategy processes across different levels of government (country, region, city) and across borders in ways that enable synergies and scale. Fourth, the challenge of monitoring and evaluating the progress and impacts of S3 has not been widely addressed, hindering the scope for dynamic policy learning. Finally, while their aim is to transform regional economic structures, implying a focus on regional growth paths, S3 have typically lacked clear directionality related to transformation for societal challenges and sustainability.

These five key limitations of S3 to date are themselves strongly related with the four types of transformative failures identified in the transitions literature (Weber & Rohracher, 2012): (i) *directionality* towards transitions and societal challenges; (ii) *demand articulation* to introduce changes not only in the supply side but also in the demand side by incorporating users; (iii) *policy coordination*, as societal challenges need a multi-scalar articulation of problems and solutions; and (iv) *reflexivity*, in the sense of implementing a continuous monitoring process.

A new concept of smart specialisation strategies for sustainability (S4) is currently being developed (Miedziski et al., 2021), seeking to respond to these limitations and incorporating

perspectives from wider literature on transitions. This will need to be experimented in regions by building on the foundations already established by the S3 process. Greater directionality and reflexivity could be built into existing EDP processes, alongside the establishment of more sophisticated demand-side articulation and policy coordination (multilevel and moving beyond a narrow science and technology focus). These latter elements, in particular, are not explicitly developed in current S3, which focuses more on innovation and R&D and less on development and scaling-up, and they would imply the integration of a broader industrial policy focus into S3.

3. Trends and challenges in the recovery and their influence on regional strategies

Regional strategies and policies themselves are affected by national and supranational strategies in a multi-level policy setting. In this regard, transitions sit at the heart of strategies at European level. In March 2020, at the beginning of the COVID-19 pandemic, a New European Industrial Strategy was launched by the European Commission, whose main ambition is to address the 'twin transition' towards climate neutrality and digital transformation. Just a couple of months before, in December 2019, the European Green Deal was launched to tackle climate change and environment challenges. These two strategies are at the core of the European Recovery Strategy in response to the COVID-19 crisis, and in May 2021 the European Commission updated its Industrial Strategy acknowledging the acceleration of the green and digital transitions as a pandemic consequence (European Commission, 2019, 2020, 2021).

The key priority areas of the European New Industrial Strategy can be summarised as follows (European Commission, 2021):

- Strengthening the resilience of the single market, which includes an instrument to ensure the availability and free movement of persons, goods and services in the context of possible future crises and, among others, the objective to strengthen market surveillance of products by supporting national authorities to increase capacity and step-up the digitalisation of product inspections and data collection.

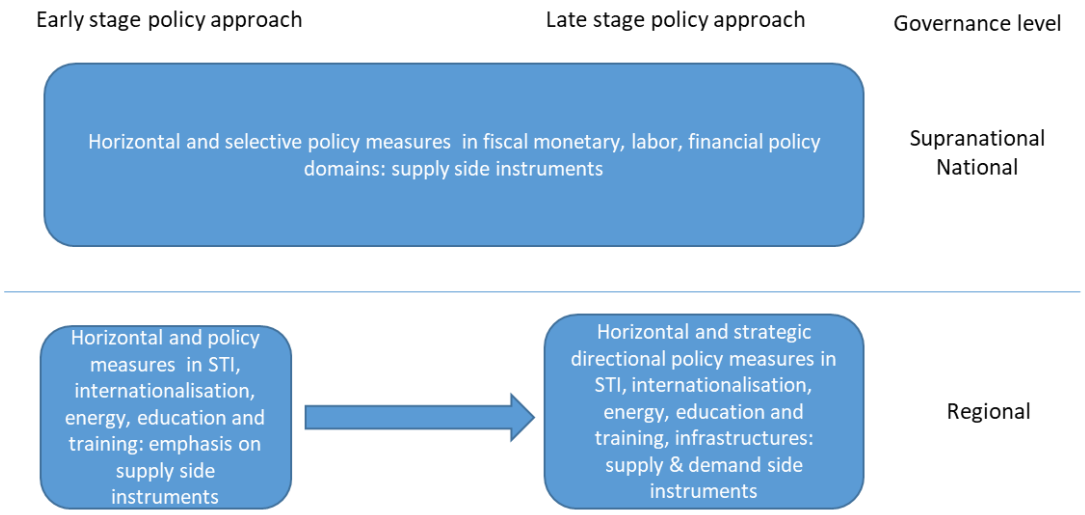
- Analysing and addressing the EU's strategic dependencies, both technological and industrial. This implies working towards diversifying international supply chains and pursuing international partnerships to increase preparedness and support new strategic industrial alliances.

- Accelerating the twin transitions, which includes, among other measures, co-creating transition pathways in partnership with industry, public authorities, social partners and other stakeholders, and investing in necessary upskilling and reskilling. The specific R&D dimension is operatized by the Horizon Europe Programme.

For its part, the European Green Deal (European Commission, 2019) provides the overall framework to tackle climate change challenges and comprises an ambitious package of measures oriented towards cutting greenhouse gas emissions, investing in cutting-edge research and innovation, and preserving Europe's natural environment.

Without being exhaustive in the description of these two strategies, it is clear that both set a series of strategic priorities at EU level that will need to be implemented by EU Member States and their regions. The rationales of these strategies are transformative in their inception, but policies on the ground at national and regional levels need to employ specific instruments to achieve these European level goals. Moreover, there the mix of policies that can be employed varies by level (supranational, national, regional) and by timing or policy stage. In this regard, Figure 1 conceptualises the evolving role of industrial policies at different levels, and how these contribute to resilience after a crisis, such as the one provoked by COVID-19.

Figure 1: The evolving role of industrial policies to support recovery



Source: Adapted from Magro (2022)

In an early policy stage, the role of supranational and national levels in supporting recovery from a crisis is largely directed towards implementing selective measures, mainly from the monetary,

labour and fiscal policy domains. However, regional policies tend to focus on horizontal measures based on market and system failure rationales. These measures are mainly on the supply side and cover a wide range of domains. In a second stage of response to a crisis, the role of supranational and national governments remains broadly similar, with a key difference being the role of setting holistic strategies that aim to shift policy paradigms, such as the European Industrial Policy or the Member State recovery plans. For these strategies to be implemented, however, regional policy must play a key role on the ground, both on the supply side and on the demand side. In this sense, regional policies see a shift from addressing market and system failures to addressing market, system, and transformative failures. This requires broadening industrial policy and the development of a more sophisticated policy-mix that itself must be coordinated among the different policy domains and governance levels. An illustration of this evolution, and the role of industrial policy and smart specialisation strategies to address social challenges, is developed in the next section in the context of the Basque Country.

4. Basque S3 and industrial policy: Main features

The Basque Country has a long trajectory in both industrial and innovation policies over the last forty years (Aranguren et al., 2021). Indeed, the Basque region is one of the few territories in Europe that remained firmly committed to industrial policy even during the times in which it was unpopular.

The approach of the Basque industrial policy has focused on manufacturing, given the strong industrial character of the region. However, during the most recent phase of S3 implementation, the focus of manufacturing evolved to incorporate the concept of industry 4.0 (Industry 4.0 was the priority established by the Basque Industrialisation Plan 2017-2020), and in the new Plan launched in 2021 it evolved further to explicitly include the nexus between industry and advanced services. Energy policy has been an important part of the Basque industrial policy, working on two main objectives: energy efficiency as a key element for industrial competitiveness, and the technologies behind new sources of energy (renewables) as a key element of competitive advantage. Other policy domains have also been incorporated into the industrial policy mix over the years, including cluster policy, skills related measures, internationalisation policy and Science, Technology and Innovation (STI) policy. Specifically, STI policy is conceived as a driver for industry and the S3 (articulated in STI Plans) represents a holistic regional STI policy. The gradual evolution of this multidomain approach to Basque industrial policy can be interpreted as a

shift from an early-stage industrial policy to a late-stage policy approach, in line with the conceptualisation in Figure 1.

There has also been an evolution in terms of the directionality of Basque industrial policy. While it was initially conceived to boost industry from the different crises that the region was facing during the 1980s, a distinctive characteristic of the Basque industrial policy has always been its concern to balance support for industry with social objectives, framed as 'competitiveness in solidarity' (Aranguren et al., 2021). Nevertheless, a stronger directionality has been progressively incorporated over the years. Firstly, during the 1990s with the establishment of a pioneering cluster policy, which has been one of the most important drivers for building capabilities in certain industries (Konstantynova, 2019; Orkestra, 2017). Secondly, the Industrialisation Plan of 2017, defined Industry 4.0 as a priority area along with several supporting policy measures. Thirdly, the new industrial strategy defined in 2021, in the context of the post-COVID recovery, incorporated at its core not only the intertwined green and digital transitions but also the ongoing socio-demographic transition. Policy measures from different policy domains, directed towards transition-related challenges but also towards developing new opportunities for the Basque industry, were incorporated into the strategy. They include supply side measures, such as the development of infrastructures needed for digitalisation or energy transition, systemic measures, such as cluster policies, and also demand-side measures such as public procurement initiatives. Finally, it is worth mentioning that the industrial policy mix is mainly defined and implemented by the Department of Economic Development, Sustainability and Environment (DESDE), although some measures, such as those related to developing new skills, are managed by other departments.

Turning to the STI Strategy, the evolution here has centred on a shift from a predominantly technology policy focus towards a smart specialisation strategy that includes a more balanced focus on science, technology and innovation, built on regional capabilities and assets. The STI 2020 was published in 2014 and has constituted the Basque Smart Specialisation Strategy. It defined three priority areas in which the Basque region had capabilities to orientate STI investments (advanced manufacturing, energy and biosciences-health), together with other opportunity niches. The strategy has been led by the Department of Presidency with a multi actor governance, both internally (different government departments take part) and externally (steering groups involving cluster associations, government, university and technology centres, companies). This governance has boosted the implementation of the strategy by structuring an

Entrepreneurial Discovery Process, which has been analysed in depth by Aranguren et al. (2016, 2019, 2022).

The process of designing a new S3 strategy to 2030 began at the end of 2019, with the new plan launched in 2021. The new plan reflects both the evolution of the strategy through its internal governance dynamics and EDP and the new context in which transitions and sustainability have gained relevance. The three priority areas have evolved towards Smart Industry (responding to the digital transition), Cleaner energies (responding to the energy transition) and Personalised Health (more linked to the demographic transition). However, the biggest novelty of the new plan is the concept of 'transversal lead initiatives', conceived as mission oriented STI projects in transition-related areas: circular economy, healthy ageing, and electric mobility.

Finally, it is worth mentioning that the Basque region, as most territories, has its own approach to the UN 2030 Agenda, which includes commitments and actions to contribute to the Sustainable Development Goals. The implementation and monitoring of these actions and commitments has been established through a multistakeholder governance. A dedicated forum for social transition and the 2030 Agenda has a permanent structure and five working groups for: i) governance; ii) urban agenda; iii) social transformation; iv) climate-energy transformation; v) digital-economic transformation. Actors involved in each of the working groups include representatives of different departments of the Basque Government, other public administrations, knowledge organisations, and social actors, among others.

5. Opportunities and challenges for the Basque Country in the link between S3 and industrial policy

The international policy context and the effects of the pandemic have accelerated the need to give stronger directionality to innovation and industrial policies, specifically to tackle social challenges and sustainability. In this sense, the academic literature shows that directionality is necessary but not sufficient to achieve sustainability goals (Weber and Robharer, 2012; Shot and Steinmuller, 2018). Indeed, reflexivity, policy coordination and the incorporation of users in the strategy, together with a mix of instruments from different rationales and domains, should accompany stronger directionality towards social challenges.

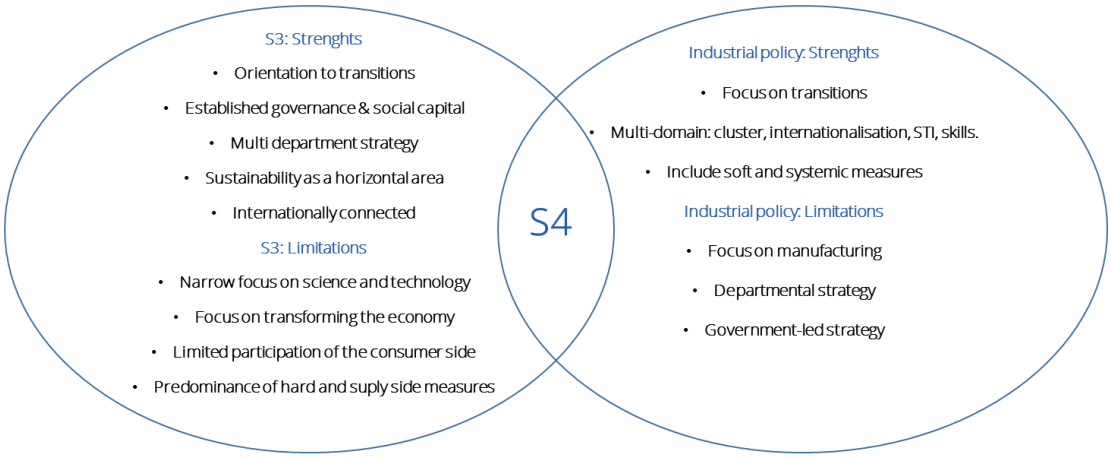
As shown in section 54, the Basque Country is an interesting case due to its long trajectory and commitment with industrial policy. The Basque Country has a solid industrial policy that has

evolved since its inception to include different types of measures from a multi-domain perspective following different policy rationales. In addition, in its latest expression in the 2021 industrial strategy document, transitions have been incorporated at the core of the strategy. This is a positive step towards not only addressing sustainability and social challenges but also making the most of them in terms of opportunities for sustained industrial competitiveness. However, the strategic focus remains manufacturing biased and needs to incorporate other areas of economic activity. In addition, it is a government led strategy, and more precisely a departmental strategy, that needs to be implemented in coordination with other strategies and actors.

It is in this coordination that the implementation of the industrial strategy can benefit from the structures and processes for multi-actor governance that have been strengthened in the framework of the Basque S3. In addition, Basque S3 is strongly connected internationally and recognised as a successful strategy among European regions. The focus of the S3 is on STI areas with an underlying goal of transforming the regional economy, recently complemented with a focus on transitions as transversal areas and some mission-oriented initiatives to contribute to social challenges such as climate change. For these initiatives to be successful they need a stronger involvement of users and consumers, which will require demand-side measures to complement traditional supply-side measures. In addition, to develop and scale up the STI outputs resulting from these missions, instruments from industrial policy will be needed.

Thus while the Basque industrial policy lacks the holistic and entrepreneurial multi-actor governance process that is present within the S3, the S3 can take advantage of the industrial focus and measures that have been progressively developed within the industrial strategy. In order to advance towards stronger directionality towards societal challenges, and specifically sustainability, the Basque S3 and industrial policy should therefore go hand in hand, assuring policy coordination within and beyond the region. Indeed, this intersection between these two policies could constitute a new generation of smart specialisation strategy for sustainability (S4) (Figure 2).

Figure 2: The intersection between the Basque S3 and industrial policy



This case shows the potential that the combination of industrial and innovation policies offers for sustainable transitions in regions. In order to maximise this potential, governance mechanisms within the regions and with other territories become a key issue to work on.

References

Aranguren, M.J., Morgan, K. y Wilson, J. (2016). *Implementing RIS3.The Case of the Basque Country*. Cuadernos Orkestra 2016/17.

Aranguren, M. J., Magro, E. y Wilson, J. R. (2017), "Regional competitiveness policy in an era of smart specialization strategies". En *R. Huggins y P. Thompson (Eds.), Handbook of Regions and Competitiveness. Contemporary Theories and Perspectives on Economic Development, pp. 546-564*. Edward Elgar: Cheltenham.

Aranguren, M.J., Magro, E., Morgan, K., Navarro, M. y Wilson, J. (2019). *Playing the long game. Experimenting Smart Specialisation in the Basque Country 2016-2019*. Cuadernos Orkestra 58/2019.

Aranguren, M. J., Canto, P., Magro, E., Navarro, M., Wilson, J. R and Valdaliso, M. J. (2021). Long-term regional strategy for inclusive competitiveness: The Basque Country case, 2008-2020, *Cuadernos Orkestra*, 05/2021, San Sebastian: Orkestra.

Aranguren, M.J., Morgan, K. y Wilson, J. R. (2022). The institutional challenges of dynamic regional innovation strategies, *Regional Studies*, https://doi.org/10.1080/00343404.2022.2047917.

Bailey, D., & Tomlinson, P. (2017). Back to the Future? UK Industrial Policy after the Great Financial Crisis? In P. Arestis, & M. Sawyer (Eds.), *Economic Policies Since the Great Financial Crisis* (pp. 221-263). (Papers in Political Economy). Palgrave Macmillan. https://doi.org/10.1007/978-3-319-60459-6_6

Bailey, D. & Glasmeier, A. & Tomlinson, P.R. (2019). "Industrial policy back on the agenda: putting industrial policy in its place?," Cambridge Journal of Regions, Economy and Society, Cambridge Political Economy Society, vol. 12(3), pages 319-326.

Benner, M. (2020). 'Six additional questions about smart specialization: implications for regional innovation policy 4.0', *European Planning Studies*, 28(8): 1667-1684.

Coenen, L.; Hansen, T.; Rekers, J.V. (2015): 'Innovation policy for grand challenges. An economic geography perspective'. *Geogr. Compass* 9 (9), 483–496.

Esparza Masana, R. and Ipanaqúe, W. (2021). Regionalizing innovation strategies in Peru based on smart specialization: implications and challenges, *Regional Studies,* 55:7, 1194-1208

European Commission (2019). *The European Green Deal,* COM(2019)640.European Commission (2020): *A New Industrial Strategy for Europe, COM(2020)102.*

European Commission (2020). *A New Industrial Strategy for Europe*, COM(2020)102.

European Commission (2021). *Updating the 2020 New Industrial Strategy: Building a Stronger Single Market for Europe's Recovery*, COM(2021)350/2.

Foray, D. (2015): 'Should we let the genie out of the bottle? On the new industrial policy agenda and the example of smart specialisation', in Antonietti, R., Coró, G. and Gambarotto, F. (eds.) *Uscire dalla crisi: Cittá, comunitá, specializzazioni intelligenti*, Milan: FrancoAngeli.

Foray, D. (2019): In Response To 'Six Critical Questions About Smart Specialisation', *European Planning Studies,* 7:10, 2066-2078.

Foray, D. And B. Van Ark (2008), 'Smart specialisation in a truly integrated research area is the key to attracting more R&D to Europe', in European Commission, *Knowledge for Growth: European Issues and Policy Challenges*, Brussels, Belgium: European Commission, pp. 24–28.

Frenken, K., Van Oort, F.G., Verburg, T. (2007) Related variety, unrelated variety and regional economic growth, *Regional Studies*, 41 (5): 685-697.

Geels, F. (2004). From sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and institutional theory, *Research Policy*, 33, Issues 6–7, 897-920,

Hassink, R.; Gong, H. (2019): 'Six critical questions about smart specialisation', European Planning Studies, 27(10): 2049-2065.

Isaksen A., Tödtling F., Trippl M. (2018) Innovation Policies for Regional Structural Change: Combining Actor-Based and System-Based Strategies. In: Isaksen A., Martin R., Trippl M. (eds) *New Avenues for Regional Innovation Systems - Theoretical Advances, Empirical Cases and Policy Lessons*. Springer, Cham. https://doi.org/10.1007/978-3-319-71661-9_11

Johnstone, P., Rogge, K., Kivimaa, P., Farné Fratini, C. and Primmer, E. (2021). Exploring the re-emergence of industrial policy: Perceptions regarding low-carbon energy transitions in Germany, the United Kingdom and Denmark*. Energy Research & Social Science*, 74,101889.

Konstantynova, A. (2017). Basque Country cluster policy: The road of 25 years, *Regional Studies, Regional Science*, 4(!): 109-116.

Magro, E. (2022). Revisiting the nexus between industrial policy and regional economic resilience in an era of grand societal challenges, *Review of Public Economics*, forthcoming.

Miedzinski, M., Ciampi Stancova, K., Matusiak, M. and Coenen, L., (2021). *Addressing sustainability challenges and Sustainable Development Goals via Smart Specialisation. Towards a theoretical and conceptual framework*, EUR 30864 EN, Publications Office of the European Union, Luxembourg,

Naudé, W. (2010). 'Industrial Policy: Old And New Issues'. WIDER Working Paper 2010/106. Helsinki: UNU-WIDER.

Neffke, F., M. Svensson Henning, R. Boschma, K.J. Lundquist y L.O. Olander (2009) *The dynamics of agglomeration externalities along the life cycle of industries*, working paper, Utrecht University, Utrecht

Orkestra (2017). *Basque Country Competitiveness Report 2017: And Tomorrow?*, Bilbao: Deusto Publications.

Rodrik, D., (2004). Industrial policy for the twenty-first century.

Rodrick (2008). Normalizing industrial policy. Working paper n.3.World Bank

Soete, L. (2007). From Industrial to Innovation Policy. *J Ind Compet Trade* 7, 273.

Schot, J.; Steinmueller, W.E. (2018): 'Three frames for innovation policy: R&D, systems of innovation and transformative change'. Research Policy 47 (9), 1554–1567.

United Nations (2015): *Transforming Our World: The 2030 Agenda for Sustainable Development*, A/RES/70/1.

Uyarra, E. Zabala-Iturriagagoitia, J-M, Flanagan, K., Magro, E. (2020) Public procurement, innovation and industrial policy: Rationales, roles, capabilities and implementation, *Research Policy*, 49, Issue 1.

Wade, R.H. (2012). Return of industrial policy?, *International Review of Applied Economics , 26, 2,* 223–239.

Warwick, K. (2013). *Beyond Industrial Policy: Emerging Issues and New Trends*, OECD Science, Technology and Industry Policy Papers, No. 2, OECD Publishing, Paris

Weber, K. M. & Rohracher, H. (2012). 'Legitimizing research, technology and innovation policies for transformative change', *Research Policy*, Vol. 41(6), pp. 1037-1047.

Weiss, J, (2015). *Taxonomy of Industrial Policy,* Working Paper, UNIDO.

Wilson, J. R. (2019). 'Cluster policy resilience: New challenges for a mature policy', *International Journal of Business Environment*, 10(4): 371-382

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