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Smart Specialisation in EU and Chile, challenges and opportunities

Towards a transcontinental policy learning dialogue methodology

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Abstract

The Smart Specialisation approach is being an inspirational driver of regional innovation not only within the European Union but beyond. This paper elaborates on the Policy Learning Dialogue: Smart Specialisation in EU and Chile which took place at the Joint Research Centre, Seville (21st November 2016). The article showcases policy reflections and outcomes derived from a fruitful discussion between practitioners of regional innovation strategies in EU and Chile, smart specialisation platform staff and experts. This policy dialogue was part of the activities carried out by the smart specialisation platform aiming at providing evidence-based support to policy makers and stakeholders of smart specialisation through common reflections focused on cooperation dynamics and joint learning.

1. Introduction

Smart Specialisation is a policy instrument to support the effectiveness of the Cohesion Policy in the European Union. The cohesion policy aims at reducing differences between regions and to ensure smart, sustainable and inclusive growth across Europe. The EU cohesion policy is also supported by specific Funds which amount to EUR 325 Billion for the period 2014-2020 allocated to mobilise investment for growth and jobs and European territorial cooperation, among others. Their efficient use and management is a crucial factor for many regions in Europe to overcome the economic crisis. For this reason, developing a Research and Innovation strategy for Smart Specialisation (RIS3) is currently a prerequisite for European regions in order to receive funding from the Cohesion funds to support their Research and Innovation initiatives.

The Smart Specialisation approach requires looking beyond the national/regional administrative boundaries. Countries and regions should identify their competitive advantages through systematic and constructive comparisons, mapping their national and the international context in search of examples to learn from and performing effective collaboration (Foray et al, 2012). Moreover, each country/region should be able to identify relevant linkages and flows of goods, services and knowledge revealing possible patterns of integration with partner regions. This is important in the case of both developed and less developed countries/ regions that would often require to source know-how and technology from elsewhere.

The smart specialisation concept promotes the enhancement of territorial capacities by maximizing innovation with and from local resources, players and know-how. In the context of developing countries, S3 related-action contributes to the international efforts to promote sustainable development and innovation. In this regard, globalisation trends appear as a challenge that can be harnessed with target investments at regional level, favouring innovation and moving up value chains to stimulate private investments (European Commission, 2017).

On November 21st of 2016, the Smart Specialisation Platform (S3 Platform) organised the Policy learning dialogue: Smart Specialisation in EU and Chile, challenges and opportunities. The event served as discussion forum on experiences and challenges derived from the implementation of regional innovation strategies in the European Union and Chile. Accordingly, the aim of this technical report is to showcase the policy reflections and outcomes derived from a fruitful discussion between practitioners of regional innovation strategies in EU and Chile, smart specialisation platform staff and experts. This policy dialogue was part of the activities carried out by the smart specialisation platform aiming at providing evidence-based support to policy makers and stakeholders of smart specialisation through common reflections focused on cooperation dynamics and joint learning.

2. Policy learning dialogue, towards a methodological approach

The smart specialisation approach and its implementation in non-EU countries evidence promising cooperation frameworks but also require organisational dynamics to enable related action. The experience of this workshop reveals the importance of bi-lateral learning dialogues between policy makers in charge of implementing a similar policy instrument under different approaches and contexts.

Several techniques in organisational dynamics have been studied and explored in different contexts highlighting the role of facilitators, design of tools, methodological messages and personal action (Werner Franz & Sarcina, 2009). Specificities of the smart specialisation context suggest several ways of exploring combination of existent techniques and elaboration of new ones. Accordingly, the smart specialisation platform contributes to the development and testing of tools and methodologies aiming a assisting a rapid comprehension and effective implementation of the smart specialisation approach[1].

Achieving valuable outputs for policy development based on similar approaches but different contexts, as is the case of smart specialisation in the EU and Chile, represents a challenge. The implementation of smart specialisation in EU and its replication in Chile have brought policy makers of both sides to discuss together on S3 opportunities around common key policy aspects (e.g. entrepreneurial discovery process, inclusiveness, regional innovation and governance). Learning dynamics and policy effectiveness appear as the central elements of this methodology which can favour successful interventions.

Policy learning dialogue for smart specialisation (PLDSS) can provide the methodological framework to facilitate the exchange of regional innovation experiences in several areas of the world. The experience of the European Union is attracting the interest of policy makers in non-EU countries allowing not only to provide lessons for a wider range of regions and countries (McCann & Ortega-Argiles, 2016) but also to learn from other policy interventions.

Concrete characterization of PLDSS methodology may be applied in forthcoming interaction, dialogues and workshops with counterparts of other regions and countries interested in the smart specialisation concept. The experience of this workshop EU-Chile allowed identifying key elements for the set-up and application of a PLDSS methodology. This new methodology may have a certain relation with the peer-review exercises carried out with EU regions (Midtkandal & Rakhmatullin, 2014), but substantially differs as the contextual factors and policy approaches are different. Thus, important aspects to characterise PLDSS methodology are:

- **Three-stage approach** including (*i*) preparatory phase for identification of counterparts, topics of common interest (e.g. similar or complementary specialisation) and central elements for "policy learning" (*ii*) Dialogue phase, as

[1] See for instance, peer-review methodology at: http://s3platform.jrc.ec.europa.eu/s3-design-peer-review

principal appointment where knowledge is shared and learning takes place. Normally as working meting (*iii*) Post-learning phase, including outputs for the application of acquired knowledge, potential adaptations, identification of roadmaps and avenues for cooperation.

- **Format**, constructive, interactive, critic but also friendly. Based on the predisposition to learn from experiences in different but complementary policy contexts and assess the best ways of adapting this acquired knowledge. Not unique-formula but adapted to cultural and social proximities and differences of participants.

- **Participants**, several type of actors such as: (*i*) policy makers in charge of design, implementation and/or management of the smart specialisation strategies (EU) and similar or complementary regional-innovation initiatives (third countries). At least representatives of two different territories in EU and third countries; (*ii*) Active observers and contributors who can provide inputs from their experience at larger scale (e.g. international organisations, researchers, project representatives); (*iii*) facilitators: smart specialisation platform staff and other experienced actors in facilitating cooperation on S3 through interactive exchanges and learning processes.

- **Materials**, in preparatory phase, they can include reliable data, self-assessments grids, previous analysis and evidences. In dialogue phase, materials and tools allowing both the interaction of participants and their understanding of dialogue objective. Not a closed set of tools but open to suggestions according to cultural and social background of participants.

- **Evidences**, key findings coming from research articles and official reports of reference in the topics to be discussed. Particular focus will be made to the visualisation of these evidences in order to be understood and commented by participants. These evidences will be the base for the identification of new ones aiming as an input to the policy process of participant territories and stakeholders.

- **Follow-up**, as the PLDSS is a living and open dialogue that needs a smooth periodic feedback, efforts will be necessary in the afterwards phase, aiming at keeping learning and applying distinct and complementary inputs to regional innovation and smart specialisation.

3. European Commission support to regional innovation in EU: the experience of the Smart Specialisation Platform

Innovation and the right investment in our economies have become central pillars of the EU agenda for economic growth and job creation. Since the global economic and financial crisis, one of the priorities has been to bring the level of investments back to its historical trend and this is reflected in the Commission's priority for jobs, growth and investment. The Investment Plan for Europe establishes a new fund for strategic investments as well as policies aiming at creating the right climate for businesses and new entrepreneurs to invest and create new industries and jobs. The Commission is also committed to mainstream innovation across all Union policies and to target its research and development and structural and investment funds effectively. One key objective is to make European Union a leader in innovation, new technologies and business methods; smart specialisation is a key instrument to achieve this goal.

In this context, the European Commission has supported public authorities responsible for the allocation of investment resources with analysis and guidance. As part of this support, the Joint Research Centre contributes with the development of analytical tools allowing the ex-ante and ex-post assessment of the impact of investment decisions on jobs and economic development at territorial level, as well as support for the identification of trans-regional projects of European interest. In addition, a better understanding of place-based innovation dynamics and their role in territorial based industrial and economic development policies will help to guide policy making at EU, national, regional and local levels.

The Smart Specialisation Platform (S3 platform) is part of the work carried out by the JRC to assist EU Member States and regions in their way to design and implement their smart specialisation strategies. The S3 Platform has created several tools[2] to encourage and support stakeholders' interaction and facilitate the access to information in key aspects such as funding provisions, strategic choices and priorities of specialisation. These tools are backed-up by methodologies developed and tested by the platform in issues related to benchmarking, common learning processes and peer review exchanges leading to stimulate collaborative dynamics among practitioners of smart specialisation across Europe.

In terms of activities and projects, the S3 Platform offers targeted support according to key elements of the smart specialisation process in terms of both policy cycle and relevant actors. Some of these activities have taken place for instance in the way of "peer-review" events oriented to facilitate the interaction and learning among regions in phase of design and elaboration of the strategies. Concerning relevant actors, the S3 platform has carried out policy briefs addressing key policy stakeholders such as Research and Technology organisations (Charles & Ciampi Stancova, 2015); science parks (Nauwelaers, et al., 2014) and Universities[3], among others.

[2] http://s3platform.jrc.ec.europa.eu/s3-tools

[3] Campillo et al (2017), Higher Education for Smart Specialisation, the case of Navarra, JRC (Forthcoming).

One of the core activities carried out by the Smart Specialisation Platform is the targeted support to EU Member States and regions in the development of collaborative frameworks towards efficient implementation of the strategies. Accordingly, since 2015, thematic platforms of Smart Specialisation have been implemented for structured support in thematic areas of energy, industrial modernisation and agro-food.

Box 1. Smart specialisation thematic platforms, Enabling cooperation across EU

The Smart Specialisation Thematic Platforms (SSTPs) **provide a cooperation framework between member states/regions with similar innovation priorities**. National or regional innovation strategies for smart specialisation are currently in implementation process of strategic choices aiming at enhancing the local innovation capacities. This smart implementation requires not only a mobilisation of resources available in the region but also to look beyond administrative boundaries. The SSTPs enable inter-regional cooperation and provide the strategic framework for the **innovation-driven economic transformation of the European regions in order to build competitive advantage by matching research and innovation strengths to business needs**. The ultimate goal of these thematic smart specialisation platforms is to facilitate investment pipelines of mature projects areas across the EU, by providing tailored advice and helping regions to establish strategic linkages with business and research communities.

Currently, the smart specialisation thematic platforms enable cooperation among **120 EU regions throughout 21 Interregional partnerships** in several priorities of reference such as Bioenergy, sustainable buildings, solar energy, innovative textile, Industry 4.0, nano-enabled products, high tech farming, agro-food and electronic systems.

"*The Smart specialisation program of European Commission is currently the biggest experiment in innovation and industrial policy in the world and possibly biggest ever undertaken*".

Kuznetsov-Sabel, World Bank and Columbia University, 2016

Smart Specialisation approach beyond the European Union

Since the creation of the smart specialisation platform in 2011, several activities and tools have been designed to support EU Member States and regions in their way to develop and implement their smart specialisation strategies[4]. Part of the outcomes derived from these activities have revealed the interest of non-EU countries and regions to take stock of the EU experience and identify innovation niches based which can stimulate cooperation channels in research and innovation between EU and other parts of the world.

[4] All these activities are showcased in the new S3 website section S3BeyondEU and the S3 platform expects to facilitate cooperation with Smart Specialisations of EU member states and regions under the Global Value Chains approach.

In relation to S3-related experiences being implemented outside of the EU, the smart specialisation platform has conducted targeted activities leading to obtain policy evidences of relevant interest for economies of EU member states and their regions. To this respect, some of the activities can be summarised as follows:

EU Neighbourhood. The S3 platform has facilitated cooperation with EU neighbour countries, specifically under the frameworks of Danube and Baltic Sea Macro-regional strategies as well as in close cooperation with other instruments of the EU cohesion policy (e.g. Interreg cross-border) and EU neighbourhood policy (e.g. TAIEX). Some of the EU-neighbour countries that have participated in the S3 platform activities are Ukraine, Moldova, Serbia and Tunisia. More recently, a pilot project supporting initial preparatory steps for the development of the smart specialisation strategies within the Enlargement and Integration Action (E&IA) was kicked off. The smart specialisation platform is currently preparing a mapping of economic, scientific and innovation potentials in Serbia, Moldova and Ukraine.

Australia. In 2015 scientific staff of the S3 platform presented the smart specialisation concept as well as the experience of the European Union in Melbourne (RSA, 2015)[5]. In 2016 the launching of the regional innovation strategy of the Hunter region (see Hunter Region S3) evidences the introduction of the smart specialisation concept in the continent. Since then, several stakeholders, academics and practitioners of regional innovation have shown more interest in the smart specialisation concept currently implemented in the EU. Currently, the regions of Latrobe Valley and the Gippsland Region (State of Victoria) are also developing a smart specialisation process. The Smarter Conference on Smart Specialisation brought the participation of Australian stakeholders who presented the smart specialisation approach in Australia focused on pathways of growth, regional diversity and innovation challenges (Seville, 29th and 30th September 2016). In addition, the Australian Federal Government is studying the option to incorporate smart specialisation in their policy framework for regional development.

Africa. The S3 platform has presented the experience of smart specialisation strategies in the EU in the international African forum organised by the Moroccan Regional Science Association (AMRS) and the Portuguese Association for Regional Development (APDR), Marrakesh, May 2016. Also, in May 2016 the S3 platform has presented the EU approach on smart specialisation in Tunisia, at the occasion of the innovation workshop organised within the framework of the Technical Assistance and Information Exchange (TAIEX) instrument. In forthcoming activities, the S3 platform will organise an event in the EU development days (June 2017) with key organisations addressing research and innovation in Africa aiming at discussing the possibilities of smart specialisation implementation in the continent.

[5] Regional Studies Association, International conference Rethinking the Region & Regionalism in Australasia: Challenges & Opportunities for the 21st Century

Latin America. Public authorities of Chile, Mexico, Brazil and Peru have received policy and methodological advice in initiatives leading to the establishment of smart specialisation and innovation strategies. In March of 2016 the S3 platform published a research analysis on the implementation of the smart specialisation concept in six Latin American Countries: Mexico, Colombia, Brazil, Chile, Peru and Argentina. Accordingly, the study: Innovation and regional specialisation in Latin America (Barroeta, et al., 2017) evidences that several regions of Latin America are conducting pilot activities aiming at testing the adoption of the smart specialisation approach according to their own territorial characteristics and socio-economic contexts. The S3 platform has also jointly collaborated with other European Commission services such as DG RTD in the elaboration and revision of country reports for of the research and innovation observatory of Mexico (Bernaras, 2016) and Brazil (Maragna, 2016), and in some consultations elaborated by DG REGIO within the on-going projects IUC (International Urban Cooperation/component regional innovation), and INNOVACT (RIS/global value chains in Latin America)[6].

The State of Pernambuco in the North East of Brazil is currently developing a Science, Technology and Innovation Strategy for 2017-2022 that aims to strengthen its territorial innovation system. The strategy has incorporated elements of the smart specialisation approach thanks to an EU-Brazil cooperation project that has been running since 2015 in partnership with the European Commission's Joint Research Centre. As part of this project two 'innovative territories' have been selected for analysis and entrepreneurial discovery. These territories linked to the textile and automotive-IT sectors were identified as potentially highly competitive on a national and international scale. This project will be used as a pilot to demonstrate and adapt the S3 approach to the Brazilian context, in particular, by helping to explain appropriate forms of multilevel governance, priority selection and activity development.

The participation of the Smart Specialisation Platform in EU-Beyond activities implicitly represents strategic collaboration opportunities for EU regions. The region of Ostrobothnia in Finland has developed a collaboration dialogue with Chilean public authorities situating smart specialisation in Bioeconomy as a driver of cooperation. Similarly, energy clusters of Bogota and Basque Country have found common ground for cooperation thanks to similar priorities of specialisation[7]. Other regions such as Andalusia include and also anticipate overseas-projection activities in the strategy RIS3 as a way to develop regional innovation and also acknowledging support from initiatives such as the Smart Specialisation Platform.

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6 http://ec.europa.eu/regional_policy/en/policy/cooperation/international/urban/

7 http://s3platform.jrc.ec.europa.eu/-/launching-study-smart-specialisation-in-latin-america?inheritRedirect=true&redirect=http%3A%2F%2Fs3platform.jrc.ec.europa.eu%2Fhome

Box 2. Specialisation of EU regions and overseas projection, the case of Andalusia

With the contribution of Maria Angeles Ruiz (regional government of Andalusia)

The entrepreneurial discovery process reveals the need to link capacities to other cutting-edge scientific and productive regions, in order to facilitate firms and knowledge centres to be part of competitive international value chains (OECD, 2013). Accordingly, **overseas projection has been identified as one of the eight Smart Specialisation dimensions** as a way to support, develop and consolidate the specialisation priorities of Andalusia. The regional government has also defined complementary measures to enhance trans-regional collaboration, namely: immersion in innovative environments, internationalisation of knowledge generation, Internationalisation of enterprises, international cooperation projects and capture of innovative companies.

The smart specialisation process itself and the nature of Andalusian priorities have allowed cooperation experiences with several EU regions and some Latin American related initiatives. At EU level, Andalusia region is an active member in the portfolio of activities promoted by the S3 Platform of the European Commission (e.g. peer review workshops, thematic events and membership in thematic S3 platforms of Energy, Agro-food and Industrial Modernisation). Concerning joint activities with S3 initiatives in Latin America, the Innovation agency IDEA participates in the cooperation frameworks (e.g. Iberoam Group Platform and "Campus Iberoam Academy).

4. Smart Specialisation in Chile: driver of modernisation and added value

With the contribution of Soledad Valiente (Chilean Economic Development Agency, CORFO)

The economic prosperity of Chile has decreased as a result of the traditional economic sectors' exhaustion. Different to the growth tendency over the 1990s; in the early 2010 Chilean gross domestic product (GDP) and investments show a negative trend as raw material prices and external demand began weakening (OECD, 2015). According to Chilean customs data for 2015, the country experiences low production diversification and weak export performance (Aduanas de Chile, 2015). This scenario appears after several years of economic activity where metal sector represents 63% of exports, followed by food, beverages and tobacco with 12%. This scenario remains relatively constant since 1960s (Simoes & Hidalgo, 2011).

In terms of innovation, Chile requires targeted public intervention which highly stimulates the engagement of private sector and favours the increase of social capital. The percentage of GDP allocated to Research and Innovation in Chile corresponds to 0.37% of its total, the latest position of the OECD ranking (OECD, 2017). Concerning Interpersonal trust, understood as key driver for innovation (Morgan & Cooke, 1998) only 13% of Chileans express high level of trust in others, against 89% in Denmark or 62% in Spain. Moreover, only 7.3% of innovative enterprises acknowledge to have participated in cooperation activities along with other institutions.

Chile needs to diversify and modernize its productive structure in order to ensure sustainable growth that better responds to the international trends. The challenge lies on the need to transform the traditional economy, highly based on natural resources, into a specialised economy based on smart choices. The economic activity of Chile denotes stagnation which derives in little incentives for growth and motivates the introduction of innovation. Technological development should be applied to segments of the economy characterised by having latent competitive advantages, critical mass and scale to compete globally.

In response to these challenges, the Chilean government has implemented several initiatives aiming at increasing innovation and added value in the economy. Some of these initiatives emerged from shared interests between public and private actors at both national and regional levels, being the most important:

- The Strategic Guidelines of the National Innovation Council for Competitiveness, which under different government mandates have provided long-term strategic orientations for sectors with high growth potential. Within these guidelines framework, the "Productivity Dialogues" were developed in sectors such as logistics, mining and food.
- The pilot activities of Regional Innovation Strategies, as a consequence of the RED Project through the RIS methodology and accompanied by European experts thanks to a collaboration agreement between Chile and the EU. This process allowed the training of a large number of regional actors.
- The previous experience accumulated in the framework of the Competitiveness Improvement Programs. This experience allowed bottom-up and participative

dynamics leading to create at least 20 Innovation Programs coordinated by Innova-Chile of CORFO. Some of these programs were oriented to support of mining suppliers, healthier food and sustainable Tourism, among others.

Box 3. RED Project, strengthening Innovative regions in Chile.

With the objective of contributing to deepening the process of regionalization and decentralization of the Chilean innovation system, the RED Project has contributed to the improvement and **effectiveness of public investment with contribution of the regions** to the development and competitiveness of the country.

The RED project conducted **capacity building activities for regional administration staff** and tutorials in the participant regions to consolidate the acquired learning. Also, study visits were organised engaging the 7 Chilean regions in exchanges of good practices with stakeholders of Spain (Madrid, Valencia, Basque Country and Galicia), Italy (Umbria and Lazio) Finland (Helsinki) and Belgium (Brussels). The achieved results revealed the importance of maintaining **collaboration between European and Chilean institutions and regions**, as well as continuing the training of regional administrative staff in the definition and management of policies to support innovation and competitiveness.

"Cooperation with the EU first in the RED project and then in regional policy dialogs had been of fundamental importance for the regions in Chile".

Natalia Piergentili, subsecretary of Economy, Chilean Government

In a more structured way, Chile addresses this innovation challenge from 2014 with the implementation process of the new strategy for productive growth. As part of the Government's Productivity, Innovation and Growth Agenda, the Strategic Programs of Smart Specialisation (also known as Strategic Programmes) were created. This initiative is coordinated by CORFO in its role of public policies executive agency. The objective of the Strategic Programmes is to improve the competitiveness of Chilean economy through the development of strategic sectors that seek to promote market opportunities, through sophistication, productivity improvements and diversification that contribute to the country's competitive positioning at global scale.

5. The strategic programmes for smart specialisation, agenda for productivity, innovation and growth

The strategic programmes aim at improving the economic competitiveness taking advantage of business opportunities with high potential. These strategic programmes are based on the smart specialisation concept and look for the establishment of appropriate conditions to enhance productivity, territorial development, innovation and entrepreneurship through stakeholders' participative approach. The main drivers of this strategic initiative are:

- Strengthening competitiveness based on market opportunities and challenges
- Resolving coordination failures and generating critical mass of resources in sectors or industries with growth potential
- Diagnosing competitive gaps and identifying roadmaps to reduce them through strong public-private action.
- Developing policy instruments enabling competitiveness, human capital capacities; greater investments and connectivity.
- Developing of a common technological infrastructure and the creation of better regulation and regulatory aspects.

The design process of the strategic programmes integrates the shared vision of public and private actors at national and regional level. It begins with the reflection on how to address innovation and technology challenges in traditional sectors. Long-established productive areas like copper mining or salmon farming were analysed aiming at transforming challenges into generation of knowledge-based businesses leading to increase exports and develop sophisticated services and technology. In the case of sectors such as food and tourism, the reflection entailed the need to add value in order to create offer that better matches with the demands of more sophisticated consumers.

Concerning the identification of strategic priorities, the adopted selection criteria integrate inputs from best practices of smart specialisation strategies conducted in the European Union. These criteria are based on the potential to generate technological and productive progress for the country and its regions, leverage capacities and resources and diversify and sophisticate the economy in a sustainable way. Concretely, these criteria are defined in five domains, namely: (*1*) Market potential of the sector or existence of enabling platform; (*2*) Significant potential offer, incorporating sophistication and knowledge; (*3*) Sustainability considerations in social, economic and environmental aspects; (*4*) Existence of coordination failures and need of public goods and (*5*) Maturity, considering also political, social and economic variables.

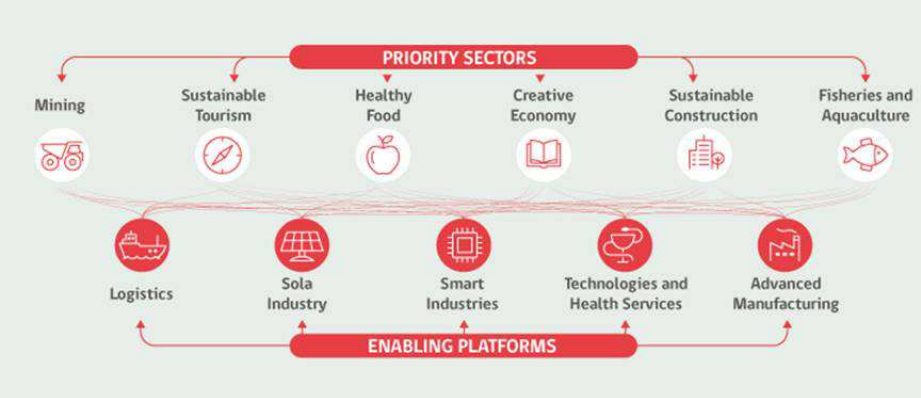
Table 1. Implementation steps of strategic programmes in Chile

Animation and shared vision	Based on a **participatory and consensual reflection** and dialogue. This step seeks to raise a common vision from quadruple helix actors and enabling platforms with market opportunities and high potential for growth requiring prioritization of efforts and resources.

Identification of gaps and roadmap design	It identifies **coordination and production failures** as well as transversal obstacles that affect targeted sectors or enabling platform. It includes the definition of a set of initiatives, agreed with public and private actors, aiming a reducing short, medium and long term gaps.
External validation	Once the roadmaps are drafted, this stage includes a final **validation by private-public bodies known as Committee of Programmes** and Strategic Initiatives who will validate the respective roadmaps and can propose part of the solution to the main challenges emanated from these programs.
Implementation	Based on the budget allocated for the defined programmes, this step consists on deployment of efforts and **coordination of the roadmap implementation** through annual work plans. Monitoring and evaluation aspects are also integrated in this step.

The process lead to the definition of 35 strategic programmes of Smart specialisation organised in 7 strategic sectors and 3 enabling platforms expected to facilitate cross-sectorial synergies and generate new innovation niches. From the territorial point of view, the programmes are defined at national, macro-regional and regional level in order to promote multi-level governance and facilitate vertical linkages between the policy orientations and expected results. The economic sectors of reference are food, mining, tourism, fishing, creative economy, construction, manufacturing, logistics, health & technology, intelligent industries and solar Industry. It is about building social capital between public and private agents in order to remove obstacles and take advantage of the opportunities for the country's development.

Figure 1. Strategic sectors and enabling platforms identified in the Chilean Smart Specialisation process



Source: CORFO

Support from Conicyt to regional innovation planning

With the contribution of Wanda Garcia (Conicyt)

The National Commission for Scientific and Technological Research (Conicyt) is created in 1967 as a body of the Ministry of Education. Its mission is to advice the presidency of the Chilean Republic in planning of scientific and technological research and to promote science and technology with orientation in the economic and social development of the country. This promotion of science and technology is done in coherent manner with the national innovation strategy and constitutes the framework to support regional innovation action.

The regional programme of Conicyt was established in the year 2000 with the objective to promote the scientific and technologic development of Chilean regions. This objective is to be achieved through the joint work with regional governments and research centres according to the needs and priorities defined by the regions for their economic and social development.

The Conicyt regional programme is supported in two main action lines. The first looks at building and enhancing capacities in Science, Technology and Innovation in the regions of Chile. This action operates through the implementation and follow-up of projects aiming at the creation and strengthening of Regional Centres for Scientific and Technological Development, jointly supported by Conicyt and regional governments.

The second action line is based on the promotion and implementation of policy instruments relevant to the regional needs. This action includes the coordination and implementation of the resources provided by the Regional Innovation Assignment Fund for Regional Competitiveness (FIC Regional). In this action line, Conicyt has contributed to the strengthening of Regional Innovation Systems for instance in the definition of regional planning instruments such as policies and strategies of science, technology and innovation.

In this context, Conicyt has contributed in the field of regional planning also within the Innovation and Competitiveness Program, funded by the European Union and the Government of Chile (through the Agency for International Cooperation). Within this framework, the project "*Supporting the Development of a Regional Innovation System to Promote Innovative Regions (RED Project)*" was implemented with the coordination of the Chilean Undersecretary of Regional and Administrative Development (SUBDERE). The regions benefited with Conicyt support (e.g. expert consultancies) were: Tarapacá; Antofagasta; Coquimbo; Valparaiso; Metropolitan; O'Higgins; La Araucanía and Aysén. Thus, these regions now have planning instruments approved by their respective Regional Councils - a collegiate body with normative and auditing powers, whose institutionalism is born with the Constitutional Organic Law 19.175 on Government and Regional Administration, its purpose is to make effective the participation of the regional community - an instance that allows the regions to order their investment and develop their capacities in the strategic axes and foci defined through participatory processes.

6. Regional strategies of innovation in Chile

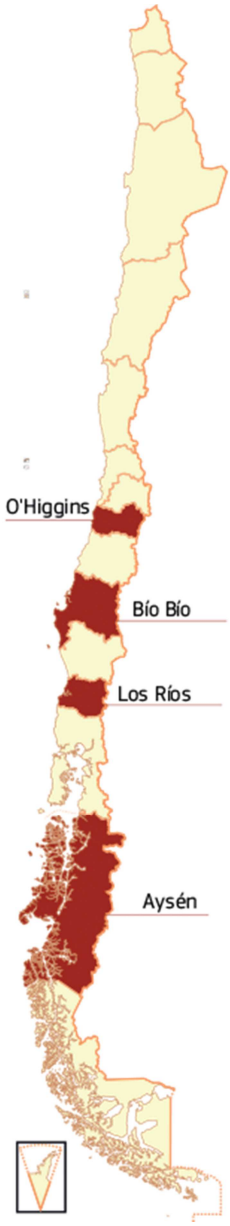


Figure 1. Focus on four Chilean regions

"Effectively decentralizing the country is another of our imperatives and that is why we have insisted on giving greater power to the territories [...]"

Presidential address by Ms. Michelle Bachelet, 21st of May 2016.

At the national level, one of the main results of an in-depth reform of the decentralization process is a transfer of competences in strategic way to the regional managing authorities: strengthen the productive activities, land use management and social and cultural development. There has been a qualitative gap in incorporating innovation for the social, environmental, and economic development of Chile.

In consideration of the complexity of the process of decentralization of some functions and powers from the central to the regional level, the Chilean government instructed in September 2014 a ministerial committee to analyse and implement certain competencies that could be transferred through administrative measures to the law, to prepare the regional institutions and train the authorities and regional teams to face this challenge.

With specific funding allocation enabled by the Innovation Fund for Competitiveness (FIC), a total of 25 strategic specialisation programs have been implemented. Territorially, these programmes are distributed at national, meso-regional and regional levels and respond to 7 strategic sectors (Mining; Healthy Food; Sustainable Tourism; Sustainable Construction; Health Technologies; Fishing and Aquaculture and Creative Economy) with the support of 4 technology platforms (Health, Logistics, Energy and (in certain niches) Advanced Manufacturing) (Barroeta et al. 2017).

The policy dialogue (JRC, 21st November 2016) focused on four regional cases: O'Higgins, Bío Bío, Aysén and Los Ríos.

6.1 The Region of O'Higgins: towards an innovative culture

With contributions of Geraldine Fuentealba Romero (Regional government of O'Higgins)

The region of O'Higgins is located in the Central part of Chile. It limits to the North with the Metropolitan Region (Santiago), to the East with Argentina, to the South with the Region of Maule and to the West with the Pacific Ocean. The Region of O'Higgins has an area of 16 387 km² and its population projected for 2015, according to the National Institute of Statistics is 851 406 inhabitants. The capital and largest city of the region is Rancagua.

RIS3 priorities

O'Higgins priority sectors are focused on agri-food (fruticulture, vitiviniculture, apiculture, horticulture, sheep breeding), tourism (Lake Rapel, Colchagua wine route, skiing), and mining. Cross-sectoral priorities were also defined by the region: Information and Communication Technologies (ICT); water (efficiency in the use of the resource) and renewable energy (Gobierno Regional del Libertador General Bernardo O'Higgins, 2012).

The specific objectives of its RIS Strategy are:

- To develop the regional Human Capital for Innovation;
- To strengthen Knowledge Transfer;
- To promote Key Cross-Cutting aspects for Innovation in companies; and
- To foster an innovative culture in the region; strengthen and articulate with the Regional Innovation System.

Stakeholder engagement (EDP)

200 key players participated to the Entrepreneurial Discovery Process, among them entrepreneurs of the different productive sectors and of different sizes of companies (micro to large companies), managers and heads of areas; company association directives; directors of research centres; deans, academics and researchers from universities that carried out actions or projects in the region; public actors such as intendant, regional ministerial secretaries, national and regional directors of public services; professionals and technicians of public services; and regional council.

Challenges to RIS3 implementation

The regional administration identifies as the four main challenges for RIS3 implementation: a low level of regional autonomy in budgetary matters; a high turnover of professionals in public departments; a limited influence of the regional authorities in the formulation of national public policies and a weak governance and low representation of private actors.

6.2 The region of Bío Bío: interconnected innovation

With contributions of Víctor Torres Jara (Regional government of Bío Bío)

The region of Bío Bío is also located in the Central part of Chile. It limits to the North with the Region of Maule, to the East with Argentina, to the South with the Region of Araucanía and to the West with the Pacific Ocean. The Region of Bío Bío has an area of 37,068.7 km² and a population of 2,114,286 inhabitants, according to the projections of National Institute of Statistics in 2015. Bio Bio is the second most populated region of Chile and includes 4 provinces: Arauco, Biobío, Concepción and Ñuble.

RIS3 priorities

Bío Bío specific objectives are threefold, as outlined below (Gobierno Regional de Bío Bío, 2015):

- Strategic Objective 1: To improve the competitiveness of the regional 16 000 SMEs through the promotion of Innovation;
- Strategic Objective 2: Improve the skills and capacities of actors involved in the Regional Innovation System.
- Strategic Objective 3: To improve collaboration and cooperation among all agents of the regional innovation system.

Stakeholder engagement (EDP)

Primary and secondary sources were used to diagnose the Regional Innovation System. It should be mentioned that the Bío Bío region is one of the most studied regions, reflecting the revision of 39 studies and literature related to the regional innovation theme - 28 regional documents and 11 national documents.

On the other hand, a field work was carried out to gather the opinion of the players of the Regional Innovation System, managing to mobilize around 400 people (mainly SMEs, universities and representatives of the public sector) through interviews.

The result of the diagnostic stage provided a characterization of the Regional System of Innovation of the Bío Bío Region and identified gaps in the system, visualized from 3 dimensions: Demand (SMEs), Supply (Knowledge Generating Centres) and Interconnection (interface between supply and demand).

Challenges to RIS3 implementation

To date (May 2017), the regional innovation strategy is still under evaluation.

6.3 The Region of Aysén: entrepreneurial innovation

With contributions of Catalina Faundez (Regional government of Aysén)

The Region of Aysén is located in the Chilean Patagonia. It limits to the North with the Region of Los Lagos, to the South with the Region of Magallanes, to the East with Argentina and to the West with the Pacific Ocean. Aysén has an area of 108,494 km² and its population projected for 2015, according to the National Institute of Statistics is 108,328 inhabitants, which makes it the least populated region of Chile.

RIS3 priorities

The objective of Aysén regional strategy is to increase the regional competitiveness of the region within a context of environmental sustainability, social and economic well-being through innovation and based on its natural, human and social capital.

It is built on 4 strategic axes (Gobierno Regional de Aysén, 2014):

- Innovation in companies for greater competitiveness and value-added;
- Human Capital and promotion of an entrepreneurial and innovative culture;
- Social innovation and improvement in public management; and
- Knowledge Hub on natural resources, ecosystems, biodiversity and climate change.

The Region of Aysén is still initiating the processes of innovation management. However, it is noteworthy that although Aysén is a recent region, it has created a Regional Innovation Strategy and planning instruments that allow projecting the idea of an innovative and pilot region for various areas, both nationally and internationally.

Stakeholder engagement (EDP)

In order to implement the strategy and seek coherence with the regional planning instruments, aiming to answer to the citizen requirements in terms of innovation in companies, in human capital, in social and public innovation and in knowledge pole in natural resources, a management team in innovation was established in Aysén Region.

This team is made up of professionals from various public services. It is projected that this management team will originate a directory, which will be led by the highest regional authority and integrated by stakeholders from the public and private sectors.

Challenges to RIS3 implementation

The Region of Aysén is characterized by a low development of the productive sector, which means that the priorities of companies are gradually considering innovation as an important part of their daily work. However, a first challenge consists in considering in the corporate culture the advantages of innovation. This is why the first axis of ERI Aysén focuses on innovation in companies.

On the other hand, the Region of Aysén is a recent territory, with few inhabitants, and it does not yet have the critical mass to develop each of the areas covered by the

Strategy, which arises as this the main barrier and challenge to face. This is why the axis number 2 focuses on Human Capital and promotion of entrepreneurial culture and innovation.

Another major barrier is associated with the fact that one of the main economic activities is the regional public administration, which is characterized by a resistance to change and slowness in the modification of historically undertook processes. This explains why innovation in public management stands as a challenge in ERI.

In addition, the Region of Aysén gives importance to the collaborative work between the public sector and citizenship, an area in which social innovation emerges as a fundamental axis of ERI Aysén.

Another challenge to highlight is the axis number four associated with Knowledge Pole in Natural Resources, Ecosystem and Climate Change, since the low population density of the Region of Aysén together with its low industrial development has allowed the maintenance of natural processes and a high conservation of its ecosystems, which allows to consider the potential of a natural laboratory for humanity as one of the areas prone to innovative processes in different fields.

6.4 The Region of Los Ríos

With contributions of Jorge Balboa (Regional government of Los Rios)

The Region of Los Ríos is located in the Central part of Chile. It limits to the North with the Region of Araucanía, to the South with the region of Los Lagos, to the East with Argentina and to the West with the Pacific Ocean. The Region of Los Ríos has an area of 18 429.5 km² and its population projected for 2015, according to the National Institute of Statistics is 98 inhabitants, which makes it the least populated region of Chile. The region is composed by 2 provinces: Ranco and Valdivia.

RIS3 priorities

The Regional Development Strategy 2009-2019 for the Region of Los Ríos prioritized different strategic axes: tourism, agro-food, fisheries, creative industry, culture and knowledge, forestry and timber industry, naval and metal-mechanic industry.

Stakeholder engagement (EDP)

The results of the stakeholder engagement in the Region of Los Ríos are embedded in the Regional Ecosystem of Innovation and Entrepreneurship through 29 initiatives distributed in 8 main lines of action:

- Strengthening cooperation between Knowledge Institutions and regional SMEs;
- Strengthening the processes of Knowledge Transfer at the regional level;
- Strengthening Public Policy for Innovation and Entrepreneurship;
- Strengthening the pro-innovation culture in SMEs;
- Stimulating public and private investment on innovation;

- Creating a network for knowledge generators in education;
- Fostering Human capital; and
- Creating an Implementation and Monitoring Unit for the regional ecosystem of Innovation and Entrepreneurship.

Challenges to RIS3 implementation

The table 2 summarises the main challenges and barrier to RIS3 implementation in the Region of Los Ríos.

Table 2. Regional innovation policy, main problems and potentialities (Region Los Ríos)

Field	Main problems identified in the region	Potentialities of the region
Scientific environment	lack of linking knowledge between scientists and companies	presence of advanced human capital, universities and research centres
Technological environment	lack of technological transfer	
Productive environment	innovation is not considered as a strategic factor	large numbers of micro, small and medium-sized enterprises
Financial environment	insufficient development tools	existence of decentralized funds
Institutional environment	public services with low articulation	regional development bodies, public-private partnerships
Cultural and educational environment	generally low culture of innovation and entrepreneurship	Traditional cultural experiences and practices.

Source: based on the document "Política Regional de Innovación y Emprendimiento, Región de los Ríos, 2016-2019. Gobierno Regional de Los Ríos, 2016

7. Cooperation EU-Chile in regional smart specialisation

The study of the experiences from these four Chilean regions reveals different stages of implementation of the Regional Innovation Strategies. Nevertheless, the RIS3 methodology implemented in the EU can be seen as a strong catalyser of the regional stakeholders, which is reflected in a shift in the governance (decentralisation process). Despite the variety of territorial approaches, RIS3 can be seen as (*i*) a learning process; (*ii*) a cooperation project between Chile and the EU, and; (*iii*) a cultural shift towards a more central role for innovation in the regional development policy and the entrepreneurship ecosystem.

a. RIS3 methodology as a learning process in Chile

The experience of designing regional innovation strategies RIS3 has allowed Chilean policy makers to gain momentum and to start a learning process oriented to develop innovation capacities from local action and resources. For instance, the Regional Innovation Strategy of the region of O'Higgins, based on the RIS3 methodology, has been developed from 2012 onwards in the region as a learning process, with the view of creating a R&D planning instrument. Three productive sectors within the field of environment friendly agriculture (fruit, beekeeping and winery) were prioritized on the basis of economic and social criteria, generation collaborative processes including a high participation of the triple helix actors (companies, public entities, and in a smaller measure to universities and research centres). More than 4,000 people have also been trained through specialisation courses. As a result, the region shows now a greater R&D offer, which focuses mainly on the agricultural sector, in areas such as fruit growing (genomics, stress physiology, diseases), horticulture, and livestock systems.

The regional innovation policy of Los Ríos proposes a strategic vision towards 2030, with successive phases. The first phase of four years aims at consolidating the innovation model and its bases. Throughout this process, validation committees and citizen consultation were set up to approve the different stages of design and implementation, organise working groups and participatory workshops with relevant actors in the field of regional innovation.

This learning process has been benefited by projects financed by the European Commission (e.g. project RED) through which regional representatives of Chile and counterparts of EU have exchanged their experiences and perspectives on regional innovation and smart specialisation. As an example, the Scientific and Technological Park of Extremadura (FUNDECYT-PCTEX[8]) contributed to the design of the Aysén innovation strategy in the strategic phases such of: (*i*) Set-up of a directory and a management team; (*ii*) Initial diagnosis revealing the weaknesses and strengths of Aysén region in terms of innovation; (*iii*) Definition of the strategy, vision, objectives and axes, and; (*iv*) Strengthening regional capacities.

[8] FUNDECYT-PCTEX is a non-profit organisation based in Extremadura (Spain) with the aim of contributing to the social and economic exploitation of science and technology in the region, supporting and promoting scientific and technological development and a better use of research and innovation outcomes. www.fundecyt-pctex.es

b. RIS3 methodology as a cooperation project between Chile and the EU

The development of RIS3 strategies requires cooperation at the level of political representatives as well as key operational stakeholders. This cooperation can be applied at trans-continental level with substantial contribution from regional experiences. The knowledge and capacities developed around innovation and territorial innovation policies in Latin America and the European Union may provide a concrete collaborative framework oriented to approach regional economies specialised (or willing to specialise) in common and/or complementary strategic domains (Barroeta, et al., 2017).

Thematic specialisation and interregional cooperation developed in EU (see box 1) can find potential synergies of cooperation with similar on-going initiatives as is the case of the *Transforma* platforms. Solar energy for instance constitutes a sector of common interest for many regions of EU and Chile. In the EU for example, the interregional partnership on solar energy engages the participation of 12 regions committed to follow a cooperation path which includes steps such as learning, connecting, demonstrating and developing joint investments[9]. This business-oriented cooperation may find a direct relation with the regional specialisation platform on solar industry managed by *Transforma* and can be replicated in the framework of other interregional partnerships and related initiatives in Chile (e.g. sustainable construction, smart industries and advanced manufacturing).

Box 4. Defining a solar roadmap based on common stakeholders' vision

The solar platform is one of the initiatives promoted by Transforma within the regional specialisation programme (Transforma, economia productiva y diversificada, 2016). Based on the **high potential of solar resource availability**, Chile has identified this solar sector as a key pillar of specialisation. The solar energy platform process initiated in 2015 with stakeholders' **consultation and dialogues attended by over 100 representatives from the public, private, science and technology sectors, and civil society**. After identifying important challenges such as lack of local enterprises in the value chains, weak skills, absence of research laboratories and little regulation, the common vision of actors led to define the roadmap for this technology which by 2025 expects to achieve the following goals:

- 7 to 10% generated with solar energy (> 3.2 GW installed).
- 45.000 jobs
- Investment attraction amounting to MMU$D 9,380.
- Local added value: 55% (MM U$D 5,159).
- Generation of 250 MW in Self-supply PV, 2000 GWht (1,7M ACS systems).

*"**We rarely have the luck to see so clearly how an opportunity is becoming a reality. And that is what is happening in Chile with the development of the renewable energy industry**". President Michelle Bachelet at the launching event of the Transforma solar platform*.

[9] For more information on the methodology to facilitate EU interregional cooperation and smart specialisation, please visit http://s3platform.jrc.ec.europa.eu/s3-energy-partnerships

c. RIS3 methodology as a cultural shift toward an innovative and entrepreneurial ecosystem in Chile

The case of the region Bío Bío represents an example of reflection and shift towards the enhancement of innovative entrepreneurial ecosystems. The region launched programme aiming at strengthening its entrepreneurship ecosystem with the collective vision of stakeholders. This program seeks to raise awareness in society about the benefits of innovative entrepreneurship, promoting the transformation of people and favouring their cultural evolution towards innovation and creating the conditions for support to research and innovation as a source of regional development and wealth creation. Bío Bío defined its regional strategy of specialisation with an orientation to support the traditional industry associated to the sectors of wood and furniture, mining, agro-industry or advanced production technologies, able to generate new production chains (Barroeta et al. 2017).

Similarly, the Region of Los Ríos developed its regional innovation policy as a vehicle to boost its competitiveness. The objective is to "*generate the necessary conditions for the implementation of a regional ecosystem of innovation and entrepreneurship that contributes to the strengthening, articulation, knowledge and dynamics of the different environments that make it up*" (Gobierno Regional de Los Ríos, 2016). The innovation policy is considered in this region as a planning tool designed to facilitate the development of new and new products and processes and a triggering factor for innovation and entrepreneurship in which the capacity to do so lies in regional actors and natural resources.

8. Conclusions

The European Commission support to EU Member States and regions in their implementation of Smart Specialisation Strategies is recognised not only within but beyond the EU. For instance, methodological guidance, technical reports delivered by the Smart specialisation platform have been taken into account in the elaboration processes of Regional Innovation Strategies in Chile.

The joint vision and decision of regional stakeholders (including representation of private and public sector, research, academia and civil society) constitutes a clear added value in the elaboration of public policies related to research and innovation. Giving priority to targeted investments which potentiate the regional capacities and resources also evidences the spirit of the S3 concept in Chile.

CORFO and CONYCIT, the two strategic bodies in the specialisation process of Chilean regions, have contributed to the identification of strategic sectors with specific challenges (e.g. sustainable construction, healthy food and solar energy) and also provided transversal support through targeted programmes aiming at strengthening operative alliances in regional governments. Cooperation with EU member states and regions is perceived as a strategic input in the process.

A major contribution of this paper lies on the emergence of the Policy Learning Dialogue for Smart Specialisation (PLDSS) as a solid methodological framework to facilitate the exchange of regional innovation experiences between EU stakeholders and their counterparts in other parts of the world. The JRC will continuing exploring this PLDSS methodology in forthcoming interactions with policy-makers of other regions and countries interested in smart specialisation and their follow-up, to nourish a living and open dialogue on regional innovation strategies.

Other conclusion of this policy learning dialogue lies on the complementarities and cooperation opportunities derived from the implementation of a similar policy instrument in different contexts. Although the existence of different conditions to implement Smart Specialisation in EU and Chile (e.g. regulation, funding, decentralisation and centralisation), common aspects appearing in both processes are:

(1) bottom-up dialogues among actors of innovation eco-systems leading to identify priorities of specialisation;

(2) targeted investments, and;

(3) deep concern on the relevance of good governance and cooperation within and outside a region.

Cooperation and synergies would be explored by national and regional bodies of both EU Member States and Chile according to pre-identified domains of specialisation and Global Value Chains approach. To this respect, key common domains of specialisation appear in the sectors of Bio-economy - including agro-food and bioenergy - solar energy, advanced manufacturing and health.

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List of abbreviations and definitions

CELAC	Community of Latin America and Caribbean States
CF	Cohesion Fund
DG REGIO	European Commission's Directorate-General for Regional and Urban Policy
EDP	Entrepreneurial Discovery Process
E&IA	Enlargement and Integration Action
ERDF	European Regional Development Funds
ESIF	European Structural and Investment Funds
EU	European Union
GDP	Gross Domestic Product
GVC	Global Value Chains
ICT	Information and Communication Technologies
IPR	Intellectual Property Rights
JRC	Joint Research Centre
LAC	Latin America and the Caribbean
NGO	Non-Governmental Organisation
OP	Operational Programme
R&I	Research and Innovation
RIS3	Regional Research and Innovation Strategies for Smart Specialisation
SME	Small and Medium Enterprise

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