



## BRIDGES project, 5<sup>th</sup> call, additional activities: policy instrument improvement recommendations, PP2/LP Regional Council of Kainuu

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# 1. Background

## 1.1 Objective

The policy instrument improvement recommendations are final deliverables of the additional activities of the BRIDGES project approved under the 5<sup>th</sup> call of the Interreg EUROPE (IE) programme, on 31.5.2021. As a result of the relatively limited time (12 months) allocated to the additional activities, actual policy impact was not possible to achieve. Nevertheless, during these 12 months, it has been possible to test a value chain mapping methodology in five (5) regions, reach conclusions relating to re-shoring, in-shoring and near-shoring of value chain segments, identify and select good practices, and develop interregional relatedness opportunities and profiles. The purpose of the policy instrument recommendations is to prepare regions for mainstreaming these findings during the forthcoming RIS3 update period in 2023.

## 1.2 The BRIDGES project 5th call, additional activities

The objective and content of the 'additional activities' should be understood as an extension (partially), a deepening and a systematisation of the BRIDGES project insights gained during Phase 1 (2016-2019), aiming at improved RIS3 implementation through interregional collaboration. The starting argument of the BRIDGES project was addressing mismatches between the economic and knowledge bases of the partner regions as a precondition for more effective & more visible RIS3 results. During Phases 1 & 2 of the project, interregional complementarities were further tested through the BRIDGES pilot action. The pilot action tested the conditions and contexts in which interregional complementarities would be/are essential for the RIS3 implementation of the respective regions. The pilot action findings indicate that addressing interregional complementarities is an essential dimension of the RIS3 -provided regions are prepared to understand the potential for addressing contextual advantages and structural barriers, i.e. they go beyond conjectural opportunities and corresponding gaps/challenges.

The BRIDGES project additional activities focus on interregional complementarities as a RIS3 tool based on value chain policies. This is done by re-shoring, inshoring & near-shoring productive activities based on value chain (VC) analysis selected by the regions. Linking interregional complementarities to VC-based development and to regional resilience, was inspired by the EC's New Industrial Strategy<sup>1</sup> and the EPRS, PE 653.626 – March 2021 study<sup>2</sup>, arguing how geographically diversified production structures result in reinforced regional clusters, contributing to the resilience of economies<sup>3</sup>. VC re-, in- & near- shoring drivers

<sup>1</sup> Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery, COM (2021) 350 final. "In the areas of common dependencies with its partners, the EU may choose to pool resources and build stronger and more diverse alternative supply chains with our closest allies and partners", p13. [https://ec.europa.eu/info/sites/default/files/communication-industrial-strategy-update-2020\\_en.pdf](https://ec.europa.eu/info/sites/default/files/communication-industrial-strategy-update-2020_en.pdf).

<sup>2</sup> Post Covid-19 value chains: options for reshoring production back to Europe in a globalised economy. [https://www.europarl.europa.eu/thinktank/en/document/EXPO\\_STU\(2021\)653626](https://www.europarl.europa.eu/thinktank/en/document/EXPO_STU(2021)653626).

<sup>3</sup> According to the EC, for example, the COVID-19 crisis affected the EU economy, across eco systems but not homogenously. The crisis exposed the interdependence of global value chains and demonstrated the critical role of a globally integrated and well-functioning Single Market. The key issues highlighted by the crisis are: Borders restricting free movement of people, goods and services; Interrupted global supply chains affecting availability of essential products; Disruption of demand; 6.3% decline of EU economy; 60% of SMEs reported a fall in turnover in 2020; 24% fall in intra-EU trade in Q2 & Q3 2020; 1.7% SME employment decrease in 2020 - 1.4 million jobs; 45% of firms expected to reduce

<http://www.interregeurope.eu/bridges/>

are identified as<sup>4</sup>: product design, innovation (R&D), flexibility, quality, market proximity & addressing VC weaknesses (e.g. Green Deal gaps). These arguments, favouring VC-based policy measures were further reinforced: we became increasingly aware that (1) value-chain based policies are and will be more and more important strategic & diversification tools; (2) the impacts of the Ukraine war on the EU productive space. OECD<sup>5</sup> notes that "The substantial economic costs of the war, elevated uncertainty (p13)" and later on that "Exports will continue to benefit from deep integration into value chains (p181)". Re-localisation has various dimensions. For example, OECD<sup>6</sup> notes that while through re-localisation countries have less exposure to external shocks, at the same time they risk becoming less efficient and stable in their production models. Therefore, it is important that re-localisation is combined with updated business & production models. These considerations allow scope for governments to "join efforts with businesses to improve risk preparedness" (page 8). In the BRIDGES project additional activities, two (2) good practice (GP) themes are dedicated to these issues<sup>7, 8</sup>, and eight (8) GPs have been identified, mostly from the EU and the USA (Good practices)

All project partners (PP) from Phases 1 & 2 participate in the additional activities except for PP1 (restructured as a result of municipal decisions) and PP3 (internal adjustment processes). All partner regions focus on RIS3: (i) the selected value chains are part of partner regions' RIS3 prioritised sectors. They were selected with the intention to explore and strengthen innovation-based growth; (ii) the RIS3, through the SF 2021-2027 Policy Objective 1 (PO1) 7<sup>th</sup> enabling condition on 'interregional innovation investments', provides the / an operational context.

Table 1 BRIDGES project, additional activities, policy instruments per region

Partner organisation		Region	Policy instrument	Timetable
PP2 /LP	Regional Council of Kainuu	Kainuu, FI	RIS3 2021-2027; revision 2023	Revision in 2023
PP4	Regional Council of Helsinki - Uusimaa	Helsinki-Uusimaa, FI	RIS3 2021-2027; revision 2023	Revision in 2023
PP5	ANKO	Western Macedonia, GR	RIS3 2021-2027	Finalisation 2023

investment in 2021. [https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en) .

<sup>4</sup> The European Re-shoring Monitor [REM] (2018). <https://www.eurofound.europa.eu/publications/report/2019/reshoring-in-europe-overview-2015-2018> .

<sup>5</sup> OECD (2022), OECD Economic Outlook, Volume 2022 Issue 1: Preliminary version, OECD Publishing, Paris, <https://doi.org/10.1787/62d0ca31-en>. <https://www.oecd-ilibrary.org/sites/62d0ca31-en/index.html?itemId=/content/publication/62d0ca31-en>.

<sup>6</sup> Arriola, C., S. Guilloux-Nefussi, S. Koh, P. Kowalski, E. Rusticelli and F. Van Tongeren (2020), "Efficiency and Risks in Global Value Chains in the context of COVID-19", OECD Economics Department Working Papers, No. 1637, OECD Publishing, Paris. <https://www.oecd-ilibrary.org/docserver/3e4b7ecf-en.pdf?expires=1656179716&id=id&accname=guest&checksum=F42775C8A630F30A6106D8D2567733CA>.

<sup>7</sup> **GP Theme 1** Good practices about value chain mapping, identification of competitive advantage and decision-making criteria related to value chain re-shoring and nearshoring. **GP Theme 2** Good practices for anticipating interregional complementarities and including them into their S3 have not yet been addressed sufficiently (Balland and Boschma 2021).

<sup>8</sup> Balland P-A, and Boschma R. (2021). Complementary interregional linkages and Smart Specialisation: an empirical study on European regions. Article in Regional Studies · January 2021 DOI: 10.1080/00343404.2020.1861240. <https://www.researchgate.net/publication/348587340> .

Partner organisation		Region	Policy instrument	Timetable
PP6	SVDC	Western Slovenia, SI	Community-led Local Development (CLLD), LAG (local action group) Soča Valley	2021-2027
PP7	PBN	Western Transdanubia, HU	EDIOP PLUS and Szombathely2030	2021-2027

## 1.3 Structure of the document

In addition to this introductory part, this document is organised into

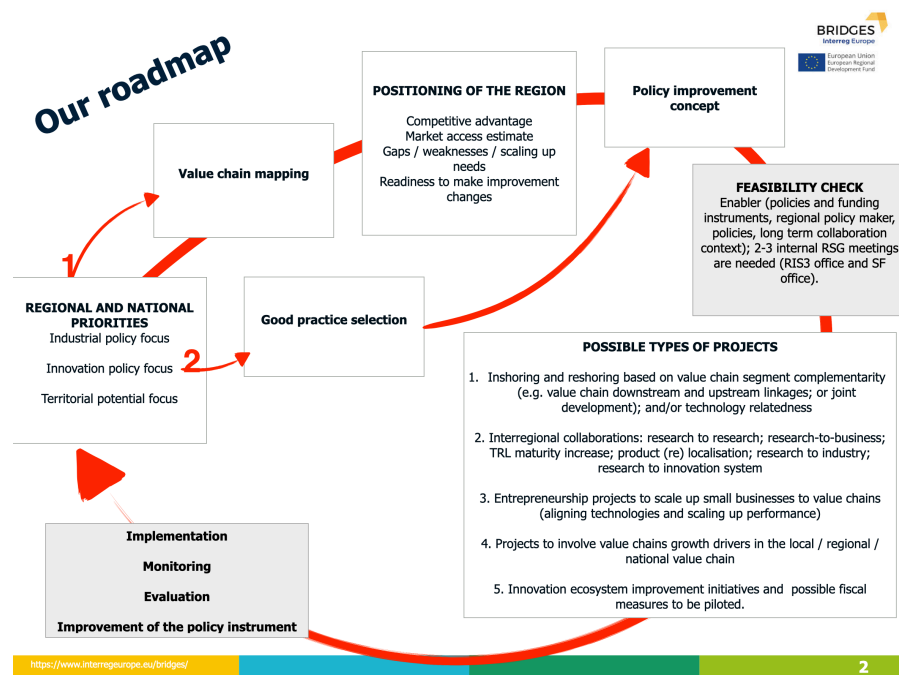
1. Background (1.1 Objective, 1.2 The BRIDGES project 5th call, additional activities, 1.3 Structure of the document).
2. Policy instrument improvement recommendations methodology
3. The region and its RIS3 2021-2027 (3.1 The Kainuu region, 3.2 The Kainuu 2021–2027 RIS3)
4. Good practices (4.1 Good practice identification, 4.2 Good practice selection)
5. Value chain mapping (5.1 Value chain mapping methodology, 5.2 Value chain mapping results)
6. Policy instrument improvement recommendations
7. Conclusions: benefits from the additional activities
8. Contributions
9. Stakeholder group meetings

## 2. Policy instrument improvement recommendations methodology

The value chain mapping was expected to generate regional and interregional initiatives (Figure 1) which strengthen re-shoring and in-shoring relevant activities and coherently position/align such activities together with near-shoring (=off shoring), with the aim to reach VC-based strong and solid development paths. These initiatives are either new types of projects (Type 1 policy instrument impact according to the Interreg Europe terminology) or / and activities that strengthen the evidence base of the RIS3 and through that, the range of possible collaborations (Type 2 policy instrument impact according to the Interreg Europe terminology). For example, good practices 1, 4,5,9,10,11 are examples of potential Type 1 initiatives, while good practices 2,3,6,7 and 8 are examples of potential Type 2 initiatives (Figure 1 and Table 2 BRIDGES project additional activities, good practices (GP)).

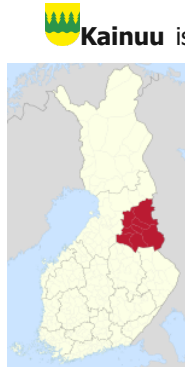
The policy instrument improvement is intended to serve three purposes: (1) strengthen the regional productive base by inshoring and reshoring parts of segments of the selected value chains; (2) support interregional innovation investments and collaborations through value chain nearshoring opportunities; (3) support integrating value chain "thinking", value chain management as a development approach to be included into the range of RIS3 tools and development channels of the partner regions. The process for reaching the policy improvement recommendations is mapped in Figure 1 below. In the roadmap proposed in Figure 1, in addition to the expected regional stakeholder group meetings (RSG:s) there have been also formally included internal meetings, integrating the administration and decision making of the partner-organisations. Experience from several Interreg Europe and Interreg IV C projects, indicated that clear provisions for including such meetings are both needed and essential.

Figure 1 Policy improvement recommendations roadmap



### 3. The region and its RIS3 2021-2027

#### 3.1 The Kainuu region



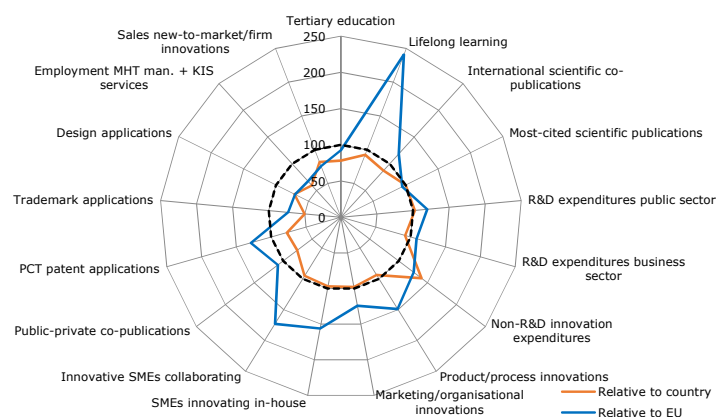
**Kainuu** is located in north-East Finland. It has an area of 22 687 km<sup>2</sup> and a population of 72 506 inhabitants (31.12.2019), 1,3 % of Finland. In 2019 the GDP per capita was € 34 082<sup>9</sup>, compared to a national average of € 38,370.04 (Statistics Finland, 2019). Kainuu's unemployment rate is around 10.8% (2017). In 2017, the top 5 industries in Kainuu were: (Regional Council of Kainuu, 2018) 1. Bioeconomy (renewable natural resources) (502M €); 2. Mining (300.7M €) 3. Energy (226.9M €); 4. Forestry (193.6 M €) 5. Metal (152.5M €). Kainuu has an important research and knowledge base relating to measurement technology, ICT, and data analytics. One of the eight European supercomputers is located in Kainuu.

BERRY+ is of strategic importance to Kainuu, as addressing the small economic critical mass of the region through research-based entrepreneurship and value chain integration are prioritised development objectives. According to the Regional Innovation Scoreboard 2019, Kainuu is a strong+ innovator region.

According to the Regional Innovation Scoreboard 2019<sup>10</sup>, the Regional Profile dedicated to Finland<sup>11</sup> "Pohjois- ja Itä-Suomi (FI1D) is a Strong + Innovator; innovation performance has increased over time (10.7%). ... The radar graph shows relative strengths compared to Finland (orange line) and the EU (blue line), showing relative strengths (e.g. Lifelong learning) and weaknesses (e.g. Employment MHT man. + KIBS services):<sup>12</sup>, **Figure 2.**

Figure 2 Relative innovation system strengths of NorthEast Finland

(source: Regional Innovation Scoreboard 2019<sup>12</sup>)



**Figure 2** indicates that among the fields with the weakest performance are those classified under the *Sales impacts category*, namely: medium and high-tech products exports, sales of new-to-market or to-the-firm

<sup>9</sup> Data 2019, <https://www.statista.com/statistics/1150699/finland-gross-domestic-product-gdp-per-capita-by-region/>.

<sup>10</sup> For 2020 results: [https://ec.europa.eu/growth/sites/growth/files/eis2020\\_leader\\_map-01.png](https://ec.europa.eu/growth/sites/growth/files/eis2020_leader_map-01.png)

<sup>11</sup> Finland report: [http://ec.europa.eu/growth/industry/innovation/facts-figures/regional\\_en](http://ec.europa.eu/growth/industry/innovation/facts-figures/regional_en). For the comprehensive 2019 EU report: <https://ec.europa.eu/growth/sites/growth/files/ris2019.pdf>

<sup>12</sup> <https://ec.europa.eu/docsroom/documents/36284>.

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innovations, exports of knowledge intensive business services (KIBS); also trademark applications, and R&D expenditures of the business sector (BERD). These tendencies appear to be persistent and are confirmed by the European Innovation Scoreboard of 2020<sup>13</sup>, too. They addressed by the revised *Kainuu RIS3 2021-2027* as well as by the policy instrument recommendations (Policy instrument improvement recommendations).

The export-related employment comparative advantage of Kainuu, i.e. concentrations of exports-related employment compared to total regional employment (i.e. the Balassa-Hoover index) indicates that the most important concentrations are found in nine (9) domains, however, more than 40% is concentrated in the Mining and Quarrying sectors (Table 2). In turn, this overconcentration implies that the Herfindahl-Hirschman index, measuring regional resilience in the sense of the market base<sup>14</sup>, indicates the need for Kainuu to expand its economic base, since it is rated 14<sup>th</sup> out of the 19 Finnish regions. Clearly, this overconcentration applies also to the RIS3 industries.

Table 2 The RIS3 industries, excerpt from the Balassa-Hoover analysis (source: University of Turku)

Comparative advantage of Kainuu 2017	Number of jobs	Share	B-H 2017
07 Mining of metal ores	650	2,4 %	25,55
B Mining and quarrying	797	2,9 %	11,65
30 Manufacture of other transport equipment	468	1,7 %	5,72
02 Forestry and logging	730	2,7 %	4,11
08 Other mining and quarrying	137	0,5 %	4,04
03 Fishing and aquaculture	43	0,2 %	3,53
79 Travel agency, tour operator and other reservation service and related activities	154	0,6 %	2,92
82 Office administrative, office support and other business support activities	353	1,3 %	2,16
A Agriculture, forestry and fishing	1609	5,9 %	2,07
55 Accommodation	285	1,0 %	1,91
26 Manufacture of computer, electronic and optical products	418	1,5 %	1,81
Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	221	0,8 %	1,66
16 Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	339	1,2 %	1,58
O Public administration and defence; compulsory social security	2039	7,5 %	1,52
01 Crop and animal production, hunting and related service activities	836	3,1 %	1,42
23 Manufacture of other non-metallic mineral products	191	0,7 %	1,39
95 Repair of computers and personal and household goods	45	0,2 %	1,33
81 Services to buildings and landscape activities	1082	4,0 %	1,32
86 Human health activities	2740	10,1 %	1,32
42 Civil engineering	265	1,0 %	1,30
N Administrative and support service activities	2444	9,0 %	1,21
49 Land transport and transport via pipelines	972	3,6 %	1,20
Q Human health and social work activities	5519	20,3 %	1,20
63 Information service activities	99	0,4 %	1,17
69 Legal and accounting activities	318	1,2 %	1,16
93 Sports activities and amusement and recreation activities	311	1,1 %	1,16
36 Water collection, treatment and supply	34	0,1 %	1,14
88 Social work activities without accommodation	1594	5,9 %	1,10
09 Mining support service activities	10	0,0 %	1,10
87 Residential care activities	1185	4,4 %	1,10

<sup>13</sup> <https://ec.europa.eu/docsroom/documents/41874> .

<sup>14</sup> The HHI is calculated by squaring the market share of each firm competing in the market and then summing the resulting numbers. <https://www.justice.gov/atr/herfindahl-hirschman-index> .



The **location quotient**<sup>15</sup> and the **shift share analysis**<sup>16</sup> indicate that:

- The location quotient (LQ) confirms the B-H index relating to the regional comparative advantage and selection of RIS3 industries. However, it also indicates that it is necessary to increase knowledge inputs to the industries such as primary production and strengthen the manufacturing industry. Location quotient identifies concentration strengths and internal discrepancies between, for example, primary production (A) or manufacturing (C) and knowledge inputs (M). The regional potential is understood as a projection of strengths and improvement of performance weaknesses. Radical diversification is understood as part of such projections.
- The shift-share analysis (SSA) indicates that the competitive advantage of Kainuu is based on the ICT sector which has been largely enhanced by the award of the LUMI supercomputer from the EC. On the other hand, the primary production and manufacturing show positive growth projection (expected change) but negative competitive effect. This finding confirms the location quotient finding that Kainuu needs to strengthen science – based inputs to its primary and manufacturing industries.
- These findings were taken into account in the revision of the Kainuu RIS3.

## 3.2 The Kainuu 2021–2027 RIS3

The Kainuu RIS3 2021-2027 (Table 3) proposes to confront the challenges very briefly described in the section 3.1 as part of a comprehensive process by building on strengths. The revised Kainuu RIS3: (i) includes into the RIS3, as a separate priority (Theme 1) the reinforcement of the research & innovation infrastructure base domains linked to existing strengths; (ii) maintains the RIS3 2014-2020 priorities (Theme 2); (iii) supports interactions between the research and RIS3 industries base (Theme 2); (iv) provides options for follow up projects foreseen to increase the TRL of research projects under Theme 1 and associated actions for research results commercialisation; (v) includes a separate cross-cutting theme on Digital Transformation (Theme 4) addressing also interdisciplinary issues (technology capabilities x management skills) as well as data analytics issues thus linking also to the potential of the LUMI innovation infrastructure; (vi) invests in a separate theme (Theme 3) dedicated to different forms of transregional collaboration and also include into it a sub heading dedicated to innovation infrastructures as a potential tool of supporting the realisation of the LUMI potential; (vii) through Theme 3 and S3 – based collaborations, to support European Value Chain participation (EVC) and through that, scaled-up entrepreneurship and support export of innovations to access markets.

<sup>15</sup> **Location quotient** (LQ) is basically a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region “unique” in comparison to the national average. [https://www.economicmodeling.com/wp-content/uploads/2007/10/emsi\\_understandinglq.pdf](https://www.economicmodeling.com/wp-content/uploads/2007/10/emsi_understandinglq.pdf) .

<sup>16</sup> **Shift share** is an economic indicator that tells you which industries (or occupations) are competitive in your region. Shift share shows you the national growth (in terms of jobs) of a particular industry. Based on this national growth, it then calculates how much the industry is likely to grow in your region, and compares this estimation with how much the industry *actually* grew. <https://www.economicmodeling.com/2020/02/27/understanding-shift-share-2/> .

Table 3 Kainuu RIS3 2021-2027

<b>RIS3 Governance instruments:</b> (Instrument I) Stakeholder involvement; (Instrument II) Entrepreneurial discovery process; (Instrument III) Monitoring; (Instrument IV) Funding & financing; (Instrument V) Technical assistance reserve.	<b>THEME 1: Increasing research and promoting innovation</b>  Theme 1 is planned to reinforce the existing R&D base	<b>THEME 2: Strengthening and diversifying the specialisation base</b>  An important part of the Theme 2 projects is based on the utilization of applied research results produced in Theme 1.		<b>THEME 3: Connectivity and integration, measures for interregional collaboration</b>  Theme 3 is designed as a tool to support the effectiveness of Themes 1 and 2
	<b>DEVELOPMENT OF INNOVATION (APPLIED RESEARCH)</b>  1. Measurement technology 2. Gaming and advanced simulation techniques (3D, VR, AR) 3. Big data analytics and high-performance computing 4. Circular economy in mining and bioeconomy	<b>2A) INDUSTRIES: Bioeconomy, metals and ICT</b>  Promoting industrial modernisation through investments in: 1. New product development. 2. Improve production processes (eg introduction of Industry 4.0). 3. Improve the environmental and quality of products	<b>2B) KNOWLEDGE-BASED SERVICE INDUSTRIES</b>  1. Professional (winter) sports and sports coaching and training technologies and applications 2. Activity tourism 3. Social and health services (Innovations using digitalisation will be used to increase the efficiency of service production (especially social services) and to increase the added value of services. Increase international cooperation in RDI activities related to service development.	<b>BETTER FUNCTIONING OF THE REGIONAL INNOVATION SYSTEM</b>  1. Innovation infrastructures 2. Access to interregional demand-driven innovation processes 3. Emerging industries and innovation platforms, incl. interregional value chains, clusters, S3 partnerships 4. Platform economy 5. Attracting investment in RIS3 industries
	<b>Cross-cutting themes and objectives for all RIS3 priorities</b>			
	<b>THEME 4. Digital transformation</b> Theme 4 concerns the strengthening of digital change for the industries prioritized in Theme 2. To this end, Theme 4 projects may make use of the interregional options offered in Theme 3 and / or the innovative solutions developed in Theme 1.			
	1 Deployment of Industry 4.0, including robotics and automation applications			
	2. Big data analytics and high-power computing (HPC) utilisation			
	<b>THEME 5. Green deal</b> Theme 5 covers both the application and development of Green Deal solutions, which will effectively lead to an environmentally friendly industrial change in Theme 2. To this end, Theme 5 projects may make use of the interregional options offered in Theme 3 and / or the innovative solutions developed in Theme 1.			
	1. Production and use of clean, affordable and secure energy			
	2. Increasing the circular economy and environmentally sustainable production in industry			
	3. From field to table: a fair, healthy and environmentally friendly food system			
4. Climate change mitigation and adaptation				
5. Preservation and restoration of ecosystems and biodiversity				
6. "Keep everyone involved" (just transition)				

## 4. Good practices

### 4.1 Good practice identification

According to the BRIDGES project additional activities, Good Practices (GPs) explore five (5) GP themes: (1) Tools for targeting value chain reshoring & nearshoring segments; (2) instruments for identifying interregional complementarities related to value chain re- and near- shoring priorities; (3) Targeted, VC related science-based entrepreneurship programmes and TRL<sup>17</sup> 5-8 promotion; (4) Integration of Green Deal & Digital Transformation into VC; (5) Benefitting from EDIHs.


The purpose of the good practice exercise is to identify good practices that can become policy tools for supporting re-, in- shoring and near-shoring initiatives of the partner areas, namely into the regional S3 of Helsinki-Uusimaa, Kainuu, (both FI) and Western Macedonia (GR); the CLLD of Western Slovenia (SI), and the national S3 of Western Transdanubia (HU)<sup>18</sup>. The exercise foresees near-shoring to be based on interregional complementarities mostly within the partnership, but it is not excluding more extensive collaboration schemes and networks.

The good practice identification took place between 1.10.2021 – 31.3.2022. It proved very challenging to identify good practices for all five themes. Finally, eleven (11) GPs were identified. Three come from BRIDGES project regions (2 come from Greece and 1 comes from Spain), 1 was identified during the Policy Learning matchmaking session organised by the PLP and the BRIDGES project on 30.3.2022, three from the USA, two are European Parliament initiatives, and two come from European Commission studies.

More than half of the good practices identified concern the 1<sup>st</sup> Theme (6 GPs), while the 2<sup>nd</sup> theme has two GPs, the 3<sup>rd</sup> theme 1 GP, and the 4<sup>th</sup> theme 2 GPs. No satisfactory GPs were identified for the 5<sup>th</sup> theme on EDIH contributions to value chains. One of the challenges of the 5<sup>th</sup> thematic area, the EDIHs, is that often, there is a tendency to apply the term “digital innovation hub” or even “innovation hub” in a somewhat general way, often denoting a concentration of activities without specification of qualifications, functionalities, or

<sup>17</sup> **TRL = Technology readiness level = TRL= Technology Readiness Level.** Technology readiness levels (TRLs) are a method for estimating the maturity of technologies during the acquisition phase of a program, developed at NASA during the 1970s. The use of TRLs enables consistent, uniform discussions of technical maturity across different types of technology [Mihaly, Heder (September 2017). "From NASA to EU: the evolution of the TRL scale in Public Sector Innovation" (PDF). The Innovation Journal. 22: 1–23]. A technology's TRL is determined during a Technology Readiness Assessment (TRA) that examines program concepts, technology requirements, and demonstrated technology capabilities. The European Commission advised EU-funded research and innovation projects to adopt the scale in 2010. TRLs were consequently used in 2014 in the EU Horizon 2020. In 2013, the TRL scale was further canonised by the ISO 16290:2013 standard. "Technology readiness levels (TRL); Extract from Part 19 - Commission Decision C(2014)4995" (PDF). *ec.europa.eu*. 20149]. [https://en.wikipedia.org/wiki/Technology\\_readiness\\_level](https://en.wikipedia.org/wiki/Technology_readiness_level) . MORE: <https://www.ic.gc.ca/eic/site/080.nsf/eng/00002.html>; [https://www.nasa.gov/directorates/heo/scan/engineering/technology/technology\\_readiness\\_level](https://www.nasa.gov/directorates/heo/scan/engineering/technology/technology_readiness_level) .

A comprehensive approach and discussion of TRLs has been published by the European Association of Research and Technology Organisations (EARTO) [The TRL Scale as a Research & Innovation Policy Tool, EARTO Recommendations (PDF). European Association of Research & Technology Organisations. 30 April 2014].

<sup>18</sup> Besides the BRIDGES project partners, the good practices contribute to the methodological tools of the BERRY+ S3 partnership (  <https://s3platform.jrc.ec.europa.eu/berry>), and to any region & their networks that are interested in institutionalising value chain-based policies and initiatives into their RIS3.

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results. Table 3 provides summary information the identified GPs according to their thematic domain and focus. Detailed descriptions of the GPs are included in the document *BRIDGES project, 5th call, additional activities: good practices*; <https://projects2014-2020.interregeurope.eu/bridges/library/>, while more information can be found also directly from the web, see cited [url:s](#) in Table 2.

Table 4 BRIDGES project additional activities, good practices (GP)

GP number and name	Theme	Focus
Good practice 1 The future of manufacturing in Europe (FOME) pilot project.	1	Pilot project of the European Parliament, 2015-2018. <a href="https://europa.eu/european-union/about-eu/agencies/eurofound_en">https://europa.eu/european-union/about-eu/agencies/eurofound_en</a> . Study investigating re-shoring industries, priorities, practices.
Good practice 2 Reshoring advanced manufacturing supply chains to generate good jobs (Brookings)	1	Brookings Metropolitan Policy Programme (2020). Reshoring advanced manufacturing supply chains to generate good jobs. July 2020. <a href="https://www.brookings.edu/interactives/metro-recovery-watch/">https://www.brookings.edu/interactives/metro-recovery-watch/</a> . Policy recommendations for re-shoring, 6 measures, fiscal, financial, and guaranteed contracting are proposed.
Good practice 3 Post Covid-19 value chains: options for reshoring production back to Europe in a globalised economy.	1	European Parliament (2021). Post Covid-19 value chains: options for reshoring production back to Europe in a globalised economy. European Parliament, Policy Department for External Relations Directorate General for External Policies of the Union PE 653.626 – March 2021. Near/off shoring and re-shoring decisions are required to be based on <i>multi-dimensional optimisation approaches</i> , while policies supporting re-shoring, should take into account the specific characteristics of the GVC under consideration, i.e., “no general policy approach to re-shoring exists”. Policy recommendations for re-shoring; reshoring decision framework.  ACCESS: <a href="https://www.europarl.europa.eu/thinktank/en/document/EXP_O_STU(2021)653626">https://www.europarl.europa.eu/thinktank/en/document/EXP_O_STU(2021)653626</a>  SECTORIAL: <a href="https://www.europarl.europa.eu/RegData/etudes/STUD/2021/659437/EPRS_STU(2021)659437_EN.pdf">https://www.europarl.europa.eu/RegData/etudes/STUD/2021/659437/EPRS_STU(2021)659437_EN.pdf</a>  OLDER: <a href="https://www.europarl.europa.eu/EPRS/140791REV1-Reshoring-of-EU-manufacturing-FINAL.pdf">https://www.europarl.europa.eu/EPRS/140791REV1-Reshoring-of-EU-manufacturing-FINAL.pdf</a>
Good practice 4 The use of 3D printing in manufacturing: the case of Inertia Racing Technology.	1	Reshoring Institute ( <a href="https://reshoringinstitute.org/">https://reshoringinstitute.org/</a> ), in collaboration with the University of San Diego Supply Chain Management Institute. Re-shoring case study. Gives ideas for business-based projects preparatory funding for re-defining business model in view of re-shoring interests.
Good practice 5 Increased innovation and service level in fashion: the case of Ted Shelton.	1	Reshoring Institute ( <a href="https://reshoringinstitute.org/">https://reshoringinstitute.org/</a> ), in collaboration with the University of San Diego Supply Chain Management Institute. Re-shoring case study. Gives ideas for business-based projects preparatory funding for re-defining the business model in view of re-shoring interests.
Good practice 6 BILAKATU programme (direct incentives to	1	Policy Learning Platform session, 30.3.2022

GP number and name	Theme	Focus
promote re-location and near-shoring; includes measures on direct incentives, collaboration with clusters and thriving companies needs)		Policy initiative for re-location associated with value chains, three types of incentives / policy measures are proposed: direct incentives, collaboration with clusters, thriving companies needs (direct subsidies to strengthen embeddedness). <a href="https://www.spri.eus/es/ayudas/bilakatu/">https://www.spri.eus/es/ayudas/bilakatu/</a> <a href="https://www.fundacioncarmengandarias.com/contenidos.php?seccion=3&amp;categoria=14&amp;subcategoria=5&amp;lang=en">https://www.fundacioncarmengandarias.com/contenidos.php?seccion=3&amp;categoria=14&amp;subcategoria=5&amp;lang=en</a>
Good practice 7 Exploring the impact of interregional linkages on regional diversification in Europe, in the context of smart specialisation	2	European Commission, report by Baland & Boschma 2019 <a href="https://ec.europa.eu/regional_policy/sources/docgener/brochure/impact_ir_linkages_en.pdf">https://ec.europa.eu/regional_policy/sources/docgener/brochure/impact_ir_linkages_en.pdf</a>
Good practice 8 Mapping the potential of EU regions to contribute to Industry 4.0	2	European Union, Balland, P.A. and Boschma, R. (2021). Mapping the potentials of regions in Europe to contribute to new knowledge production in Industry 4.0 technologies. <i>Regional Studies</i> , 55:10-11, 1652-1666, DOI: 10.1080/00343404.2021.1900557
Good practice 9 DEFINE network	3	ePlatform for the development of fashion networks. <a href="https://www.define-network.eu/">https://www.define-network.eu/</a>
Good practice 10 Symbiotic networks of bio-waste sustainable management	4	<a href="https://symbiosisproject.eu/">https://symbiosisproject.eu/</a> Applying digital tools to develop symbiotic networks, to improve cross industry resource efficiency through waste, by-products and raw material trading and sharing assets in an environmentally sustainable way.
Good practice 11 SYMBIOICT	4	<a href="https://apps.symbiolabs.gr/symbio/">https://apps.symbiolabs.gr/symbio/</a> A digital platform to collect and analyse datasets relating to industrial facilities, regional waste production and supply chain economics with the aim to detect and visualize geographic areas and industrial sectors with high Industrial Symbiosis potential.
Good practice 12 Value chain mapping methodology  For more information see <b>Table 7</b> <b>Error! Reference source not found.</b>	1	GP 11 has complementarities with GP 8. GP12 is currently under evaluation by Interreg Europe Policy Learning Platform innovation experts. It is the instrument that has been used for the value chain mapping reports under the 5 <sup>th</sup> call additional activities.  The methodology focuses on identifying and exploring VC segments for re-shoring, in-shoring and near-shoring potential, related to products and services, including access to markets. Competitive advantage is calculated according to different types of concentrations, sometimes absolute (like location quotient) and sometimes relative, reflecting potential of regional concentrations.  The methodology is aligned with GP2 and GP7. Its advantage is that it can reflect even baseline competitive advantage in regions and propose also better suited diversification strategies. At the same time, it is a tool that can build on interregionalities and on long term collaborations.

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By analysing the eleven (11) GPs, we found thirteen (13) policy measures proposed by them. We notice that the same policy measures can be found in more than one GPs (**Error! Reference source not found.**), i.e. there is convergence of understanding and optimisation approaches.

Table 5 Policy measures proposed by the identified good practices (GP12 is not included as it is currently under evaluation)

Proposed policy measures	Relevant GPs (*)										
	1	2	3	4	5	6	7	8	9	10	11
<b>[1]. Tools for the Identification of interregional complementarities</b>							X	X			
<b>[2]. Financial &amp; fiscal incentives<sup>19</sup></b> Investment (subsidies) support, for example, for technological upgrading to Industry 4.0 / additive manufacturing, research centres and academic programmes for workforce upgrading; Interest rates, provisions oriented to facilitate re-shoring, i.e. a way of directing investments.	X		X			X					
<b>[3]. Monetary policies, financial measures, subsidies.</b> Interest rates, provisions oriented to facilitate re-shoring, i.e. a way of directing investments.		X	X			X					
<b>[4]. Innovation policies</b> Financial incentives for mission oriented, technological upgrading / investments, upskilling of workforce, research centres-university synergies.			X								
<b>[5]. Industrial policies</b> Identification of grand challenges, missions, strategic sectors, industrial clusters, etc. to channel investment into strategic areas, Industrial clusters / smart spec.	X	X	X	X	X	X	(x)	(x)			
<b>[6]. Trade policies</b> Anti-dumping / countervailing duty orders; Tariffs / quotas; Patent / copyright enforcement.	X		X								
<b>[7]. Environment policies</b> Lower energy cost; Lower tax on energy use; Lower environmental standards.			X								

<sup>19</sup> Financial, fiscal and monetary: **financial** (relating to finance, which is the commercial activity of providing funds and capital, or to put it the other way, the ways in which individuals and organizations raise money); **fiscal** (relating to financial matters, especially government tax revenues and government expenditure and debt); **monetary** (relating to the money supply: the amount of money in circulation, its rate of growth, and interest rates). <https://difference-between.com/finance/financial-fiscal-monetary/>.

Proposed policy measures	Relevant GPs (*)										
	1	2	3	4	5	6	7	8	9	10	11
[8]. <b>Public procurement</b> (including defence policies), including guaranteed contracting.		X	X	X	X			X			
[9]. <b>Competitive advantage; crash test</b> Map most important industries locally and assess their performance ("crash test"); identify competitive advantage for re-shoring and in-shoring.	X	X	X	X	X	X	X	X			
[10]. <b>Connect to and leverage regional talent generators and workforce development providers.</b> With the labour demand of many manufacturers shifting from low-skill, low-cost labour to mid- to high-skill engineering and technical capabilities, U.S. educational institutions are well positioned to produce the very talent that will increasingly be in demand from these sectors. Connect to the need for a digitally fluent workforce, massive disruption is underway in manufacturing, with an increased reliance on technology as opposed to low-cost labour.	X	X		X	X	X					
[11]. <b>Take advantage of Opportunity Zones</b> <a href="https://eig.org/opportunityzones">https://eig.org/opportunityzones</a>		X		X	X	X					
[12]. <b>Invest in regionally based soft-landing services</b> Companies setting up new operations in any community will need assistance with site selection, permits and local approvals, and optimizing their processes.		X		X	X						
[13]. <b>E-Platforms facilitating value chain cooperation</b>									X	X	X
<b>LEGEND:</b> GP 1 FOME; GP 2 BROOKINGS; GP3 EPRS; gp4 & GP5 RESHORING INSTITUTE; GP 6 Basque Country; GP 7 & 8 identification of interregional complementarities as a tool to focus reshoring, in shoring and near-shoring initiatives; GP 9, 10, 11: e-platforms as tools supporting the implementation of thematic interregional complementarities.											

The proposed policy measures cover a wide range of interventions, some of which go beyond regional jurisdictions. They reveal a well-structured, multi-dimensional, optimisation approach that appears to rely on the complementarity between and among policy instruments. For example, instruments affecting firm performance, industrial dynamics and demand for products & services are all present among the 13 measures included in Table 5. It is worth mentioning that these 13 measures, appear to be aligned with the OECD taxonomy of policy instruments.

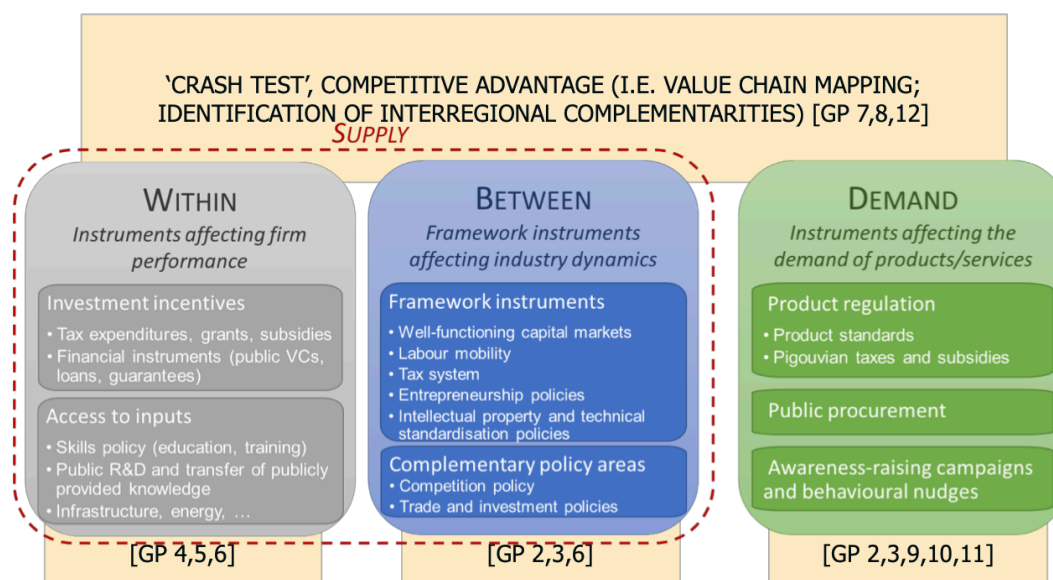


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The OECD (OECD 2022<sub>[1]</sub><sup>20</sup> and OECD 2022<sub>[2]</sub><sup>21</sup>, page 19) proposes a new taxonomy of industrial strategy policy instruments, which “allows identifying the channels through which instruments operate and potential complementarities”. ...

In addition to keeping with the traditional distinction between horizontal and targeted policies, the taxonomy distinguishes between demand-pull instruments and two types of supply-push instruments: those that improve firm performance (“within” instruments) and those that affect industry dynamics (“between” or framework instruments) [OECD 2022<sub>[2]</sub>, page 19]. The 13 measures & the associated GPs go beyond the alignment with the OECD policy instrument taxonomy. They reveal an implementation path, an optimal re- and in-shoring potential decision making. In this path, the notion of the ‘crash test’, of competitive advantage’ is predominant and it is this concept that is supported by the policies (Figure 3).

Figure 3 Policy instruments taxonomy and the BRIDGES project good practices (source: adjusted from OECD 2022<sub>[2]</sub>, page 19).



## 4.2 Good practice selection

Partners analysed the good practices and selected those that were most relevant to them. The selection process 1.4.4044 – 30.6.2022, included interregional, national (in some cases) and regional stakeholder as well as administrative meetings, with date marking the final decision making, the 17th ISC (Interregional Steering Committee), organised online on 14.6.2022. To make the good practice selection, GPs were analysed according to approaches, measures [see the proposed thirteen (13) measures already discussed

<sup>20</sup> Criscuolo, C. et al. (2022), “Are industrial policy instruments effective? A review of the evidence in OECD countries”, *OECD Science, Technology and Industry Policy Papers*, No. 128, OECD Publishing, Paris. Accessed at <https://www.oecd-ilibrary.org/docserver/57b3dae2-en.pdf?expires=1656421972&id=id&accname=quest&checksum=15E3AF775AC84757C3AFF89F02F402CA> .

<sup>21</sup> Criscuolo, C., et al. (2022), "An industrial policy framework for OECD countries: Old debates, new perspectives", *OECD Science, Technology and Industry Policy Papers*, No. 127, OECD Publishing, Paris, <https://doi.org/10.1787/0002217c-en>. Accessed at <https://www.oecd-ilibrary.org/docserver/0002217c-en.pdf?expires=1656418796&id=id&accname=quest&checksum=102441FCC1D46A6B1629CA71A29C0220> .



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(Table 5) and intervention Types (IE taxonomy). **Error! Reference source not found.**, below, summarises the GP selection also including the types of policy instrument improvements according to the taxonomy proposed by the Interreg EUROPE programme.

Partner regions made their GP and measure selection according to their interests (development priorities and absorptive capacity). However, certain cross – cutting observations deserve more attention: (i) value chain mapping, as operational as well as strategic tool appears to be relevant for all partners; (ii) building on competitive advantage and associated (and localised) eco-system, is a shared priority among all partners; (iii) industry-related business and innovation services & collaboration with cluster units appear to be relevant to all partners as well; (iv) branch-related preparatory projects like feasibility studies and business plans for re-shoring have been important to two partners; (v) measures supporting competitive advantage of value chains (such as targeted development projects to large or medium size businesses, are also important to all regions; (vi) bilateral value chain mapping, for the establishment of interregional collaboration contexts and then implementing relevant activities.

The PP2 good practice selection (Table 6) confirms the general trend, i.e. the selection is focusing on (1) good practices relating to the identification of interregional complementarities, applied as part of the RIS3 planning as well as a way to develop new networks during the RIS3 implementation (GPs 2,3,7 and [12]); (2) linkages facilitating diversification through new investments and even FDI (GPs 3 and 6) aiming at in-shoring and near-shoring attraction; (3) eco-system improvement to better support diversification (GPs 2 and 6).

Table 6 Good practice selection, Kainuu region

Type of policy impact (Type 1 = new projects; Type 2= improvement of the policy instrument management; Type 3= new policy instrument)		PP2
Good practice 1 The Future of Manufacturing in Europe (FOME) pilot project.		
Good practice 2 Reshoring decision framework (Brookings)		
Type 2	Value chain mapping / competitive advantage for in-shoring and re-shoring	1
Type 2	Guaranteed contracting (requires negotiations with national level, too)	
Good practice 3 Reshoring decision framework (EPRS)		
Type 2	Regionally based soft landing services (competence building and specialisation of intermediaries to effectively support re-shoring and in-shoring)	1
Good practice 4 The use of 3D printing in manufacturing: The case of Inertia Racing Technology		
Type 1	Branch-based feasibility studies helping businesses re-define their business concept to re-shoring. As preconditions for res-shoring business and research projects, for the sports equipment sector and stressing utilisation of 3D printing.	
Type 1	Business plans implementing primarily re-shoring and in-shoring business plans based on the respective feasibility studies; for the sports equipment sector and stressing utilisation of 3D printing.	
Good practice 5 Increased innovation and service level in fashion: The case of Todd Shelton		
Type 1	Branch-based feasibility studies helping businesses re-define their business concept to re-shoring. As preconditions for res-shoring business and research projects, for the textiles sector.	
Type 1	Business plans implementing primarily re-shoring and in-shoring business plans based on the respective feasibility studies; for the textiles sector, and especially renewable and re-cyclable textiles.	
Good practice 6 BILAKATU programme (direct incentives to promote re-location and near-shoring)		
Type 3	Direct incentives	
Type 1	Collaboration with clusters (this is aligned with GP3)	1
Type 2	Thriving companies' needs (this is aligned with GP2, option 1)	1
Good practice 7 Exploring the impact of inter-regional linkages on regional diversification in Europe in the context of smart specialisation.		

<b>Type of policy impact (Type 1 = new projects; Type 2= improvement of the policy instrument management; Type 3= new policy instrument)</b>		<b>PP2</b>
Type 2	Network (at least 3) feasibility studies to identify complementary technologies for joint development; important for coordinated near-shoring with in-shoring	1
Good practice 8 Mapping the potential of EU regions to contribute to Industry 4.0		
Type 2	Network (at least 3) feasibility studies to identify complementary technologies for joint development	1
Good practice 9 DEFINE network		
Type 1	e-Platform for the development of fashion networks.	
Good practice 10 Symbiotic networks of bio-waste sustainable management		
Type 1	Applying digital tools to develop symbiotic networks, to improve cross industry resource efficiency through waste, by-products and raw material trading and sharing assets in an environmentally sustainable way.	
Good practice 11 SYMBIOICT		
Type 1	A digital platform to collect and analyse datasets relating to industrial facilities, regional waste production and supply chain economics with the aim to detect and visualize geographic areas and industrial sectors with high Industrial Symbiosis potential.	1

## 5. Value chain mapping

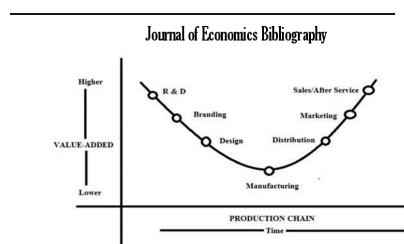
### 5.1 Value chain mapping methodology

The following value chains were selected to be mapped: forest industry side-streams (Kainuu, FI), recyclable and recyclable (Helsinki-Uusimaa, FI), dairy industry side-streams (Western Macedonia, GR and Western Slovenia, SI), and e-health equipment (Western Transdanubia).

The value chain mapping was done by applying a methodology initially introduced through the PP1 & PP2 Phase 1 action plan, Action 2 Development of the berry industry in Kainuu and further processed by the BRIDGES project partners.

The purpose of the methodology is to map the selected value chains to profile the region's localised strengths (peaks, competitive advantage), valleys (weaker points) as well as industrial and regional interactions within the said value chains. The approach is based on three critical components:

- (1). Mapping (table) the segments of an industry-specific supply chain (Table 7). Value chains' competitive advantage is assessed according to five (5) parameters: business activities & products, research solutions (TRL 5+), knowledge and research (TRL 0-4), labour skills, and policies. These parameters were selected to mark regional concentrations reflecting the current 'VC smiling curve'<sup>22</sup> references, as listed in the horizontal axis in Table 7 below. This approach proposes a wider concept for assessing competitiveness, inclusive of but not restricted by exports peaks. Table 7 proposes indicators for identifying value chain segments' competitive advantage. The relative advantage of this value chain mapping approach is that it can be tailored to all types of regions, innovation leaders or leaders + to innovation modest regions, according to the identified regional concentrations. This methodology has been conceived as a complementary approach to that introduced by GP7 (Balland & Boschma 2019) which identifies interregional linkages based on the technologies present in patents. To identify interregional complementarities, requires that two regions interested in the same value chain, are making in parallel the value chain mapping or, that thanks to known performance of the region and / or the RIS3 planning studies, such complementarities are indicated.
- (2). Matching the supply chain segments to regional state-of play activities of the value chain and linking to development initiatives criteria, including funding options.
- (3). Identifying peaks & valleys of competitiveness and drawing conclusions leading to industry localisation decisions and initiatives (in-shoring, re-shoring, near shoring).



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Figure 2. The Smile Curve  
Source: Misudombi (2008)

Aggarwal, S. (2017). Smile Curve and its linkages with Global Value Chains.

Page 4; [https://mpra.ub.uni-muenchen.de/79324/1/MPRA\\_paper\\_79324.pdf](https://mpra.ub.uni-muenchen.de/79324/1/MPRA_paper_79324.pdf) .

Table 7 Summary of the value chain mapping approach.

VC mapping parameters	Value chain mapping components and proxies.								
	Raw materials	Technologies / R&D	Design	Production	Products	Branding	Funding	Distribution	After sales service
Business	Turnover for the total of the sector		Turnover for the total of the sector	Turnover for the total of the sector	Range and added value of the sector as a whole	Projects funded of the sector as a whole		Range and turnover from sales	Turnover
						Visibility of sector across the EU.			
Research solutions		Funded projects for TRL or MRL scaling up		Funded projects for TRL or MRL scaling up					
		Results of projects TRL5+		Results of projects TRL5+					
Knowledge and research base		TRL0-4 projects; University faculties)	TRL0-4 projects; University faculties; targeted entrepreneurship	University faculties; targeted entrepreneurship		University faculties; targeted entrepreneurship			
			Average educational level in businesses and skills training in the region	Average educational level in businesses and skills training in the region	Average educational level in businesses and skills training in the region			Average educational level in businesses and skills training in the region	
Policies (regional and national)	Funding schemes and policy measures	Funding schemes and policy measures	Funding schemes and policy measures	Funding schemes and policy measures	Funding schemes and policy measures	Funding schemes and policy measures	Funding schemes and policy measures	Funding schemes and policy measures	Funding schemes and policy measures
							Collaboration with financing organisations for possible alignment with financial instruments.		

The value chain mapping results are summarised in **Error! Reference source not found.** below. The RIS3, the good practices selected and the value chain mapping form the base for the policy instrument improvement recommendations. RIS3 planning studies, such complementarities are indicated.

## 5.2 Value chain mapping results

The value chain mapping revealed strengths of the dairy industry and insights about the potential of exploring dairy industry side streams (whey). Cheese industry, based mostly on goat and lamb cheese varieties, has export potential under the precondition of branding and increase of production capacity. Exploration of the whey implies new investments aiming at radical diversification. In both cases, strengthening of the economic base and the innovation eco system are also needed. It follows that the optimal model that was identified in Western Macedonia is a combination of economies of scale (cheese) and economies of scope (whey).

**Table 8**, below summarises the findings of the value chain mapping report.

Table 8 value chain mapping summary, Kainuu region

<p><b>VALUE CHAIN:</b> FOREST INDUSTRY SIDESTREAMS Region: PP2/LP REGIONAL COUNCIL OF KAINUU</p>
<p><b>Peaks (re-shoring and in-shoring potential)</b></p> <p>The forest industry value chain was analysed in terms of lignin. In Kainuu there are 3 and forthcoming one more medium sized &amp; large businesses that produced lignin, can process lignin, and consider lignin applications. Lignin is not an ultimately defined substance. "Lignin, as a natural polymer, exists in all terrestrial plants, although some aquatic organisms may contain lignin or "lignin-like" components. Lignin molecules, starting with dimerization of two monolignol radicals, grow via cross coupling between a monolignol radical and the previously formed dimeric or oligomeric lignol radicals. Lignins are plant polymers made from phenylpropanoid building units. They contain most of the wood methoxyl content. Lignins are resistant to acid hydrolysis, readily oxidized, soluble in hot alkaline and bisulfite, and readily condensed with phenols or thiols."<sup>23</sup> "Lignin is a water-insoluble, long-chain heterogeneous polymer composed largely of phenylpropane units which are most commonly linked by ether bonds. The conversion of cellulose and hemicellulose into fuels and chemicals leaves lignin as a by-product. In recent years, removal of lignin from lignin-carbohydrate complex has received much attention because of potential application in the pulp and paper industry."<sup>24</sup> In Kainuu, lignin is produced as side-stream of biofuels production, and novel utilisation applications for it especially for wood construction industry (glues) is studied.</p> <p>In terms of regional peaks,      ___ the large and medium sized enterprises located in Kainuu provide in-shoring potential based on own product development priorities &amp; strategies      ___ the research unit (MITY) of the University of Oulu is an important specialisation actor in bio-based and measurement technology research.</p>
<p><b>Valleys (near-shoring and in more rare cases, in-shoring potential)</b></p> <p>The most important challenge is the relevantly small regional market that does not encourage the development of small, specialised businesses. Another important issue, associated with the main challenge, is the level of education and skills in the sector. Both challenges can be addressed through FDI initiatives, encouraging the re-location of medium sized businesses to Kainuu and, in parallel, by education and training that reflects the needs of the sector under development. Finally, MITY, as lignin-innovation research unit, could develop related innovation services as a specialised intermediary supporting forest side-streams technologies and business development.</p>
<p><b>Interregionality (near shoring)</b></p> <p>Kainuu is an ideal region for locating forest-industry and forest-industry side-stream businesses. It implies</p>

<sup>23</sup> Fachuang Lu, John Ralph, in *Cereal Straw as a Resource for Sustainable Biomaterials and Biofuels*, 2010

<sup>24</sup> B.C. Saha, R.J. Bothast, in *Encyclopedia of Microbiology* (Third Edition), 2009.  
<https://www.sciencedirect.com/science/article/pii/B9780123739445001462> .

**VALUE CHAIN: FOREST INDUSTRY SIDESTREAMS**

Region: PP2/LP REGIONAL COUNCIL OF KAINUU

a targeted FDI strategy and development of soft-landing services.

MITY is a very strong forest-bioeconomy and -industry, bio circular economy and measurement technology research unit, very active in international and national innovation projects.

Joint development and patenting with national and foreign partners of solutions of lignin application challenges.

## 6. Policy instrument improvement recommendations

As discussed in section **The value chain mapping results are summarised in [Error! Reference source not found.](#)** below. The RIS3, the good practices selected and the value chain mapping form the base for the policy instrument improvement recommendations. RIS3 planning studies, such complementarities are indicated.

5.2 Value chain mapping results, the forest industry side-streams is a promising development domain. Table 2 indicates that forest industries are the 4<sup>th</sup> sector in terms of economic income (exports) importance for the region. It has potential to diversify and grow, but targeted development interventions will be needed.

The policy instrument recommendations, aligned with the findings of the value chain mapping and the good practice selection, target four areas:

1. Extend the options of new economic and research development on the base of value-chain based complementarities.
2. The large and medium sized enterprises located in Kainuu provide in-shoring potential based on own product development priorities & strategies. Persistent working groups, in collaboration with the research base could be developed pointing to new economic activities.
3. Densification of the economic base programmes should be prioritised. Business models favouring potential investment domains, either as in-shoring (development of new activities, related to existing ones either within an existing business or as a new business activity), or as FDI (re-shoring or even near-shoring domains from other areas) should be developed and applied.
4. Forest-industry side streams and diversification initiatives are introduced based on comprehensive product & eco system development programmes. This is aligned with the newly approved (5.7.2022) New European Innovation Agenda<sup>25</sup>, taking into account explicitly innovation ecosystems and innovation intermediaries. Interregionality, with joint development in research, knowledge, and products is essential here, and if planned ex ante it will be more effective. Whely products industry is also considered a potential investment attraction domain; Type 3 and Type 1 initiatives.

<sup>25</sup> European Commission, Directorate-General for Research and Innovation, *A new European innovation agenda*, Publications Office of the European Union, 2022, <https://data.europa.eu/doi/10.2777/066273>. Adopted on 5.7.2022. The five objectives of the agenda are to help companies scale up; enable experimentation and public procurement; strengthen innovation ecosystems; foster talent; and improve policymaking tools. [https://ec.europa.eu/info/research-and-innovation/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda\\_en](https://ec.europa.eu/info/research-and-innovation/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda_en)

<http://www.interregeurope.eu/bridges/>

5. The research unit (MITY) of the University of Oulu
6. can be an effective factor for attracting investments from beyond the region, aiming at forest industry side-streams. In such a case, MITY could qualify for and host soft landing services specialising in forest industry side-streams investments and entrepreneurship growth.
7. is an important specialisation actor in bio-based and measurement technology research. Based on the identification of interregional complementarities reaching out to market access new research expertise can be developed and explored across
8. MITY has measurement technology expertise. It could be explored through specialised solutions applied to measurement technology applications and products for various kinds of value chains.

Funding sources are in principle the regional and national structural funds, without excluding other sources for research and innovation funding, national and EU-based). Table 9 (Table 9 Policy measures, correspondence to PP2/LP GP selection, funding instruments and types of policy instrument improvement), below, summarises different funding sources, suitable for the three types of policy instrument improvements as defined by the Interreg Europe programme<sup>26</sup>.

The approval of the policy instrument improvement recommendations into the forthcoming 2023 revision of the Kainuu RIS3, follow a well-defined process, already applied in the context of Interreg Europe action plans:

The approval of the policy instrument improvement recommendations into the forthcoming 2023 revision of the Kainuu RIS3 (as a part of Kainuu regional strategy action plan revision), follow a well-defined process, already applied in the context of Interreg Europe action plans:

1. Presentation and discussion of the policy instrument improvement recommendations by the designated department of the Regional Council of Kainuu, PP2. Agreement on actions.
2. Set up of the regional stakeholder group and meetings presenting the new suggestions.
3. Additional meetings with large and medium size businesses.
4. If needed, targeted feasibility studies.
5. Formulation of improvement interventions and integration into the RIS3 2023 revision.
6. Presentation to the Regional Council's regional board.
7. Implementation.

<sup>26</sup> The three types of policy impact as defined by the Interreg Europe programme, are: Type 1 = new projects; Type 2= improvement of the policy instrument management; Type 3= new policy instrument

Table 9 Policy measures, correspondence to PP2/LP GP selection, funding instruments and types of policy instrument improvement

Type of policy impact (*)		PP2/LP		
		Possible initiative	Policy instrument impact	Potential funding sources
<b>Policy instrument</b>		Kainuu RIS3 2021-2027. Value chain - based development will be mentioned in the text under revision (2023).		
<b>Good practice 2 Reshoring decision framework (Brookings)</b>				
Type 2	Value chain mapping / competitive advantage for in shoring and re-shoring	Project (-s) to map regional competitive advantage of selected value chains and liaise with EU value chains for further development.	Call criteria and evaluation will be mentioned in the SF (RIS3 revision of 2023)	Structural Funds and / or national funds
<b>Good practice 5 Increased innovation and service level in fashion: The case of Todd Shelton.</b>				
Type 1	Branch-based feasibility studies helping businesses re-define their business concept to re-shoring. As preconditions for res-shoring business and research projects, for the textiles sector.	Support with external calls intermediary institutions to develop new types of business plans and feasibility studies, beyond labour costs (comparative advantage), for example in the forest industry & sidestreams sector. These new types of business plans are industry related, automation related, green deal related and access to research related.	Call criteria and evaluation will be mentioned in the SF. RIS3 revision of 2023)  Interregional and transnational projects.	Structural Funds, Interreg and / I3 calls / Imnterreg programmes
Type 1	Business plans implementing primarily re-shoring and in-shoring business plans based on the respective feasibility studies; for the textiles sector, and especially renewable and re-cyclable textiles.	Open calls for implementing the above business plans. It requires existing and/or start up groups of businesses to be also involved, including specialised intermediary.	Call criteria and evaluation will be mentioned in the SF RIS3 revision of 2023)	Structural funds
<b>Good practice 6 BILAKATU programme (direct incentives to promote re-location and near-shoring)</b>				
Type 3	Direct incentives			
Type 1	Collaboration with clusters (this is aligned with GP3)	External project to develop certified industrial intermediaries in the bio-based and recyclable textiles y in the ICT/ health care sector and introduces network-based development with counterparts across the EU.		Interreg and / or I3 calls
<b>Good practice 7 Exploring the impact of inter-regional linkages on regional diversification in Europe in the context of smart specialisation.</b>				
Type 2	Network (at least 3) feasibility studies to identify complementary technologies for joint development; important for coordinated near-shoring with in-shoring	Agreeing interest of at least 2-3 regions in shared value chains; joint projects for identification of technological complementarities as oper the Balland & Boschma methodology.	Structural Funds and / or national funds	Interreg and / or I3 calls
<b>LEGEND</b>				
(*): Type 1 = new projects; Type 2= improvement of the policy instrument management; Type 3= new policy instrument		(**): PP2/LP Kainuu; PP4 Helsinki-Uusimaa; PP5 Western Macedonia; PP6 Western Slovenia; PP7 Western Transdanubia		



## 7. Conclusions: benefits from the additional activities

As discussed earlier, Kainuu is at cross-roads: it is a sparsely populated NUTS3 region part of a similar (i.e. sparsely populated) NUTS2 area facing critical mass challenges; it has an export-oriented specialisation base with low added value nevertheless; it faces challenges in the localised clustering structure; it is endowed with research capacities and innovation infrastructure resources one of which is of European importance. These findings indicate a relatively unique RIS3-context, challenging for achieving the overarching RIS3 priority which is innovation-based growth in a straightforward way.

The additional activities revealed the possibility and the methods for strategically locating the region in competitive, existing or emerging value chains, and, through this, giving access to markets, joint development options and predictable growth & investments.

## 8. Contributions

Jouni Ponnikas, Ninetta Chaniotou

## 9. Stakeholder group meetings

Regional stakeholder group meetings, including also interregional EDP sessions

(PP2/LP)
<b>Date</b>
<b>Issues</b>
<b>Participants</b>
<b>Results</b>

(PP2/LP)
<b>Date</b>
<b>Issues</b>
<b>Participants</b>
<b>Results</b>