



## BRIDGES project, 5<sup>th</sup> call, additional activities: policy instrument improvement recommendations, PP7 Pannon Business Network, Western Transdanubia

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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

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<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

<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)

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.

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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 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> .

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

Partner organisation		Region	Policy instrument	Timetable
PP 2 /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
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

- Policy instrument improvement recommendations methodology
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- 
- 3. The region and its RIS3
- Good practices
- PP7 selected the above good practices because of the following issues:

#### **Good Practice 2 - 2 Reshoring decision framework (Brookings)**

**The important quote of GP: before designing any interventions, communities need a better understanding of which industries may be deemed essential.** This good practice is a well-thought-out guideline for a region standing before a structural change. In the West Transdanubian region – as outlined previously – the dominance of the automotive and metal industry is a key element and a stable knowledge base to serve a gradual sectoral change and to accelerate the economic development in the health care related developments. The process already started but the Good Practice can provide guidance in the fine tuning of the local strategy. Thus the presented Good Practice is an ideal tool to be introduced to the City of Szombathely and can be utilized during the evolution of Szombathely 2030 program. On the other hand, it is relevant for the Managing Authority of EDIOP PLUS in case new, more structured calls are planned to be opened in the future.

#### **Good practice 3 Reshoring decision framework (EPRS)**

**The important quote of GP: both, off-shoring and re-shoring decisions are required to be based on multi-dimensional optimisation approached.** Regionally based soft landing services (competence building and specialisation of intermediaries to effectively support re-shoring and in-shoring) need to be accelerated. The GP can be addressed to local and national policy makers in order to support the aim namely to assist the resilience of the West-Transdanubian region by specifying regional services, like programs for competence building, education, to give a stable knowledge base for regional, interregional healthcare related projects and development.

To support this process concrete projects have been identified in the value chain mapping:

- In the area 'Autonomous systems' the **establishment of a Doctoral school** based on Teaching and Learning Factory with the cooperation of local and Austrian companies, a Joint degree program with Vienna,

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Ljubljana and Bratislava universities to increase regional advanced knowledge in manufacturing digitalisation.

- **MDR Education** – exchanging training materials on international level, by incorporating national level academia and bring back the knowledge to the regions companies, to augment regional capacity to host new medical device manufacturing

#### **Good practice 4 The use of 3D printing in manufacturing: The case of Inertia Racing Technology**

**Important quote of the GP: iRT Wheels invested in the development of locally located 3D printing production hubs for its products.** The GP is an excellent case study and inspiration for the West Transdanubian Region, the local Szombathely 2030 strategy and the regional-national health sector as it provides solutions how to create new, demand driven businesses at place based on traditional sectoral knowledge and how to introduce industry 4.0 into a developing but modest innovator region which carries more new possibilities, how to create new work places, offer the place of learning and education and finally save money and time in the supplier chain processes.

Several organisations, institutions introduced in the last 5 to 10 years the starting initiatives of industry 4.0 in the West Transdanubian Region. One of these is PBN (PP7) who funded AM-LAB, the own digital innovation hub based on international learnings and on cooperation with regional companies, regional institutions, the policy level and organisations from Austria and Slovenia. In the value chain through the involvement of the AM-LAB technology background and the engineer staff a project is identified for the effective use of 3D printing:

The development of a '**Local advanced polymer 3Dprinting service**' and this way improving competencies in 3Dprinting, fundament for 4Dprinting potential locally in collaboration with national actors and an international material science team.

#### **Good practice 5 Increased innovation and service level in fashion: The case of Todd Shelton**

This good practice gives a straightforward example of how to support businesses who wish to re-locate to our region: it is proposing co funding of business plans, for re-interpreting the business model to be applicable in local conditions.

#### **Good practice 6 BILAKATU programme (direct incentives to promote re-location and near-shoring)**

BILAKATAU is an example of good practice tht addresses re-shoring of businesses from several critical dimensions. It is useful to propose and discuss at national level especially in reference to the MediCluster in Austria and the counterpart collaboration unit, the MediCluster in Budapest, Hungary.

#### **Good practice 7 Exploring the impact of inter-regional linkages on regional diversification in Europe in the context of smart specialisation.**

Network (at least 3) feasibility studies to identify complementary technologies for joint development; important for coordinated near-shoring with in-shoring. This is a strategic good practice, aligned with GP2 and GP3, which would allow Western Transdanubia to identify potential joint development collaborations through existing networks.



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- Value chain mapping
- Policy instrument improvement recommendations
- Conclusions: benefits from the additional activities
- Contributions

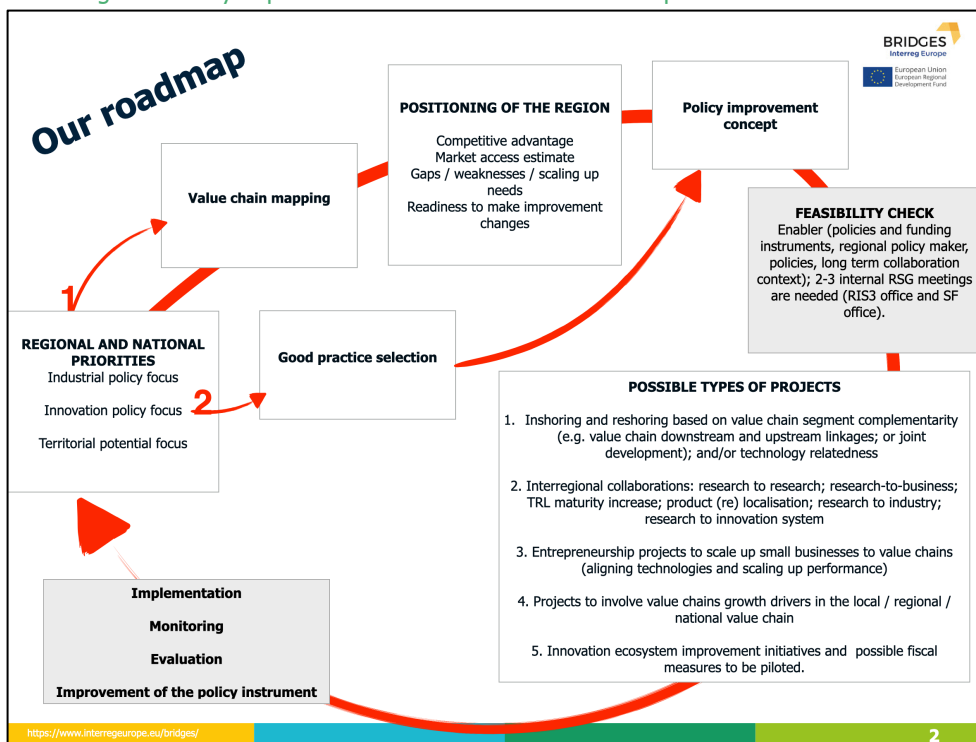


## 2. Policy instrument improvement recommendations methodology

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 Western Transdanubia region

BRIDGES project involves the West-Transdanubian region as statistical region of Hungary. Western Transdanubia in Hungary is bordering Austria, Slovakia, Slovenia, and Croatia, with app. 1 million people living in the 3 counties of the region: Vas, Győr-Moson-Sopron and Zala.

It is one of the fastest growing regions of the entire European Union, reaching nearly 80% of the EU average with respect to GDP per capita (from app. 55% a decade ago).

In the county capitals Szombathely and Győr the role of automotive multinationals and manufacturers for electronic components is decisive. In Szombathely and Zalaegerszeg (capital of the 3<sup>rd</sup> county) the wood and furniture industry are significant and is based on locally available natural resources. Further notable sector is metal industry and machinery with local and multinational companies in all 3 county capitals.



Figure 2 The Western Transdanubia region

Focusing on Szombathely city the five largest industrial employers represent 30% of the total employment, 95% of the city industrial tax income. In Szombathely the local companies are mostly in the service sector – retailers, training and human-resources connected service providers and further players of the tertiary sector.

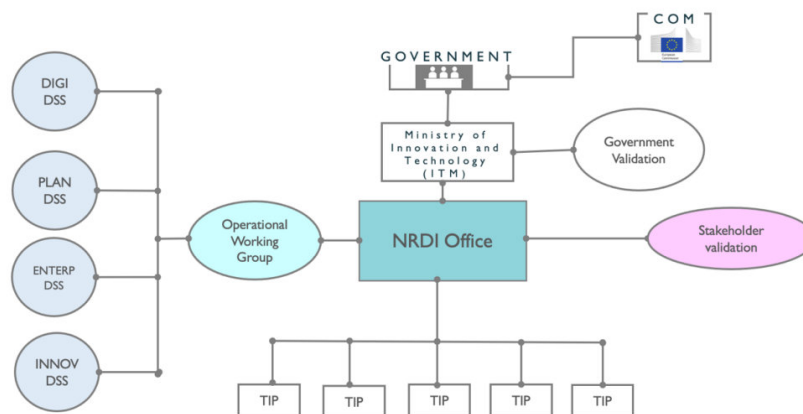
## 3.2 Hungary RIS3 2021 – 2027

### **RIS3**

The development of the Hungarian National Smart Specialisation Strategy for the period of 2021-2027 was launched in autumn 2019 supervised by the Ministry for Innovation and Technology and was coordinated by National research development and innovation office Hungary.

A significant change compared to the previous strategy is that the new S3 was designed with the active application of the **EDP (Entrepreneurial Discovery Process)** process, and the set-up of a regionally based monitoring system containing regional bodies (TIPs) and direct contact to the actors of the quadruple helix.

Key element of the EDP is the creation of **Territorial Innovation Platforms (TIPs)** based on local university centres, initiated by the NRD Office and the Ministry of Innovation and Technology. At regional level, the TIPs provide an opportunity to bring together higher education, industry, central and local government and civil society, to disseminate the innovation process across sectors, to organise activities related to the implementation of S3 and to develop proposals to achieve the objectives.<sup>[1]</sup>



1. Figure: The institutional framework for the S3 planning process<sup>2</sup>

<sup>[1]</sup> SMART SPECIALISATION STRATEGY (S3) 2021-2027, Hungary

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

The three sectoral deputy state secretariats of the Ministry for Innovation and Technology will continue to work together throughout the implementation of the strategy. RIS3 determined the following main development directions in Hungary:

<i>Hungarian National Smart Specialisation Strategy 2021-2027 priorities</i>	
<i>National economic priorities</i>	<i>Horizontal priorities</i>
Cutting edge priority Health priority Digitisation of the economy priority Energy, Climate priority Service priority Resource-efficient economy priority Agriculture, food priority Creative industries priority	Training, education Public sector and university innovation priority

The seven economic and two horizontal priorities of the Hungarian National Smart Specialization Strategy include the **development of the healthcare industry**, the support of **digitalisation** as well as the horizontal priority of **training and education**. The health industry is a priority development area in the policy and through the achieved results **PBN can provide direct feedback for the fine-tuning of the strategy**. PBN's health industry developments – AT.HOME's projects, experiences gained through collaborations within the value chain, can be directly shared with the aforementioned local **TIP unit**, as PBN is a contractual member of this.

Through the results of the value chain mapping, we hope to contribute to interregional complementarities and to the fine tuning of RI3 objectives and activities.

Let's see in detail what the health priority focuses on: the priority covers the whole field of health innovation, from better understanding of diseases, health promotion and disease detection, to cures, clinical research, clinical trials of new drugs by Hungarian pharmaceutical companies, development of services to improve physical wellbeing (e.g. health tourism), including a wide range of health care and research institutions engaged in RDI activities, pharmaceutical SMEs, and health industry enterprises.

Objectives<sup>[2]</sup> are among other are:

- Strengthening R&D in the health sector and health industry, expanding R&D capacities: Setting up new research centres
- Increasing the involvement of healthcare institutions in R&D projects Digital, smart care developments to increase access to health services, with a particular focus on the Silver Age (55+) and people living in depopulated settlements
- Strengthening SMEs in the health sector, encouraging start-ups in health services, supporting collaboration between medical researchers and start-ups, SMEs and innovators

<sup>[2]</sup> SMART SPECIALISATION STRATEGY (S3) 2021-2027, Hungary [IS THERE A URL](#)

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

- Encourage the spread of innovative solutions for technological change (innovative diagnostic technologies, therapeutic procedures, services, medical devices e.g. individual patient specific implants PSI - Patient Specific Implants - 3D printing techniques etc., digital solutions.
- To increase the sector's capacity to generate added value, in particular by encouraging large multinational companies with production capacity in the domestic market to carry out RDI activities in Hungary

Primary target services for the priority are among others:

- Manufacture of medical instruments
- Manufacture of electronic medical equipment
- Scientific research, development
- Human health, social care
- Business and management consultancy activities
- Etc.

The goals and activities of AT.HOME are fully aligned with the objectives of RIS3. As the host organization of AT.HOME Pannon Business Network is also the coordinating organization of the AM-LAB digital innovation hub it is feasible to contribute to the development of new products with Industry 4.0 solutions, qualified engineering staff, and company relations. Products developed can then be tested by those target groups directly involved in AT-HOME: seniors, formal and informal care givers, doctors, SMEs, social institutions, universities.

### **POLICY INSTRUMENT SZOMBATHELY 2030**

Szombathely2030<sup>9</sup> is the strategic policy framework for the region and directly of the City of Szombathely focusing on health- and social care, both with respect to FDI (Foreign Direct Investment) generation and community building. Main focuses are:

- Industrial digitalisation
- Complex rehabilitation, health- and social care, both with respect to FDI (Foreign Direct Investment) generation and community building.

The program aims to implement its two main focuses applies the following elements:

- Strengthening education
- R & D & I supporting environment
- Emphasizing R & D
- Attracting companies

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<sup>9</sup> SZOMBATHELY 2030: For the creation of a crisis-resistant knowledge economy (January 2021), <https://szombathely2030.hu/>

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

The economy of Szombathely is extremely fragile as it is purely dependent on the automotive industry. On the other side the COVID-19 pandemic of 2020 demonstrated the vulnerability of this one-leg structure, **urging the need for diversification**.

In cooperation with the city of Szombathely, PBN developed the resilience strategy of the city within the framework of the FOUNDATION project. This is a strategy and a policy document containing concrete actions. The urging question was: how should we build regional resilience? The dominance of the automotive industry must be broken, and a new sector must be strengthened, taking into account local and international needs.

To be able to introduce new production profile – healthcare related manufacturing – **the entire ecosystem must be involved**. It is a transformative change, covering from research-and-development areas through new institution developments to mindset shift by promoting industrial transformation and specializing on complex rehabilitation within the health industry. AT.HOME Smart Senior Room is an important part of the programme.

PBN was contributing to the strategy with giving inputs on its international experiences and competencies, defining flagship projects in the manufacturing and health related sessions, as well as it was also checking the stakeholders' contributions and incorporating them into the final strategy.

### **POLICY INSTRUMENT EDIOP PLUS**

In BRIDGES project the targeted national level policy instrument was **EDIOP - Economic Development and Innovation Operational Programme**. The continuation of the program is called **EDIOP PLUS** (GINOP PLUS in Hungarian) which is currently running and provides financial support in several priorities. In connection to the aim defined in BRIDGES project the following priorities are relevant: The OP is targeting the

- (1) improving the adaptability of employees,
- (2) supporting knowledge-intensive sectors and
- (3) balancing different territorial development level.

The targeted Priority Axis is PA2: Research, development, innovation 2.2 Skills development for the smart specialization, industrial transformation, and entrepreneurship.

## 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>10</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>11</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

<sup>10</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>11</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.

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

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 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 2 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/EXPO_STU(2021)653626">https://www.europarl.europa.eu/thinktank/en/document/EXPO_STU(2021)653626</a>  SECTORIAL: <a href="https://www.europarl.europa.eu/ReqData/etudes/STUD/2021/659437/EPRS_STU(2021)659437_EN.pdf">https://www.europarl.europa.eu/ReqData/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 promote re-location and near-shoring; includes measures on direct incentives, collaboration with clusters and thriving companies needs)	1	Policy Learning Platform session, 30.3.2022 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>



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GP number and name	Theme	Focus
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	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.
For more information see <b>Table 5</b> <b>Error! Reference source not found.</b>		The methodology focuses on identifying and exploring (0 building initiatives) for re-shoring, in-shoring and near-shoring value chain 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.

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 3 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
— Tools for the Identification of interregional complementarities							X	X			
— Financial & fiscal incentives <sup>12</sup>	X		X			X					

<sup>12</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

Proposed policy measures	Relevant GPs (*)											
	1	2	3	4	5	6	7	8	9	10	11	
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.												
<p>— <b>Monetary policies, financial measures, subsidies.</b></p> <p>Interest rates, provisions oriented to facilitate re-shoring, i.e. a way of directing investments.</p>		X	X			X						
<p>— <b>Innovation policies</b></p> <p>Financial incentives for mission oriented, technological upgrading / investments, upskilling of workforce, research centres-university synergies.</p>			X									
<p>— <b>Industrial policies</b></p> <p>Identification of grand challenges, missions, strategic sectors, industrial clusters, etc. to channel investment into strategic areas, Industrial clusters / smart spec.</p>	X	X	X	X	X	X	(x)	(x)				
<p>— <b>Trade policies</b></p> <p>Anti-dumping / countervailing duty orders; Tariffs / quotas; Patent / copyright enforcement.</p>	X		X									
<p>— <b>Environment policies</b></p> <p>Lower energy cost; Lower tax on energy use; Lower environmental standards.</p>			X									
<p>— <b>Public procurement</b> (including defence policies), including guaranteed contracting.</p>		X	X	X	X			X				
<p>— <b>Competitive advantage; crash test</b></p> <p>Map most important industries locally and assess their performance ("crash test"); identify competitive advantage for re-shoring and in-shoring.</p>	X	X	X	X	X	X	X	X				
<p>— <b>Connect to and leverage regional talent generators and workforce development providers.</b></p> <p>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.</p>	X	X		X	X	X						
<p>— <b>Take advantage of Opportunity Zones</b></p> <p><a href="https://eig.org/opportunityzones">https://eig.org/opportunityzones</a></p>		X		X	X	X						

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	
<p>— <b>Invest in regionally based soft-landing services</b></p> <p>Companies setting up new operations in any community will need assistance with site selection, permits and local approvals, and optimizing their processes.</p>		X		X	X							
<p>— <b>E-Platforms facilitating value chain cooperation</b></p>									X	X	X	
<p><b>LEGEND:</b> GP 1 FOME; GP 2 BROOKINGS; GP3 EPRS; gp4 &amp; GP5 RESHORING INSTITUTE; GP 6 Basque Country; GP 7 &amp; 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.</p>												

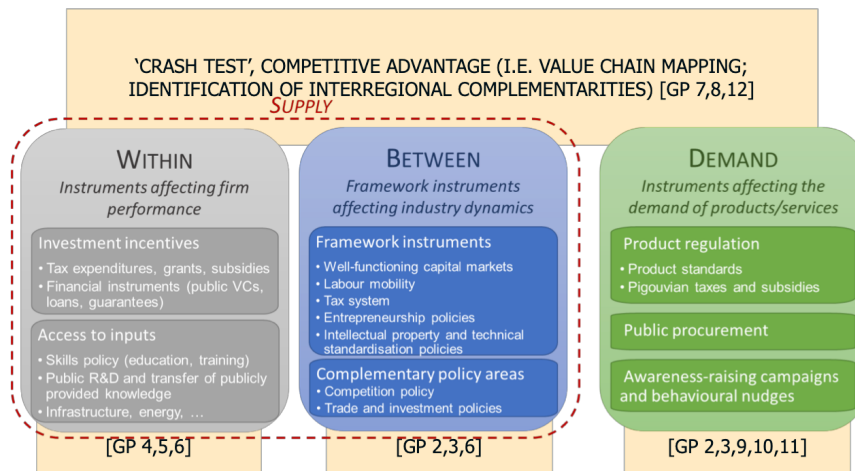
The proposed policy measures cover a wide range of interventions, some of which go beyond regional jurisdictions. They reveal a well-structured, multi-dimensional, optimisation approach that appears to rely on the complementarity between and among policy instruments. For example, instruments affecting firm performance, industrial dynamics and demand for products & services are all present among the 13 measures included in Table 3. It is worth mentioning that these 13 measures, appear to be aligned with the OECD taxonomy of policy instruments. The OECD (OECD 2022<sub>[1]</sub><sup>13</sup> and OECD 2022<sub>[2]</sub><sup>14</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).

<sup>13</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>14</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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Figure 3 Policy instruments taxonomy and the BRIDGES project good practices (source: adjusted from OECD 2022<sup>[2]</sup>, 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 (**Error! Reference source not found.**)] and intervention Types (IE taxonomy). **Error! Reference source not found.** below, summarises the GP selection including also 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.

Table 4 Good practice selection, Western Transdanubia

Type of policy impact (Type 1 = new projects; Type 2= improvement of the policy instrument management; Type 3= new policy instrument)		PP7
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	
Type 2	Guaranteed contracting (requires negotiations with national level, too)	1
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.	1
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.	1
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.	1
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.		
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.	

PP7 selected the above good practices because of the following issues:

### **Good Practice 2 - 2 Reshoring decision framework (Brookings)**

**The important quote of GP: before designing any interventions, communities need a better understanding of which industries may be deemed essential.** This good practice is a well-thought-out guideline for a region standing before a structural change. In the West Transdanubian region – as outlined previously – the dominance of the automotive and metal industry is a key element and a stable knowledge base to serve a gradual sectoral change and to accelerate the economic development in the health care related developments. The process already started but the Good Practice can provide guidance in the fine tuning of the local strategy. Thus the presented Good Practice is an ideal tool to be introduced to the City of Szombathely and can be utilized during the evolution of Szombathely 2030 program. On the other hand, it is relevant for the Managing Authority of EDIOP PLUS in case new, more structured calls are planned to be opened in the future.

**Good practice 3 Reshoring decision framework (EPRS)**

**The important quote of GP: both, off-shoring and re-shoring decisions are required to be based on multi-dimensional optimisation approached.** Regionally based soft landing services (competence building and specialisation of intermediaries to effectively support re-shoring and in-shoring) need to be accelerated. The GP can be address to local and national policy makers in order to support the aim namely to assist the resilience of the West-Transdanubian region by specifying regional services, like programs for competence building, education, to give a stabile knowledge base for regional, interregional healthcare related projects and development.

To support this process concrete projects have been identified in the value chain mapping:

- In the area 'Autonomus systems' the **establishment of a Doctoral school** based on Teaching and Learning Factory with the cooperation of local and Austrian companies, a Joint degree program with Vienna, Ljubljana and Bratislava universities to increase regional advanced knowledge in manufacturing digitalisation.
- **MDR Education** – exchanging training materials on international level, by incorporating national level academia and bring back the knowledge to the regions companies, to augment regional capacity to host new medical device manufacturing

**Good practice 4 The use of 3D printing in manufacturing: The case of Inertia Racing Technology**

**Important quote of the GP: iRT Wheels invested in the development of locally located 3D printing production hubs for its products.** The GP is an excellent case study and inspiration for the West Transdanubian Region, the local Szombathely 2030 strategy and the regional-national health sector as it provides solutions how to create new, demand driven businesses at place based on traditional sectoral knowledge and how to introduce industry 4.0 into a developing but modest innovator region which carries more new possibilities, how to create new work places, offer the place of learning and education and finally save money and time in the supplier chain processes.

Several organisations, institutions introduced in the last 5 to 10 years the starting initiatives of industry 4.0 in the West Transdanubian Region. One of these is PBN (PP7) who funded AM-LAB, the own digital innovation hub based on international learnings and on cooperation with regional companies, regional institutions, the policy level and organisations from Austria and Slovenia. In the value chain through the involvement of the AM-LAB technology background and the engineer staff a project is identified for the effective use of 3D printing:

The development of a '**Local advanced polymer 3Dprinting service**' and this way improving competencies in 3Dprinting, fundament for 4Dprinting potential locally in collaboration with national actors and an international material science team.

**Good practice 5 Increased innovation and service level in fashion: The case of Todd Shelton**

This good practice gives a straightforward example of how to support businesses who wish to re-locate to our region: it is proposing co funding of business plans, for re-interpreting the business model to be applicable in local conditions.

**Good practice 6 BILAKATU programme (direct incentives to promote re-location and near-shoring)**

BILAKATAU is an example of good practice that addresses re-shoring of businesses from several critical dimensions. It is useful to propose and discuss at national level especially in reference to the MediCluster in Austria and the counterpart collaboration unit, the MediCluster in Budapest, Hungary.

**Good practice 7 Exploring the impact of inter-regional linkages on regional diversification in Europe in the context of smart specialisation.**

Network (at least 3) feasibility studies to identify complementary technologies for joint development; important for coordinated near-shoring with in-shoring. This is a strategic good practice, aligned with GP2 and GP3, which would allow Western Transdanubia to identify potential joint development collaborations through existing networks.

## 5. Value chain mapping

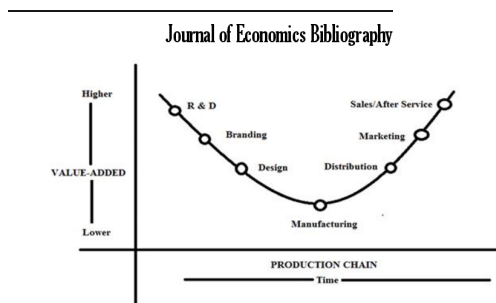
### 5.1 Value chain mapping methodology

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 devised by the BRIDGES project partners. The purpose is to map the selected value chains to identify localised strengths (peaks, competitive advantage), valleys (weaker points) as well as industrial and regional interactions within the same value chains. Value chains' competitive advantage is assessed according to five (5) parametres: business activities & products, research solutions (TRL 5+), knowledge and research (TRL 0-4), labour skills, and policies. These parametres were selected to mark regional concentrations reflecting the current 'VC smiling curve'<sup>15</sup> references, as listed in the horizontal axis in Table 1 below.

Table 5 Summary of the value chain mapping approach.

VC mapping parametres	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					



15

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

Aggarwal, S. (2017). Smile Curve and its linkages with Global Value Chains. Page 4; [https://mpr.aub.uni-muenchen.de/79324/1/MPRA\\_paper\\_79324.pdf](https://mpr.aub.uni-muenchen.de/79324/1/MPRA_paper_79324.pdf) .



VC mapping parameters	Value chain mapping components and proxies.								
	Raw materials	Technologies / R&D	Design	Production	Products	Branding	Funding	Distribution	After sales service
		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.		

Table 1, furthermore, 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.

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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.

## 5.2 Value chain mapping results

Table 6 value chain mapping summary, Western Transdanubia

VALUE CHAINS
<p><b>HEALTH CARE ICT EQUIPMENT<sup>16</sup></b>            Region: PP7 PBN, WESTERN TRANSDANUBIA</p> <p><b>Peaks (re-shoring and in-shoring potential)</b>            In the West-Transdanubian region there is potential to realize innovative products:</p> <p><u>Potential 1:</u>            Locally present manufacturing companies with production and testing capacity, participate in prototyping procedures, local health companies take part e.g. in bioengineering education and further educational programs.</p> <p>Example 1:            In key technology 'advance manufacturing', in 'robotics domain' the value chain team identified the possibility for 'Exoskeleton development and manufacturing'. The addressing project is going to support the rehabilitation of stroke patients with product development. To realize this project the West-Transdanubian region has the potential to have local companies capable of robotics manufacturing and the region has a local stroke hospital center which is ideal for testing facility. Through the product development the next step is to build exoskeleton manufacturing unit with R&amp;D department in the West-Transdanubian region. The project is explicitly included in the Szombathely 2030 agenda.</p> <p>Example 2:            In key technology 'advance manufacturing', in 'robotics domain' the value chain team identified a second project which aims to develop sensors with improved capacity and low energy consumption which can be applied in Intelligent inhalators, smart newborn incubators. To realize this project in West-Transdanubia a PCB Service company is present as potential producer. The project is not included in the Szombathely 2030 agenda.</p> <p><u>Potential 2:</u>            Based on the two products introduced in the previous lines further activities in product development and improvement can be started. AM-LAB in West-Transdanubia is Hungary's first Digital Innovation and provides professional services in product development, testing and training, is a platform for constant development and obtains international social capital through PBN:</p> <ul style="list-style-type: none"> <li>- Product development and prototyping - Designing custom products and tools from idea to prototype production, model and tool preparation and mass production optimization, Model and tool preparation and mass production optimization</li> <li>- 3D scanning and reverse engineering</li> <li>- Extended reality - Model and tool preparation and mass production optimization</li> <li>- Data science – analysis of production data of manufacturing companies</li> <li>- Entrepreneurial trainings – industry 4.0</li> </ul> <p><u>Potential 3:</u>            Local institutional actors and end users are present in the region and open to cooperate with own resources:</p> <ul style="list-style-type: none"> <li>- Local university faculties act as leading actors in the transition to a new sector</li> <li>- local hospital provides rehabilitation services and specialists</li> <li>- thermal water based rehabilitation facilities are available</li> </ul>

<sup>16</sup> Value Chain Analysis in Healthcare related manufacturing, Western Transdanubia, Krisztina Bárdos, 2022.

**VALUE CHAINS**

- Local social care organisation provides test environment
- Local end-user basis is given participation in needs-assessment and involved in testing and

***Potential 4:***

The local policy background is supportive, and healthcare related developments are priority of the city. National level policy background is open for good examples and proposals.

**Valleys (near-shoring solutions within Hungary and the research area)**

**(1) *DOMINANT ECONOMIC BASE CONTEXT, over relying on the dominating*** of the automotive industry. This weakness is a possibility on the same time: the presence of manufacturing companies led the city and its surroundings to redefine the possibilities, in the knowledge of global trends, through international experience, the design, testing, application and training of products related to the health industry, and the organization of education became possible.

***(2) LACKING COMPETENCES AND KNOWLEDGE OF MATERIAL SCIENCES:***

2.1 PROJECT-BASED "REACTION": Through the value chain mapping the VC mapping team determined the project: "Intelligent 4Dprinted materials for Smart product and production development". To the realization in the West-Transdanubian region there are manufacturing companies present and ready to introduce such prototypes but the project needs collaborative research between academia-business for 4Dprints which is only realizable on country or interregional level.

2.2 PROGRAMME-BASED APPROACH: Could there be a programme foreseen in the new EDIOP for strengthening materials science knowledge, skills, and longer-term collaborations with synchrotrons for example, explicitly focusing on health care applications based on ICT? This cross disciplinary approach is a strength for. PP7 and as a domain it deserves to be expressed more openly.

***(3) TEST-BEFORE-INVEST NEEDS IN VIEW OF DEVELOPING NEW PRODUCTS***

3.1 Need for application site of the new product at e.g a technical university. In the 'Advanced manufacturing' key technology topic in 'Autonomous' systems domain the VC mapping team determined the project: 'Doctoral school based on Teaching and Learning Factory' to apply in research and international doctoral schools. To the realization engineers at regional large companies can be involved but the academic knowledge from technical universities and international PhD students is missing, e.g. the Technical universities' PhD in Budapest can offer practical application site.

3.2 Need for a large testing base of applications, programs: (1) in the exoskeleton project testing cooperation with national rehabilitation institutes is planned, regionally testing base is limited. (2) In case of 'Applications developed for dementia prevention' project in Life Science technologies a country wide test environment for novel product/app development is needed and planned.

3.3 Technical barriers in 3D and 4D printing. In the projects: Local advanced polymer 3Dprinting service and Intelligent 4Dprinted materials Increased collaboration with leading European material science team coming from the wider research area is a basic need.

3.4 Lack of training and education in special domains: improve competencies in 3Dprinting, fundament for 4Dprinting potential, etc.

3.5 In general, academic background is available mainly on national and international level.

**Interregionality (near shoring)**

Interregional cooperations are inevitable in developing, testing and realizing new products and processes. If we take in consideration the 15 projects defined as the outcome of the values chain mapping we can list the following possible cooperation fields:

***(1) TRAINING AND EDUCATION***

VALUE CHAINS
<p><u>1.1 Cooperation field 1:</u> Key interregional capital is training and education through joint educational programs to support the restructuring of the regions' academy, to attract companies and universities to the region through joint actions of the nearby regions through educational programs, exchange of training materials, etc.</p> <p><u>1.2 Cooperation field 2:</u> Develop a joint degree programme in MSc Biomedical Engineering.</p> <p><u>1.3 Cooperation field 3:</u> Connected to product development parallel to ICT co-operation, the cooperation with design companies is essential in order to create practical, aesthetic and clear-out products for end users in the health industry.</p> <p>(2) GOOD PRACTICES: The exchange of healthcare related good practices and the exchange of knowledge in healthcare related manufacturing supportive technologies like industry 4.0 solutions, data processing cyber security. In the value chain mapping we identified the following examples:</p> <ul style="list-style-type: none"> <li>○ Good Practices in advanced materials in general and connected to this increase the competency in advanced materials</li> <li>○ Intelligent 4Dprinted materials - Good Practices and exchange of experience in 4D printing</li> <li>○ Machine-vision and neural network applications</li> <li>○ Exchange knowledge in applying statistics into production improvement,</li> <li>○ Exchange experience about cybersecurity application introductions.</li> </ul>

## 4 Policy instrument improvement recommendations

In the West-Transdanubian region and very focused on the district of Szombathely City capital of Vas County the core competitive advantage is that there are locally operating companies applying skilful workers whose knowledge is compatible with the diversification and resilience process of the regional industry. The aim of the Region is to accelerate the development of the healthcare related industries encouraging local production processes, strengthening the place-based approach on the basis of the traditions, knowledge and available technology of the so far dominant automotive, metal and engineering industry.

Tables 7 and 8 below discuss the correspondance between the selected good practices, forthcoming initiatives, policy frameworks and funding sources.

Table 7 Good practices and policy instrument improvement, Western Transdanubia.

Policy instrument interventions	Policy instrument update stage	GP reference	Implementation
Measures to the further developing of already existing services inside PBN and ensuring market linkages.	<p>The results obtained during the BRIDGES value chain analysis and the 1st activities carried out by AT.HOME (PBN's healthcare focused testing facility ) will be included in the so-called Integrated Urban Development Strategy of the City of Szombathely through the proposal of PP7 towards the City Council.</p> <p>The elaboration of this strategy will we started in</p>	We apply good practice 3 Reshoring decision framework (EPRS)	<p>Providing a test environment for product development validation of new products before market introduction</p> <p>- Supporting research and development of prototypes to help renew the elderly care at home</p> <p>- Demonstration environment and trainings: the showroom of PBN's unit AT.HOME, which lists more than 50 digital solutions, AT.HOME staff presents practical and modern</p>

Policy instrument interventions	Policy instrument update stage	GP reference	Implementation
	Autumn 2022 and it is connected to the Szombathely2030 strategy of the City of Szombathely. (Type 2 policy impact).  PBN as regional development organization, intermediary and contracted partner of the City of Szombathely will be direct contributor to this Urban Strategy.		solutions in a thematic, interactive way.  - connect relevant regional SMEs to the demanded services, project proposals
<b>MAINSTREAMING</b>			
<b>BENEFIT</b> Encouraging the development of regional soft-landing services by prioritizing the realistic needs and capabilities of businesses (competence building and specialisation of intermediaries to effectively support re-shoring and in-shoring)			
Policy instrument interventions	Policy instrument update stage	GP reference	Implementation
Participate in the development of new types of business plans and feasibility studies, beyond labour costs (comparative advantage). These new types of business plans are industry related, automation related, green deal related and access to research related.	In Autumn 2022 the City of Szombathely will start to draft the so-called Integrated Urban Development Strategy of the City of Szombathely in which regionally competent organisations will contribute (also PBN) in which also industry and research related concept will be drafted.	Good practice 4: The use of 3D printing in manufacturing: The case of Inertia Racing Technology	Creation of a favourable environment for manufacturing companies connected to the health industry, education and scientific life based on a production orientation, and on the other hand, encouraging the introduction of new production systems by companies already producing. In order to attract the above actors to Szombathely, a complex program of activities must be implemented, which includes, in addition to the available investment areas, the appropriate scientific and training background, digitalization services (robotization, automation, artificial intelligence). In this concept it is outlined that the businesses have to redefine their scopes to connect to health industry.
<b>MAINSTREAMING</b>			
<b>BENEFIT</b> Assist businesses to redefine their business concept to re-shoring, to take part in research and restructuring processed by applying the available digitalisation services and training.			
Measures to thrive local companies' needs	The complete business plan of a so called 'Regional Research and Development Centre' in Szombathely has been elaborated in the last few months by PP7 and external expert and now the next step is to discuss the financing of building the Centre.  In Autumn 2022 PP7 is going to negotiate this program with the representative of the Hungarian Investment Promotion Agency (HIPA) to gain FDI investment support to	Good practice 6 BILAKATU programme (direct incentives to promote re-location and near-shoring)	The establishment of the 'Regional Research and Development Centre' in Szombathely with special focus on research, education and product development focusing on elderly care and rehabilitation. The aim is to realize special product development projects defined during the Value chain mapping process. The Centre will be the new home of PBN, AM-LAB and At.HOME and several R&D companies.

Policy instrument interventions	Policy instrument update stage	GP reference	Implementation
	<p>realize the establishment of this centre.</p> <p>One other component of this Centre is aimed to be financed from IPCEI support, the application has been submitted Spring this year.</p>		
<b>MAINSTREAMING</b>			
<b>BENEFIT</b>			
Long term services for small and medium sized enterprises to enable common, innovative product development by assisting regional actors and companies through education and providing testing site and cooperate in partner search.			

Table 8 Policy instrument improvement recommendations related to selected value chain, Western Transdanubia

Policy impact
<p><b>Health care &amp; ICT value chain (PP7)</b></p> <p><b>Policy instrument (strategy + funding source to be indicated)</b></p> <p><u>EDIOP PLUS</u> EDIOP PLUS is the continued version of the original policy instrument involved into BRIDGES project, the Economic Development and Innovation Programme Plus (EDIOP Plus) for the 2021-2027 programming period. The program is under negotiation with the EU. 1 - On base of the value chain mapping policy recommendation for the Managing Authority who can utilize the elements for future calls (Type 2 policy impact)</p> <p><u>SZOMBATHELY 2030</u> Szombathely20306 is the local strategic policy framework for the region and directly of the City of Szombathely focusing on - Industrial digitalisation and - Complex rehabilitation, health- and social care, both with respect to FDI (Foreign Direct Investment) generation and community building.</p> <p>Health-care industry connected re-shoring and in-shoring possibilities have been determined during the value chain mapping process through the following locally initiated research, product development and educational project ideas in which local, national and international complementarities are analysed. These project concepts are included into the Szombathely 2030 agenda (Type 1 policy impact): 1 - Doctoral school based on Teaching and Learning Factory 2 - Exoskeleton Manufacturing and Development 3 - Certified MSc education 4 – Life Science Technologies Service platform: Create Test and Experimentation infrastructure with connected households for product validation 5 - MDR education 6 - Teaching and Learning Factory</p> <p><b>How the policy instrument is impacted (can be call criteria, content of programme, new programme content)</b></p> <p><b>Good practice 2 Reshoring decision framework (Brookings)</b> <i>Value chain mapping / competitive advantage for in shoring and re-shoring:</i> <u>Possible initiative:</u> 1). Follow up actions (deeper analysis, identification of structural collaboration &amp; development opportunities) of the value chain mapping of the ICT &amp; health sector done during the BRIDGES project additional activities.  2) Project (-s) to mapping regional competitive advantage of selected value chains and liaise with EU value chains for further development.</p> <p><u>Policy instrument impact</u> 1) Interregional innovation investment (I3) sector-targeted options. 2) ALSO RECOMMENDED Open call across Hungary. Open call can be thematic or sector-based. Criteria of the call to be co-agreed.</p>

**Policy impact**Potential funding resources:

- 1) Transnational and interregional Interreg programme options; I3 calls; I3-related initiatives as they are forthcoming (e.g. EC Innovation pilot)
- 2) ALSO RECOMMENDED: EDIOP +

**Good practice 3 Reshoring decision framework (EPRS)**

*Regionally based soft landing services (competence building and specialisation of intermediaries to effectively support re-shoring and in-shoring)*

Possible initiative:

The aim would be further developing already existing services inside PBN and ensuring market linkages:

- · Providing a test environment for product development validation of new products before market introduction
- · Supporting research and development of prototypes to help renew the elderly care at home
- · Demonstration environment and trainings: the showroom of PBN's unit AT.HOME, which lists more than 50 digital solutions, AT.HOME staff presents practical and modern solutions in a thematic, interactive way.
- · connect relevant regional SMEs to the demanded services, project proposals

Policy instrument impact:

The results obtained during the BRIDGES value chain analysis and the 1st activities carried out by AT.HOME (PBN's healthcare focused testing facility ) will be included in the so-called Integrated Urban Development Strategy of the City of Szombathely through the proposal of PP7 towards the City Council. The elaboration of this strategy will we started in Autumn 2022 and it is connected to the Szombathely2030 strategy of the City of Szombathely. (Type 2 policy impact). PBN as regional development organization, intermediary and contracted partner of the City of Szombathely will be direct contributor to this Urban Strategy.

Potential funding resources:

Interreg and / or I3 calls

**Good practice 4 The use of 3D printing in manufacturing: The case of Inertia Racing Technology**

*(1) Branch-based feasibility studies helping businesses re-define their business concept to re-shoring. As preconditions for re-shoring business and research projects, for the sports equipment sector and stressing utilisation of 3D printing.*

Possible initiative:

STEP 1 Participate in the development of new types of business plans and feasibility studies, beyond labour costs (comparative advantage). These new types of business plans are industry related, automation related, green deal related and access to research related.

Policy instrument impact:

In Szombathely 2030 business plan it is already included:

Settlement of healthcare enterprises:

Creation of a favorable environment for manufacturing companies connected to the health industry, education and scientific life based on a production orientation, and on the other hand, encouraging the introduction of new production systems by companies already producing

In order to attract the above actors to Szombathely, a complex program of activities must be implemented, which includes, in addition to the available investment areas, the appropriate scientific and training background, digitalization services (robotization, automation, artificial intelligence).

In this concept it is outlined that the businesses have to redefine their scopes to connect to health industry.

On the other hand, in Autumn 2022 the City of Szombathely will start to draft the so-called Integrated Urban Development Strategy of the City of Szombathely in which regionally competent organisations will contribute (also PBN) in which also industry and research related concept will be drafted.

Potential funding resources:

Several connected centres, testing places and labors are planned in this concept with the cooperation of regional and national actors and with the involvement of actors from abroad. Their realization will be financed mainly from:

- · Competitive Hungary Operational Program;
- · HORIZON,
- · Interreg;
- · Business Development and Innovation Operational Program

*(2) 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.*

Possible initiative:

SEPT 2 Open calls for implementing the above business plans. It requires existing or start up businesses to be also involved.

Policy instrument impact:

**Policy impact**

2 Open calls in Hungary. Open call can be thematic or sector-based. Criteria of the call to be co-agreed.

Potential funding resources:

**Call1: EDIOP PLUS 2.2.1-22** call, *open since May 2022*: Provision of targeted research development services for companies and research centres, research and knowledge transfer organisations. This is a Priority project managed by IFKA Hungarian organization. Main activities financed:

- · Business Development Ecosystem and development of networking
- · Providing expert services to SMEs

Green Academy - Education, training and "greening" development of supporting activities

**Call 2: EDIOP PLUS 3.2.1-21**, *Open until April 2023*: Improving the adaptability and productivity of employees and companies through workforce development. Only a consortium of the Ministry of Innovation and Technology and government agencies can apply for this, this is a national priority project in EDIOP. The priority project aims to meet the conditions provide passed-on support to businesses a for the implementation of workplace training.

**Good practice 6 BILAKATU programme (direct incentives to promote re-location and near-shoring)**

*Collaboration with clusters (this is aligned with GP3)*

Possible initiative:

OPTION 3 (counting from GP3 suggestions) PBN is certified as industrial intermediary in the ICT/ health care sector and introduces network-based development with counterparts across the EU.

Policy instrument impact:

PP7 as LP submitted a new Interreg Europe Project application in the topic of supporting innovative product & service development with focus on healthy ageing and test infrastructure with SMEs and Start-ups in focus.

Potential funding resources:

Interreg Europe call

*Thriving companies' needs (this is aligned with GP2, option 1)*

Possible initiative:

Negotiate direct subsidies with Hungarian Investment Promotion Agency (HIPA) for FDI investing in establishing local Centre for high tech and / or education in the ICT/health care sector.

Policy instrument impact:

The program is focusing on the establishment of a Regional Research and Development Centre in Szombathely, with special focus on research, education and product development focusing on elderly care and rehabilitation. The aim is to realize special product development mentioned in Value chain mapping. This Centre will be the new home of PBN, AM-LAB and At.HOME and several R&D companies.

On base of a global market research the complete business plan (activity field, services, employees, financing, cooperating partners) of the Centre has been elaborated in the last few months by Pannon Business Network and external expert and now the next step is to enable financing of building the Centre. In Autumn this year PBN is going to negotiate this program with the representatives of the Hungarian Investment Promotion Agency (HIPA) to gain FDI investment support to realize the establishment of the Centre.

One other component of the Centre is aimed to be financed from IPCEI support, the application has been submitted Spring this year. The plan of the Centre is demonstrated in the Szombathely2030 strategy of Szombathely City.

Potential funding resources:

Support of Hungarian Investment Promotion Agency (HIPA) and IPCEI

**Good practice 7 Exploring the impact of inter-regional linkages on regional diversification in Europe in the context of smart specialisation.**

*Network (at least 3) feasibility studies to identify complementary technologies for joint development; important for coordinated near-shoring with in-shoring*

Possible initiative:

Agreeing interest of at least 2-3 regions in shared value chains; joint projects for identification of technological complementarities as per the Balland & Boschma methodology.

Policy instrument impact:

Future interregional cooperation projects

Potential funding resources:

Interreg and / or I3 calls

**Impact process (institutions to be involved, evidence they require, stakeholders to be involved, anticipated timetable)**

The following steps have been / are being followed:

- 1 - Joint Local stakeholder group meeting with the representatives of the Ministry of Finance (October 2021)



**Policy impact**

- 2 – Stakeholder meeting with the representative of the Local Faculty of The ELTE University (January 2022)
- 3 – Cooperation agreement signed with Hungarian MediCluster (February 2022)
- 4 – Continuous cooperation with Social and Youth Welfare Center Pálos Károly, the local caregiver institute and the Local Government of the City of Szombathely with County Status as the holder of the Szombathely2030 development program
- 5 – Value chain mapping team meetings (January – March 2022)
- 6 – Value chain mapping follow up and clarifications (April – July 2022)
- 7 – Two projects in product development topic submitted for funding (1 IPCEI, 1 Horizon) (Spring 2022)
- 8 - Presentation of VC mapping results to the Managing Authority (July 2022)
- 9 – Elaboration of the concept of the Regional Research and Development Centre (Summer 2022)
- 10 – Policy improvement proposals to the Integrated Urban Development Strategy of the city of Szombathely (September 2022)
- 11 – Strengthening cluster collaboration with MediCluster Hungary and MediCluster Austria through new initiated projects
- 12 – Negotiation about funding with National Institution (Autumn 2022)
- 13 – Follow up of the submitted projects and the policy proposals (Winter 2022)

## 5 Conclusions: benefits from the additional activities

Focusing on the core development of the healthcare related industries PP7 aims at contributing to the significant restructuring of the industry of the West-Transdanubian region and especially focusing on the territory of Szombathely City the capital of Vas County in Hungary.

During a complex value chain mapping procedure introduced by BRIDGES project we reached a more complete vision of development directions, the re-shoring and in-shoring potentials and near-shoring solutions within Hungary and the narrower research area.

By applying the mapping tool, we reviewed the domestic, regional and global trends in healthcare related manufacturing and the value chain mapping as a tool helped us to be able to model diversification potential within our region and to detect different types of collaborative actions between and among other relevant regions. Innovative product ideas, need of skills, technology background and relevant actors have been identified, the near-shoring and in-shoring possibilities have been analysed. We also examined the possibility of interregional cooperation with BRIDGES Partners and with further EU actors. On the same time, we concentrated on the local and national policy environment, investigated if the planned projects are in accordance with the local policy and how to go to the next step namely, to ensure financing to the realisation. Good practices identified by the consortium served as inspiration and guidance how to formulate regional project plans more accurate.

As a summary of our findings, we can state that value chain mapping has been a very useful exercise, as it allowed to collect and operationalise information and ideas that were already 'in the air' but needed to be addressed in more systematic way. As with any other investigation also this mapping process was partially challenging, and for two reasons: it opened up the need to concretise local strengths, weaknesses and collaboration potential in reference to very specific industries and, secondly, it put on the table the issue of funding which always entails risk of realization. Many of the ideas and insights from the value chain mapping have been included or are being included into EU-based project funding. At local level, the value chain mapping findings and the policy instrument recommendations, are very much aligned with the local development plan, Szombathely 2030.

A very important finding from all this analysis process has been the recognition of advanced skills, locally, among the labour force of several businesses, that can be a localisation and embeddedness foundation for the regional economic renewal towards ICT & Health specialisation, thus diversifying from the older focus on FDI-based automotive industry. Other very important result of the value chain analysis was that it is obvious that we cannot carry out the planned development process exclusively by focusing on a narrower region. One of the basic conditions for efficient, real needs-based and forward-looking developments is interregionality, the cooperation of actors with different competences and resources, which results in a development process encompassing several regions.

## 6 Contributions

PBN, PP7: Andrea Kurucz, Balázs Barta, Robert Nemeth; in collaboration with Ninetta Chaniotou, PP2/LP

Regional & national stakeholder group meetings:

Health care and ICT (PP7)
Date
Issues
Participants
Results

Health care and ICT (PP7)
Date
Issues
Participants
Results

