

INSTITUTE FOR  
INNOVATION AND  
TECHNOLOGY

# Revitalisation of Disused Industrial Sites: Aligning Local Interests and Regional Priorities for Green Growth

A Workshop Concept based on Sustainable  
Smart Specialisation

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## **Imprint**

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### **Layout**

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### **Picture Credit**

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DOI: 10.23776/2024\_04

Berlin, April 2024

### **Citation**

Eichler, Martin; Foray, Dominique; Ziegler, Oliver (2024): Revitalisation of Disused Industrial Sites: Aligning Local Interests and Regional Priorities for Green Growth. A Workshop Concept based on Sustainable Smart Specialisation. Institute for Innovation and Technology (iit), Berlin

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## Abstract

The revitalisation of disused industrial sites represents an opportunity to shift previous paths of economic development towards the direction of green growth by promoting the establishment of a robust and more sustainable economy. While current examples of post-industrial sites mostly feature commercial, culture or community usage, the space and facilities can be used for the development of innovative green capacities. These sites could serve as sustainable regional innovation anchors, unleashing opportunities for the entire region to strengthen its capacity to develop innovative solutions to place-specific ecological, social and economic challenges. This requires a novel approach to industrial site revitalisation, including four particular aspects:

- 1) better aligning local (business) interests with regional strategic priorities;
- 2) reconciling business interests and opportunities for green economic growth;
- 3) identifying and building on existing (regional) assets and opportunities; and
- 4) identifying funding synergies and addressing barriers to innovation.

In the Horizon Europe project RIS4Danu we have gathered significant evidence on how to facilitate this process by applying a revised Entrepreneurial Discovery Process (EDP) inherent in Smart Specialisation (S3).

## Acknowledgment

We would like to express our deep gratitude to all partners of the RIS4Danu project, in particular, all Consortium Partners, regional Support Partners, Site Owners and the many Workshop Participants for their outstanding work, for their openness to participate in the development of the novel concept, for their investment of time, knowledge and energy, and most of all, for their comradeship and great hospitality.

## Financial support

Financial support for this paper comes from an Horizon Europe grant (grant agreement ID: 101058457): Sustainable Smart Specialisation for the Re-opening of Industrial Sites in the Danube Region

# 1 Introduction

In 2018, Andrés Rodríguez-Pose caused a stir with his essay ‘The revenge of the places that don’t matter (and what to do about it)’. Under the impression of the lost Brexit referendum in Britain in 2016 and Donald Trump’s victory in the 2016 US presidential election, he traced the emergence of a ‘geography of discontent’ in structurally weak regions. Poor development prospects and the increasing conviction of a hopeless future have strongly fuelled populism in these so called insignificant places.<sup>1</sup>

To counteract the trend of eroding democracy, the European Commission (EC) in recent years has revised its cohesion and innovation policies and put in place a variety of new initiatives for *place-based* policy interventions with the ultimate goal of harnessing untapped potential and providing local people with perspective and hope.<sup>2</sup> Among the various initiatives, one innovative approach under the EU’s latest research and innovation framework programme ‘Horizon Europe’ looks into the economic and innovation potential of *disused industrial sites*. It raises the question of how to transform (recently) closed industrial sites into inclusive hubs for green production and research and innovation where a wide range of regional stakeholders can bundle their activities and knowledge to develop new solutions for green and digital transition – with positive spill-over effects for the entire region.<sup>3</sup>

In general, industrial plant closures pose significant challenges to affected regions and municipalities.<sup>4</sup> In the past, if the response to a certain plant closure was not turning a blind eye to it, the most common reactions were efforts for a short-term, swift reopening of the closed plant – ideally with a new cash-injecting investor or the transformation towards a new post-industrial function, such as community area, culture or commercial centre. In the medium to long term, however, plant revitalisation can be considered an opportunity to shift previous paths of economic development towards green and innovation driven growth by promoting the establishment of a robust and more sustainable economy. There are several reasons why it is worth the effort to approach (recently) closed industrial sites with an innovative

and inclusive policy approach and take advantage of existing opportunities:

- Even after their shut-down, industrial sites possess tangible as well as intangible values. Brownfields with an adjoined specific infrastructure and a distinctive history build a unique ensemble which can be revitalised by applying a set of innovative activities. Structurally weak regions in particular should not forgo such assets.
- With plant closure, local municipalities face the difficult task to develop smart social and labour market interventions to absorb the external shock. An innovation driven revitalisation of the site, oriented towards new, sustainable value chains, provides substantial and sustainable support towards these aims.
- The shutdown of an industrial activity constitutes, by definition, a trigger for transformation. Taking advantage of this momentum by initiating a larger transformational push facilitates industrial transformation of the respective region towards a greener, more sustainable and dynamic development path.
- Plans for sustainable industrial site revitalisation can not only draw on large (financial) support schemes, such as the EU’s Just Transition Fund (JTF). There is also an increasing trend among private investors and lenders to incorporate green and social ratings into their investment assessments.

Hence, disused industrial sites combined with a green, innovation driven approach for revitalisation may be of particular value for the industrial transformation of a region and the implementation of the EU’s updated Industrial Strategy and the Green Deal.

Such a novel approach requires a new way of thinking about industrial plant revitalisation. For this, the underlying methodology of the *Smart Specialisation Strategy (S3)* innovation policy

1 Rodríguez-Pose, A. (2017) The revenge of the places that don’t matter (and what to do about it). *Cambridge Journal of Regions, Economy and Society*, 11 (1). pp. 189–209. ISSN 1752–1378. DOI: 10.1093/cjres/rsx024

2 For example, in 2022, the EC’s Joint Research Centre (JRC) and the European Committee of the Regions (CoR) jointly set up the Partnerships for Regional Innovation (PRI), which shall act as a bridge between smart specialisation and other EU policies to promote innovation-driven territorial transformation in order to tackle key societal challenges and accelerate Europe’s green and digital transitions. See <https://s3platform.jrc.ec.europa.eu/pri> The approach is also enshrined in the EC’s New European Innovation Agenda with its particular focus on Regional Innovation Valleys. See [https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda\\_en](https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda_en)

3 See HORIZON-CL4-2021-RESILIENCE-01-28

4 Shutdowns are commonly associated with large-scale displacement of workers and negative effects on tax payments towards regions and municipalities, on the procurement of local goods and services, on house prices, on social cohesion of local communities, etc. See, for example, Beer, A. et al. (2019). The urban and regional impacts of plant closures: new methods and perspectives. *Regional Studies, Regional Science*, 6:1, 380–394.

tool offers an ideal starting point.<sup>5</sup> In contrast to most other established innovation policies, such as tax credits or financing of basic research, S3 follows a vertical intervention logic: Within a certain innovation topic, all elements of the innovation chain are supported to maximise the chances for a positive transformation effect. Furthermore, S3 emphasises the concentration of activities to exploit the full extent of agglomeration effects in the innovation process. Moreover, the methodology calls attention to the fact that innovation should be based on the specific assets, strengths and opportunities available, taking into account the specific challenges present and explore the possibilities of local, regional and inter-regional networks.

A novel approach for innovation driven, sustainable industrial site revitalisation, which is based on S3, should particularly deal with the following four aspects:

- 1) While common approaches to plant revitalisation mostly centre on *local* business interests or the needs of local communities, greater emphasis must be placed on *regional* strategic priorities for innovation and competitiveness. In short, local (business) interests and regional strategic priorities must be aligned.
- 2) Local (business) interests and existing opportunities for green and inclusive growth must be reconciled.
- 3) Existing assets and capacities, within the industrial site itself as well as in the regional economy and the regional innovation system, must be considered as valuable inputs for the revitalisation process.
- 4) Public and/or private funding synergies must be identified and barriers to innovation must be addressed.<sup>7</sup>

In the course of the 2022 – 2024 Horizon Europe project ‘Sustainable Smart Specialisation for the Re-Opening of Industrial Sites in the Danube Region’ (RIS4Danu),<sup>6</sup> we were able to develop and test such a novel approach to plant revitalisation, taking into consideration the four above-mentioned aspects and applying a revised approach to Smart Specialisation (S3). We gathered first-hand experience in the decision-making process on plant revitalisation and developed a stakeholder-driven workshop methodology based on Smart Specialisation and the inherent Entrepreneurial Discovery Process (EDP). The RIS4Danu project facilitates the stakeholder-driven identification of transformational goals for disused industrial sites and the development of transformational roadmaps for their sustainable and innovative revitalisation.<sup>7</sup>

We argue that a re-opening of old industrial sites, which follows this novel approach, shows the potential to build transformative resilience, particularly in less-favoured regions. These sites could serve as transformation and innovation anchors, unleashing opportunities for the entire region to strengthen its capacity to develop innovative solutions to place-specific ecological, social and economic challenges.

5 Foray, D., David, P. A., Hall, B. (2009): Smart Specialisation – The Concept. Knowledge Economists Policy Brief n° 9.

6 See <https://ris4danu.eu>

7 Ziegler, O. (2022). Eine grüne Zukunft für alte Industriestandorte. In: *Tagesspiegel Background*, 07.09.2022.

## 2 A Novel Approach to Industrial Site Revitalisation

Disused industrial sites can constitute a burden and at the same time an opportunity for their public or private owners, local municipalities and regional economies alike. Depending on their state of repair and the local surroundings, plant revitalisation can be challenging, but if successful, the process can trigger economic growth in the affected region. In general, plant revitalisation is a long-lasting and interdisciplinary process, in which numerous local stakeholders are actively involved. Suitable solutions depend on many factors, such as the nature of the site, its location including infrastructure, existing assets and capacities, population and other socio-economic factors, as well as an assessment of the costs and risks associated with the development. The academic literature on revitalisation of post-industrial spaces distinguishes different transformation models, based on the new function of the site.<sup>8</sup> What they all have in common is a particularly complex (and often conflicting) decision-making process<sup>9</sup> and a clear focus on immediate *local* interests. What is most often missing in the decision-making process for the revitalisation of disused sites is a direct link to the larger *regional* strategic priorities for economic growth, competitiveness or innovation as well as a clear commitment towards green industrial modernisation with sustainable and higher value-added activities. In this chapter, we highlight four aspects which need to be considered for this process in order to be successful.

### 2.1 Aligning local interests and regional priorities

An exclusive focus on immediate local business and/or community interests is an immanent shortcoming in most revitalisation projects as it misses economic growth opportunities as well as innovative input stemming from the regional level. We clearly argue in favour of better aligning *local* interests and *regional* strategic priorities.<sup>10</sup>

Regional priorities are commonly enshrined in regional innovation, growth, or Smart Specialisation Strategies. In Europe, the

European Commission (EC) encourages regions to develop regional innovation strategies as part of its common task to foster cohesion and support economic growth and development across the EU. Moreover, over the past years, the EC turned towards regions to rethink the role of Regional Innovation Systems (RIS) to tackle grand societal challenges such as climate change, the ageing society, health, digitalisation or growing social and territorial inequalities.<sup>11</sup> A prime example is the EU initiative to foster green transitions and more inclusive development through Smart Specialisation Strategies (S3).<sup>12</sup> As such, most regions have developed regional strategic priorities as key areas of focus for their innovation or – in particular – Smart Specialisation Strategies. These priorities are determined based on the region's strengths, weaknesses, opportunities, and challenges, and are aimed at promoting economic growth, competitiveness, economic resilience, and increasingly also digital and green transition.

Yet, what is often missing in these strategies, is a direct link to the *local* level where regional strategic priorities need to be implemented. While much has been written about the important role of intermediaries, in particular industry and innovation clusters, to facilitate the implementation of regional strategic priorities 'on the ground',<sup>13</sup> proof of a clear impact of S3 at the local level is mostly missing.<sup>14</sup> Introducing regional priorities into the decision-making process for the revitalisation of disused industrial sites at local level can contribute to dealing with this shortcoming. It provides regional authorities with an additional lever for their mission-oriented policy making. In most cases, local municipalities can act as their natural partners on the ground. Whether an industrial site is owned by the municipality or a private party, local policy makers and municipalities play an essential role in its development. Municipalities can become the key drivers in the revitalisation process with the relevant commitment to push things forward. In addition, they provide the necessary soft and hard infrastructure and can create a political and legal framework, which facilitates the implementation of

8 Marta Chmielewska et al. (2016) distinguish between five different transformation models: 1) a revival of industrial function making use of modernised existing buildings, 2) a revival of industrial function and restoring of existing buildings accompanied by an introduction of new functions and buildings, 3) using the existing buildings and infrastructure to establish an industrial heritage site, 4) adapting the area and post-industrial buildings to a new functions, 5) demolishing the post-industrial buildings.

9 See, for example, Corrado V. (2020). The refurbishment of abandoned industrial areas with adaptive re-use strategies: analysis of decision making models and design criteria. *Journal of Urban Environment*, 01:01, 15–28.

10 Notice that 'alignment' is a broad and not always very well specified notion. The requirement we suggest could be derived from a relatively weak notion of alignment (e.g. the local business interests and the regional priorities share a common broad orientation (such as sustainability or innovation). Or alignment implies more specific and strong coherence between both levels, which can give rise to a range of spill-overs and positive externalities (e.g. the relationships are established at the level of specific groups of industries). Our approach emphasises this stronger notion of alignment.

11 Isaksen, A. et al. (2022). Regional innovation systems in an era of grand societal challenges: reorientation versus transformation. *European Planning Studies*, 30:11, 2125–2138.

12 McCann, P. and Soete, L. (2020). Place-based innovation for sustainability, Publications Office of the European Union, Luxembourg.

13 Keller, M. et al. (2019). Implementing S3 with Clusters: An Innovation Model for Transformative Activities. In: *fteval Journal for Research and Technology Policy Evaluation*, Issue 47.

14 Foray, D. et al. (2020). Smart specialization strategies—insights gained from a unique European policy experiment on innovation and industrial policy design. In: *Review of Evolutionary Political Economy* volume 2, pages 83–103.

mission-oriented regional policies through industrial plant revitalisation. For example, this can be useful in the context of the circular economy, when a municipality enacts local legislation that promotes 'Reduce, Reuse, Recycle'. At the same time, introducing regional priorities into local decision-making processes has the potential of widening the options for plant revitalisation for the local stakeholders in various ways, e.g. by providing a network of partners, creating demand for products, or by making financial resources supporting the investment in the site available.

Linking regional and local interests, however, requires a clear understanding and analysis of the regional as well as the local asset base, the most relevant stakeholders and the underlying economic, social and environmental challenges that provide opportunities for green regional industrial restructuring.<sup>15</sup>

## 2.2 Reconciling business interests and green growth opportunities

Despite the pressing challenge of climate change, we often observe how local businesses underestimate the growth opportunities in green technologies. Many businessmen and businesswomen still consider the 'green growth' concept an oxymoron, arguing that protecting nature and economic growth contradict each other. We would argue against this by highlighting several opportunities inherent in 'green' and sustainable growth and hence the potential in the revitalisation of industrial sites. The approach addresses one of the grand societal challenges, namely climate change as well as other environmental challenges. 'Green growth', as adopted by the EU, facilitates, for example, the EU's goal to cut net greenhouse gas emissions by 2050. This inherits a number of business opportunities:

First, green solutions hold a great market potential: 'Green growth' entails a large and increasing demand for green goods, services and solutions, whether new or already established. The greening of the economy, of the society and life, is a global megatrend, providing a vast market potential. Secondly, new 'green' solutions can generate sustainable business models. They are unlikely to become obsolete in the near-term future, given the global and long-lasting challenges. For example, the EU's clear direction of becoming climate-neutral by 2050 implies new market opportunities to emerge for at least a quarter century. Indeed, even if decarbonisation will be successfully implemented by 2050, the demand for the services and solutions developed

will continue beyond 2050. Thirdly, plans for sustainable and green industrial site revitalisation can draw on large (financial) support schemes. For example, to facilitate the greening of the economy, the European Commission adopted a new EU Industrial Strategy,<sup>16</sup> which aims to develop markets for climate neutral and circular products and to encourage the digital transition in the EU. At the same time, the European Commission has made available a number of funding mechanisms under the EU Green Deal strategy to facilitate the goals of the EU Green Deal, totalling more than €1 trillion.<sup>17</sup> Finally, we see an increasing trend among investors and lenders to incorporate environmental, social and governance (ESG) ratings into their investment assessments.<sup>18</sup>

When discussing plans for industrial site revitalisation, it is thus important to rebut the misconception of an oxymoron and help reconcile business interests and green growth opportunities. More precisely, the inclusion of green aspects in the transformational goals for disused industrial sites can ultimately lead to a successful and sustainable revitalisation of the site while new green technologies help to reduce the regional environmental footprint and enable sustainable growth.

## 2.3 Considering the specific assets, capabilities and challenges

Any innovation policy, particularly if based on a Smart Specialisation approach, needs to be place-based and *specific*, i.e. specifically suited for the regional economy and the regional innovation system. On the other hand innovation policies must differ from region to region. The same is true for sustainable industrial site revitalisation: Any approach which does not take the specific local and regional context conditions into account is likely to fail. It will ultimately compete with neighbouring industrial or innovation activities which can do without the challenges related to plant revitalisation. In order to be successful, the revitalisation process must draw on existing assets, make well use of all available specific economic and innovation capabilities, build on existing structures, use network and agglomeration opportunities on the site and in the region, and finally, explicitly tackle local and regional challenges. This process must build on an extensive quantitative and qualitative regional analysis to identify existing assets and capacities, put them in perspective with sustainable transformation opportunities and identify a set of appropriate activities (e.g. new business models, technologies, RDI stakeholders, services, training and education, etc.).

15 Trippel, M. et al. (2020). Unravelling green regional industrial path development: Regional preconditions, asset modification and agency. *Geoforum* 111, 189–197.

16 See <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0102&qid=1612808800281>

17 See [https://ec.europa.eu/commission/presscorner/detail/en/qanda\\_20\\_24](https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_24)

18 Green investments are at the core of many lenders' activities. This includes, for instance, alignments with the United Nations Principles for Responsible Banking and the United Nations Net-Zero Banking Alliance, which aims to harmonise credit and investment portfolios with reaching net zero emissions by 2050 or earlier.



#### 2.4 Funding Synergies and Barriers to Innovation

Last but not least, we often observe that a lack of public or private funding opportunities can constitute a significant impediment to sustainable plant development. In many cases, local communities are waiting for a new cash-inducing investor to redevelop a disused industrial site. Particularly in lagging regions, where local communities and municipalities have little bargaining power, site owners are too often ready to accept any investment into their brownfield. Sustainable plant revitalisation thus requires the identification of additional funding sources or the detection of synergies with other existing or potential sources. Many regions and municipalities, however, have insufficient capacities to navigate through the intricate funding landscape. It is thus an imperative to screen the relevant programmes potentially providing financial contributions for research and innovation on the EU, the national or the regional level (such as ERDF, ESF+, JTF, EMFF, EAFRD and InvestEU) as well as private funds or financial instruments. Moreover, it is important to understand the roles and priorities of significant bodies, such as the European Investment Bank (EIB) and national public development banks within the Green Deal framework.<sup>19</sup> These banks due to the EU Green Deal have to prioritise environmental and social dimensions in their financing decisions.

As the identification of matching funding sources very much depends on the ownership structure of the industrial site, it is equally important to clarify the role of the municipalities in the project. For example, disused industrial sites, which are in entirely public ownership, might be eligible for funding from the EU Just Transition Fund (JTF). In other cases, sustainable plant revitalisation affects both commercial and public interests, for example, if a technology hub, operated by a private owner, is complemented by a social housing component. Here, a public-private partnership (PPP) can be a solution to ensure joint action despite differing interests.

In addition, lagging regions are often confronted with insufficient institutional capacity, fragile industrial links or a low-skilled workforce when it comes to job profiles related to future technologies, innovative and green growth. As a consequence, these regions may be unable to attract either sufficient investment or talent to encourage innovation, even more so commercial research structures and firms that could contribute to industrial modernisation. By pinpointing the most pressing barriers to innovation (particularly in the thematic field in which a revitalisation of the industrial site seems promising) and by identifying schemes that can help overcome these specific barriers, the revitalisation of the industrial site will go hand in hand with strengthening the regional innovation system, both even reinforcing each other.

In the following, we will discuss our novel approach by introducing findings from a recent Horizon Europe project. This project takes into consideration the four above-highlighted aspects and aims at identifying sustainable and innovative transformational goals for 21 disused industrial sites in the Danube Region by implementing a participatory stakeholder process of entrepreneurial discovery inherent in Smart Specialisation.

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<sup>19</sup> Such as SID – Slovenian Export and Development Bank, L-Bank (State Bank of Baden-Württemberg), Bayerische Landesbank (BayernLB).

## 3 RIS4Danu: Sustainable Smart Specialisation for Industrial Site Revitalisation

The Horizon Europe project '*Sustainable Smart Specialisation for the Re-opening of Industrial Sites in the Danube Region*' (RIS4Danu)<sup>20</sup> aims at facilitating the sustainable revitalisation of 21 disused industrial sites in 11 European regions along the Danube River.<sup>21</sup> The five project partners VDI/VDE Innovation + Technik, BAK S3A, University of Vienna, ecoplus and Anteja ECG developed a novel approach for plant revitalisation by aligning *local interests* with *regional priorities* for green and inclusive growth. Based on extensive quantitative and qualitative analyses of regional assets and capabilities, challenges, as well as funding synergies, the project applies a revised S3 'Entrepreneurial Discovery Process' (EDP) approach.<sup>22</sup> The corresponding EDP workshops for each of the 21 disused industrial sites brings together relevant local and regional quadruple helix stakeholders to facilitate the identification of transformational roadmaps specifically tailored to each of the 21 sites.<sup>23</sup>

In the following, we will discuss this novel approach and our corresponding workshop concept, which is based on the S3 methodology and EDP. We begin with a discussion of recent policy initiatives to add a sustainability component to the S3 methodology, followed by some conceptual ideas on how to apply S3 at the industrial site level and turn the discussed site into a regional 'anchor tenant'. We will conclude by discussing our RIS4Danu EDP workshop concept.

### 3.1 Sustainable Smart Specialisation at the Industrial Site Level

Smart Specialisation Strategies aim at transforming the economic structures of a region or any other geographical unit. In all cases of Smart Specialisation, the starting point is an existing structure with its available capacities and potentials, the transitional path is the definition of (a) transformational goal(s) and

the development of transformative activities, and the objective is structural change. This basic structure has been inherent to the concept since its first appearance in 2009, first in the academic literature<sup>24</sup> and soon afterwards in European policy practice<sup>25</sup> as a result of the reflections issued by the Knowledge for Growth Expert Group established by the European Commissioner for Science and Research, Janez Potocnik.

#### 3.1.1 From S3 to S4

The real-world experience with Smart Specialisation gathered over the past 10 years amounts to a large-scale policy experiment of invaluable interest for innovation economists, regional policymakers and practitioners. Practical implementation challenges have been discussed, conceptual issues debated, results evaluated and compared. Today, in the first phase of the EU's Multiannual Financial Framework 2021 – 2027, the concept appears strengthened from this constructive experience. In particular, Smart Specialisation is recognised as a cornerstone of the EU's mission-oriented approach to competitive sustainability and the European Green Deal.<sup>26</sup> In this regard, there is an imperative to deepen existing strategies by embracing sustainable and inclusive growth as specific transformational objectives. The European Commission's Joint Research Centre (JRC), for example, initiated various initiatives to enhance the sustainability dimension in Smart Specialisation strategies and move toward 'Sustainable Smart Specialisation Strategies (S4)'.<sup>27</sup>

#### 3.1.2 From regional to industrial site level

Still, Smart Specialisation is a concept for *regions*. Although regions are defined quite flexibly in this concept, from metropolitan areas or small administrative entities, the national level, up to macro-regions or even Europe with a continental dimension, the concept has not yet been applied to the level of individual industrial sites. From a conceptual point of view, however, ana-

<sup>20</sup> See <https://ris4danu.eu/>

<sup>21</sup> Tripl, M. et al. (2022). Outline of S4 Methodology. RIS4Danu Deliverable D3.1. [https://ris4danu.eu/wp-content/uploads/2022/10/D3.1\\_Outline-of-S4-Methodology\\_V1.0.pdf](https://ris4danu.eu/wp-content/uploads/2022/10/D3.1_Outline-of-S4-Methodology_V1.0.pdf)

<sup>22</sup> EDP is a key step in the standard S3 approach, which helps to encourage stakeholder participation and to resolve the challenge of distributed information: once priorities are established (the *Transformational Goals*), their operationalisation (what actions and policies are needed to achieve the priorities) requires a bottom up and decentralised process of entrepreneurial discovery. Stakeholders and the regional authorities engage in strategic interactions to i) identify specific gaps, problems and opportunities, and ii) the policy interventions in response. Ideally, each priority should trigger a specific EDP.

<sup>23</sup> Tripl, M. et al. (2022). Outline of S4 Methodology. RIS4Danu Deliverable D3.1. [https://ris4danu.eu/wp-content/uploads/2022/10/D3.1\\_Outline-of-S4-Methodology\\_V1.0.pdf](https://ris4danu.eu/wp-content/uploads/2022/10/D3.1_Outline-of-S4-Methodology_V1.0.pdf)

<sup>24</sup> Foray, D., David, P. A., Hall, B. (2009): Smart Specialisation – The Concept. Knowledge Economists Policy Brief n° 9.

<sup>25</sup> See, for example, Foray, D. et al. (2012): Guide to Research and Innovation Strategies for Smart Specialisation (RIS 3). Regional Policy, EC.

<sup>26</sup> See inter alia JRC Seville, From S3 to S4: Towards Sustainable Smart Specialisation Strategies: <https://ec.europa.eu/newsroom/jrcseville/items/670313>; McCann, P. and Soete, L. (2020). Place-based innovation for sustainability. Luxembourg; Foray, D. (2018): Smart specialization strategies as a case of mission-oriented policy—a case study on the emergence of new policy practices. *Industrial and Corporate Change*, Vol. 27, No. 5, 817–832.

<sup>27</sup> See, for example, Miedzinski M. et al. (2022): Enhancing the sustainability dimension in Smart Specialisation strategies: a framework for reflection. Step-by-step reflection framework and lessons from policy practice to align Smart Specialisation with Sustainable Development Goals. Luxembourg.

lytical processes, structures and success factors of this micro-level are very much comparable to those at the regional level. Taking this into account, revitalising old industrial sites by applying a sustainable and innovative approach adds new value to the site as much as it contributes to the regional economy. Or in other words, by linking S3 to the revitalisation of industrial sites and to the capacities and opportunities for transformation available in the surrounding regional ecosystem, the process is oriented towards achieving high impact. Last but not least, the principals of Smart Specialisation add almost naturally to the four above-highlighted aspects to be considered in site revitalisation.

### 3.1.3 From disused industrial sites to 'anchor tenants'

Based on the argument mentioned in the introduction that revitalised industrial sites could serve as regional 'innovation anchors', it is useful to recall a few features of the anchor tenant theory as applied to innovation systems. Agrawal and Cockburn<sup>28</sup> developed and tested the hypothesis that the presence of a large local, R&D intensive firm – an 'anchor tenant' – enhances the productivity of local innovation systems. The empirical analysis – involving data on indicators of university research and industrial R&D collected at the level of US metropolitan areas – indeed shows that the presence of an anchor tenant in a local area enhances the regional innovation system. There are several reasons for thinking that this may be so. First of all, anchor tenants may be directly involved in the commercialisation of university inventions through the deployment of several well-known mechanisms (undertaking collaborative research, carrying out co-supervision of graduate students, sponsoring labs, licensing the rights to university inventions, recruiting graduate students, hiring professors as consultants). Secondly, the anchor tenant may also indirectly stimulate innovative activity by enhancing not only the supply but also the demand sides of the market for technologies. Anchor tenants thicken factor markets such as labour, including both managerial and scientific. They also develop social networks with suppliers and partners on which smaller firms can draw. The anchor tenant's demands for local resources such as intellectual property legal counsel, technology-oriented marketing or human resources services also consolidate markets, which benefits smaller firms. Because of its large size, an anchor tenant can invest in the development of innovations with uncertain application that other firms may not be able to justify. Anchor tenants play, therefore, an important role by directly absorbing local university research or absorbing further developed industrial R&D output generated by smaller firms.

Last but not least, an anchor tenant could help target the regional innovation system, an issue right at the core of Smart Specialisation. All of the mechanisms of anchor tenants discussed

above like deepening of (labour) markets, attracting specialised suppliers, or absorbing local university research are particularly strong when specialised in a similar or related field. In this way, anchor tenants can contribute to achieving the density in innovation activities which in turn are one of the critical success factors for Smart Specialisation. Clearly large spill-overs can arise from anchor tenants' activities and will have positive effects on innovation and productivity at regional system level. However, the critical condition to realise such potential is obvious, too: It is about the coherence between the areas of activities of the anchor tenant and the regional specialisations. In other words, a *clear condition* for a revitalised industrial site to play a role as anchor tenant is about the extent to which the industrial site's strategy aligns with the regional Smart Specialisation Strategy. In case of poor connections between the industrial site's new activities and the regional S3, all potential spill-overs mentioned above will logically not eventuate.

### 3.2 The RIS4Danu EDP Workshop Concept

The RIS4Danu Horizon Europe project is a prototype for adapting the S3 methodology to the industrial site level. In view of the crucial importance of transformative activities and the relevant granularity level for structural change, it has put the role of the Entrepreneurial Discovery Process (EDP) at the core of its activities. By integrating the above-highlighted four aspects for sustainable industrial plant revitalisation into a structured, stakeholder-driven process based on the principals of *Sustainable Smart Specialisation*, the project has established a novel approach for sustainable and inclusive regional economic development. In a nutshell, RIS4Danu connects the industrial site and the regional system by putting local and regional quadruple helix stakeholders in the lead of a structured discovery process. Based on extensive research and analysis (what we call the 'Base of Evidence'), regional and local assets, capacities, and challenges are put in perspective with sustainable transformation opportunities for each of the disused industrial sites. By doing so, stakeholders can formulate a vision for each site, the *transformational goal* (e.g. a new function or a new business model), and facilitate the discovery of new activities to achieve this transformation, the *transformative activities* building together a *transformational roadmap* (e.g. investments, RDI, services, training and education). The below figure highlights the main steps of the RIS4Danu EDP workshop concept:

28 See Agrawal, A. and Cockburn, I. (2002). University Research, Industrial R&D, and the Anchor Tenant Hypothesis. National Bureau of Economic Research.

The RIS4Danu Workshop Concept

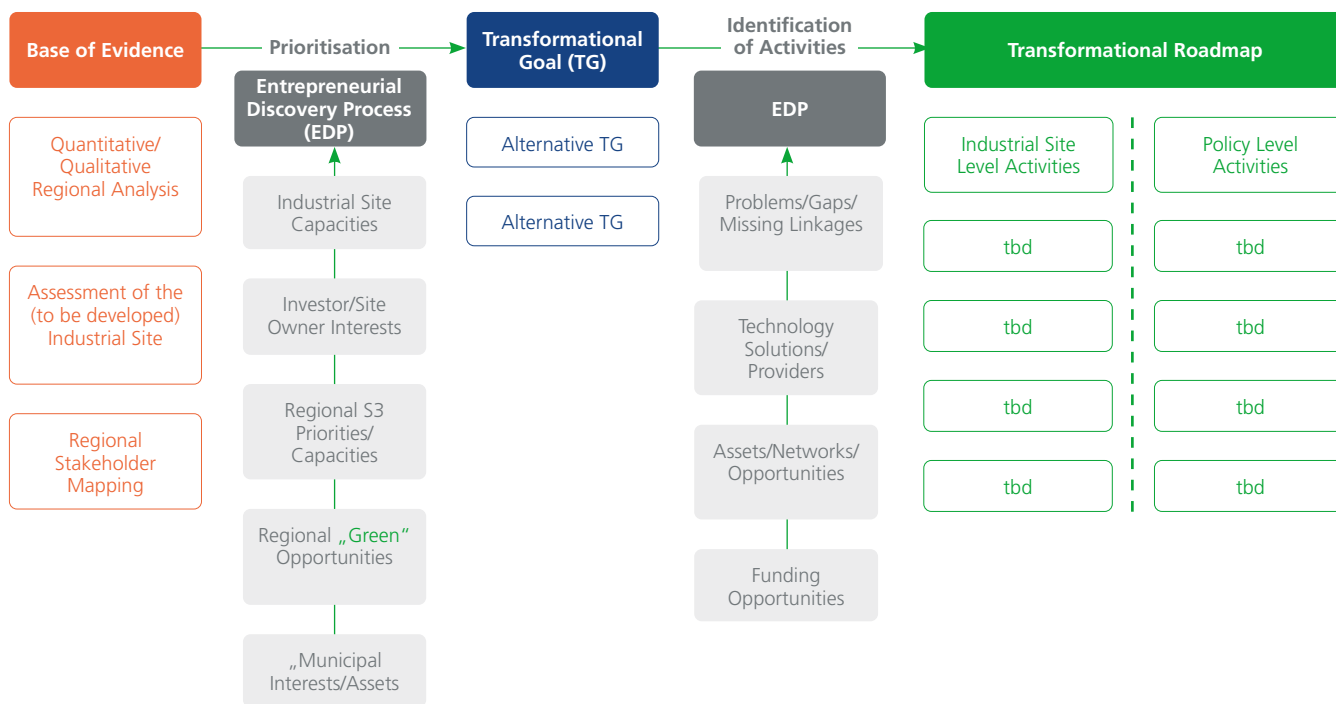


Figure 1: The RIS4Danu EDP Workshop Concept

3.2.1 Base of Evidence

The RIS4Danu methodology is based on an in-depth analyses of all participating regions. Quantitative and qualitative analyses at the regional level build the empirical evidence base for the subsequent workshops – in addition to a detailed assessment of all industrial sites. The analyses make use of and combine various data sources, such a Eurostat, OECD, World Bank or ESPON as well as country-specific sources to provide evidence on four fundamental building blocks:

1. Offering insights into the general regional economic fabric and innovation ecosystem and the regional development trajectories by providing information on the conditions in which the respective industrial sites are embedded (e. g. the development in key socio-economic indicators, recent innovation performance or key development fields identified in relevant documents).
2. Identifying key challenges, which the regions are facing, namely
  - challenges that are global in nature (e. g. climate change, environmental degradation or the fourth industrial revolution) as well as

- challenges that are specific to the region (e. g. due to their specific industry structure, policies or informal institutions).
3. Identifying regional asset bases and key regional strengths linked to the regional innovation systems. Accordingly, existing place-based structures (such as the industry mix, organisational support structures, policy and public administration traditions), institutional and cultural conditions, as well as non-regional structures and dynamics which might offer ‘entry points’ and a network platform for the project (e. g. the region’s embeddedness in national and global innovation and production networks or the proximity to innovation hubs).
  4. Revealing potential barriers to implementing transformative activities. In particular, qualitative interviews shall help identify regional obstacles, which might substantially impede and complicate the design and implementation of transformative activities.

This ‘Base of Evidence’ also includes a mapping of relevant local and regional stakeholders from the quadruple helix (public, pri-

vate, academia and civil society). These stakeholders can bring a multitude of perspectives into the process and help generate a rich bouquet of innovative ideas for plant revitalisation. Ideal candidates are, for example, intermediaries, such as managers of relevant regional industry clusters or tech transfer centres, researchers involved in (sustainable) *Horizon Europe* projects or similar activities, architects, entrepreneurs, investors, ‘anchor tenants’ in the regional innovation system, if existing, local industrial and commercial associations’ representatives, funding experts, engineers, representatives of local/regional training institutes, community representatives, etc. Obviously, the industrial site owner as well as relevant representatives from both the region and the municipality should be identified and invited to actively contribute to the EDP process. In general, an inclusive process guarantees a livelier and truly place-based entrepreneurial process for which it is imperative to involve all of the above-mentioned stakeholders.

### 3.2.2 Developing a vision and steps towards implementation: EDP Workshops

The revised EDP process, which is applied in the RIS4Danu project, involves three fundamental steps:<sup>29</sup> The first two steps are tasks of a one-day-EDP-workshop at the industrial sites in question:

- 1) *Identifying Strategic Priority Areas*; and
- 2) Translation of Priority Areas into *Transformational Roadmaps*. The results thereof are gathered and translated into *Strategic Business Development Plans* in the aftermath of the workshop (step 3). The below figure illustrates these three steps.

The identification of priority areas as Transformational Goals and the conversion of these priorities into concrete transformational roadmaps is a complex process. Which regional and local assets and capacities harbour promising opportunities? How to achieve

#### RIS4Danu Entrepreneurial Discovery Process (EDP)

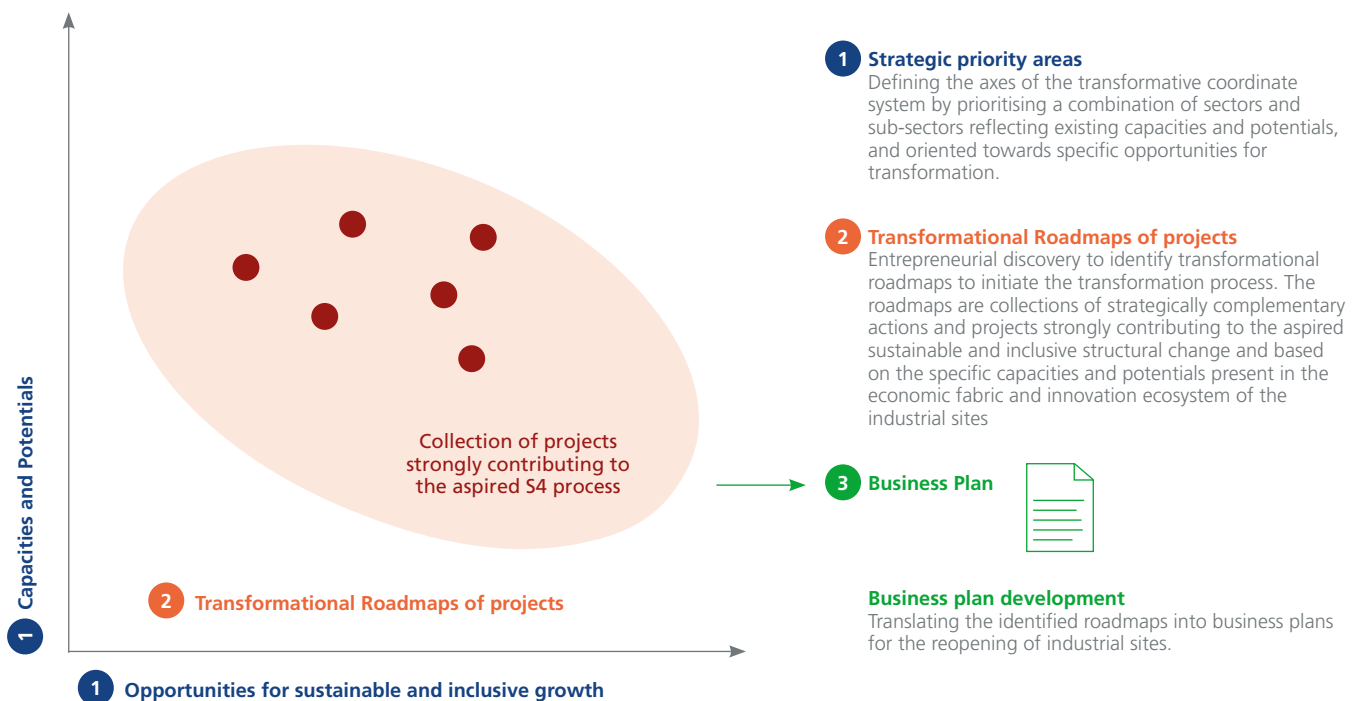


Figure 2: RIS4Danu Entrepreneurial Discovery Process (EDP) for the re-opening of Industrial Sites. Own illustration based on Foray, D., Eichler, M., Keller, M. (2020)

<sup>29</sup> We qualify the EDP as “revised” because in the classical S3 approach, the identification of priorities and the EDP are often two different steps and the prioritisation process is not always done through a decentralised and bottom up process. In the approach described here, the prioritisation phase is included in the EDP.

the aspired transformation? With which activities? Involving which multi-level actors? And how to fund this process? Finding answers to these questions is typically subject to an Entrepreneurial Discovery Process – the RIS4Danu project addresses the complexity inspired by the most recent relevant literature.<sup>30</sup>

For each industrial site, the project team organises an EDP workshop, ideally at or in close proximity to the site. It brings together relevant local and regional quadruple helix stakeholders. In a first part of the EDP workshop, participants are invited to consolidate the base of evidence and define relevant *priority areas* along the two axes ‘Opportunities for Sustainable and Inclusive Growth’ and ‘Capacities and Potentials’. In order to do so, they can apply analytical instruments of regional strategy development (e.g. SWOT analysis, cluster potential analysis, synergy diamonds, etc.). By weighing the opportunities provided by a priority area for sustainable and inclusive growth vis-à-vis capacities and assets available at the site and in the region, one or a few priority areas will be selected for further elaboration. They constitute the *transformational goal(s)* for the site.

In other words, in this step, workshop participants develop a green and sustainable vision for revitalising the industrial site. For example, priority areas have been defined as the ‘shift towards wood-based inputs for manufacturing industries’, the ‘development of a recycling hub for ceramics and complex materials’ or the ‘development of new materials for lightweight construction’.<sup>31</sup> All the examples clearly demonstrate the combination of a transformation (‘shift to wood based inputs’, ‘development (and usage) of new materials’, etc.) with its appliance in a certain sector, sub-sector or market (‘for manufacturing industries’, ‘for lightweight construction’, etc.).

The second workshop part is meant to specify the necessary measures to achieve the transformational goal. Workshop participants develop *transformative activities*, which together build a *transformational roadmap*, providing a development path of concrete actions needed to transform and revitalise the industrial site. The transformative activities can include of a variety of different types (e.g. R&D, infrastructure and refurbishing, training, regulatory environment, etc.). What is specific to the application for industrial sites in RIS4Danu is that the proposed activities can, and even must, take place at different operational levels. On the one hand, this concerns the site itself and measures related directly to it – like a modernisation of electricity infra-

structure or general refurbishment (‘Industrial Site Level’). These proposed activities are primarily addressed to the site owner or an investor. On the other hand, a different set of activities addresses the public sector, be it at local or the regional level – such as planning and building permits or new funding schemes (‘Policy Level’). It is crucial that all activities, regardless of the question of who is responsible for their implementation, are coordinated and reinforce each other.

#### Conceptual cornerstones in the RIS4Danu EDP Process

Transformational Goals outline possible visions for the disused site, relying on available assets, capabilities, and capacities, building on opportunities for a green and sustainable growth, and ensuring the alignment with the regional innovation strategy. In order to allow for the subsequent identification of impact-oriented activities for implementation, it is crucial for each identified priority area that it not only defines sectors, sub-sectors, markets or any combinations thereof, but must be associated with an explicit direction of change (transformation), which reflect opportunities for sustainable and inclusive green growth. As regional and industrial site-level capacities are usually limited, the strategic focus will in the end usually be on one transformational goal to facilitate targeted investments and the necessary density of activities.

Transformational roadmaps then are understood as collections of strategically complementary *activities* oriented towards the aspired sustainable and inclusive structural change (transformation) and based on the specific capacities and potentials present in the economic fabric and innovation ecosystems of both, the region and the location of the industrial sites. These Transformative Activities should not only address R&D aspects, but also the need for new skills and qualifications, building renovation, specific public goods (e.g. social housing), or adoption of certain key production technologies. They should be tailored to

- the specific needs at the industrial site level, such as transport, energy or digital infrastructure needs, building permits or the identification of anchor investors or tenants for laboratory equipment; and
- regulatory and policy requirements, such as public-private partnership arrangements or co-funding schemes.

<sup>30</sup> See, for example, Bersier, J. and Keller, M. (2019). Smart Specialisation Strategies with Smart Clusters - A New Approach to Generating Transformative Activities. Interreg Alpine Space. Foray, D., Eichler, M., Keller, M. (2020): Smart specialisation strategies—insights gained from a unique European policy experiment on innovation and industrial policy design. Review of Evolutionary Political Economy. Springer or Sedlmayr, B. et al. (2019). Understanding Regional Transformation Processes – New Instruments for Regional Strategy Development. Working Paper of the Institute for Innovation and Technology, Nr. 43.

<sup>31</sup> A comprehensive overview of results from 21 RIS4Danu EDP workshops in 11 regions in nine countries can be found here: <https://ris4danu.eu/wp-content/uploads/2024/02/Overview-of-RIS4Danu-Workshop-Results.pdf>

### 3.2.3 Turning a Vision into a Plan

The last step of the RIS4Danu EDP process is operationalised by translating all gathered information into individual Strategic Business Development Plans, that is, key strategy documents for a successful and sustainable re-opening of the relevant industrial sites. These 20 pages documents include several sub-chapters, ranging from location-specific details on space and regulatory obstacles to market research and financial planning.

One task in this last step of the RIS4Danu EDP concept for the revitalisation of industrial sites is to complement the transformational roadmap with the identification of tailor-made funding synergies and policy recommendations for the development of the industrial sites. Here, the ambition lies in creating a blueprint that integrates the complexities of funding mechanisms with policy nuances, fostering a sustainable business model with profound environmental, economic, and societal impact. Recommendations are derived from

- findings in the regional analysis,
- learnings from the two EDP workshops, and
- surveys among workshop participants conducted in the aftermath of the workshops.

Recommendations also take into consideration the latest developments in green investments and new funding schemes.

### 3.3 EDP and its public dimension

At this point, we would like to highlight one important aspect in our revised S3/EDP design: In general, in the S3 theory, the EDP is a coordination process to overcome information gaps and to solve collective action problems involving numerous stakeholders. The problem is that useful information about obstacles, gaps and opportunities is dispersed and distributed among many stakeholders. These are private information and local knowledge. Complex and demanding strategies like Smart Specialisation can only be successful if EDP participants are willing to share them in order to generate collective actions and policy responses. For an illustrative example, imagine a firm's CEO willing to share within an EDP setting the information that a skills gap exists in a particular field and qualification. If this usually privately kept information is confirmed with similar information, then a policy response will emerge such as the support of a new engineering programme in the local university. Through the achievement of this process of information sharing conducting to collective actions, the EDP has a high social value. Therefore, EDP has a strong public dimension: The goal of the EDP is to generate information

and insights about problems, needs and opportunities, which are relevant for the whole region or at least a whole industry. While for regional innovation strategies a common public interest is inherently apparent, this is less obvious when developing a vision for a privately owned industrial site.<sup>32</sup>

In the spirit of EDP, the outcome of the process should not be a list of 'privately-owned' projects. Rather, the results of the EDP process involve, firstly, collective projects or collective goods (such as infrastructure, platforms, training programmes), and secondly, policy proposals, which can then facilitate the firms' private projects (for example, participants may propose implementing a funding call for R&D projects).

The public dimension of EDP is fundamental to avoid policy capture and to generate projects and ideas, which are not only of interest to the industrial site owner but of wide relevance for the regional industry or sector, which is involved in the priority area and the transformational roadmap. The nature of EDP – public, private, mixed – when being organised within the RIS4Danu project to help a private owner to define a strategy for his/her disused industrial site thus needs to be addressed. The inclusive and interactive organisation of the workshop with open and transparent discussions involving participants from the quadruple helix is one step to tackle this challenge. In addition, the alignment of the transformational goal with local needs and regional strategy inherent in the concept helps to counter-weight probably existing private benefits. Moreover, the involvement of local municipalities and regional authorities is critical to manage possible tensions between the private interests of the industrial site owner and the public nature of the EDP.

<sup>32</sup> Note that in this consideration a publicly owned site, e.g. by a municipality, would still be considered "private" as only the public owner profits directly from reusing the site. Therefore, developing a vision for publicly owned industrial sites with EDP might disguise the problem but not solve it.

## 4 Conclusion

Industrial plant closure poses significant challenges to affected stakeholders as well as to the hosting regions and municipalities. While in booming regions disused industrial sites are quickly put to reuse by market forces, it is much more challenging in lagging regions to bring such brownfields back into a productive use. Nevertheless, any brownfield could build a potential asset for the local and regional economy if an innovative and inclusive policy approach is applied, which takes advantage of existing opportunities. Recognising the specific, place-based challenges in many regions as well as the potentials of (recently) closed industrial sites, the European Commission (EC) has revised its cohesion and innovation policies in the past years. This shift did put in place a variety of new initiatives for place-based policy interventions, specifically addressing local and regional needs, focusing on specific opportunities, and ultimately harnessing untapped potential. One such policy is piloting the revitalisation of industrial sites with the 2022 – 2024 Horizon Europe project 'Sustainable Smart Specialisation for the Re-Opening of Industrial Sites in the Danube Region' (RIS4Danu). The project aims at facilitating a sustainable, in terms of innovative, green and inclusive revitalisation of 21 disused industrial sites in 11 European regions along the Danube River.

To achieve this goal, a novel approach was needed, requiring a different way of thinking about industrial plant revitalisation. The methodology of the innovation policy tool of Smart Specialisation Strategy (S3) provided the perfect starting point for such a novel approach, with an inclusive and interactive Entrepreneurial Discovery Process (EDP) at its core. Starting from this baseline, the novel approach had to take four critical aspects into account to successfully transfer the S3 concept from a regional to the industrial site level:

- 1) A marriage of *local* business interests or local community needs, which are commonly in the focus when reusing industrial sites, with *regional* strategic priorities for innovation and competitiveness. This step enables synergies, facilitates a mission-oriented focus in the implementation of regional Smart Specialisation Strategies with local partners, and provides local partners with additional resources and networks to draw on. Linking regional and local interests requires a clear understanding and analysis of the regional as well as the local asset base, and can only be successful if the most relevant stakeholders from both levels are actively involved in the process.
- 2) The existing opportunities for green and inclusive growth must be reconciled with the local (business) interests. Too often, the significant market potential for green growth is

not recognised. Given the long-term need for green solutions, the green growth concept enables sustainable business models whose implementation can draw on a significant financial support and funding infrastructure.

- 3) As it is common practice in S3 strategy building, existing assets and capacities must be considered as valuable and critical inputs for industrial site revitalisation.
- 4) Public and/or private funding synergies must be identified and barriers to innovation must be addressed.

Based on these foundations, the Horizon Europe project RIS4Danu has developed a prototype concept for the revitalisation of industrial sites through innovative, inclusive and green business development plans. The concept was successfully applied and tested at 21 disused industrial sites in 11 regions along the Danube River. It is based on quantitative and qualitative analyses of the general regional economic fabric and innovation system, the local conditions as well as assets, opportunities and challenges. Furthermore, results are translated into Strategic Business Development Plans for each site, including a blueprint that integrates the complexities of funding mechanisms and accompanying policy recommendations. At the heart of our novel approach is an inclusive and interactive Entrepreneurial Discovery Workshop with local and regional stakeholders from all sectors of the quadruple helix. A structured workshop process empowered the various participants to identify possible priority areas for each site, select one of them as *Transformational Goal* towards green and innovative reusing of the site, and identify *Transformative Activities* to be implemented as a *Roadmap*.

The concept was successfully implemented and proved valuable for 21 disused industrial sites in 11 regions from different countries. Over time, however, we realised some potential for improvement for potential future revitalisation activities. In particular, we would like to highlight three possible adjustments to the concept, which might even further increase the impact of such activities on local and regional development:

1. *Local Capacity Building*: The S3 methodology proved very useful for a green and innovation driven revitalisation of disused industrial sites. Nevertheless, as the concept is complex, a sufficient understanding increases the potential output from EDP. Adding a capacity building element at the local level with key stakeholders could improve the EDP workshop results even further.
2. *Workshop Participants*: We realised that the identification of transformational goals requires a different set of competences and expertise than the subsequent definition



of matching transformative activities. Overall results might be improved by splitting these two tasks into two separate workshops, using the time between them for further specific research and inviting matching experts in the chosen priority area to a second workshop, in addition to (at least a core group of) participants from the first workshop.

- 3. Continuity and Ownership:* Per definition, EDP is a process, and it should be a continuous process. While at least one workshop or a series of initial workshops is needed, the concept should include a routine to make sure that EDP is not a one-off exercise but is used to continuously accompany and monitor the implementation of each Strategic Business Development Plan. Ideally, this activity is organised (or 'owned') by cross-sectoral 'task forces', which bring together representatives from relevant departments of municipal administration and private investors.

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