Smart specialisation: reappraising the local dimension

Edited by Nicola Bellini, Marino Cavallo, Giulia Lazzeri

FrancoAngeli

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This volume represents a tool for knowledge, training and dissemination of the topic of Smart Specialisation in the European local economies. The research group that carried out the analysis and coordinated the various phases of the research activities included: Nicola Bellini, Alessandra Borghini and Giulia Lazzeri from the Institute of Management of the Scuola Superiore Sant'Anna; Marino Cavallo and Valeria Stacchini from the Metropolitan City of Bologna. A special thanks goes to the RELOS3 partners and to all the involved public and private stakeholder for their collaboration in developing the project.

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Acknowledgments

This volume was developed in the frame of the research activities coordinated by the Institute of Management (IDM) of the Scuola Superiore Sant'Anna and the Metropolitan City of Bologna (CimetBO) as part of the INTERREG Europe project 'RELOS3 – From Regional to Local: Successful deployment of the Smart Specialisation Strategies'.

INTERREG Europe is a European programme aimed at promoting the development and delivery of better public policies, based on the sharing of ideas and experiences among regional and local authorities across Europe, thereby improving strategies for their citizens and communities.

In this framework, RELOS3 is a 5-years interregional cooperation project launched in January 2017, addressing the topic of Research and Innovation, and more precisely the new European approach to regional innovation strategies: Smart Specialisation. RELOS3 is a valuable example of transnational collaboration capitalising on interregional knowledge exchanges and learning among sub-regional and municipal authorities from 6 European countries:

- Sabadell Development Agency (Lead Partner) Spain
- Metropolitan City of Bologna (local authority), Italy
- Tartu Municipality (local authority), Estonia
- Wielkopolska Region (regional authority), Poland
- Emmen municipality (local authority), Netherlands
- Malta Enterprise Corporation (State agency), Malta

As part of RELOS3, the IDM was in charge of supporting CimetBO in coordinating and developing some core research outputs during Phase 1 of the project (January 2017-December 2019), and namely: Baseline Study, Good Practice analysis and cataloguing, Evaluation Survey and Final Study.

The IDM research was carried out though a qualitative approach mixing different tools e.g. desk research, case studies analysis for benchmarking and policy learning, on-line surveys, interviews and capacity building activities for policy owners, policy makers and relevant local stakeholders.

The research team included: Nicola Bellini, Alessandra Borghini and Giulia Lazzeri from the Institute of Management of the Scuola Superiore Sant'Anna; Marino Cavallo and Valeria Stacchini from the Metropolitan City of Bologna.

Our special thanks go to the project's partners and to all the participants of the transnational meetings (thematic events and long term visits), that discussed various versions of our work and provided invaluable insights to improve it.

RELOS3: the lessons from the past, the challenges ahead

Nicola Bellini, Marino Cavallo

This volume summarizes the main evidence collected through the RELOS3 research activities and re-assesses the arguments that support the claim for a greater role of sub-regional governments in the Smart Specialisation Strategy (S3) development process.

The overall goal of the RELOS3 project was to stimulate a successful deployment of national/regional S3 at the local (i.e. sub-regional) level, enhancing awareness about the opportunities related to the deployment of S3 through the inclusion of local innovation actors (public and private) and offering ideas, suggestions and working directions for the development of innovative projects at the territorial level in the partner's regions.

Specifically, the RELOS3 transnational exchanges focused on four thematic issues:

- the role of the local (sub-regional) level in the S3 implementation process;
- the sustainability of Quadruple Helix Collaboration (Industry, R+D and Academy, public administration and citizens) beyond S3 strategy;
- the participation of private sector in territorial innovation operations to pave the way of S3 deployment; and
- the challenge of removing 'policy silos' between R&D policies and public led innovation and the promotion of cooperation among EU regions with similar or complementary S3.

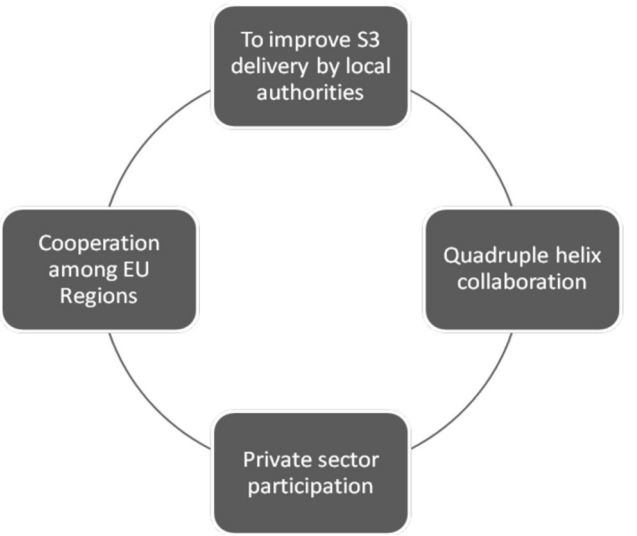

Figure 1 - RELOS3 key thematic areas

So far, there is a systematic absence of references to sub-regional governments in the literature on S3. Although many regions are designing their own policies, decentralization in this specific sphere has often stopped at the regional level. Local governments (including provincial or municipal governments) have in some cases been included as one more stakeholder in local partnerships; still, there is no clear role defined for them or systematic academic reflections on the role of different government levels in this type of process. Some authors recognize interdependencies between different levels of government and consequently propose multilevel governance to enhance their coordination. But there is little literature on how this coordination should be constructed (Estensoro and Larrea, 2016).

The local dimension of S3 was not the object of clear and compulsory indications from the European Commission and the local role has been significantly absent from many strategies, with the only exception of the urban emphasis with regard to the Digital Agenda. In this case, the contents (and rhetoric) of smart cities programs have often influenced the inclusion of the city

dimension. A 2014 study prepared for the European Parliament's Committee on Regional Development (EP 2014) already questioned the role of cities in the 2014-2020 programming phase and stressed the fact that the European Commission's intention to enhance that role had "not been fulfilled at Member State level. (...) All in all, the urban character has not been properly acknowledged in Cohesion policy, which is still very much oriented along sectoral thematic priorities at national level. (...) The role of cities in the 2014-2020 Cohesion policy period seems to be similar in scale to that of the previous 2007-2013 programming period".

In fact, on the one hand, the reference to S3 and to business-led models of economic development provided (at least potentially) were "a driver to re-invigorate the urban agenda" (Rivas, 2018). On the other hand, a less obvious, but equally important connection exists also between smart villages and regional and rural development, lending itself to careful consideration and original implementation within S3. This has been visible especially in remote and scarcely populated areas where "local smart specialisation strategies" (a mirror concept of the regional S3) emerged as a necessary complement to regional strategies to suit the need of smaller communities like in the Scotland and the Nordic Arctic areas (www.reginaproject.eu).

Otherwise, the meso-levels of government, i.e. Regions, have had an overwhelming weight in defining and implementing S3 (with the exception of "small" Member States, where national authorities have played that role). In some countries, one may even suggest that S3 proved to be instrumental to re-legitimize the weakened role of meso-governments on the crucial issue for economic development and resilience.

And yet, the challenge of giving "capillarity" (Estensoro and Larrea, 2012) to regional innovation policy remains. By capillarity we mean, on one hand, the capacity of regional top-down strategies to target and be fine-tuned with specific situations (local clusters, individual firms) and, on the other, to develop bottom-up, locally-designed programs. With reference to cities, the 2014 study of the EP's Committee on Regional Development (EP, 2014) already included a set of significant recommendations, in fact

looking at possible applications in the 2021-2027 programming period. As the study suggested, "in general terms, there are two ways to involve cities and urban areas. The first is to consult them during the development of EU regulations or during the monitoring and evaluation process; and the second is to involve them at project level". Concerning the EU, the study emphasized the need to guarantee a higher political profile to the urban agenda, while reducing the risk of over-generalisations by means of more refined typologies of cities and urban areas, reflecting the variety of situations existing within the Union. Furthermore "the definition of integrated urban development could be better mainstreamed by developing adequate urban concepts", including cross-sectoral solutions, urban networking, more flexibility in territorial actions and greater coordination of actors. Opportunities of coordination across administrative borders and sectors appear to be more important at the national level, considering that "the character of the involvement of cities in the 2014-2020 programming period shows a picture of the general lack of acknowledgement of urban agendas on national term"'. Recommendations included greater flexibility on agglomeration policies and urban policy representation in European urban policy development. Similar needs of positioning urban agendas on project and programme levels (and of understanding differentiation between urban and rural areas) were identified at the regional level.

S3 require the presence of both professionally qualified and politically legitimized actors. Political leadership is arguably one of the most important factors influencing S3 effectiveness. Building consensus around a policy option is key to support its effective deployment, and the political level is expected to play a catalytic role, to break policy silos and better synchronise its multiple roles as producer, regulator, and procurer. If on one side this represents the S3 biggest strength, on the other the obstacles and disincentives to act in such a way are many and diverse, leading to the risk of ineffective actions, undefined prioritization, lock-in and short-termism.

A good government for S3 should be experimentalist, embedded and characterised by a dynamic and long-term vision.

Local governments may easily show greater embeddedness, but their ability to perform complex policies in the field of innovation and to be informed visionaries cannot be taken for granted. Also the limited role played in the S3 process so far had as a consequence a limited awareness of the potential impact of this approach at local level (Rivas, 2018). Furthermore, seen from Brussels, but also from many capital cities, a greater role of sub-regional governments may suggest the risk of more fragmentation, escaping control and coordination and potentially unsustainable.

Present trends are not necessarily favourable. At the EU level, the on-going S3 implementation is often affected by the emergence of a desire for normalization once the ex-ante conditionality was fulfilled, so that after the efforts of the S3 writing, a less challenging form of 'business as usual' was restored, weakening the expected innovativeness of the new generation of R&I interventions. The selection of S3 priorities has often been based on centralized efforts to assess the strengths and weaknesses of the regional economic structures through quantitative and qualitative techniques and studies conducted in-house by the regional or national administrations or by external consultancy firms, although this is not a guarantee of the capacity to really reach the relevant local innovation partners with their different needs and expectations: "Making processes simpler for the regional government might hinder potential discoveries" (Estensoro and Larrea, 2016).

On the contrary, the sub-regional dimension lends itself more naturally to place-based, decentralized policy experiments, especially those that are characterized by a more consistent involvement of business and civil society in the Quadruple Helix perspective, linking smart specialisation and social innovation (Garcia-Brustenga and Lazzeri, 2018; Rissola *et al.*, 2017; Spiesberger *et al.*, 2018; Pasi and Misuraca, 2018).

To sum up, the future role of local (sub-regional) governments may ultimately depend on the combination of a sincere emphasis on the innovative characters of the S3 concept, of an original contribution to renew the methodologies of policy

design and implementation and of the sincere effort to improve quality and professionalism of those governments in dealing with innovation policy.

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This volume is articulated as follows.

Chapter 1 introduces the S3 agenda by discussing its economic and political origins and the main practical innovations when moving from the smart specialisation discourse to its implementation. The centrality of the EDP and the principle of inclusiveness are underlined, focusing on the role to be played by regional institutions i.e. the public sector and the other involved actors of the innovation ecosystem, for its successful deployment.

Chapter 2 questions opportunities and limits of the role of sub-regional local levels in the S3 design and implementation process across the EU trough contributions of experts (practitioners and researchers) working on the S3 approach.

Chapter 3 presents the main results of the field work conducted as part of the RELOS3 project research activities. The chapter provides a data base of 39 European Good Practices selected through a case study methodology, and conceived as a tool for benchmarking and knowledge sharing for S3 practitioners and policy makers.

1. The analysis

Nicola Bellini, Giulia Lazzeri

1.1. Intellectual and historical roots of the Smart Specialisation approach

Smart Specialisation Strategies have been a key element of EU Cohesion Policy since the 2014-2020 Programming Phase, both because of the novelty of their approach and because of being the object of an ex-ante conditionality. According to the most authoritative definition,

> National/Regional Research and Innovation Strategies for Smart Specialisation are integrated, place-based economic transformation agendas that:
>
> - Focus on a limited number of key national/regional priorities, challenges and needs;
> - Build on each territory strengths, competitive advantages and potential for excellence;
> - Support technological as well as practice-based innovation and aim to stimulate private sector investment;
> - Get stakeholders fully involved and encourage innovation and experimentation;
> - Are evidence-based and include sound monitoring and evaluation systems. (Foray *et al.*, 2012, p. 8)

The reformed 2014-2020 Cohesion Policy is characterized by a significant effort towards thematic concentration and, within

this perspective, by a shift of resources towards the innovation goal (the "thematic objective" 1). This choice has been especially strengthened by the adoption of the S3 requirement as ex-ante conditionality. In other words, the adoption of a "Research and Innovation Strategy for Smart Specialisation", drafted and approved according to the standards proposed by the EU, became a necessary step in order to activate Structural Funds (Regulation EU No 1303/2013).

A list of S3 key characters has been prescribed to get the strategy approved. The main ones are:

- An economic transformation agenda supporting structural evolutions;
- A place-based strategy: realistic and balanced policy mix and road map;
- A dynamic and evolutionary process based not on an ex ante identification of given specialisations, but on an interactive dialogue with stakeholders, i.e. an Entrepreneurial Discovery Process (EDP);
- An open and user-centred innovation policy, giving voice to innovation users;
- A more direct involvement of users in various stages of the innovation process;
- An inclusive strategy-making, possibly widening the range of stakeholders to include new actors that are usually not involved in the traditional consultation routines (according to the "quadruple helix" and the social innovation models);
- An outward-looking approach, inviting regions to connect with specialisations of other regions;
- Explicit synergies with EU and national policies.

The S3 approach has challenged the established policy know-how in many respects.

First of all, they were intended to counter the trend towards converging, "photocopied" strategies and, instead, to develop original paths of innovative development, through distinctive pilot initiatives and "smart" experimentations. This was supposed to

be possible also thanks to a wider concept of innovation, not just based on the linkage to R&D assets, but looking at original kinds of "co-invention of applications" (Foray *et al.*, 2009). Overall, this has meant to give up a linear approach to innovation policy, based on strengthening public and private R&D infrastructure, and to look for a more complex combination of actual/potential strengths (knowledge assets) and/or competitive realignment of "traditional" industries (thanks to Key Enabling Technologies – KET[1]) and/or local challenges (meaning that even problems had to be explored as potentially leading to innovative solutions).

Furthermore, the EU explicitly required increasing the level of inclusiveness in the design of strategies, in line with the "social innovation" and the "quadruple helix" logic. Inclusiveness was combined with the requirement of setting up an "entrepreneurial discovery process". In principle, this was supposed to be much more than a formal involvement of entrepreneurs and their representatives as stakeholders in the process: an easy task, as EDP often overlapped with established practices based on the selective and regulated inclusiveness of the relevant stakeholders.

These requirements asked for a change in the policy making processes and the European Commission responded to this challenge by putting in place a policy-learning community through an unprecedented level of assistance (catered around the Seville-based "smart specialisation platform": http://s3platform.jrc.ec.europa.eu/).

Thus S3 marked a discontinuity with the past, while also, and to a very large extent, "building on the past". The meaning and relevance of this approach can only be understood on the background of a decades-long history of reassessing economic theories and policy practices in regional economic development. The intellectual roots can be traced back to a number of scientific turns in the debate on growth and innovation:

1. Key Enabling Technologies (KETs) are a group of six technologies (micro and nanoelectronics, nanotechnology, industrial biotechnology, advanced materials, photonics, and advanced manufacturing technologies) that have a wide range of product applications and have huge potential to fuel economic growth and provide jobs (https://ec.europa.eu).

- the discovery of endogenous development dynamics and the role of spatially-defined industrial districts and clusters;
- a different focus on innovation, shifting from linear models to systemic and "open innovation" approaches;
- the impact of evolutionary economics on regional science, stressing, in particular, related variety as a feature of localized development patterns.

Policy practices also contributed to design a new scenario. Starting with the '90s, a sequence of "new" regional innovation policy experimentations – Regional Technology Plans (RTP); Regional Innovation Strategies (RIS); Regional Information Society Initiative (RISI); Regional Innovation and Technology Transfer Strategies (RITTS) – has been realized within the EU cohesion framework. They have been inspired by a participative, learning-for-policy approach, emphasizing not so much the direct subsidization of activities but the creation of systemic and institutional pre-conditions and the provision of collective services and "intelligence". This approach adopted a wide definition of innovation, focusing on SMEs and, most importantly, stressed the importance to abandon "one-size-fits-all" solutions and to look for place-specific and place-based strategies. At the same time, this approach advocated greater stakeholder involvement in policy processes and greater accountability for results before, during and after the programs' implementation.

Within the EU policy framework this new approach coincided with an important reappraisal of the cohesion strategy, marked by the publication of the Third Cohesion Report (2004) and characterized by the search for a consistency between the "Lisbon objectives" (enhancing prosperity and competitiveness, also through innovation) and the Cohesion goal (reduction of disparities). This vision legitimized the shift from a "defensive", compensatory regional policy focused on disparities as problems to an "offensive" regional policy looking for opportunities behind disparities, embracing innovation as key priority area of intervention also for less advanced regions (Bellini and Landabaso, 2007). A few years later, also the independent "Barca Report" ("An Agenda

for a Reformed Cohesion Policy", 2009) forcefully argued for a place-based approach: "the Union needs a policy for economic and social development tailored to the specific needs of very diverse places".

1.2. Priority setting as a discovery process

As part of the S3 agenda, the European Commission recommends EU regions and Member States to identify investment priorities through the setting up of an EDP (Foray *et al.*, 2012). Inspired by the new industrial policy discipline, and particularly by the works of Hausmann and Rodrik (2003) on the view of development as a self-discovery process led by entrepreneurs, the EDP is characterised by two important features: it is business-centric and puts the practice of discovery at the heart of the priority setting activity.

Adopting a business-centric logic means putting existing and potential needs of firms at the core of programs aimed at promoting innovation. Those who are in the best position to know which new economic activities can profitably be pursued in a given country or region are the entrepreneurs. Entrepreneurs are intended in a broad sense, including innovative firms but also research leaders in higher education institutions, independent inventors and innovators (Foray, 2015; Hausmann and Rodrik, 2003). Thus EDP implies the mobilisation of the entrepreneurial knowledge base available in the society to produce economic knowledge. Entrepreneurial knowledge involves much more than knowledge about science, technology and techniques. Rather, it combines it with "knowledge of market growth potential, potential competitors as well as the whole set of inputs and services required for launching a new activity" (Foray *et al.*, 2011, p. 7), thus representing the most precious input of the priority-setting process. Economic knowledge instead relates to what works or does not work economically i.e. targets the market needs, and can be seen as the EDP main output (Foray, 2015; Hausmann *et al.*, 2011).

The second key component concerns the emphasis put on the idea of discovery. Within S3, discovery is conceived as the activity of anticipating opportunities through the economic exploration of new activities. In entailing the possibility of opening a new domain where innovation might occur, discoveries can be seen as the stage that precedes an innovation, and its principal source of information.

The process has to be focused and selective. S3 asks for the identification of a limited number of priorities that are realistically tailored to a region's capabilities and able to reach critical mass. To be successful the EDP should be informed by local knowledge and capabilities and characterized by a strong degree of openness in order to capture the relevant entrepreneurial knowledge fragmented and distributed over many sites and organisations.

Through the EDP the new agenda attempts to provide a practical response to a long-standing debate on how to prioritize some R&D and technological activities while at the same time guaranteeing market-driven resource allocation boosted by decentralized entrepreneurial experimentations. Namely, S3s makes two critical and somehow conflicting requirements compatible: identifying priorities in a vertical logic (specialisation) while not dissipating the extraordinary power of market forces working in revealing domains and areas where priorities should be selected (smart) (Foray and Goenaga, 2013).

The strategic interaction between all the entrepreneurial actors from both the public and the private sector is seen as the way to avoid the risk of lock-in into traditional activities that a rigid interpretation of the idea of specialisation could generate. The selection exercise is instead interpreted as a way to discover and support diversification potentials in new areas (Foray *et al.*, 2012).

1.3. The Quadruple Helix model: inclusiveness and connectivity

The ability to recombine knowledge to create a larger variety of smarter and better products is a collective, rather than individual, endeavour where different actors collaborate and interact

(Foray *et al.*, 2012; Hausmann *et al.*, 2011). Innovation is the result of systemic interactions, which are not limited to the development or adoption of new technologies nor confined to particular sectors or clusters, being instead understood as a complex, open, lateral and pervasive process, shaped by a variety of institutional routines and social conventions.

It is this perspective that gives strategic relevance to inclusiveness and to the need to look at the "demand" side of innovation, therefore marking a discontinuity with regard to the supply-side tradition of innovation policies (Grillo and Nanetti, 2016). According to the inclusiveness principle, all sectors have a chance to be included in the priority setting through the presentation of promising projects, ideas, challenges (Foray, 2015; Foray and Goenaga, 2013). Consequently, innovation policies have become a "messy and complex, multi-level, multi-actor reality" (Flanagan *et al.*, 2011, p. 19), which require the presence of coordination mechanisms linking ideas, people, resources, and markets, by promoting effective alliances. Setting up inclusive and effective processes is paramount to the success of any S3, more than setting the specialisation priorities themselves (Morgan, 2016).

Besides the key role assigned to entrepreneurial knowledge, the S3 agenda asks for a high degree of connectivity ("social capital") among the stakeholders that make up the local innovation systems and that can jointly contribute through networking to economic growth. S3 must be seen as (part of) a strategy to build these relational assets (trust-building).

During the last three decades, growth and innovation theories have evolved towards a systemic approach that is referred to as a relational turn (Fløysand and Jakobsen, 2010). Its distinctive features are the recognition that knowledge exploitation processes require dynamic interactions between the various components of inventions, research, technical change, learning and innovation (Soete *et al.*, 2010) as well as the evidence of the economic importance of the so-called relational assets: trust, voice and reciprocity (Morgan and Henderson, 2002). A particular emphasis is put on the role of networks in facilitating knowl-

edge sharing and transfer. Networks allow the diversification of participants' risks and the minimisation of transaction costs, and facilitate information exchanges and the efficacy of voice mechanisms, thus ultimately enabling collective learning processes (Morgan and Henderson, 2002).

Concepts such as learning region (Asheim, 1996; Morgan, 1997; Hassink, 2004; Landabaso *et al.*, 2000; Storper, 1993) and regional milieu (Camagni, 1991) were coined to stress the essence of innovation as a socially and territorially embedded learning process that cannot be understood independent of its institutional contexts. Knowledge, and especially an essential component, which is tacit knowledge, cannot be understood nor created in terms of independent decisions made at the level of single firms or inventors, being instead the result of complex dynamics across different actors from the public and private sphere (Lundvall, 1992; Morgan, 2004, 2007; Nelson, 1993). The relational turn points out that networks should guarantee a constant inflow and outflow of knowledge through internal and external connectivity.

In policy terms, adopting a relational perspective means recognising that innovation is not primarily or solely dependent on R&D efforts but the result of the capacity to absorb and diffuse knowledge within the "innovation ecosystem" characterised by a high number of interactions among participants and resources. The ecosystem approach emphasizes the role of public and private actors in continuously nurturing the innovation process, and the need for a high degree of openness in order to be able to capture the knowledge that is also located outside the regional physical space. This translates into the need for an active participation of all the relevant public and private actors and organisations of the local ecosystem of innovation. The EC stresses that not only industry, research institutions and Government exponents, as the tripartite model of the Triple Helix suggests (Etzkowitz and Leydesdorff, 2000), but also the demand side should be included, according to the so-called Quadruple Helix (4H) governance model (Foray *et al.*, 2012). The 4H refers to a four-tiered organisational structure for governing research and innovation resource

allocation patterns. It entails the involvement of four types of actors in policy-making: institutional bodies, research sphere, business sector, and citizens.

1.4. The S3 governance challenge

The reality of 4H cooperation is that the actors of the different helixes encounter problems and barriers in dealing with innovation, which are related to: different approaches to knowledge; different visions of failure; different propensity towards taking decisions; organisational and skill gaps; different view of the timing of the process due to political cycles and short term managerial power logics (Blazek and Morgan, 2015; Trippl *et al.*, 2016).

The public sector is called to play a new and to a certain extent ambiguous function with respect to more traditional consultation practices. Orchestrating collaborative processes to enhance the diversity of voices and broaden the dialogue with the local stakeholder, while at the same time supporting in a preferential way the selection of promising projects and activities, implies activities characterized by a high degree of uncertainty which require the capacity to routinely absorb mistakes. The public sector is asked to become itself a smart player, deeply involved in the social learning process it is trying to stimulate. Policy-makers are expected to act not only *with* the entrepreneurs but also *like* the entrepreneurs (Bellini, 2015).

A good government for S3 should be experimentalist, i.e. be able to take risks; embedded, i.e. able to engage in strategic cooperation with the private partners; and characterised by a dynamic and long-term vision (Foray, 2015). These requirements entail changing the modus operandi of administrators and elected officials, and addressing the cultural gap between innovators and bureaucrats, which stems from a long tradition of civil service being risk adverse and keen on the predictability of outcomes.

Besides, the stakeholders of the other helixes i.e. the research and university world, enterprises and civil society, are asked to actively contribute to the planning process generating inten-

sive experimentations and discoveries. The EC stresses the need to promote the empowerment of those actors, that are usually not represented by the traditional routines of consultation, like the civil society and its representations expressing significant dynamics of contemporary societies and economies (Foray *et al.*, 2012).

Under S3 an increasing emphasis is also put upon the critical role played by intermediaries. In order to develop sustainable cooperation routines, it becomes more and more important for policy makers to introduce local mediators, animators and facilitators of change processes that may fulfil a brokering and connecting role and create the conditions for reflection, decision and action such as common language and trust.

Besides, a critical aspect is the timing of the process. S3 are progressive strategies meaning that today's new activities will no longer be new tomorrow and could be replaced by other more suitable priorities (Foray, 2015). Guaranteeing continuity over time is essential, and consolidating such practices in a routine of public-private cooperation within the administrations is desirable (Grillo, 2017). Stimulating sustainable 4H collaboration thus entails constructing and supporting collective awareness of complexity, and requires motivation and an attitude to learn (*and fail*) among all the involved actors at all the involved levels. Accordingly, robust policy learning is definitely a key feature for successful S3 governance.

1.5. Why and how local matters

Transforming EU regions into more innovative places and promoting diversification through new path development can hardly rely on S3 alone but requires an alignment with other policies and strategies at various spatial scales. In fact, S3 was supposed to be a multi-scalar challenge (Morgan, 2016) in which there is a strong role to be played by the sub-regional level, as it is essential to capture evolving needs in their own place-specific dimension and not just through a centralized vision.

The official guide accompanying the S3 process and drafted by the EC experts (as well as the majority of the literature) repeatedly referred to "local and regional authorities" as one category, without further articulation (Foray *et al.*, 2012).

S3 signals a challenge to all levels of the polity system and entails constant coordination and connectivity to the outside. On one side, outside connectivity is about horizontal coordination with other regions or local areas, in order to foster cross-border collaborations, and get insights about a key additional set of missing information coming from peers and that should not be overlooked (Bellini, 2015). Knowledge transfer mechanisms tend to have a strong local bias (Boschma and Frenken, 2011), but at the same time, the relevant entrepreneurial knowledge could also be located elsewhere, i.e. outside the territory concerned. In the era of open innovation and global value chains "endogenous does not mean indigenous" (Morgan, 2007) and the space of innovation partnerships cannot be limited to the local dimension. It should embrace an expanded territorial perspective and be outward looking, allowing to consider the relative position of each context and its competitive advantages in relation to others (Bellini, 2015; Foray *et al.*, 2012).

Outside connectivity is also about vertical multilevel coordination between the local, regional, national and EU level (Morgan, 2013). The need to synchronize S3 priorities with priorities and incentives existing at the other levels has to be considered when selecting projects, being also potential sources of additional financing. Likewise, this must not influence the selection process. Nonetheless S3 should not be developed to respond to national or EU priorities but to exploit the related opportunities when it comes to financing context-specific projects in the locally selected domains (Foray *et al.*, 2012).

As part of the multi-scalar governance challenge, the need for connecting regional and sub-regional governments assumes a key relevance: "regional governments often lack people to get involved in this dialogical process. But sub-regional (provincial, county, local or municipal) governments that lack the competences for S3

do sometimes have staff with long-term trust relationships with such stakeholders" (Estensoro and Larrea, 2016). Local governments can contribute to enhance the capabilities of a territory to develop S3 approaches and operationalize successful collaborations. As mentioned before, a good government for S3 should be embedded. Embeddedness both implies the ability to engage in strategic cooperation with the private partners and suggests that the quality and thickness of networks are a key asset and a condition for success. This need for embeddedness provides the main argument to support a greater involvement of local (sub-regional) governments in S3.

The local dimension may concern a variety of situations. E.g. rural spaces can provide the context for innovations concerning the environment, agri-food industries or tourism. However, a special attention needed to be devoted to cities, whose role as vanguard of today's societal challenges and as privileged testing ground and incubators of a wide range of innovation has given to "urban policies" a very high profile. Cities were the obvious candidates to be engines of S3 for a large majority of European regions. Considering the overall policy mix available at European level, a discourse on S3 can make reference to the EU toolbox that is already in place to activate urban policies (ESIF, UIA, URBACT, EU Urban Agenda, European Innovation Partnership on Smart Cities and Communities). On the one hand, cities can reinvigorate the S3 demand-driven innovation dimension by helping to create synergies between technologies, knowledge, and skills. Cities can better identify the most suitable areas for specialisation, capitalize on their unique eco-systems, mobilize their assets, resources and individuals, and target their efforts to their own engines of innovation and growth. On the other hand, S3 can reinvigorate the business-led economic development urban agenda: S3 produces impacts inside and outside territories and can help turning cities into innovation drivers and developing dense polycentric networks of demonstrators across the whole Europe around emerging strategic themes/sectors (e.g. mobility systems, energy efficiency solutions, circular economy models) that are expected to offer broad business and job opportunities in the years to come.

Last but not least, the local dimension seems to be crucial in building a common "culture of innovation" as soft infrastructure for development and innovation (Bellini and Pasquinelli, 2016), i.e. in spreading throughout the society the sensitivity towards the challenges of innovation and the need for societal cooperation as an essential element of place-based innovative eco-systems (Rissola *et al.*, 2017).

1.6. A simple model to analyse local S3

To sum up, the local (sub-regional) dimension of S3 can be analyzed on the basis of three main variables: the theme they deal with; the role envisaged for the local authority; and the envisaged relational context. Based on the analyses of practices performed during the RELOS3 research activities, these variables could be further articulated as follows:

A) Themes

- "smart city" deployment of new technologies in order to significantly improve living conditions in urban settings. S3 projects at the local level may articulate this challenge around sub-themes such as:
  - ICTs;
  - smart energy;
  - infrastructures;
  - circular economy;
- R&D&I initiatives, mainly around two sub-themes:
  - the establishment of research and higher education facilities and their integration in the local settings;
  - incubators etc., high tech companies, knowledge-intensive and business support services;
- innovation-led development through local interventions emphasizing specific key aspects (e.g. environmental sustainability) and specific settings such as:
  - rural areas;
  - remote and scarcely populated areas, inner areas;

- areas characterized by processes of industrial restructuring and/or deindustrialization.

B) The role of the local/sub-regional government in the policy cycle

- at the design stage:
  - local management of an entrepreneurial discovery process,
  - locally-specified projects within the framework of the regional strategy;
- at the delivery stage:
  - decentralized implementation of the regional programs,
  - setting up of the regulatory and/or organizational framework at local level;
- as experimentation of the regionally-designed strategy:
  - targeted demand-side policies (like pre-commercial procurement initiatives),
  - "living labs" etc.

C) The relational context

- within the local/sub-regional context: this happens typically when the local jurisdiction is relevant in size (e.g. metropolitan areas, city/regions);
- within the region's (or national) framework and under regional (or national) government coordination;
- as part of wider networks, either national or international (e.g. within IINTERREG projects).

Graphically, the practice and potential of local involvement in the S3 process can be summarized as follows:

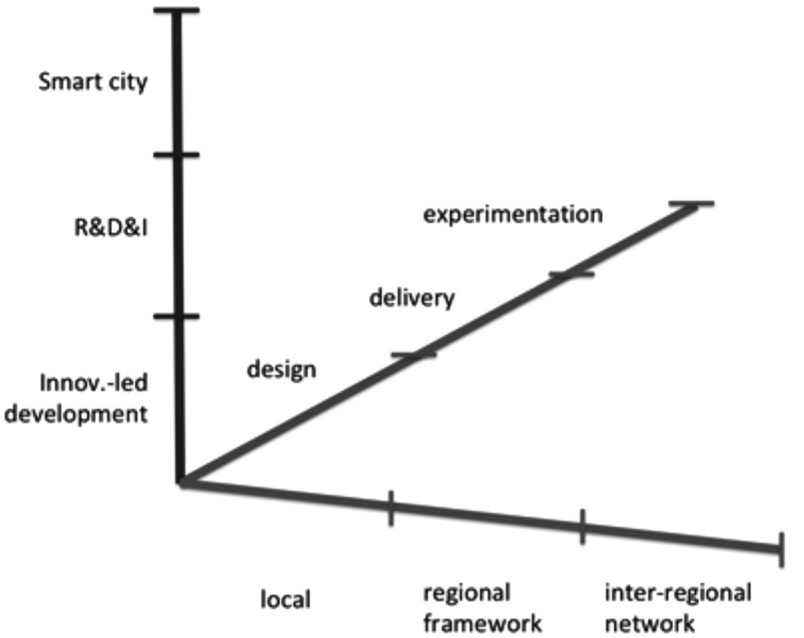

Figure 2 - Practice and potentials of local involvement in S3

2. Expert contributions

2.1. Can innovation policies survive their bureaucratisation?

Francesco Grillo

The relationship between innovation and public administrations is a critical one (Grillo and Landabaso, 2011; Oughton, Landabaso and Morgan, 2002; Borins, 2002). On one hand, it seems increasingly clear that the capability of a society to unfold the potential of the new technological revolution depends on the presence of the policies, regulations, new forms of welfare needed to govern disruptive changes (see Grillo and Nanetti, 2019 on the case of China in the 21st century; and Mazzucato, 2013 on the US industrial policies of the sixties).And yet there is a tension between the characteristics of the innovation process (as defined by Schumpeter, 1913) and the nature of public administrations (as for the traditional Weber's definitions; Sager and Rosser, 2009).

This contribution is an attempt to identify main problems and to, then, put forward the proposals for creating the conditions for relaunching smart specialisations within the next programming period. It is an evolution of a previous article of the same author written for the Smart Specialisation Team at the European Commission's Joint Research Centre in Seville[1].

1. Grillo F. (2017), "Structuring the entrepreneurial discovery process to promote private-public sector engagement". European Commission's Joint Research Centre, Institute for Prospective Technological Studies (ed.), *Governing Smart Specialisation: the institutions of entrepreneurial discovery*, Regional Studies Association, New York, Routledge.

The problem setting

One possible identification of the main problems to be tackled is the following:

1. Public Administrations cannot finance failures

Failure is an intrinsically fundamental part of any innovative process. If you do not allow yourself to fail, you cannot have innovation because innovation has – by definition – uncertain outcomes (Green, Howells and Miles, 2001). Public administrators, however, are not legally allowed to fail and, for instance, they cannot allow for temporary interruption of delivery of services due to a failure of the experimentation of a new technology (Nicholls, 2003). One of the consequences of such contradiction is that public administrations cannot technically fund projects which may fail, unless they engage innovators through complex public procurement procedures which are explicitly tagged to research (or less frequently as experimentations) (Koch, 2006).

2. Institutions have hard time to make choices

Smart specialisation mean that resources get allocated to specific industries/niches (or phases of the value chain within industries) or to certain locations (as one may expect from a strategy for tourism) or to segments of populations (for instance, categories of entrepreneurs whose contribution is crucial for innovation to happen) (Foray *et al.* 2011). This, again, poses a potential contradiction with the very nature of bureaucracies which were born with the very objective of ensuring that all citizens, all constituencies get equal treatment (in the eighteenth century's tradition of the "modern state"). Unequal distribution of resources, albeit only temporary and based on evidence and efficiency reasons, is not normally accepted. This is a major difference between public and private sector where companies create or destroy value through decisions (Nutt, 2005).

3. The organization gap

The public administrations tend to be organised horizontally by typology of administrative tasks to be executed (Scott, 1992),

whereas firms, instead, organize themselves by business units (although this is combined by functions into more complex matrix). A process based organization chart makes difficult to conceive and implement smart specialisation strategies that still tends to be structured by portion of industries or by research domain.

Consistently with this, civil servants are normally equipped with a set of (mostly legal and administrative) skills, which are not aligned with the technological and managerial expertise that S3 requires.

The organization gap becomes even more evident when we consider that in order to smartly specialize a region/city, you need to position it *vis-a-vis* other regions/cities. You cannot identify some area's unique position, if you do not know what other regions are doing: this is, in turn, very useful also in order to identify your partners and competitors, investors and innovators you want to attract. This requires to have a vision of market and technology dynamics at global level which is beyond the scope of the vast majority of public administrators(a remarkable exception are the international organizations) whose function tend to be linked to a certain place (Rainey *et al.*, 1976).

4. The trap of experts

The remedies to above problem can be even worse than the initial problem itself.

The experience of smart specialisations is that public administrations – including the European Commission – tend to respond to the gap opened by smart specialisations by calling so called experts. The problem here is that innovation is precisely about challenging existing behaviours and, even, disrupting existing knowledge base. Experts can be counterproductive both because they themselves may run into a cognitive problem because trapped into their convictions, and because of a "conflict of interest".

Not less damaging is the idea to simply importing models from the corporate world. Regions and companies have different sets of objectives and this requires different decision making patterns. An example of this is the selection of specialisations: aprofit seeking

firm would select the so called "stars" (growing market share within growing markets) as business units where invest more resources; for a country, instead, it may not make sense to select firms or sectors which are already winning in growing sectors, whereas this would imply to pour money where money is already piling up.

Smart specialisation would correspond, instead, to areas where there is a "potential" competitive advantage, which is prevented to be used because of a constraint (it can be the lack of an infrastructure or, even, of a technology) that the market is failing to remove (Grillo and Bellini, 2013). Too many experts and too much outsourcing tend not to solve the problem of skill gaps and create new ones: either experts are simply used to endorse political agendas; or they end up capturing public administrations which will lose the control of strategic decisions.

5. The political cycle

Many authors suggest that the engagement of policy makers is to be considered as a pre-requisite to success. This is almost obvious and yet politicians seem to be often just not focused enough on the details that can make the difference between good and bad innovation policies (Halvorsen *et al.* 2005). They tend to be even not less short term oriented than executives in companies. Their time span may be even shorter than a quarter: when their success is measured by daily polls. As a result they lose interest in something like R&D programs, which will have their impact in few years.

The problem solving

On the basis of above problems identification and, mostly, of the author's experience of S3 design and implementation (Grillo, 2014, 2015, 2016), we now propose five specific actions which may be undertaken to increase the chances for S3 sustainability.

1. Give value to failure through a proper knowledge management system

Allowing for failure is essential but failure will not be allowed until we do not find a way to make sense of it (Koch, 2006).

If one observes the world of venture capital (especially in areas like biotech and pharmaceutical), he would realize that the real (economic) value of failure can be the knowledge which it can produce. This is the method by which highly innovative public administrations (an example is the US NASA) have bought the right to fail even on very expensive programs.

This would lead to a complete different approach to drafting strategies and programs. Smart specialisations should be conceived as a portfolio of experimentations of solutions meant to solve one specific problem with unknown technical or social variables (for instance: what does it take to make fossil free a city? or to increase the elderly's use of e-government applications?). With this approach possible solutions would be tested against measurable outcomes; these outcomes are to be systematically measured; some of them would legitimately fail; so that knowledge is generated and made available to other constituencies.

We believe that the promotion of such a knowledge management approach is to be promoted and maintained by the European Commission or at least individual member states.

The design (or redesign) of innovation policies on the basis of knowledge management will require a reorganization of development programs and the development of new public procurement methods to engage and fund innovation which would even go beyond existing instruments (like the PRE COMMERCIAL PROCUMENT).

2. Integrate choices of 'smart specialisations' with the development of systematic spill over/reuse mechanisms

Smart specialisations need to be integrated by explicit spill-over mechanisms so that it is clear how value created in a specific territory or industry or research area or public service, can be spread at a later stage to the rest of economy/society.

The reuse mechanisms are, therefore, the complement of the experimentation phase: funding mechanisms must be in place so that there is an expectation that the result of experimentation will become a common asset.

3. Smart specialisations to be run by public – private partnerships

Strategies to respond to the skills gap include: development programs and organizations to be restructured by areas of specialisation; introduction of (young) people from outside which would challenge the existing culture; cross border partnerships with Regions which should be based on specific problems to be solved.

We, however, believe that in most cases more radical choices need to be considered: smart specialisation are supposed to be the product of public – private partnerships and, consistently, one option would be to have innovation policies to be implemented by development agencies outside the public administration domain and yet within the policy maker's influence.

One further possibility is, also, to establish close – end equity funds which would pool together public and private money: the policy would be to have the policy maker to define the overall strategy and specialisations and the private financial institution to choose where to allocate equity.

4. Develop metrics in order to detect early signs of success

The idea that results of innovation are unavoidably measured on long time period is untrue: such an idea is, however, extremely damaging because it tends to assimilate innovation amongst the policies which are important and yet not urgent.

However, there are signals of performance which tend to be neglected by most of evaluators which tend to be unreasonably concentrated on the notion of economic impact of innovation which tends to be rather indirectly affected by innovation.

The capability of public investment programs to raise further private investments should be one of the sign which detects the credibility of an innovation strategy and the quality of partnership upon which it is based. The same can be said by the assessment of the expectations that S3 raises amongst specific targets of innovators (or even amongst the general-public). After all the logic of S3 is the one of an expectation based policy, it is meant to modify the expected return of investing in innovation and, ultimately, the behaviours of economic actors is what can multiply the effect of the initial shock.

Develop systems to anticipate the success of S3 is also an effective way to make policy maker to feel the urgency to achieve results. It is the European Commission or the member states to promote innovative ways to evaluate.

5. Design incentives so that performance is recognised

The idea that resources are allocated to specific institutions regardless their capabilities is to be abandoned. Mechanisms should be in place so that subsidiarity is applied: money will be reallocated across institutional levels at different levels so that results are maximized.

In addition, processes should be designed so that teams and program managers who are achieving good performances are rewarded by providing them the possibility to export their methods to other programs/regions. Results are here to be meant as knowledge being generated or concrete outcomes.

The above set of ideas can be the tool kit of initiatives which may trigger a much needed innovation of the processes through which smart specialisations strategies are designed and implemented.

2.2. Implementation: the design of experimental S3 mission-oriented policies

Jordi Garcia Brustenga

In Catalonia, local governments are already implementing their smart specialisation strategies. Within the framework of the S3 agenda, in 2017 the Catalan government launched the first call for Specialisation and Territorial Competitiveness Projects (PECT). Co-financed by the ERDF funds, this call represents an unprecedented local commitment that seeks to boost innovation in a specific area of knowledge and economic activity. Tarragona province is committed to family tourism; city of Lleida to intelligent agri-food; Maresme county to smart textile. And so up to about 25 approved projects, which bet on specialisation opportunity areas, decided by the local government in agreement with business ecosystem, universities and technological and research centres, leading to a public program that is actually generating a map of explicit specialisations in the region.

A bolt version of these local smart specialisation plans is 'Vallès Industrial', led by the City Council of Sabadell. The plan attempts to consolidate a local innovation ecosystem around industrial design and innovation in this historically industrialised territory near Barcelona. An important sum of resources is being assigned to boost innovation and competitiveness in the area with this specific focus, which will contribute to the positioning of this county in the regional and international scenario. The goal is to become one of the local nodes of the global industrial design and transformation network.

The reason for this relevant change with respect to classical local economic promotion policies is that a territory cannot be globally competitive if it does not specialize with an innovative and transformative approach. Like companies and professions, a territory must specialize itself focusing on its more specific strengths and local characteristics and looking outward to the global challenges and trends. Moreover, the acceleration of new scientific-technical knowledge and the urgency to prevent climate change forces us

to put innovation at the centre of our growth model. The territory that today does not systematically observe, devise, test and launch new differentiated products and services will have an unviable economy in the future.

In this context, most public administrations have been developing a proactive role to stimulate innovation based on awareness, support, training and, above all, financing of so-called market failures. Knowledge and technology transfer requires a risky investment that neither the university nor the company are willing to finance, the famous "death valley". Hence, societies understand this activities as public goods, with real expectation of recovering the investment through direct and indirect generation of wealth, taxes and employment in the region.

So far, this is a story more or less known and shared by many people involved in regional development. Now, a new concept comes into play, especially with the inspiration of Mariana Mazzucato. This author invites the governments, in her book "The Entrepreneurial State" (2013), to take the lead in the co-creation of new markets, and not only in the setting and follow-up of existing ones. Only from the public perspective, together with business and academy, it is possible to put a direction to the regional growth. Concretely, as Mazzucato and the EU new strategy promote, to develop innovation policies oriented to social and green missions. The "entrepreneurial discovery process" that S3 talks about is a practical and useful way for the regional or local governments to determine and collaboratively agree their own missions. Examples of these missions, which are strategically aligned with UN 2030 agenda (Sustainable Development Objectives), can be reduction of obesity, increase of life expectancy or full access to water or housing.

Territories and organizations are neither more nor less than groups of people. And people mobilize effectively, efficiently and creatively when we get together to solve a shared challenge or mission. The illusion, pride and activation of most of our abilities and energies appear especially in these situations. And only organizations and people who represent us can lead the group. And

these are the governments and their representatives. We are, therefore, to be developed through missions, based on our S3 strategy opportunities and, at the same time, on our biggest social and green local challenges.

2.3. Locally-embedded tools for S3: Living Labs and local heroes

Giulia Lazzeri

An intense practical experimentation has started to take place across Europe as regions have engaged in the development of the S3 agenda. So-far developed scientific evaluations suggest that the strategy development phase has been accepted by most EU regions as a useful planning exercise, culminating in the development of documents more responsive to regional potential than in the past programming period and based on inclusive processes entailing the participation of the main stakeholders at the planning arenas (Bellini *et al.*, 2015; Kroll, 2015). At the same time, these studies point out that one of the most critical aspects is the ability to translate the declarations of intent into a concrete policy toolbox (Capello and Kroll, 2016, McCann and Ortega-Argilés, 2016).

Smart specialisation is a new concept, of an ambiguous nature, that might hinder its translation into practice. In many cases, an excessive concentration of S3 priority investments on few Axis, especially Axis 1 as requested by the ex-ante conditionality, is registered, together with the tendency to embrace an extensive interpretation of the beneficiary eligibility criteria, responding to the need to speed up the release of public calls and the allocation of subsidies by simplifying procedures.

Play-it-safe interpretations have been adopted by many EU regions when moving to the S3 implementation phase. In the absence of focused and effective domains of action, targets and evaluation procedures, even well developed strategic documents run a tangible risk of being applied in a distorted manner so as to betray their very essence. The main threat is that the effort to build S3 results in a progressive tendency to replicate what had worked in the past or to duplicate measures successfully adopted in other regions, to the detriment of their effective correspondence to local needs (McCann and Ortega-Argilés, 2016; Capello and Kroll, 2016).

Instead, it should be agreed upon more clearly that under the S3 approach there must be a limit to automatic procedures in

favour of more offensive and experimental approaches. Evidence shows that the adoption of locally-embedded tools is essential in order to capture the cross-cutting nature of S3 domains and to discover and give visibility to innovation processes inspired by related variety.

As an example, instruments such as Living Labs (adopted by some Italian regions, amongst which Apulia) allow to look into the 'black box' of innovation and foster conversations between actors that were not used to networking with each other, especially civil society. Living Labs are defined as "public private partnerships in which public administrations, businesses, researchers, authorities and citizens work together for the creation, and validation of new services, business ideas, markets and technologies in real life contexts" (Bergvall-Kareborn *et al.*, 2009). Conceived as an open ecosystem whereby the users can actively take part in researching and testing innovative solutions through the use of ICT, the Labs encourage the incorporation of social issues in the discourse on innovation.

Also, the adoption of Google Drive games showed to be particularly effective in exploring the reality of social innovation, as it happened in the case of the Sicily region (IT). Freely accessible to all those who 'felt they were social innovators', the tool allowed the discovery of more than 30 project ideas and innovative realities that were unknown to the regional administration, namely start-ups founded by young entrepreneurs operating in the field of smart cities, health care, food redistribution, among others.

The identification of local leaders belonging to the different parts of the 4H (government, business, research, civil society) also emerges as essential. Local heroes refer to committed and knowledgeable persons as part of the public administration, the civil society and the business world, able to spread their enthusiasm towards the new agenda across their local communities. Acknowledging that some people have a strong interpretative power, and are thus able to affect the dominant perceptions of their local communities, appears strategic in engaging the right actors at the right moments throughout the whole S3 process.

These exercises represent a great novelty and an important step towards the design of better policies. Firstly, they promoted awareness of the forms of innovation that already existed at the territorial level, which represent a valuable humus to be exploited; secondly, actors without any previous experience and competence in the planning fields were for the first time involved in the definition of policy tools and measures, which enhanced the capacity of capturing the distinctive and constantly evolving needs of places and facilitated the orientation of efforts towards concrete territorial challenges.

The S3 agenda should be seen as opportunity to open networks and to push forward the role of the local level in a political sense, even though some political issues might arise. The real value of S3 comes from establishing a common language. Territorial innovation is the result of interactions between political deciders at the different polity levels, teams of experts, SMEs, research institutes and users. These actors contribute to the articulation of the innovation demand, and help to define societal findings and needs. Amongst them, the local level is particularly suitable in capturing local needs and aligning the urban investments in the wanted direction. Locally-managed tools can inform the process of identifying technological needs during the design phase of S3, and support the subsequent development of successful trials in real applications by combining traditional industries and more innovative sectors.

Though, this role needs to be inscribed in the wider regional and national strategy. Learning within smart specialisation is about resources, skills, culture and organisational changes. The new agenda requires managerial capabilities and technical skills for the different productive or research fields, and a diffused attitude to choosing and the risks associated. These issues go well beyond the ability usually possessed by the community of insiders involved in the regional ESIF management structures, asking instead for scale management and continuous learning and dialogue among polity levels.

2.4. S3 and circular economy

Natalia Marzia Gusmerotti, Alessandra Borghini

The widespread definition of circular economy refers to an *industrial system that is restorative or regenerative by intention and design. It replaces the concept of "end of life" with the concept of restoration, shifts towards the use of renewable energies, eliminates the use of toxic chemicals, which hinders reuse and aims to eliminate waste through the superior design of materials, products, systems and business models* (EMA, 2012). The main aim of a circular economy is to *enable effective flows of materials, energy, labor and information so that natural and social capital can be rebuilt* (EMA, 2013). In the performance economy frame, one of the theories on which the circular economy approach is founded, Stahel (2013) suggests how an economy based on closed loops, which promotes reuse, repair and remanufacturing of goods rather than manufacturing of new goods, could generate a positive impact in terms of jobs, competitiveness, resource savings and waste prevention.

At local level, it is possible to identify three different circular loops:

- *Reuse Loop*, which includes second-hand markets, trade of reused goods (e.g. vintage apparel shops) and commercial activities, as in the case of refill. This loop generally takes place at local level.
- *Remanufacturing Loop*, which includes activities and processes able to extend the lifespan of products as repair, remanufacturing, upgrading. This loop can occur both at local level and in regional services hub.
- *Recycling Loop*, which includes processes able to provide recycled raw materials for industries. This loop can take place both at local and global level (i.e. global supply chain).

Smaller loops are more advantageous and allow a more efficient resources management. For this reason, in the circular economy approach the local and the regional scale are preferable. In this context innovative business models gradually

substitute traditional ones (i.e. manufacturing business models). New business models integrate products and services (e.g. product service systems – PSS) and generate value, well-being and jobs using fewer natural resources (Stahel & Reday-Mulvey, 1981; Wautelet, 2018).

This is consistent with the "3R" approach that represents one of the critical principles of the circular economy:

- the *first R* refers to the minimization of resources consumption, the reduction of emissions and environmental impacts generated by production, distribution and consumption phases, and, lastly, to waste prevention;
- the *second R* concerns reuse of scraps, products and their components, both after repair, refurbishment and remanufacturing activities and directly, partially or totally;
- the *third R* points out to the recycling of waste for reusing these recycled materials as new inputs of industrial processes[2].

The transition toward a circular economy – from a linear one – requires fostering – especially at local level – businesses and markets oriented to *reuse, repair, remanufacturing, upgrading, refurbishment, repurpose and recycling* (Reike *et al.*, 2018). This kind of activities can support local economies and job creation, since they are labor intensive and have basically sub-regional economies of scale (up to regional level, indeed) (Stahel, 2013).

Environmental benefits of *reuse* are very well explored in literature (Gusmerotti *et al.*, 2018). Several studies have confirmed that reused products generate lower environmental impacts comparing to those resulting from the manufacturing and distribution of news product from raw materials (inter alia, González *et al.* 2017; Tecchio *et al.* 2017; Castellani *et al.*, 2015). Also social and economic benefits of reuse are investigated in literature (Gusmerotti *et al.*, 2018). These include, for instance, job creation and training opportunities for unemployed and disadvantage people and the provision of products for low-income people

2. In the 4R approach the last R refers to recovery activities.

(inter alia, Kissling *et al.*, 2012; O'Connell *et al.*, 2010). It is interesting to note that second-hand products represent an important source of IT equipment for business and educational organizations in the developing countries (inter alia, Kissling *et al.*, 2012; Streicher-Porte *et al.*, 2009). Gusmerotti *et al.* (2018) have found that the integration of waste management system at local level with reuse is crucial for the transition to a circular economy, because this allows to adopt and carry out strategies aimed at the maintenance of the highest value of products, material and components in different loops.

Looking at the *reuse and recycling of packaging*, the circular economy approach includes concepts such as local integration and proximity. In relation to this, the French *Conseil National de l'Emballage* (CNE, 2014) points out that packaging production and recycling are economic activities that occur mainly at local level. Indeed, in France the packaging industry is particularly reactive to local characteristics and needs. This is the case of purchasers of recycled paper and cardboard packaging that produce raw material for cardboard packaging producers, that are diffused all over the Country and deliver to packaging companies near their locations. The same happens for corrugated cardboard sector which has 73 production sites spread in the Country, being able to ensure its local presence (i.e. production sites are close to clients). Similar considerations can be made for collectors and reconditioners of pallets and wooden packaging, where, thanks to the number of actors involved, distance, financial and environmental costs are substantially reduced. The French glass packaging industry is strongly consistent with the principle of proximity. The presence of a strong network of 20 glass-making plants determines an average distance between a plant and its clients of 300 km. Used plastic packaging recyclers in French represent of over 70 sites, thus assuring a local presence. CNE (2014) has estimated an average of one employee for every 400 tons of packaging waste recycled.

Another key element of the circular economy approach at local level is the *industrial symbiosis*, rooted on industrial ecology principles. Industrial ecology promotes collaboration between organizations with the aim to create eco-industrial network particularly

efficient under resource efficiency management perspective. Under this approach, scraps, waste and by-products of a firm must be systematically valorized becoming – whenever possible – as input for another firm. An eco-industrial system based on these concepts can achieve a substantial reduction of resources consumption, of waste generation and of environmental impacts. Therefore, an Industrial Symbiosis is a business relationship focused on sharing resources, aimed at the improvement of the total impact of industrial processes and products on the environment and at the support of business competitiveness. This concept is inspired by biology where a symbiotic relationship refers to the mutually beneficial coexistence of individuals belonging to different species. In this kind of local partnership, each actor provides, share and reuse resources to create shared value. The objective of industrial symbiosis is to create loops of technical or biological materials while minimizing the leakage and waste in the loops, thus demonstrating critical elements of a circular economy at a local scale. One of the most representative examples of industrial symbiosis is Kalundborg Symbiosis (The Kalundborg Symbiosis, 2016). Situated in Kalundborg, Denmark, the symbiosis is based on public-private partnerships, with exchanges of energy, water and materials in closed loops. Kalundborg is a small industrial town where several major industries are located in close proximity. The main industries are DONG Energy/Asnæs Power Station, the largest power plant in Denmark, Statoil, a large oil refinery, Novo Nordisk, a multinational pharmaceuticals maker, and Saint Gobain Gyproc, a plasterboard manufacturer. All organizations involved are large production units. Not only the proximity and the industrial setting of the area have determined the successful cooperation between the enterprises involved, but also sociocultural relationships among people and the main characteristics of the Danish regulatory system have influenced the success of this network (The Kalundborg Symbiosis, 2016). Firstly, managers, engineers and other professionals lived closely in a small town, sharing places (e.g. clubs, schools) and way of life. This gives to them the opportunity to share ideas, projects, common issues, etc. Businesses located in Kalundborg are deeply

embedded in the local community. Secondly, institutions (e.g. Kalundborg Municipality) involved in the networks have behaved as player and not as administrator. Thirdly, the legal system in Denmark is largely collaborative and organizations can be proactive in defining solutions for managing environmental issues (The Kalundborg Symbiosis, 2016).

3. Good practices for RELOS3

Nicola Bellini, Alessandra Borghini,
Giulia Lazzeri, Valeria Stacchini

In the framework of RELOS3 a best practice analysis was conducted inspired by two set of motivations: the need to explore the actual and potential role of local governments in S3 strategies across the EU; and the need to coagulate consensus around the need for and benefits from local, "place-based" action.

This chapter introduces the methodology adopted to conduct the field work (rationale, criteria and goals) and presents the database of 39 selected practices, deepening amongst them 12 cases evaluated as particularly relevant and inspiring in offering policy suggestions and recommendations on the research topic.

3.1. Which practices? The need for a method

Notwithstanding its popularity among both researchers and practitioners, the use of a "best practice" (BP) approach in investigating public policy issues requires a preliminary attention to some methodological questions or, at least, the sharing among participants of a sufficient methodological awareness. Otherwise the risk of misunderstandings about the value and the usability of the analysed practices is very high. For such reason, we believe that it is important to summarize some of the main issues, as discussed in the literature (see list of references), and to point out why they are important to RELOS3.

Nowadays, the reference to best practices in an important feature of the policy-making at different levels. The main reason to engage in BP research is *learning*. A learning attitude has many underlying justifications. In some cases it is a de facto obligation, so that a higher level of government is reassured about the quality of a program, project or policy proposition and can validate (and finance) it. In other cases the push to learning is related to a more sincere need to explore new and better ways, whose urgency may be increased by the need to "compete" with other regions or localities. And learning itself is more complex as we need to look for ideas and solution much beyond the traditional (geographical or sectoral) borders defined by our jurisdiction.

A second set of reasons to engage in BP exercises is to *build consensus* around a policy option. By "demonstrating" policies we show that they are feasible and therefore we lower the perception of risk linked to policy innovation. BP can be didactically very powerful as they are "concrete", not abstract and "academic", therefore more effective in persuasion. This is especially important for innovative policies that are not following familiar standards and can raise uncertainty and doubts among stakeholders.

In the case of RELOS3 both sets of motivations apply: the need to explore the actual and potential role of local governments in S3 strategies, and – especially when a trend toward centralization emerges – to coagulate consensus around the need for and benefits from local, "place-based" action.

"Best", "good", "smart" or just useful? Behind these semantic variations, we find a number of very practical challenges. First of all, we must acknowledge that it is practically impossible to assess that some practice is "best", at least within a certain geographical or sectorial scope, because that would require a "complete" comparative analysis (not just a sample survey) on a scale that could be so large to prove unmanageable. In the RELOS3 case, the "universe" to be considered is extremely large indeed.

The wider is the range of possible BPs, the greater are the analytical difficulties, which one must face and in turn prevent the researcher to elaborate a rigorous comparison. In particular in

public policies the causal linkages between a certain action and some outcome, which define the additionality of the policy, are rarely linear (because of multiple resource/multiple outcome situations and of rival explanations) and often not measurable.

A "*benchmark*" approach is an acceptable compromise. "Benchmarking" is an expression borrowed from a technique developed in the corporate context, which consists of setting up processes for systematic and continuous comparison of some variables of one's own organisation with the same variables as those found in other benchmark organisations, usually using batteries of indicators summarised in scoreboards. On the basis of this comparison, we try to understand the reasons for any differences in performance and to use this information to improve our performance. This learning-by-comparing approach (combined with case study analysis techniques) has been transferred to the theme of confrontation between policy practices. Rather than looking for the best, we get along dealing with the "good", i.e. identifying cases that are useful for learning (as an extreme option, they may even be unsuccessful cases).

BP benchmarking is based on *selective observation*. Unsurprisingly, selection is a critical point, as different *criteria* can be used and often are used in a very pragmatic way. A possible list of these criteria to select a BP is the following:

- some kind objective (measurable?) relevance of the practice, i.e. its importance and the significance of its outcome relative to similar experiences in the same field: of course, this criterion is used when such data are available (and comparable);
- reputation: when lacking objective elements, a practice can be "known as" a relevant case among qualified members of the community of practice and/or scholars, also because of previous observations and studies;
- contribution to the variety of the sample of BP, as it allows to consider a wider range of institutional and socio-economic contexts;
- innovativeness with respect to standard practices;

- transferability, i.e. the potential to use what we learned in a different context.

A pragmatic and eclectic approach is often necessary and this is also the case of the exercise for RELOS3. Yet in the actual process of selection some *critical problems* are likely to emerge and need to be monitored:

- we may be trapped in our mental maps ("cognitive lock-in") and choose cases that we already know and like, as they look more manageable and more likely to provide us with good quality of information;
- we may be biased in the analysis because of the wish to extract evidence that is instrumental to our policy objectives;
- we may simplify the picture (and run the risk of excessive optimism) because of the urgency of "doing fast" and of compensating for the shortage of local ideas and solutions with some policy transfer (a low-cost "quick fix");
- we may focus on "advanced" countries/regions/cities and thus there may be an underestimation of the fact that "difficult" contexts may provide not just challenges (i.e. the handicaps compared to advanced countries) but also opportunities for creative imitation and improvement of policies (the "advantages of backwardness");
- we may face heterogeneous lists (like the one provided by the RELOS3 partners), also as a result of the heterogeneity of the institutional contexts. This implies the need for additional selection at the risk of losing interesting cases (and this is the reason why in this preliminary paper we used a large-mesh filter).

Policy learning will be used not only to perform an evaluation of one's position but also to consider the *transfer* of some of the solutions in a different context. This transfer may concern:

- individual policies or institutions that may be emulated or simply hard-copied (learning by *copying*);

- visions, ideas, strategies that may be source of *inspiration* for the same or different policies and help to consider or re-consider the policy objectives;
- specific aspects and technicalities of policies and institutions ("smart practices") that may be assimilated into other policies through *hybridization*.

What are we then looking for within the RELOS3 framework? A policy to be copied? Inspiring ideas? Technicalities to be assimilated?

The use of learned results presents several *critical aspects:*

- there may be a "policy fashion" effect, as there is a built-in propensity of political elites to imitate successful first movers. The reason for this is twofold: image and consensus (the wish to appear "modern"); risk reduction. "Waves" or "swarms" of policies may result, leading to indistinctive – and thus possibly unsuccessful – policy choices (like in the case of the "Silicon Somewhere" syndrome);
- there may be an underestimation of the weight of contextual variables, which are often the result of unique institutions and modes of social and cultural interaction, that are historically and geographically determined and not reproducible in other contexts. Getting the essence of the local experience and separating it from the context-specific features requires an often difficult balance between local knowledge and cognitive distance. In other words, this requires that locals are involved but it is difficult to do without a "third party" contribution;
- there may be an underestimation of the weight of contingencies that influence individual stories, starting with the role played by individuals, their "place attachment" and their personal motivations, competences and relations;
- one must consider the difficulty of reproducing with top-down actions, planned and carried out by public policies, phenomena that, in the case of reference, are instead "spontaneous" and the result of bottom-up processes;

- the way we learn is also relevant. Very often the sharing of experiences takes place in traditional manners, with little interaction and a one-way teacher-learner relationship. At its best, on the contrary, learning will take place and be effective when there is opportunity of co-designing and co-managing an action;
- policy learning is not just a cognitive exercise for enlightened politicians and bureaucrats. It is about having an impact by implementing what we have learnt. Therefore policy learning is also about setting up the conditions for implementation (processes, organizations, people, resources): without this, there is no 'magic' effect of learning, but a risk of failure and de-legitimization.

Within RELOS3 this suggests the importance of thinking and planning not only the learning phase but also implementation. In so doing, an additional benchmarking exercise may be suggested, that looks less at actions than at capabilities. In the literature this is often called *benchmarking of competences* (internal learning) and *benchmarking of networks* (learning with others), emphasizing the disposition of institutions and territories to elaborate and creatively generate adapted solutions.

3.2. The RELOS3 good practices database

Dealing with RELOS3 objectives added two more difficulties to the BP analysis exercise:

- the scouting of the potential BP was made more complex by the minor role that local and sub-regional governments played in the definition of S3 in many countries and regions of Europe;
- RELOS3 has a wide range of potential topics that can be covered.

The 39 selected Good Practices include two kinds of cases: 23 cases that were proposed by the partners of the project; and 15 cases that were identified through desk analysis of several sources,

including the data base of the S3 Platform, scientific literature, media and internet sources.

Practices were analysed on the basis of three main variables:

- the theme they deal with;
- the role envisaged for the local authority;
- the envisaged relational context.

Themes

Three main sets of elective themes emerge in the BP analyzed:

- the "*smart city*" concept is a popular concept that summarizes the attempt to coordinate the deployment of new technologies in order to significantly improve living conditions in urban settings. S3 projects at the local level articulate this challenge around the following main sub-themes: ICTs, smart energy, infrastructures, circular economy;
- although typically a topic for larger scale (regional or national) policy actions, *R&D&I* lends itself to a local policy design around two sets of sub-themes: the establishment of research and higher education facilities and their integration in the local settings; incubators etc., high tech companies, knowledge-intensive and business support services;
- *innovation-led development* issues are dealt with through local interventions emphasizing specific key aspects (e.g. environmental sustainability) and especially in specific settings such as: rural areas, remote and scarcely populated areas, inner areas, areas characterized by processes of industrial restructuring and/or deindustrialization.

The role of the local/sub-regional government

A role for the local (or sub-regional) institutions is identified along different phases of the policy cycle:

- already at the *design* phase one can consider:
  - the local management of an entrepreneurial discovery process;

  - locally-specified projects within the framework of the regional strategy;
- at the *delivery* stage:
  - a decentralized implementation of the regional programs;
  - the set up of the regulatory and/or organizational framework at local level;
- as *experimentation* of the regionally-designed strategy:
  - targeted demand-side policies (like pre-commercial procurement initiatives);
  - "living labs".

The relational context

The local role in S3 can be realized within different relational contexts:

- *within the local/sub-regional context*: this happens typically when the local jurisdiction is relevant in size (e.g. metropolitan areas, city/regions), although some BPs are not easily classified accordingly because of the specific institutional context (e.g. in the case of "small countries");
- *within the region's (or national) framework* and under regional (or national) government coordination;
- *as part of wider networks*, either national or international (e.g. within Interreg projects).

The information regarding the selected GPs have been organised in an Excel database reporting: location, area of action, involved actors, addressed themes, role played by the local government, relational context, timescale, link and contact details.

Here below an extract is reported.

Title	Country	Region/City	Area
BP01 – High Technology Network	IT	Emilia Romagna regions, city of Bologna	Industrial and applied research and technology transfer for enterprises
BP02 – Metropolitan Covenant for Employment and economic and social development	IT	Metropolitan area of Bologna	Innovative manufacturing, green and circular economy, employment, social inclusion and technical culture
BP03 – The re-launch of technical education	IT	Metropolitan area of Bologna	Educational services in the manufacturing areas, in economic sector and others (food, agro industry, buildings, environment)
BP04 – OF – Opus facere. Make to understand. Territorial Employability Laboratory	IT	Metropolitan area of Bologna	Training services in health and wellbeing, mechatronics and motoring, agro-food, new materials, automation, ICT and Big Data
BP05 – GreenPac Polymer Application Centre	NL	City of Emmen and the Drenthe region	Triple helix collaboration in the bio-based sector (i.e. Green Chemistry) through knowledge development and transfer and education
BP06 – ECOmunity Park Oosterwolde	NL	City of Oosterwolde	Quadruple Helix collaboration focusing on regional development, cooperation between companies and education and quality of space
BP07 – Entrance – Energy Transition Centre	NL	City of Groningen	Plans to exceed energy market demands with new energy products and services

Title	Country	Region/City	Area
BP08 – Regions of Smart Factories	NL	Northern Netherlands	Innovation in 'old' manufacturing processes through research into new technologies
BP09 – Implementing the Entrepreneurial Discovery Process in practice	M	Malta	Structures and systems to stimulate, guide and drive the local EDP
BP10 – Review and re-design of Malta Enterprise's industry support schemes for RD&I	M	Malta	R&I incentive schemes for higher value added
BP11 – Biomalta – Setting up a Life Sciences Centre	M	Malta	Life Sciences and associated technologies
BP12 – PECT TurisTIC en família	ES	Tarragona province	Destination tourism
BP13 – PECT INNOAGRO	ES	Lleida municipality	Innovation in the agro-food industrial sector embracing advanced manufacturing, food industries, cultural industries
BP14 – RIS3 EUSKADI – RIS3 Basque Country	ES	Basque Country	Inter-departmental cooperation for the S3 deployment
BP15 – MobileMonday	EW	City of Tartu	Networking events between small and large IT companies, and between local and foreign talent
BP16 – SPARK Demo	EW	City of Tartu	Showcase the capabilities and strengths of local and regional companies located with focus on S3 domains (wood, metal, food, IT, biotechnology)

Title	Country	Region/City	Area
BP17 – sTARTUp Day	EW	City of Tartu	Collaboration between stakeholders from traditional business sectors, IT and biotechnology, start-ups, business support organisations, government and media
BP18 – Tartu Entrepreneurship Week	EW	City of Tartu	Business culture and attitude towards entrepreneurship
BP19 – Territorial targeting of Regional Operational Programme of Wielkopolska Region 2014-2020 (WRPO 2014+)	PL	Wielkopolska region	Place-based needs and challenges diagnosed in different areas trough different territorial-based tools
BP20 – Skills Academy of Pila	PL	City of Pila	Entrepreneurial attitudes among high school student
BP21 – DUAL EDUCATION – STUDIES OF THE 21st CENTURY	PL	City of Pila	Innovative educational project based on acquiring theoretical knowledge supported by practice
BP22 – Export activities	PL	Gostyn County	Actions directed to local companies to improve the condition of companies in the field of export and UE supplies
BP23 – Contest for the Marshal of the Wielkopolska Region Award	PL	Wielkopolska region	Spreading smart specialisations for Wielkopolska in scale of country and world
BP24 – AS-Fabrik	ES	City of Bilbao	Digital transformation of industry
BP25 – Smart LEADER	ES	City of Extremadura	Rural development
BP26 – RegioWIN	DE	Baden Württemberg region	Light-house projects

Title	Country	Region/City	Area
BP27 – LEP – Local Enterprise Partnerships	UK	England	Local enterprise partnership for S3 delivery
BP28 – Metropolitan Digital Fabric	IT	Sardegna region, city of Cagliari	Complex project for innovative solutions to specific local problems
BP29 – Living Labs-ICT Apulia innovation in progress	IT	Puglia region	Experimenting innovative (ICT) solutions at local level
BP30 – S3	FI	Helsinki-Uusimaa region	Municipal + metropolitan S3
BP30 – Smarter City Karlsruhe Initiative	DE	City of Karlsruhe	Smart city strategy
BP31 – Campus Skelleftea	SE	Västerbotten County, city of Skellefteå	"Multi-university shared campus" in remote community
BP32 – Route des Lasers	F	Aquitaine region	Public-private partnership to support the establishment of high tech companies specialising in optics-lasers
BP33 – Rider-SOE	F-ES-P	Various local communities	Local innovation systems in rural settings, with transnational platform
BP34 – Smart energy	CZ	City of Litoměřice	Smart energy strategy
BP35 – ENIGMA	GR	City of Thessaloniki	Joint transnational pre-commercial procurement (PCP) procedure between 5 cities: Eindhoven (coordinator), Malmo, Espoo, Stavanger and Bassano del Grappa. Focus: innovative public lighting

Title	Country	Region/City	Area
BP36 – Action research	ES	Pais Vasco	Action research at local level for territorial development and social innovation
BP37 – Creative meeting places	SE	Jämtland Härjedalen region	Municipal business units to facilitate cross-fertilisation
BP38 – Cradle-to-Cradle	NL	Venlo municipality	Support to circular economy
BP39 – Smarter City	DE	City of Karlsruhe	Smart city

Figure 3 - The RELOS3 Good Practices database

In the following pages, 12 case studies are discussed more in depth as particularly relevant and inspiring to the research objectives. For each practice, after presenting a synthesis of its main elements (territorial scale, goals, partnership), the added value of the local scale and the main elements of originality are questioned.

TITLE

The re-launch of technical education as part of the broader strategy "Manufacturing Renaissance"

WHERE

Italy (Metropolitan area of Bologna and Emilia Romagna NUTS2 region)

THE PRACTICE IN A NUTSHELL

The practice was designed in 2013 by the Metropolitan City of Bologna and was implemented by an inter-institutional public-private partnership made of local educational institutes and their associations (AsaBo – Association of Autonomous Schools of Bologna); public institutions (the Emilia Romagna regional administration and its agencies; the Bologna Chamber of Commerce); enterprises and their representations; research centres.
The main goal of the practice is to give new vigour to the Bologna traditional manufacturing sectors and prompt the application of new technologies and digitalisation by bettering the existing local educational services.
The project initially involved 9 local institutes operating in the mechanics, electronics, ICT, chemistry, graphics, logistics and fashion fields, and focused on 4 principal areas of intervention, i.e.:

- welcome programs (e.g. organisation of open days and workshops to promote technical culture in lower secondary schools; launch of the Technical Culture Festival);
- partnership with companies (e.g. through the definition of conventions and standard procedures);
- curricular, methodological and organizational innovation (e.g. experimentation of integrated curricula among different educational schools and fields);
- network activities between institutes (e.g. through the development of digital platforms for cooperative learning among institutes of different fields and territories).

In 2015 the practice was extended to regional institutes of the economic sector (accounting, finance, marketing, business information systems, international relations, tourism) and courses on food, agro industry, buildings and environment were launched.

ADDED VALUE OF THE LOCAL SCALE

The practice addresses an issue, i.e. education, in respect to which the local level appears to be particularly legitimated and effective in designing and delivering successful policy actions.
Operating at the metropolitan city scale allowed to reach a better integration among schools – territory – jobs at the territorial level. The role of the local government of the city of Bologna was fundamental in building up the partnership and prompting an effective knowledge exchange and dialogue within the involved stakeholder, thus facilitating the identification of the relevant educational areas responding to the needs of local firms operating in traditional sectors (such as food, agro industry, buildings) and others (e.g. environment).
This also stimulated the progressive inclusion of new partners and the extension of the practice to new sectors and areas, generating transferable knowledge throughout the whole region.

ELEMENTS OF ORIGINALITY

As part of this practice, education, and more precisely technical education, is addressed as a strategic asset to stimulate the economic, social and cultural renaissance of the Bologna traditional manufactory and to support the recovery and competitiveness of its local industry. In line with the industry 4.0, investing in the technical educational culture is seen as key to stimulate the digitalisation of traditional sectors, and actively contributing to nurturing the local innovation system.

TITLE

GreenPac Polymer Application Centre

WHERE

Netherlands (Emmen and the Drenthe region)

THE PRACTICE IN A NUTSHELL

Green PAC is an open innovation centre for green plastics, fibres and composite that offers to local businesses the opportunity to develop and carry out innovative projects under favourable conditions. Green PAC stands for:

- The development of knowledge;
- The valorisation of promising innovative ideas and research;
- The facilitation of projects in the commercial risk phase.

Moreover, the Green PAC hub also focuses on education by developing connections between Higher Professional Education 'HBO' (Centre of Expertise) and Secondary Vocational Education 'MBO' (Centres for Innovative Craftsmanship) programmes and the business community in order to offer to students the opportunity to learn and at the same time gain practical experience in the sector.
The hub is nurtured by the constant knowledge exchange and dialogue among public and private territorial actors of the cluster around Zwolle and Emmen in the Netherlands.

ADDED VALUE OF THE LOCAL SCALE

The "green technology" challenge is addressed by the city of Emmen with the aim of stimulating as much as possible the plastics (chemistry) cluster and in this way create more (i.e. better and sustainable) jobs at the territorial level. This entails the need to develop an effective eco-system at the local level that facilitates access to all the assets that a company needs i.e. not just the availability of raw materials but also access to skilled labour, contacts, knowledge and methods. The local scale appeared the most suitable level to prompt a close cooperation among the high-tech business community and the knowledge institutions made of students, lecturers, researchers, professors of applied sciences, which is key to nurture the innovation process.

ELEMENTS OF ORIGINALITY

Green PAC provides all the necessary ingredients and links to nurture the innovation process and stimulate the translation of technological issues into research themes, that lead to innovation and to new products. The practice emerges as a successful mix of research activities, educational services and enterprises supporting schemes. The hub allowed to quicker the adaptation of new technology in the local business community and bettered knowledge circulation between universities, technology companies and regional education institutes, thus stimulating also the development of start-ups and new enterprises.

TITLE

PECT TurisTIC en família

WHERE

Spain (Tarragona province)

THE PRACTICE IN A NUTSHELL

With a total budget of 3,7mil. euro and co-financed by the ERDF, the PECT TurisTIC en família project was approved by the Catalan government in 2018 and will be concluded by 2020.
It is aimed at boosting and improving the family experience tourism in Tarragona province. The actions are grouped around the so-called Territorial Specialisation and Competitiveness Project (PECT) TurisTIC in the family, which is implemented by the following local partners: Rovira i Virgili University; Tourism Board of the Costa Daurada and Terres de l'Ebre; Fundació Parc Científic i Tecnològic de Turisme i Oci de Catalunya; Centro de Difusión Tecnológica de la Madera y el Moble de Cataluña; Instituto Catalán de Paleoecología Humana y Evolución Social (IPHES); Ayuntamiento de Montblanc.
The objective of the different involved agents is to generate competitiveness, innovation, growth and new direct and indirect employment at the territorial level, turning the tourist destinations of the Costa Daurada and the Terres de l'Ebre into an innovative global reference for family tourism.
Actions entail different areas given the extension of the region, including both coastal destinations and cultural and rural ones. Amongst these:

- Family vineyard, i.e. boosting the destination and development of wine tourism products designed for families;
- Innovative beach, i.e. boosting the destination and development of sustainable solutions for more efficient management and better family safe beach experience.
- Historic & Cultural experience, i.e. boosting the destination and development of solutions in education, cultural and historical information based on the experience of inspiring discovery.

ADDED VALUE OF THE LOCAL SCALE

The governance model of the project is based on the recognition of the essential function of the local scale in managing the S3. The Tarragona provincial government plays an important role in leading and coordinating the complex

network of public and private actors involved in the definition and operationalisation of the project's actions. In fact, in order to assure the effective delivery of the strategy, the provincial government works with a high number of municipalities, counties and other local actors (different universities, research centres, business associations, tourism agencies).
Moreover, the Tarragona provincial government is involved and supports other projects launched by the regional level in the field of tourism. In particular, the Terres de l'Ebro Biosphere Reserve, coordinated through the Baix Ebre County Council; Innovative, safe and healthy Food, through the City Council of Reus; and the 'Priorat-Montsant Siurana, agricultural landscape of the Mediterranean mountain', through the Priorat County Council.

ELEMENTS OF ORIGINALITY

The project is an interesting practice in how it was able to address tourism as a multidimensional and multidisciplinary innovation domain. The vision of the project is to improve the sector both from a destination perspective (making the territory more attractive and competitive to tourists, specially family oriented) and from a "economic sector" perspective, by enhancing the innovation capacities of the companies working in tourism (hotels, restaurants, commerce) but also using tourism as a lever to activate other economic sectors, always with innovation as a driver.

TITLE

sTARTUp Day

WHERE

Estonia (city of Tartu)

THE PRACTICE IN A NUTSHELL

sTARTUp Day is a business festival taking place in the city of Tartu in South-Estonia. First organised in 2016 with the aim of incorporating different business events taking place in Tartu, the sTARTUp Day has become a flagship initiative and is today recognised as the biggest business festival in the Baltics bringings together stakeholders from traditional business sectors, IT and biotechnology, start-ups, business support organisations, government and media.
The Festival is conceived as a frame where start-uppers and traditional entrepreneurs, experts and newbie, government and media can discuss business, innovation and new technologies, share start-up success stories and lessons learned. The Festival is open for everyone who is interested in:

- entrepreneurship and start-ups;
- getting to know how to avoid making common mistakes in starting a business;
- getting to know how to increase success rate;
- meeting with interesting people, networking with greatest minds and making new contacts,
- or just wants to enjoy the inspiring vibes of the most awesome business festival held in Tartu.

The program entails matchmaking events completed by several pitching competitions, hands-on seminars with professionals and a large expo area where companies showcase their latest innovations.
The main organising partners are: University of Tartu, Tartu City Government and the sTARTUp Community. Supporting partners are: Tartu Science Park, Tartu Business Advisory Services, Tartu Centre for Creative Industries, Tartu Biotechnology Park, University of Tartu Idea Lab, Ole Rohkem, Contriber, sTARTUp Hub, Spark Hub, Buildit, Convertal, Mooncascade.
The next sTARTUp Day will be held in January 2019.

ADDED VALUE OF THE LOCAL SCALE

The Tartu City Government together with the University of Tartu has designed and launched this initiative acting as a promotion and knowledge diffusion agent, stimulating the territorial innovation process and the creation of new & innovative entrepreneurship related to the local manufacturing tradition and culture.
The local level also emerges for its effectiveness in managing the otherwise weak outward-looking dimension of the city of Tartu through the activation and attraction of an international network. The coming edition (23-25 January 2019) is expected to bring together over 100 world-class speakers and 4,000 international attendees, thus contributing to raising awareness of the Tartu territorial assets.

ELEMENTS OF ORIGINALITY

The practice is a good example of inspiring platform for generating new business ideas, exchanging experiences and contacts and enhancing cooperation between start-ups, mature companies and public organisation. Particularly, it emerges as an effective and original tool to stimulate the contamination among tradition and innovation. The initiative stimulates the modernisation of traditional industries and small handicraft enterprises thus enhancing their competitiveness in the global markets.

TITLE

Biomalta – Setting up a Life Sciences Centre

WHERE

Malta

THE PRACTICE IN A NUTSHELL

The Malta Life Sciences Park (MLSP) is a world-class research facility and digital hub set to spur the growth of Malta's life sciences sector by increasing available skills, drive new FDI and RTD activity and incubate new enterprises. The life sciences sector has a large presence within the Maltese economy, with many companies operating in the pharmaceutical, medical device, healthcare technology and health tourism sectors. This is in large part a result of Malta offering a knowledgeable workforce of skilled, English speaking individuals and its well-established connections to foreign markets. The MLSP aims to further leverage these advantages, allowing new life sciences companies to launch with minimal preparation and start-up costs.
The specific objectives of the centre are:

1. Creation, incubation and attraction of new knowledge-based companies;
2. Supporting new and existing SME to invest in knowledge-based activities;
3. Increasing collaboration between knowledge institutes and Malta enterprises;
4. Develop a currently unutilised area designated as an employment node around the MDH and UoM in generating high value-adding activities.

The MLSP provides laboratory spaces to new and existing companies. It also extends business advisory services, financial incentives and tangible support to companies intending to set-up operations.
The project was launched in May 2010 by the Malta Finance and Economic Development Ministry. The construction of the BioMalta campus was completed in 2015. The project forms part of a larger biotechnology park proposed to be built in the Sam Gwann Industrial Estate.

ADDED VALUE OF THE LOCAL SCALE

The project entails a strong territorial dimension. In addition to supporting the growth of the region's knowledge-based economy, the MLSP aims at stimulating new & innovative entrepreneurship and create new jobs at the local level. A key role in this respect is played by Malta Enterprise, the government agency responsible for attracting foreign investors and

promoting industrial development in Malta. Moreover, the project site is strategically located in proximity to the University of Malta and Mater Dei Hospital, enabling operating companies to work in collaboration with the university staff and the hospital.

ELEMENTS OF ORIGINALITY

The Centre provides a facility with the right functional environment whereby target companies achieve expansion and growth through specialisation in key knowledge based activities and networking with companies from the same sectors, hospitals, academia and other service providers like laboratories, that decide to set an operation within the centre as well as generate employment by incubating new enterprises.

TITLE

Rider-SOE

WHERE

France – Spain – Portugal

THE PRACTICE IN A NUTSHELL

Rider-SOE was an economic cooperation project aimed at creating local systems for the access of small rural enterprises to innovation in order to promote territorial economic dynamics. It involved five partners from the SUDOE zone:

1. ADEFPAT (Asociacion pour le Développement par la Formation des Projets, Acteurs et Territoires) – lead partner (FRANCE)
2. SyndicatMixte du Pays Couserans Direction – Associated Partner (SPAIN)
3. DIPUTACIÓN PROVINCIAL DE GRANADAÁREA DE CULTURA, JUVENTUD Y COOPERACIÓN LOCAL – Associated Partner (SPAIN)
4. CORANE – ASSOCIAÇÃO DE DESENVOLVIMENTO DOS CONCELHOS DA RAIA NORDESTINA – Associated Partner (PORTUGAL)
5. Pays de Figeac – Associated Partner (FRANCE)

The project – covering a period of 32 months (from May 2009 to December 2011) with a total budget of EUR 1.007.000, 75% of which coming from the European Regional Development Fund (ERDF) – helped the partners to gain a shared culture of innovation, overcoming the disadvantages of the rural areas of the SUDOE Space. The main delivered products were:

- Development of a feasibility study for the innovativeness platform adapted to the needs of each territory;
- Creation of 4 permanent platforms of innovation (of business services) to search new sectors/needs;
- Training courses for "ambassadors of innovation" in the SUDOE space;
- Creation of 5 "clusters of companies for innovation";
- Creation of 4 on-line exhibitors of commercialization of the products of the companies;
- Identification of a common protocol to continue training in rural areas in the SUDOE zone.

ADDED VALUE OF THE LOCAL SCALE

SMEs represent 90% of all companies in the European Union. This kind of businesses show relevant potentials in terms of innovation that are not always completely expressed. The reasons for that are, amongst others: isolation, the lack of cooperation between companies, their diversity of status and activities as well as difficulties in accessing support services. RIDER connected the existing regional systems with the local needs by creating an assistance scheme for very small businesses in rural areas. The project allowed rural businesses to build up a strategy of adaptation to markets and facilitated their internationalization. Furthermore, the project created jobs and new activities at the local scale that, at the end, increased the power of attraction of the rural territories of SUDOE.

ELEMENTS OF ORIGINALITY

The RIDER project generated results at two levels. On one side, it stimulated organizational innovation through the creation of local innovation platforms ("clusters") structured in a transnational network. On the other side, the project contributed to marketing innovation through the creation of local on-line exhibitors. Following the aim of ensuring the diversification of the SMEs, RIDER allowed entrepreneurs to define a collective and innovating strategy of promotion of manufactory products and services, according to the needs of consumers. Local Innovation Platforms also formed "innovation ambassadors" i.e. business leaders who implemented strategic plans focused on innovation in different companies ensuring their further development, once the project ended.

TITLE

Route des Lasers

WHERE

France (Aquitane)

THE PRACTICE IN A NUTSHELL

In 1999, France took the decision to replace nuclear testing with high-energy laser simulations. It was then decided to build the Megajoule Laser (LMJ), one of the most significant tools for simulation, in the Aquitaine region. Taking into consideration the estimated amount of property investments, a local management company (Société d'Economie Mixte Locale, 17 SEML), whose statutes allow for public and private funds to be combined, was created to implement the project. The project allowed the development of three business parks (LASERIS 1, LASERIS 2 and Photonic City – Cite de la photonique) representing slightly more than 40 hectares, for the benefit of industry and service businesses. The project started in 2004. Investments are still progressing but activity areas are already operational. The experience involves the regional government, "Department de la Gironde", municipalities, the chamber of commerce, local banks, and companies.

ADDED VALUE OF THE LOCAL SCALE

The Route des Lasers project is a flagship for the Aquitaine region and remains among the most strategic and most promising in terms of scientific, economic and social development. The project created job opportunities and achieved national and international recognition of the Aquitaine region in the field of lasers and related technologies. To date, the laser-optical sector includes 80 institutions, 8,850 jobs and 600 researchers. The three business parks host 39 companies and generate 400 jobs and 800 indirect jobs, thus greatly exceeding the initial objective of creating up to 100 jobs.

The emergence of a new industrial sector is a very ambitious goal that can only be achieved in the long term. Some achievements are still on-going (e.g. the business development of Park LASERIS 2 – reserved for solar energy – has been hampered by the moratorium on photovoltaic facilities). However, all the decisions taken to develop the sector have helped make the concept of the 'Aquitaine laser industry' credible and visible at national and international levels.

ELEMENTS OF ORIGINALITY

The only equipment comparable to the Megajoule Laser in Aquitaine is located in California. The importance of the LMJ has generated major interest in the scientific community from industrial and scientific perspectives. The established management allowed for the emergence of a new industrial sector focused on laser technologies and their applications and for strengthening basic research and scientific sectors of higher education and continuing education.

TITLE

Metropolitan Digital Fabric (Tessuto Metropolitano Digitale)

WHERE

Italy (Metropolitan area of Cagliari and Sardegna NUTS2 region)

THE PRACTICE IN A NUTSHELL

Metropolitan Digital Fabric is a research, training and technological transfer project carried out by the Centre for Advanced Studies, Research and Development of Sardegna (CRS4) and the University of Cagliari. It is aimed at studying and developing methods and technologies to offer new intelligent solutions to improve city attractiveness, resource management, and the safety and quality of citizens life through the close combination of use and experimentation of advanced communication infrastructure and widespread sensors, and the study and development of innovative vertical solutions. More precisely, the project's goal is to produce concrete solutions in response to specific territorial needs affecting the following four macroareas:

1. Local intelligent networks for energy distribution;
2. Applications for meteorology and flood prevention, with extensive use of sensors (Internet of Things), cloud and big data;
3. 3D modelling of architectural assets and public buildings;
4. Traffic management, with wide use of cloud solutions and production of open data.

The project started in 2017 and will last till the end of 2021.

ADDED VALUE OF THE LOCAL SCALE

The project is based on the effective collaboration between the regional and the metropolitan level. The role of the Municipality was essential to identify the relevant issues on which focusing the experimentations in relation to specific localized needs such as forecasting and mitigation of large meteorological phenomena. Therefore, the project experimentation is carried out at the metropolitan city scale through the direct involvement of the Municipality of Cagliari, besides generating transferable knowledge throughout the region.

ELEMENTS OF ORIGINALITY

As recognized by the Strategic Implementation Plan-SIP, actions to overcome the obstacles that still hamper smart cities include: the development of infrastructure platforms and common architectures for smart city information; the availability of data in the urban domain; tools for scalable integrated design, simulation and multi-criteria optimisation to enable multi-stakeholder analyses of different spatial and sectoral perspective. The project can actively contribute to the implementation of these strategies through the development of an open urban digital infrastructure of data from sensors distributed throughout the metropolitan area and multi-sector and multi-space decision supporting systems, by means of advanced analysis, simulation and visualization tools, enabling new digital services in the energy and environment domains, to improve the quality of life of citizens and the attractiveness and competitiveness of the city.

TITLE

LEP – Local Enterprise Partnerships

WHERE

England (UK)

THE PRACTICE IN A NUTSHELL

To replace existing Regional Development Agencies, the May 2010 Coalition Agreement outlined plans for the creation of Local Enterprise Partnerships (LEP) defined as "joint local authority-business bodies brought forward by local authorities themselves to promote local economic development". The Government received a total of 62 LEP proposals, 24 of which were approved in the Local Growth White Paper. A further 15 LEPs were subsequently approved covering the remaining areas in England.

According to the White Paper the roles of the LEPS are: i) working with Government to set out key investment priorities, including transport infrastructure and supporting or coordinating project delivery; ii) coordinating proposals or bidding directly for the Regional Growth Fund; iii) supporting high growth businesses, for example supporting consortia to run new growth hubs; iv) making representation on the development of national planning policy and ensuring business is involved in the development and consideration of strategic planning applications; v) lead changes in how businesses are regulated locally; vi) strategic housing delivery, including pooling andaligning funding streams to support this; vii) working with local employers, Job centre Plus and learning providers to help local workless people into jobs; viii) coordinating approaches to leveraging funding from the private sector; ix) exploring opportunities for developing financial and non-financial incentives on renewable energy projects and Green Deal; x) becoming involved in delivery of other nationalpriorities such as digital infrastructure.

The LEP network – a not-for-profit company limited by guarantee, governed by three volunteer LEP Chairs – allows LEPs to discuss issues of shared importance, engage with government and share knowledge and good practice.

ADDED VALUE OF THE LOCAL SCALE

Cities, towns and rural areas across England face a range of economic opportunities and challenges. Over recent years, LEP have assessed these local needs and tailored economic policy responses accordingly. They have played an important role in supporting local growth and have increased private sector

involvement in economic decision making, encouraged greater collaboration between public sector leaders across administrative boundaries, and ensured that effective investments are made across areas in growth priority projects. Moreover, in order to work with 38 LEPs, the Smart Specialisation Hub has been set up. The Hub is a facility to develop innovation strategies and collaborations that follow S3 methodologies.

ELEMENTS OF ORIGINALITY

LEP replaced the former Regional Development Agencies which delivered poor value for money; covering sprawling government office regions, the Regional Development Agencies were distant and remote from local business, and the arbitrary regions had no connection with natural economic areas. This approach has led to significant local innovation.

The collaboration between local actors is strategic to the model. Private sector leadership is integral to the LEP model. Businesses provide essential market intelligence to inform local decision making. Councils are also critical. They provide political accountability and community knowledge. They support business growth through their statutory functions, investment in economic infrastructure, and wider role in creating quality places. Successful LEP have also worked closely with universities, business representative organisations, further education colleges, the voluntary sector, and other key economic and community stakeholders.

TITLE

Contest for the Marshal of the Wielkopolska Region Award

WHERE

Poland (Wielkopolska Region)

THE PRACTICE IN A NUTSHELL

The practice aims at spreading smart specialisations for Wielkopolska in scale of country and world, building awareness of the Wielkopolska brand and reach the goals of the strategic documents of the Wielkopolska Region concerning development, innovation and economic promotion.
To this end, the Marshall Office awards the companies' most innovative solutions. Products or services are divided into six categories in line with the six smart specialisations for the region, namely: Bio-materials and food for aware consumers, Interiors of the future, Industry of the future, Specialised logistics processes, ICT-based development, Modern medical technologies.
Winners of the competition receive financial awards the total value of PLN 120,000.00 and promotional packages whose total value amounts to PLN 90,000.00.

ADDED VALUE OF THE LOCAL SCALE

The award stimulated knowledge diffusion and raised awareness around the implementation of innovative products and services at the local scale in line with the S3 strategic priorities.

ELEMENTS OF ORIGINALITY

The award marks the local relevance of the S3 strategy, raising local awareness and engagement.

TITLE

Skills Academy of Pila

WHERE

Poland (Pila)

THE PRACTICE IN A NUTSHELL

The Skills Academy of Pila initiative is aimed at stimulating entrepreneurial attitudes among high school students. By participating to "Lessons of Entrepreneurship", workshops, consultations and meetings with entrepreneurs, students acquire key competences in the marketing and advertising field to prepare competition's projects.
Expected benefits of the practice entail:

1. Stimulate the youths' abilities to take more conscious decisions about their education path and, consequently, their professional development;
2. Enhance entrepreneurial attitudes among youths;
3. Integrate theory with practise through the organisation of meetings with coaches-practices, local businessmen's and marketing experts;
4. Develop marketing strategies used by companies and finding new possibilities of promotion;
5. Broaden school knowledge;
6. Get practical knowledge about how to set and develop a business;

ADDED VALUE OF THE LOCAL SCALE

The project was developed by the Pila Community and is realized in cooperation with Inwest-Park, a municipal company working for the creation of favourable conditions to raise investment attractiveness and the development of entrepreneurship in the Piła sub-region.
Designing and implementing the practice at the local scale allowed to better identify and plan the best forms of support for youths, which give the key competences and knowledge necessary to prepare competition's projects; and to obtain the commitment to co-operation the biggest group of experts, businessman and companies, who give the highest profits to the project.

ELEMENTS OF ORIGINALITY

The greatest idea of the Academy is the creative cooperation model of students and businessmen's, who become real teachers i.e. mentors and guides in the field of running an own company. Participating to this initiative showed to generate benefits for both sides:

- for students, the opportunity to complement and broaden school knowledge, getting the possibility to check knowledge it the real world of practice;
- and for businessmen, the opportunity to reap the benefits of students' creativity and fresh view.

TITLE

Cradle-to-Cradle

WHERE

Netherland (Venlo)

THE PRACTICE IN A NUTSHELL

In contrast to the concept of "Cradle to Grave", illustrating our resource-to-waste lifestyle, the "closed loop" or "Cradle to Cradle" (C2C) approach to production processes seeks to create systems that are not only efficient but also essentially waste-free.
The Venlo Region, located in the southeast of the Netherlands, is the first region in the world to embrace the C2C principle on a large scale. The Cradle to Cradle Products Innovation Institute (C2CPII), headquartered in the USA, opened its first European product certification training center in Venlo in 2012. The Institute's aim is to provide support to business to develop new products, and to create a platform to encourage European companies to become more familiar with the benefits and process of Cradle to Cradle® product certification.
In this frame, the Cradle to Cradle Certified Products Program is a publicly available transparent and third- party verified methodology that encourages manufacturers to make products in fundamentally better ways by providing them and their suppliers with criteria and requirements for continually improving products and what they are made from.
The Institute is administered and supported by the C2C ExpoLAB Foundation. Also supported by the municipal authority of Venlo and the European Union. The municipal offices in Venlo are situated in a unique building, designed and built based on the principle of Cradle to Cradle (C2C).

ADDED VALUE OF THE LOCAL SCALE

The city of Venlo adopted the Cradle to Cradle model as a driver of the region's economic development, and many large companies in the region have joined. Venlo also hosts and partly funds the C2C ExpoLAB, which is providing consultancy services, workshops, project support etc, and also facilitates the C2C-Centre, which is actively involved in the gathering and dissemination of information on Cradle to Cradle. In this way, Venlo demonstrated how the circular economy can be a model to collectively solve problems, share best practices, and build capacity for positive impact.

ELEMENTS OF ORIGINALITY

C2C has quickly become the main organizing principle for the development of the Venlo region, and is successful in supporting private demand. It is seen as a transferable economic model with the capacity for enhancing the cooperation of all major regional players from local governments, industry, civil society organizations and NGOs, universities/educational institutions, and citizens.
In line with the Venlo's strategic vision 2030, the municipality wants to encourage other (local) government, businesses and organizations to start innovating according to the principles of Cradle to Cradle and circular economy. Therefore, Venlo wants to share the gained knowledge and experience based on open-innovation.

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