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Enhanced quality of policy governance resulting from the implementation of the Smart Specialisation Strategies

As a general overview of the S3 governance (structure and processes) the overall management of the Strategy lays in the responsibilities of the Management Authority (MA) of the ERDF ROP which is in charge of the design of the EDP and the management of the Strategy. The MA reports the results of the EDP process, carries on the proper implementation of the Strategy as well as the monitoring, evaluation and communication activities of the Strategy.

The S3 governance is based on two instruments:

- The “Technical Coordination Unit”, composed by the officials responsible for the Programmes contributing to the Strategy (mainly co-funded with ERDF and EARDF, but also other Regional Programmes), and other regional Directorates as well as Regional Agencies and Institutes. It acts as a tool for the internal operational coordination, with the aim to maximise the effectiveness of regional interventions and the monitoring of Programmes related to the implementation of the Strategy.
- The “S3 Observatory”, consisting of the main regional innovation stakeholders (primarily the Technological Districts) and Technical Coordination Unit, that acts as a mirror group of the Strategy. Within the S3 Observatory the MA shares the progress of the Strategy, discusses on the main regional innovation dynamics and on how to exploit any opportunities for development of the regional innovation system. It meets periodically and it has been actively engaged for the scoping and the implementation of the Mid-Term Review (MTR) of the Strategy.

The introduction of the S3 governance structure contributed to some significant evolutionary dynamics:

- in Tuscany before S3, innovation governance was more de-structured ("grassroot"). There were 12 innovation poles and their activities were carried out autonomously; their coordination was not systematic and mainly carried out on specific issues and contents. The S3 has certainly contributed to contextualize the operations of the major innovation stakeholders within a strategic framework, enabling them not only as innovation intermediaries but also as innovation policy agents, through their contribution in the selection of priorities, as well as in the decision-making process. This engagement has led them to a greater legitimization, an interdisciplinary coordination and cooperation, strengthening the network of technological transfer intermediaries. This process has been characterized by a co-evolutive dynamic, it has involved the regional administration offices, with great reciprocity and inclusion. This structure will be further developed with regards to the Enabling Condition, foreseen by the framework of next EU programming period;

- On some specific topics (industry 4.0, cultural heritage, agrifood and life sciences) a strong partnership and collaboration between innovation stakeholders and regional administration has been achieved. On the domains mentioned above, the Regional Administration has acted not only as a facilitator, but also as a coaching and coordination player. One of main outputs of those dynamics, especially with regards to industry 4.0, has been the role played by the Regional Administration, directly managing the Regional Platform for Industry 4.0; another example is the Unit for the Exploitation of Research Results in Health and Life Science, jointly coordinated by health policies regional offices and the Life Sciences Technological District; similar examples are related to the direct involvement of regional offices in the S3Ps for Agrifood and Industrial Modernisation;
- A relevant dimension relates to the interregional dimension of innovation networks. The S3 paradigm has facilitated interregional innovation partnerships, both in National Technology Clusters and European networks. There have been numerous support requests for H2020 and Interreg Europe projects. Tuscany Region itself is directly involved in Interreg projects, ERANET cofund, as well as in the above mentioned S3Ps. There is significant cooperation on the various issues of S3, at the interregional level. Although the S3 governance instruments are not formally engaged to discuss on possible partnerships and application to EU Calls for proposals, indeed the mutual learning and understanding, as well as the flexible and informal dimension of governance operations, have certainly contributed to opportunities for collaboration.
- The introduction of a techno-political discourse within the policy decision making process. Until the introduction of the S3 paradigm the involvement of stakeholders was useful to detect regional intervention in terms of tools, not in terms of technological perspectives. Main stakeholders contributed to the discussion on policy instruments (i.e. support to start-ups, cluster policies etc..) and not on development scenarios (i.e. artificial intelligence, block-chain solutions etc..). Now the discussion is on which kind of policy instrument is more adequate in order to reach specific goals in determined domains (i.e. how to design the support to start-ups in artificial intelligence sector, within the next three year). This change of paradigm requires to shorten the intermediation of information as well as new skills and competences within the regional administration. At the same time it requires a continuous territorial engagement, necessary to collect information and to enable a collective agency.

Induced changes in innovation ecosystems towards economic transformation

As a general assumption, indeed one of the main features of the S3 paradigm is the capability to enhance transformative dynamics in the regional innovation system. At the same time anyway it is difficult to determine if main changes occurred in an economy (or in an innovation system) can be univocally related to the Strategy and so accounted as an outcome induced by the Strategy. The financial dimension of the Strategy is very small, if compared to the overall budget of the Region Administration or to GDP of a region. In this context quantitative counterfactual analyses on innovation investments are difficult to be implemented, especially due to the nature of the transformative dimension of S3 paradigm (for instance the difficulties in compare treated and controlled players). Moreover most of expected changes have been explored during the EDP and it is difficult to assess if the Strategy actually determined changes within an innovation system, or rather if the Strategy has somehow undergone them (as an exogenous dynamic) or if it simply detected them and the changes occurred are only just fine-tuned with the Strategy.

At this stage of implementation of the Strategy, the answer to the question “what are main changes induced in innovation ecosystems towards economic transformation” have to be searched in the behaviour of main stakeholder. In Tuscany analysis based on behavioural insight will be carried out (with special attention to main stakeholders or main player behaviour and mindset) and investigating on complexity dynamics, in the novelty dimension and outward looking.

Indeed there is as acceleration towards the circular economy and digitization.

In Tuscany the majority of the industries are operating in traditional manufacturing sectors and they are slowly introducing automation and green solution. Similarly there is a strong attempt to introduced IT solutions in Agri-food (especially in wine and olive-oil sectors). Or indeed there is a strong enhancement in the development and application of IT solution in health sectors and life sciences. The S3 strategy in its first version strongly focussed on the cross-fertilisation and technological hybridation dynamics. The revised version of the Strategy (through the MTR) confirmed that approach especially with regards to robotics, neurosciences, waste management, bio-photonics, machine learning. The cooperative dimension confirms the mindset of main stakeholders oriented to the cross-fertilisation and the exploitation of innovation opportunities based on high level of complexity.

One of the output of this process has been the strengthening of cooperative dynamics among the regional technological district, that have recently set up a consortium of clusters (CLOCK - Cluster of Clusters for Knowledge) as a bottom up initiative to seize the cross sectorial opportunities in Tuscany.

The interregional dimension has been strongly developed. The Tuscan innovation system has always had a strong interregional outlook, there are many high-level research centres and Universities that were accustomed to network with other institutions at international level, even before the S3.

Now the same actors play on interregional and international arenas, not only to promote their own research facilities, their results or competences, but as a part of a system, of a regional strategic framework and of a strategic roadmap. When networking abroad their counterparts are aware that behind them, there is a system, a Regional Administration, a territory and a wider set of

opportunities. This new relation requires a different mindset, awareness, commitment and sometimes also engagement.

Experiences on this side regard topics such as environmental application, health, agri-food, photonics and bio-robotics within interregional or EU co-funded projects, European Platforms, interregional joint calls.

Potential impact of Smart Specialisation in terms of growth and jobs

The logical framework of the Tuscan Strategy is explicitly related to the model of “unbalanced growth” (Hirschman) supporting - on the one hand - the innovative processes of companies able to compete on international markets and - on the other - strengthening assets and endowments at territorial level, enabling backwards linkages (activation effects) in the internal value chains and domestic markets. This approach attempts to combine excellence and relevance, as well as competitiveness and cohesion.

The logical framework above mentioned has characterised the entire Strategy: the scoping activities during the EDP process, the priorities selection, the implementation of the Strategy through interventions in OT1 exclusively towards the so-called "dynamic" companies (positive turnover and employees), as well as in the design and programming of monitoring and evaluation activities.

During the revision of the Strategy (MTR in the 2018) a specific analysis on the territorial potential of main innovation roadmaps activation has been conducted on the basis of the composition of regional value chains and labour market areas dynamics (using sub-regional input/output models) as well as on the basis of the distribution of territorial endowments. This analysis (namely “Territorial Proofing”) allowed the Regional Administration to represent and discuss some potential scenarios especially in scarcely populated areas. In particular, it gave the chance to the Regional Administration to represent the “potential” impact in terms of expected technological diffusion at territorial (sub-regional) level.

In future, a similar analytical approach could be replicated, in order to have a representation of main economic results in terms of growth and labour at territorial level. In order to assess the S3 impact at the end of the Strategy, a comparison between the Territorial Proofing conducted in the MTR, to the Territorial Proofing conducted at the end of the Strategy could contribute to represent the main economic dynamics activated by the Strategy (at regional and sub-regional level) and the implementation of its logic framework.

In a greater detail, this activity could allow to detect the estimated territorial (sub-regional) scale-up, induced by the Strategy, on the basis of its “actual” implementation and through the steps listed below:

- Detection of territorial distribution of actual innovation roadmap activation;
- Analysis of territorial supply chain using I/O methodologies;
- Analysis of income distribution related to workforce commuting using Labour Market Areas;
- Analysis of territorial endowments able to facilitate the effective sustainability of transition.
- Comparison with the estimated distribution of potential innovation roadmap activation (MTR).

In addition, and in order to detect effective transformations at microeconomic level, evaluations on beneficiaries could be conducted with special attention to:

- the directionality of the transition,
- the quality of transition (vertical, horizontal, functional);

- the Technological Readiness Level or Manufactural Readiness Level of results exploitation.

A special attention should be dedicated to the temporal lag occurring between the project implementation and the effective economic transformation that very likely: (a) goes further beyond the timing of the strategy and of the programming period; (b) is affected by auto-selection biases; (c) requires counterfactual approach in order to estimate the effective contribution of the Strategy to the regional economic transition.

ANNEX

Regional statistical data (EUROSTAT):

- Population (2019): 3729
- Tertiary educational attainment of people aged 30-34 years (2019): 29,1%
- Employment rate (2019) (share of people aged 20-64 years): 71,7%
- Gross domestic product (2018): 118 Billions EUR
- Gross domestic product (GDP) per inhabitant (2018) index on EU27 average (100): 103,98
- Labour productivity per hour worked (2017) index on EU27 average (100): 100
- Most common sector of performance for R & D expenditure, (2017): 0,86%
- Researchers (2017) %, share of total number of persons employed measured in FTEs: 0,68

S3 indicators (ISTAT - COEWEB):

- Export growth rate higher than the European one (Definition: Average growth rate of exports at current regional values / Average growth rate of exports at current European values (average values over the past 7 years)): Target 2023 >1,00; Actual value 2014-2019 1,41;
- Balance export import (Definition: balance between exports and imports regional, in relation to gross domestic product regional (average values over the last 7 years)): Target 2023 >7,00%; Actual value 2014-2019 10,25%;

S3 Data (Tuscany Region)

At June 2020, 1808 projects have been activated on TO1 ERDF, divided by technological priority as follows:

- 168 Nano&Chemistry (9.3%),
- 499 Smart Factory (27.6%),
- 1,141 ICT-Photonics (63.1%).

	Total investment	%	Public contribution	%
Nano - Chemistry	131.098.526,67	18,33	54.483.623,25	17,91
Smart Factory	296.044.881,19	41,38	115.268.357,57	37,89
ICT-Photonics	288.207.899,59	40,29	134.475.530,38	44,20
	715.351.307,45	100,00	304.227.511,20	100,00

Main roadmaps:

- Advanced design solutions;
- Eco-sustainable processes
- Photonics and ICT for medical, industrial, civil applications

Qualitative Data on EDP:

- First Version:
 - Over 70 thematic Ws organised;
 - 119 roadmaps discussed;
 - 12 external experts engaged;
 - 13 innovation poles (technological districts), engaged and involving other innovation stakeholders;
 - 8 public events organised;
 - 1 preliminary version adopted, before the final version;
 - open consultation web portal;

- Mid-Term Review:
 - over 40 thematic Ws organised;;
 - over 300 organizations involved;
 - 55 roadmaps discussed;
 - 8 technological districts engaged and involving other innovation stakeholder;
 - 5 analyses carried out;
 - 5 public events organised;
 - open consultation web portal: open.toscana.it/web/ris3-toscana/home