Tools to Analyse Potential Synergies Across Regions: The Case of RIS3 in the Alpine Area

Margherita Russo¹, Francesco Pagliacci¹, Filippo Damiani², Filippo Ferrarini², Pasquale Pavone¹, and Anna Giorgi³

¹ Dipartimento di Economia Marco Biagi, and CAPP (Centro Analisi Politiche Pubbliche) Università degli Studi di Modena e Reggio Emilia. Modena (Italy)
² PhD student, Dipartimento di Economia Marco Biagi | Università degli Studi di Modena e Reggio Emilia. Modena (Italy)
³ Leader AG1 EUSALP Lombardy Region representative, and Gesdimont research centre, University of Milan, Milano, Italy

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EUSALP (EU strategy for the Alpine Region)  
Why does RIS3 matter in Macro-regional strategies? (i)

EU Macro-regional strategy (MRS): policy tool to enhance the EU goals of inclusive and sustainable development, through complementarities/synergies among neighbouring regions.

So far, four MRSs have been implemented: EUSAIR, EUSALP, EUSBSR, EUSDR.

Their value added:
• cross-sectoral approach
• transnational dimension (also including non-EU countries)
• contribution to the better multi-level governance

An ambitious concept to be consolidated, in order to bear fruit
EUSALP (EU strategy for the Alpine Region)
Why does RIS3 matter in Macro-regional strategies? (ii)

EUSALP: the EU strategy for the Alpine Region

**Action Group 1** → developing an effective research and innovation ecosystem

asks for **mapping R&I policies across the Alpine Area.**

RIS3 analysis → essential step for such a mapping
The presentation in a nutshell

1. Research question on RIS3 in meso-level policies
2. RIS3 in macro-regional strategies
3. Data & Methods
4. Results
5. Conclusions & Policy implications
1. Research question on RIS3

General question

If the EU MRS are considered as relevant territorial units to enhance bottom-up policy planning in support of development policies across sectors, how can the integrated territorial development of MRS be supported?

To answer this question, two issues must be addressed:

1. building a comparative framework, helping policy makers in improving their innovative performance by learning from other regions

2. pointing out which complementarities and synergies can be enhanced within the macro-regional strategies
1. Research question on RIS3
Specific question from EUSALP AG1

**How to take advantage from a comparative assessment of RIS3s**
(from design to project implementation),
in order to identify and evaluate complementarity and synergies of **different priority areas**?

To answer this question, two issues must be addressed:

1. identifying how regions have designed their own RIS3s, according to the guidelines (an EC supporting tool for regions)
2. implementing the comparative assessment
2. RIS3 in MRS
Capitalising RIS3 agenda in 2021-27 Cohesion Policy

Regional Innovation Strategy for Smart Specialisation:

- an ex-ante conditionality for accessing to European Structural Investment Funds (ESIF) (European Commission, 2014a; 2014b; 2015)
- Place-based fundamentals (Barca, 2009; Foray, 2015; Foray et al., 2012; 2015; McCann, 2015; McCann and Ortega-Argilés, 2015; McCann and Ortega-Argilés, 2016) with critical implications on innovation potentials (Audretsch, 1998; European Commission, 2003; Tödtling and Trippl, 2005; Begg, 2018) and territorial equity and cohesion (Iammarino et al., 2018)

MRSs:

- a meso-level soft spaces of intervention (Faludi, 2012; Metzger and Schmitt, 2012; Stead, 2014)
- transnational multi-level governance and cooperation
In combining RIS3 within MRS:
• a comparative framework that could help policy makers and stakeholders in improving their innovative performance, by learning from other regions

With regard to EUSALP, we provide:
  o support for a more focused policy design of specific areas of interventions for investments in the macro-region
  o a leverage for developing an integrated smart specialization strategy at macro-region level
3. Methods & Data
Ex-ante analysis of structural socioeconomic conditions

Method:
- An empirical analysis to identify proper regional benchmarking in MRSs (Pagliacci et al., 2018):
  - A new analysis, which is found neither in COWI (2017) nor in Camagni et al. (2017).
  - Moving from the JRC analysis (Navarro et al., 2014) and Iammarino et al. (2018), a new methodology (Principal Component Analysis + Cluster Analysis)

Data:
- Collection of 31 variables from Eurostat, covering EU-28 regions:
  - Population and demography (6 variables);
  - Economy and the labour market (3 variables);
  - Sectoral structure, by section (agriculture, industry, construction, Wholesale and Trade...) and by manufacturing division (22 variables).
3. Methods & Data
A classification of topics emerging from automatic text analysis

Method:
• A non-supervised textual classification of priorities provides an integrated comparative perspective (Pavone et al., 2018):
  – A cluster analysis is performed on the results of factorial analysis, to create a classification of S3 topics, by region, covering all the EU regions

Data:
• the online database by JRC: "Eye@RIS3: Innovation Priorities in Europe", available at http://s3platform.jrc.ec.europa.eu/map
  – Information is entered in the database by individual regions:
    • free text of priority descriptions
    • codes, referring to economic domains, scientific domains and policy objectives
3. Methods & Data
A tool to monitor integrated territorial development paths

**Method:**
To combine results from socioeconomic analysis and classification of RIS3 topics:
- Cross tabulations along the dimensions under analysis:
  - Descriptive technique providing an effective tool in interpreting similarities across regions (Russo et al., 2018)
3. Methods & Data
Comparing the design of the RIS3s in EUSALP

**Method:**
- measuring RIS3s in EUSALP, in an analytical way:
  - with reference to the guidelines
  - by assigning them a mark (a quantitative judgement), through the "Assessment Wheel 2.0"
- comparing the RIS3s, by taking into account the composition of the marks
- give an overall judgment of the design of the strategies, by fuzzy logic technique

**Data:**
- An online S3 Platform (JRC [http://s3platform.jrc.ec.europa.eu/](http://s3platform.jrc.ec.europa.eu/)) and single regions’ information
4. Results
Socioeconomic regional benchmarking

EU-28 regions, by cluster of socioeconomic features

Legend

cities
- Wealthy capital cities: diversified services
- Wealthy financial centres; foreigners
- Capitals & urban poles
- Urban areas: poorer emp. conditions; tourists

Manufacturing
- High-income manuf. regions
- Medium-income manuf. regions
- Low-income manuf. regions
- Mining and quarrying regions

Intermediate
- Plenty-of-jobs regions (private+public activities)
- Plenty-of-jobs regions (manufacturing+services)
- Regions with emp. Imbalances; public sector
- Regions with emp. Imbalances; tradit. manuf.

Tourist
- Affluent touristic areas
- Touristic areas; traditional-economy

Rural
- Sparsely populated regions
- Rural regions: traditional econ. activites & poor emp. conditions
- Very low-income rural regions; trad. manuf.

Source: Pagliacci et al. (2018)
4. Results
Socioeconomic regional benchmarking in EUSALP

EUSALP regions, by cluster of socioeconomic features

Source: Pagliacci et al. (2018)
### 4. Results
Perspectives on RIS3: categories of priority descriptions (free texts)

#### List of detailed priorities and macro-categories obtained from automatic classification

<table>
<thead>
<tr>
<th>Macro categories</th>
<th>Categories of priority descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGROFOOD</td>
<td>agro Food</td>
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<tr>
<td></td>
<td>bio materials</td>
</tr>
<tr>
<td></td>
<td>product packaging</td>
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<tr>
<td>ENERGY</td>
<td>energy</td>
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<td></td>
<td>maintenance</td>
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<td></td>
<td>photovoltaic</td>
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<td></td>
<td>power engineering</td>
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<tr>
<td>ENVIRONMENTAL ECONOMY &amp; GREEN TECH.</td>
<td>environmental economy</td>
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<td></td>
<td>green tech</td>
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<tr>
<td>HEALTH</td>
<td>health</td>
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<td></td>
<td>healthcare</td>
</tr>
<tr>
<td></td>
<td>life science</td>
</tr>
<tr>
<td></td>
<td>medical industries (pharm, cosmetics)</td>
</tr>
<tr>
<td>ICT &amp; DIGITAL SERVICES</td>
<td>ict</td>
</tr>
<tr>
<td></td>
<td>digital service</td>
</tr>
<tr>
<td>MANUFACTURING</td>
<td>industrial manufacturing</td>
</tr>
<tr>
<td></td>
<td>optic</td>
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<td></td>
<td>photonics</td>
</tr>
<tr>
<td></td>
<td>textile manufacturing</td>
</tr>
<tr>
<td>TOURISM &amp; CREATIVE INDUSTRY</td>
<td>creative industry</td>
</tr>
<tr>
<td></td>
<td>tourism</td>
</tr>
<tr>
<td></td>
<td>tourism &amp; creative industry</td>
</tr>
<tr>
<td>TRANSPORT INDUSTRY &amp; LOGISTICS</td>
<td>aerospace</td>
</tr>
<tr>
<td></td>
<td>air transport industry</td>
</tr>
<tr>
<td></td>
<td>land transport industry</td>
</tr>
<tr>
<td></td>
<td>logistics</td>
</tr>
<tr>
<td></td>
<td>maritime &amp; marine industry</td>
</tr>
<tr>
<td></td>
<td>satellite communication (doc 367)</td>
</tr>
<tr>
<td>GROWTH'S DRIVERS</td>
<td>growth driver</td>
</tr>
<tr>
<td></td>
<td>research &amp; services</td>
</tr>
<tr>
<td></td>
<td>textile fashion (docs 374 &amp; 919)</td>
</tr>
</tbody>
</table>

Source: Pavone et al. (2018)
4. Results
Perspectives on RIS3: categories of priority descriptions (codes)

EU-28 regions, by specificity emerging from automatic text analysis of codes (economic domains, scientific domains, policy objectives)

Source: Pavone et al. (2018)
4. Results
A tool to monitor integrated territorial development paths (i)

Results from cross tabulations can be interpreted according to:
• the socioeconomic characteristics of the regions
• the categories of priorities' descriptions

Results can be browsed:
• At macro-region level
• By selecting similarities of single region

-> These results for all the EU regions will be available in the PoK for online browsing
  (https://www.alpine-region.eu/results/platform-knowledge)
-> Let’s consider a view for EUSALP regions
### RIS3 documents classified by priorities and socioeconomic features of the territorial units in the EUSALP macro-region

**Rows:** macro-categories and categories of priorities' descriptions; **Column:** regions' name, macro-group of socioeconomic features, Label clusters of socioeconomic characteristics; Macrogroup of clusters of RIS3_codes; Label clusters of RIS3_codes; NUTS code

| NUTS code | AT11 | AT12 | AT13 | AT21 | AT22 | AT31 | AT32 | AT33 | AT34 | DE1 | DE2 | FR43 | FR71 | FR82 | ITC1 | ITC2 | ITC3 | ITC4 | ITH1 | ITH2 | ITH3 | ITH4 | SI |
|-----------|------|------|------|------|------|------|------|------|------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|
| AGROFOOD  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| ENERGY    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| ENVIRONMENTAL ECONOMY & GREEN |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| HEALTH    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| ICT & DIGITAL SERVICES |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| MANUFACTURING |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| TOURISM & CREATIVE INDUSTRY |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| TRANSPORT |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| INDUSTRY & LOGISTICS |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Total     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

**Legend:**
- **AGROFOOD:** Agro Food bio materials
- **ENERGY:** Energy environmental economy
- **HEALTH:** Health green tech
- **ICT:** Life Science
- **DIGITAL SERVICES:** digital service
- **MANUFACTURING:** industrial manufacturing logistics
- **TOURISM & CREATIVE INDUSTRY:** creative industry
- **TRANSPORT:** Aerospace
- **INDUSTRY & LOGISTICS:** Land transport industry
- **Macrogoup socioecon. characteristics:** Aflluent tourist Capital & urban poles CULTURAL & CREATIVE INDUSTRIES
- **Label clusters of RIS3_codes:** Agro Food bio materials Energy environmental economy green tech Life Science digital service industrial manufacturing logistics creative industry Aerospace Land transport industry
- **Macrogroup of clusters of RIS3_codes:** NUTS code: DE: Burgenland; AT: Vienna, Salzburg; IT: Lombardia; FR: Normandie; SI: Slovenia.
4. Results

EUSALP area: Cross tabulation of the cultural & creative industry

**Rows:** macro-categories and categories of priorities’ descriptions;

**Column:** regions’ name, macro-group of socioeconomic features, label clusters of socioeconomic characteristics; macro-group of clusters of RIS3 codes; label clusters of RIS3 codes; NUTS code

### Regions reordered by socioeconomic cluster

<table>
<thead>
<tr>
<th>Name of territorial entity</th>
<th>Wien (AT)</th>
<th>Burgenland</th>
<th>Salzburg</th>
<th>Tirol</th>
<th>Provincia Autonoma di Bolzano</th>
<th>Baden-Wurttemberg</th>
<th>Bayern</th>
<th>Lombardia</th>
<th>Friuli-Venezia Giulia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macrogoup socioeconomic characteristics</td>
<td>Capitals &amp; urban poles</td>
<td>Affluent tourist areas</td>
<td>Affluent tourist areas</td>
<td>Affluent tourist areas</td>
<td>Affluent tourist areas</td>
<td>High-income manufact. regions</td>
<td>High-income manufact. regions</td>
<td>High-income manufact. regions</td>
<td>High-income manufact. regions</td>
</tr>
<tr>
<td>Label clusters of socioeconomic characteristics</td>
<td>Cultural &amp; creative industries</td>
<td>Cultural &amp; creative industries</td>
<td>Cultural &amp; creative industries</td>
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<td>Cultural &amp; creative industries</td>
</tr>
<tr>
<td>Label clusters of RIS3 codes</td>
<td>NUTS code</td>
<td>AT13</td>
<td>AT11</td>
<td>AT32</td>
<td>AT33</td>
<td>ITH1</td>
<td>DE1</td>
<td>DE2</td>
<td>ITC4</td>
</tr>
</tbody>
</table>

| AGROFOOD | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| ENERG | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| ENVIRONMENTAL ECONOMY & GREEN | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| HEALTH | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| ICT & DIGITAL SERVICES | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| MANUFACTURING | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 |
| TOURISM & CREATIVE INDUSTRY | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |
| TRANSPORT & INDUSTRY & LOGISTICS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
### 4. Results
Comparison of the design of the RIS3s in EUSALP

| REGIONS              | AT11 | AT12 | AT13 | AT21 | AT22 | AT31 | AT32 | AT33 | AT34 | DE1 | DE2 | FR26 | FR43 | FR71 | FR72 | FR82 | ITC1 | ITC2 | ITC3 | ITC4 | ITH1 | ITH2 | ITH3 | ITH4 | SI |
|----------------------|------|------|------|------|------|------|------|------|------|-----|-----|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|
| Years divided per quarters |      |      |      |      |      |      |      |      |      |     |     |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |
| 2011                 | 1    | 3    | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| 2012                 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| 2013                 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| 2014                 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| 2015                 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| 2016                 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| 2017                 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| 2018                 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |

**Open issues:**
- Implementation of RIS3s design is at different stages
- Heterogeneity in RIS3 documents, despite the common guidelines
- How to reduce subjective judgements from different analysts
4. Results
Comparison of the design of the RIS3s: an example

Assessment Wheel 2.0: Spidergraphs and fuzzy output
5. Conclusions & Policy implications

• By combining multidimensional features of regions, we are able to undertake specific detailed analyses on the RIS3 features.

• Policy suggestions:
  – The results can be used by local stakeholders interested in further implementation of their own RIS3s
  – This methodology may strongly support the Action Groups of MRS in designing more integrated territorial strategies (taking advantage from the capitalization of both intra- and inter-MRS multidimensional comparison of the RIS3s)
  – Strengthening cooperation with non-EU countries (e.g. Switzerland), to overcome the current lack of shared information

• Other ongoing strands of research:
  – a comparative assessment of projects, implemented by regions under the same RIS3’s priority
  – from PoK to Eye@RIS3: potential of sharing open data