

Introduction



- Social innovation (SI) increasingly recognised as an important driver of change
- Foremost type of “new forms of innovation”
- The term “SI” has been in circulation since the early 19th century (Godin, 2012)
- It still lacks conceptual clarity in spite of its rapid take-up since the early 2000s.
- Purpose of this presentation:
 - An analysis of the correspondence of the various definitions of SI on real life projects by employing European Social Innovation Database (ESID)

Data on SI

- Availability of data as a barrier for better understanding of SI
- No mature data source
 - c.f. data sources for conventional forms of innovation, such as patents, publications, financial data, etc.
- A number of previous attempts, mainly funded by the EC. Limitations:
 - limited in size and scope
 - data collection methods: human input
 - not sustainable

European Social Innovation Database (ESID)



- Initially created developed as part of EU-funded KNOWMAK Project: <https://www.knowmak.eu/dashboard>
- Being further developed as part of EU-funded RISIS 2 Project
- Methodological approach:
 - collects information about social innovation projects from the publicly available information on the web
 - utilises semi-automatic advanced machine learning and natural language processing techniques to process the unstructured web text
 - uses some limited human annotation to train the machine learning models and to ensure the quality and the integrity of the data

European Social Innovation Database (ESID)



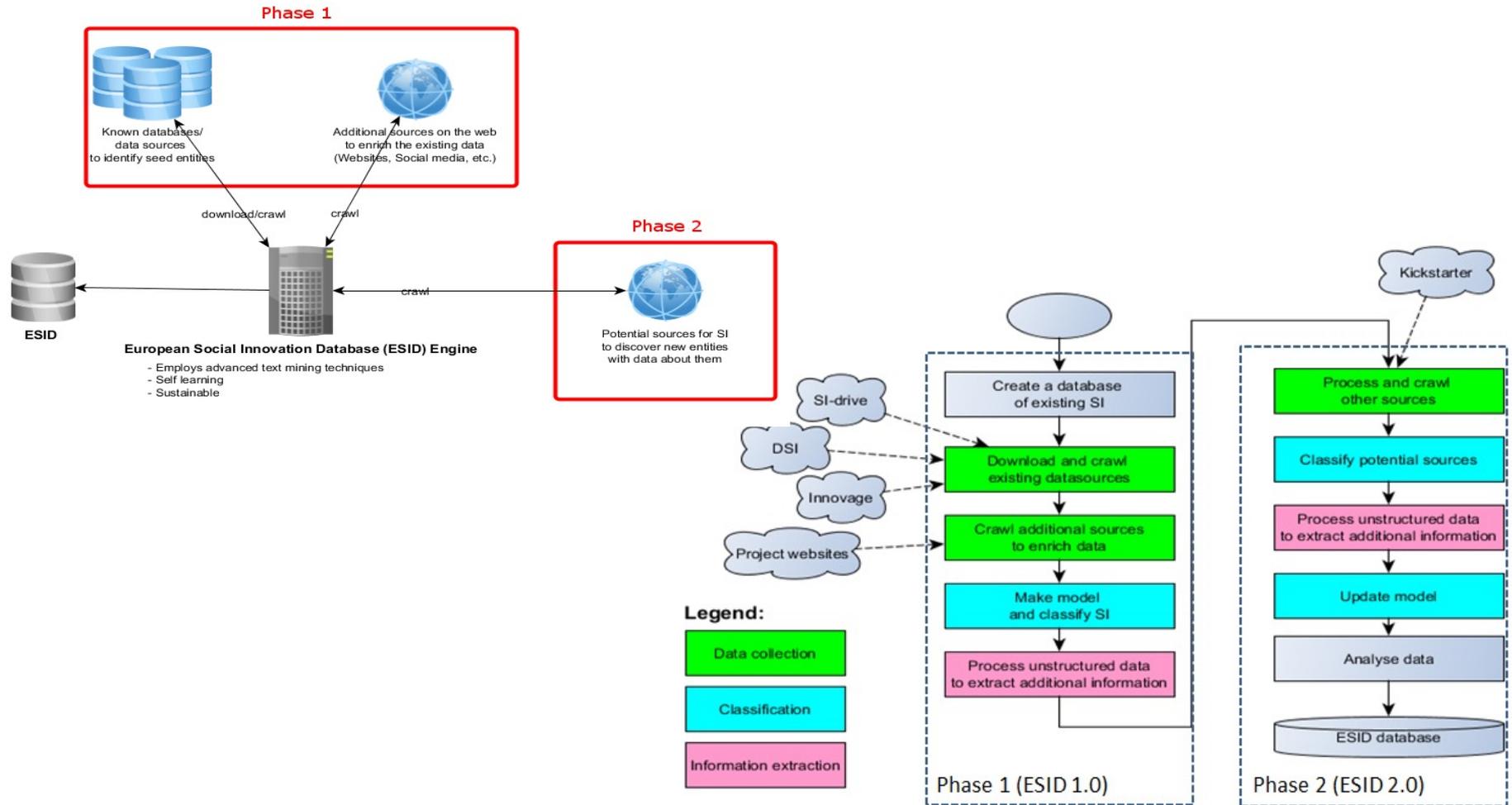
- Promise:
 - thematically more comprehensive
 - significantly more recall than existing databases
 - more consistent and flexible conceptual structure in terms of the social innovation definition it adopts.
 - much richer information
 - more sustainable as it is based on semi-automatic and automatic information retrieval and knowledge discovery techniques

European Social Innovation Database (ESID)



- Main entity:
 - SI projects
- Project features:
 - scores on four SI criteria
 - location (country, city, NUTS regions, approximate coordinates)
 - topic (Key Enabling Technologies and Societal Grand Challenges adapted from H2020 priority areas as part of KNOWMAK project)
 - a short summary
 - URL
 - source from which we identified

European Social Innovation Database (ESID)



Data and Interfaces



- Data:
 - SQL Database (structured data): controlled access through RISIS
 - MongoDB (web pages): closed
- Code: open (GitHub)
- Interfaces:
 - Internal project quality control interface
 - KNOWMAK interface (a prior version of the data utilised): <https://www.knowmak.eu/dashboard>
 - Shiny (most recent version): <https://bit.ly/ESIDapp>

The Shiny Tool

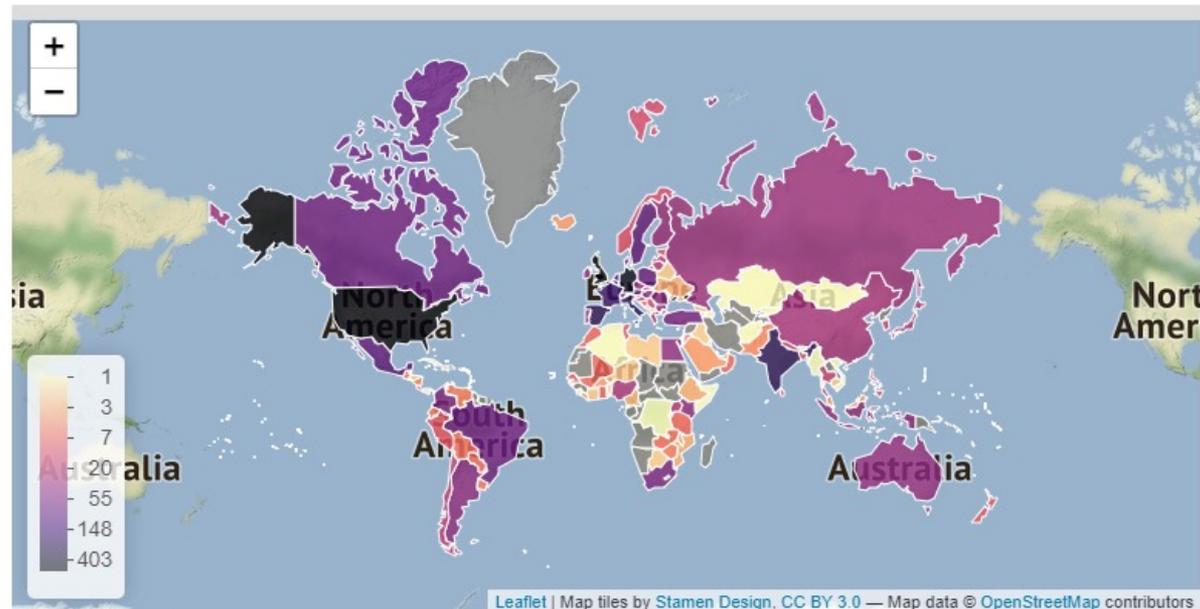


<https://bit.ly/ESIDapp>

A screenshot of the European Social Innovation Database (ESID) application. The interface has a dark sidebar on the left with navigation options: Home, Methods, View Projects, and Data Analysis. The main content area is titled 'European Social Innovation Database (ESID)' and contains two sections: 'About ESID' and 'About this App'. The 'About ESID' section describes the database as a comprehensive source of information on social innovation projects, developed using machine learning and natural language processing. The 'About this App' section instructs users to use the sidebar navigation to view data and interact with the analysis. At the bottom, a footer note states that the ESID is part of the RISIS 2 project, funded by the European Union under Horizon2020, and that external links are provided for information purposes only.

ESID Coverage

- Overall: 11,441 projects from 153 countries
- This includes:
 - “negatives”
 - projects which do not have full info
- Positive projects with most info: 6,341



Note: Some projects are operational in multiple countries, which is why some countries might be shown in the map even if they are not selected in the country filter.

What is SI?

Element of Definition	Criteria	ESID Score
Objectives	<ul style="list-style-type: none"> satisfy societal needs including the needs of particular social groups or aim at social value creation target needs not met by conventional innovative activity either as a goal or end-product 	<ul style="list-style-type: none"> 2: fully satisfies the meaning of the criteria 1: partially satisfies 0: no indication at all
Actors and actor interactions	<ul style="list-style-type: none"> involve actors who would not normally get involved in "economic innovation", including formal and informal civil society/third sector/NGO/social and grass-root movements (i.e. social actors) create collaborations between "social actors", business and public sector involve (predominantly new types of) social interactions towards achieving common goals, including user/community participation rely on trust relationships rather than solely mutual-benefit involve significantly different action and diffusion processes that ultimately results in social progress as social innovation 	<ul style="list-style-type: none"> 2: fully satisfies the meaning of the criteria 1: partially satisfies 0: no indication at all
Outputs / Outcomes	<ul style="list-style-type: none"> change attitudes, behaviours and perceptions of the actors involved produce social technologies (c.f. innovation employing only "physical technologies"), i.e. new combination or configuration of social practices or new law, norm or rule lead to long-term institutional/cultural change 	<ul style="list-style-type: none"> 2: fully satisfies the meaning of the criteria 1: partially satisfies 0: no indication at all
Innovativeness	<ul style="list-style-type: none"> involves "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations" 	<ul style="list-style-type: none"> 2: fully satisfies the meaning of the criteria 1: partially satisfies 0: no indication at all

Based on Caulier-Grice et al., 2012, Choi and Majumdar, 2015, Dawson and Daniel, 2010, Ettorre et al., 2014, Grimm et al., 2013, Harrisson, 2013, Jessop et al., 2013, van der Have and Rubalcaba, 2016, Edwards-Schachter and Wallace, 2017

ESID Scoring System



- ESID does not have a particular SI definition.
- It allows its users to filter
 - combination of criteria
 - objectives
 - actors and actor interactions
 - outputs
 - Innovativeness
 - scores for each criteria:
 - 0: no indication of the criteria
 - 1: partially satisfies
 - 2: fully satisfies
 - We experimented with various bins, and 0-2 is the best performing and easiest to analyse.

Performance of ML Models



Model Name (Objectives)	P	R	F1
TFIDF LR	0.78	0.73	0.75
TFIDF NB	0.86	0.68	0.67
TFIDF SVM	0.88	0.74	0.75
BERT	0.9	0.9	0.9

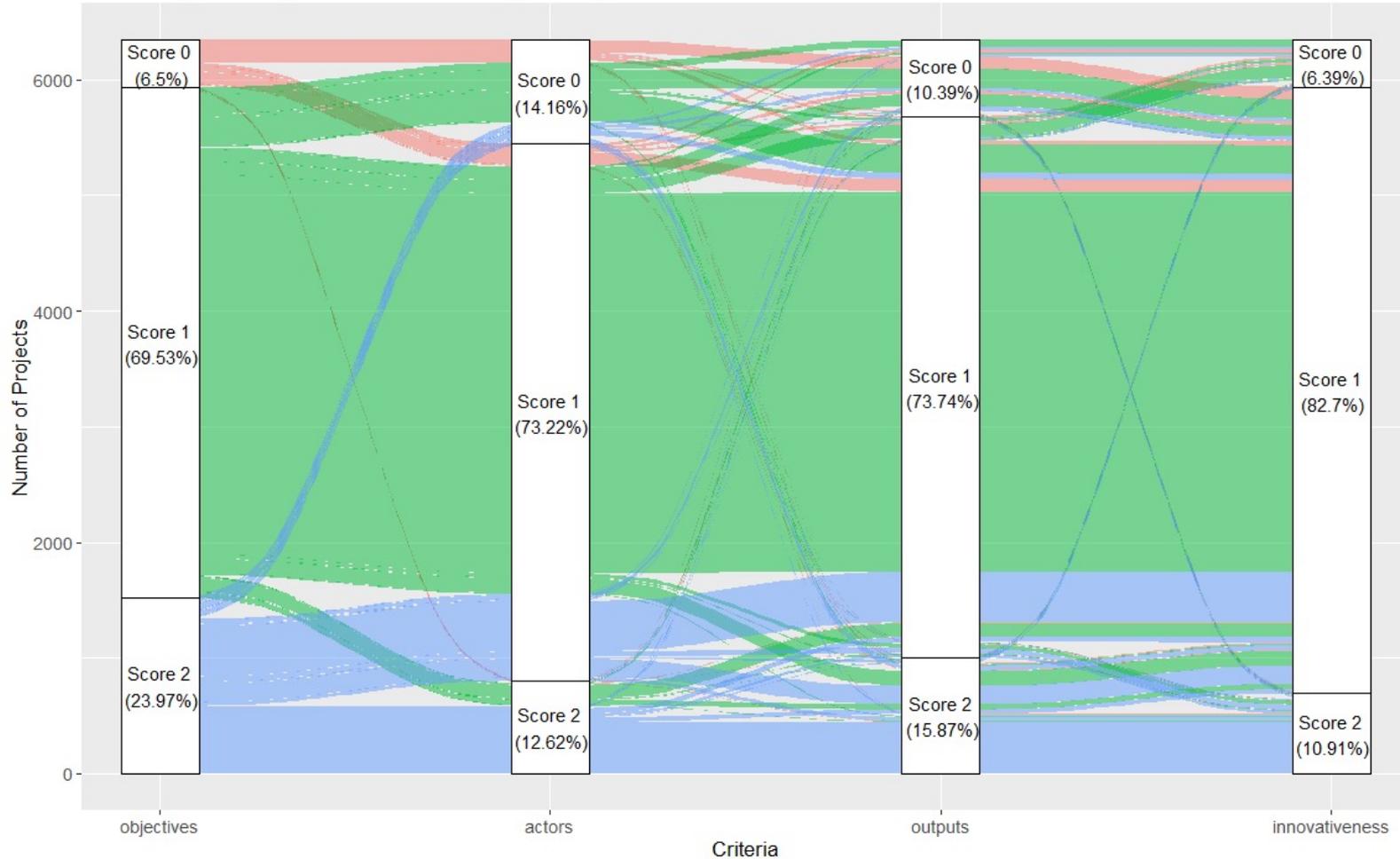
Model Name (Outputs)	P	R	F1
TFIDF LR	0.83	0.77	0.79
TFIDF NB	0.89	0.71	0.74
TFIDF SVM	0.88	0.72	0.76
BERT	0.9	0.9	0.9

Model Name (Actors)	P	R	F1
TFIDF LR	0.86	0.77	0.8
TFIDF NB	0.9	0.72	0.76
TFIDF SVM	0.89	0.75	0.79
BERT	0.91	0.91	0.91

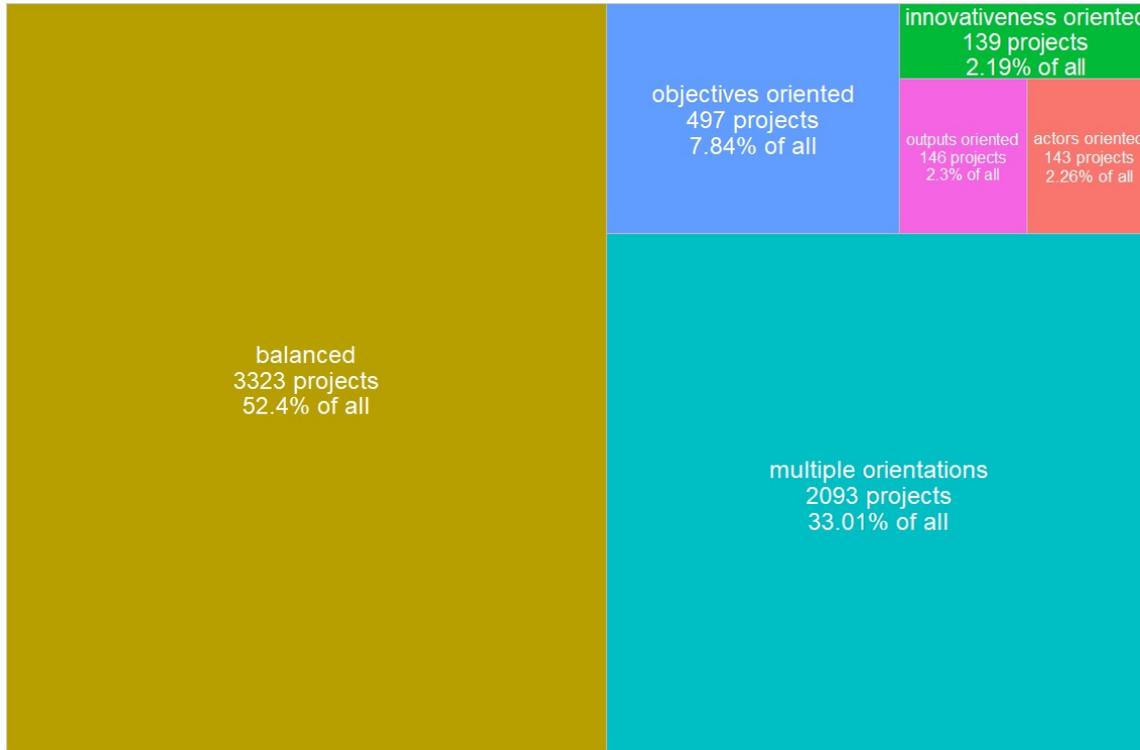
Model Name (Innovativeness)	P	R	F1
TFIDF LR	0.81	0.75	0.77
TFIDF NB	0.9	0.72	0.74
TFIDF SVM	0.86	0.74	0.76
BERT	0.88	0.88	0.88

SI in Practice

Social Innovation Projects in Practice
Stratified by different types of social innovation (N= 6341)



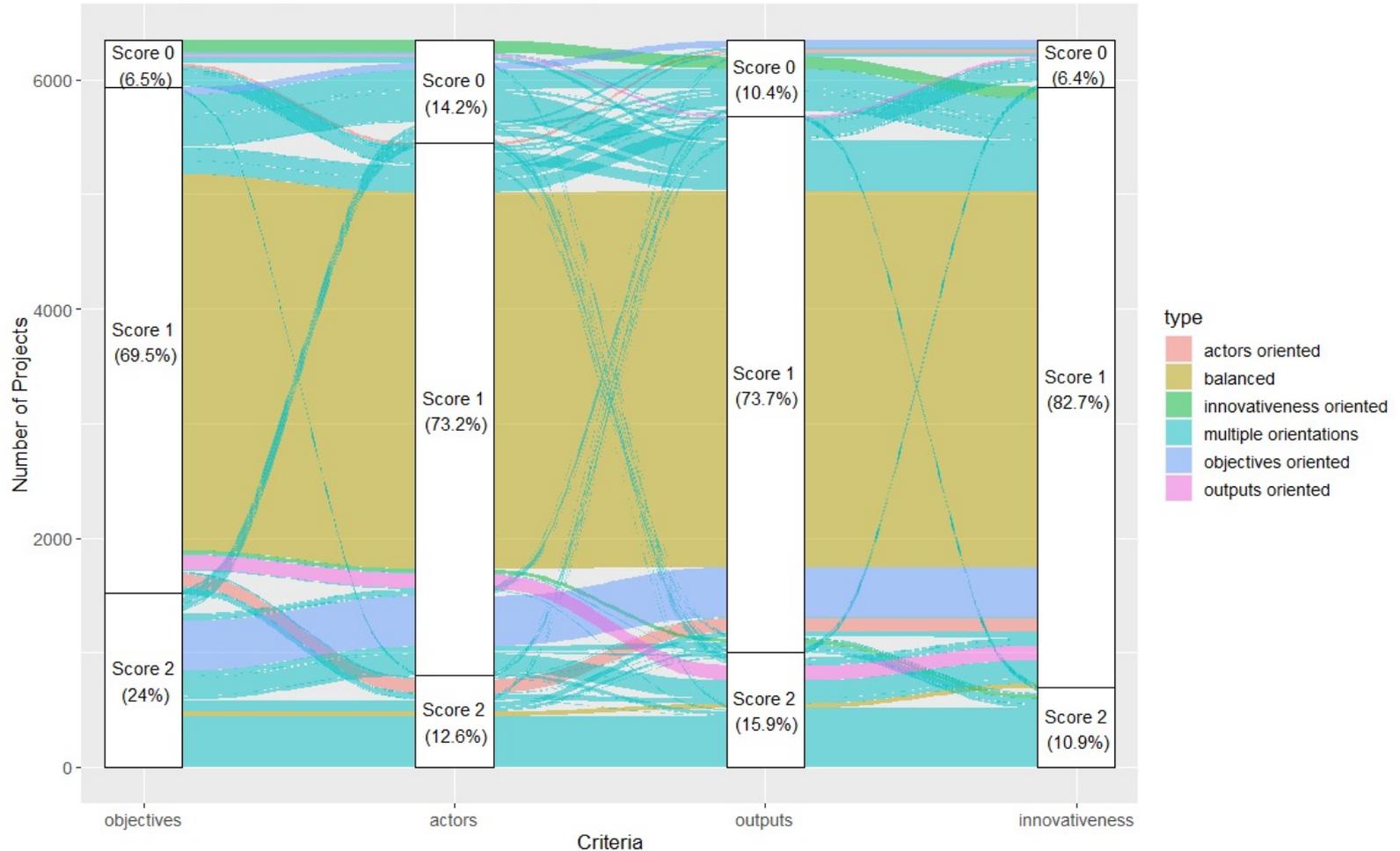
«Types» of SI



- **Multiple orientation:** Two or three criteria scored same
- **Balanced:** All four criteria scored same
- **Objectives oriented:** Criterion objectives scored higher than other criteria
- **Outputs oriented:** Criterion outputs scored higher than other criteria
- **Actors oriented:** Criterion actors scored higher than other criteria
- **Innovativeness oriented:** Criterion innovativeness scored higher than other criteria

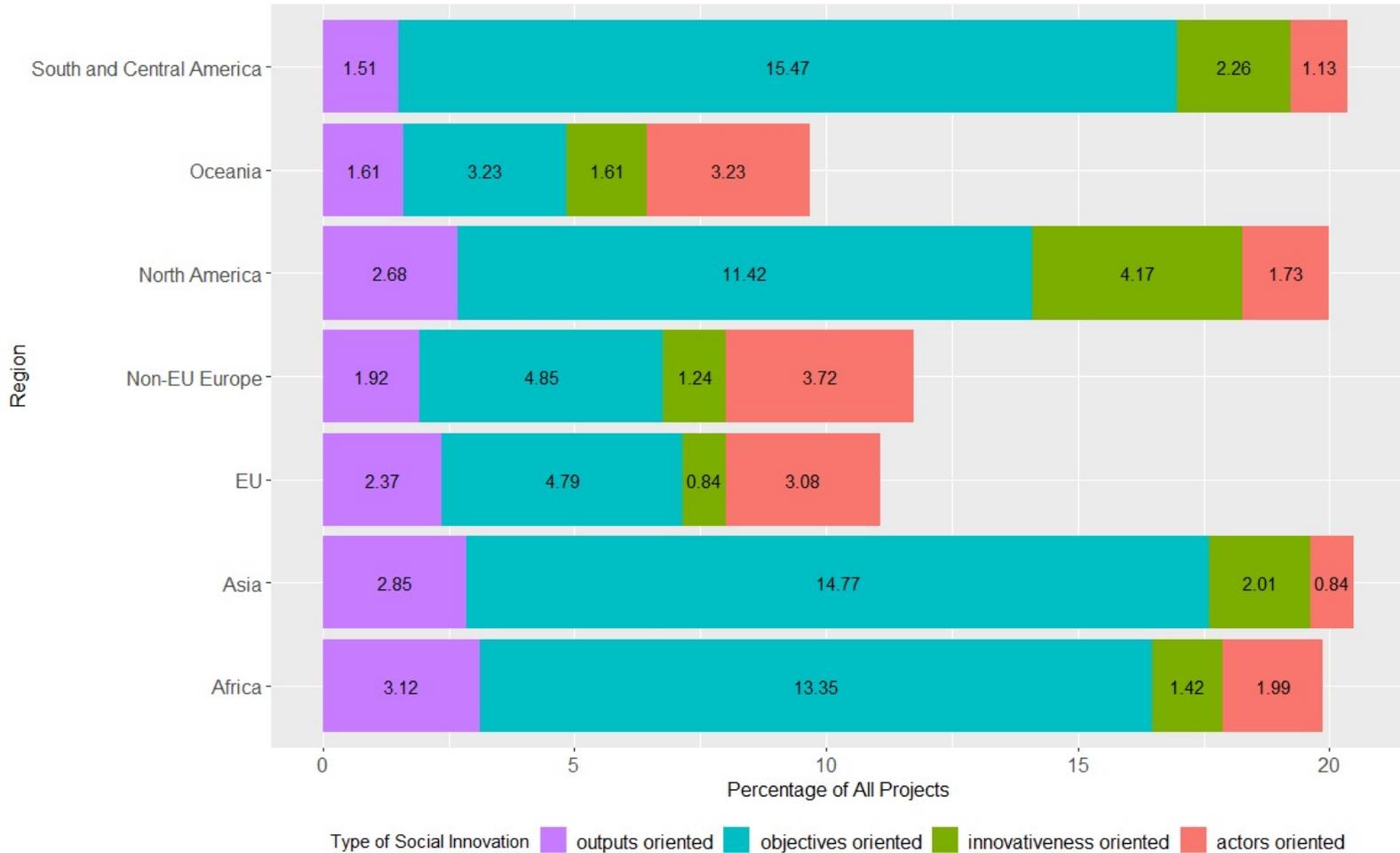
«Types» of SI

Social Innovation Projects in Practice
Stratified by different types of social innovation (N= 6341)



SI in Practice

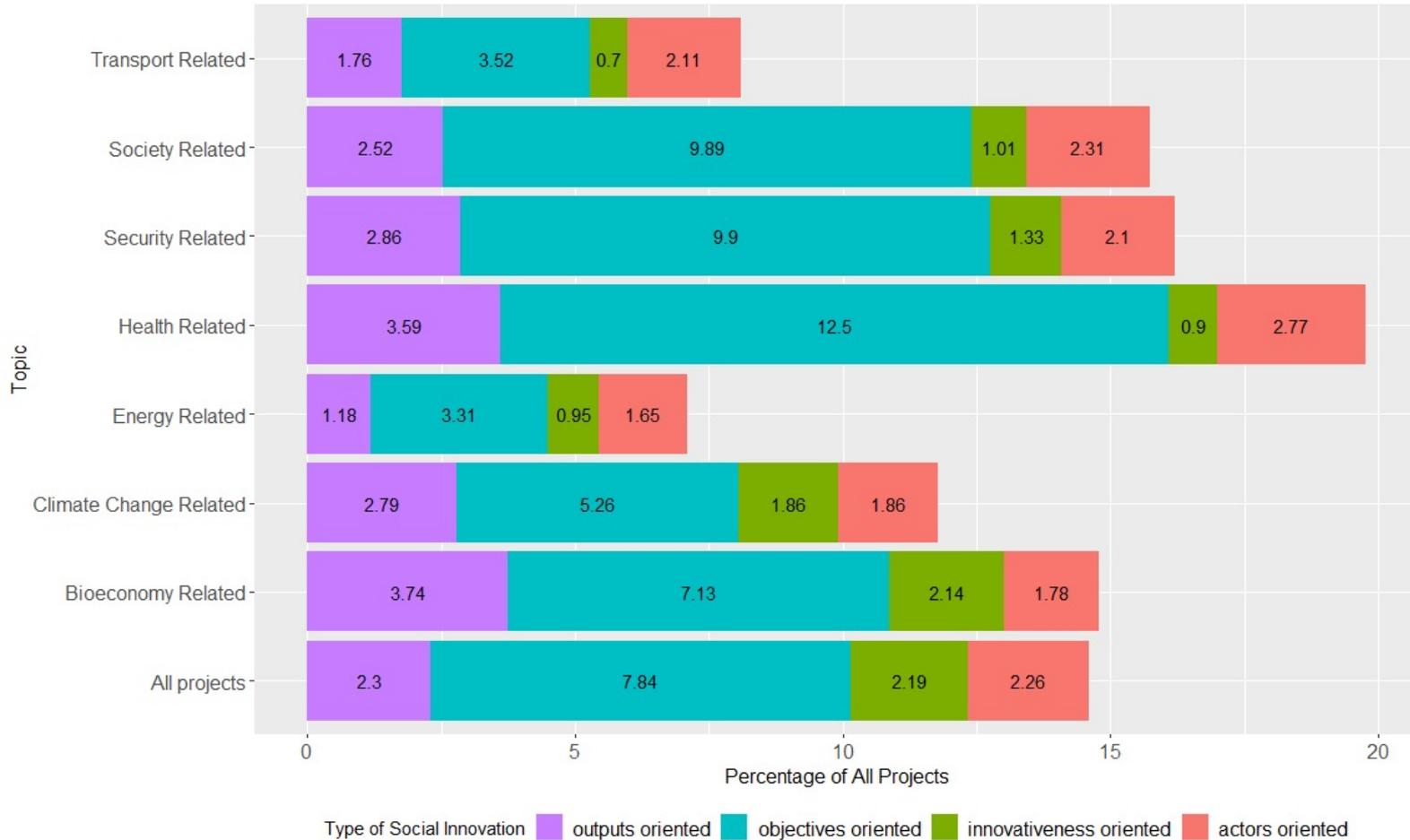
Types of Social Innovation by Region
Balanced and multiple orientation types are not shown (N=5706)



SI in Practice

Types of Social Innovation by Topic

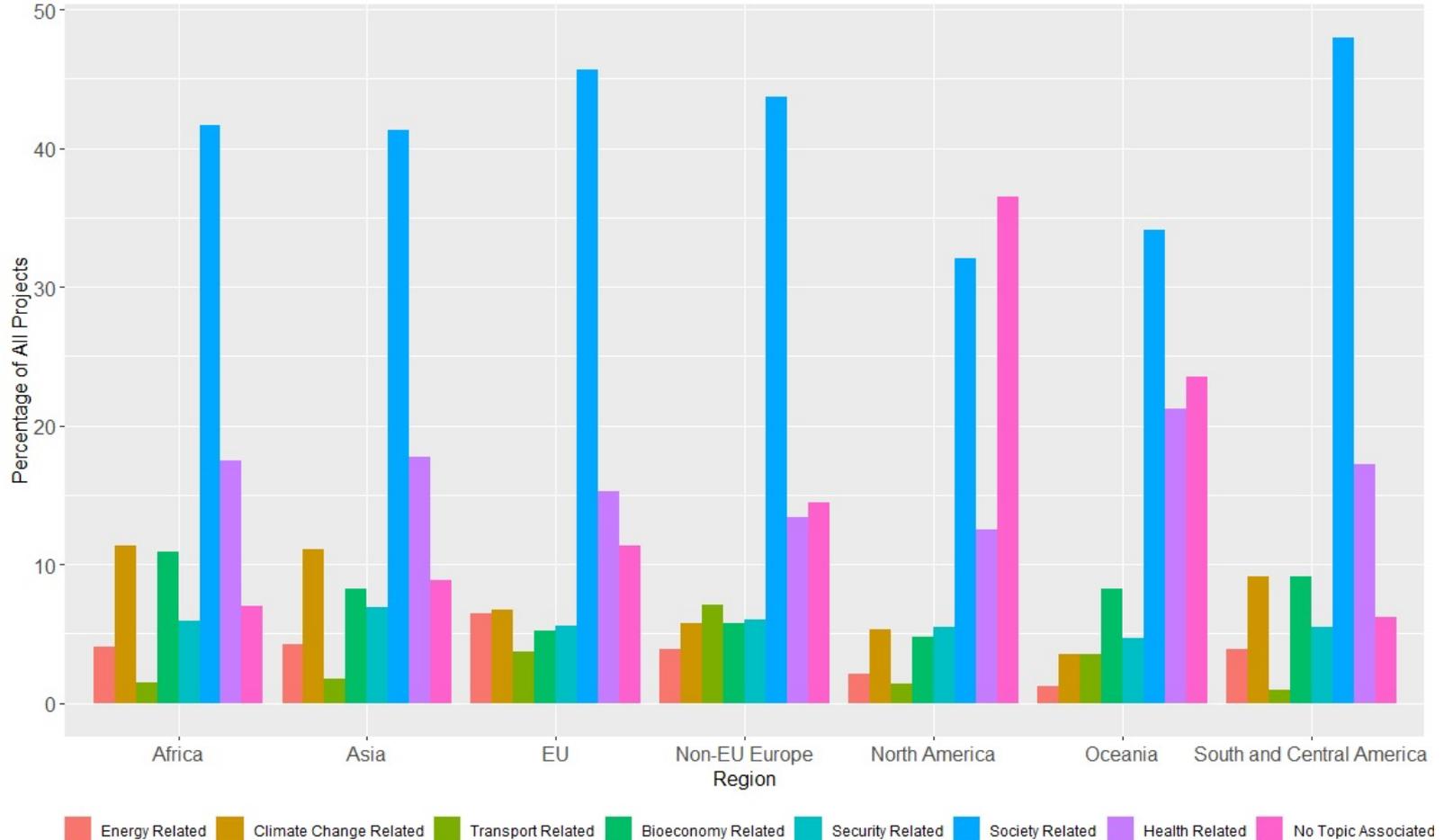
Balanced and multiple orientation types are not shown (N=6341).
Topics are derived from H2020 Societal Grand Challenges.



SI in Practice

Topics by Region

Topics are derived from H2020 Societal Grand Challenges (N=5706).
Sums might be more than 100% as some projects are associated with multiple topics



Implications

- ESID



Development Plan for ESID



Expansion:

- Increase the number of projects to about 20,000:

Extension:

- Add new features/entities:
 - Actors (including their type, e.g. project owner, funder, partner, etc.)
 - Mission, products/services, outputs/impact

Dynamic Retrieval:

- Biannual crawl and information extraction

Accessing ESID



Access the underlying data:

- Apply through RISIS: <https://www.risis2.eu/risis-datasets/>

View the data and analysis:

- <https://bit.ly/ESIDapp>

Work together

- We are also very happy to discuss any ideas that would utilise ESID

