



fondo europeo  
sviluppo regionale

# Piemonte in industrial transition : the role of innovation clusters

*Vincenzo Zezza*  
*Regione Piemonte*  
*Responsabile Settore Sistema Universitario, Diritto allo Studio, Ricerca e Innovazione*

Surface 25,400 km<sup>2</sup>

Population: 4,5 millions

30k manufacturing SMEs (98,85%);  $\approx$  80% micro (<10 empl)

Long-standing industrial tradition

Traditional industrial sectors combined with emerging trends and sectors (automotive, aerospace, mechatronics, green chemistry, textile, agrifood, clean tech, life sciences, ICT,...).

## **R&D and innovation key indicators:**

- total R&D expenditure: 2,03% of GDP (above national average)
- private R&D expenditure: 1.6% of GDP (above EU average)
- EPO patent applications, innovative SMEs, employment and export in medium/high tech technology-intensive manufacturing above EU average

**Global industries** (FCA; CNH; Iveco; Comau; Magneti Marelli; General Motors; VW (Italdesign), Alstom; Thales Alenia Space; Leonardo, Avio Aero (GE Group), Novamont, Ferrero; Lavazza; ... ) together with a number of highly qualified and innovative Medium and small companies

**4 universities:** Politecnico di Torino; Università degli Studi di Torino; Università degli Studi del Piemonte Orientale; Università degli Studi di Scienze Gastronomiche (Slow Food)

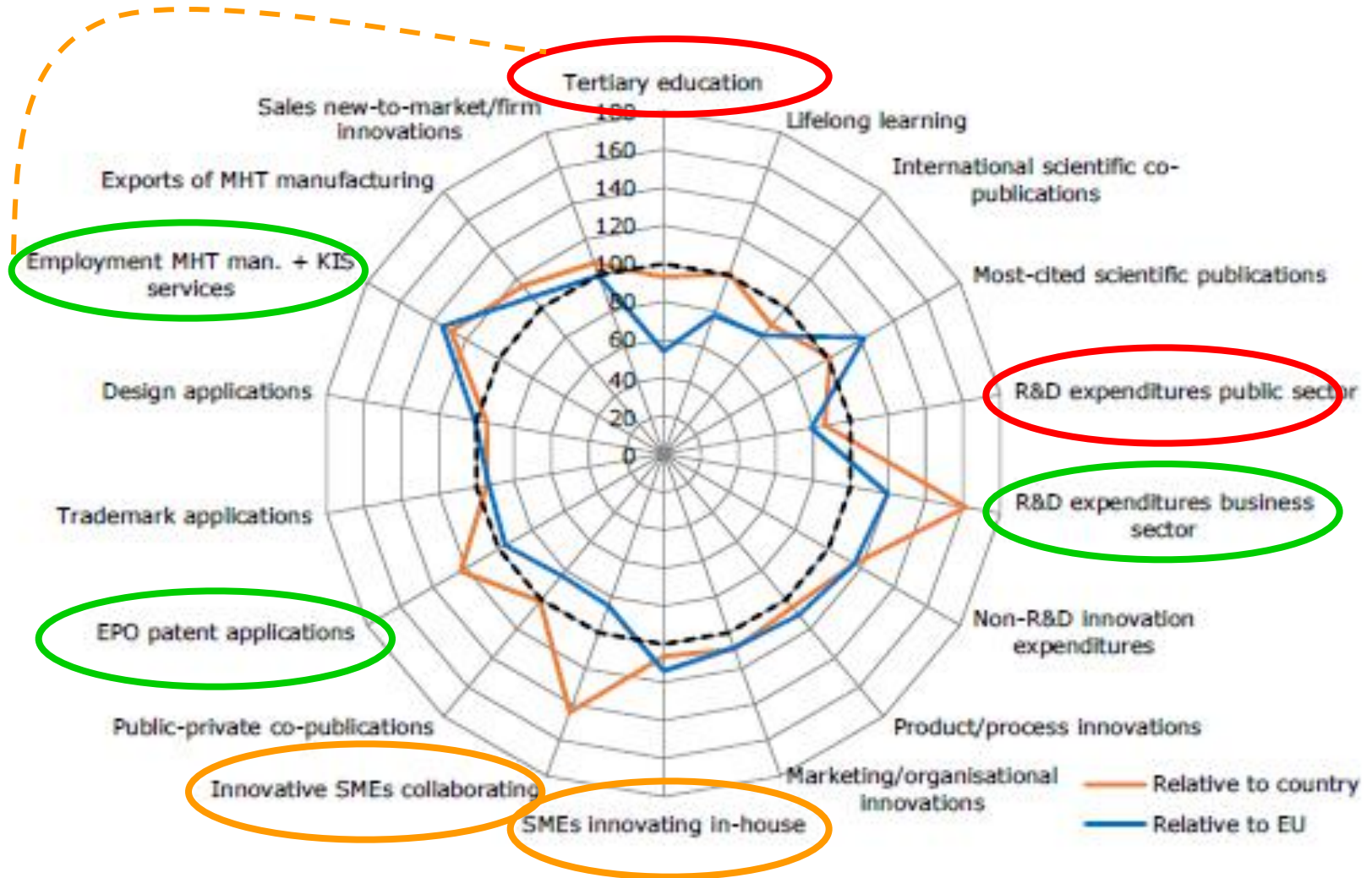
Regional branches of main national **research institutes** (CNR, ENEA, IIT, INRIM, ...)

Over **200 research centres** and **380** laboratories research foundations and research facilities

**3** University Start-up **Incubators** (2i3t, i3p, Ennetre ... 100 enterprises) and other similar public or private initiatives ( $\approx$  100 start up running)

**4** main **Scientific and technology parks** (Environment Park, Bioindustry Park, PST, Proplast)

**7 Innovation Clusters** ( $\approx$  1500 companies associated)





3rd performing region in Italy after Lazio\* and Lombardia

3406 eligible participation

(420 retained)

9,8% of Italy

12,3% success rate

1.405 M€ eligible cost

(160 M€ retained)

10,5% of Italy

11,4 % success rate

# PIEMONTE IN INDUSTRIAL TRANSITION

**Strong R&D and industrial competences and deeply rooted value chains (but high number of SMEs not innovating and insufficient level of collaboration of SMEs with education and research organizations)**

**Employment in medium/high tech technology-intensive manufacturing above EU average (...but also high rate of employment potentially challenged by industrial change)**

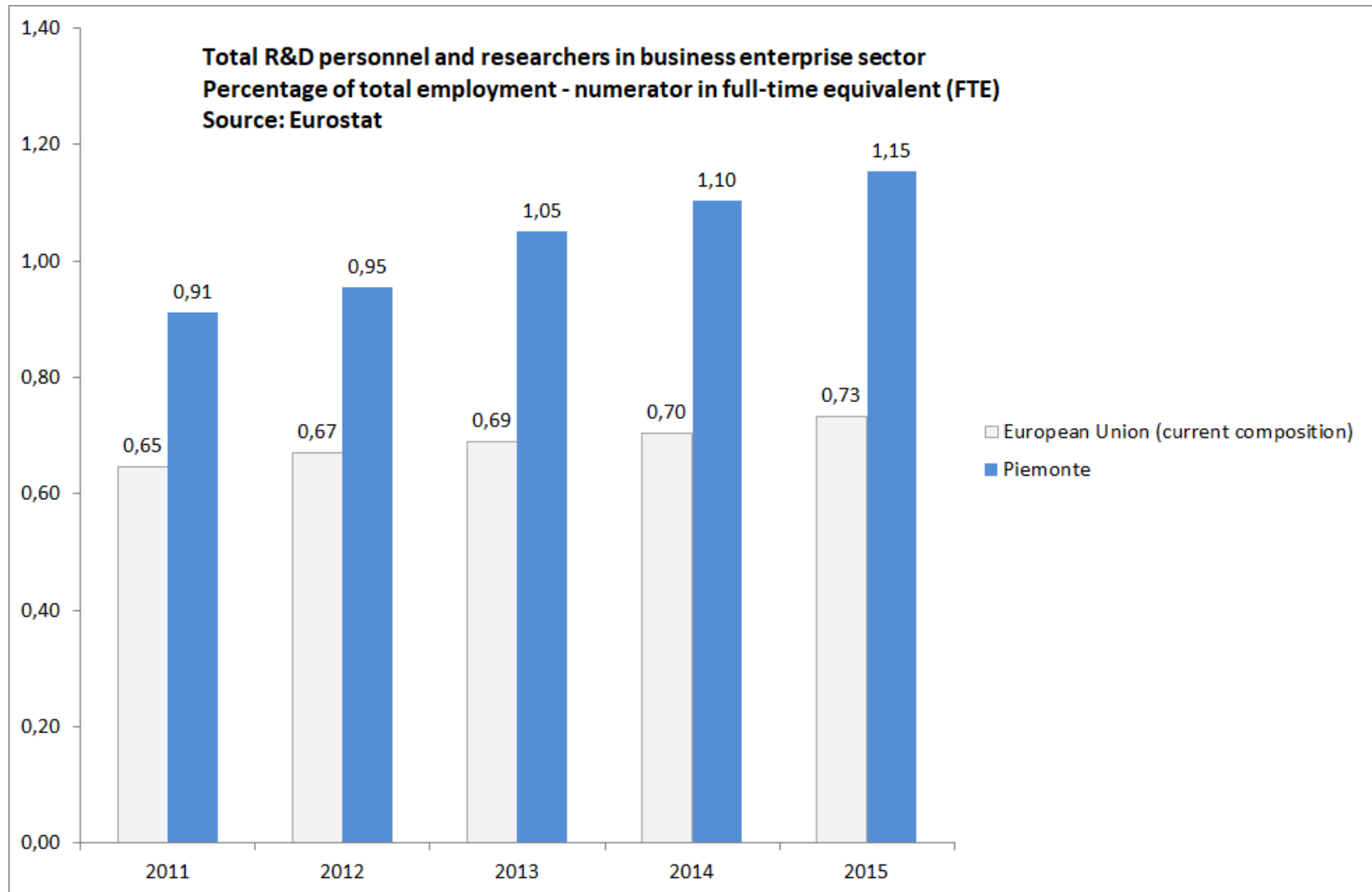
- Industry 4.0 can have heavy impact on jobs, esp. Artificial Intelligence (impact on a wide range of intermediate job profiles) and Advanced Robotics (impact on jobs in manufacturing)
- **Servitization** as a potentially disruptive trend for a manufacturing region like Piemonte

**High rate of youth unemployment (with polarization between top and very low education levels), and high rate of aged workers with low qualifications**

**High level of education and training offer, but tertiary educated people below EU average**

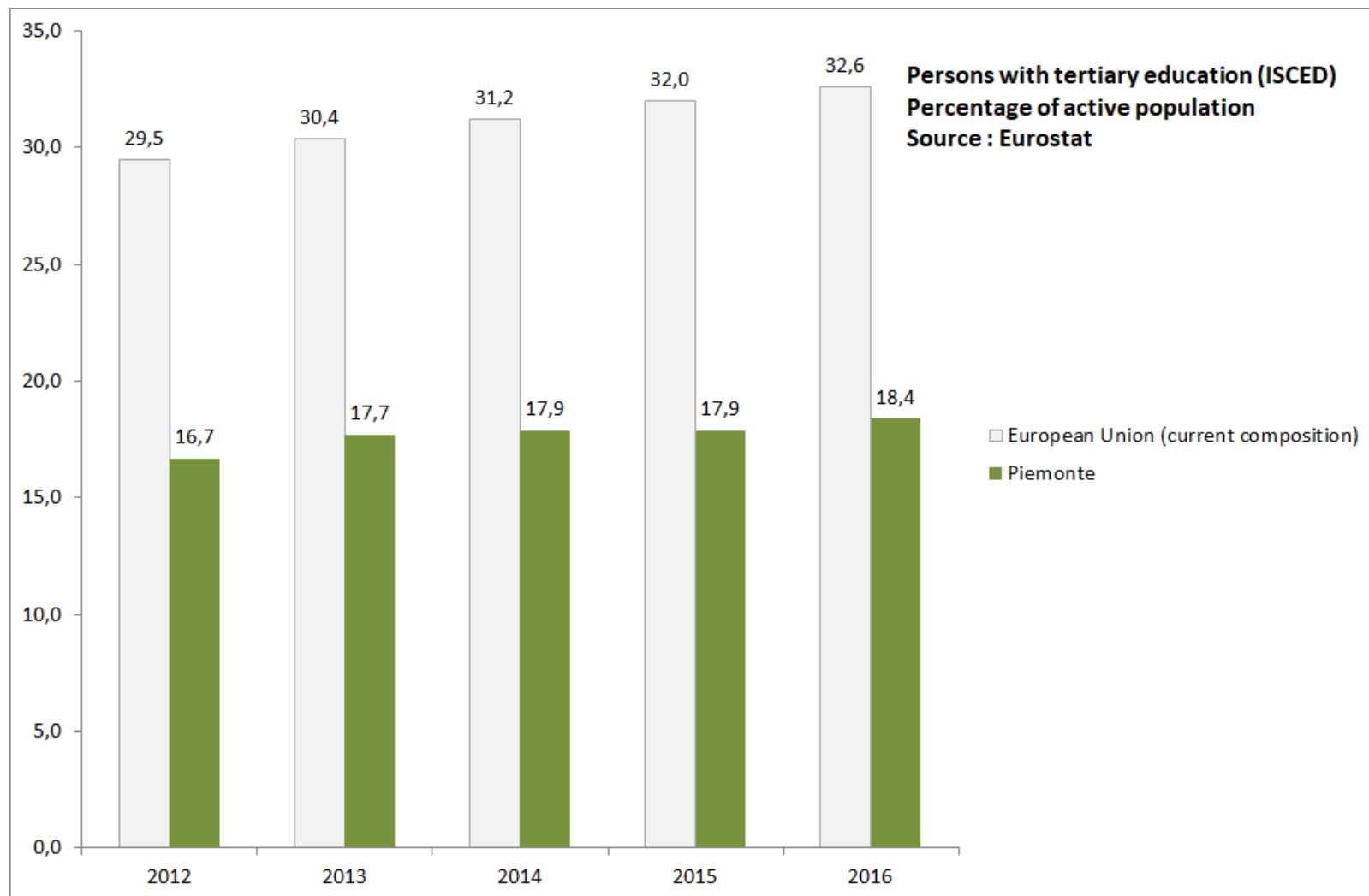
**General issue related to ageing and generational replacement**

## High level of R&D in business sectors

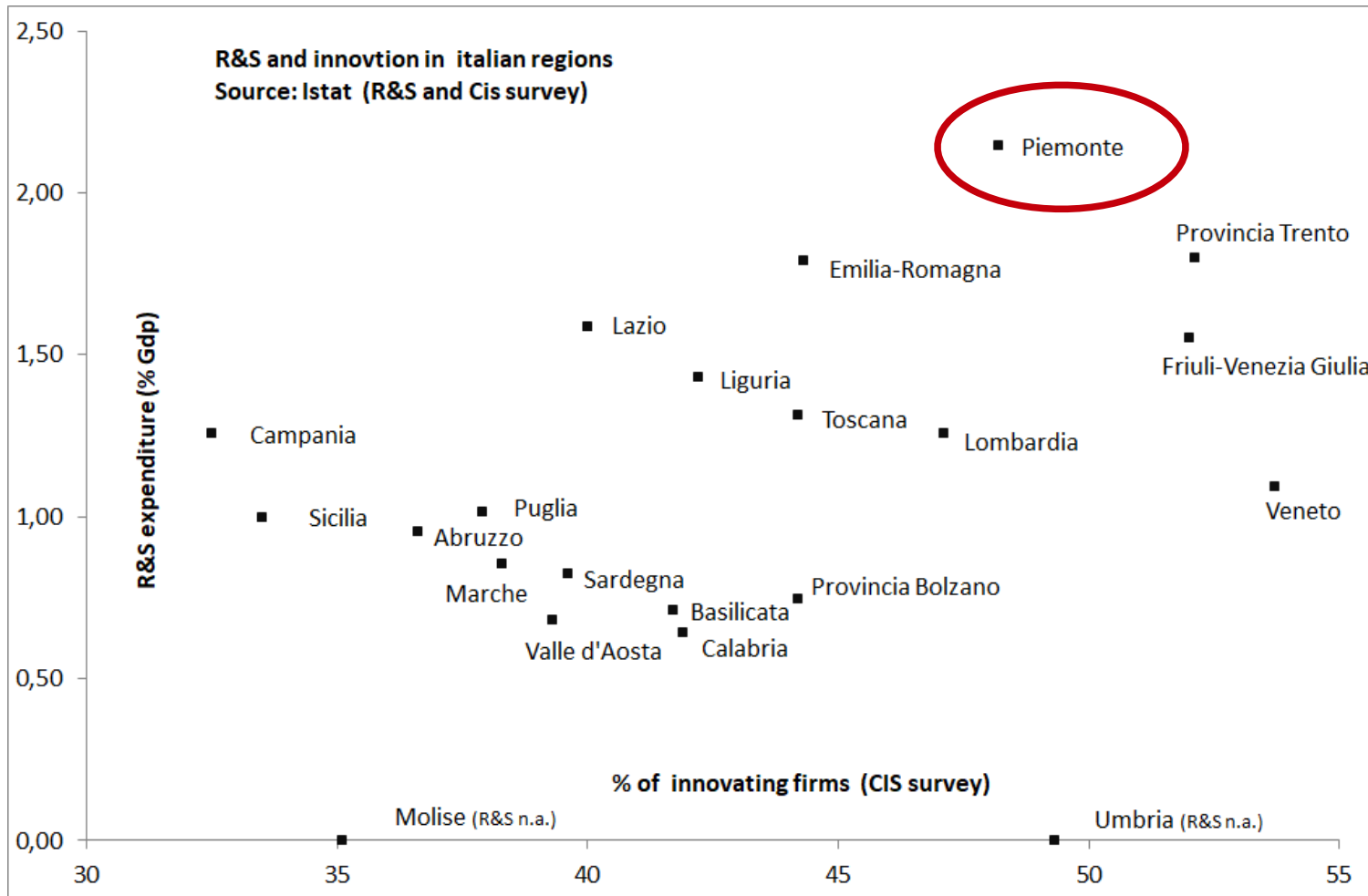




## Below average education attainment



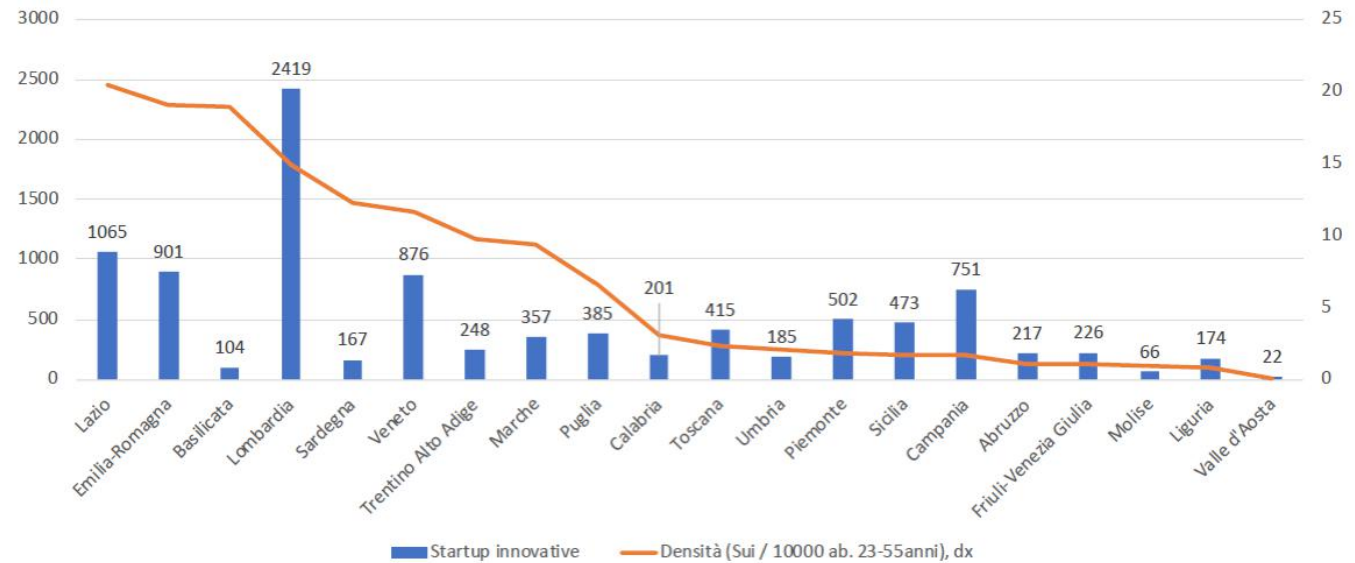
## R&D engagement and innovation diffusion



**Start ups:**  
Piemonte 5<sup>th</sup> Region  
but very low  
density quotient

Torino 3<sup>rd</sup> Province  
(urban polarization)

**Innovative SMEs:**  
Piemonte 2<sup>nd</sup> Region



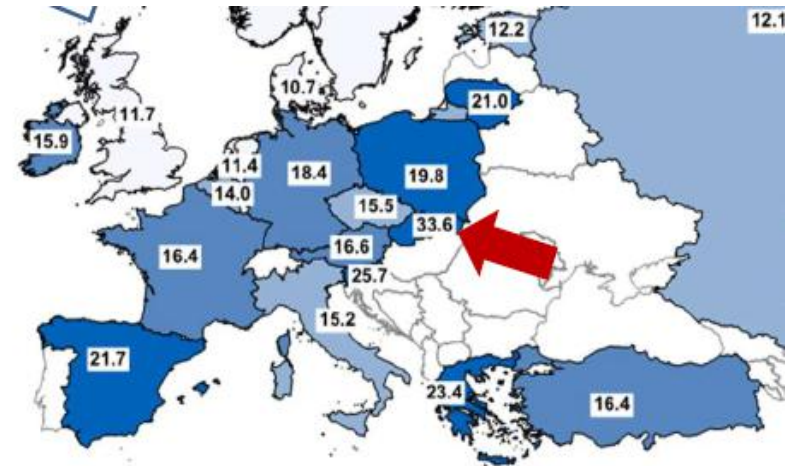
Fonte: Rapporto Comitato Torino Finanza, 2018

## JOBS AT RISK OF AUTOMATION

Evidence across European regions

David Bartolini, Senior Economist LEED Programme

2018



**Impact of automation**  
**Italy: 15% of workers at risk**  
**(18% in Germany, 16% in**  
**France)**

**Piemonte is above national**  
**average (16%)**

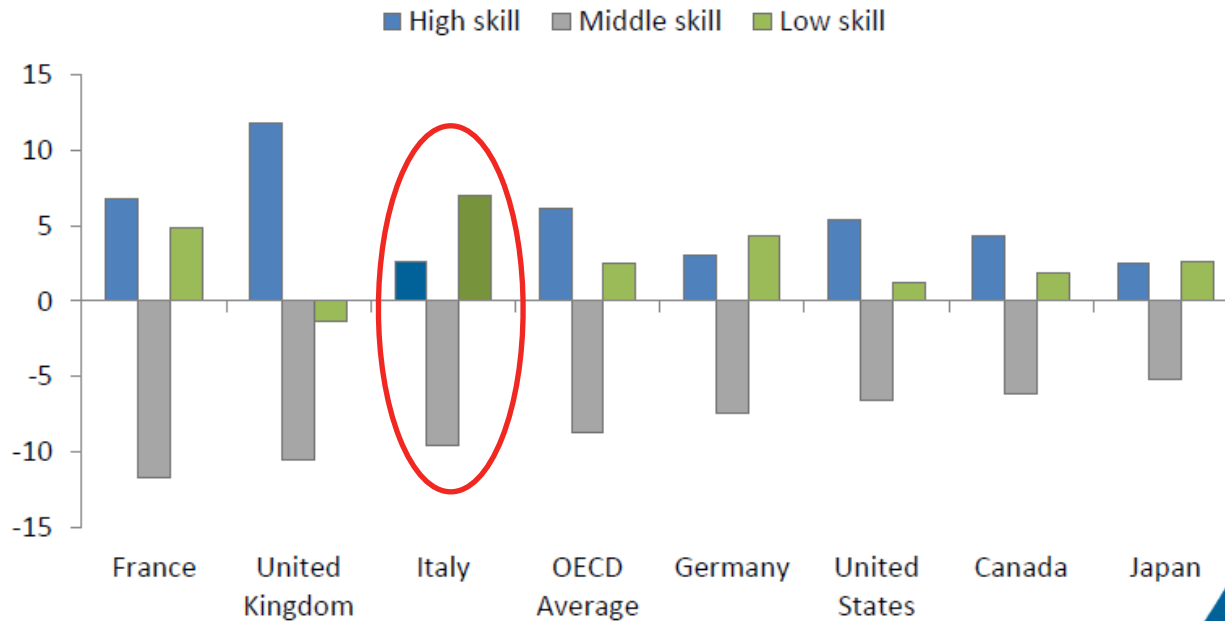




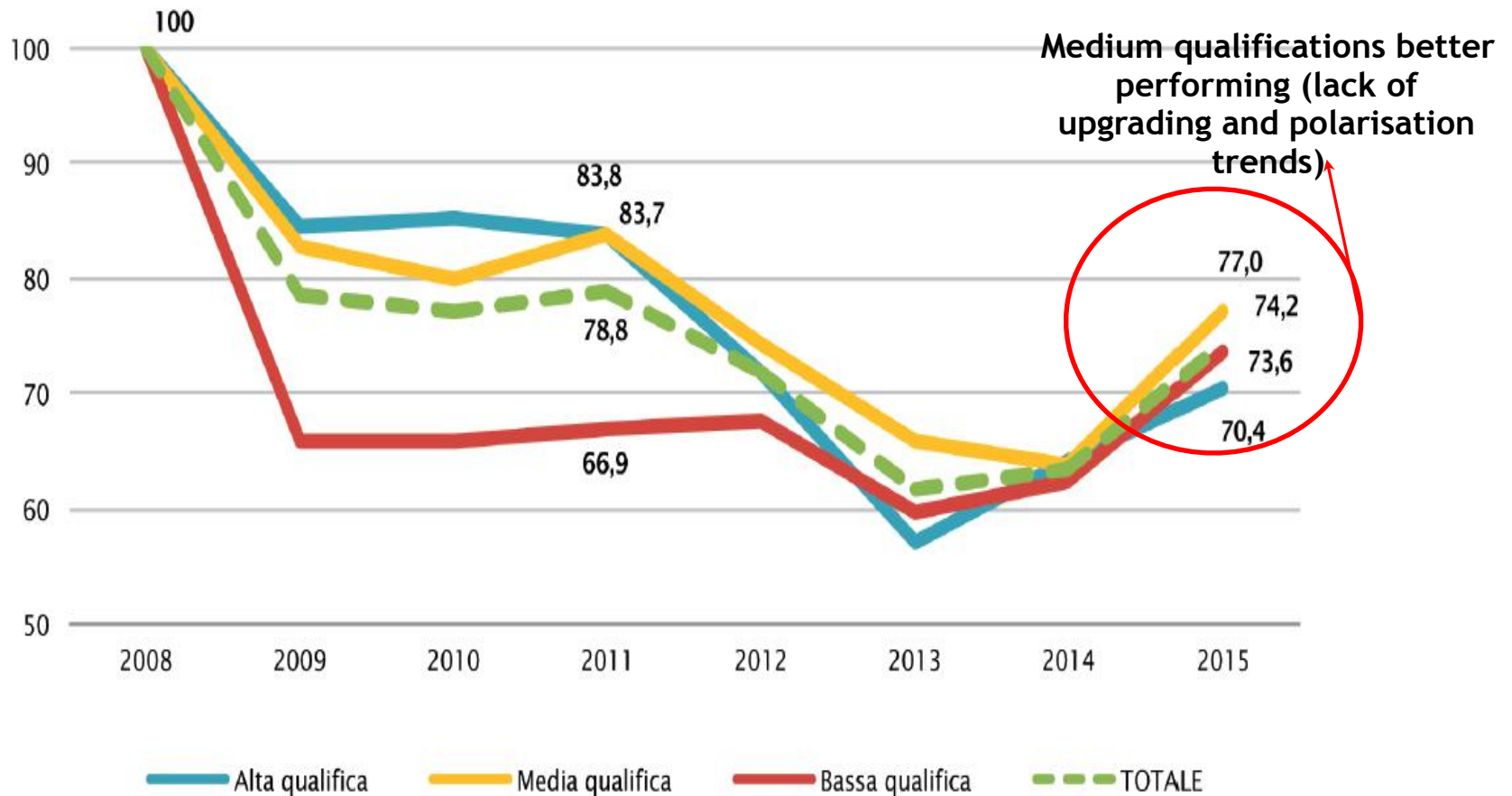
## A key impact: job polarisation

Labour market polarisation, selected OECD countries, 1995-2015

Percentage point change in share of total employment



## Relative trend of FTE jobs by qualification level in Piedmont 2008-15 (2008=100)



**DENSO**

**OLSA** OPTICAL LIGHTING SYSTEMS AUTOMOTIVE  
**MAGNA**

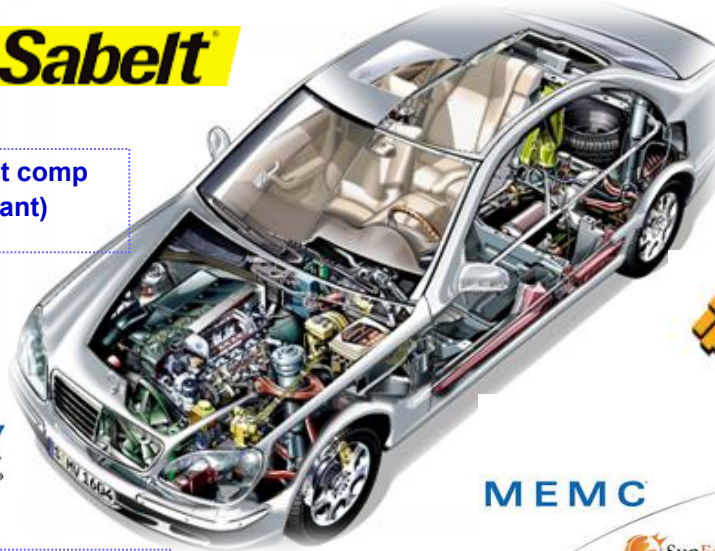
Light system  
Energy & communication  
5 M€ (1,5 grant)

**Sabelt**

Lightweight seats  
5 M€ (1,5 grant)

**MICHELIN**

Tyres  
6,5 M€ (2 grant)



**ENDURANCE OVERSEAS**

**2a** S.p.A.

Lightweight comp  
10 M€ (3 grant)

Lightweight comp  
8,5 M€ (2,5 grant)

**ITT**

Smart pad  
7,5 M€ (2 grant)

**SPEA**  
YOUR BEST WAY TO TEST

**VISHAY**

Electronic system  
6,5 M€ (2 grant)

**MEMC**

**SunEdison**

Electronic system  
10 M€ (2,5 grant with Italian Ministry)

Electronic testing  
7,5M€ (2,5 grant)

**AHLSTRÖM MUNKSJÖ**

Battery membranes  
21,5M€ (6 grant)

**blue**  
Engineering & Design

New transport vehicle  
6M€ (2 grant)

**CECOMP**

Electric vehicle  
9M€ (2,5 grant)

**FCA**

Electric, Hybrid & connected technologies  
150M€ (50 grant with Italian Ministry)

Electric off road vehicle  
14M€ (4 grant)



**MERLO GROUP**

**New policy models** to keep pace of radical changes of economy/society; better integration of labour/training and innovation/growth policies

Increasing **SMEs innovation capacity**, collaboration with research organizations and use of research infrastructures

Invest in **competences**: top level competences (e.g. AI) and skills updating of low qualified workers

Create a **favourable ecosystem**: increase networking and collaboration attitude and stimulate open innovation processes, build on territorial assets to attract investors and support scaling up

Support integration of regional R&D and industrial specializations in European and global **value chains**



## What supports catching up and employment growth

- **Diversification**
  - Specialised regions more productive, diversified ones grow faster  
Manufacturing important, but tradable services are gaining
- **Local strengths**
  - Linking investment in skills, FDI, and knowledge from the supply chain  
Taking advantage of opportunities for territorial branding
- **Well-functioning cities**
  - Home to knowledge-intensive (traded) sectors  
Larger markets can support economic diversity and dynamism  
Agglomeration economies (beyond borders)
- **Tradable sectors (that could be traded)**
  - Face competition even if they are not traded  
Might overcome market size and institutional constraints  
Avoid economic imbalances from excessive expansion of non-tradables
- **Integration across actors and policies**
  - Skills development for place-based needs is a shared responsibility  
But skills policies might not be enough: trade shocks vs automation

# **THE ERDF PROGRAMME CURRENT POLICIES**

Focus on S3 innovation areas and on horizontal trajectories (Smart and Resource efficiency)

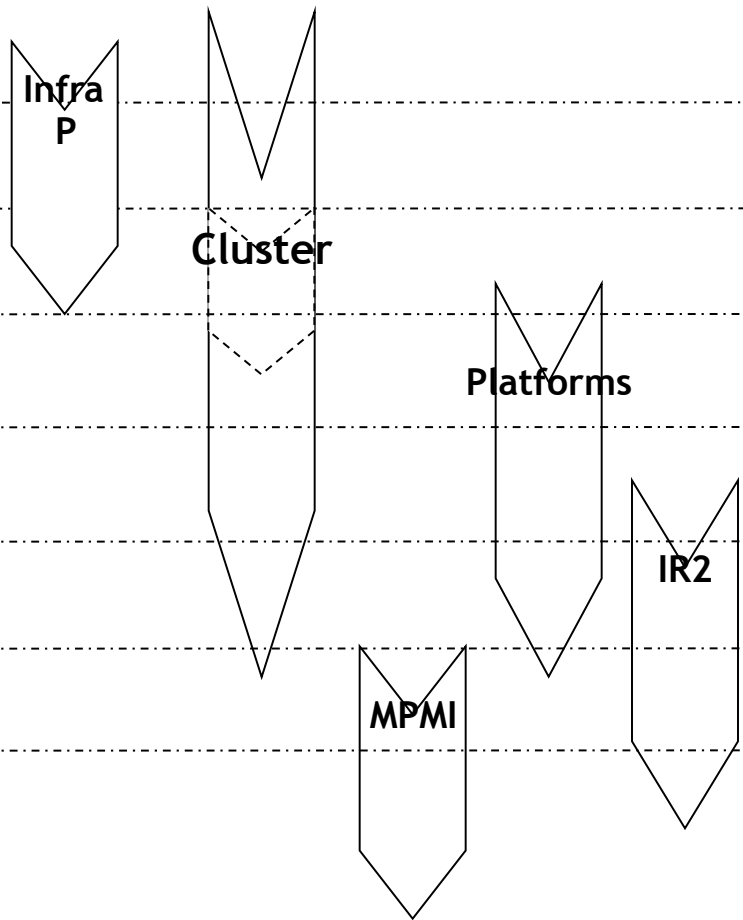
Different schemes covering different TRLs

Technology Transfer and collaborative R&D, at regional and interregional level

Support to SMEs innovation processes

Integration of policies

# Current regional ERDF R&D policies - rationale



TRL	DEFINITION
TRL 1	basic principles observed
TRL 2	technology concept formulated
TRL 3	experimental proof of concept
TRL 4	technology validated in lab
TRL 5	technology validated in relevant environment
TRL 6	technology demonstrated in relevant environment
TRL 7	system prototype demonstration in operational environment
TRL 8	system complete and qualified
TRL 9	actual system proven in operational environment

**Technology Platforms** (large collaborative projects on relevant areas):

**Smart Factory:** 8 projects supported; total investments 78m€, ERDF contribution 34m€

**Life Sciences:** 5 projects supported; total investments 38,7m€, ERDF contribution 19,3m€

**Bioeconomy:** 11 projects submitted, under evaluation

**IR2 - Industrialization of R&D results** (focus on large enterprises and investments):

21 projects supported; total investments in Piemonte 191,3m€, ERDF contribution 47,1m€

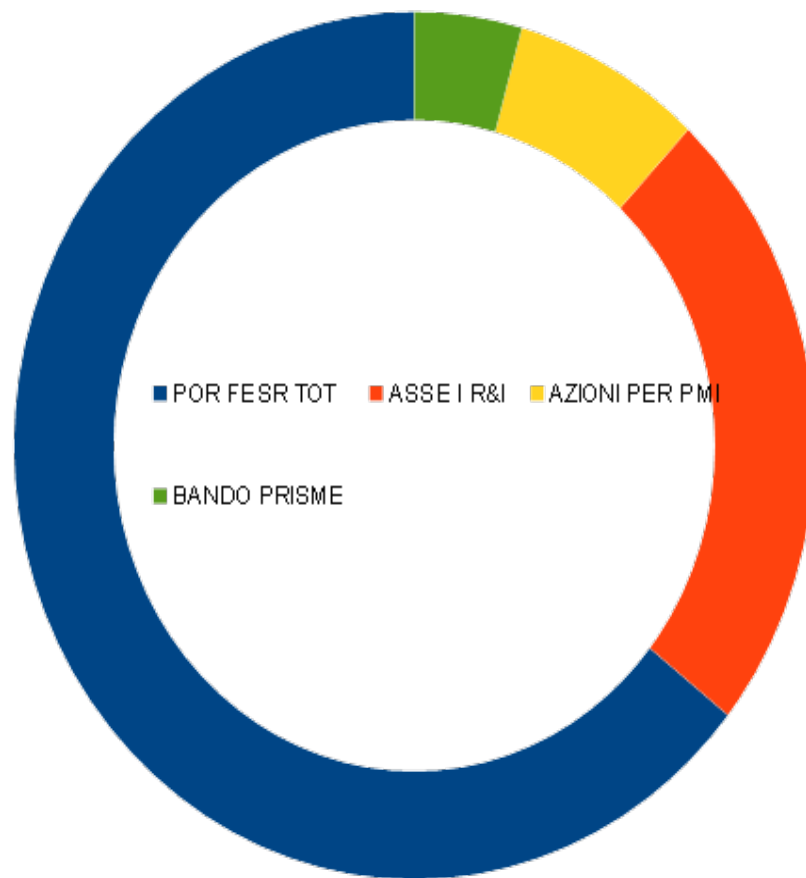
**Research Infrastructures:** 13 RI supported, total investments 40m€, ERDF contribution 19,5m€; voucher scheme to be launched

**ERA-NET** - Manunet, Incomera and EME schemes: 23 projects (with 39 regional partners), 5,2m€ ERDF contribution

Scheme to support **Start ups** to be launched soon (10m€ allocation)

... and **INNOVATION CLUSTERS**

## Piemonte ERDF





**Members**

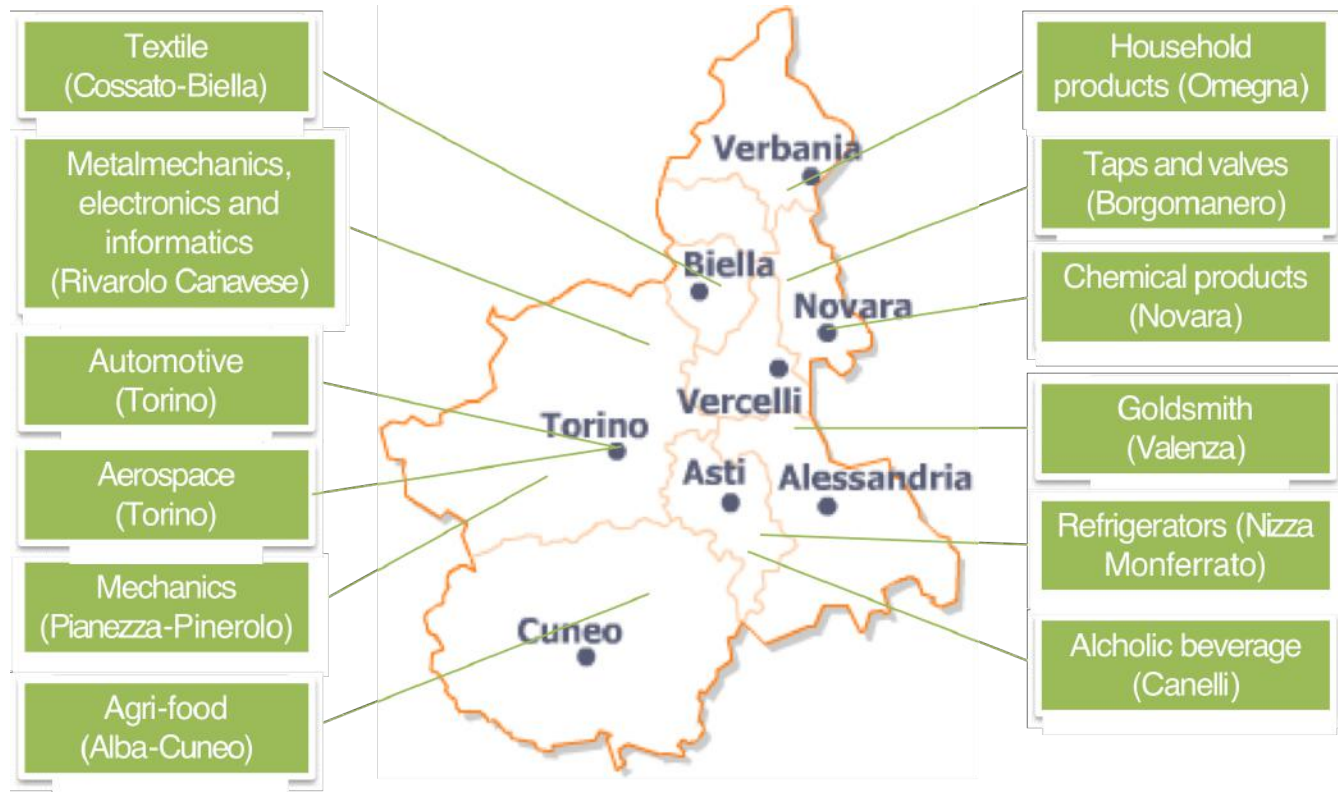
**1200 enterprises (mainly  
SMEs)**

**Universities and RTO**

**Training institutions**

**Funding entities (banks)**







2007-2013 period: 12 innovation clusters launched in 2009 (first region in Italy)

**2014-2020:** revision to better match S3 (currently **7 clusters**)

**Mission** of cluster organizations:

- expand the membership base

- provide high quality innovation **services** to cluster members

- promote **partnerships** at national and international levels

- Elaborate **research agendas** and support the regional policy maker with updated data on technology trends and cluster evolution

- helping cluster members to **access regional public funding** for collaborative R&I projects

**Total fund allocation 2014-2020:** 110m€ (including 5,65m€ allocated to direct operational support to cluster organizations)

## Key figures on 2014 - 2020 Calls

(Linea A - Associated Members + Linea B - Potential new members)

Projects supported: **106**

Companies supported: **285**

Total investments: **68,5m€** (out of which for research contracts: **11m€**)

Regional ERDF contribution:  
**33,25m€**

**Interclusters projects: 25**  
(considering only those officially declared)

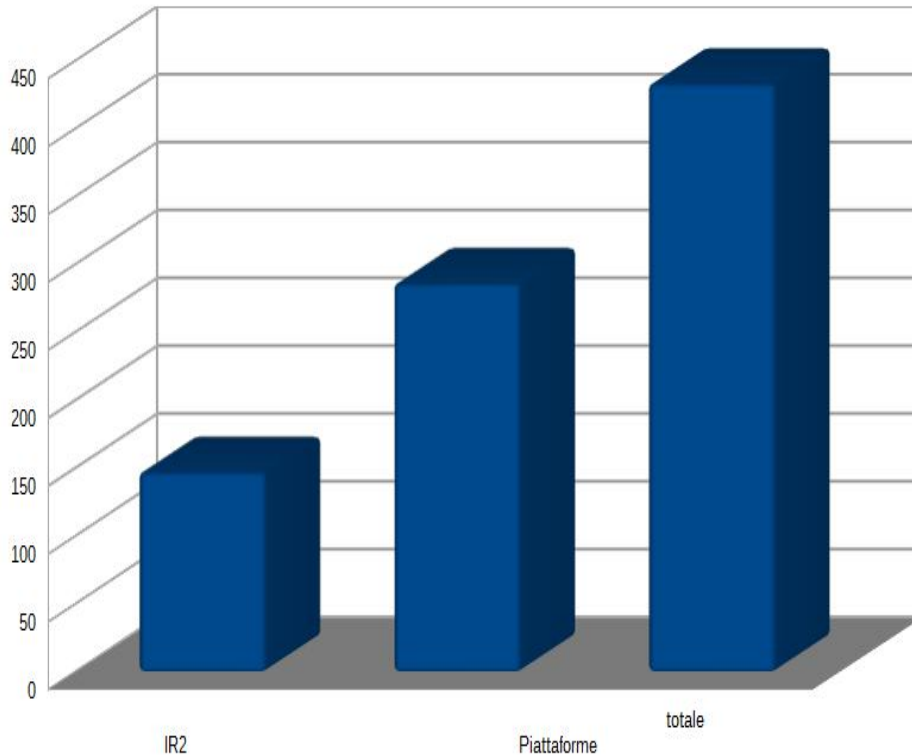
Classification of projects per transversal thematic areas:

**Eco-innovation** (circular economy and resource efficiency): **36**

**Industry 4.0:** **54**

**Health and wellness:** **16**

## Apprenticeship on higher education and research (ES scheme)



**Mandatory on IR2 and Technology Platforms ERDF schemes**

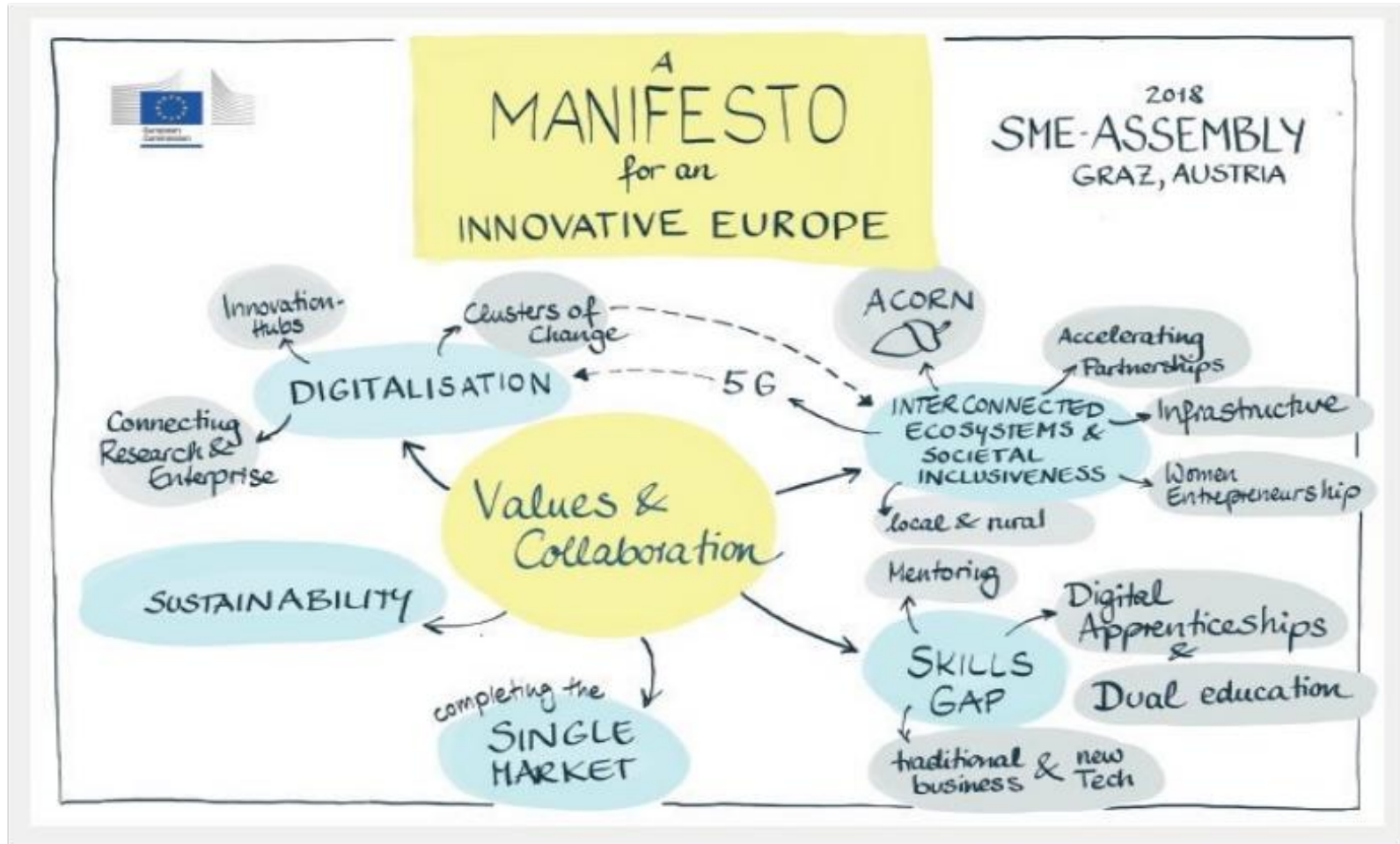
**Total number of apprentices as of call obligations: 471**

**Successful beyond call obligations (Merlo +20%, ITT +40%, Comau +40%, Denso +50%, FCA +100%, Michelin +150%)**

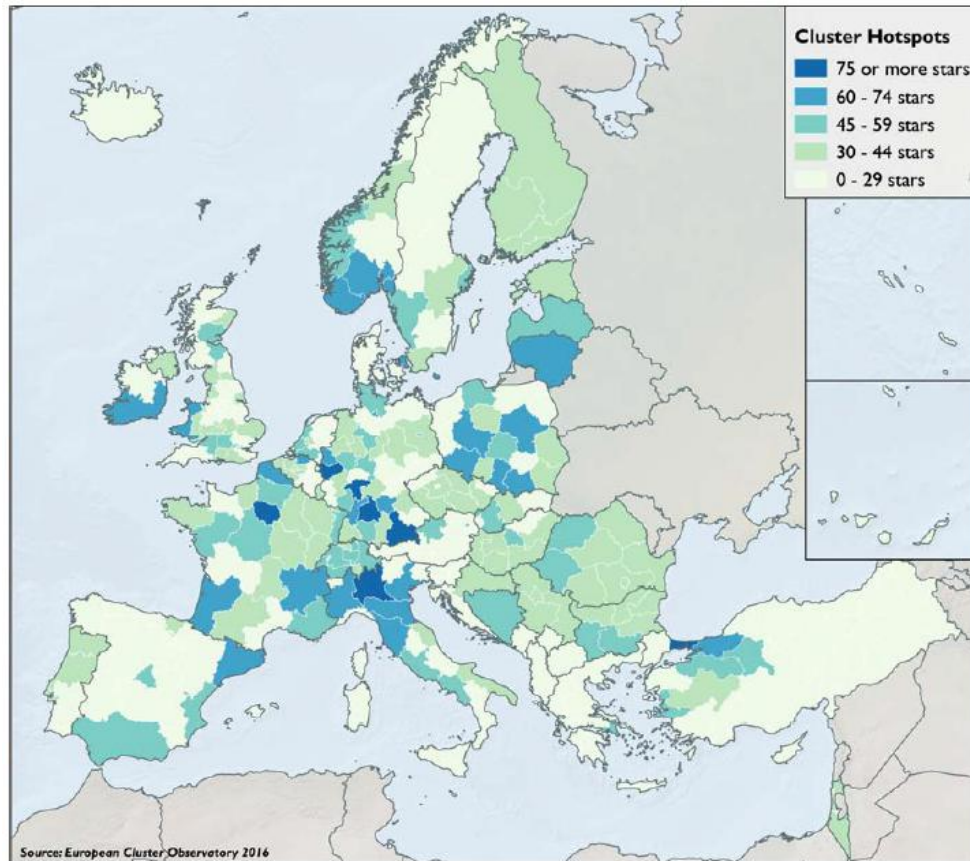
**Scheme applied also to call PRISM-E (SMEs)**

# PERSPECTIVES

# Stakeholder feed-back



# Clusters are accelerators of growth & industrial change



There are **3043 strong regional clusters** in related industries.

Clusters matter because they...

- account for **54 million jobs**;
- are **represented in all parts of Europe** and have shown **resilience** during economic crises;
- **nurture growth and jobs** e.g. 3% higher wages and the 67 700 young, fast growing enterprises in clusters employ more staff (35 compared to 24 outside).

Source: European Commission, European Cluster Panorama 2016, star rating for size, specialisation, productivity and growth.

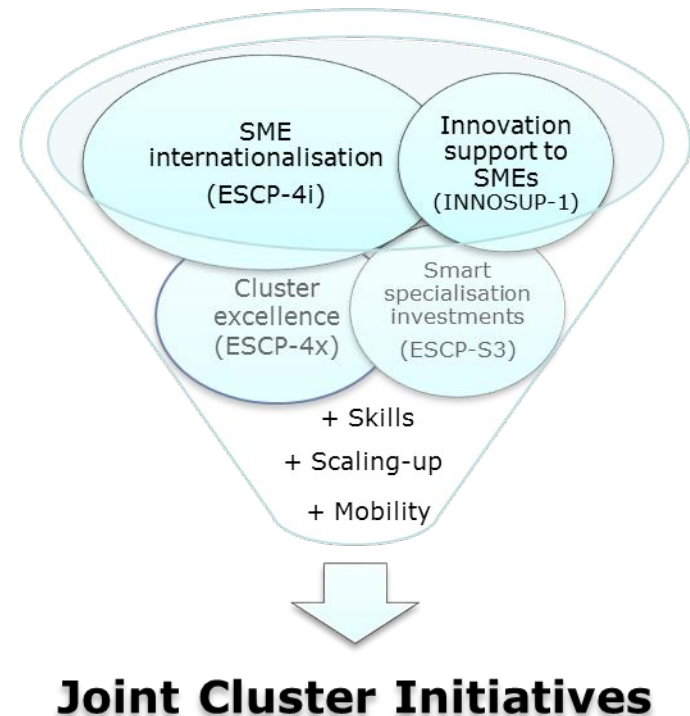
# Towards Joint Cluster Initiatives

- Industry-focused actions guided by joint strategies of specialised **SME intermediaries**
- Thematically targeted, with **cross-regional and cross-sectoral outreach to SMEs**
- Channelling scale-up support to groups of SMEs to boost **industrial transformation**

Building EU value chains,  
**industrial modernisation**  
& capacity building

**Skills** upgrading,  
talent attraction &  
entrepreneurship  
acceleration

Boosting internationalisation  
& access to  
**global value chains**



**Strengthening clusters role as system integrator**

**Rewarding performances on assigned targets**

**Industrial transition challenges targeted  
(e.g. digitalisation, circular economy, skills)**



Opening S3: from sectors to **transversal drivers**

**Societal challenges** as innovation drivers

Strengthening innovation **ecosystem**

“Internationalize” S3: **interregional value chains**

# Testing new approaches I



Development of a comprehensive strategy for economic transformation

Broad innovation and inclusive growth building on smart specialisation strategy

Multi-sectoral focusing on jobs, industrial sectors, business models, economy and society as a whole

Addressing globalisation, automation, decarbonisation, emerging and digital technologies, skills and investment



# Preliminary takeaways

- Make innovation work for territorial inclusion
- Spend as much time thinking about technology upgrading as patenting
- Develop collective intelligence to address societal challenges
- Strengthen the complementary role of workers in technological change
- Build skills systems around companies rather than the labour market
- Look for the double dividends – green jobs, new services that match the territory
- Focus on value chains rather than industries

# Interregional innovation investments

## WHAT

Interregional innovation investments through the commercialisation and scaling up of interregional innovation projects having the potential to encourage the development of European value chains ('component 5'). (ETC Art 3.5)

## HOW MUCH

11.5 % of ETC Resources (i.e., a total of EUR 970m) for interregional innovation investments (component 5). (ETC Art. 9.2)

## HOW

It shall be implemented under direct or indirect management. (ETC Art 16.1)

## FOR WHOM

At the initiative of the Commission, the ERDF may support interregional innovation investments, as set out in point 5 of Article 3, bringing together researchers, businesses, civil society and public administrations involved in smart specialisation strategies established at national or regional levels. (ETC Art 61)



**ECSEL**  
Joint Undertaking  
Electronic Components and Systems  
for European Leadership



SmartAnythingEverywhere!



**REGIONE PIEMONTE**  
**Directorate Competitiveness of Regional System**  
**Via Pisano, 6 - 10152 Torino (Italy)**

**University, Research and Innovation Unit**  
**Head of Unit: Ing. Vincenzo Zezza (PhD)**  
**tel. +39.011.4323258**  
**[vincenzo.zezza@regione.piemonte.it](mailto:vincenzo.zezza@regione.piemonte.it)**