



The Bioeconomy in Italy: facts and figures

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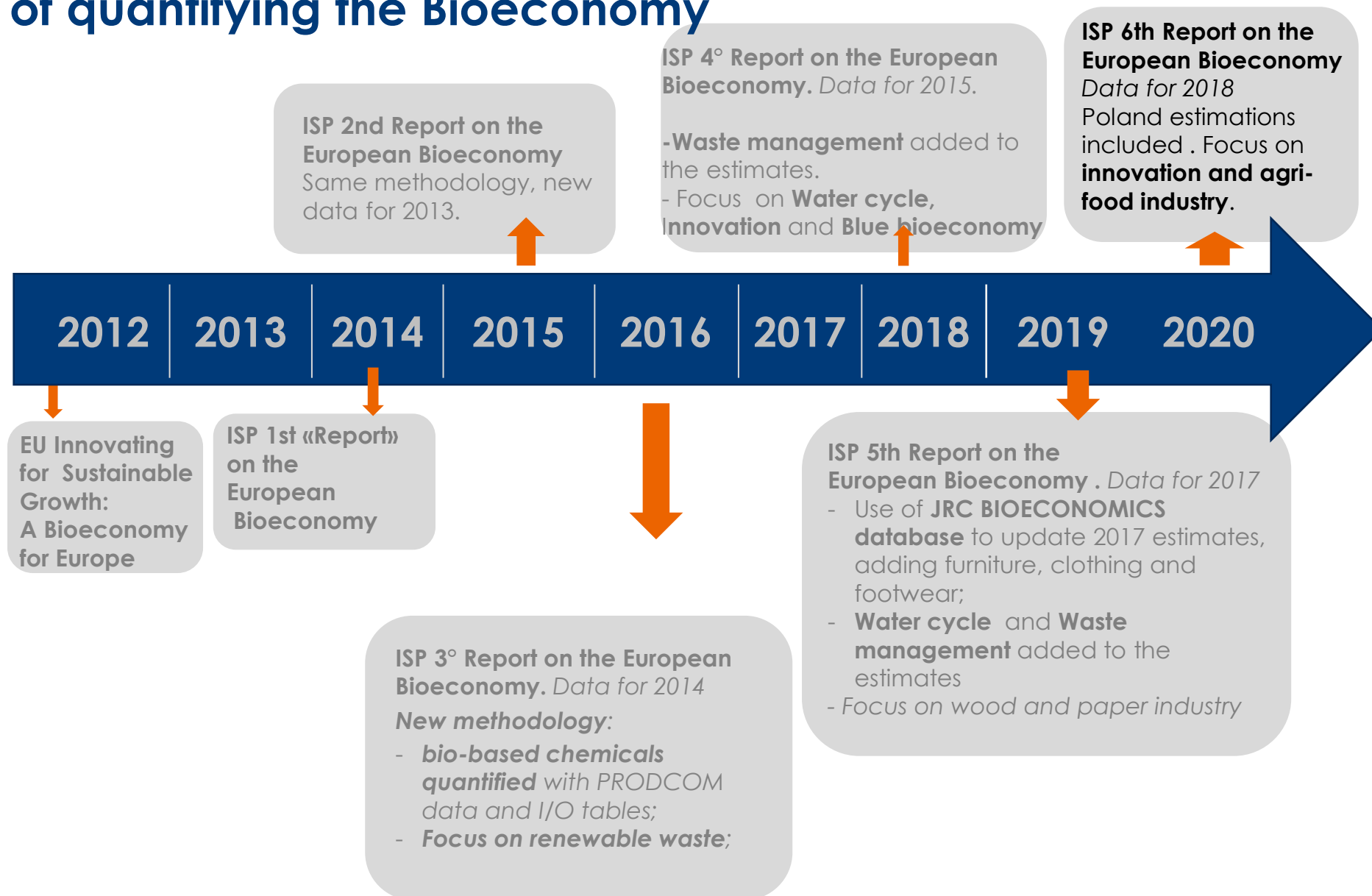
Bioeconomy: environment, innovation and circularity



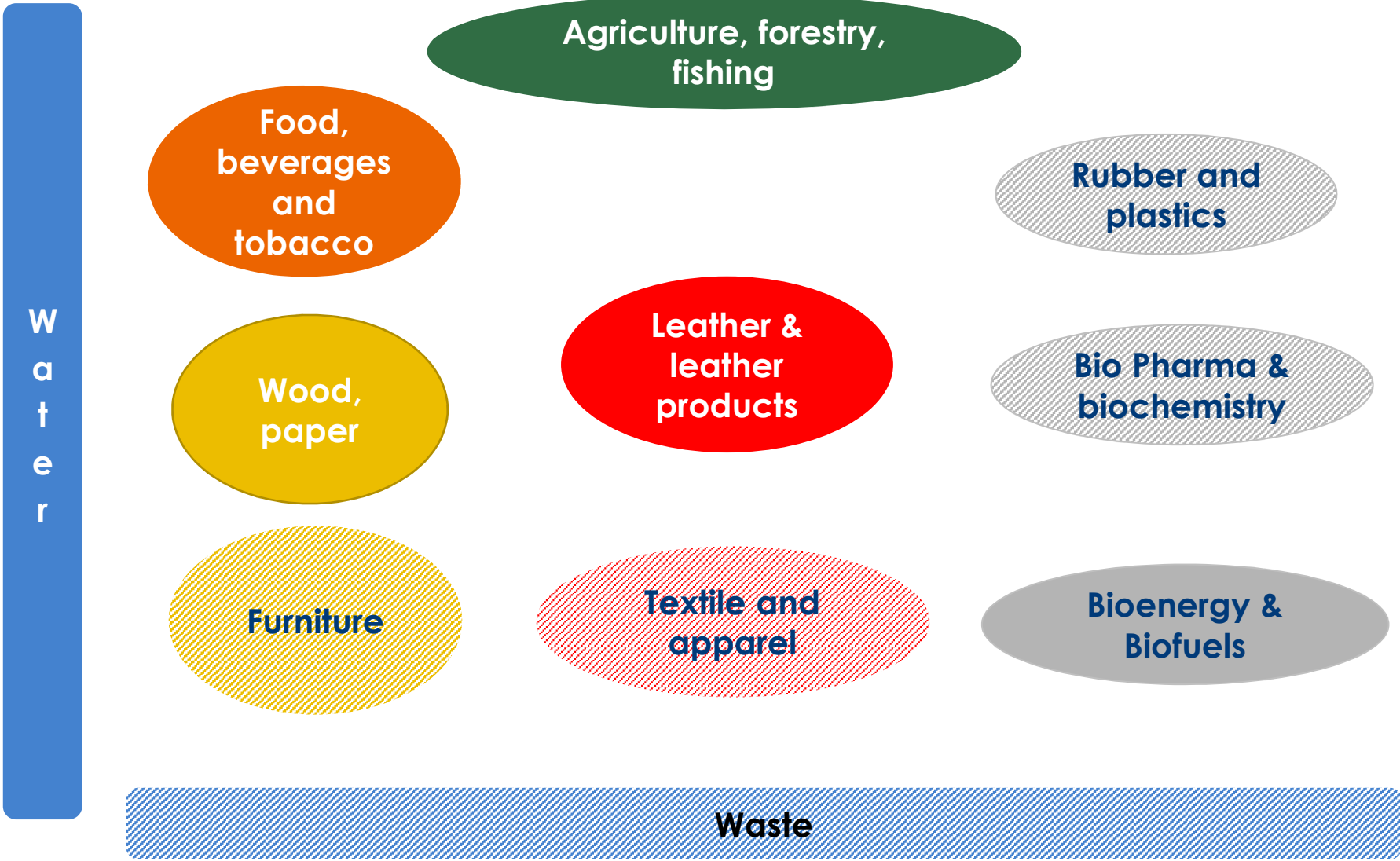
Bioeconomy: a complex system

- Bioeconomy is a **complex system** of different interrelated activities that use **biological and renewable materials**.
- Bioeconomy is a pillar of the European policy for sustainability: the European Commission launched in 2012 a **Bioeconomy Strategy**.
- According to the strategy: *“The Bioeconomy encompasses the sustainable production of **renewable biological resources** and their conversion and that of waste streams into food, feed and bio-based products such as bioplastics, biofuels and bioenergy [...] It includes agriculture, forestry, fisheries, food and pulp and paper production, as well as parts of chemical, biotechnological and energy industries”*.
- **Designing a policy for the Bioeconomy relies also on our ability to quantify this sector.**

The Intesa Sanpaolo-Assobiotech Report: the importance of quantifying the Bioeconomy



A broad definition of Bioeconomy



Why water and waste in the Bioeconomy?

■ Why **water**:

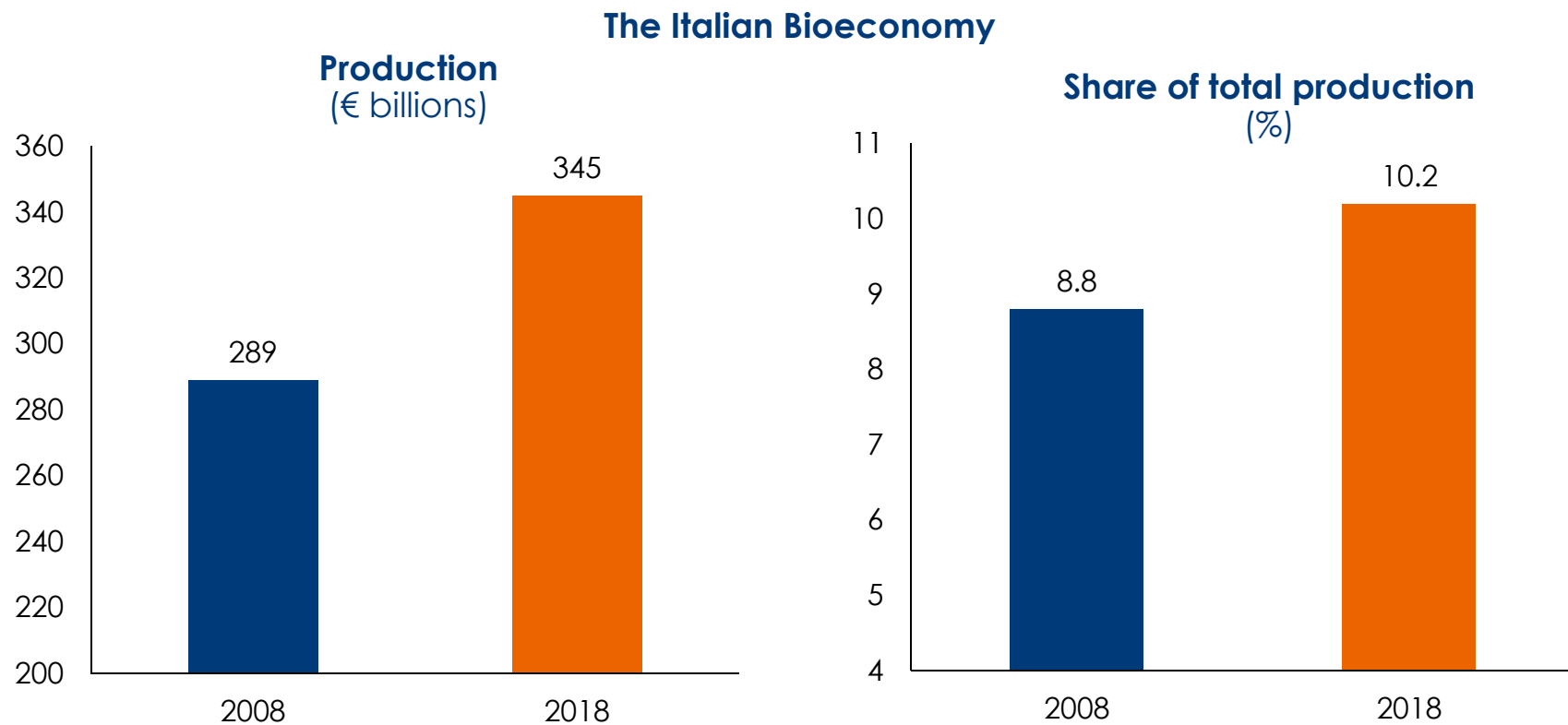
- Water as **input** for standard bioeconomic industries (agriculture, food, paper etc...) & precious **output**, if depurated, in terms of sewage sludge, an important source of biomass, energy and bio-based products;
- Water as **source of food and biomass** (fish, fish discards, seaweeds and other aquatic organisms).

■ Why **waste**:

- Waste management is a crucial activity in the bio-economy system: recycling and recovering allow for the generation of **biomass** that would otherwise be lost;
- New biochemicals allow for a more efficient and correct waste management in a truly **circular** cycle

Bioeconomy in Italy has increased its value...

- The **value of production of the Italian Bioeconomy**, according to our estimates, has reached **345 billions of euros in 2018**, 10.2% of the total production.
- **Bioeconomy** has been growing with respect to 2008, with most industries exhibiting **a positive trend**, driven mostly by food and beverage industry and water cycle and waste management services.



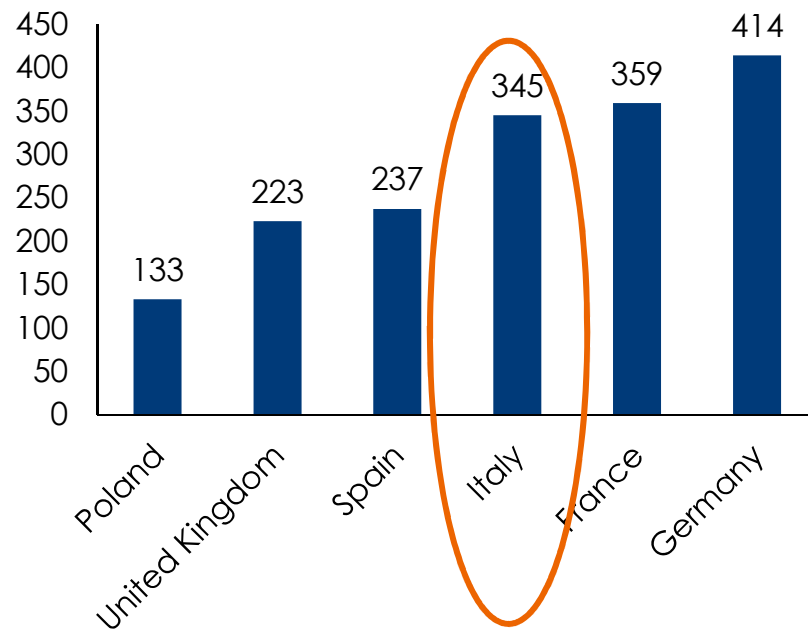
Source: Intesa Sanpaolo on various sources.

... and has gained an important role in the European Bioeconomy total production...

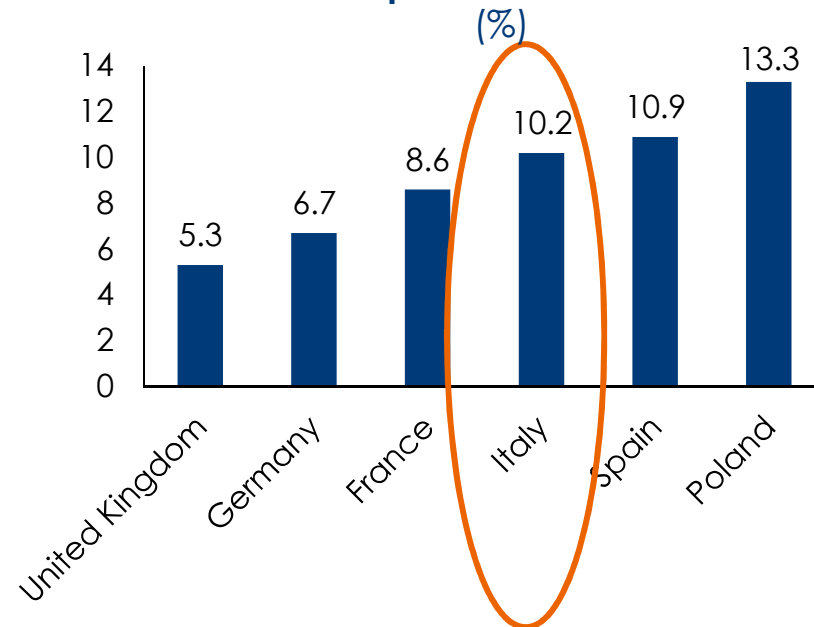
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- **Italy ranks third in terms of production value**, after Germany (414 billion euros) and France (359 billion euros) and is followed by Spain (237 billion euros), the UK (223 billion euros), and finally Poland (133 billion euros).
- **Italy ranks third in terms of share of total value too**, with the Bioeconomy accounting for 10.2% of domestic output, after Poland (13.3%), Spain (10.9%) and ahead of France (8.6%), Germany (6.7%) and the United Kingdom (5.3%).

**Bioeconomy in Europe:
production value**
(2018, € billions)



**Share of Bioeconomy production
on total production in 2018 in the
main European countries in 2018**
(%)

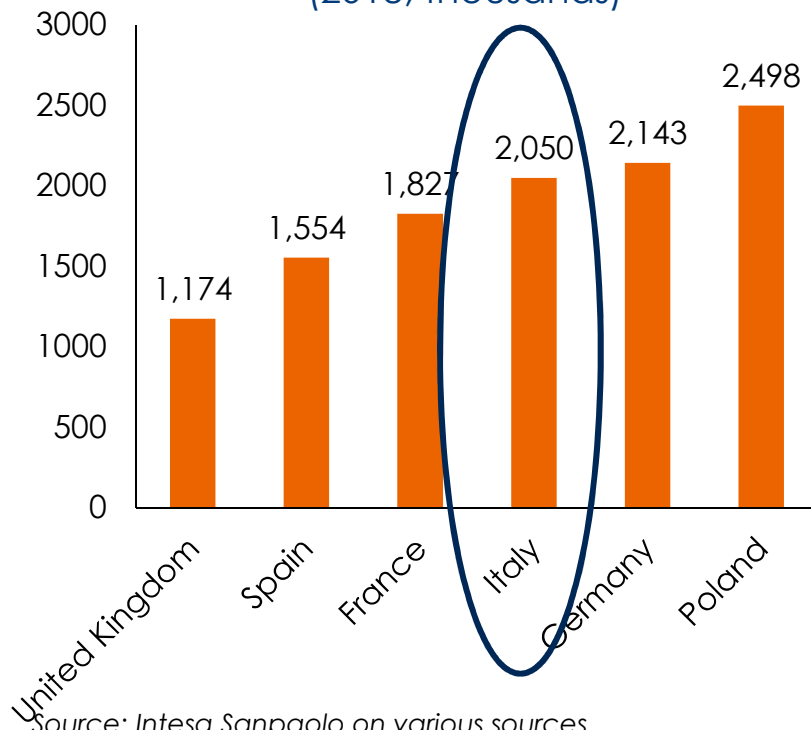


Source: Intesa Sanpaolo on various sources.

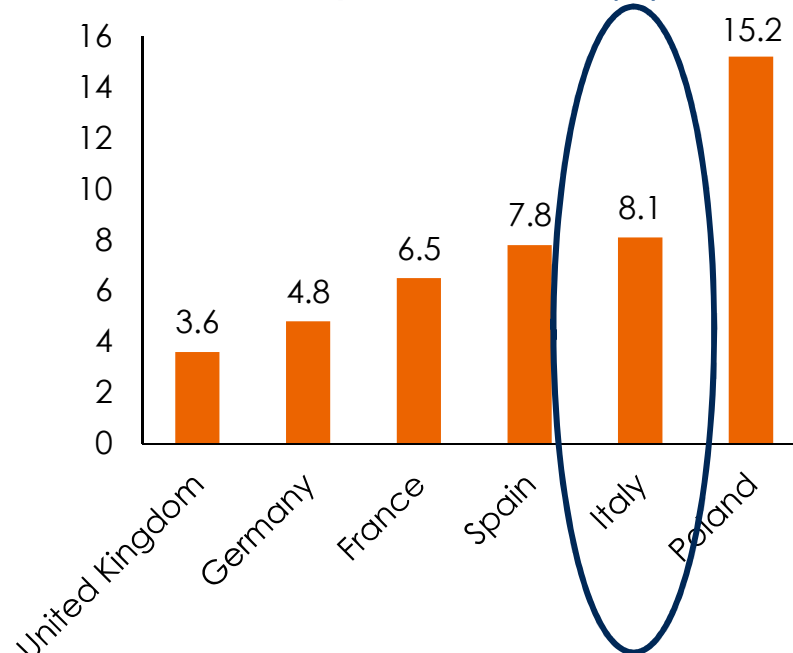
... and employment

- **Italy also ranks third in terms of people employed** in Bioeconomy, with just over 2 million employed, behind Poland, which employs 2.5 million people and Germany (2.1 million persons).
- **In terms of the contribution of the Bioeconomy on overall employment, Italy ranks second** (8.1%), after Poland (15.2%), and ahead of Spain (7.8%). The relevance of the Bioeconomy in terms of employment is lower in France (6.5%), Germany (4.8%) and the United Kingdom (3.6%).

**Bioeconomy in Europe:
employment levels**
(2018, thousands)



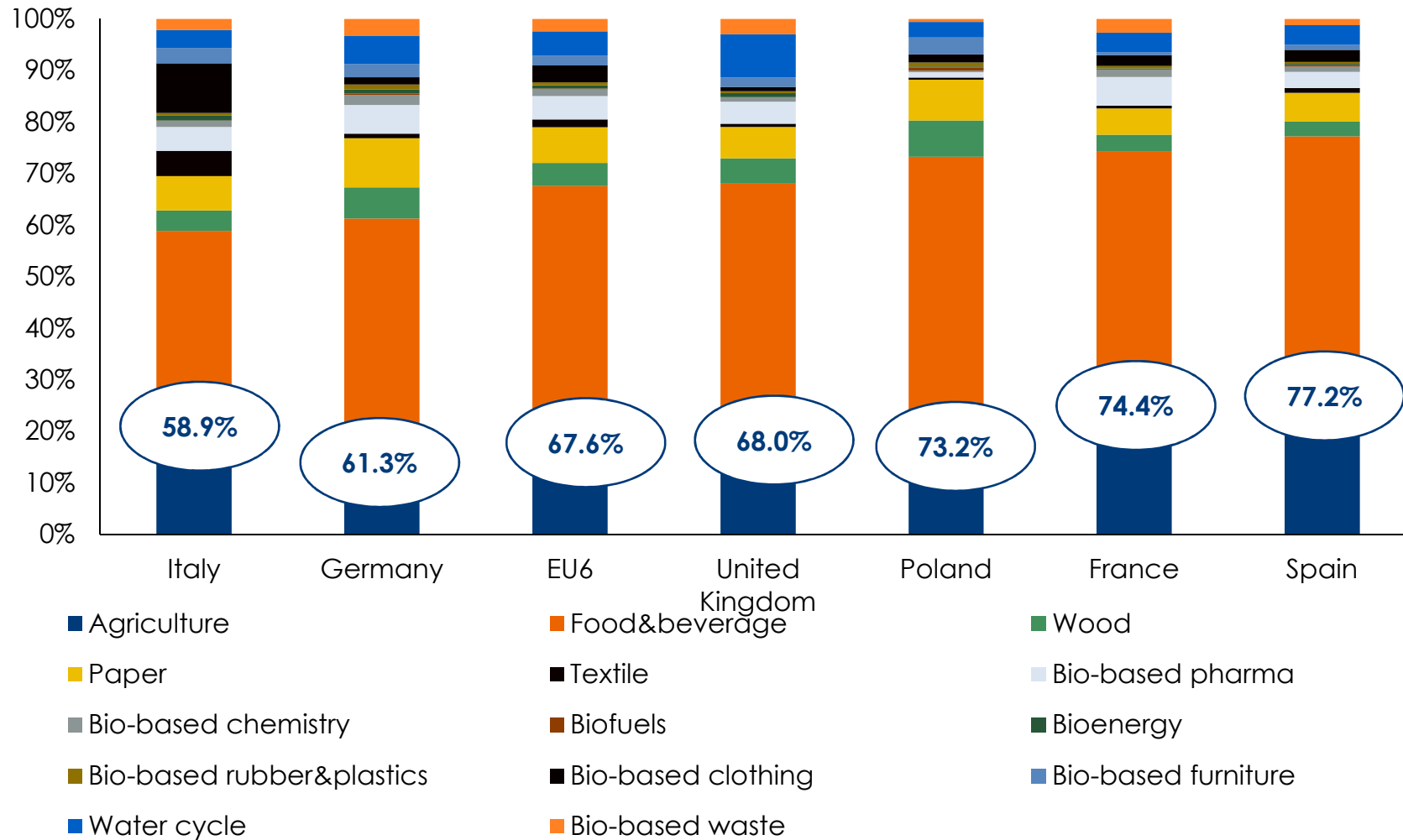
**Share of Bioeconomy employment on
total employment in 2018 in the main
European countries (%)**



Source: Intesa Sanpaolo on various sources.

Agriculture and food&beverage industry are relevant in every country...

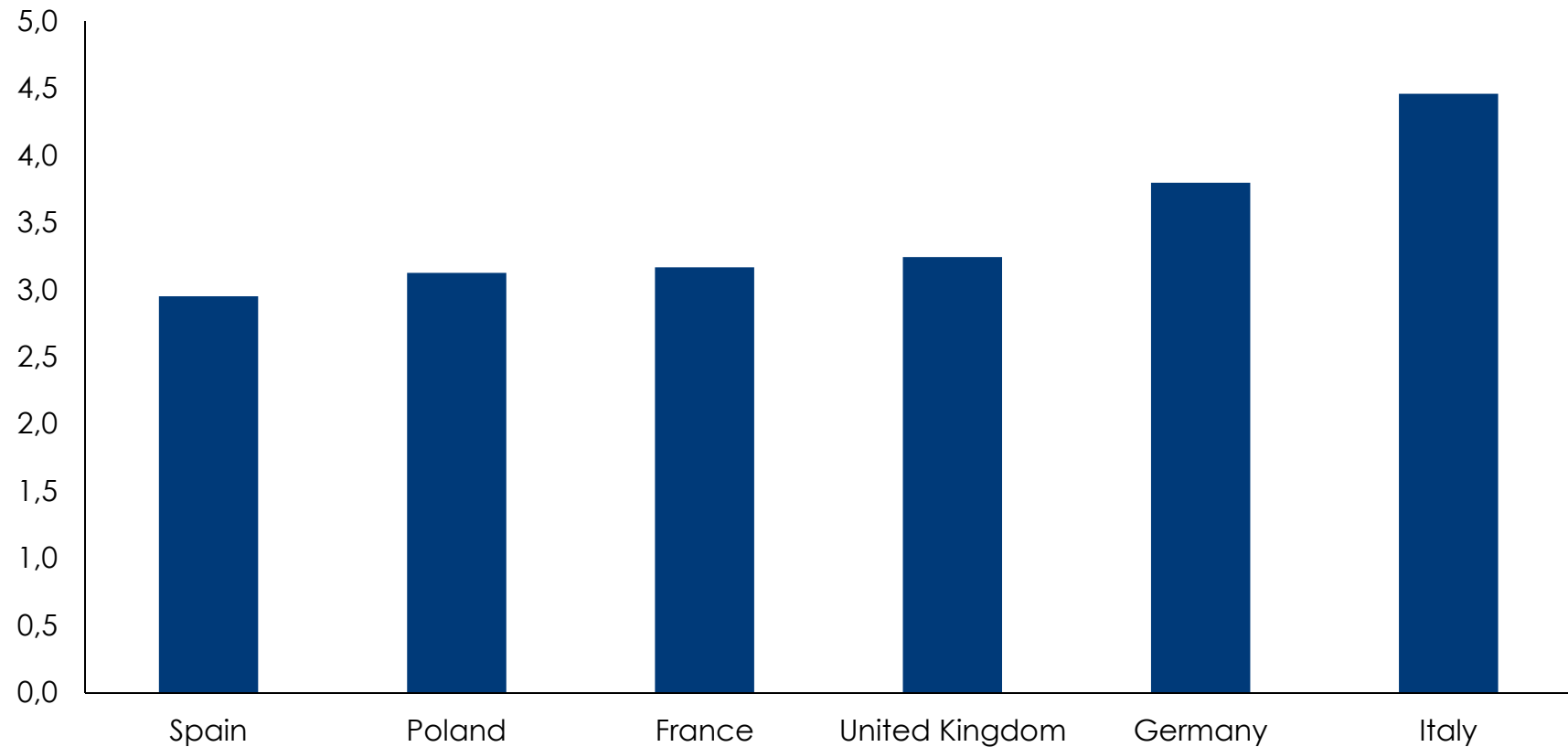
Production value by sector
(2018, %)



Source: Intesa Sanpaolo on various sources.

... but diversification is the highest in Italy

Sector diversification in bioeconomy
(inverse of Herfindahl index)

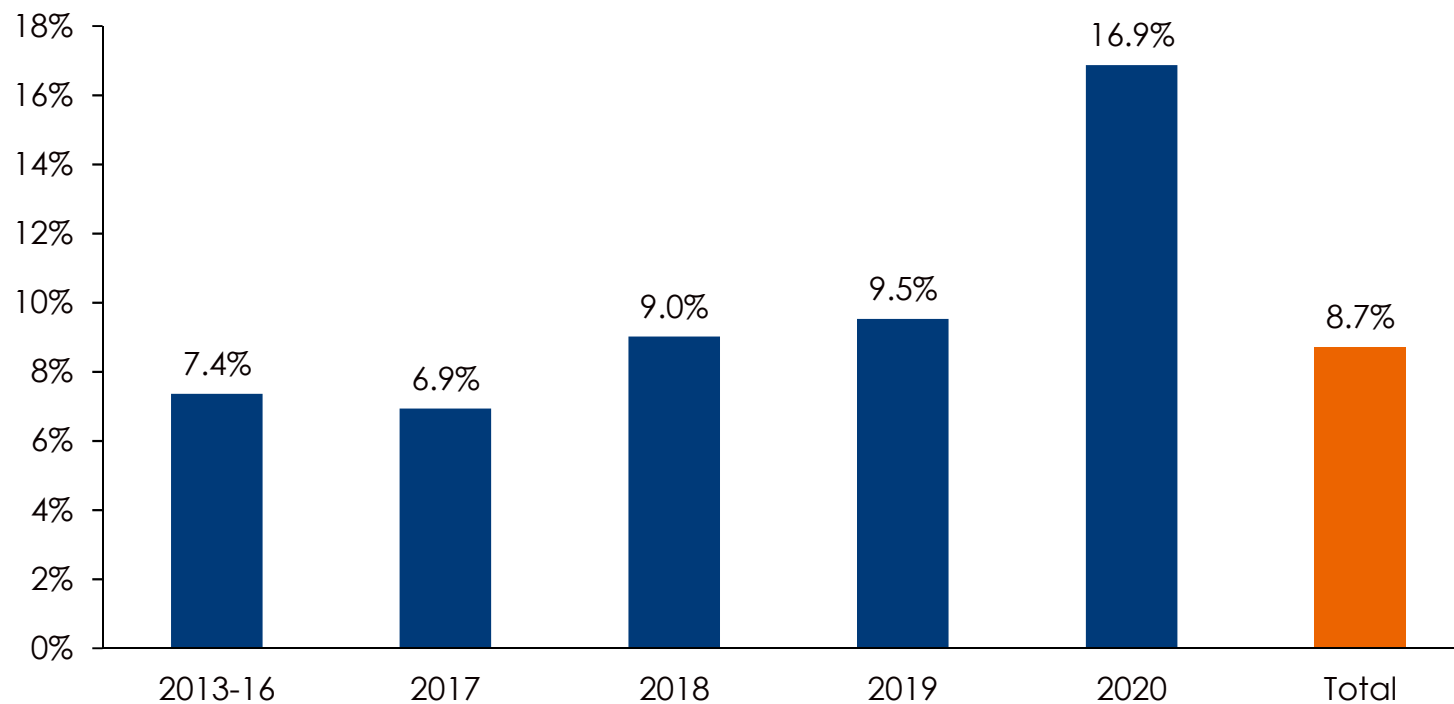


Source: Intesa Sanpaolo on various sources.

The number of innovative start-ups in Bioeconomy is growing...

- The growth of Bioeconomy is also seen in the **creation of innovative companies**: the updated estimates on the number of innovative start-ups reveal that, as of February 2020, 8.7% of registered companies belong to the Bioeconomy.

Bioeconomy innovative start-ups
(% share of total innovative start-ups by year of registration)

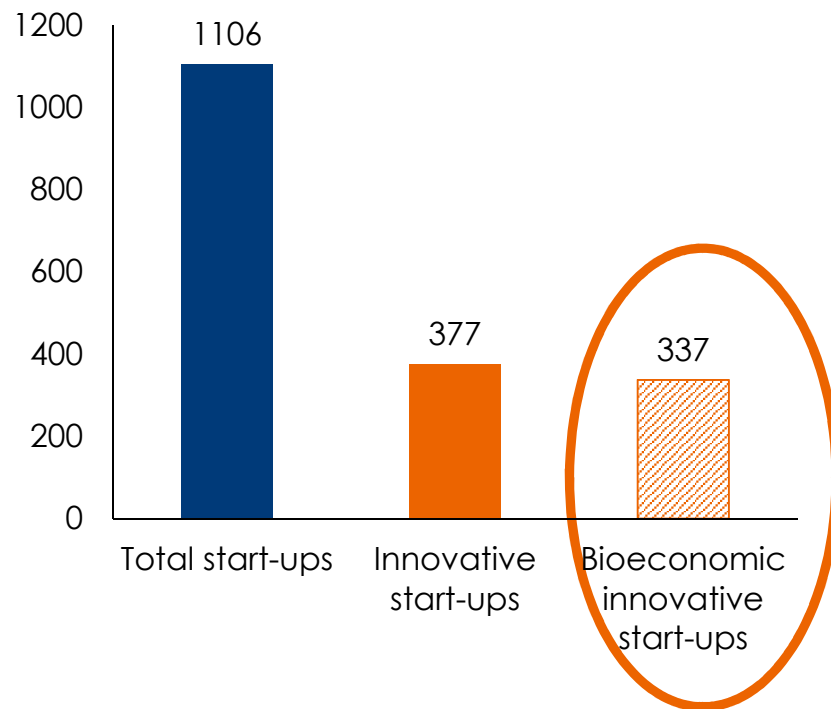


Source: Intesa Sanpaolo calculations based on Chamber of Commerce Data.

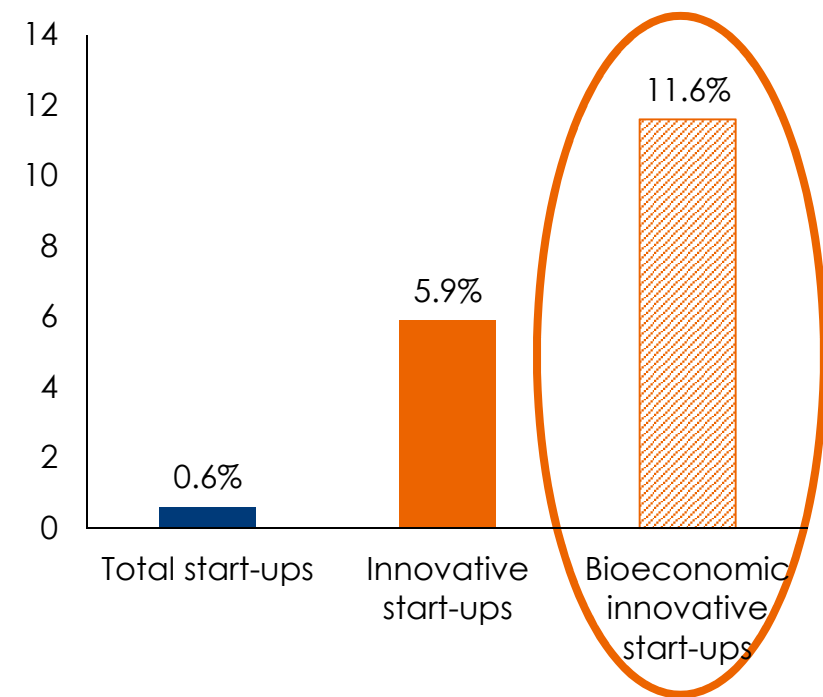
... firms are smaller yet more innovative...

- Bioeconomic innovative start-ups are smaller (in terms of production value) but more innovative than other start-ups.

Average size of Italian start-ups
(median production value, thousand euro, 2018)



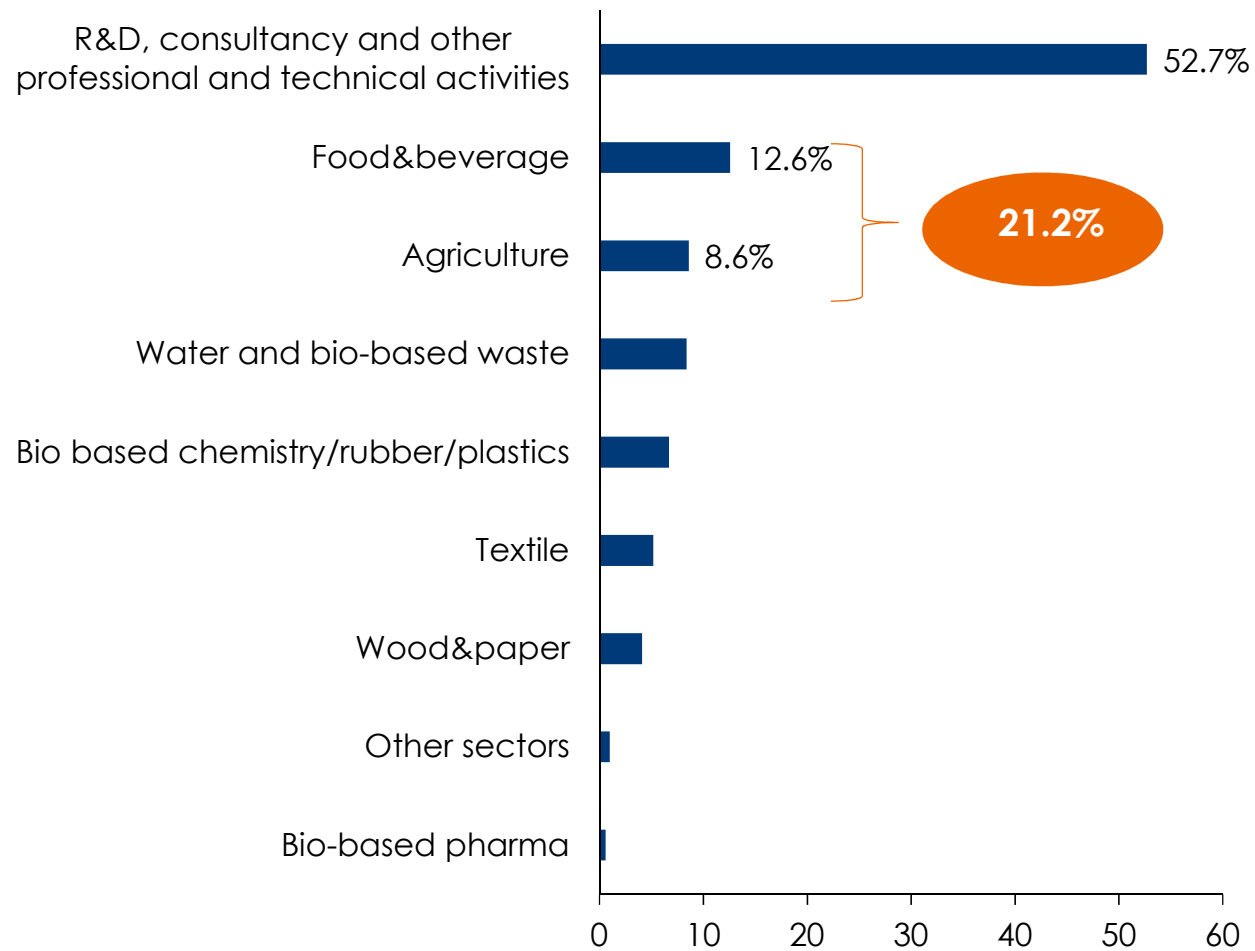
% start-ups with at least a patent or a trademark
(%, 2018)



Total: Sample of more than 220 thousand companies born after 2013; Innovative: sample of 5,555 innovative start-ups registered with the Chamber of Commerce, of which 5,183 are not part of the Bioeconomy and 372 related to Bioeconomy sectors.
Source: Intesa Sanpaolo calculations based on Chamber of Commerce Data.

... and specialized in R&D activities

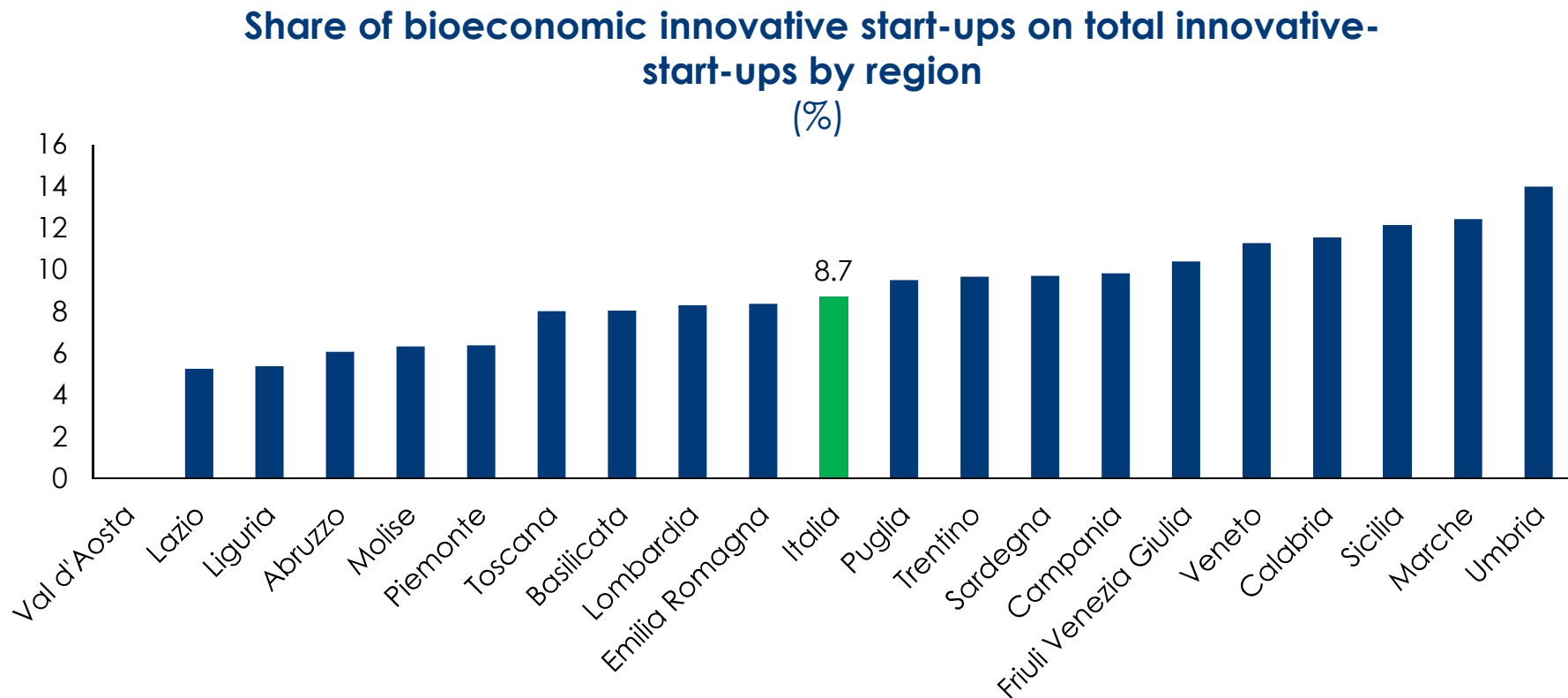
Start-ups in the Bioeconomy by industry (%)



Source: Intesa Sanpaolo calculations based on Chamber of Commerce Data

Fairly uniform distribution of bioeconomic innovative start-ups across Italian regions

- In 10 regions the incidence of bioeconomic innovative start-ups on total innovative start-ups is above the Italian average.



Source: Intesa Sanpaolo calculations based on Chamber of Commerce Data

Conclusions

- **Bioeconomy includes a large variety of sectors** (both traditional than innovative activities), and it has a relevant role in the Italian economy.
- Bioeconomy involves **several stakeholders**: firms, farmers, consumers, public administration, universities, R&D centers. In order to develop new sustainable products or processes, it's important to promote good practices and culture of innovation across all stakeholders. **Interacting with the community is essential to change the paradigm.**
- Bioeconomy could become a **driver for growth in some local areas** according to their economic **productive specialization** In Southern Italian regions, for example, the huge relevance of agriculture and food industry and the innovative eco-system in this field could represent an opportunity to create economic value and employment.

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