Politecnico di Torino

Exploring the dynamics of European cleantech SMEs

5th April 2024

Candidates
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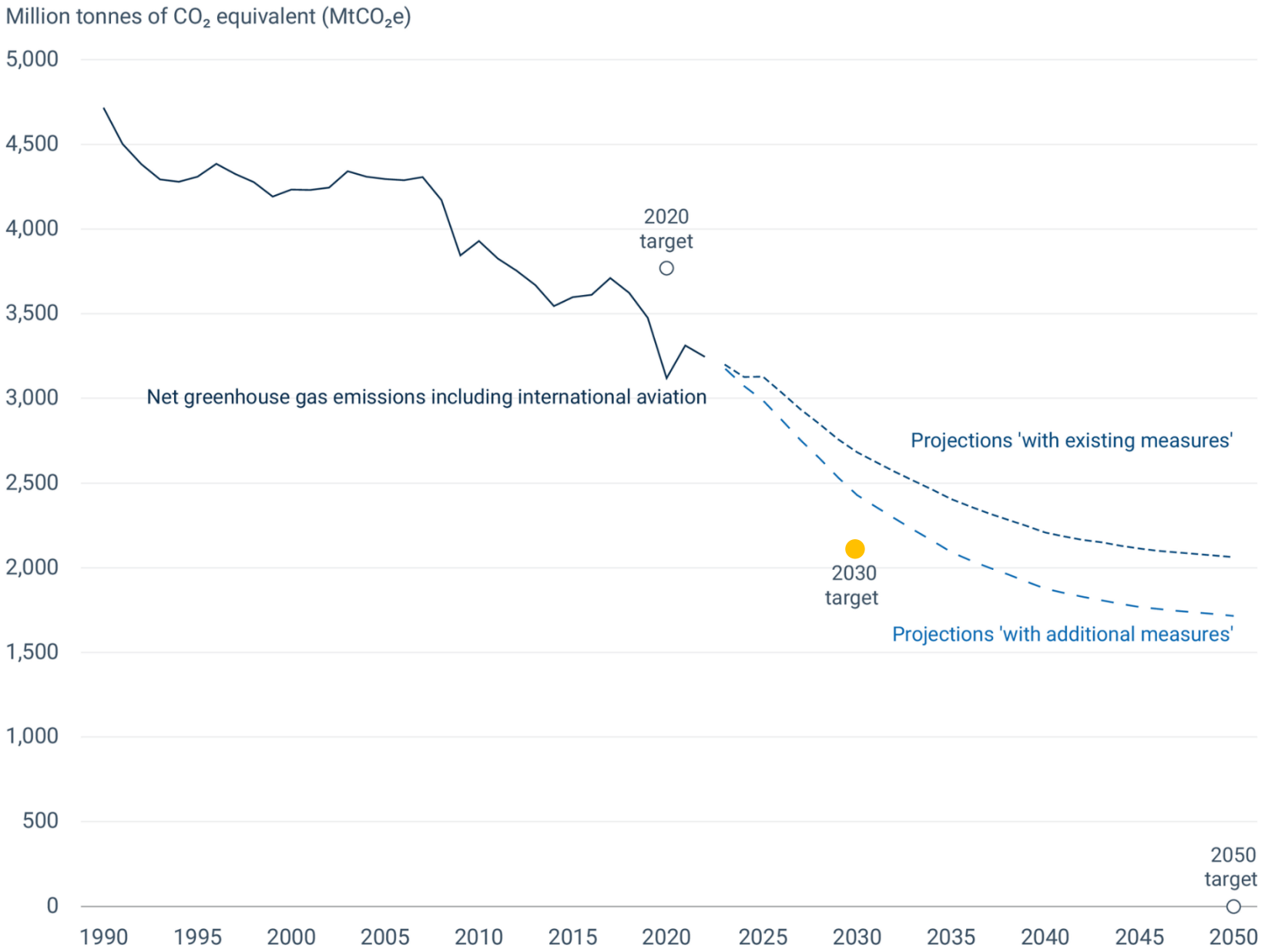
Carbon neutrality by 2050

EU is facing challenges in achieving its goal by the year 2030



Cleantech

Clentech Group sectors. Climate change impacts, risks and adaptation.
Measuring environmental innovation using patent data Ivan Haščič, Mauro Migotto
Delegation of the European Union to Canada. The clean technology market entry guide: A practical guide to the canadian clean technology market for European Union companies.

Clean+tech

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Clean+tech

designed to achieve environmentally friendly outcomes (having minimal or relatively limited effects on the environment)

technologies, products, materials, processes, business models, or related activities and systems

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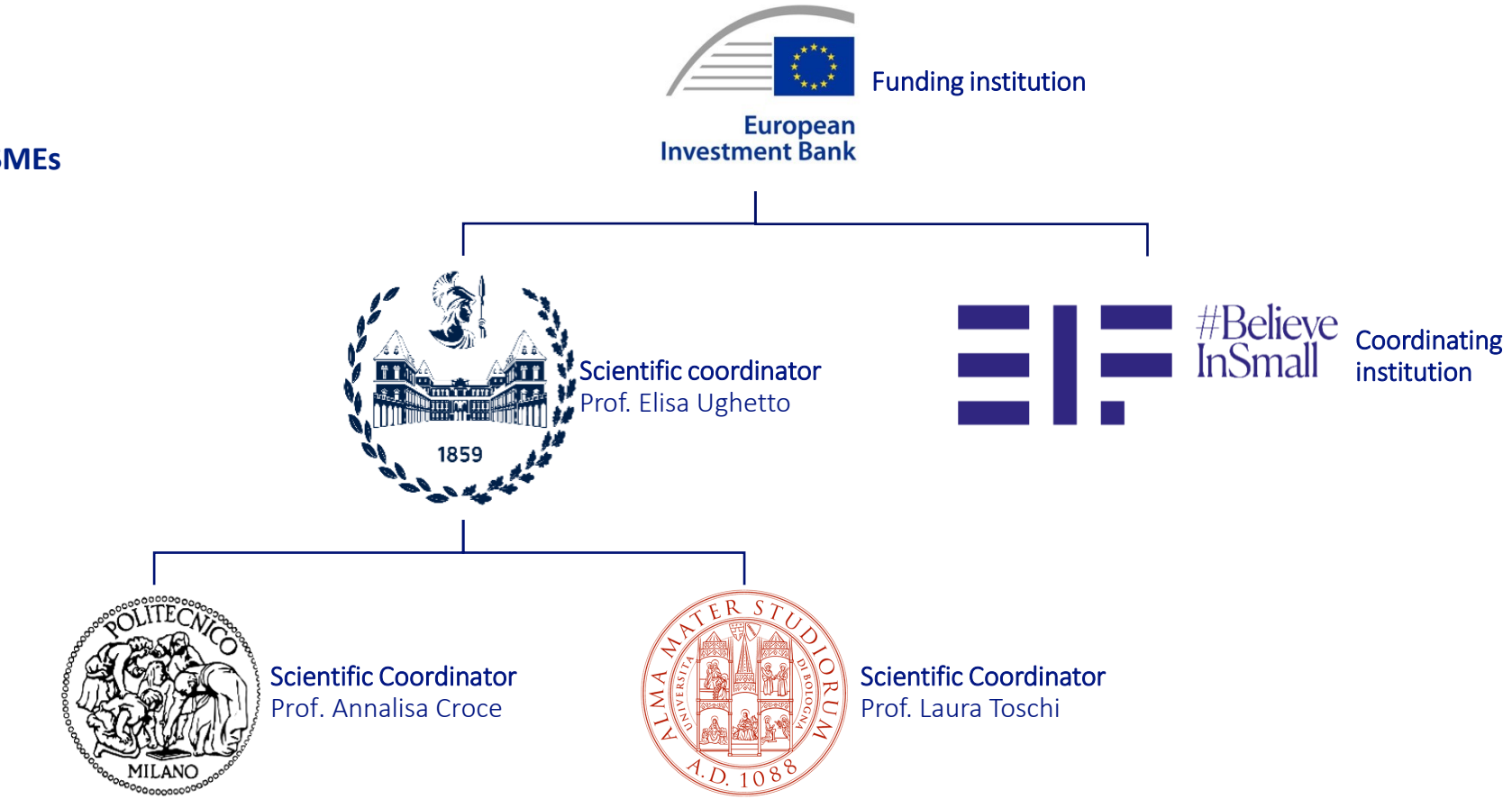
CLEU research project

Esteemed European stakeholders leveraging knowledge of renowned universities

This thesis is the outcome of the authors contribution to the Research Project

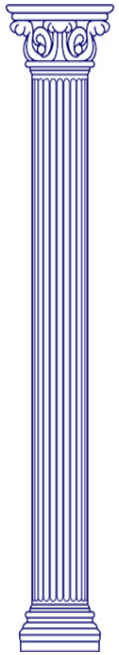
“The cleantech industry in the EGD: policy challenges and the finance landscape for SMEs (CLEU)”



The Green Deal Industrial Plan

The survey aligns with the EGD's four-pillar structure

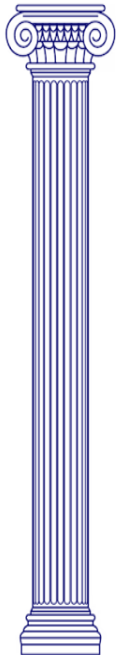
Enhancing skills



Difficulty in finding workers with the necessary skills

Job opportunities for workers displaced by automation and digitalization

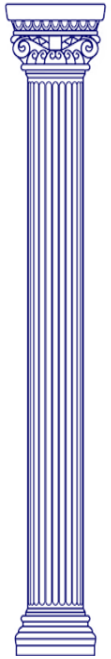
Open trade for resilient supply chain



High dependence on extra European suppliers

Supply chain disruptions exacerbated by lean initiatives and single-sourcing policies

Predictable and simplified regulatory environment



Uncertainties regarding regulations and taxation

Complex and expensive process in achieving compliance

Speeding up access to finance

Risky, long-term, and capital-intensive investments

Limited financial instruments to support scale-up

EIB Economics Department. European firms and climate change 2020/2021
British Chambers of Commerce, Burdens barometer
Organization for Economic Cooperation and Development (OECD). Chapter4. Pillar C–Access to finance
Organization for Economic Cooperation and Development (OECD). Future-proofing adult learning systems in cities and regions
European Commission. Staff working document - strategic dependencies and capacities.
Analyzing the Resilience of Complex Supply Network Topologies Against Random and Targeted Disruptions

Survey’s design

Collaborative effort in questions definition, leveraging the multidisciplinary expertise of the research group

- Questionnaires can be **cost-effectively** distributed, reaching all participants simultaneously, even in the case of a **large sample size**
- By using standardized questions and response options, questionnaires **minimize bias** and ensure **consistency** in data collection
- Consistent data enables **efficient analysis**, interpretation, and drawing of conclusions
- 323 answered surveys

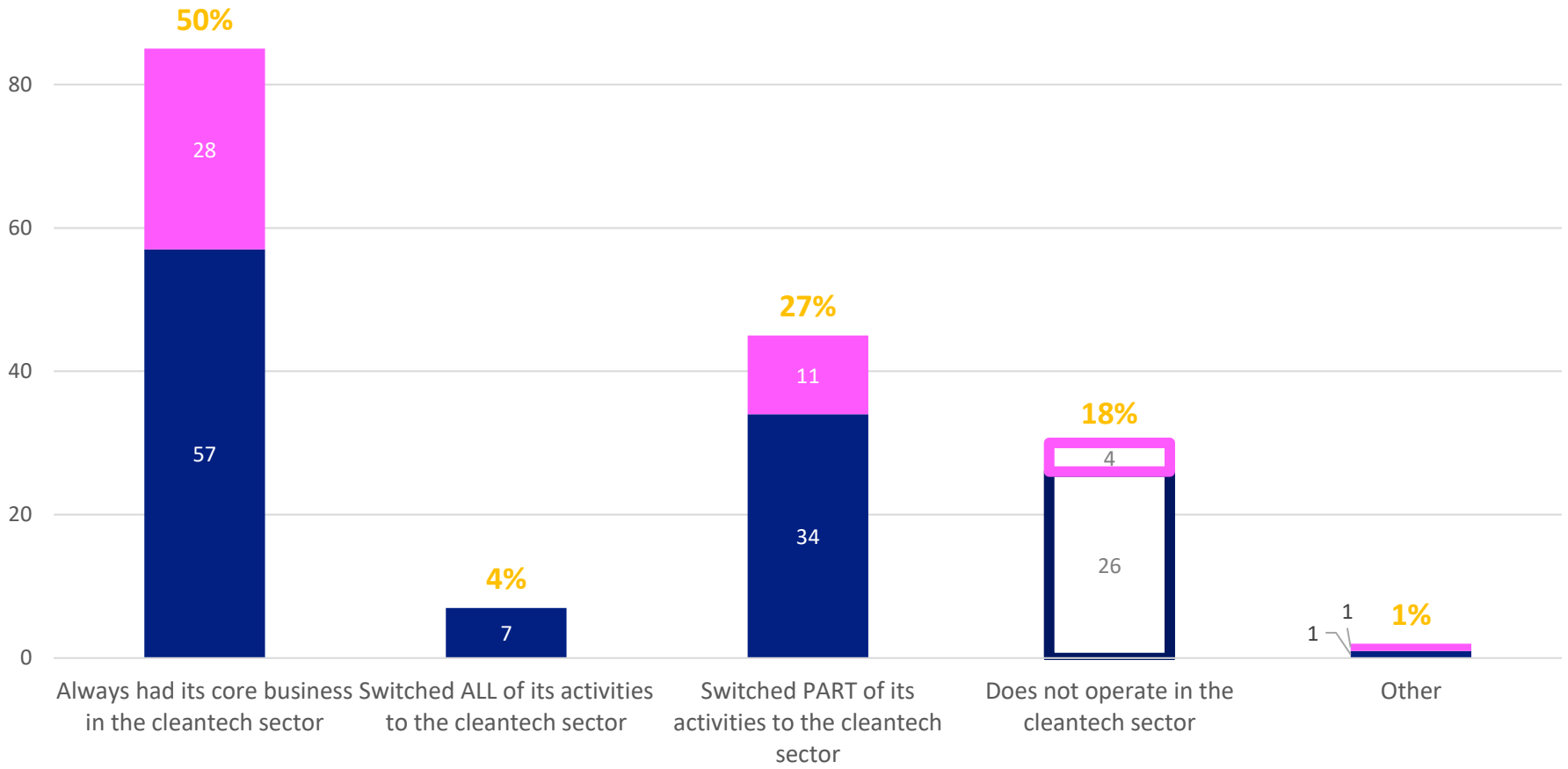
Businesses committed to attaining a sustainable future

Concerning the decision to operate in the cleantech sector, which of the following statement is mostly appropriated?
What are the main drivers for your company to operate in the cleantech sector?
What are the main difficulties for your company to operate in the cleantech sector?

Distinction between companies that have **always** operated in the cleantech sector and those that **transitioned** into cleantech over time and **false positives** excluded

Many companies view cleantech involvement as core to their **mission and vision**, being also motivated by promising **business opportunities**

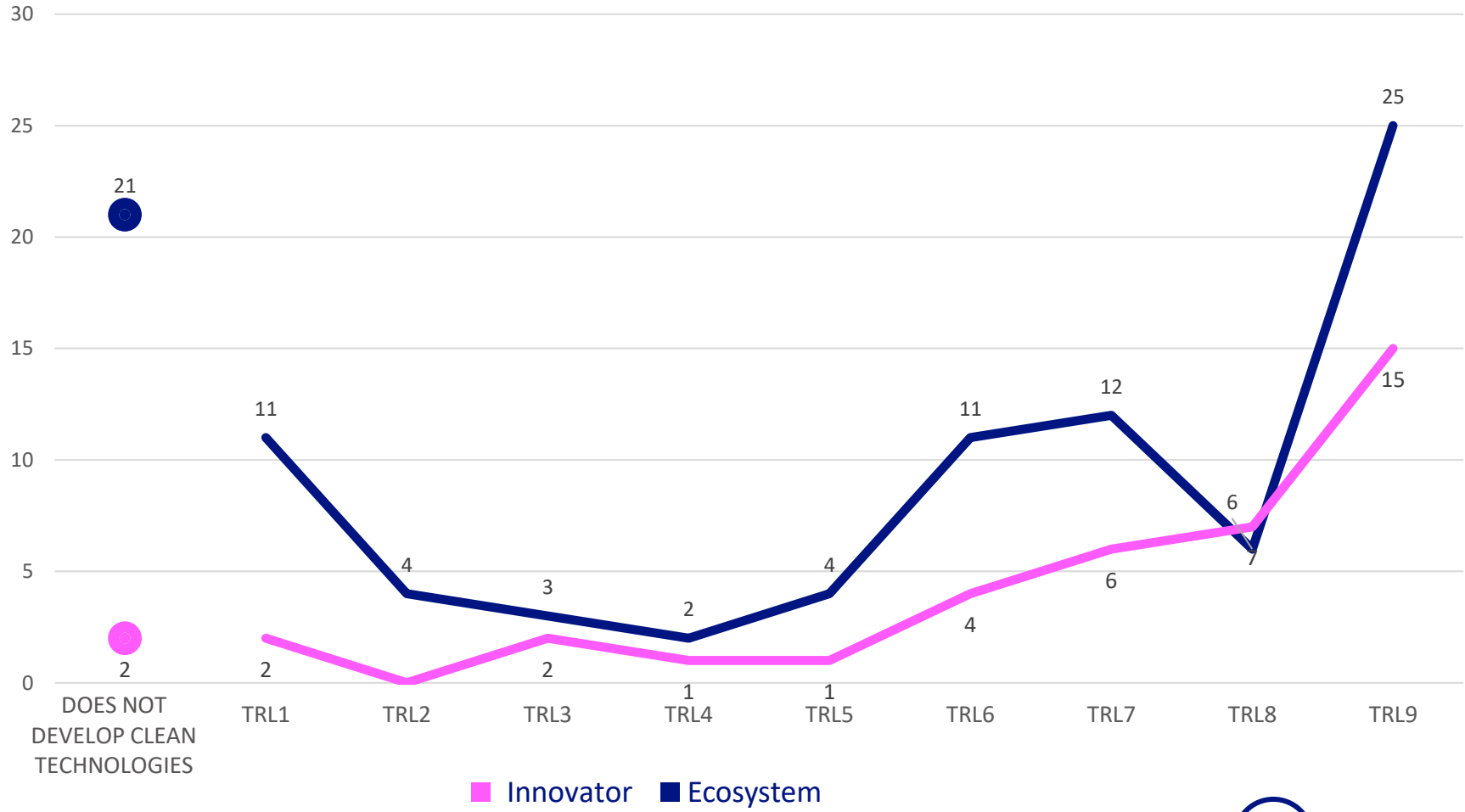
Top challenges include **uncertainty in standards and regulations, technology complexity and limited external funding**



Precompetitive product development stage achieved

How would you define the readiness level of the CORE CLEAN TECHNOLOGY embedded in the company's main project (TRL)?
Referring to your cleantech products or services recent innovations, has your company recently engaged in the following innovation activities?
What has your company done to protect its cleantech intellectual property?

- 23 respondents currently are not developing new clean technologies
- **62% of companies have core technology at TRL6 or higher**, with TRL9 being the most common (29%)
- Companies primarily opt for internal R&D and joint R&D projects, with support from universities, research centres, and consultancy firms. Industrial partnerships and **M&As** are less common
- **Extensive adoption of IP protection**, especially patents and trademarks

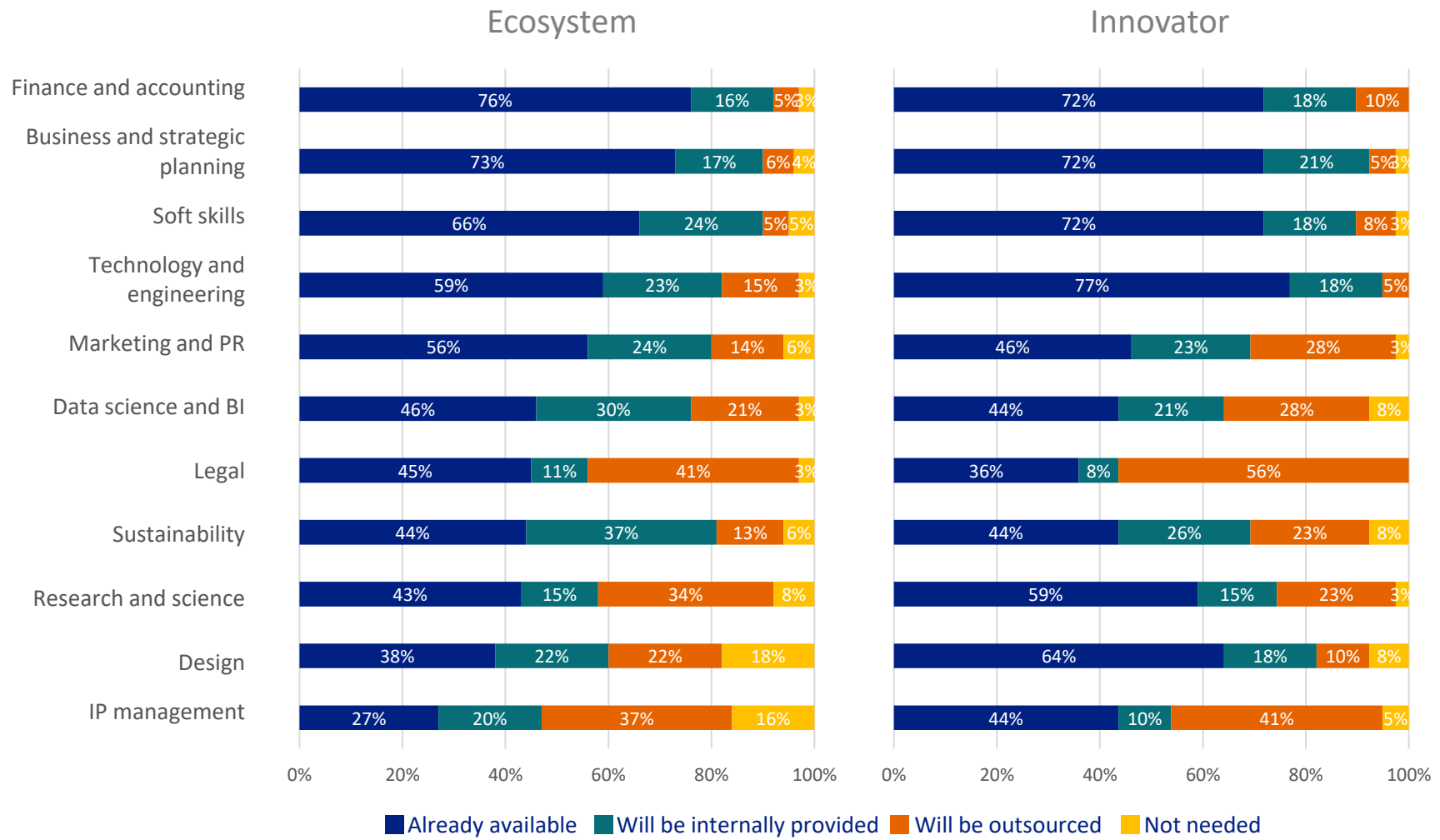


Q6 Q7 Q8

Legal and IP management skills require outsourcing

State if the skills listed are needed in your company and if you are going to outsource them

- **Intensive outsourcing** of legal and IP management skills
- **R&D and design skills** are more critical for **innovators**
- **Sustainability**, **marketing**, and **data science skills** are more critical **ecosystem** companies



Q16

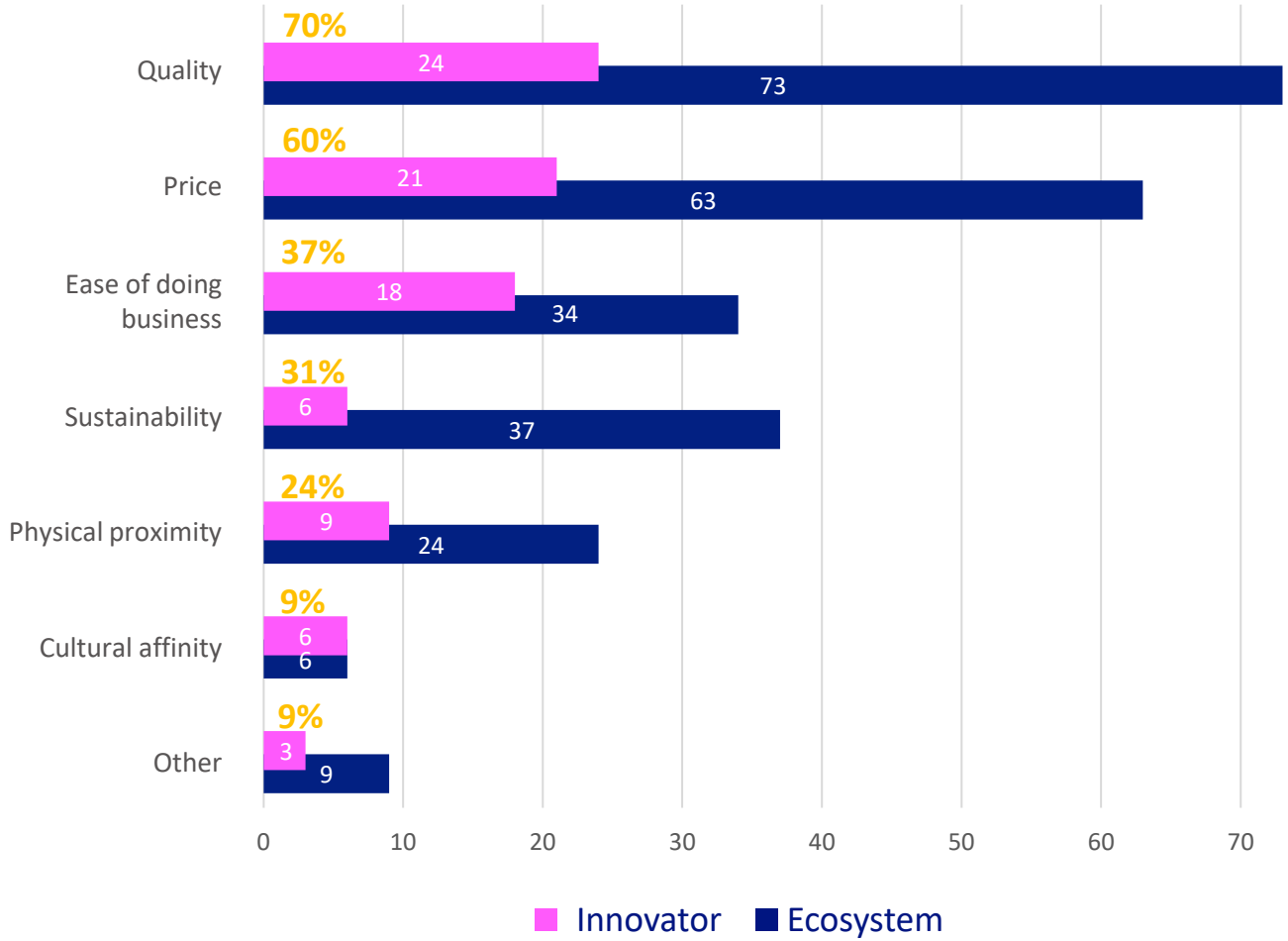
Most companies rely on a European supply chain

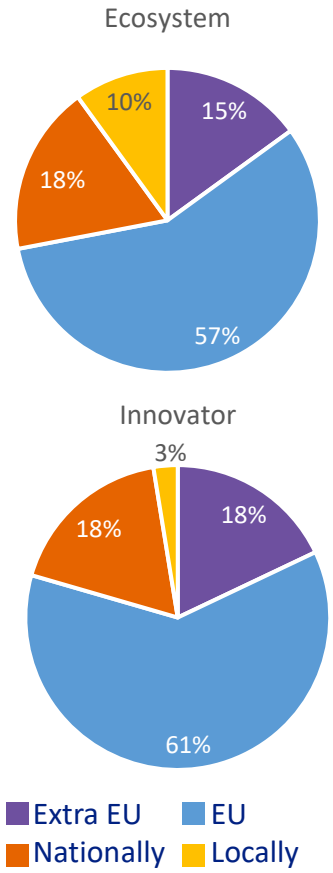
Where are your suppliers mainly localized?
Which are the main reasons for the selection of the current pool of suppliers?

- Only 3% of innovators and 10% of companies in the ecosystem have a local supply chain
- **85%** have a supply chain **limited to European borders**

Drivers of supplier pool selection:

- Quality and price
- **Sustainability** and **physical proximity** (especially for ecosystem companies)
- **Cultural affinity** (especially for innovators)



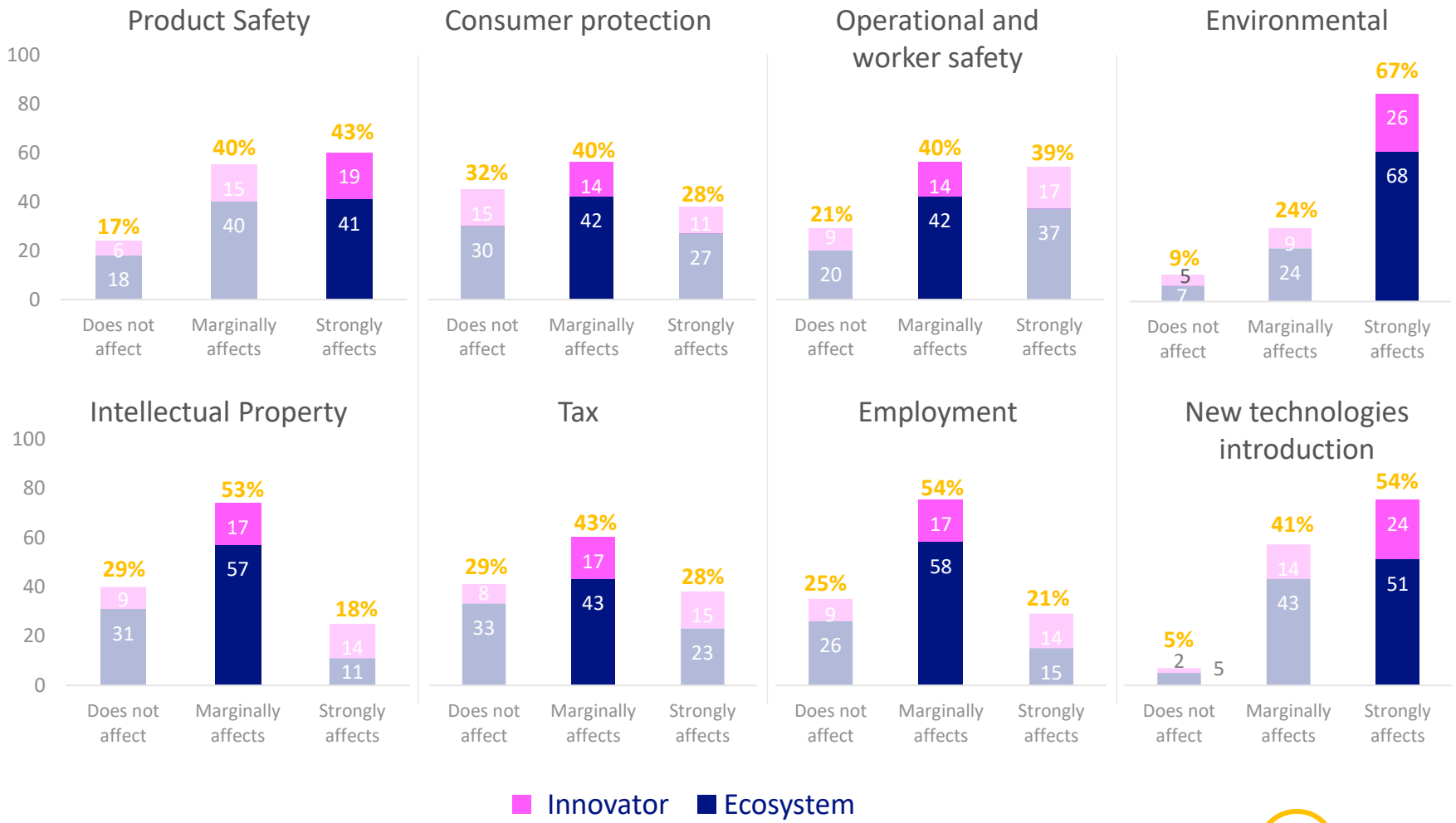


Q17 Q18

Regulations exert externalities on decision-making

How much are regulations/policies on the below area affecting your cleantech activities?
What are the undesirable effects of recent regulations/policies on your cleantech activities?

- Regulatory frameworks affect companies differently. Policies **environment related** and about the **introduction of new technologies** have a strong impact on companies, unlike established regulatory domains.
- Regulations do not always have positive impacts on the environment. Among the negative externalities observed, they generate **excessive administrative burden**, create **operational uncertainty**, and risk **unbalancing competition** with respect to countries outside the EU

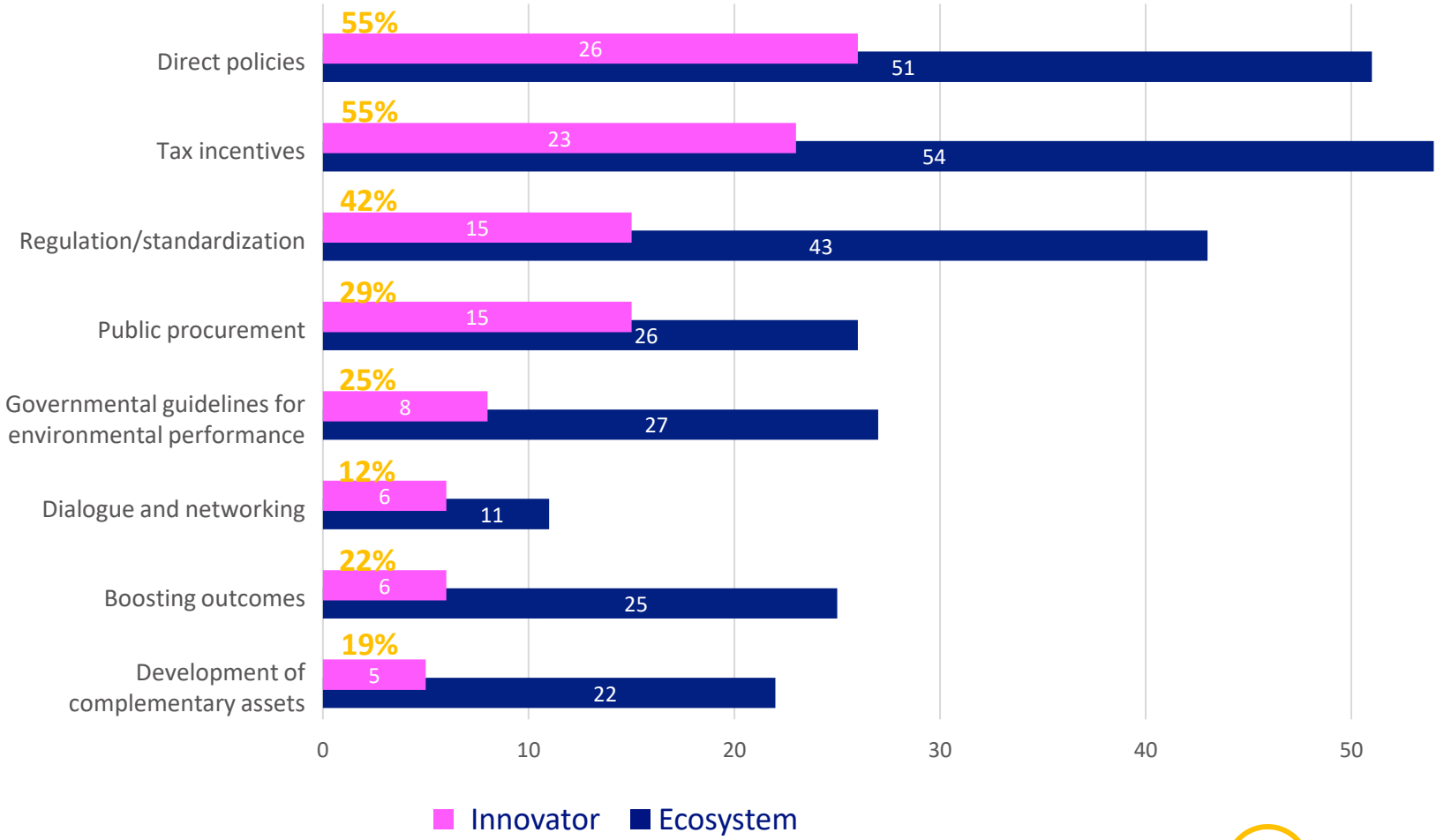


Q9 Q10

Governmental intervention can boost innovation

Which of these regulations/policies can mostly support technological development in the cleantech sector?
Referring to the main regulations/policies relevant to your core cleantech activities, how much do you agree on the following statements?

- Dealing with innovative technologies, not only traditional intervention (direct policies and tax incentives) prove effective; **public procurement** and **networking** are preferred by innovators.
  Standardization, boosting outcomes, and **development of complementary assets** are essential for the ecosystem (more mature technologies)
- Regulations objectives are perceived as **transparent** and **clear**, also the **scope** is **clearly defined**. On the other hand **KPI**s are **not clearly defined** such as the **monitoring activities**. Actual regulations are **not** always perceived as practically **enforceable**

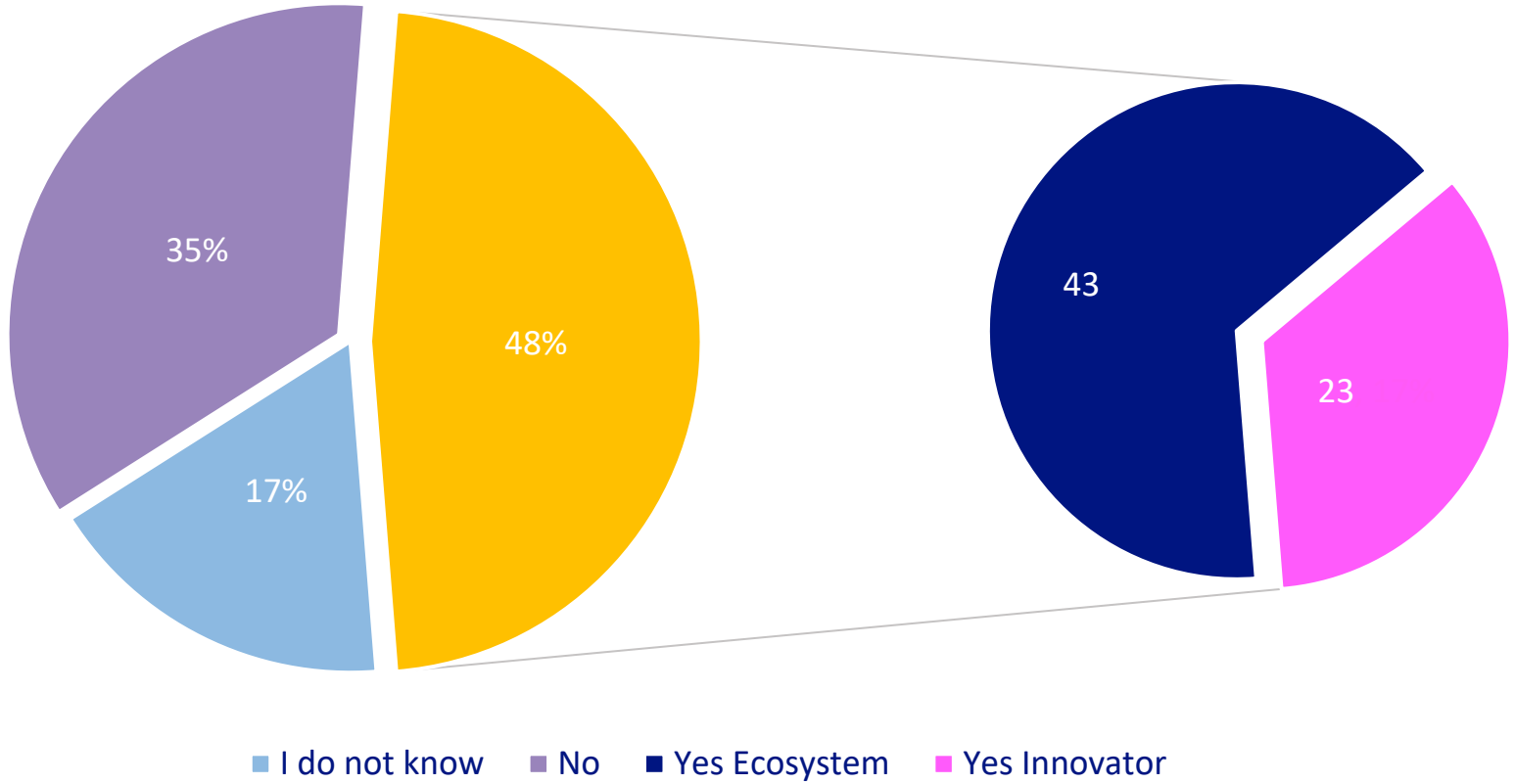


Q11 Q12

External fundraising is essential for European cleantech

Does your company have any plans to raise funds from EXTERNAL investors for its ongoing activities?
How much do you want to raise for your activities in the next five years?
How much of the funding you intend to raise will be dedicated to support cleantech activities?
What is the main challenge in participating in public funding programmes?

- At least one out of every two companies **needs external financing**, with a significant share being innovators. The amounts vary significantly from case to case, but the majority of funds are **allocated towards clean** activities
- Participating in public funding programs is still considered a challenging activity. The most significant cause of this difficulty lies in the **complex** and **time-consuming application** process

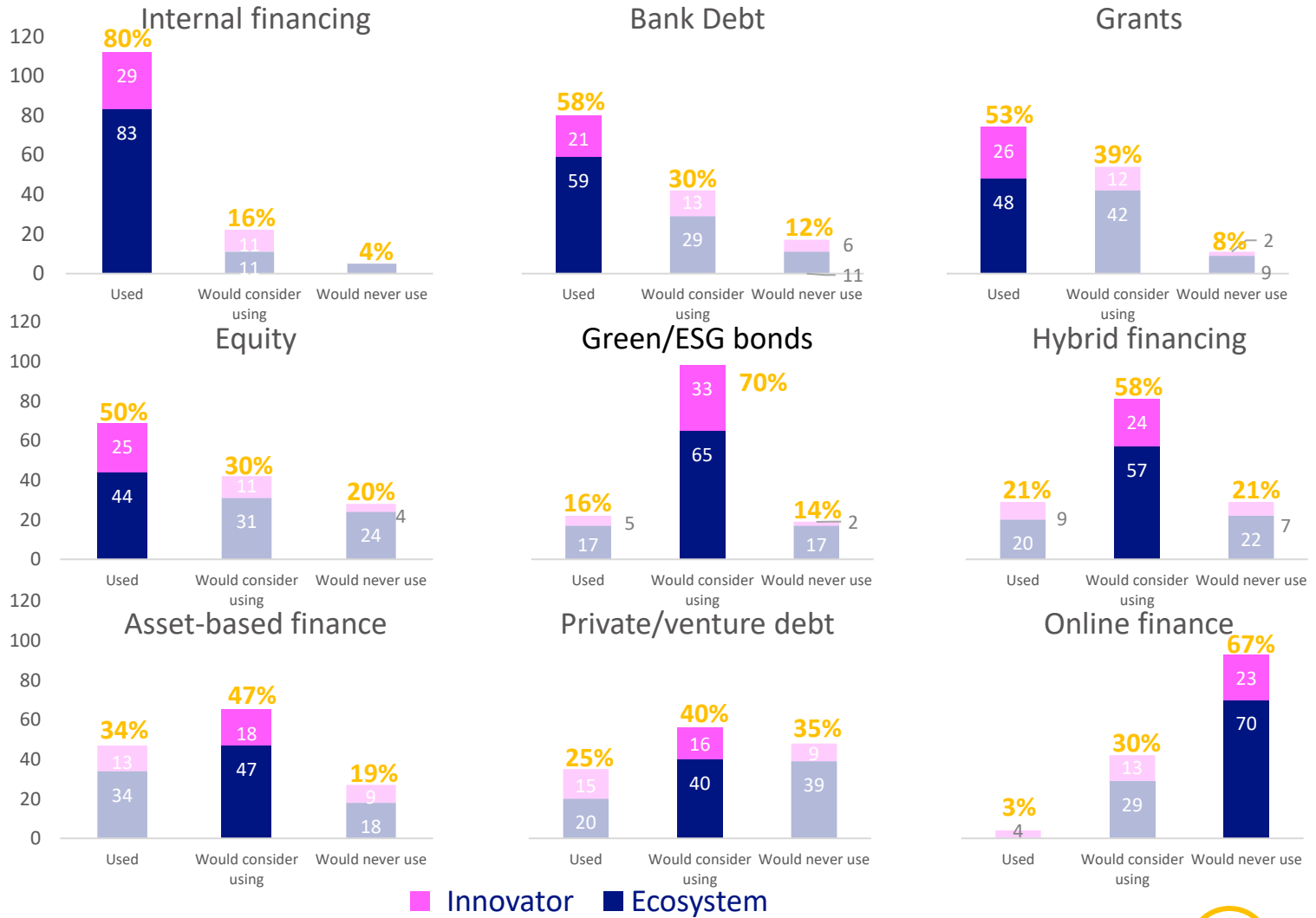


Q13 Q14

Funding alternatives range from innovative to traditional

Has your company used or would consider using the following financing instruments?

- We can divide financial instruments into **traditional** and **more innovative** categories.
- Excluding internal financing from consideration, traditional options such as bank debt, grants, and equity have commonly been used by companies transitioning to more innovative solutions, along with newer options like Green/ESG bonds, hybrid financing, asset-based financing, and private or venture debt
- **Online financing** is not considered a viable solution by most companies; only a small number have direct experience with it.

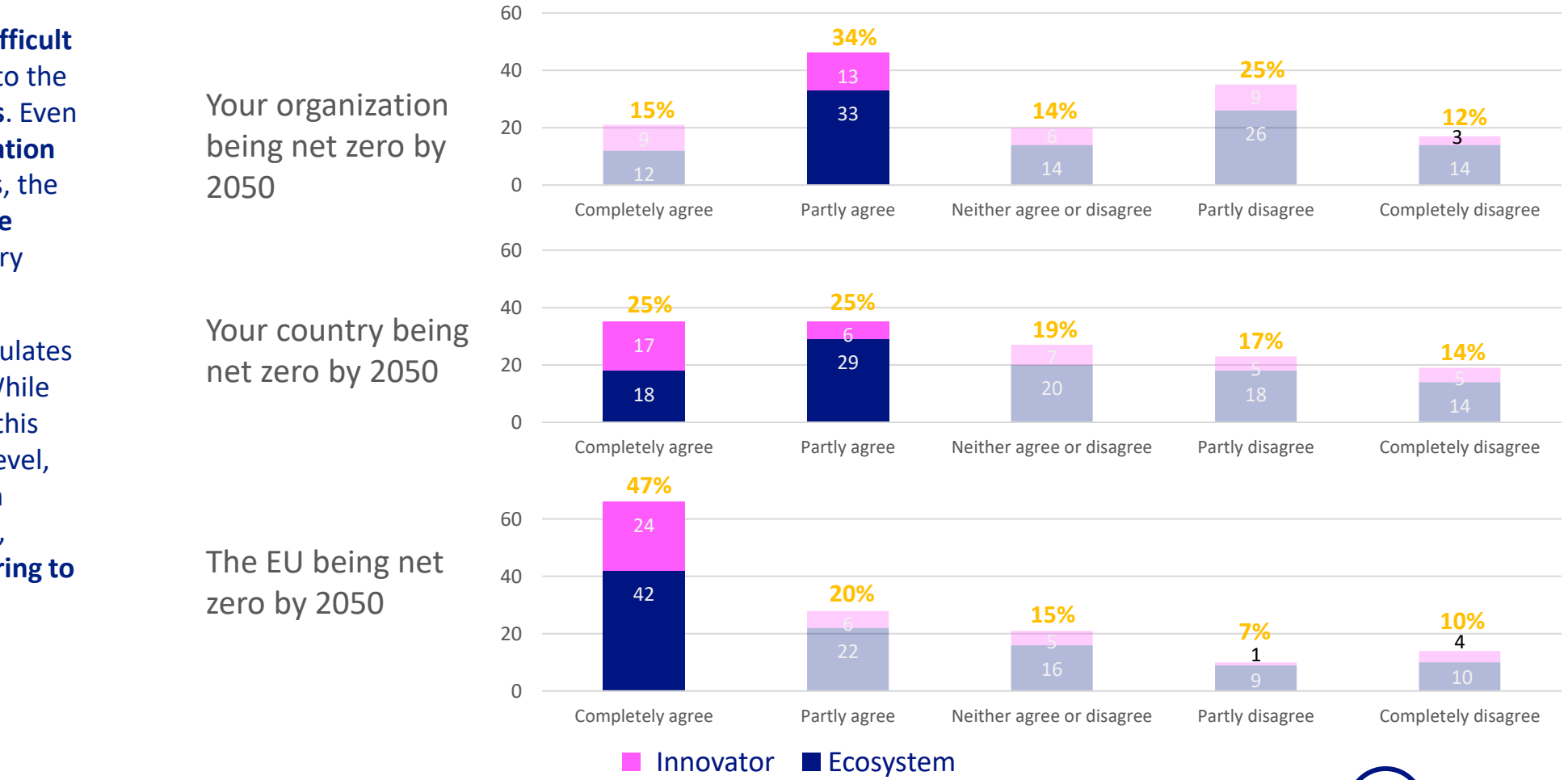


Q15

Half of the firms believe in the EU's potential by 2050

How much would you agree with the following statements about the EU Green Deal (EGD)?
How achievable do you think are the following scenarios?

- Most companies agree on the **difficult enforceability** of EGD rules due to the fact that goals are **too ambitious**. Even if it is required a **strong coordination** beetween different EU members, the EGD will be able to create a **more predictable** and clearer regulatory environment
- "Being net zero by 2050" encapsulates the perspective of businesses. While most are confident in achieving this goal at the individual company level, **confidence levels increase** when considering the national context, reaching nearly 70% when **referring to the entire European Union**

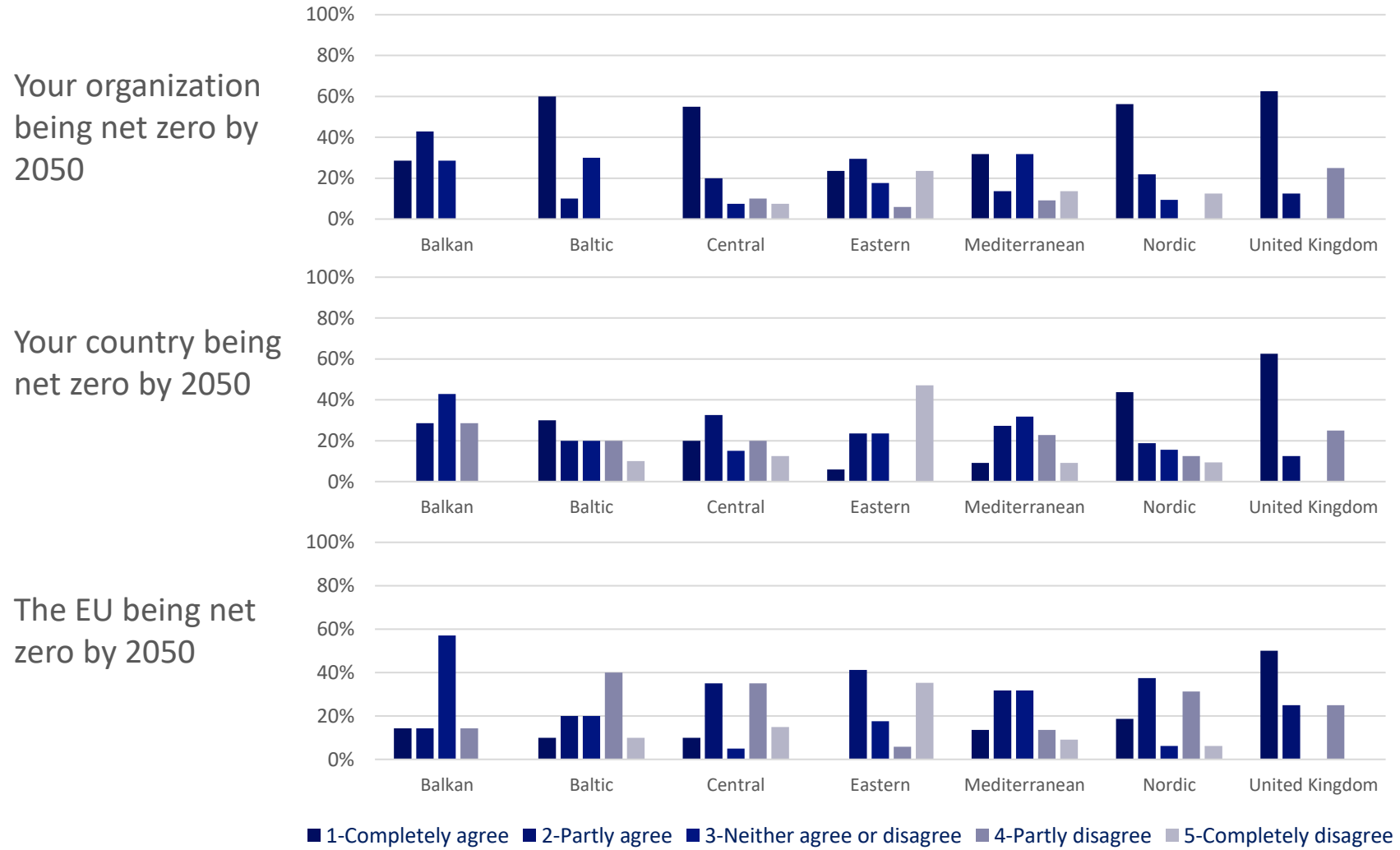


Q21 Q22

Baltics are trusty on their own, EU perspective boost trust

Grouping by geographical areas reveals patterns of trust

- Clustering the responses, we observe distinct rationales that differentiate companies in their **expectations based on geographical belonging**
- Companies in Baltics, Central Europe, Nordics, and the United Kingdom are more confident in their own company prospects
- Only companies in the Nordics and the United Kingdom are highly confident at the national level
- it is heartening to see that confidence levels level out across the European Union, indicating **widespread positivity**

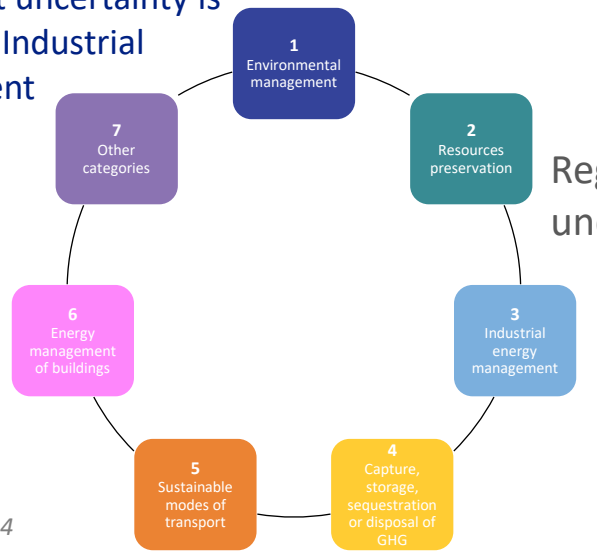


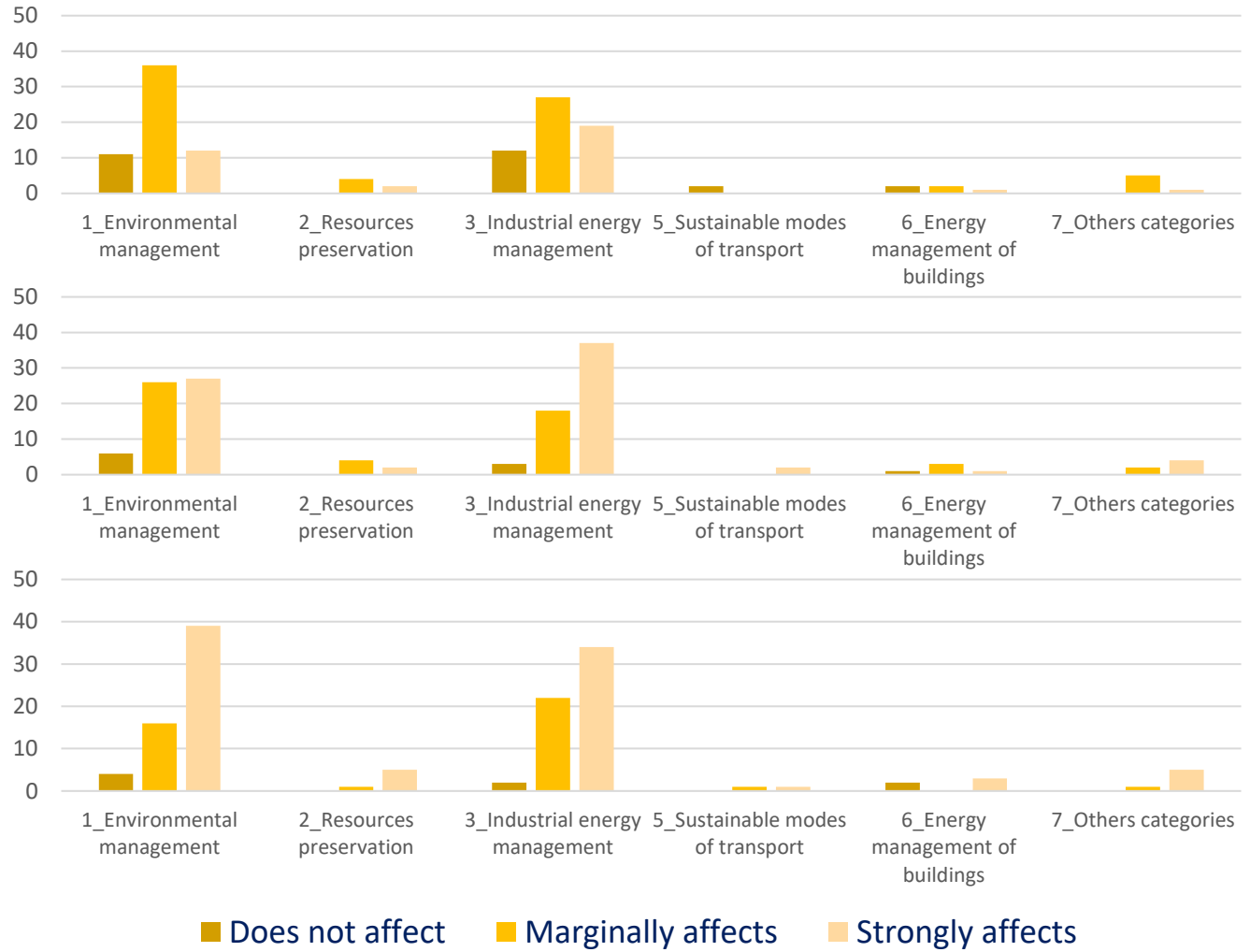
Q22

Tech and market uncertainty varies along sectors

Grouping by taxonomy suggests distinct attitude clusters

- Each question provides the opportunity to enrich the company's information with additional data from VICO, ORBIS or Pitchbook. Another clear example of a hypothetical correlation is the **type of uncertainty** most relevant based on the taxonomy
- Technological uncertainty is less relevant for companies working in Environmental Management, on the other hand market uncertainty is mostly relevant in Industrial energy management





Areas of future research

Implementing regularly in the narrow future this exercise to monitor the health of European Cleantech SMEs

Where are we now?

Official submission of the survey WP: this research will impact EIB's strategic choices regarding environmental policies, awaiting further progress in the EIBURS project

Monitor

Address recognized limitations in this project by **complementing the methodology** and adopted **strategies**

Initiate a cleantech European businesses **monitoring program** by regularly repeating the same survey every 18 months, ensuring a **comparable time series** of responses

Integrate

Proceed with **in-depth interviews** with individual companies that have voluntarily provided their contact information

Include analysis of **KPIs** defined in other research lines of the CLUE project

Long term impact

Boost response rate by targeting previous respondents

Raise response rate by **increasing awareness** of the topic (this is also a dissemination activity)

Skew responses **positively** due to implemented actions

THANK YOU!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