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Foresight Competence and Responsible Innovation in Industry: interrelations and policy implications

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Research info

- **Related Projects:**
  - Future-Oriented Technology Assessment as an instrument supporting Responsible Research and Innovation
  - Public Participation in Developing a Common Framework for the Assessment and Management of Sustainable Innovation (CASI)

- **Methodology:**
  - survey of 100 large Polish enterprises (production and services) – a pilot study
  - survey and stocktaking of 500+ European sustainable innovations

- **Profile of participants:**
  - high-level management, R&D staff, product development specialists
  - innovators - including business, government, research and civil society stakeholders

- **Time:** years 2020-2021 (+ stocktaking ongoing)

- **Research questions:**

  - Are companies with stronger foresight capabilities more responsible innovators?

  - What is the relation of the Grand Challenges-related innovation priorities of Polish enterprises with the sustainability oriented Policy Agendas derived from pan-Europan mapping?

  - How to support enterprises in building embedded foresight and RRI competences?

European Forum for Studies of Policies for Research and Innovation

European Commission

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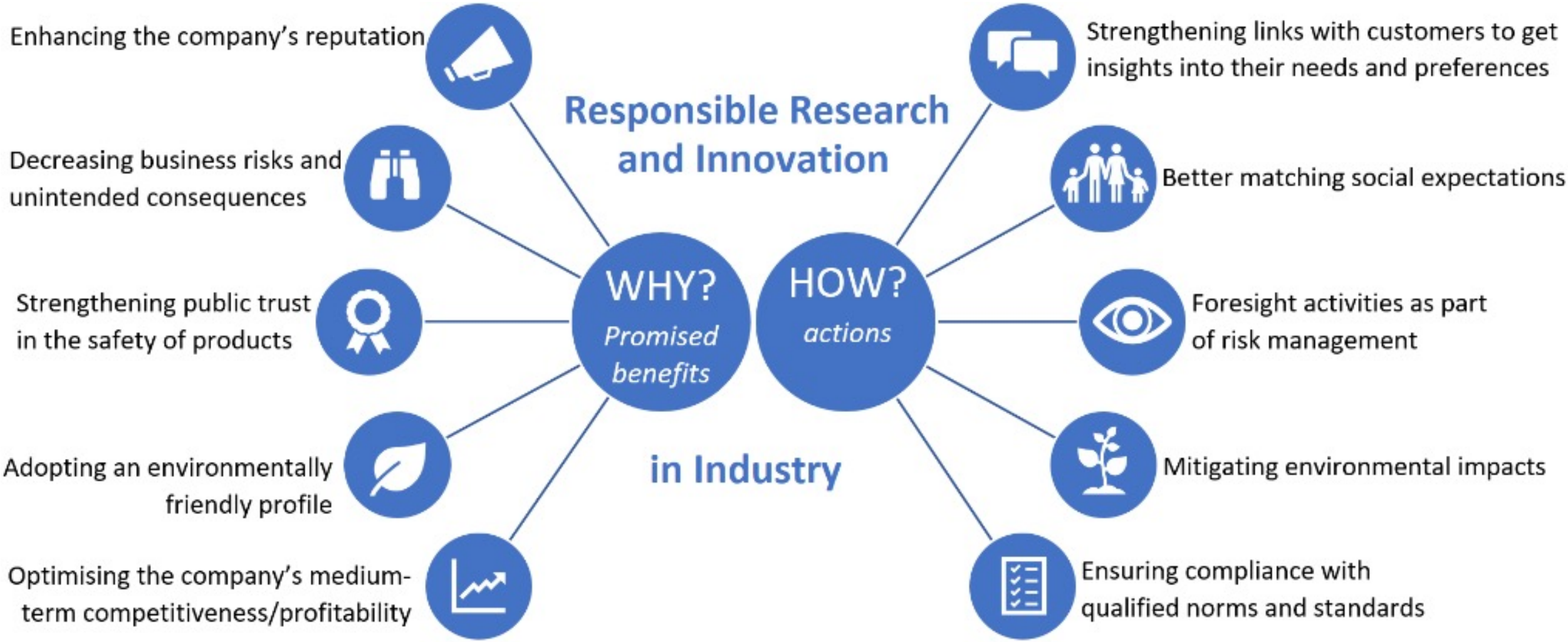
RRI in business – promised benefits and proposed actions



Diagnosing RRI and Foresight capabilities

Foresight capabilities:

1. Use of foresight tools in the enterprise's operation (PEST, STEEP, TEEPSE critical issues analysis, environmental scanning, horizon scanning, scenarios, Delphi, cross-impact analysis, simulations, modelling, roadmapping)

2. Acknowledgement of the need to increase staff competences in the application of future-oriented methods and tools

RRI assessment:

1. Company activity helps tackle Grand Societal Challenges (climate change, demand for energy, shrinking natural resources, water deficit, ageing society, privacy, security, etc…)

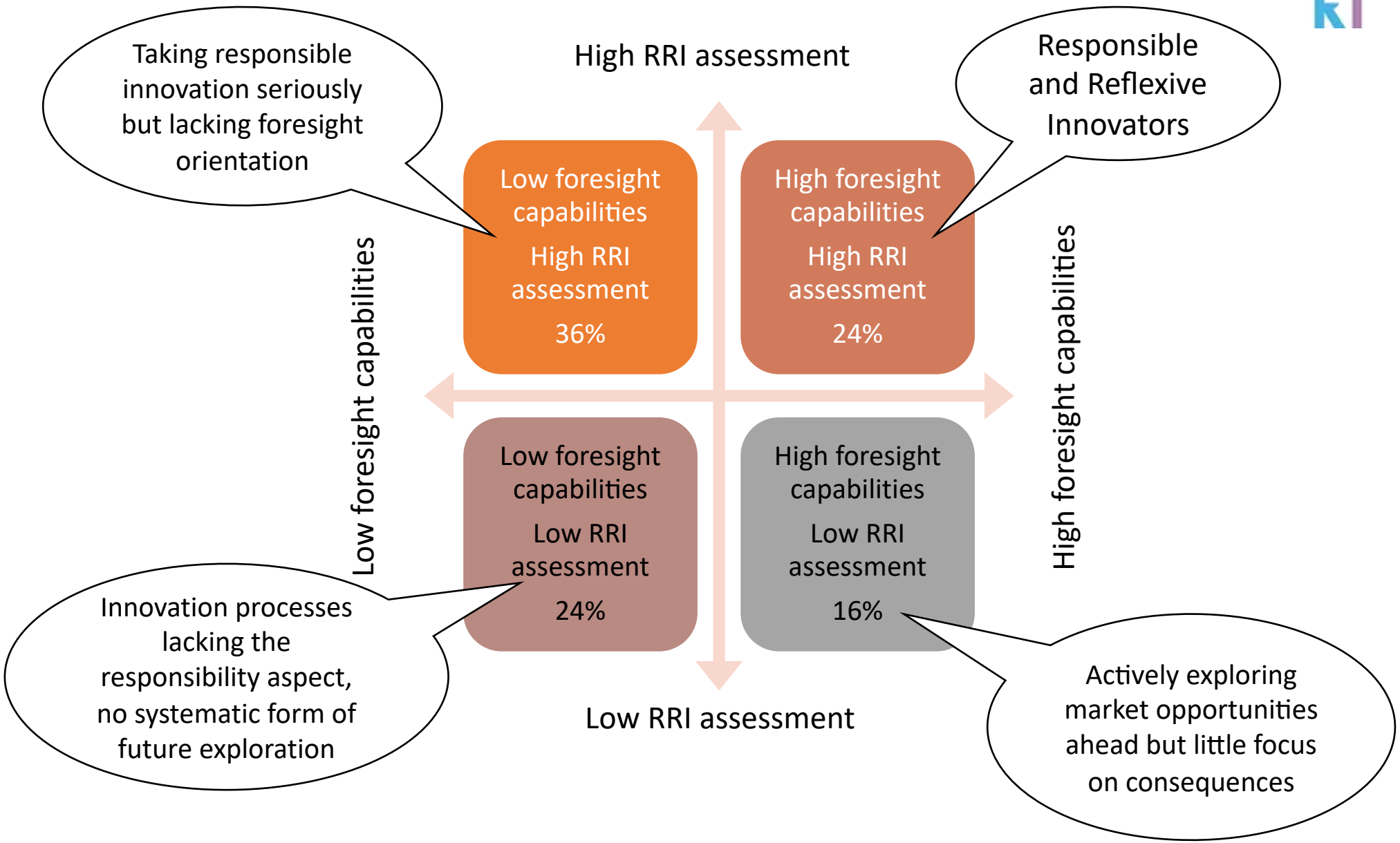
2. Involving stakeholders in the product development

3. Reflecting on the possible impact of new products on the environment and society

4. Ability to change after receiving feedback from stakeholders, including withdrawing the product from the market or aborting the new product development

5. Building scenarios of product life cycle

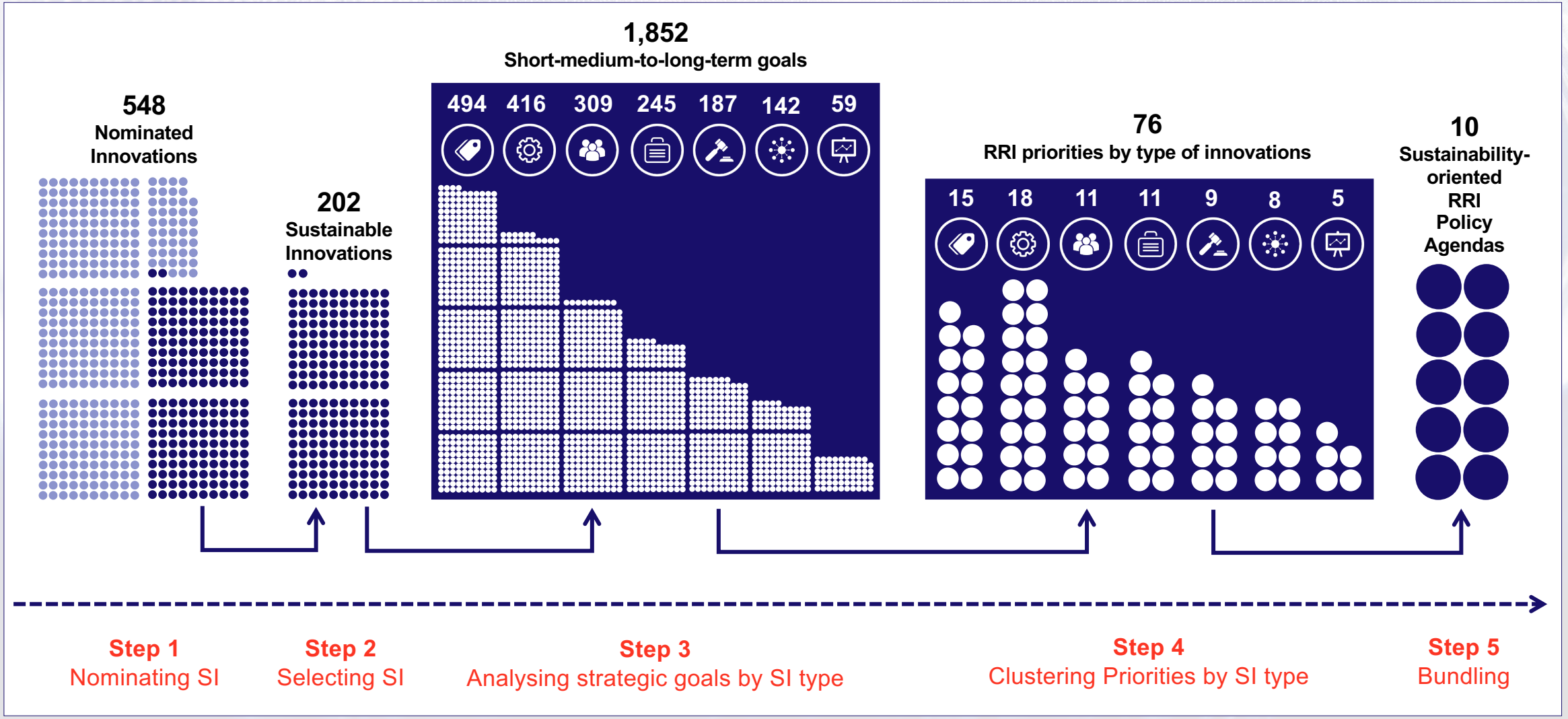
Four types of companies?



Towards a Sustainability-oriented RRI Policy Agenda

CASI

From Innovator's goals to Sustainability-oriented RRI Policy Agendas



Priority Areas by type of Innovation

76
RRI priorities by SI type

10
RRI Agendas

38 SI selected from 194
Product innovations

1. Energy
2. Waste
3. Air quality
4. Water
5. Public transport
6. Carbon footprint
7. Construction
8. Pollution
9. Regional development
10. Emissions
11. Electric vehicles
12. Food production
13. Green roofs
14. Heating and cooling devices
15. Recycling

48 SI selected from 121
Service innovations

1. Energy
2. Circular economy
3. Waste
4. Emissions
5. Renting and sharing services
6. Public transport
7. Electric vehicles
8. Rural areas
9. Knowledge sharing
10. Water
11. Communication of hazards
12. Organic food
13. Air/land/water quality
14. Cultural heritage
15. Traffic
16. Air and noise pollution
17. Advice to citizens
18. Goods distribution to shops

48 SI selected from 75
Social innovations

1. Organic food
2. Lifestyles & consumption patterns
3. Community life and development
4. Construction waste
5. Local quality of life
6. Public awareness & participation
7. Children's interest and skills
8. Conscious use of resources
9. Transport
10. Water access
11. River and stream water quality

22 SI selected from 62
Organisational innovations

1. Water saving
2. Strategies for businesses
3. Engaging customers
4. Emissions
5. Waste management
6. Local communities
7. Surplus of resources
8. Food supply chain
9. Smart grid
10. E-waste recycling
11. Business practices

25 SI selected from 46
Governance innovations

1. Energy saving policies
2. Multi-stakeholder engagement
3. Climate change
4. Engaging citizens
5. Public transport networks
6. Emissions
7. Air quality
8. Renewable energy
9. Reliable data

16 SI selected from 31
System innovations

1. Energy saving policies
2. Renewable energy
3. Natural resources
4. Food waste
5. Quality of life, water and air
6. Endangered species
7. Food industry
8. Integrated applications & systems

5 SI selected from 19
Marketing innovations

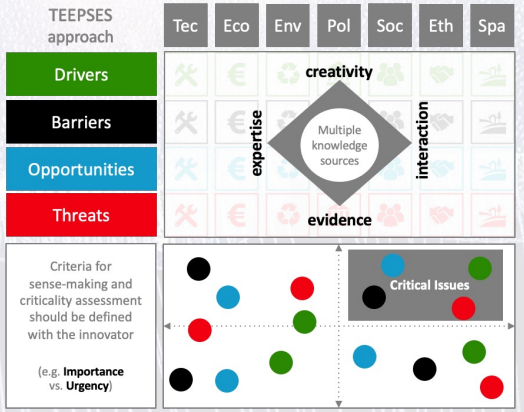
1. Organic food
2. Sustainable shopping practices
3. Eco-labels/businesses
4. Sustainable communities
5. Waste stream to landfills

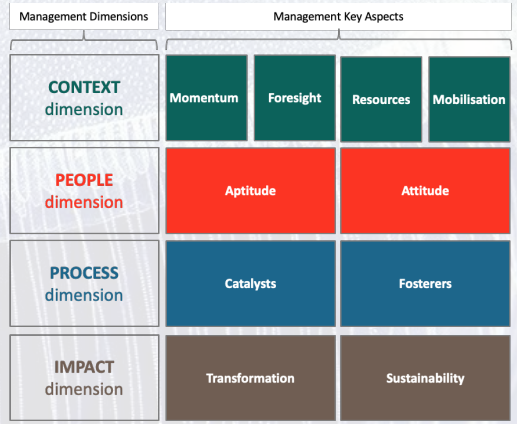
Sustainability-oriented RRI Policy Agenda

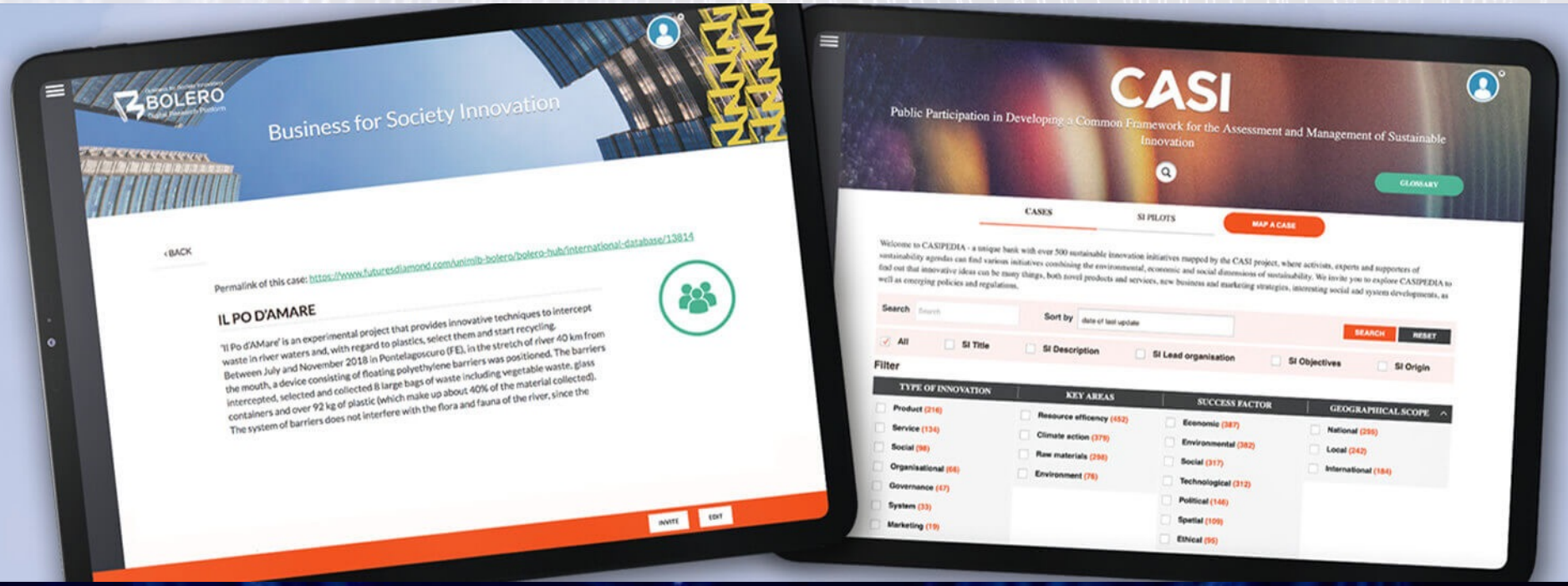
- Promoting foresight for sustainability governance and intelligence
- Deploying responsible environmental and resource-efficiency strategies
- Creating sustainable biofuel and renewable energy solutions
- Advancing recycling and circular use of waste and raw materials
- Embedding sustainability in cultural and holistic education models
- Strengthening eco-community empathy and crowd-funded development
- Developing sustainable urban and rural infrastructures for the bioeconomy
- Fostering eco-local-agriculture and bio-resources efficiency
- Implementing sustainable transport and smart mobility innovations
- Dealing with climate issues and managing greenhouse gas emissions

How to support enterprises in building embedded foresight and RRI competences?

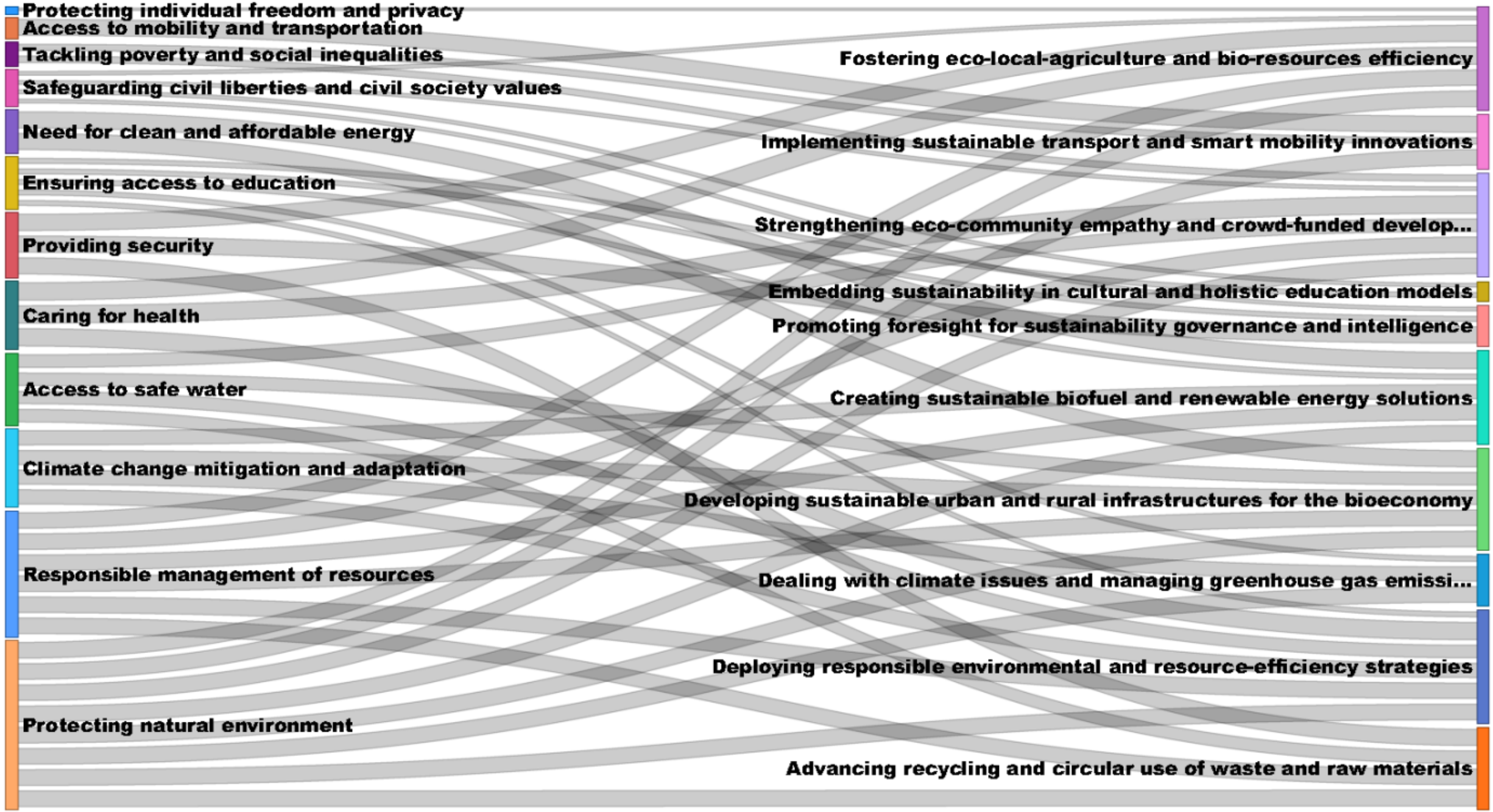
- By linking SMEs goals to SDGs
- By supporting SMEs and innovators to **systematically engage** in:
  1. **Sustainability assessment and management**
  2. **Critical Issues Analysis**
  3. **Action Roadmapping**







POLICY AGENDAS: relevance to Polish enterprises



Conclusions

- Are companies with stronger foresight capabilities more responsible innovators? **Not necessarily**
- What is the relation of the Grand Challenges-related innovation priorities of Polish enterprises with the sustainability oriented Policy Agendas derived from pan-Europan mapping? **Multi-directional, oriented mostly at environmnetal challenges (much less on socio-economic ones)**
- How to support enterprises in building embedded foresight and RRI competences?

Areas of future study

- Extend the study to a larger population of enterprises. Perform cross-sectoral and cross-country studies.
- Design novel empirical studies that could bridge the theory and practice of responsible research and innovation?
- Study the understanding and perception of responsibility in innovating enterprises?
- Confront the (Europocentric?) RRI paradigm with approaches in other world regions.
- Test the relevance of tools like key responsibility indicators (responsibility KPIs), innovation responsibility scorecard, RRI index

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Thank you!

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