

Foresight and the R&I policy of the European Union

#HorizonEU

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PUBLIC SECTOR FORESIGHT NETWORK (PSFN)

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What is foresight?

Definitions:

- Foresight is the ability to predict the future
- Foresight is the disciplined analysis of alternative futures
- Foresight is a systematic, participatory, future-intelligence-gathering and medium-to-long-term vision-building process aimed at present-day decisions and mobilising joint actions.

Anecdotes:

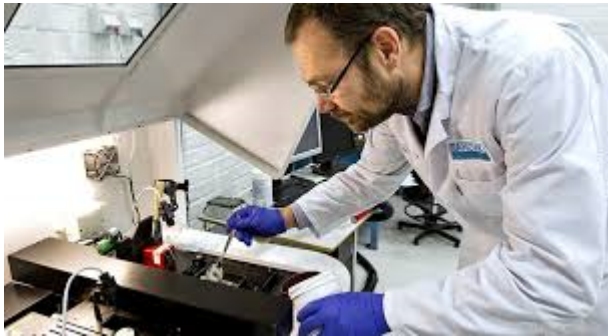
- Between “forecasting” and “action research”
- Between science and policy (e.g. somehow related to “evidence based policy”)
- “Technology Assessment” with a positive outlook 😊
- What, with hindsight, we wish we had....

Foresight in policy:

- **A structured preoccupation with the future**
- **A decision-support instrument**
- **A way of building reflexivity into strategy-making**

Three phases in the history of foresight and EU R&I policy

1978-1994: FAST



1994-2010: Grants for foresight research projects in the programme for socio-economic sciences

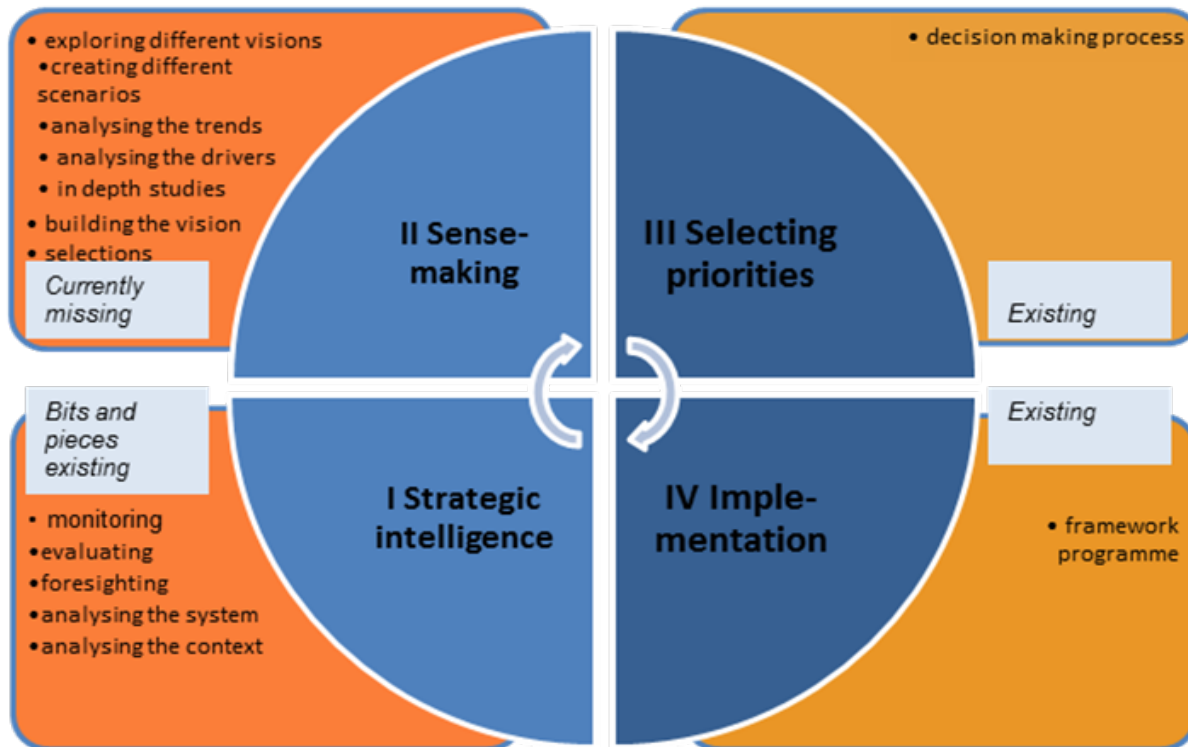
2010 – today: decentralized funding and emphasis in use and usefulness

- **EFFLA and foresight in strategic planning**

The advice of EFFLA: Foresight in strategic planning

Features of I and II:

- involves input from wide range,
- gets input from MS strategy processes
- uses new informal processes,
- exposes increasingly to global signals
- seeks constantly new ways to increase openness

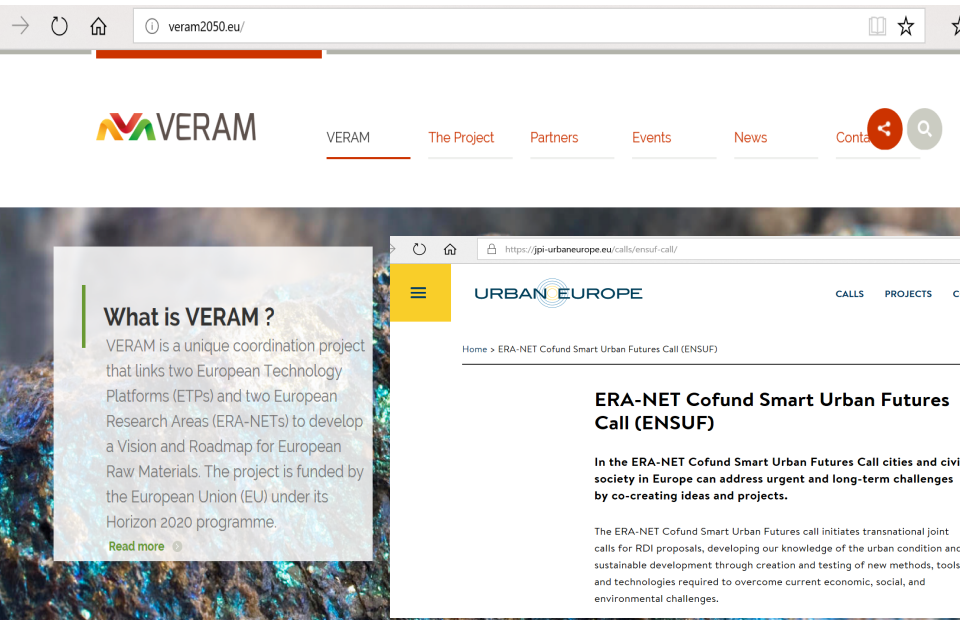


Features of III and IV:

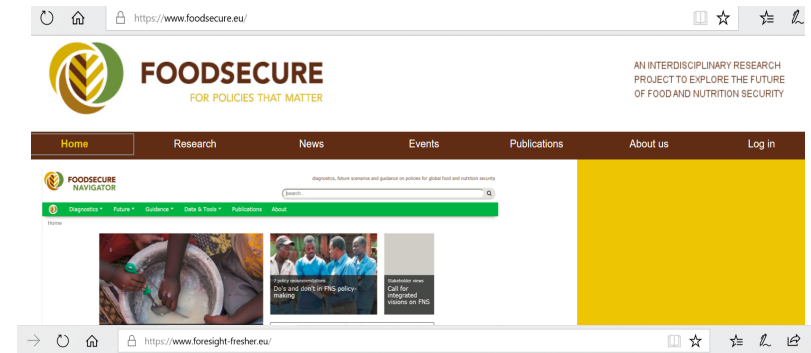
- involves decision makers
- uses existing formal processes
- seeks constantly new ways to increase openness

Current R&I investment in foresight:

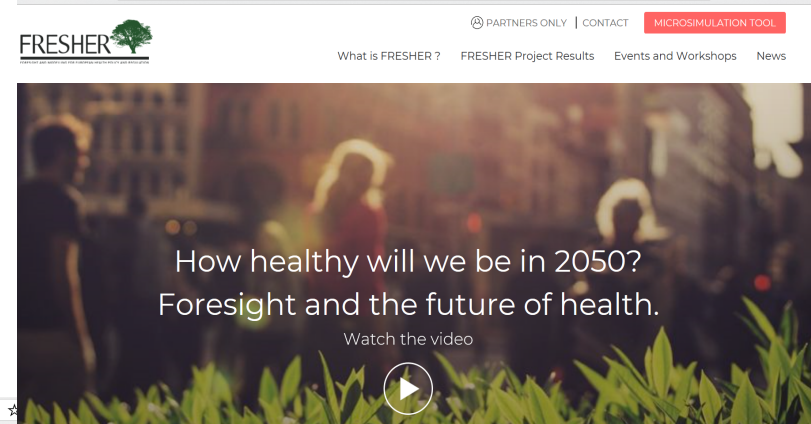
About € 10-15M pa across the Framework Programme



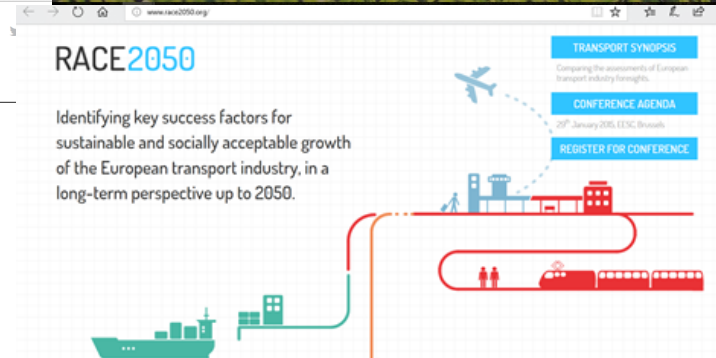
The screenshot shows the VERAM website with a navigation bar including 'VERAM', 'The Project', 'Partners', 'Events', 'News', and 'Contact'. A sidebar on the left contains the text: 'What is VERAM? VERAM is a unique coordination project that links two European Technology Platforms (ETPs) and two European Research Areas (ERA-NETs) to develop a Vision and Roadmap for European Raw Materials. The project is funded by the European Union (EU) under its Horizon 2020 programme. Read more'. The main content area is partially visible, showing the title 'ERA-NET Cofund Smart Urban Futures Call (ENSUF)'.



The screenshot shows the FOODSECURE website with a navigation bar including 'Home', 'Research', 'News', 'Events', 'Publications', 'About us', and 'Log in'. The main content area features a 'FOODSECURE NAVIGATOR' section with a search bar and a grid of images related to food security.



The screenshot shows the FRESHER website with a navigation bar including 'PARTNERS ONLY', 'CONTACT', and 'MICROSIMULATION TOOL'. The main content area features a large video player with the text: 'How healthy will we be in 2050? Foresight and the future of health. Watch the video'.



The screenshot shows the RACE2050 website with a navigation bar including 'CALLS', 'PROJECTS', and 'CONTACT'. The main content area features a large graphic with the text: 'RACE2050 Identifying key success factors for sustainable and socially acceptable growth of the European transport industry, in a long-term perspective up to 2050.' Below the graphic are links for 'TRANSPORT SYNOPSIS', 'CONFERENCE AGENDA', and 'REGISTER FOR CONFERENCE'.

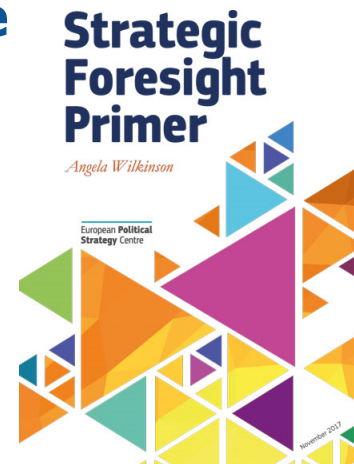
The current foresight scene in the European Commission

Joint Research Centre

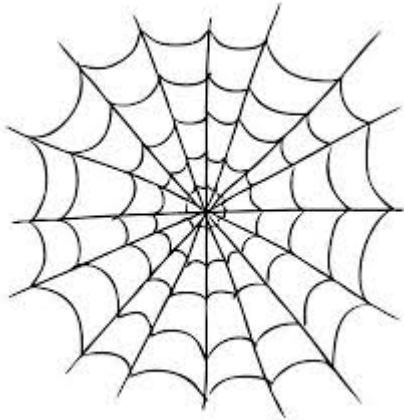


European Political Strategy Centre

DG RTD Foresight Team



The network of foresight correspondents of the European Commission



- *An inter-service network aiming to:*
 - **bring foresight in the strategic planning of EU R&I policy**
 - **coordinate foresight in Horizon 2020**
 - **Improve the use of foresight resources across the Commission**
- *Bringing together all departments of the European Commission*

The BOHEMIA project

**Beyond the Horizon: Foresight to support
the preparation of the EU Framework
Programme for R&I (2021-2027)**



THE BOHEMIA PROJECT

- A project aiming to support a policy proposal
- With foresight and engagement
- Carried out by contractors with a lot of involvement of EU Staff



Phase 1:

Extensive review of available foresight to produce meta-scenarios relevant for Europe (2016)



Phase 2:

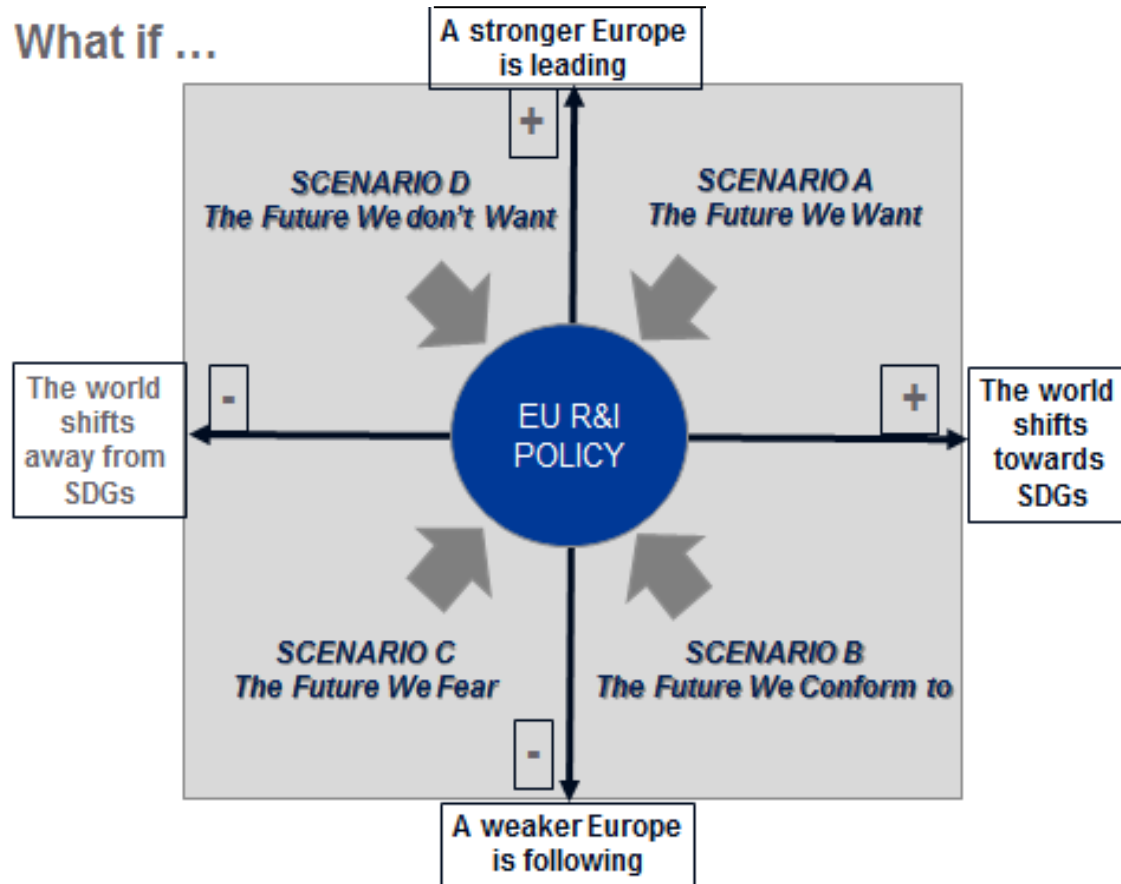
Delphi survey to gain insights on future technologies, societal issues, and R&I practices (May – June 2017)



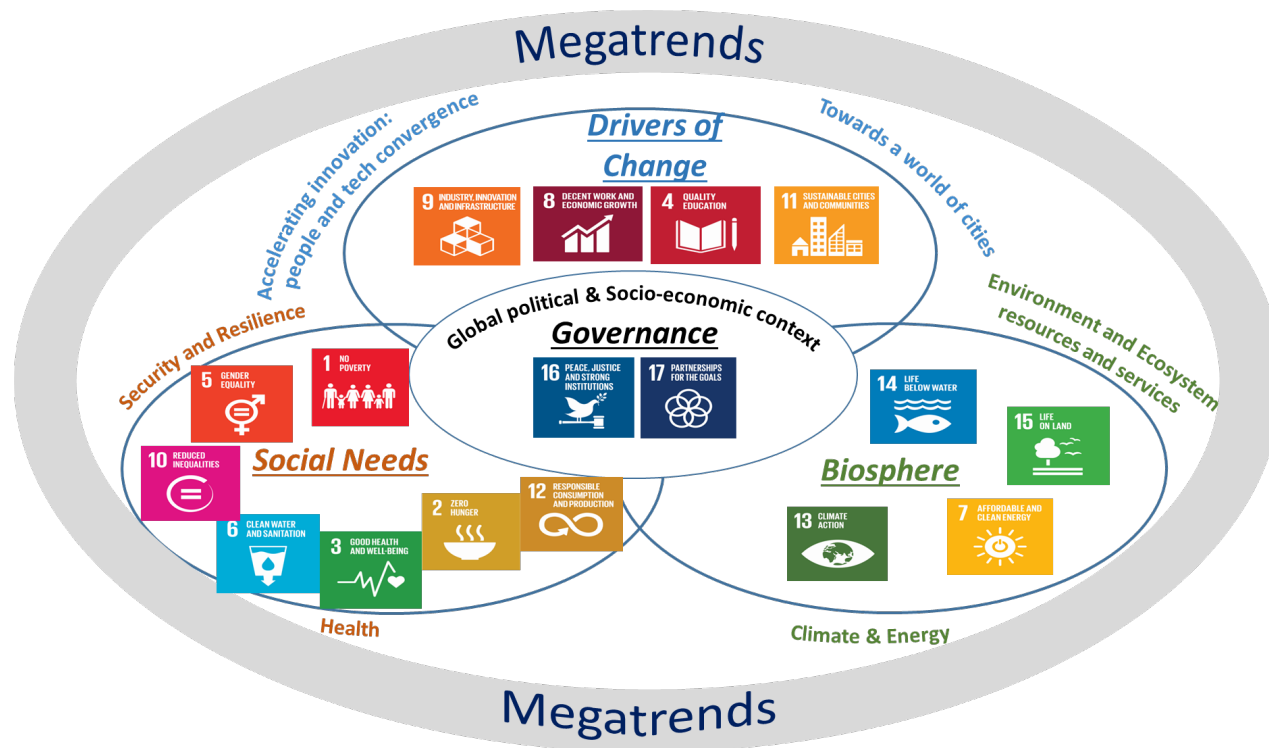
Phase 3:

Analysis, public consultation and policy recommendations (Report and 19 individual scenarios published in June 2018)

The meta-scenarios framework



Scenarios, trends and transitions



The BOHEMIA Delphi



- *147 Statements*
 - **9 Groups of statements on developments in S&T**
 - **7 Groups of statements on socio-economic developments driving R&I**
- *Assessment*
 - **Time horizon of realisation + arguments**
 - **Significance for R&I / for R&I policy + arguments**
- *Interpretation*
 - **„Likely“: Significant and likely realisation by 2040**
 - **„Uncertain“: Significant, but uncertain time frame of realisation**
 - **„Wildcards“: Unlikely realisation, but potentially high significance if realised**

Response to the Delphi

- 1391 completed groups of statements
- From 727 users of which 133 revised their scores and arguments at least once

Fig. 6: Distribution of respondents by field in Science and Technology Developments

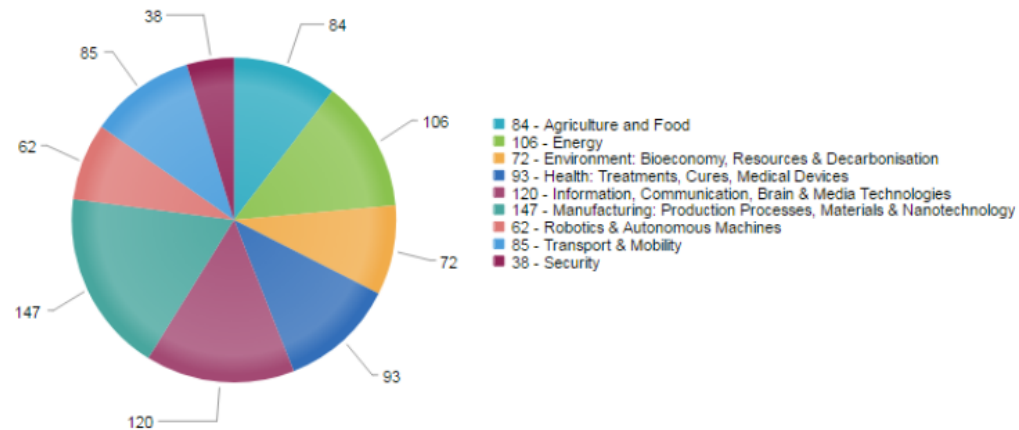
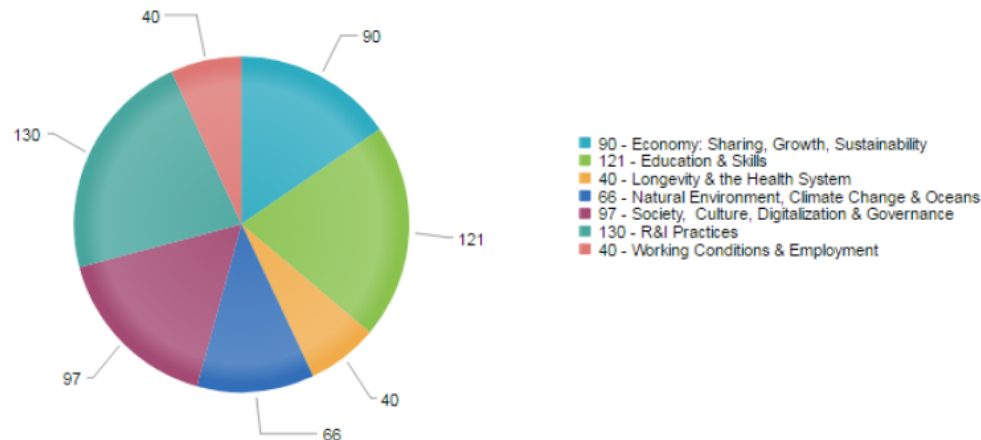


Fig. 7: Distribution of respondents by field in Developments in Society and R&I Practices



19 “scenarios”: stories based on “likely” Delphi statements



- **Future of Knowledge Production**
- **Nano-to-Macro Integral Manufacturing**
- **The electro-sphere of sensors**
- **Ambient Emotional intelligence**
- **Continuous Cyberwar**
- **Advanced ICT-based security**
- **Low-Carbon economy**
- **Bio-economy**
- **Cheap Renewable Energy**
- **Material efficiency**
- **Nature valued**
- **Re-framing Work**
- **Diversified Food Supply sources:**
 - **Assisted living / Autonomous living**
 - **Human organ replacement**
 - **Precision medicine**
 - **Defeating communicable diseases**
 - **Smart, Sustainable Mobility**
- **Decision-making supported by open expert systems**

Public consultation on the R&I policy implications of the 19 scenarios

‘In the prospect of this scenario, to what extent should the European Union invest in Research and Innovation (R&I)?’



In light of your response to the previous question, what should be the key directions for EU R&I policy?

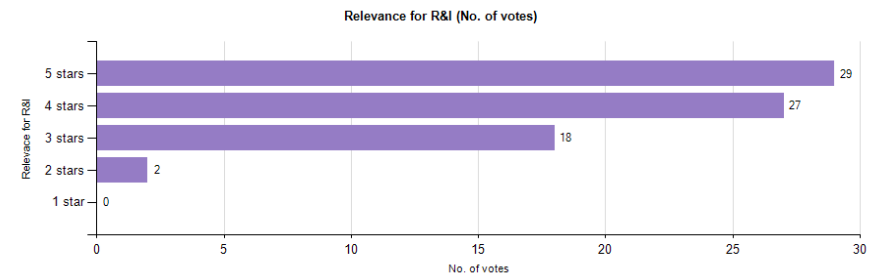
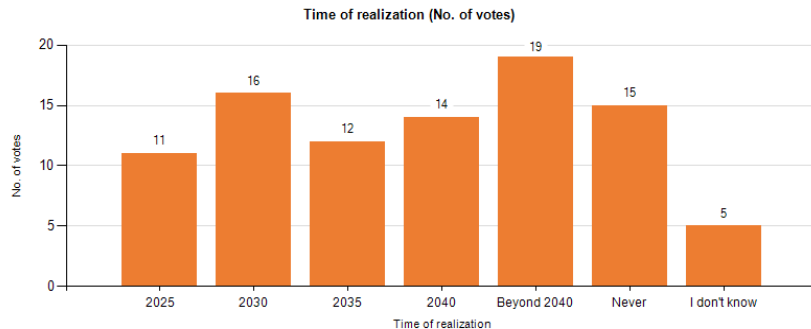
747 Respondents /
more than 500 volunteered overwhelmingly positive comments

Some key contributions of BOHEMIA

- *Content to our vision*
 - **SDGs / Transitions / Europe leading from the front**
- *Reflexive policy process: did we consider all that has European added value? Did we miss anything? Are we sure?*
- *Content for the search for appropriate objectives and R&I agendas*
 - **Using the recommendations to help the orientations of the programme**
 - **Using the Delphi Data and the scenarios in arguments relating to missions, objectives and programme directions**
- *A new way of consulting with people*

"A Petrol-Plastic Waste-free Europe by 2025"

"Annual production of plastic in the EU is reduced to less than 20m tons (from 55m tons in 2009)"

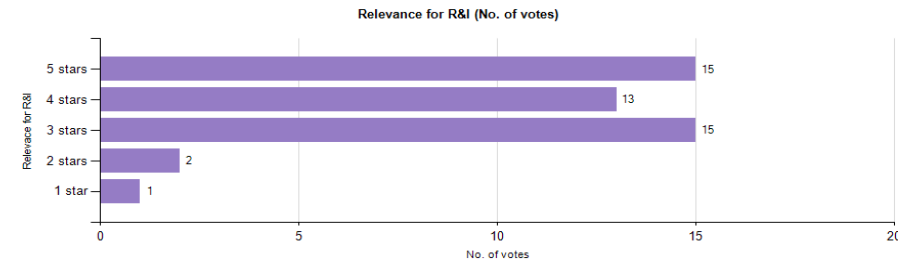
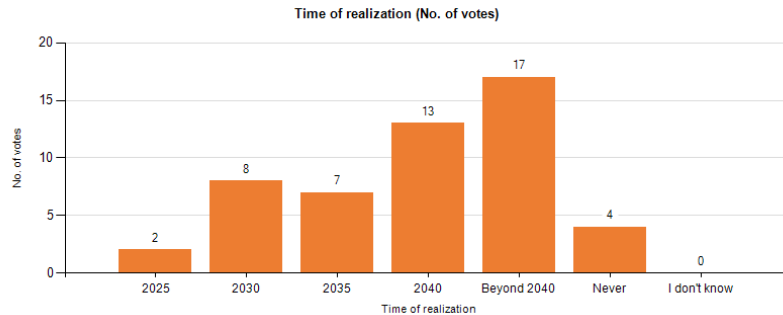


Plastic production is still increasing.	54
There is still a need in specialized plastics (functional, biodegradable etc.), plus in collecting and recycling.	53
New materials to replace plastic are needed.	36
Plastic will remain in use to protect food and prevent food waste. Development of fully recyclable consumer will reduce the need for virgin plastic.	21
Alternatives to plastic are not yet as inexpensive and high-performance, and will remain so without focused research & development.	11
	5
	5

New technologies have to be developed, in order to increase the recycling rate or to decrease the overall quantity on plastic products.	69
Alternatives for the current plastics have to be developed.	54
To reduce plastic production, use policies need to forbid specific plastic applications or make it very expensive.	26
R&I should focus on compostable biomaterials. The wide variety of plastic formulations means recycling will never be economical; compostables need no sorting, so they can be economical.	14

"A Petrol-Plastic Waste-free Europe by 2025"

"More than 90% of all materials and waste is physically recycled or re-used energetically in the circular economy"



Current recycling rates vary widely depending on the waste stream or country. A single figure of 90% may be too ambitious in some cases.	27
The European Commission's Circular Economy Package includes a common EU target for recycling 65% of municipal waste by 2030.	26
A high level of recycling requires massive investment.	23
As consistent progress has been made in life-cycle assessment methodologies, there will be more public pressure to recycle and reuse.	20
This figure can only be achieved if it includes the reuse and service-life extension of goods, which prevents waste rather than manage it.	16
Large scale utilisation of bio-waste is a clear trend.	11

There is need for more efficient recycling technologies, among others because this is a promising market, which makes it an area that is therefore ripe for research.	33
Life Cycle Assessment for sustainable production needs a standardised approach in order to provide consistent results to policy makers.	26
There is a need for more efficient and non-destructive collection of end-of-life goods as well as new sorting techniques for material mixes to achieve a high purity of the materials to be recycled.	14
RI is needed to delink atoms instead of recycling waste, resulting in high purity resources instead of secondary materials, e.g. depolymerisation, delaminating, de-coating, de-vulcanisation of tyres.	10

What difference did it make?

- *It has made the EC proposal a little better than it would have been otherwise.*
- *It helped establish an image of the Commission as a potentially reflexive policy organization ...*

.... which is a lot to live up to: a huge challenge for the future and for EU foresight

*Thank you for your
attention!*

<http://ec.europa.eu/research/foresight/>