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“Strategic foresight” as a complementary instrument for energy planning

Lessons learnt from Delphi Energy Future 2040

'It is not a matter of correctly predicting the future, but of being prepared for it.'

Pericles (ca. 500 - 429 BCE), Athenian politician and military commander

Delphi Energy Future 2040 - Goal

- Assessment of possible futures of energy systems from **global and cross-sectoral standpoint**
- Awareness for **fundamental changes** (and “weak signals”) in the energy sector – and its potential consequences
- Impulses for **strategic debate** among decision-makers

Delphi Energy Future 2040

Lead-question:

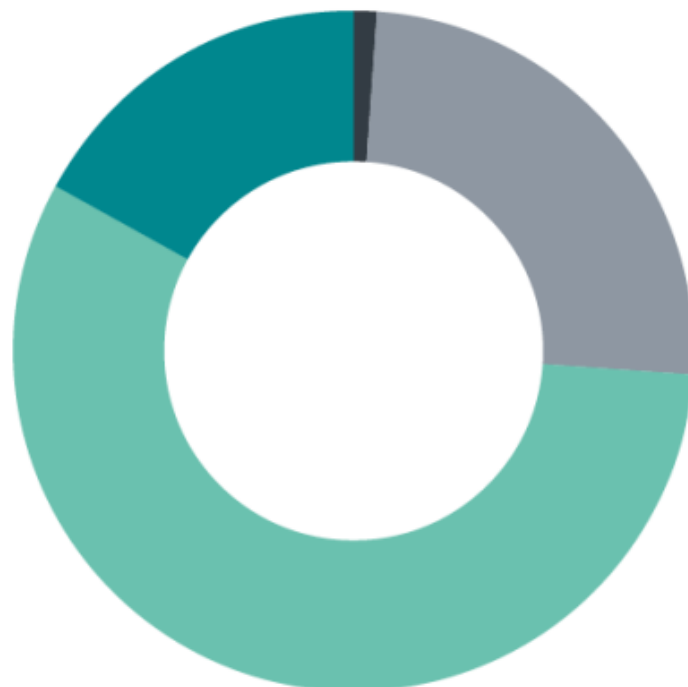
“What future awaits the energy systems in Germany, Europe and the world in the year 2040?”

Thesis 18:

By 2040 states that have strongly promoted renewable energy sources will have improved their economic position enormously and will be dominating the list of most competitive economies.

17%
certain

57%
likely

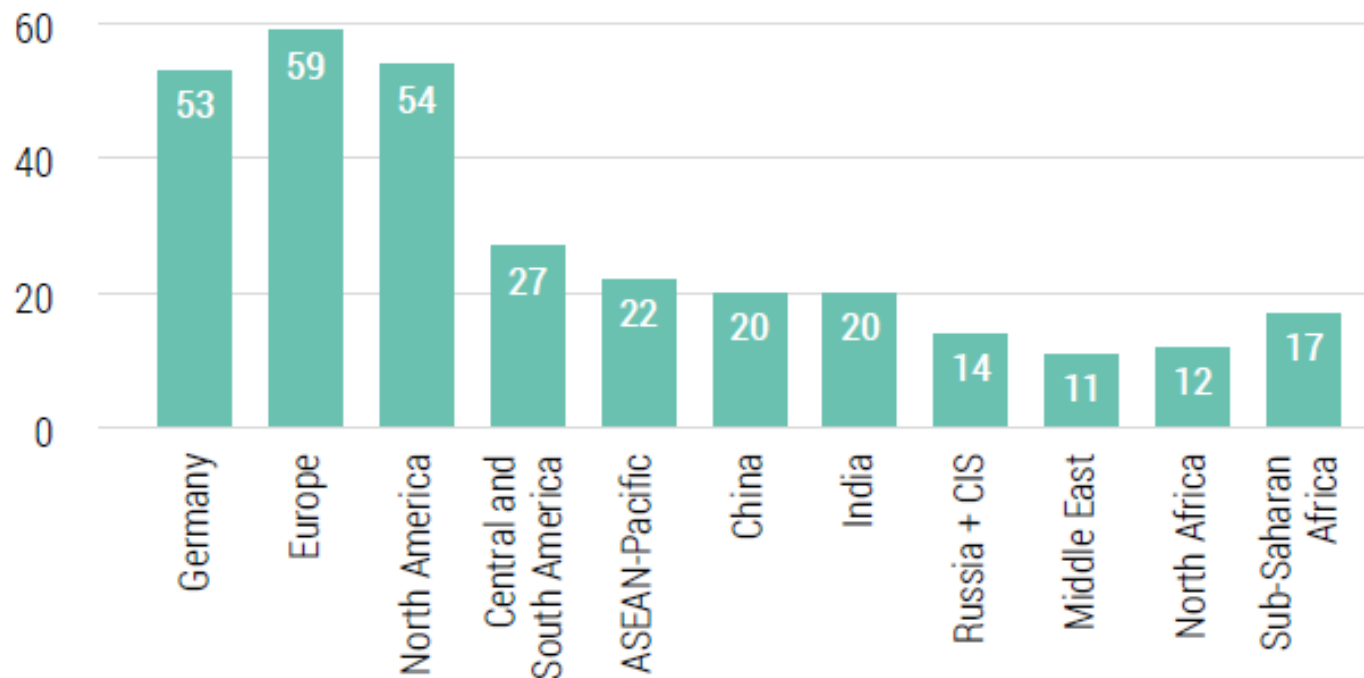


1%
impossible

25%
unlikely

Thesis 10:

By 2040 women, who will have gained a significantly higher influence on strategic decision-making processes in the energy industry and in the field of energy policy, will have pushed the promotion of sustainable energy use and ensured a closer involvement of a wide range of social stakeholders.



Thesis 31:

By 2040 bioenergy technologies relying on renewable resources will have failed to succeed due to land rivalry with the food industry, a lack of acceptance by the population and economic disadvantages.

5%
certain

57%
likely



3%
impossible

35%
unlikely

Thesis 33:

By 2040 an “all electric society” will have become a reality. Electricity, especially power generated from renewable sources, will also provide mobility and heating, and will have displaced petroleum and natural gas in many industrial processes.



13%
certain

62%
likely



2%
impossible

23%
unlikely

Thesis 36:

By 2040 thanks to new battery technologies, electric vehicles will be able to travel distances of more than 3,000km per charging cycle and will be rechargeable within a time span of no more than a few minutes by means of electrical induction.



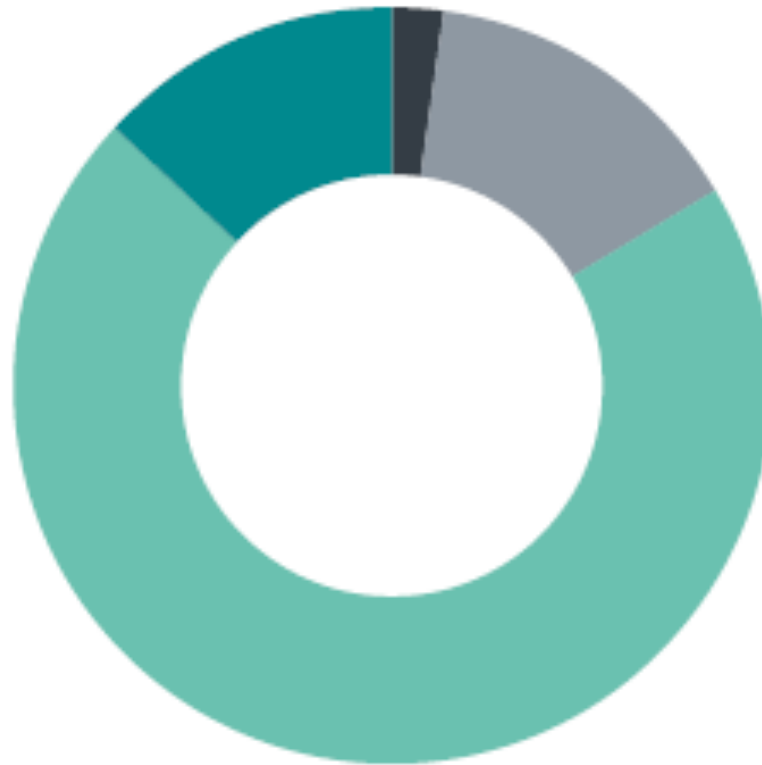
Thesis 37:

By 2040 thin-film and organic photovoltaics technologies will be the “game changers” driving a decentralisation of energy generation; power-generating windows and facades will be conquering the market.



13%
certain

70%
likely



2%
impossible

14%
unlikely

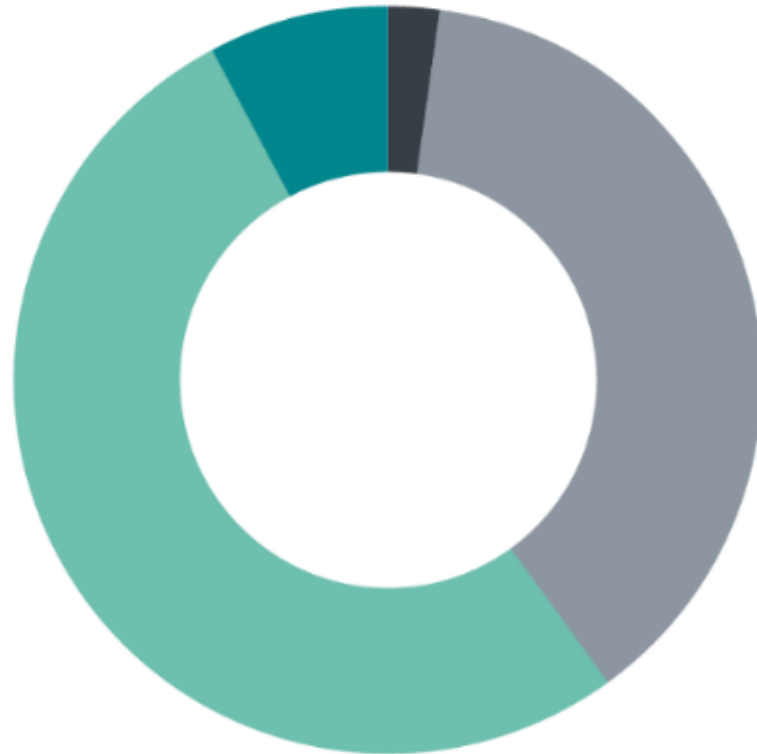
Thesis 51:

By 2040 major internet companies and the data and IT industry will have become the largest energy players given their capability to process large data volumes and their ability to manage supply and demand on an automated basis.



8%
certain

52%
likely



2%
impossible

38%
unlikely

What does this mean for energy planning?



- Convergence of Delphi experts on **energy transition to renewables, electrification**
- Strategic Foresight = tool to **identify change factors** that can lead to fundamental transformations
- Experts expect a number of **game-changers**: *new actors, technologies, public opinion changes, etc.*

What does this mean for energy planning?

- Since energy planning is often very **long-term** it needs to take those (potential) disruptions into account e.g. by:
 - **Comparing scenarios** with different assumptions regarding these changes (also calculating sensitivities)
 - Keeping the energy planning process **flexible** and capacity plans **modular**
 - Preparing pro-actively through **RD&D** and/or **industrial policy**

Thanks for your attention

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DELPHI ENERGY FUTURE
is a joint project of:

bdew

German Association of Energy
and Water Industries

giz Deutsche Gesellschaft
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pwc

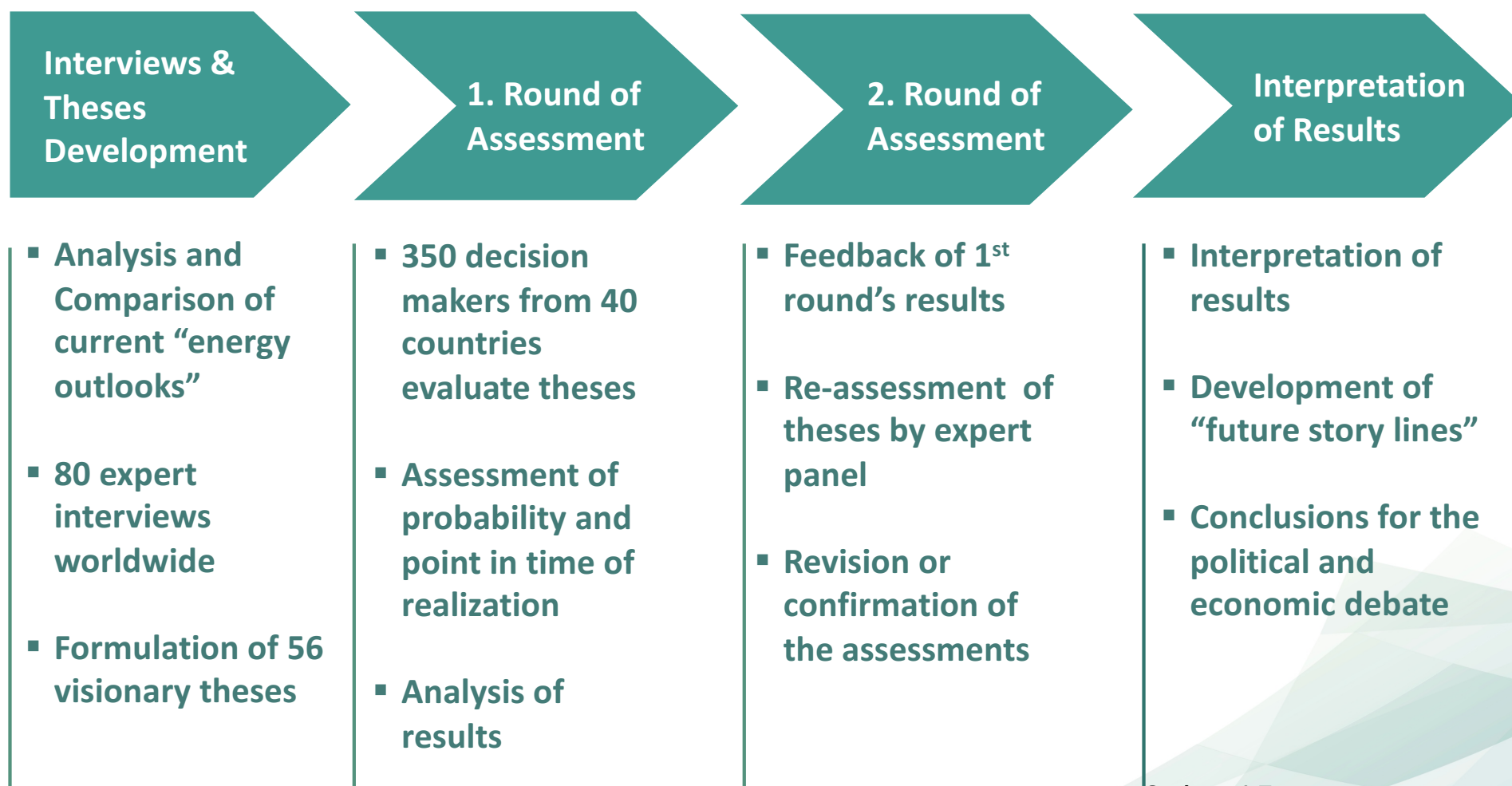
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Implementation in 4 Steps





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