DELPHI
ENERGY
FUTURE

POSSIBLE FUTURES:

FINDINGS FROM THE DELPHI ENERGY FUTURE 2040

NEW REGULATORY REGIMES HAVE EMERGED

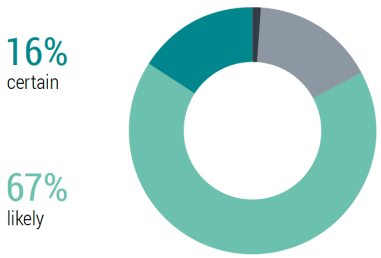
When it comes to energy policy, Europe has become one of the key global players in 2040. The European Union has adopted a common foreign energy policy. With its joint strategic infrastructure investment projects and resource supply agreements with third countries, it is an important global competitor for increasingly scarce raw materials, such as silver, copper and rare earth elements, all of which are essential components in the new energy world. Internally, the EU has developed largely harmonised domestic energy policies. These were developed on the basis of a highly efficient super grid interconnecting the member states – a single European "copper plate". Europe has seized the economic opportunities delivered by its energy transition particularly well.

In the "old" continent, energy generation, grids and energy trading activities are most strictly organised at the supra-regional level. The predominant motive: using cross-border infrastructure to ensure optimum use of shared resources. The "North Sea Grid", for example, now connects the largest wind energy producers with Norwegian storage facilities and large demand centres on the continent.

"Delphi Energy Future 2040" is a strategic foresight project in the energy sector, based upon the expertise of more than 350 experts from over 40 countries and all relevant sectors. This extraordinary study offers exciting insights into a worldwide discussion that evolve around the core question "What future awaits the energy systems in Germany, Europe and the world in the year 2040 and beyond?" To access all results, please download the full report free of charge here:
http://www.delphi-energy-future.com/results/

THESIS 14
By 2040 new multilateral governance structures will have been created to facilitate the cross-border integration of energy systems and joint infrastructure investments.

WILL THIS THESIS ACTUALLY TAKE PLACE?

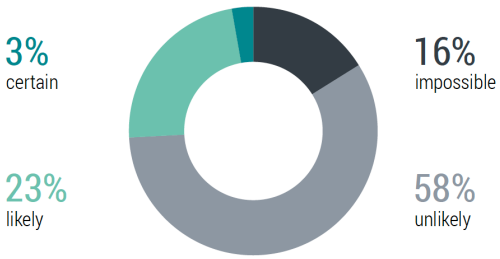


The alternative approach, a renationalisation of the energy supply, has not caught on globally. Recognising the fact that systems based on renewables require different structures, closing off national energy systems is not only rejected in Europe but in other parts of the world as well. Instead, new, multilateral governance structures have thus been created not only in Europe but also in the Americas and the ASEAN region, with the aim of optimising the energy supply and creating a framework that fits the new systems. These new structures serve a single purpose: to integrate energy systems across borders and implement joint infrastructure investment projects – especially investments in grid-infrastructure and flexibility options. It were these cooperation initiatives and new governance structures that not only facilitated the implementation of regional pricing schemes for carbon emissions but enabled their emergence in the first place.

A third level of self-governance has emerged below the multinational and super-regional governance levels where prosumers, flexible producers, network operators, data managers and social groups work together to organise their decentralised generation activities, especially in the cities. The hope that decentralised renewable energy systems might strengthen democratic self-governance structures at the local level has not been disappointed. However, this dynamic is most powerful where strong know-how, resources, infrastructure and social structures existed before: in the urban centres of Europe and North America. Here citizens are working to create highly efficient "sustainable cities", with populations sharply reducing their individual mobility needs and satisfying their own energy demand mostly by "prosuming" – assisted by small and flexible power stations – and using smart microgrids in a system of "neighbourhood generation".

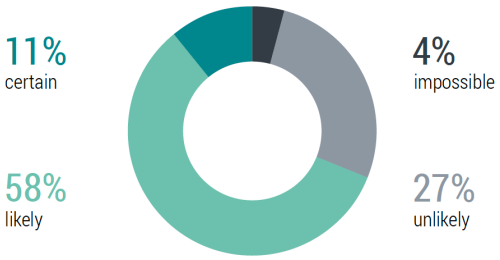
THESIS 13
By 2040 energy supply activities will have been nationalised given that energy security and sovereignty will be the key goals underlying national energy policies; as a result of this, states will also be engaged in energy trading.

WILL THIS THESIS ACTUALLY TAKE PLACE?



THESIS 15
By 2040 energy generation, power grids and energy trading activities will be organised supraregionally based on shared resources (e.g. wind power in northern Europe) without regard to state borders; national systems and monopolies will no longer exist.

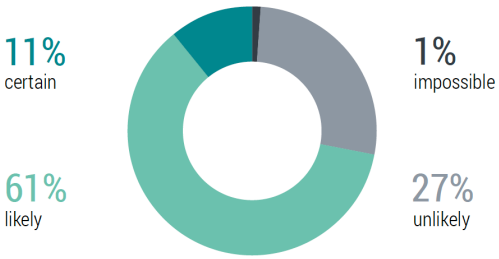
WILL THIS THESIS ACTUALLY TAKE PLACE?



The energy supply systems in Europe and North America, but also in parts of China and Asia, are now organised in cellular structures. Interconnected "islands" of the size of a city or medium-sized region are generating their energy from solar and wind power, assisted by storage units and a minor share of flexible, conventional reserves, with the latter primarily being provided by gas-fired power stations. For more information, please read theses 13, 14, 15, 16, 17, 29, 38 and 39.

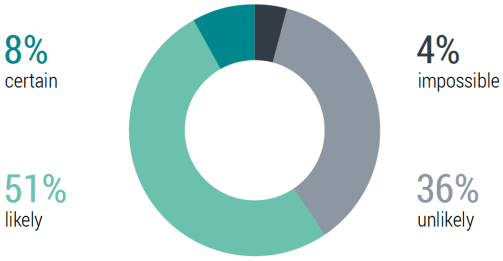
THESIS 16
By 2040 Europe will have adopted a common foreign energy policy, including joint strategic infrastructure investments and collective supply deals with third countries for the supply of resources.

WILL THIS THESIS ACTUALLY TAKE PLACE?



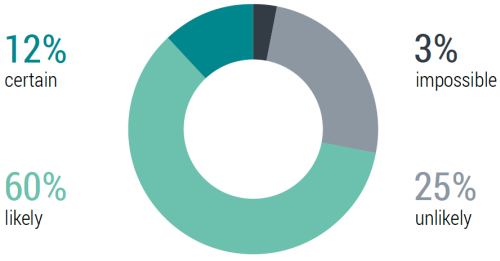
THESIS 39
By 2040 the field of conventional fossil-fired power generation will also operate on a reversed scale: formerly large power stations will have become small and flexible units, with a typical generation capacity of no more than 100 MW.

WILL THIS THESIS ACTUALLY TAKE PLACE?



THESIS 29
By 2040 distributed generation with renewable energies using battery storage will have led to the emergence of new democratic self-governance structures at the local level. Municipalities and social bottom-up movements will have gained momentum.

WILL THIS THESIS ACTUALLY TAKE PLACE?



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