

# POSSIBLE FUTURES:

## FINDINGS FROM THE DELPHI ENERGY FUTURE 2040

### THE ECONOMIC EMANCIPATION OF THE ENERGY TRANSITION

In 2040 climate protection and the causal relationship between environmental and social disasters are still a key driver of the energy transition. The existence of an effective international climate protection treaty has been an outcome of this debate. But the energy transition is also beginning to go beyond its original rationale. It is now no longer propelled by climate goals alone but also as a measure of industrial and development policy. Renewable investment projects carried out to build the required infrastructure, such as storage and grids, and decentralised energy generation structures are thus increasingly driven by a wide range of social, technological and economic trends all pointing in the same direction. The commercial and economic arguments are convincing enough to ensure the promotion of renewables even in regions where climate protection alone would not be a sufficient motivator.

The enormous pressure to improve environmental protection exerted by the middle classes in countries like China is one of these trends. So is the aspiration of African and Asian countries to stop their population's migration into the cities by building flexible and reliable decentralised energy supply systems operating for example on a combination of photovoltaics and storage technologies.

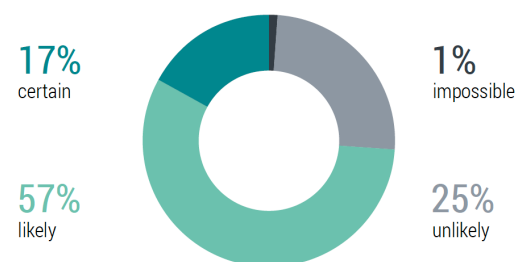
**"Delphi Energy Future 2040"** is a strategic foresight project in the energy sector, based upon the expertise of more than 350 experts from over 40 countries and all relevant sectors. This extraordinary study offers exciting insights into a worldwide discussion that evolve around the core question "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 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.

#### WILL THIS THESIS ACTUALLY TAKE PLACE?

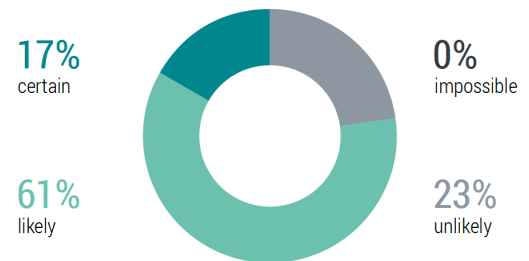


“Leapfrogging” hopes are driving energy transition initiatives, especially in Africa. Turning to renewables has been the solution for many countries to overcome infrastructure deficits and create resilient decentralised energy supply systems. And not least, in 2040 renewable energy sources operating in conjunction with affordable high-performance storage units have become the most cost-effective way to generate electricity. Large-scale, centralised and highly subsidised generation systems, in contrast, are putting too great a strain on the national budgets of many states, which is why many countries have abandoned fossil technologies for fiscal reasons alone.

### THESES 8

By 2040 the growing middle classes in emerging economies such as China and India will have forced their countries' governments to adopt sustainable energy policies. Policy-makers' top priority will be to fight environmental pollution, a rising share of growing energy demand will be met from renewable energy sources.

#### WILL THIS THESIS ACTUALLY TAKE PLACE?



### THESES 45

**A:** By 2040 the African countries will have achieved independence from international commodity markets thanks to a promotion of decentralised forms of renewable energy generation, and will be developing new energy systems themselves (frugal innovation).

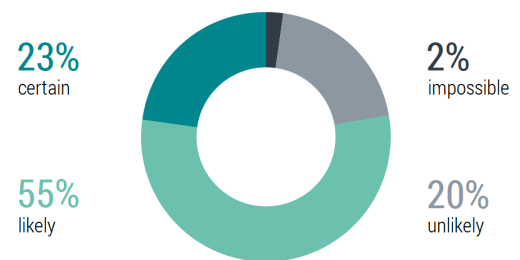
Versus

**B:** By 2040 the high investment costs of renewable energy projects, a lack of investors and insufficient levels of qualification will have prevented Africa from “leapfrogging”. Its energy mix will be dominated by fossil sources of energy.

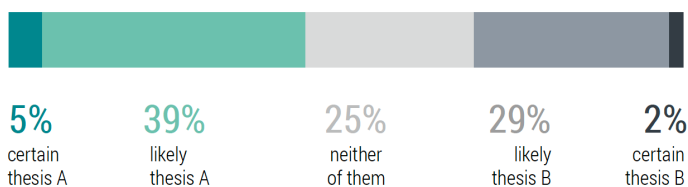
### THESES 35

By 2040 renewable energy sources operating in conjunction with storage units will be the generation technology with the lowest electricity production costs. High-performance customer generation facilities will be sold in retail stores and can be installed in a matter of minutes.

#### WILL THIS THESIS ACTUALLY TAKE PLACE?



#### WHICH OF THE TWO THESES (A, B) WILL TAKE PLACE?



States that have strongly promoted renewables are in a far better position in 2040 than a quarter of a century earlier. They are dominating the list of the most competitive economies in the world. Above all because the energy transition has come to not only mean a switch to more climate-friendly energy but also to energy that is produced at a marginal cost of close to zero. This has reverberating effects impacting entire economic systems: excess electricity is now powering mobility and heating, displacing petroleum in many industrial processes and opening up new chemical applications. In 2040 an “all-electric society” has already become a reality in many countries.

The new renewable economy is not entirely a “brave new world”, though. It may be based on a new economic rationale – but it is still an economic rationale. New shortages are produced, with important raw materials such as silver, copper and rare earth elements becoming increasingly scarce as renewables and renewable infrastructures, such as smart grids or storage systems, are promoted and expanded all over the world. Many industrialised countries and emerging economies are therefore competing for strategic commodity partnerships with resource-rich countries – while traditional producers of fossil resources are on the brink of falling into crisis. For more information, please read theses 8, 18, 21, 33, 35 and 45.

**CONTACT**

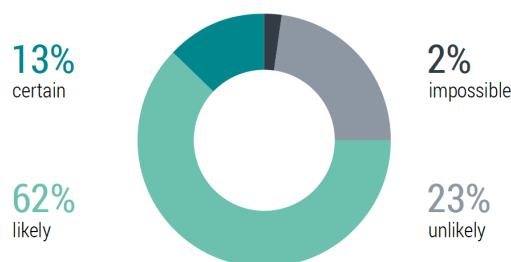
[www.delphi-energy-future.com](http://www.delphi-energy-future.com)

info@delphi-energy-future.com

**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.

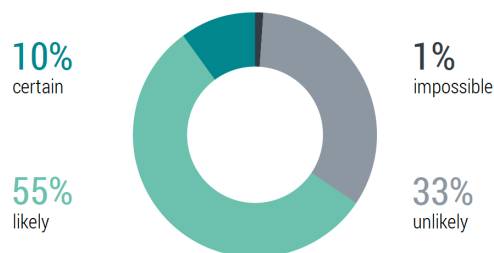
**WILL THIS THESIS ACTUALLY TAKE PLACE?**



**THESIS 21**

By 2040 important resources (silver, copper, rare earth elements) will be in greater demand and will have become increasingly scarce as a result of a worldwide promotion of renewable energy sources and expansion of electricity networks. Many industrialised countries and emerging economies will be competing for strategic commodity partnerships with resource-rich countries.

**WILL THIS THESIS ACTUALLY TAKE PLACE?**



“Delphi Energy Future 2040” is a joint project of: