georguensberg
Politik- und Strategieberatung

# Industry & Resilience in the New Energy World

**Industrial energy revolution: resilience through innovation?**

**24.08.2018 European Forum Alpbach 2018 - Technology Symposium**

# Basic assumption on resilience, industry and energy:

- The transformation of energy systems is not just a technological challenge but a structural and cultural change linked to many other trends as well as political and social processes.

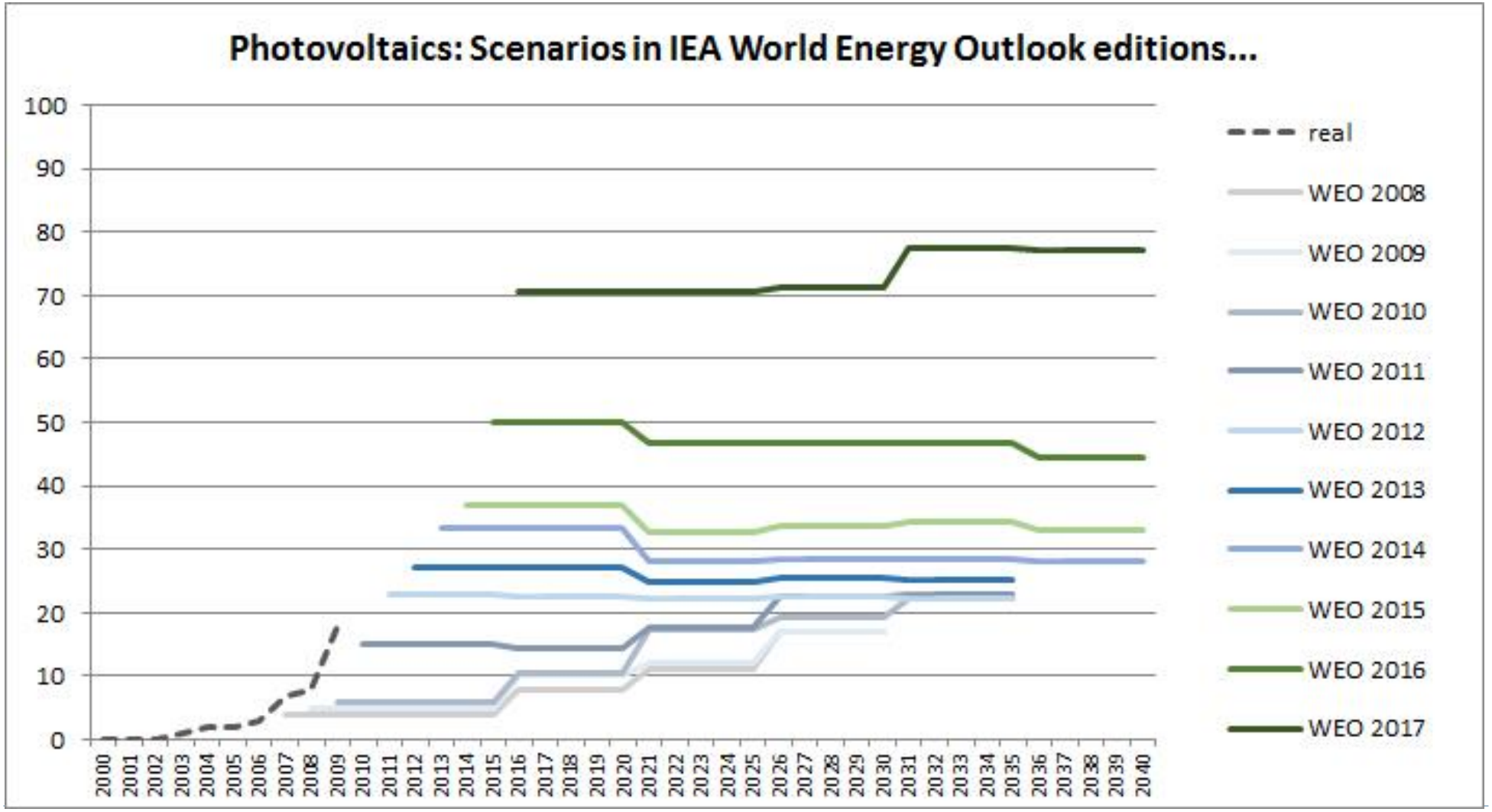
# In  a wide range of trends & strategies…

- Disruption
- Decarbonisation
- Divest-Invest
- Decentralization
- Diversity
- Digitalisation
- De-risking
- Democratization

# … I will focus on:

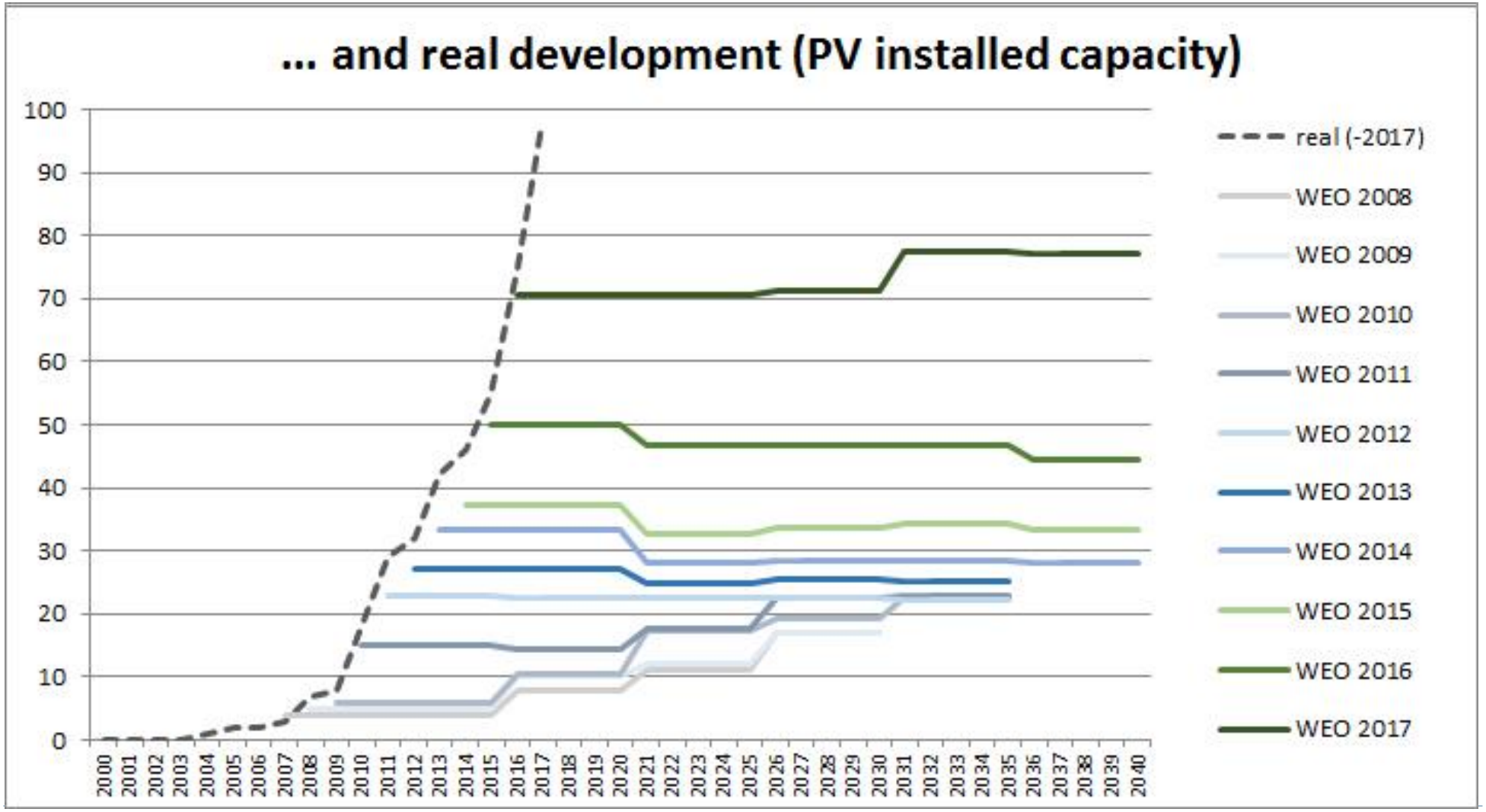
- **Disruption**
- **Decarbonisation**
- **Divest-Invest**
- Decentralization
- Diversity
- Digitalisation
- De-risking
- Democratization

# **Disruption**:
## Conventional scenarios do not integrate disruptive technologies and effects



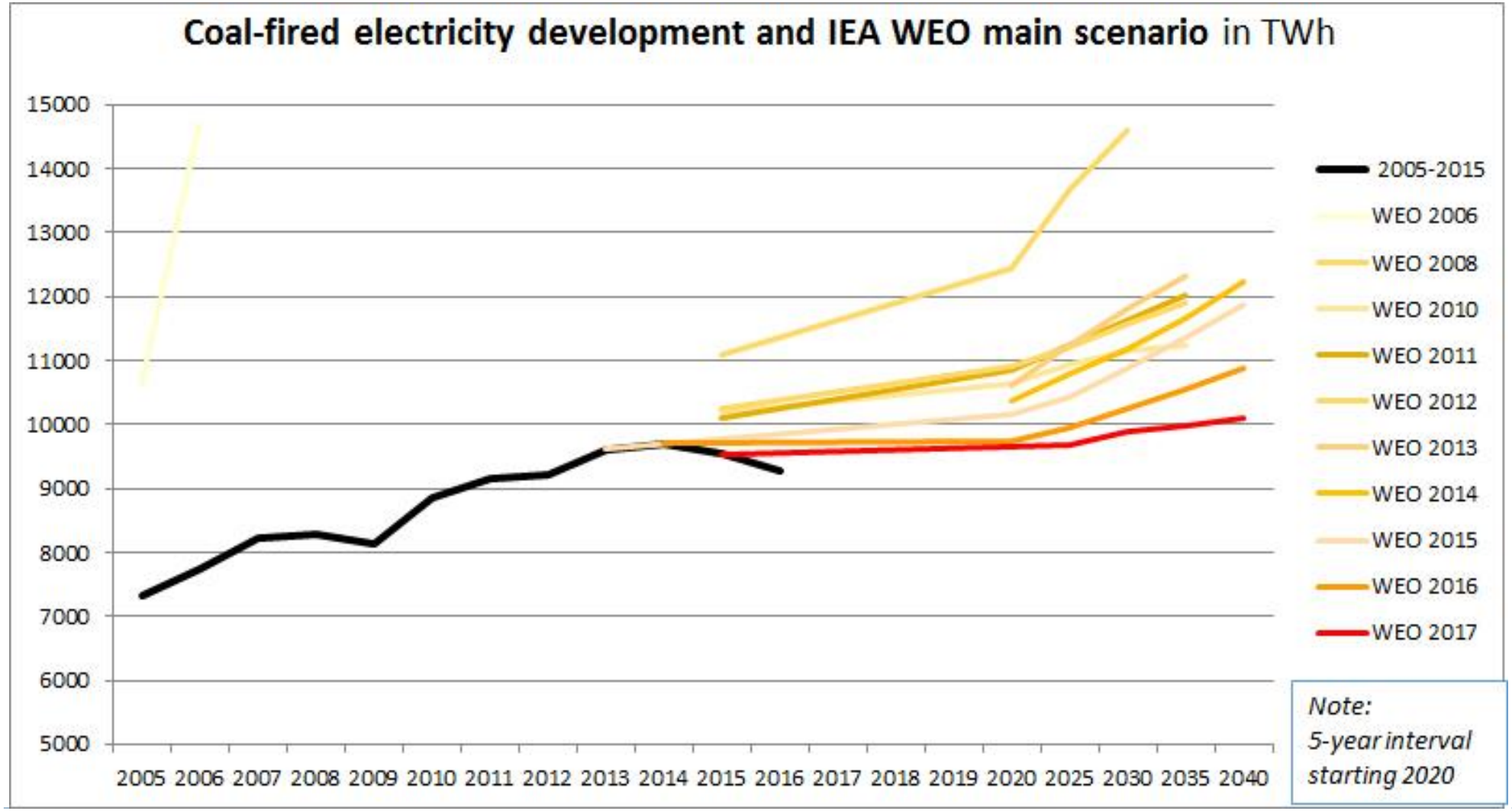

Annualy installed PV capacity in the central scenario of the IEA World Energy Outlook

# **Disruption**:
## Solar power: real growth always exceeded conventional forecasts

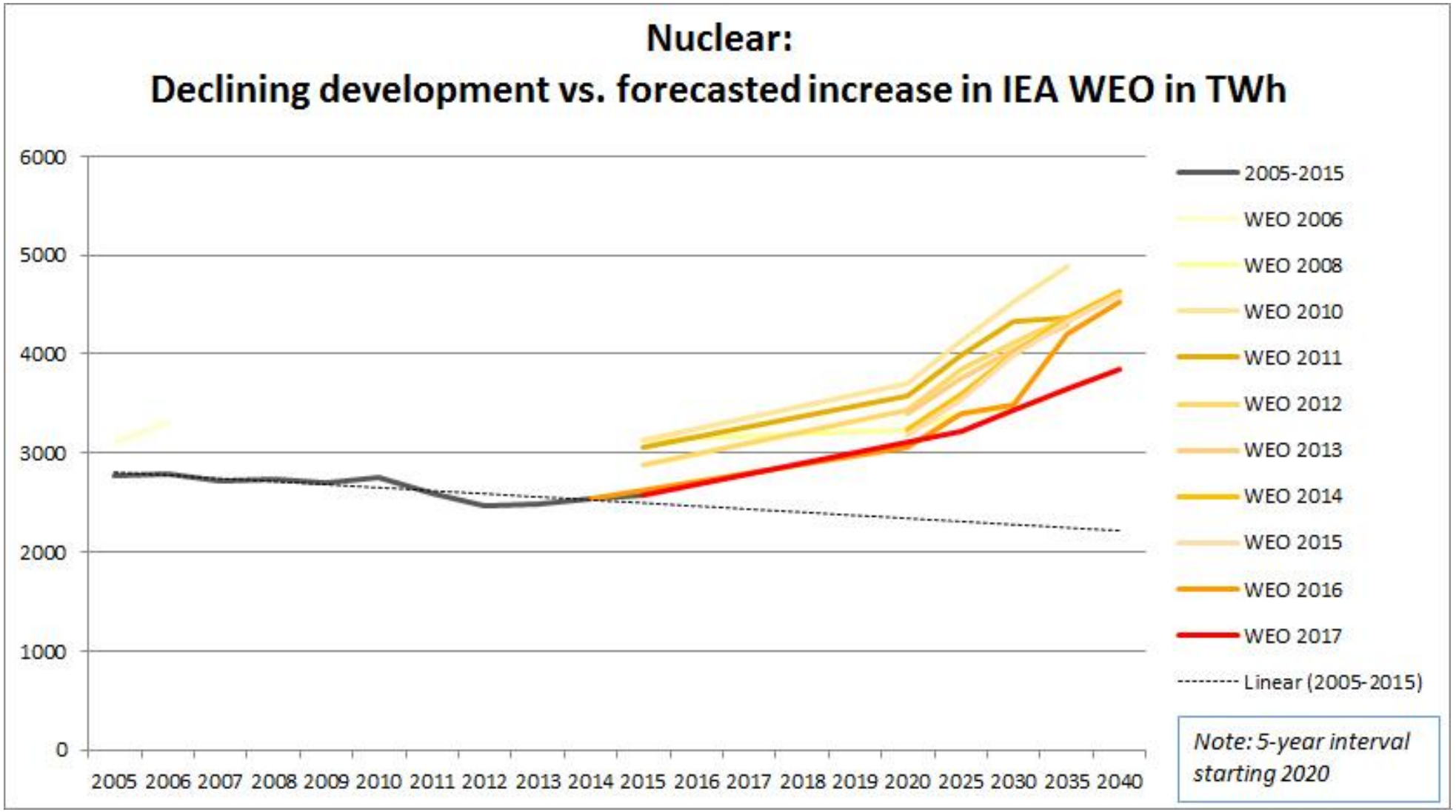



Annualy installed PV capacity in the central scenario of the IEA World Energy Outlook

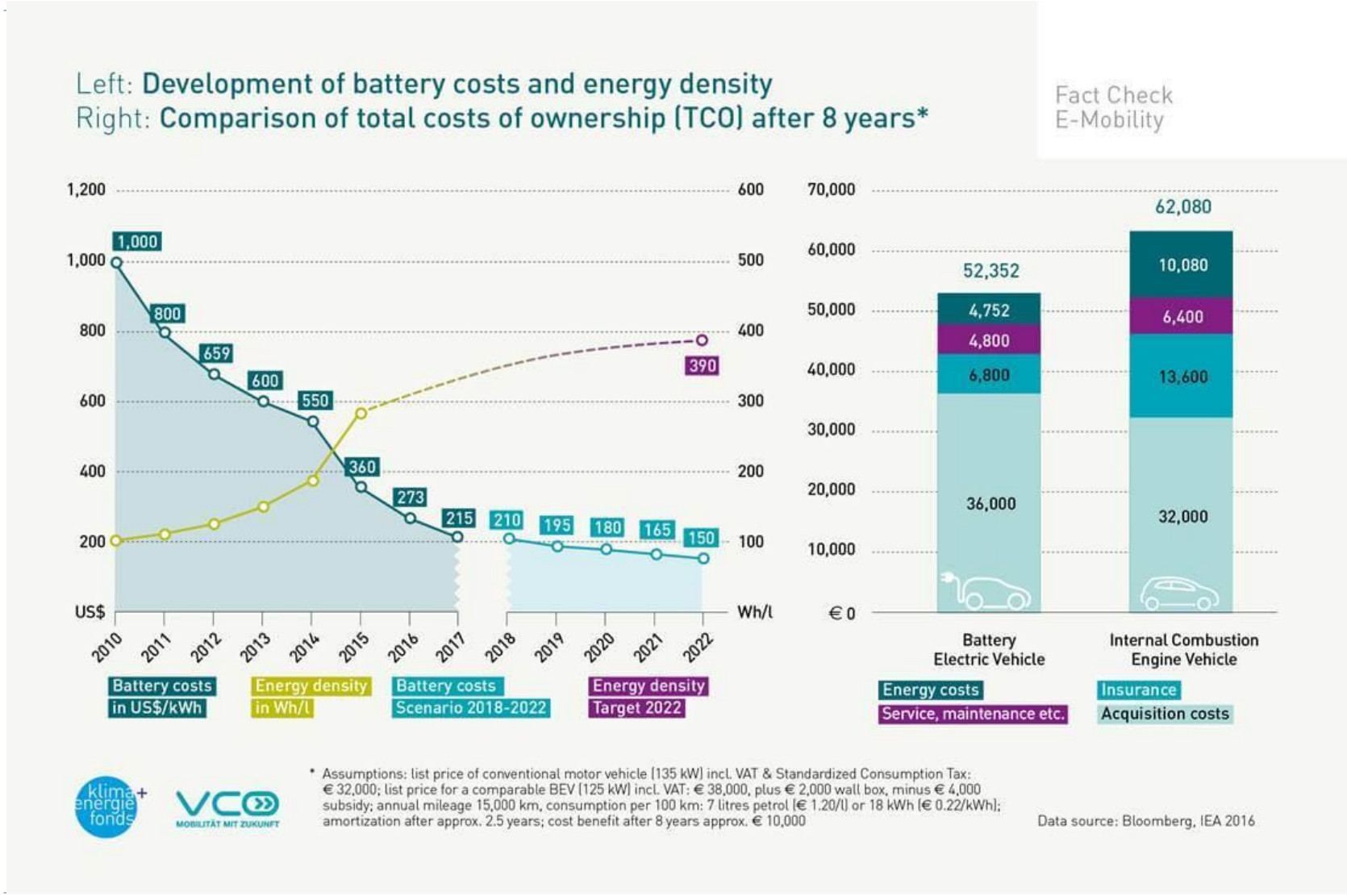
# Looking back at forecasts:
# Business as usual does not work any more! E.g. coal power



# …and nuclear significantly overestimated.

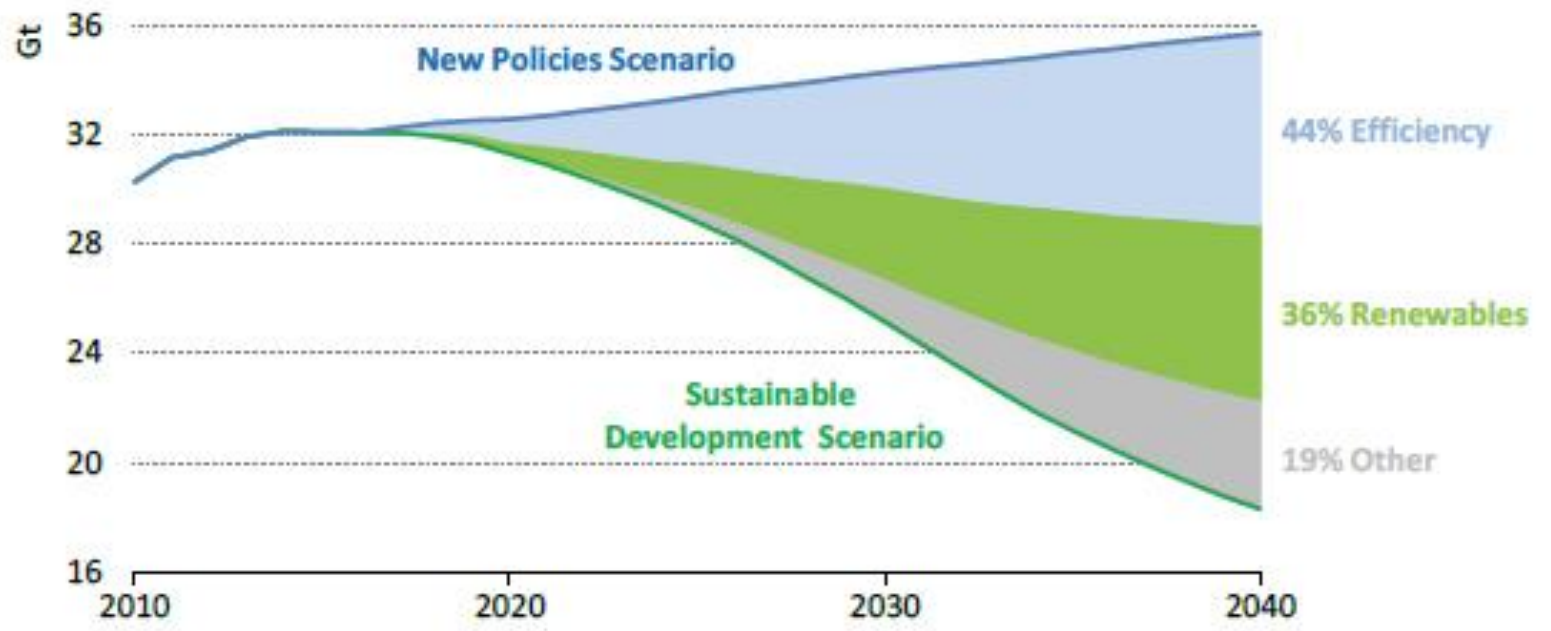


# Cost reductions in many innovation fields (e.g. batteries for EV)



# **Decarbonisation:** A clear, consistent long term strategy in line with the Paris Agreement avoids negative effects (stranded assets)

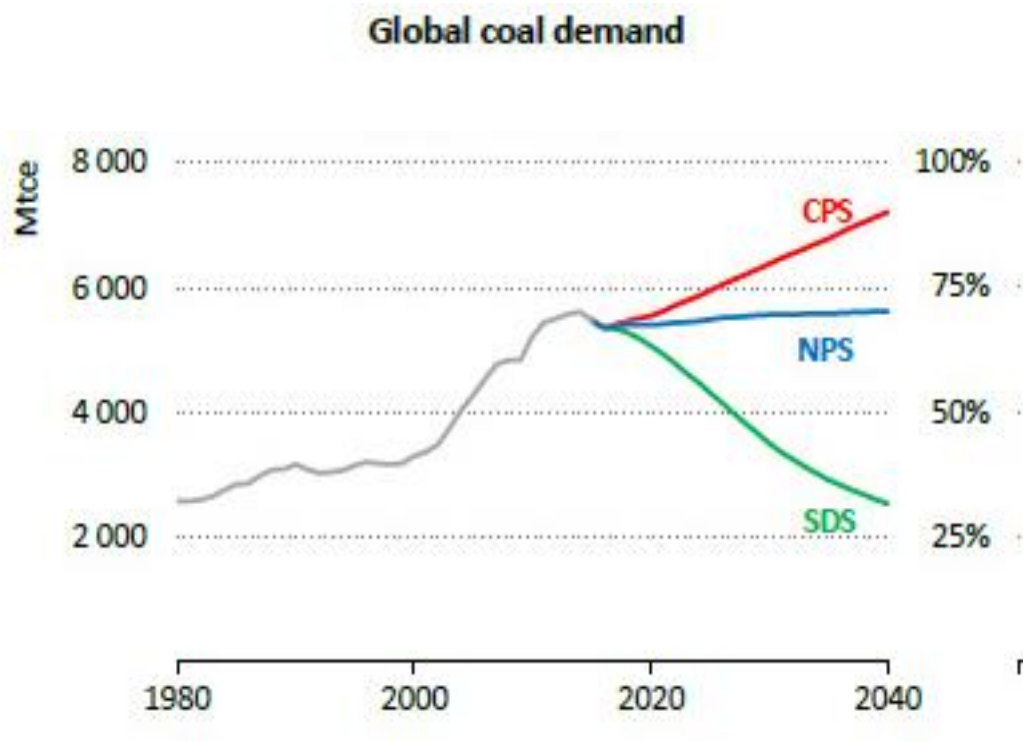
**Figure 7.21 ▷ Global energy-related $CO_2$ emissions abatement and key contributions in the Sustainable Development Scenario**

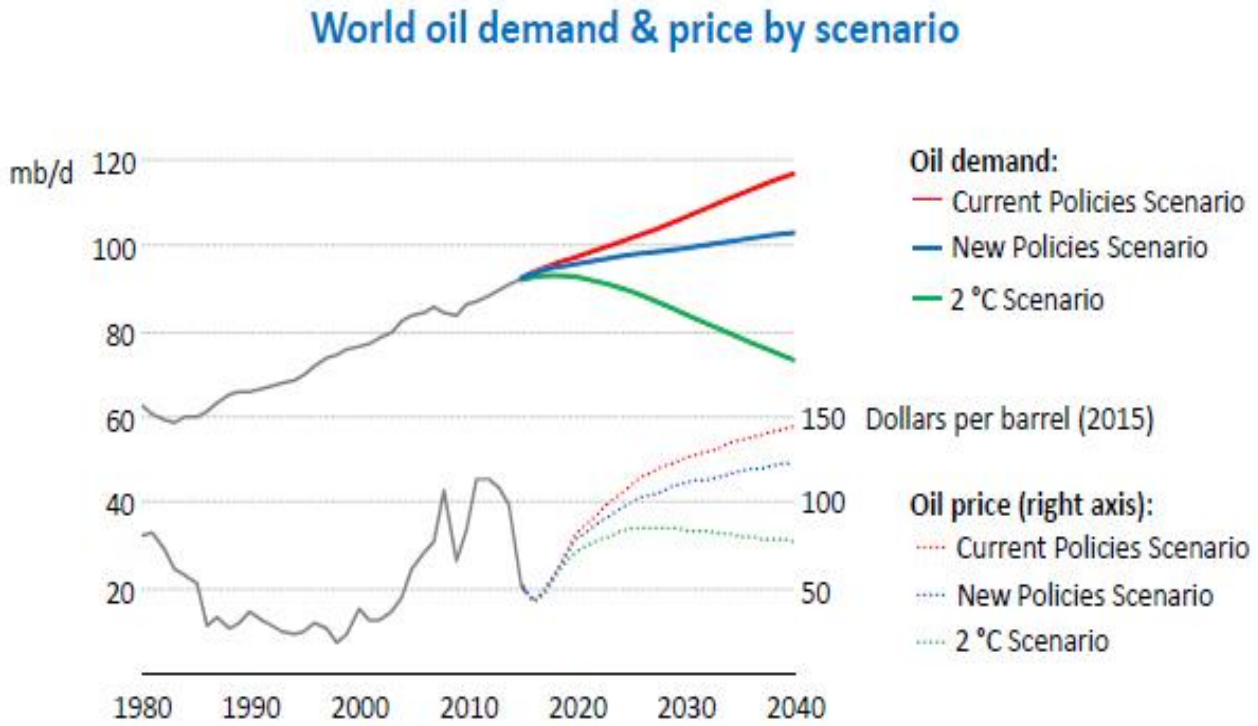



*Energy efficiency and renewables are the two key abatement measures in the New Policies and Sustainable Development Scenarios*

IEA WEO 2017

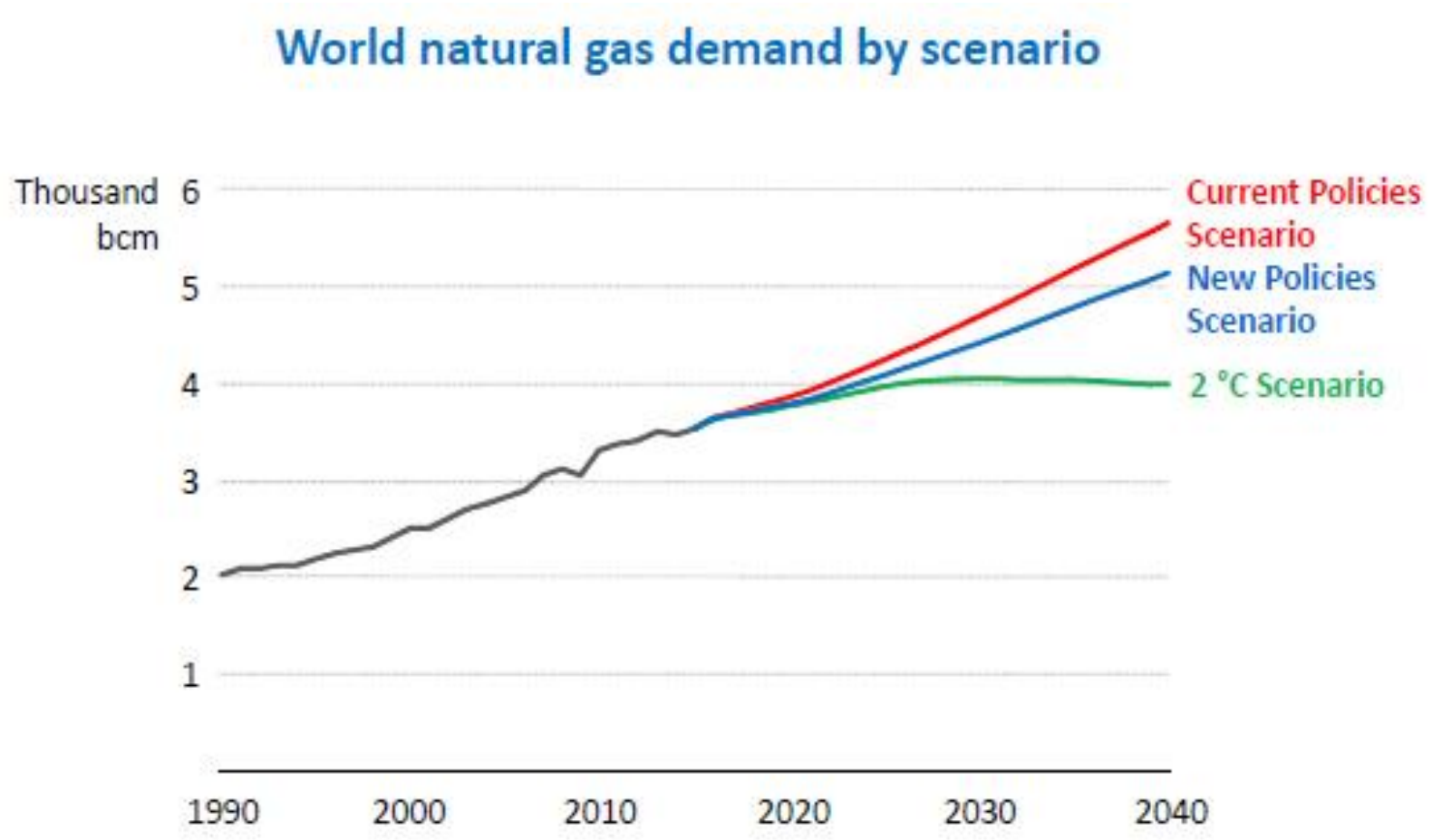
# Required decarbonisation vs. current policies scenarios




IEA WEO 2016 & 2017

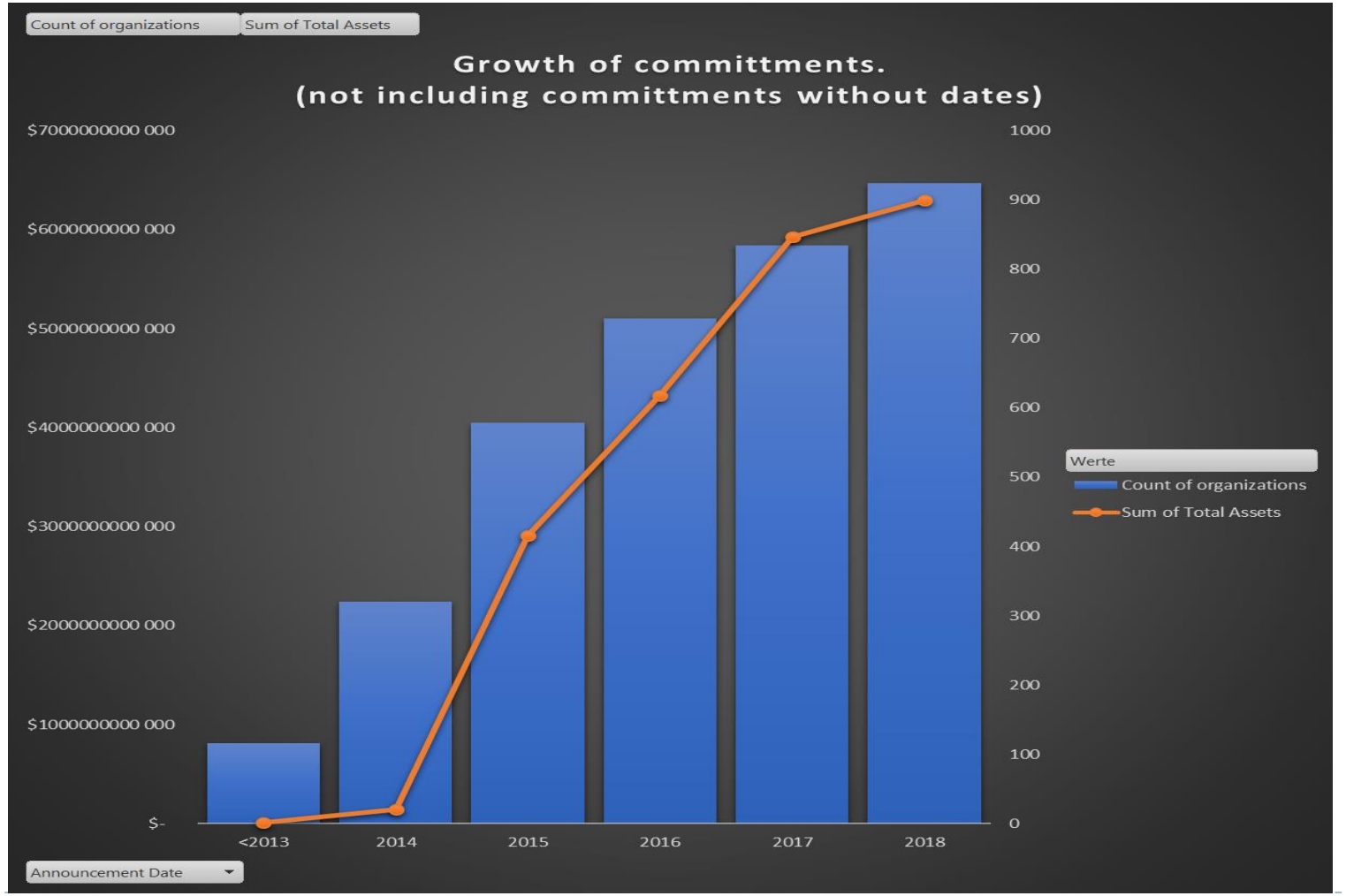
# In a 2°C energy world even growth of natural gas demand has to be stopped soon




IEA WEO 2016

# Divest - Invest

More and more investors and financial institutions decide to divest from fossil fuels. Paris Agreement adresses flow of capital in objectives.




Norwegian Sovereign Wealth Fund

Rockefeller Brothers Fund

Allianz

Leonardo DiCaprio Foundation

NYC

København Kommune

Church of Sweden

City of Oslo

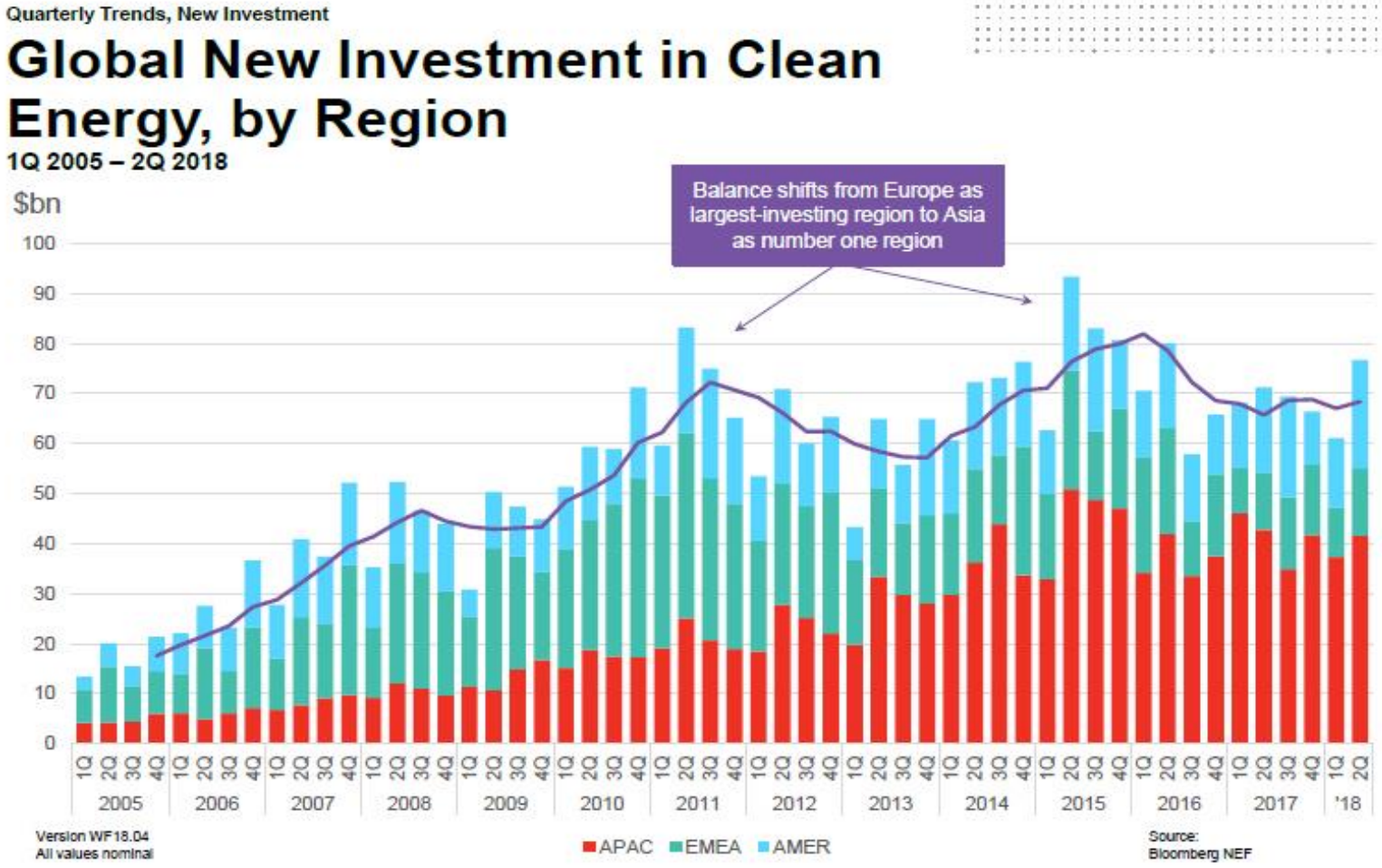
World Council of Churches



Source: Divest Invest 2018

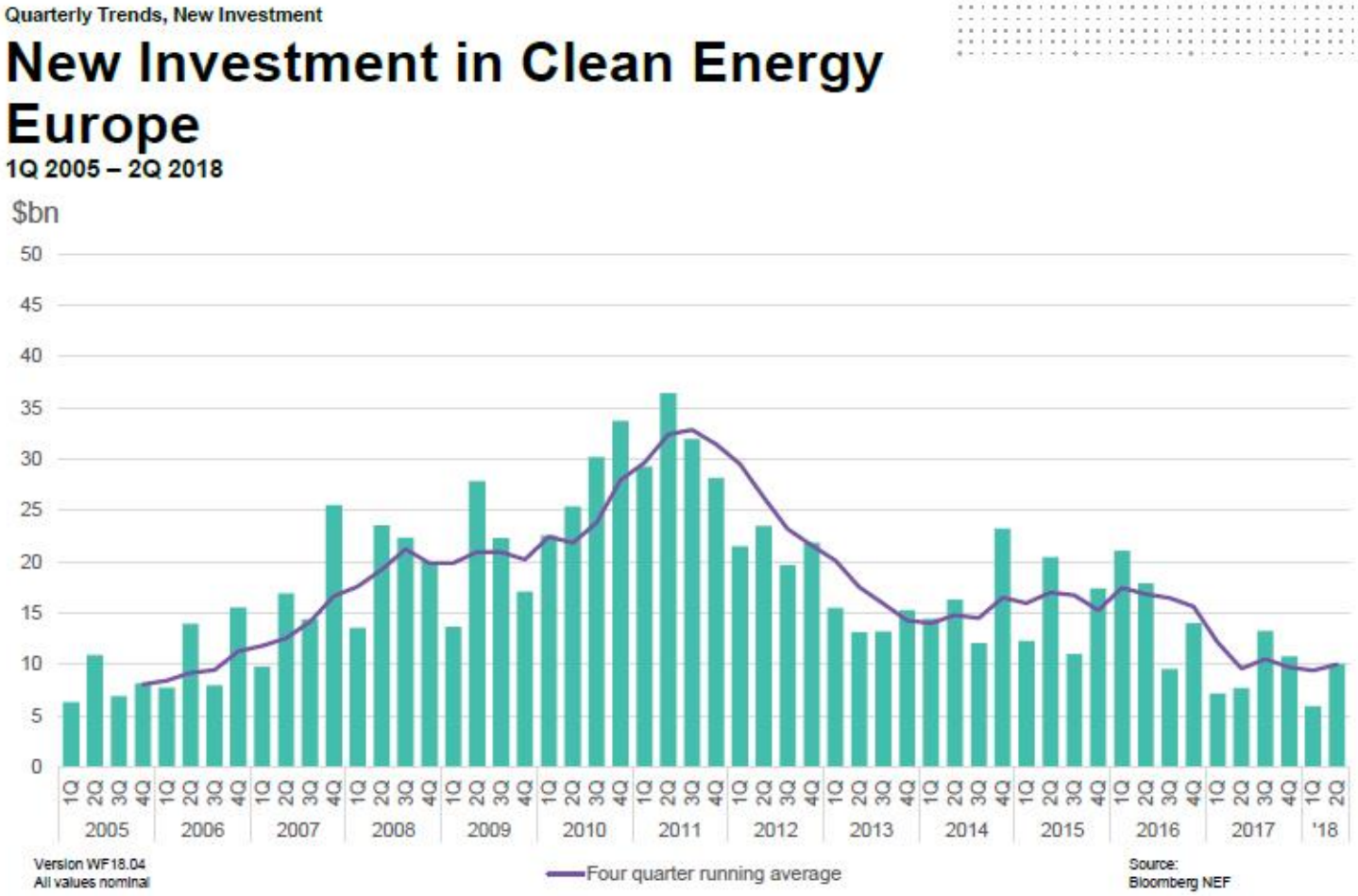
Österreichische Bischofskonferenz

# Investments in clean energy: Asia taking the lead…




BNEF Investment Trends, July 2018

# … while Europe missing opportunities




BNEF Investment Trends, July 2018

# Constant job growth in Renewables sector

FIGURE 1: GLOBAL RENEWABLE ENERGY EMPLOYMENT BY TECHNOLOGY, 2012-17


*Source: IRENA jobs database.*

*Note: The numbers shown in this Figure reflect those reported in past editions of the Annual Review.*

*a Includes liquid biofuels, solid biomass and biogas*

*b Other technologies include geothermal energy, hydropower (small), concentrated solar power (CSP), heat pumps (ground-based), municipal and industrial waste, and ocean energy.*

# Theses on the new energy world in a resilience perspective

- **Disruption**: breakthrough technologies, innovation and dramatic costs reduction (PV, EV) will change many industries on global scale. Conventional energy scenarios do not reflect the transformation process in a sufficient way.
- **Decarbonisation**: will become a key element for all industries. EU discussion on long term strategy on GHG reduction. Inaction will bring even more disruption to economy and society.
- **Divest-Invest:** finance markets have sent a signal. But policies have to deliver on instruments (carbon tax) and measures.
- **Diversity**: there won´t be *one* solution, *one* technology or *one* approach solving. We´ll have different successful approaches for different industries, sectors, regions.

# Theses on the new energy world in a resilience perspective

- **Decentralisation**: An energy system based on renewable energy will be more decentralised, requires more flexibility and demand-side management. Current instruments (and institutions) and rules are based on the old, conventional system.
- **Digitalisation**: is a key driver for the transformation and creates new business models. But: negative effects to be taken into account.
- **De-risking**: Risk management needs a more systemic perspective (e.g. finance sector) Anticipation of trends and the ability to react quickly will be improved.
- **Democratization & transparency**: Civil society will play a key element in the transformation but is threatened by shrinking space and ineffective instruments. Undermining democracy and nationalism is a threat to climate and energy strategies.