Challenges to a smooth energy transition

Cyprus Institute

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- Impact on Egypt's gas sector
- Egypt's potential
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Overview

- Challenges in achieving Paris
- Need orderly, stable and affordable energy transition
- NDC-based policies will not achieve 2degC
- Need acceleration and full implementation
- Affordable energy is key
- Renewable energy technologies paving the way
- But fossil fuel industry is becoming more competitive
- 2017 was a rude awakening

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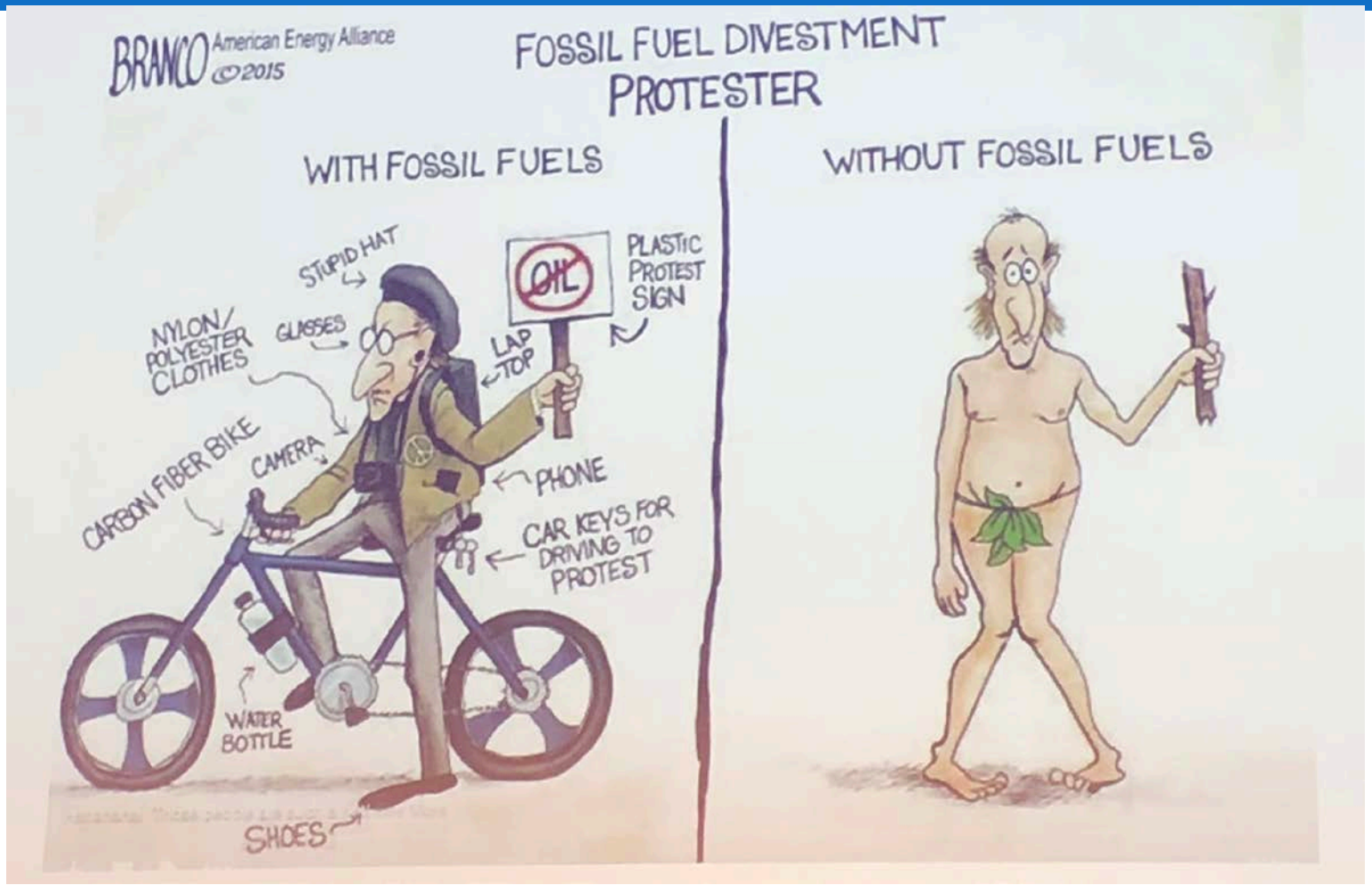
Transition without unexpected consequences



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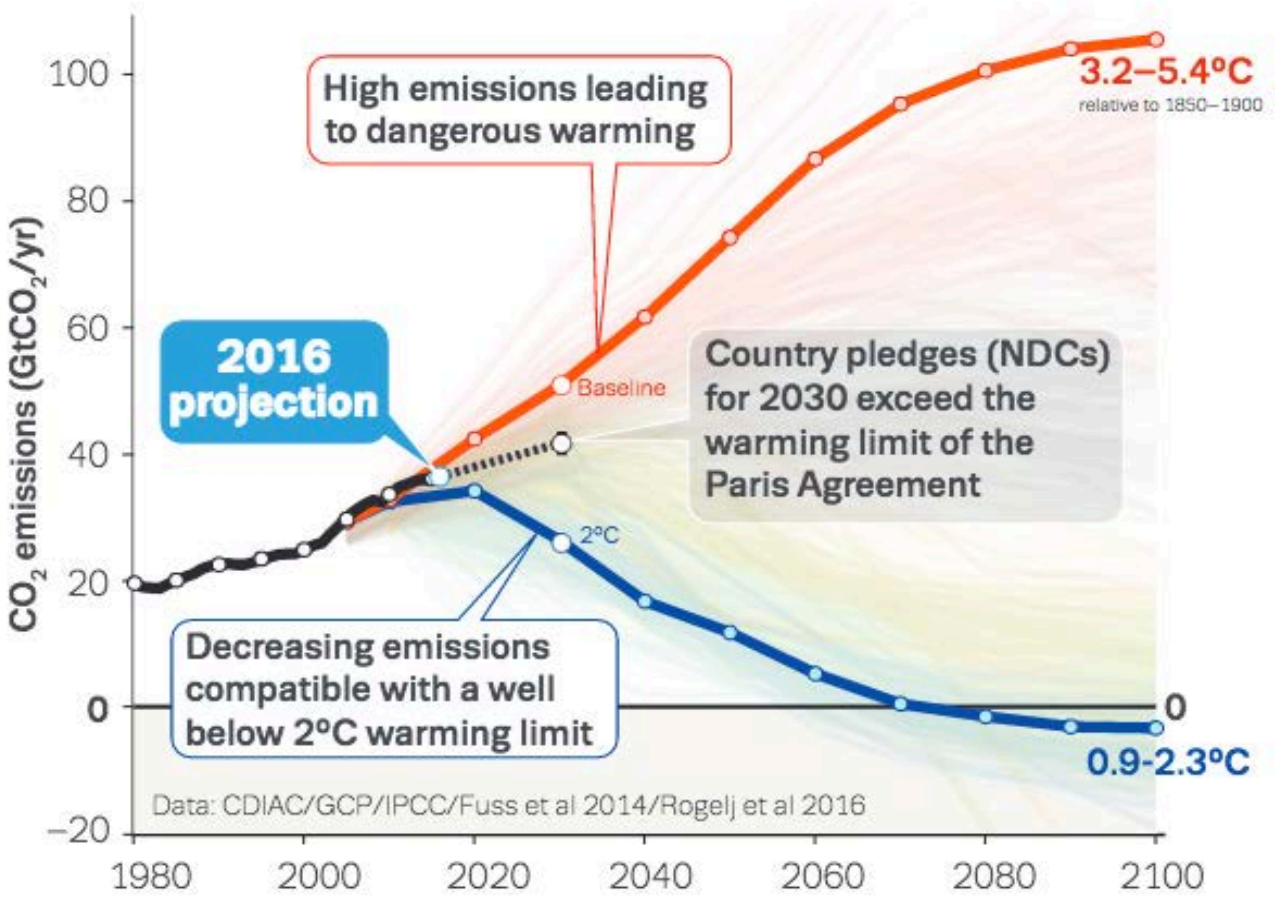
Mission impossible?



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Global energy demand

- Fossil fuels provide 85% of global primary energy, with only 3% by renewables
- By 2040 global primary energy will increase by 35% in line with 1.7 billion population growth and rising prosperity
- This will increase carbon emissions by 14%
- World will need to move into even faster transition
- In this, by 2040 renewables account for a third of global primary energy, but with 50% fossil fuels
- Without accelerated policies carbon budget will be exhausted in less than 20 year

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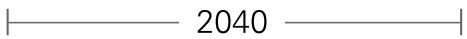
Global energy & carbon emissions



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2018 BP Energy Outlook

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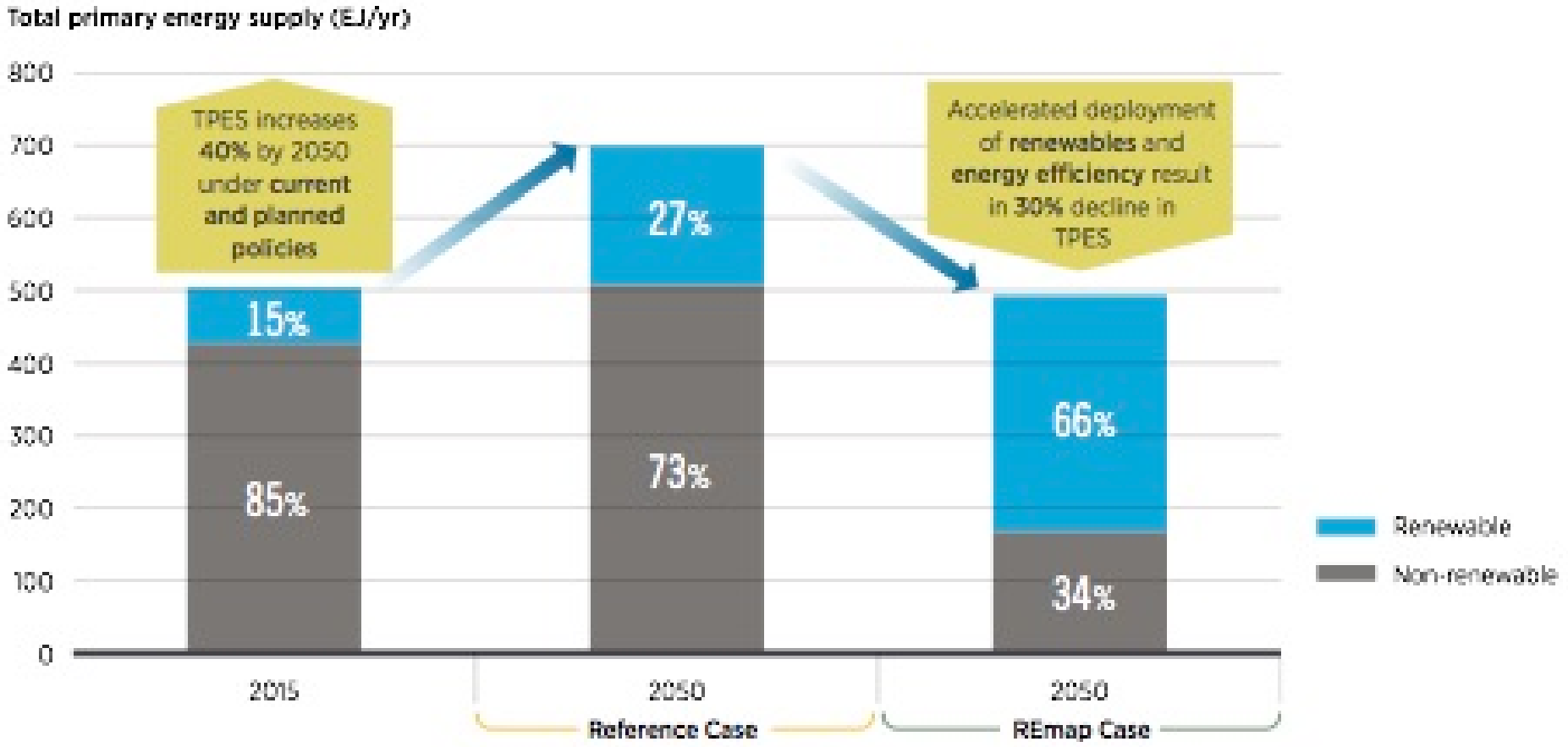
Global energy & carbon emissions



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Challenges

- So far variable success with Paris Agreement
- Need for drastic carbon emission reduction, enforceable, with immediate implementation
- Is the world ready to accept new drastic policies?
- Investment in low carbon strong but so far not sufficient
- There is no cheap option
- How can we get to the 2050/2100 goals?
- How can energy transition be achieved in an orderly manner?

Energy transition

- Climate protection: would you trust Trump or Merkel?
- Reality is that US reduced power generation carbon emissions by 25% between 2005-2017
- Germany has been strong on words but poor on delivery
- Integrated technology and policy approach needed
- One success is increasing adoption of carbon pricing – UK
- Power generation well on the way to be decarbonised due to low renewables costs
- But other sectors lack behind
- Various scenarios proposed to achieve 2degC energy transition

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Climate protection: paving the way or standing in the way?

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Shell's SKY scenario

- Shell claims its SKY scenario will get us to Paris
- It requires combination of mutually reinforcing drivers being rapidly accelerated by society, markets, governments
- It begins with current structure
- Followed by 10 years of aggressive policy commitments
- After that it becomes progressively driven by ambition to achieve 2degC, while adopting evolving technology
- Allows for realistic transition
- Satisfies main requirements: 'to enable society's orderly, stable, affordable transition to low carbon global economy, without major disruption and unexpected consequences'

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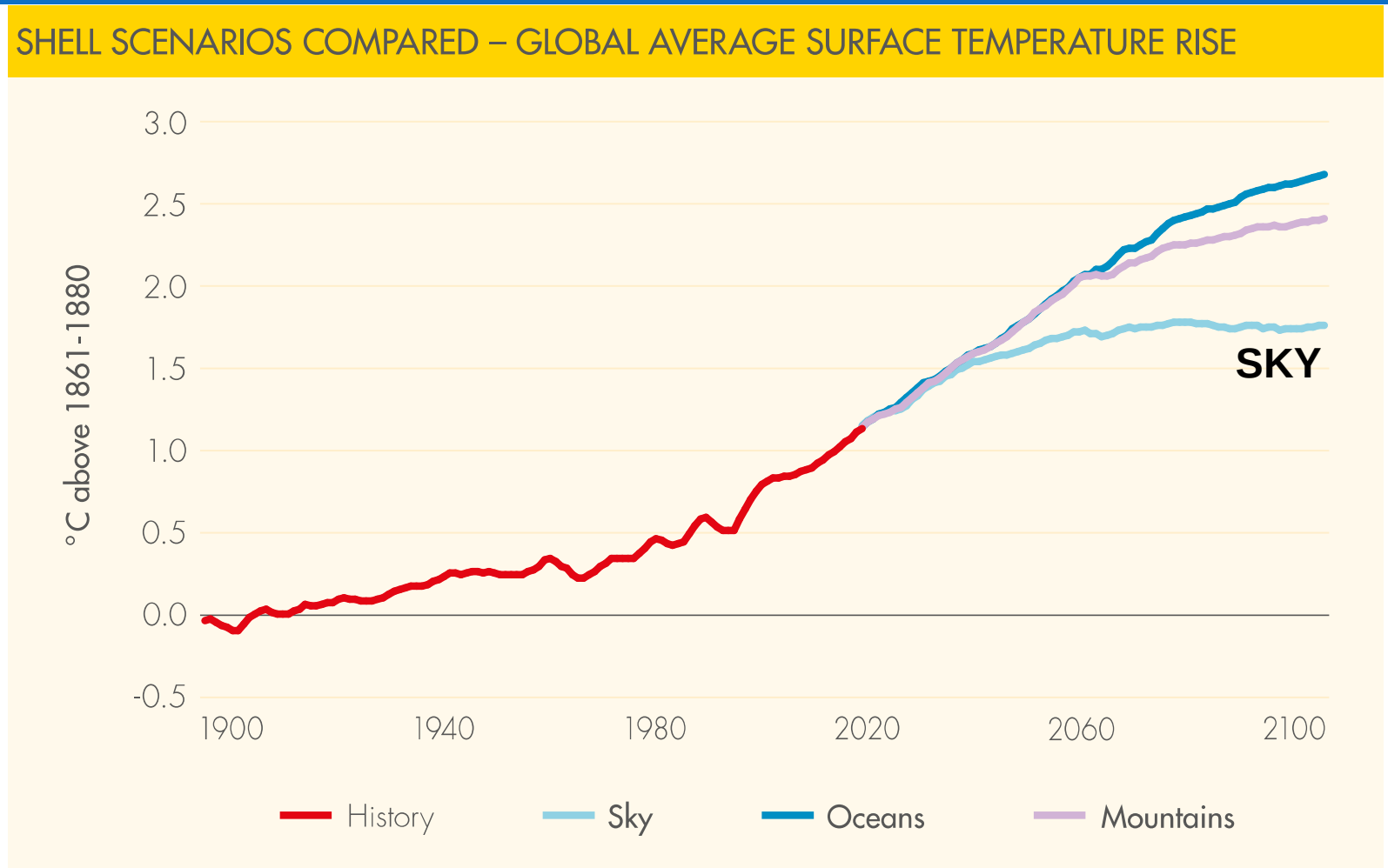
Shell's SKY scenario – impact on global temperature rise



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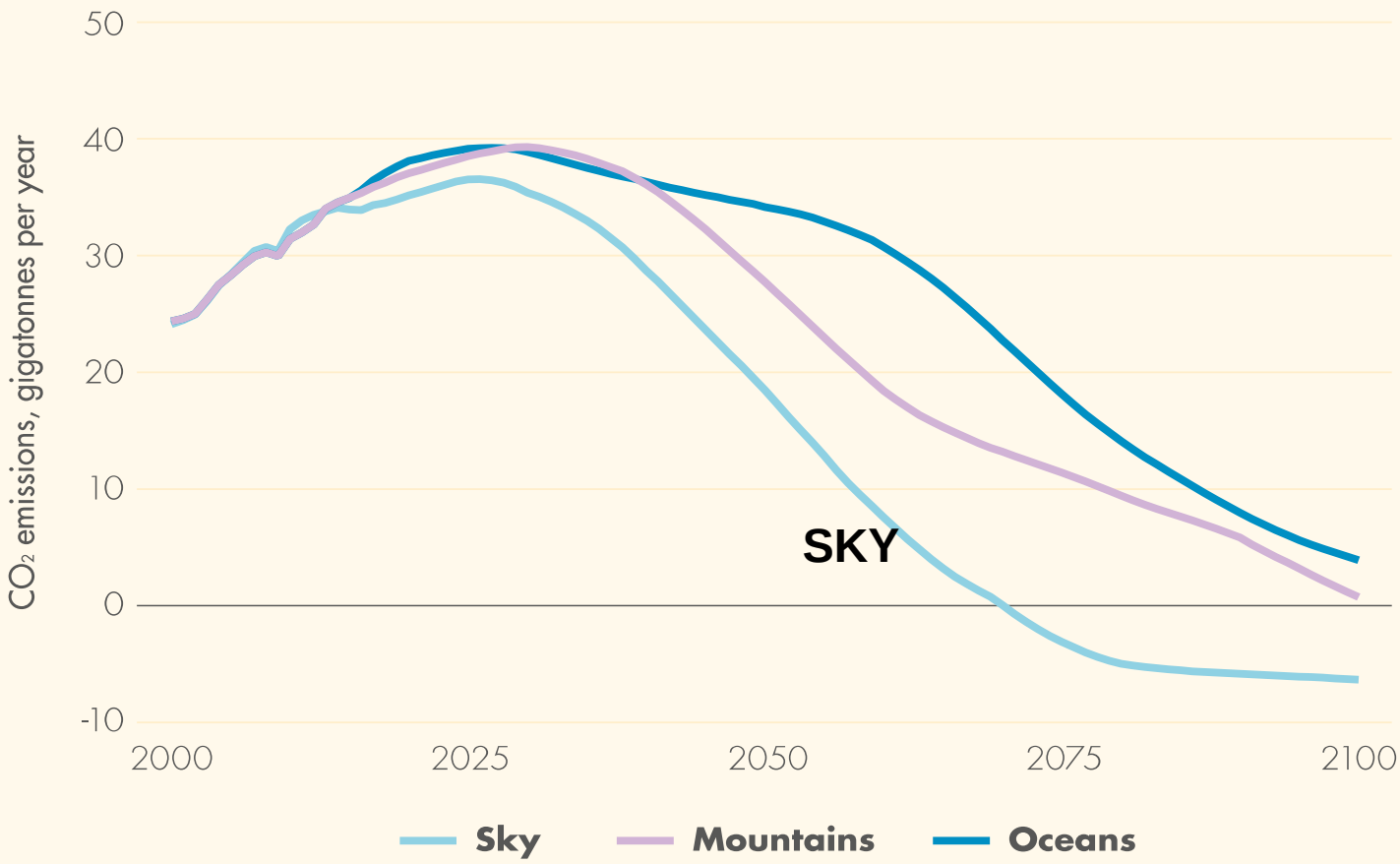
Shell's SKY scenario – impact on global carbon emissions

SHELL SCENARIOS COMPARED – WORLD ENERGY-RELATED CO_2 EMISSIONS



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Shell's SKY scenario – impact on global energy sources

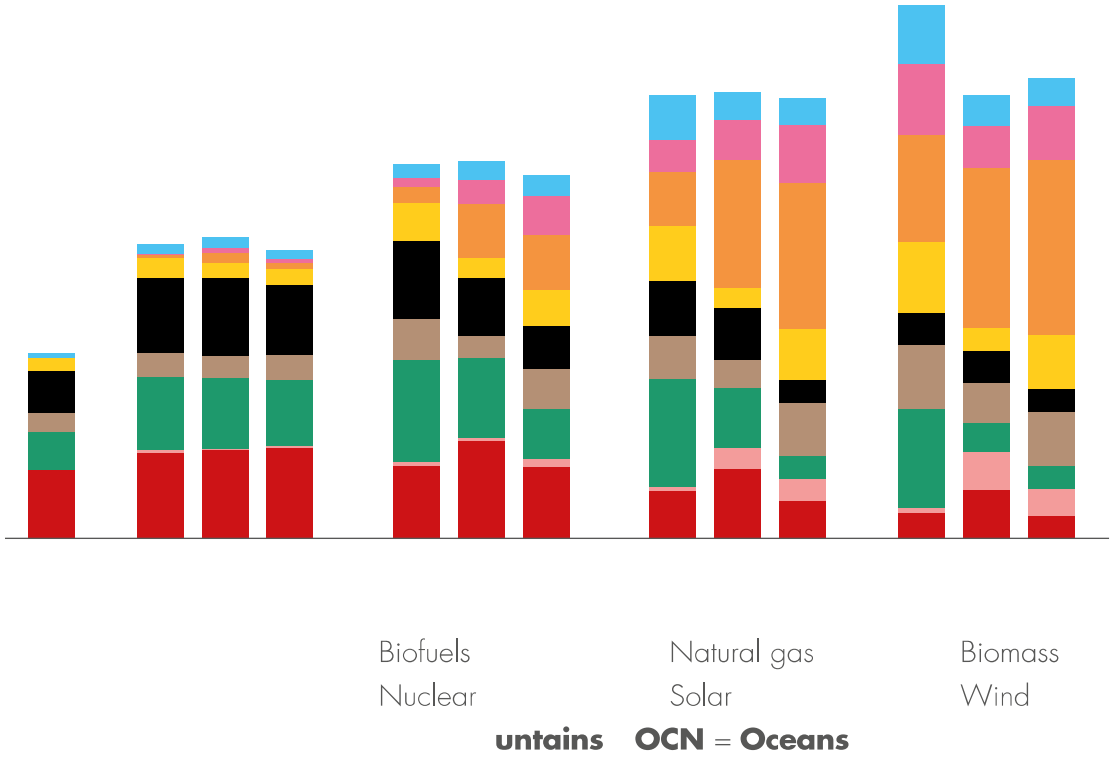

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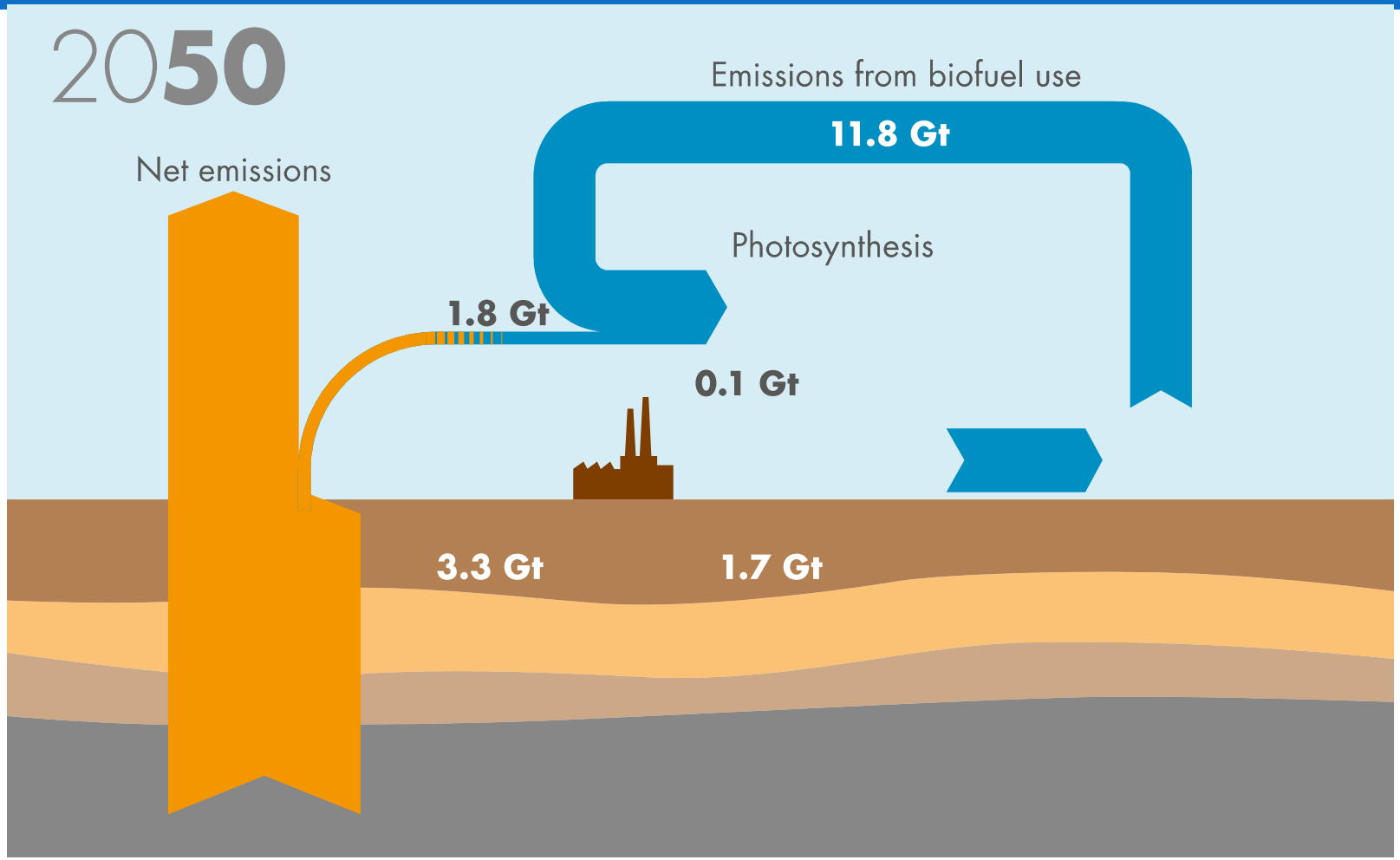
Illustration of Shell's SKY scenario by 2050



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Concluding remarks

- Need pragmatic and achievable approaches
- Can country pledges be relied upon?
- Dealing with complex societal problems
- Just saying ‘increased ambition is greatly needed and must be accelerated’ is not sufficient. It must also be realistic.
- Shell’s SKY scenario offers such a pathway
- Biggest challenges in Asia and Africa, but also our region
- Solutions need to be commercially competitive, help reduce energy costs, contribute to a better quality of life
- Reduction of carbon emissions will then be the outcome – it will not be the cause of change.

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Main sources of power in the ME

Main Source of Power in the Middle East

SAUDI ARABIA	UAE	EGYPT	QATAR	OMAN
				
60% OIL	98% LNG	75% LNG	100% LNG	97.5% LNG
KUWAIT	BAHRAIN	IRAQ	JORDAN	LEBANON
64% OIL	100% LNG	72% LNG	51% OIL	97% OIL

Sources: IEA and IRENA

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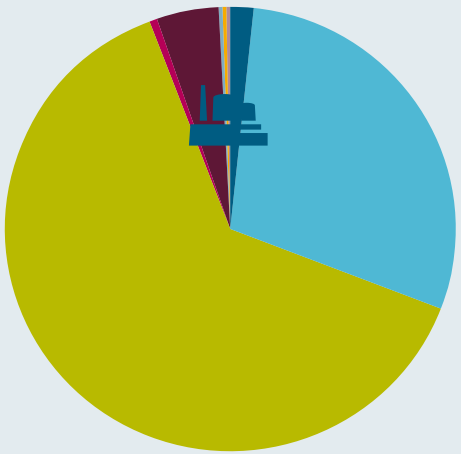
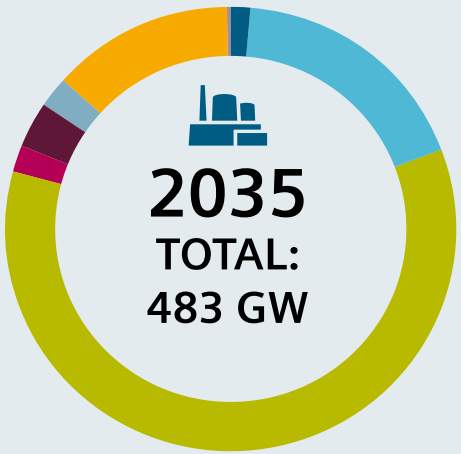
Power generation by source in the ME





as

- 16 Hydropower
- 11 Wind
- 63 Solar
- 9 Nuclear
- 0.68 Other Renewables

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