

The role of oil&gas in the energy transition era

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Contents

- Overview
- What does IPCC say
- Global warming projections
- Challenges of energy transition
- Global energy demand
- Global energy investments
- Oil & gas to the rescue?
- Measures needed

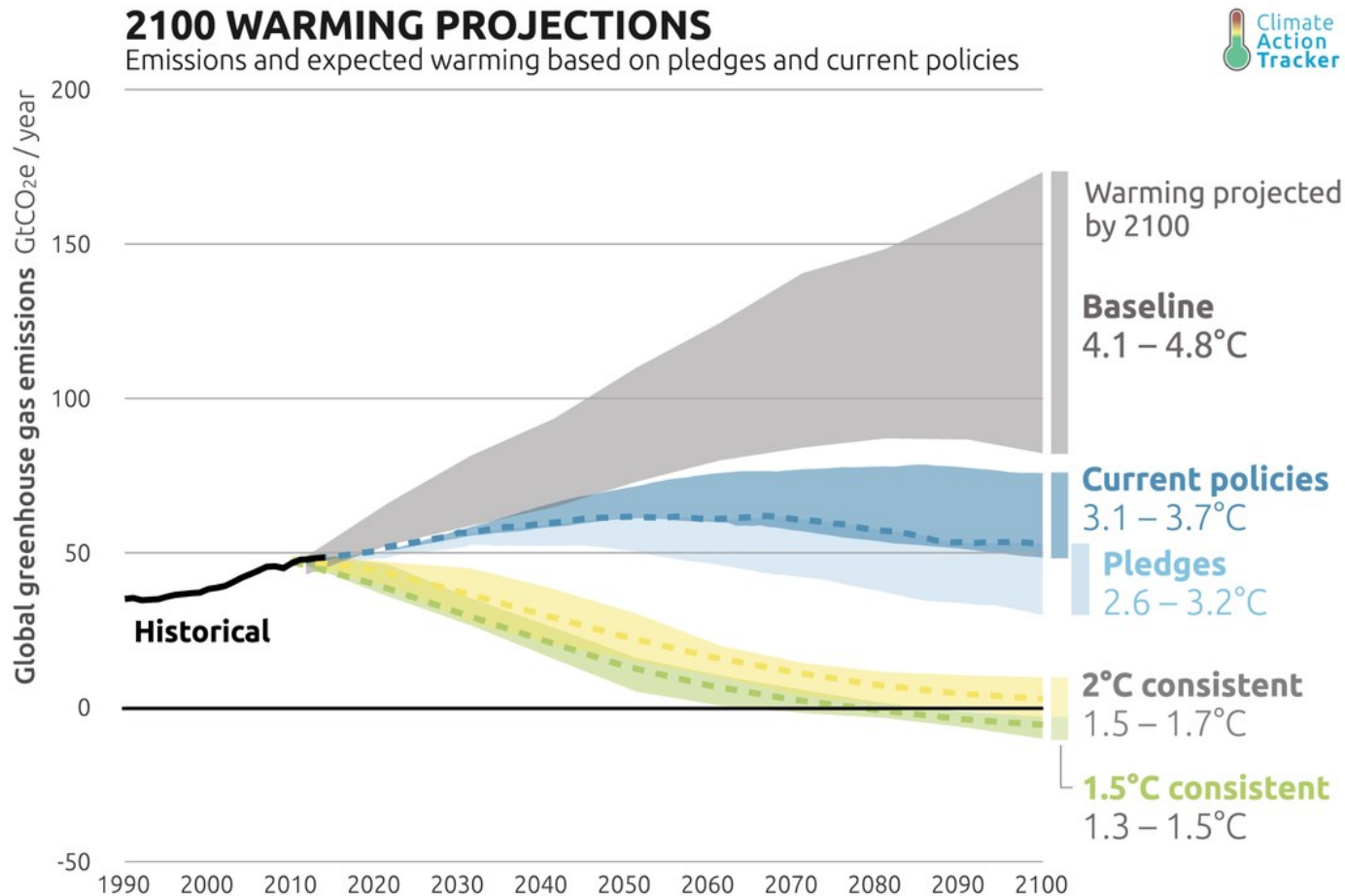
Overview

- ❑ IPCC Climate Change Report 2018 - Challenges in achieving Paris
- ❑ Need orderly, stable and affordable energy transition
- ❑ NDC-based policies will not achieve 2degC
- ❑ Need acceleration and full implementation of Paris
- ❑ Affordable energy is key
- ❑ Renewable energy technologies paving the way
- ❑ But fossil fuel industry is becoming more competitive
- ❑ 2017 was a rude awakening and so was 2018, with energy demand and emissions going up

What IPCC says

- World already seeing consequences of 1degC increase - experiencing wild weather variations
- IPCC makes recommendations on needed measures
- Must achieve net-zero emissions by 2050
- Removal of CO2 through reforestation, soil carbon sequestration, direct air carbon capture - challenging
- World must invest \$2.4tn every year in clean energy – 3% of global GDP - and stop coal power generation by 2050
- Pressure on policymakers, business and industry
- These findings are backed by UNEP

Global warming projections



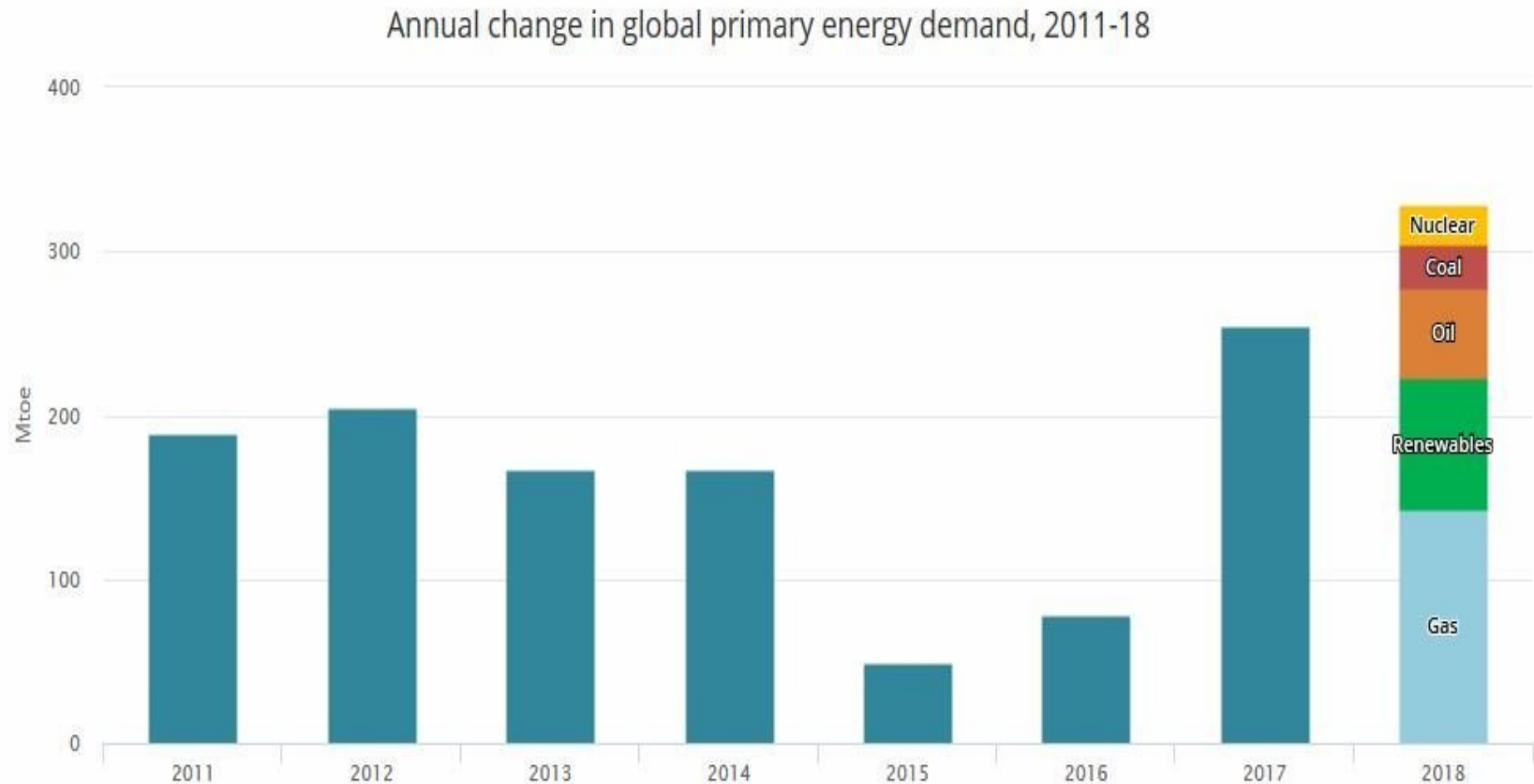
Challenges of energy transition

- The world is going through a major and permanent transition from high-carbon to low-carbon energy
- Needs to be smooth: ensuring sufficient and affordable energy – without disruption and unexpected consequences
- Current nationally determined contributions NDC-based energy transition policies will not achieve even the 2° C goal – most countries failing in their pledges
- In Asia and Africa population growth and economic drivers mean that ‘cheaper beats cleaner’ - without change, coal consumption in Asia to remain at 2012 levels even by 2040
- Fossil fuel industry not making it easier – technological improvements improve competitiveness, eg shale

Global energy demand

- Despite rapid increase in renewables, low-carbon energy has not kept up with energy demand growth - expected by BP to increase by a third by 2040. It increased by 2.3% in 2018, with emissions up 1.7%
- Renewables provided only 25% of this increase - gas 45%, oil 16%, coal 7% and nuclear 7%
- Global electricity demand increased by 4% - with fossil fuels 55%, solar+wind only 26.5%, hydro 13%, other 5.5%
- Renewable growth is not keeping pace with increase in electricity and global primary energy demand
- World energy demand growth still highly dependent on oil and gas – coal demand still growing

Increase in global primary energy demand



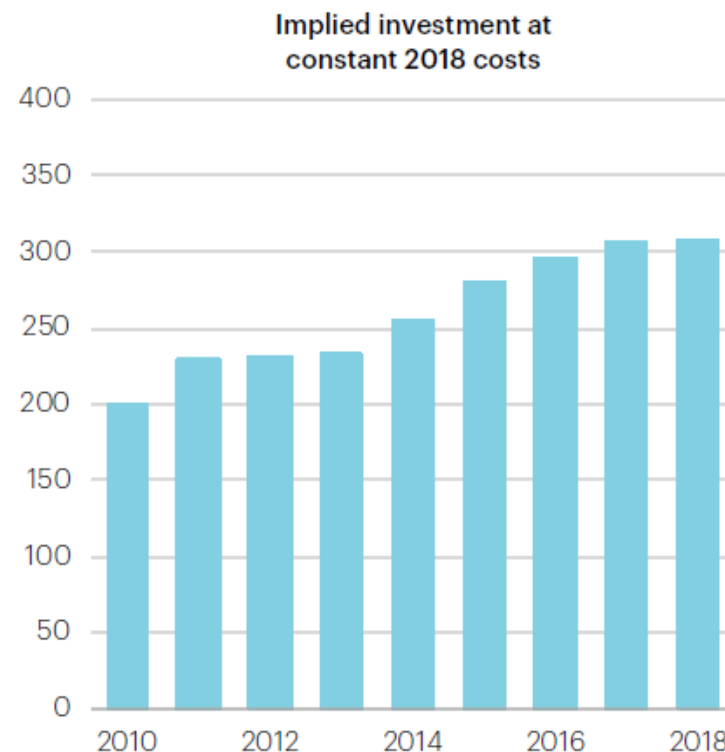
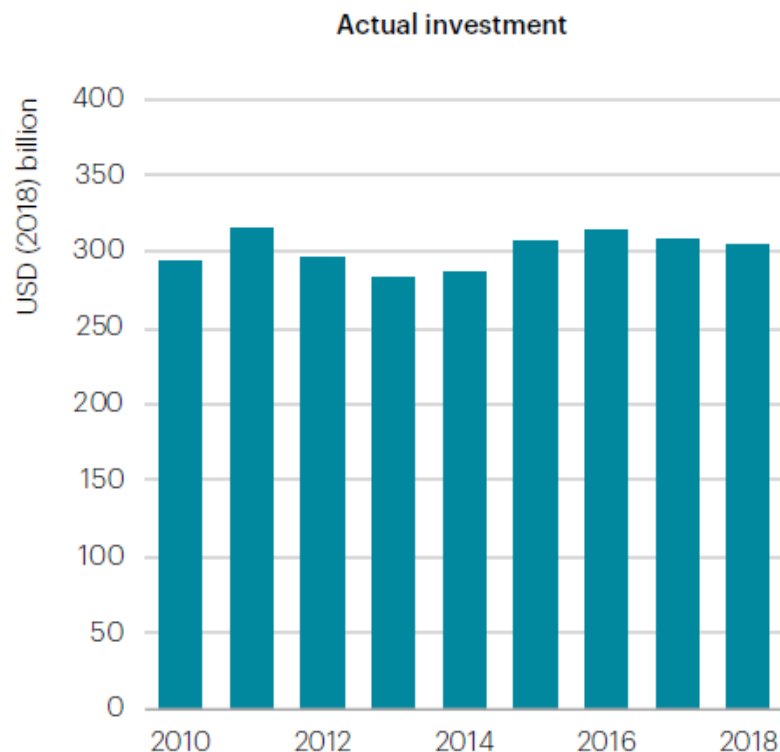
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Global energy investments

- According to IEA, after 3 years of decline global energy investments stabilised at \$1.85tn – of these 42% were in oil & gas supply, 18% in renewables, 7% on coal
- Investments in renewables and energy efficiency slowed down in 2016 and 2017 and stalled in 2018
- Also new renewable capacity added in 2018 was the same as in 2017, making it the first time since 2001 that annual new installations failed to increase from the previous year
- Output from low-carbon power investment is not keeping pace with demand
- Strong dependence of global primary energy consumption on fossil fuels carries on largely unchanged and unabated

Investment in renewable power in 2018

Investment in renewable power – actual spend vs implied investment at constant 2018 cost levels



Oil & gas to the rescue?

- According to IEA a more than doubling of renewable and energy efficiency spending is needed to deliver Paris goals
- But IEA warns that “Compared to 2015 when the Paris climate agreement was signed, the appetite to push low carbon investments and policies is slowly fading”
- Energy investments now face unprecedented uncertainties, with shifts in markets, policies and technologies
- In the meanwhile spending on oil & gas is going up, making up for the mismatch in clean energy investment and future global energy needs – expected to increase by a third by 2040

Measures needed

- Clearly the world is not investing enough in cleaner energy technologies to change course
- R&D spending far short of what is needed – need massive increase to develop new technologies required to combat climate change – responsibility lies with governments
- The IEA warns that low-carbon investment would need to grow 250% by 2030 in comparison to now
- Governments need to act quickly to provide the required policy regimes to correct this situation and bring energy transition back on track
- What is needed to bring energy transition back on track is strong policy and government leadership - globally