

World Energy Outlook 2017

**Scenario research
at the IEA**

Dr. Christophe McGlade

- **WEO analysis is conducted using three core scenarios:**
 - *Where do existing policies take us (“Current Policies Scenario”)?*
 - *What is the impact of announced policies (“New Policies Scenario”)?*
 - *What is required for the energy sector to achieve sustainability goals (“Sustainable Development Scenario”)?*
- **New Sustainable Development Scenario builds on the key energy-related components of the UN Sustainable Development agenda:**
 - *Universal access to modern energy by 2030*
 - *Urgent action to tackle climate change*
 - *Measures to improve poor air quality (both indoor and outdoor)*

■ **Faster Transition Scenario**

- *Faster reduction in emissions towards “net zero” CO₂ emissions in 2060*

■ **Low Oil Price Case**

- *First constructed in WEO-2015 but updated in WEO-2017*

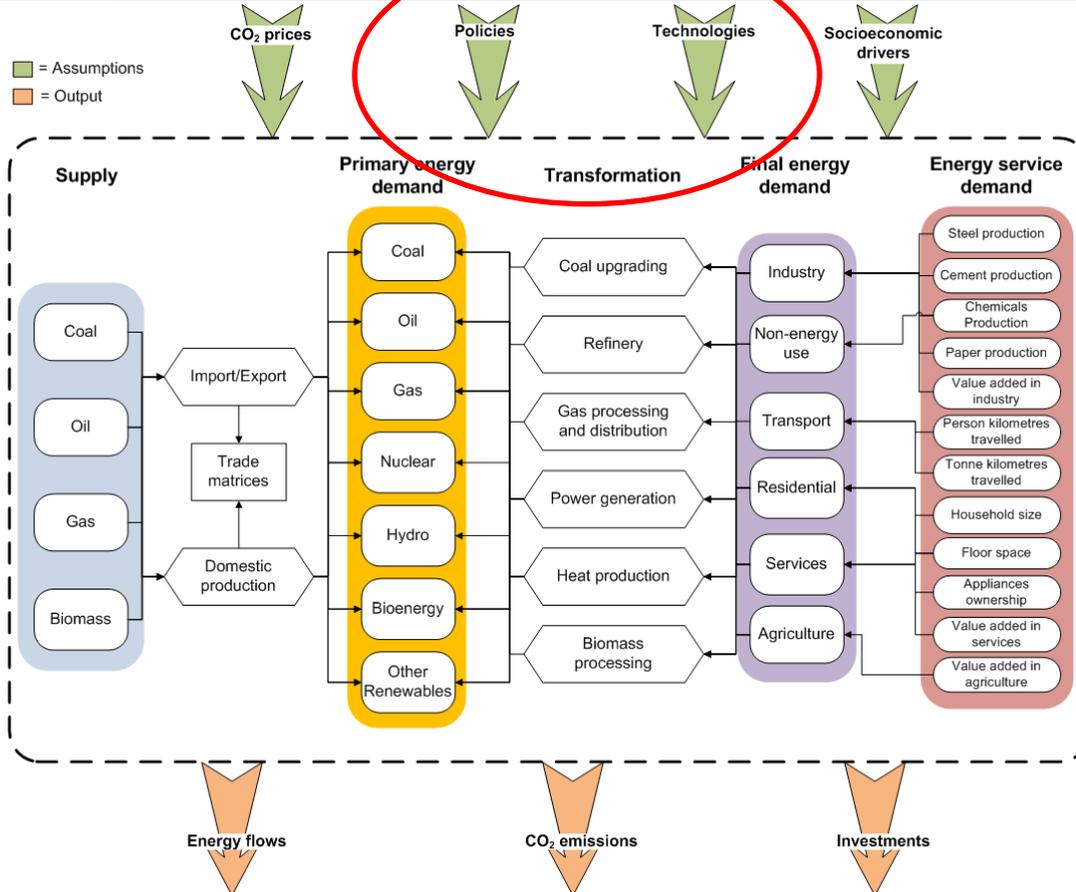
■ **Energy for All Case**

- *Universal modern energy within context of the New Policies Scenario*

■ **Disjointed Transition Case**

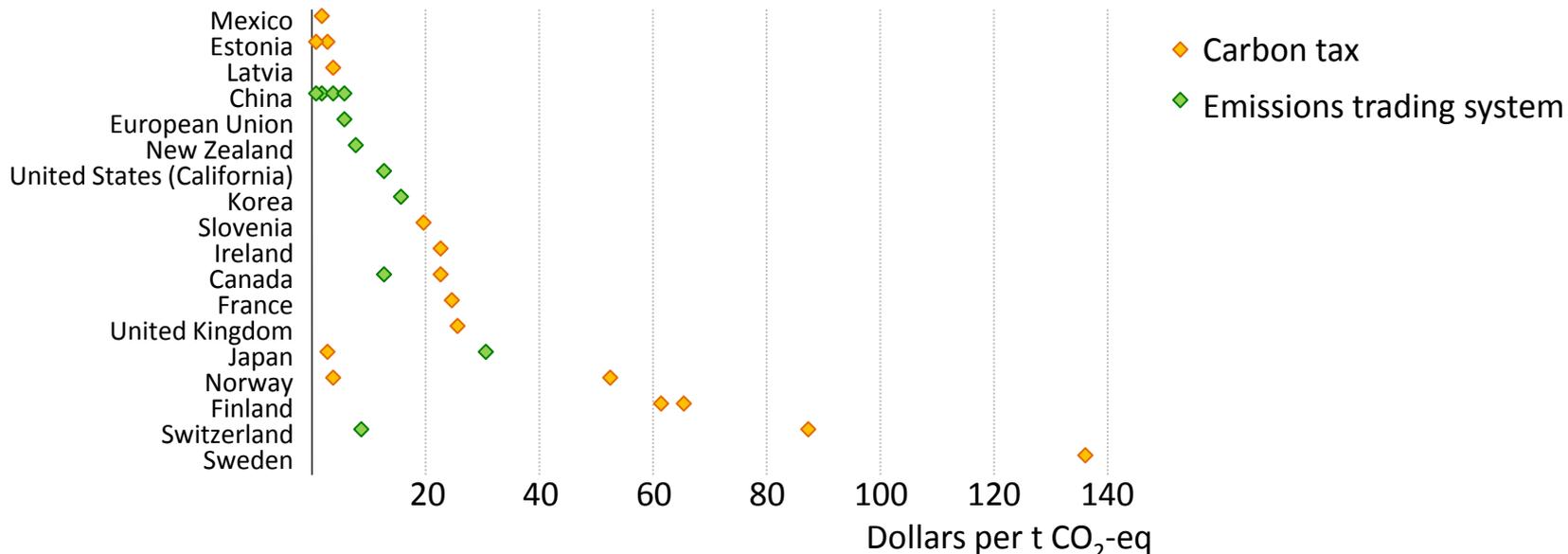
- *Explore the impact of an unforeseen abrupt policy change on investments*

Key assumptions for scenarios



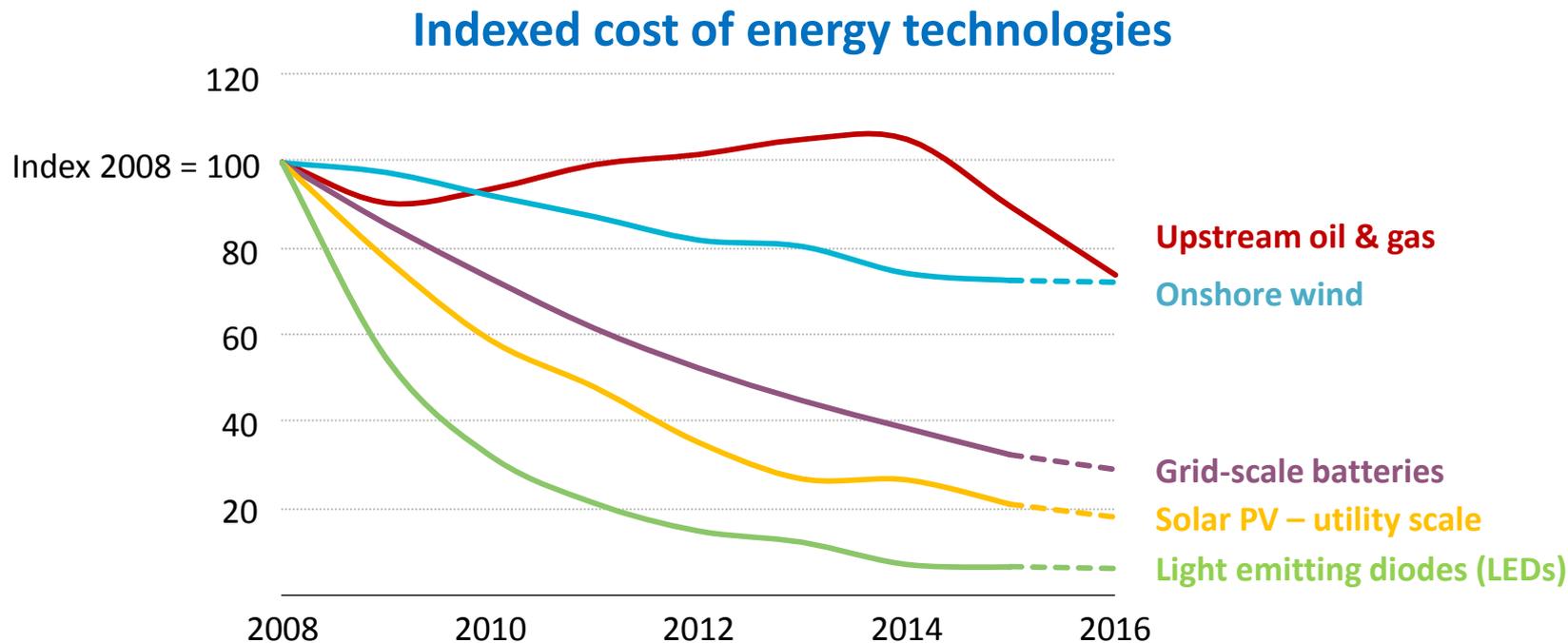
Key assumption: energy and climate policies

Selected carbon pricing schemes in place as of mid-2016



***Countries put a wide range of prices on carbon
in different parts of the energy sector***

Key assumption: Future technology costs



The falling cost of clean energies opens new opportunities; how these evolve in the future will have profound implications for inter-fuel competition and prices

What to consider when choosing scenarios

- **What was the original purpose of the scenario and are the outputs suitable to be used for the new purpose?**
- **Are the assumptions and the modelling framework consistent, rigorous and transparent?**
- **Is there a proper representation of all key dynamics and variables that can affect?**
- **Is there a broad range of scenarios that can be used to compare outcomes?**

What long-term scenarios can struggle to capture

- **Major technology breakthroughs and shifts:**

- *(In the past) Hydraulic fracturing; (In the future) Nuclear fusion?*

- **Market volatility and disequilibria in energy markets**

- *Important for short-term dynamics but not modelled over long-term*

- **Geopolitical events**

- *E.g. Instability in Middle East; breakdown in globalisation*

- **Behavioural change**

- *E.g. Intergenerational changes; shift away from vehicle ownership*

- **Positive feedback mechanisms and spillovers**

- **Extreme outcomes**