

CCS - indispensable for reaching climate targets

We need practical local solutions.. and everything

COP 23 6th Nov 2017
Charles Soothill Vice Chair ZEP

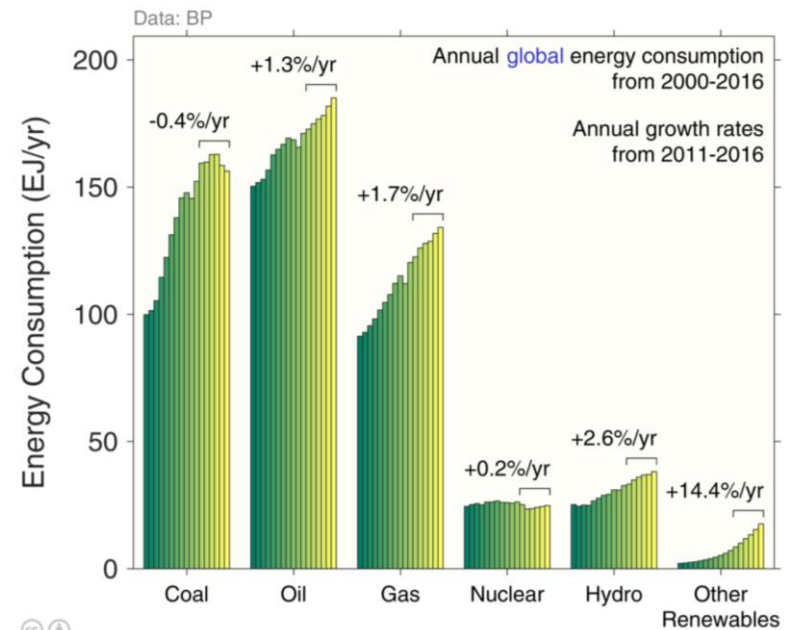


WWF also use the BP data

- Is it obvious that we need to tackle all emissions?
- Worldwide: coal, oil and gas use each grew faster than solar and wind over last 16 years
- The equipment installed will last 25years+
- 2050 is not far away?
- To meet targets we must reduce emissions as they are....



Erneuerbare sind im Vormarsch

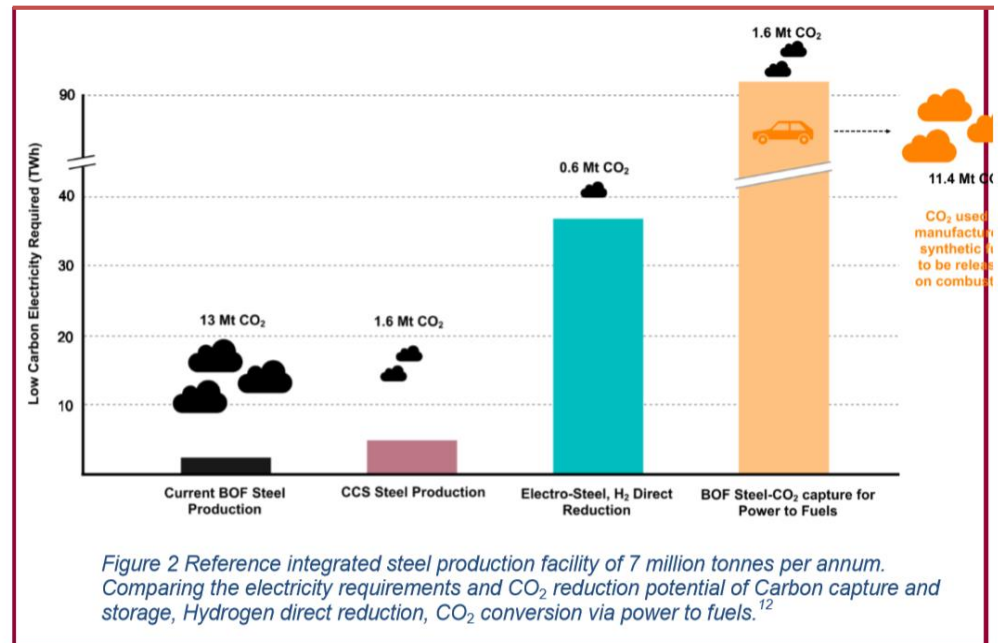


CC BY
Global Carbon Project

Source: [BP 2017](#), [Jackson et al 2015](#), [Global Carbon Budget 2016](#)

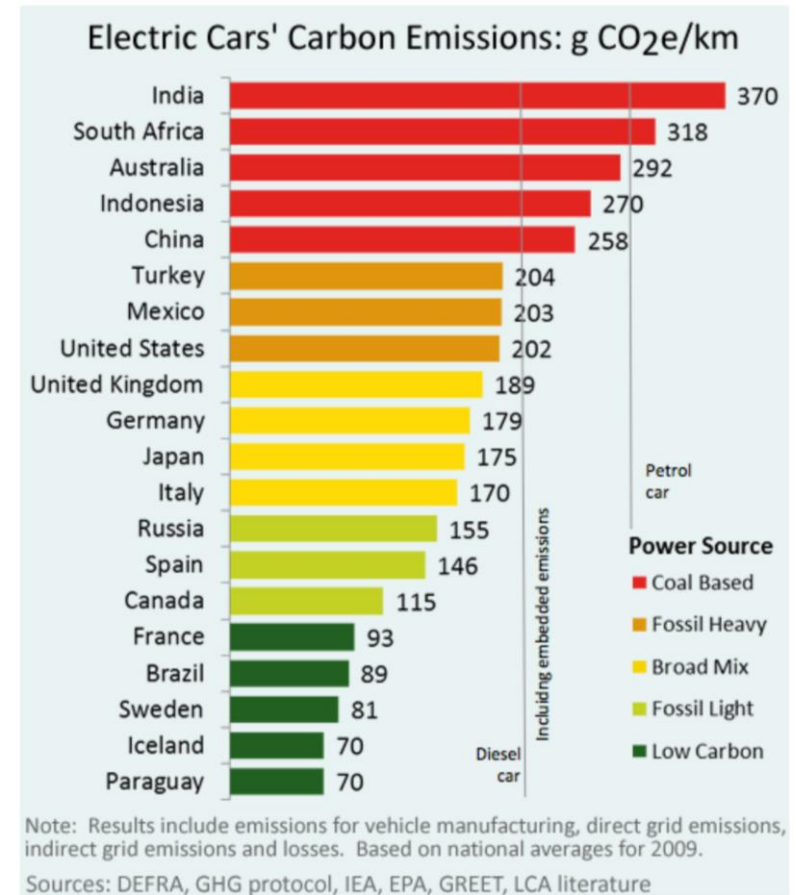
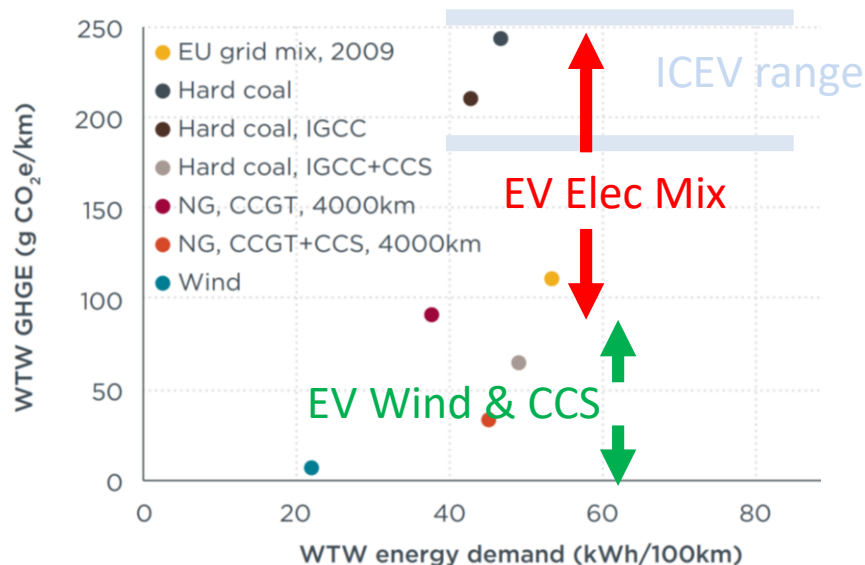
Steel Production needs CCS

- ZEP study shows CCS can reduce CO₂ from Steel by >1:8
- Additional electricity is modest 2:1
- CCS is logical choice
- Steel industry jobs at risk
- Steel needs CCS

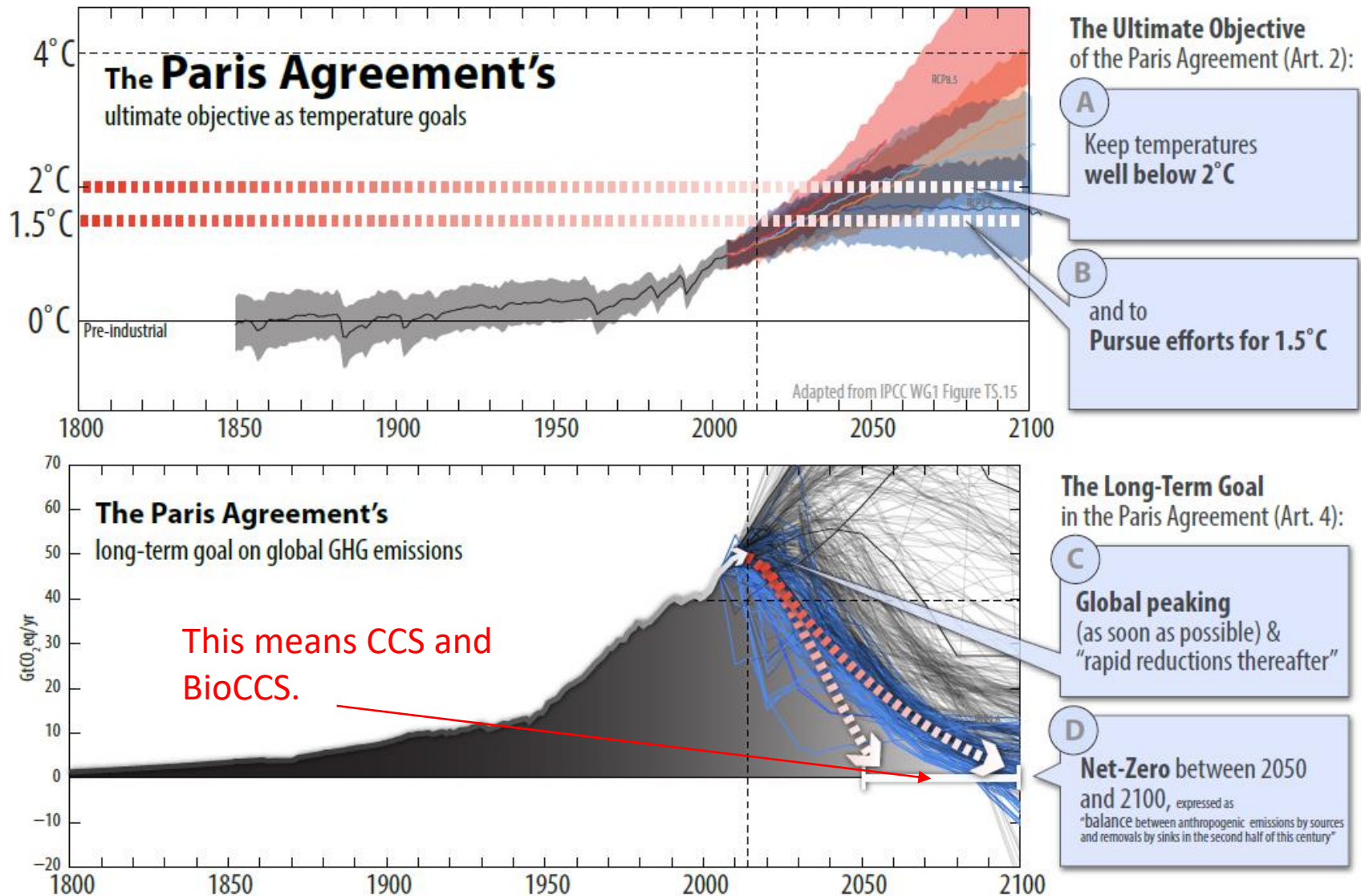


Transportation needs CCS

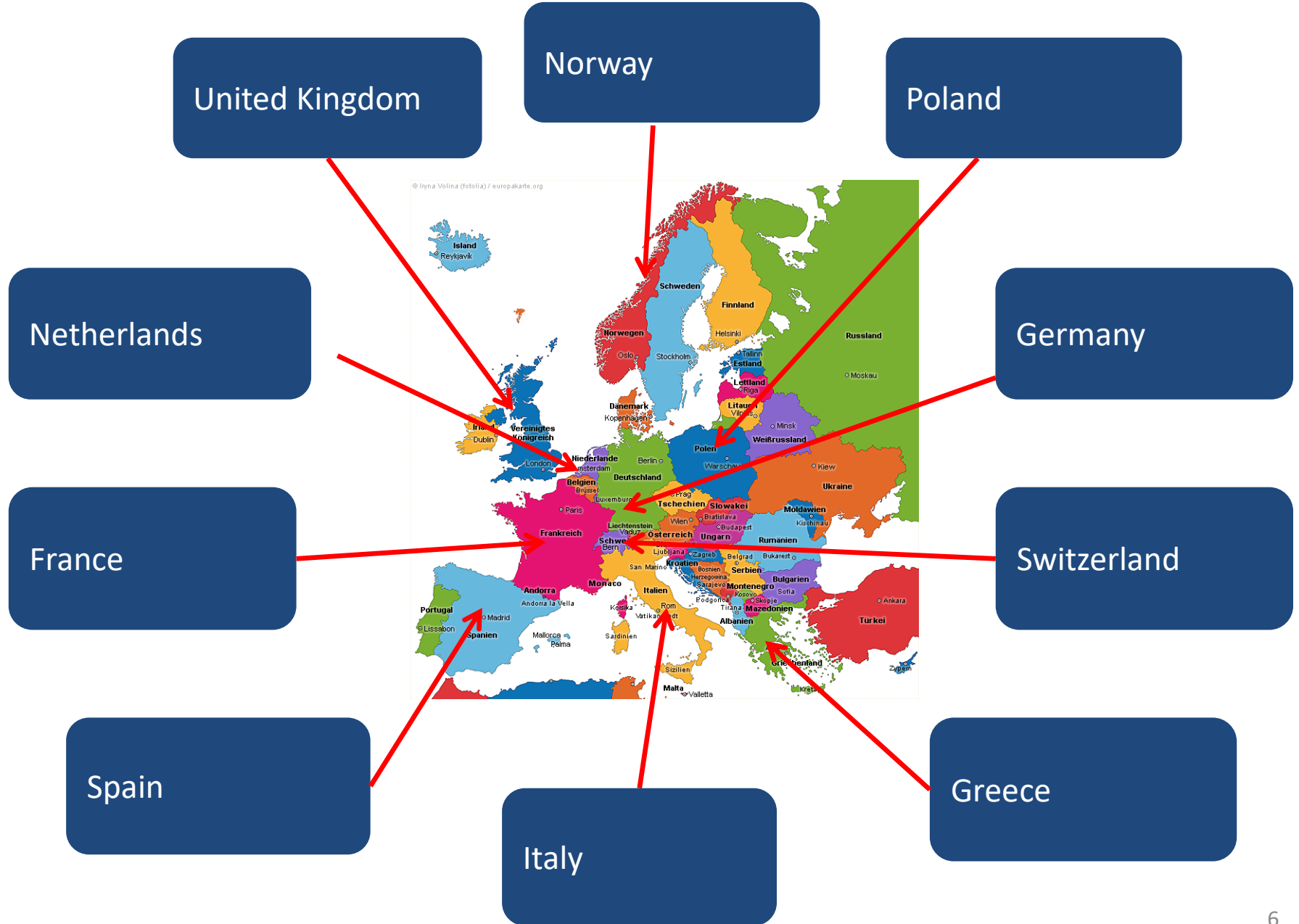
- Use of electric vehicles is increasing
- But 30 to 50% increase in electricity need
- Electricity mix determines CO₂/km
- CCS can help deliver till 2050..



Modelling Energy Systems to reach Paris

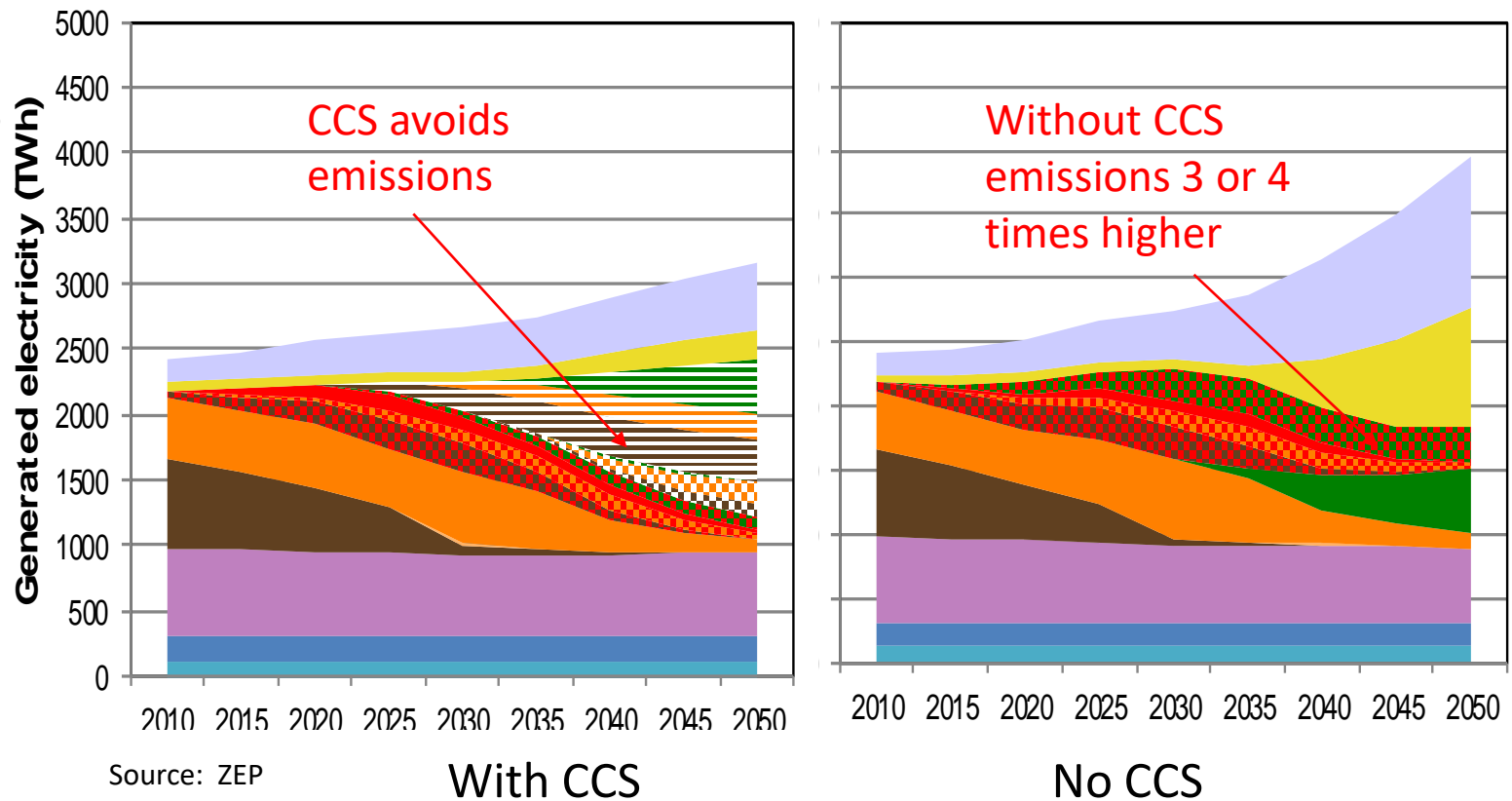


The 10 countries Modelled

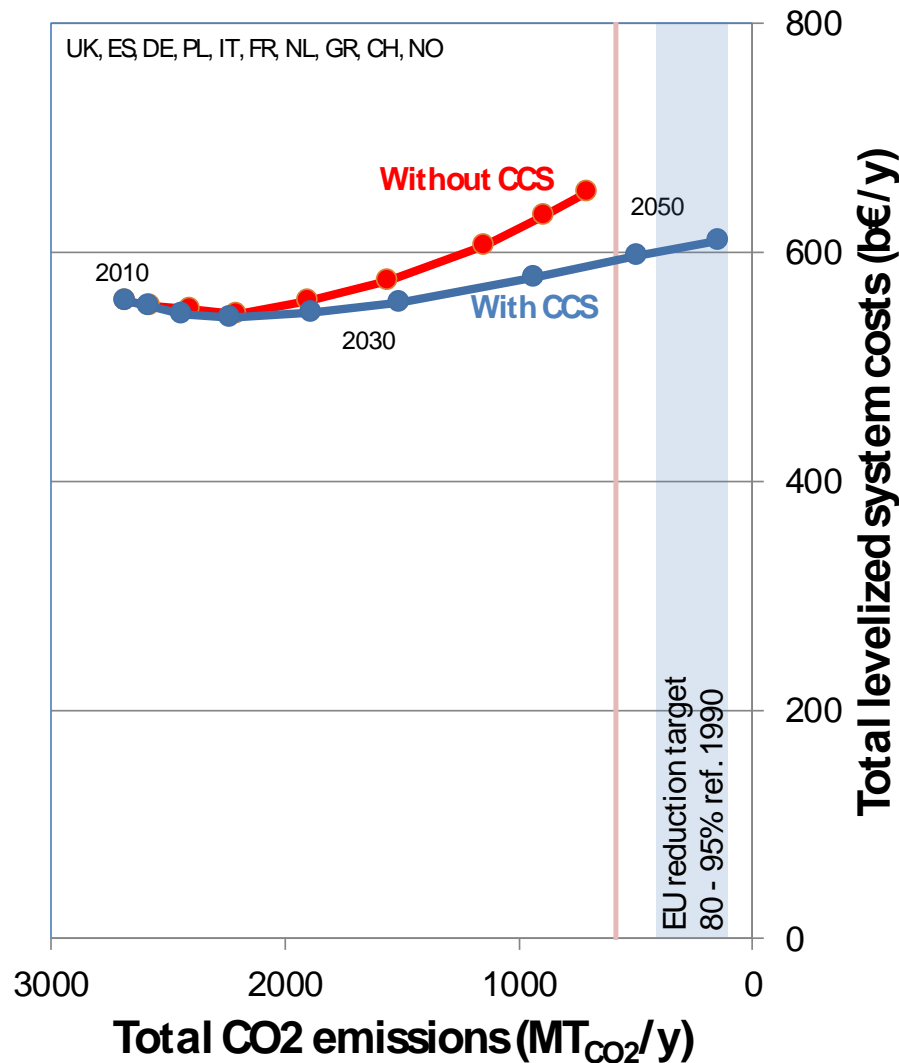


Electricity Generation in 10 countries

- Model chooses dispatchable power to better integrate Solar and Wind
- With CCS the backup power does not emit CO₂
- Wind and Solar capacity factors increased with CCS
- Growth in demand for electricity for Transport and Heat achieved



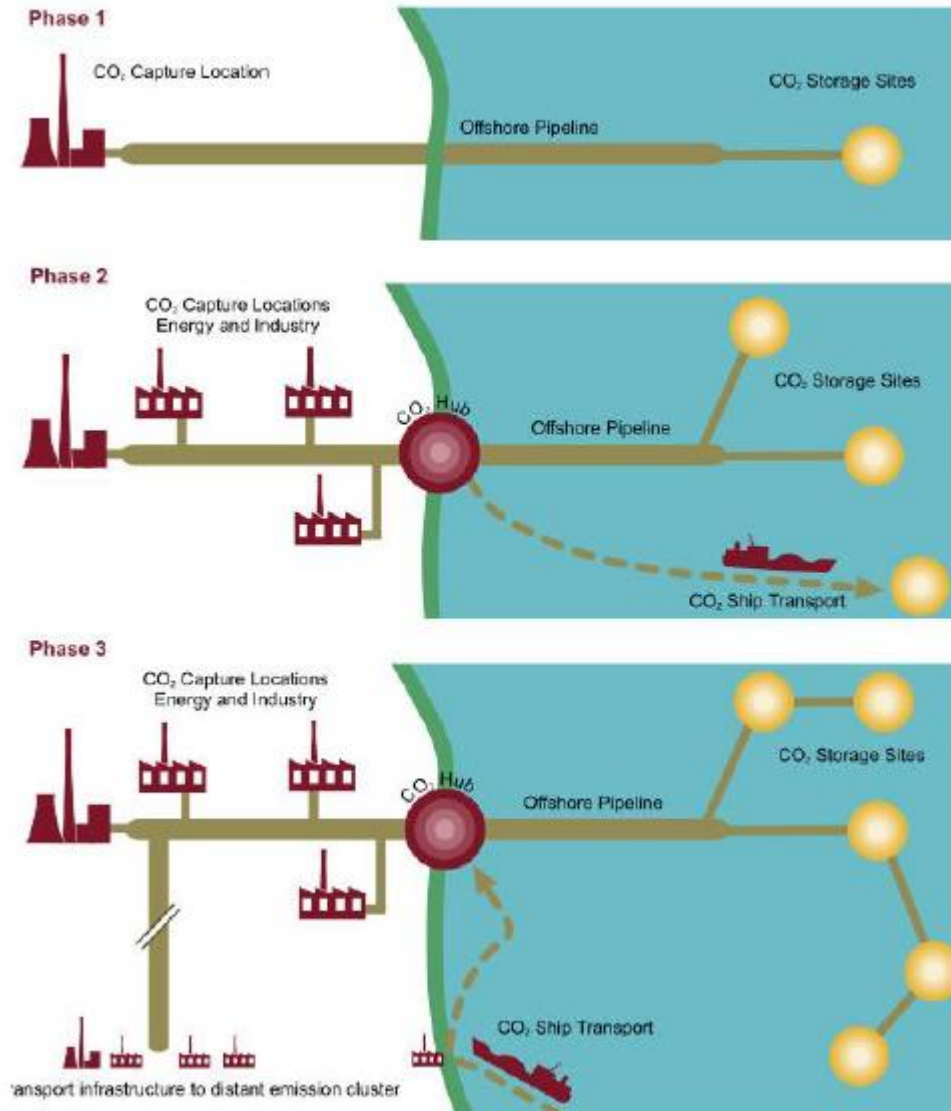
Cost benefit for emissions reduction in 10 countries



Source: ZEP

- **95% emission reduction 1.5c can only be achieved with CCS**
- Without CCS emissions 3-4 times higher in 2050
- **Savings 1 Trillion Euro till 2050 for EU**
- The more you want to reduce emissions the stronger the business case for CCS
- **Early investment in CO₂ hubs and clusters has strong business case**

Making these reductions happen – hubs & clusters



Source: ZEP

- Clusters & storage hubs reduce costs and risks for industry to connect
- Sized to accommodate local industrial emitters and their connection when possible
- EU funds for infrastructure, innovation and modernisation

Conclusions

- Urgent - 2050 targets are only achievable, with CCS (&everything)
- Lower cost – saves EU 1 Trillion Euros, to 2050
- Transport, Industry and above all Heat needs more Electricity
- Jobs in Energy Intensive Industries rely on CCS
- Solutions will be regional and vary..
- Like trains and water systems - Requires Infrastructure
- Strong Business case for countries to invest in Hubs/Clusters
- If countries want to meet the Paris Targets we should invest in CCS for:

Cost, Renewables Integration, Industrial jobs, Energy Security..
.. And we wont get there otherwise