High Efficiency, Low Emissions Coal-fired Power Generation

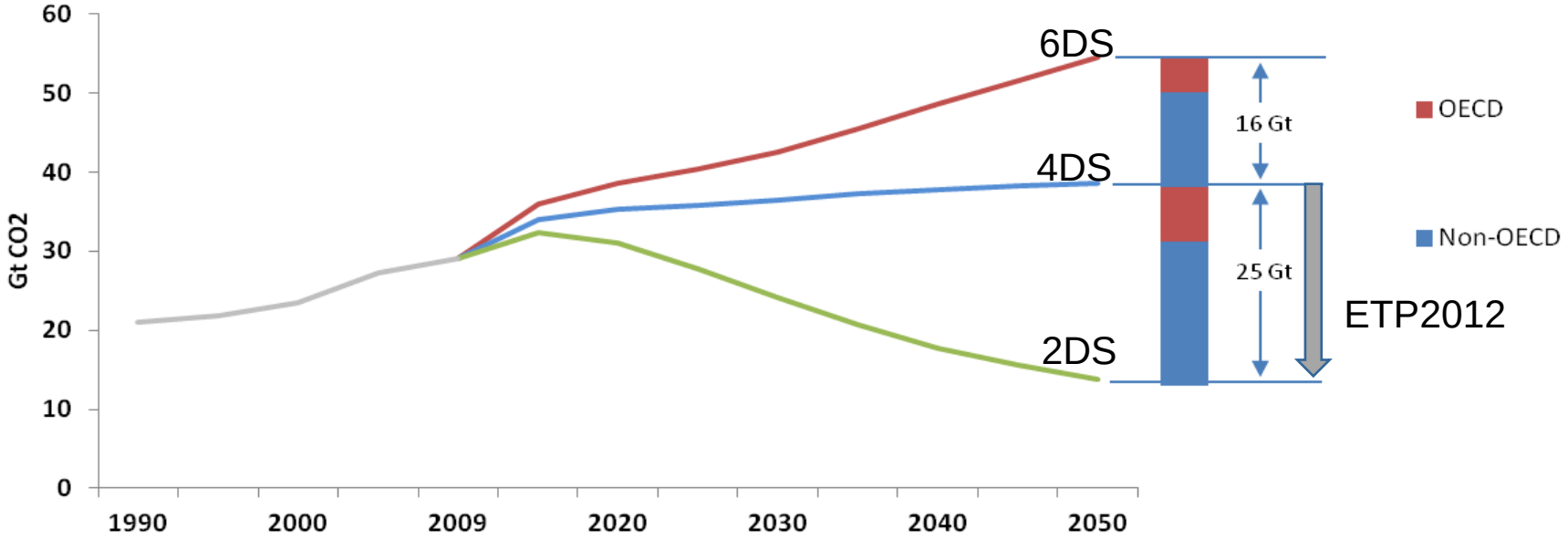
Upcoming IEA Technology Roadmap

Moscow, June 4, 2012

Ellina Levina
International Energy Agency

Goal: To keep global temperature increase to 2C by 2050

- Achieving the 2DS will require contributions from all sectors.
- What does it mean for coal power generation?



6DS ; Current trends continue. No new policies.

4DS ; Accelerated energy efficiency.

2DS ; A scenario to be achieved.

DS: Degree Scenario

To achieve 2DS is a big challenge for coal

- Halving coal consumption from current level is needed to achieving the 2DS.
- However, near-term projection of coal consumption is close to 6DS.

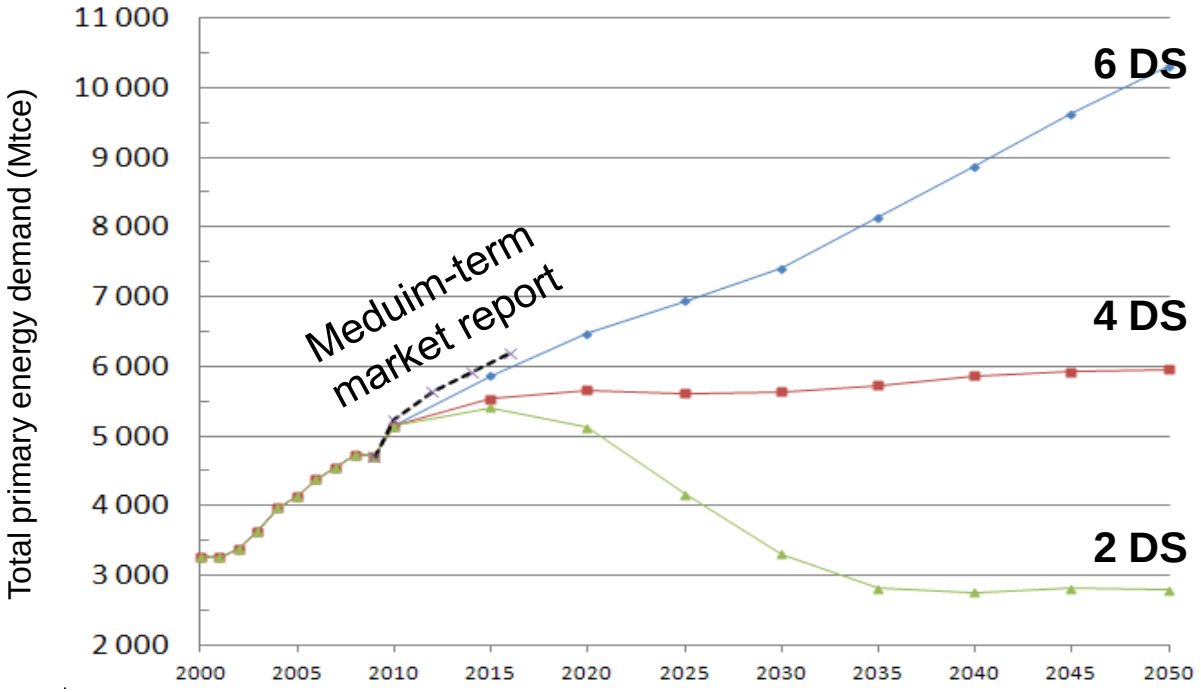


Fig. Total primary energy demand for coal (Mtce)

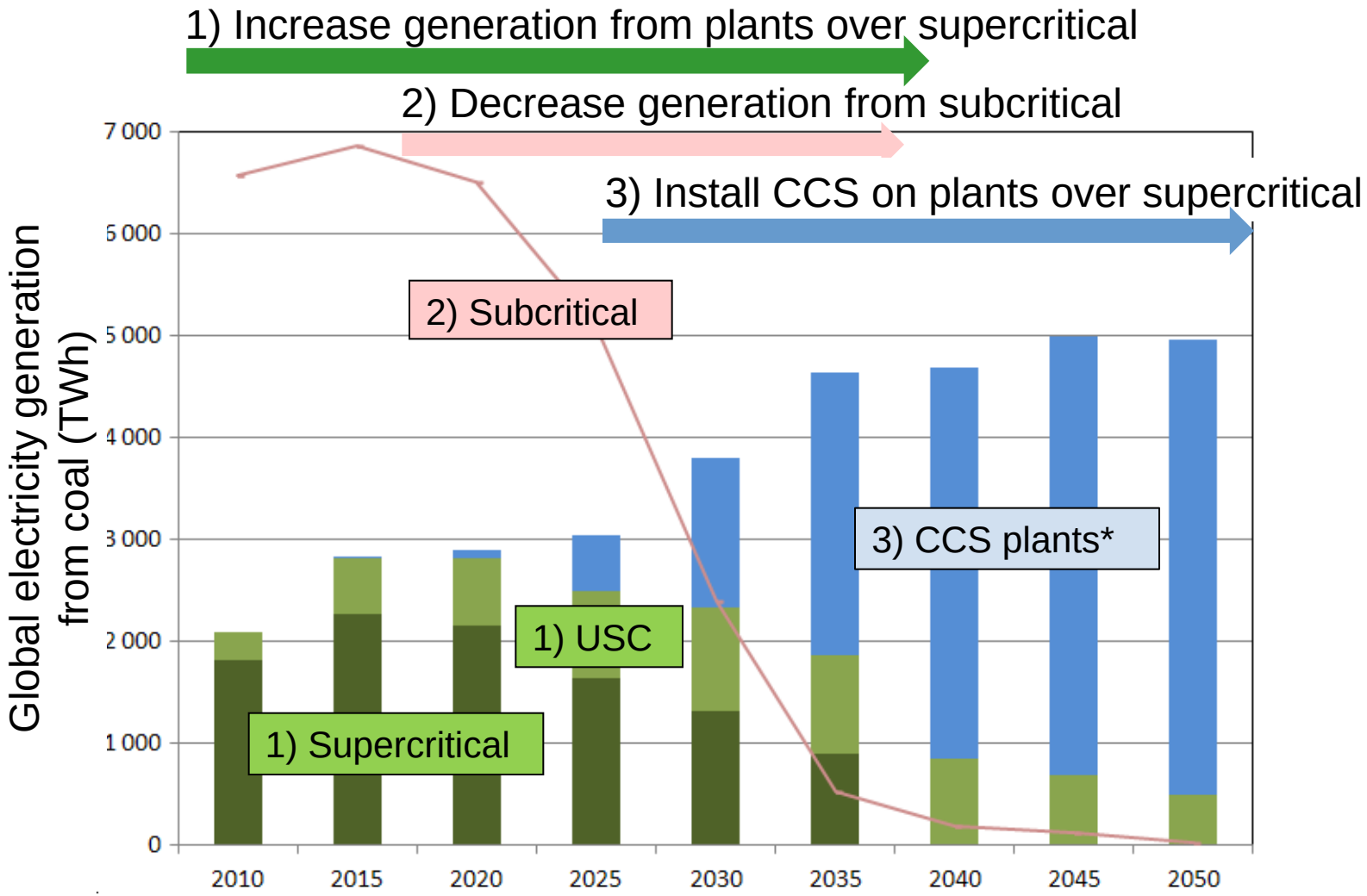
Targets and Actions

- **8 Gt reduction in CO_2 emissions is required from coal power generation by 2050**

- ***Reduction of electricity demand*** from coal by 40% by 2050 - about 3800TWh.
- This corresponds to 3.8Gt of CO_2 emissions reduction (CO_2 emissions is estimated based on the current average level of CO_2 intensity factor in coal-fired power plants (1000gCO_2 /kWh)
- Additional 4 Gt of CO_2 reductions is needed through efficiency improvement and CCS
- ***Efficiency improvements*** can lead to about 1Gt of CO_2 emission reductions and can be achieved by
  - Reducing electricity from inefficient coal-fired plants,
  - Deploying higher efficient plants over supercritical
- ***CCS*** will have to deliver around 3Gt of CO_2 emission reduction in 2050

Raise efficiency, then deploy CCS

- CO_2 abatement in 2DS can be achieved by following steps;



*Note; CCS plants are operated under supercritical steam conditions or better in 2DS.