



CCS: Moving Forward at Pace?

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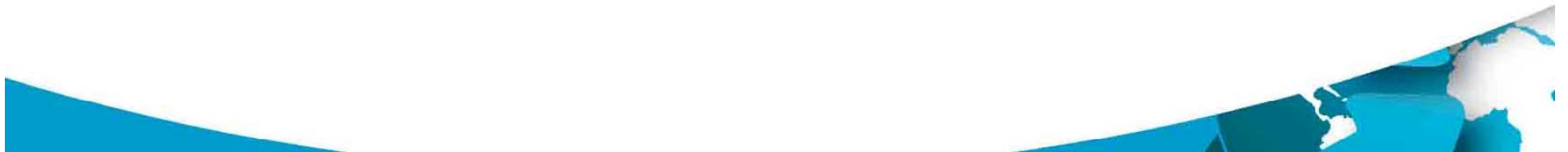
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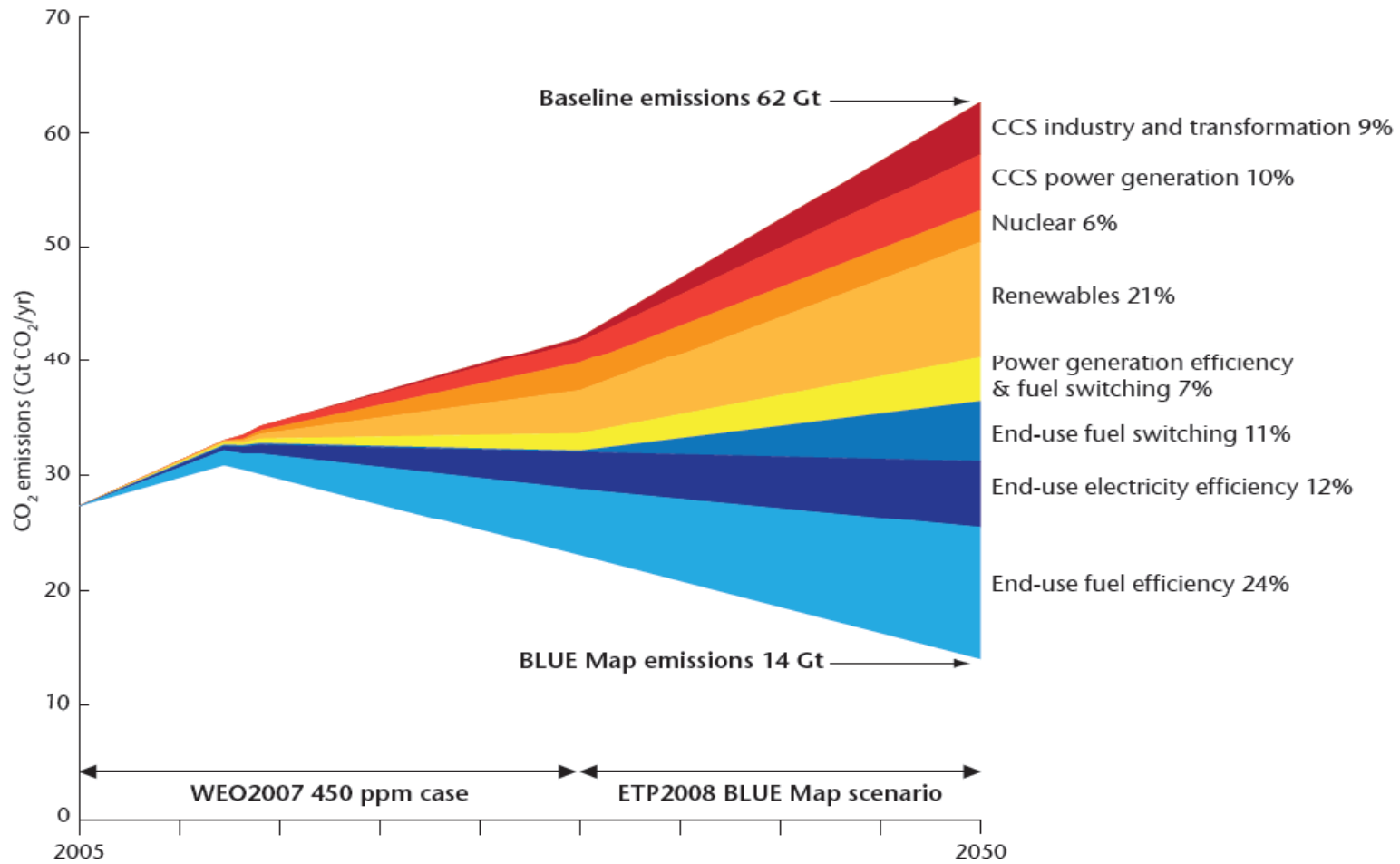
Introduction



- A lot of scepticism that CCS is losing its way
- Are we on track and more importantly what track are we on?
- Are any of the other low carbon options faring any better?
- What must happen next?



The Low Carbon Options



Source: IEA

Where are the other options today?



- Energy efficiency
 - Big strides in industry over the decade
 - China has improved its coal fleet efficiency
 - Average coal consumption per kwh dropped 15%
 - Domestic sector lagging behind
- Nuclear
 - Limited number of suppliers
 - Big Cost over runs on current project in Finland
 - Uncertainty over safety/waste storage
 - **Before Fukushima**



Where are the other options today?



- Renewables – want a level playing field?
 - Financial subsidies to stimulate market uptake?
 - Cost competitive?
 - Do costs include:
 - » Grid strengthening?
 - » Balancing supply?
 - Don't have full public support
 - Local opposition in many cases
 - Internal market competition between renewable options
 - **Good PR job**



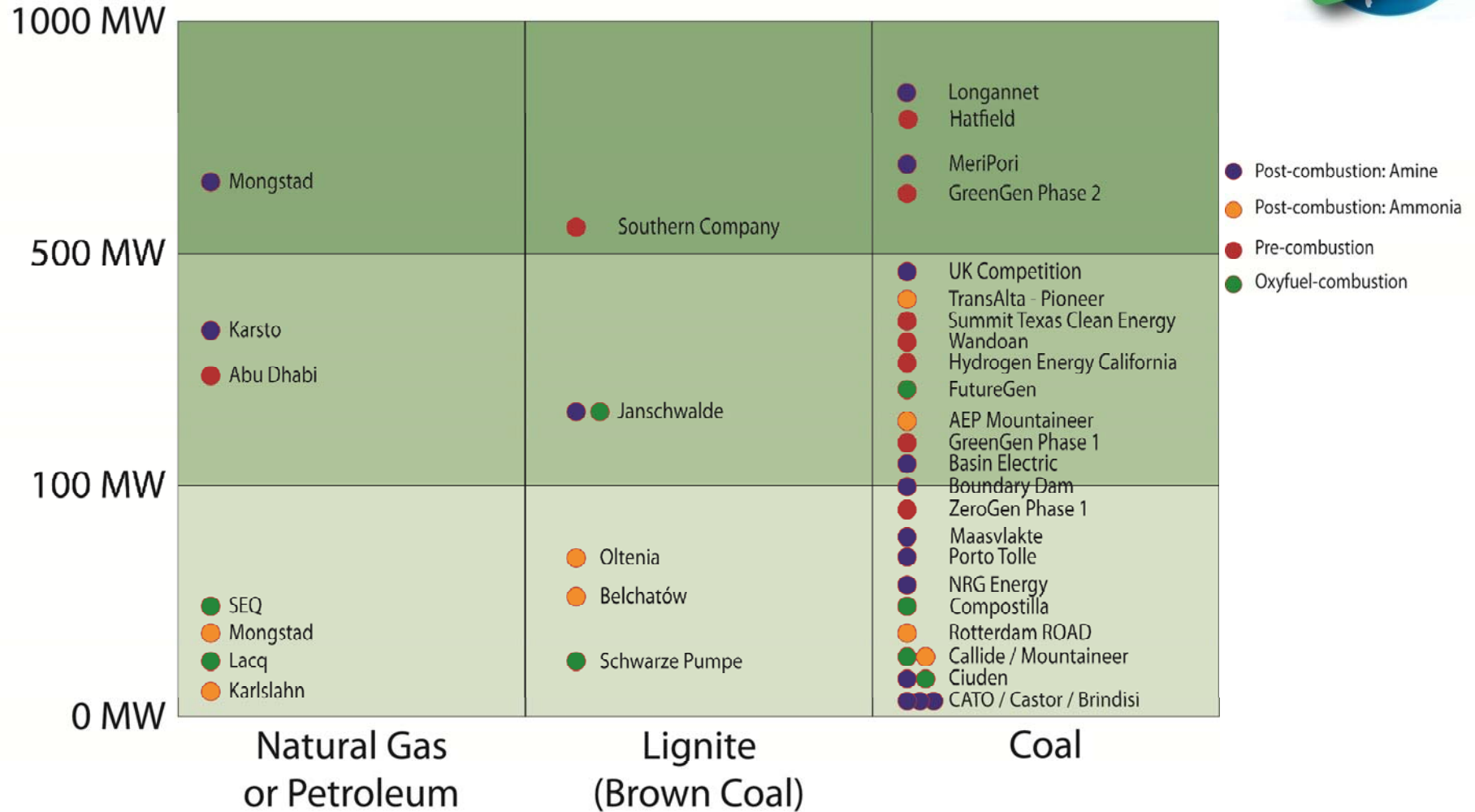


CCS status

- Major changes in international treaties in a relatively short period of time
 - Even movement on CCS in the CDM
- Regulations now in place or under development in many regions/countries
- CCS Industry is not divided but working closely together and speaking with one voice
- Economic downturn has not in all cases restricted demonstrations
 - Not all countries as committed
- Demonstration projects planned in USA, Canada, Europe (UK) and Australia



Projects Table (Dec 2010)



Why have some projects failed?



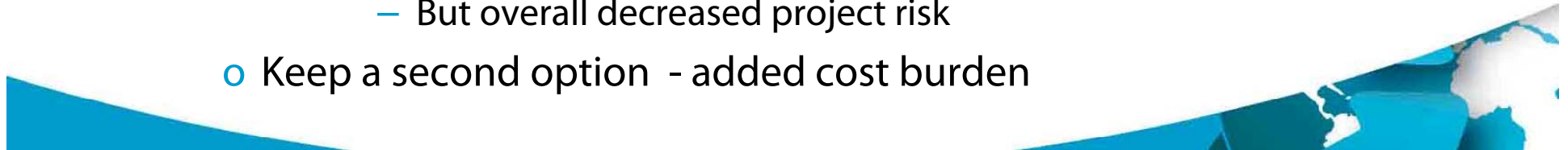
- Regulatory uncertainty – in early days
- Investor uncertainty
 - Overcome by Government support for demonstrations
 - Additional support; ETS and EOR price
 - Remains for post demonstration deployment
- Storage resource
 - Availability of suitable local geological resource
 - The “Achilles heel” for CCS
- Stakeholder resistance
 - Perceived or real
 - Affecting Government thinking & creating uncertainty



Are we giving ourselves a chance?



- Are targets too tight to allow successful project delivery?
 - Feedback from ZeroGen project in Australia
 - To meet Government targets for funding had to following three planning tracks in parallel
 - Storage path failed due to lack of suitable storage resource
 - Whole project failed
 - Advice:
 - Stagger planning
 - » Start storage exploration early
 - Upfront cost with high risk
 - Longer project leads times (6-12 years)
 - But overall decreased project risk
 - Keep a second option - added cost burden



So what track are we on?



- EU Track
- G8 Track
- IEA CCS Roadmap
- 12 Demos by 2015
- 20 Demos by 2020
- 100 projects by 2020
- YES?
- YES?
- NO



CCS not winning public hearts and minds



- Latest Euro barometer survey (364, May 2011)
key results
 - Only one in ten (10%) said they had heard of CCS and knew what it was
 - In the 6 countries where there is a major EU co-financed CCS project, 88% had not heard of the project
 - 85% would be worried about CCS technology if an underground storage site for CO₂ were to be located within 5km of their home.
 - Respondents liked renewables but least popular were nuclear and coal as energy sources



Communication is Key



- More effort through the media to make people aware of CCS and its benefits
 - Clearly not doing enough
- Storage containment/safety is of concern to the public
 - Have data from R,D& D projects and we need to improve how we communicate what we know
- The CCS Community needs to get out more !!!



CCS is not just about coal!



- Coal will continue to dominate as the fuel for power generation
 - Generation back bone countries like China and India
- Non conventional gas discoveries are changing expectations for natural gas supply
 - WEO 2010 indicates 250yrs of recoverable gas reserves
- Increasing interest in natural gas fired plant with CCS
- Bio CCS
 - Potential for negative emissions - no ETS allowances
 - Global technical potential - 10 Gt CO₂ eq/yr
 - Needs stable sustainable supply of biomass





Summary

- CCS has moved forward quickly
- As we near demonstration there will be a natural (frustrating!!) lull
- Take the opportunity in that time
 - To address the outstanding issues
 - Communication to the public
 - Safety/storage integrity
 - Make plans for wider implementation
- Then we will have a new “golden era” as results flow from the demo projects





Thank you

Enjoy the seminar!!

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