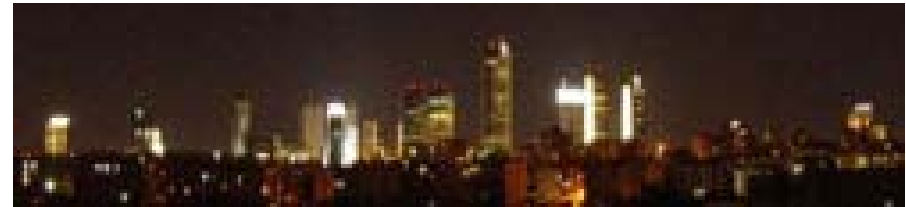


Workshop on Mitigation Potentials, Comparability of Efforts and Sectoral Approaches

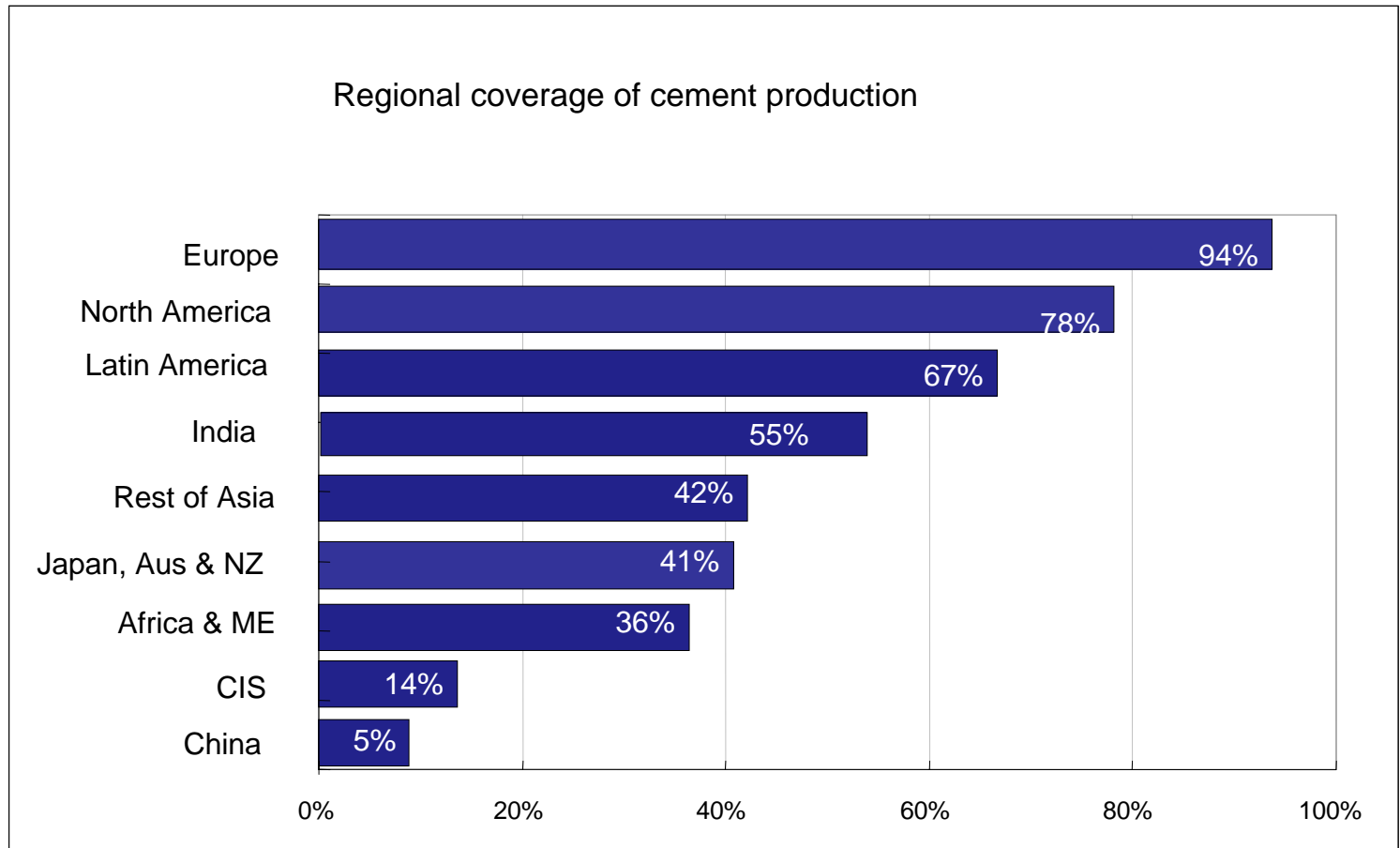
Managing CO₂ emissions in the Cement Sector: Understanding policy choices



A member-led program of the
World Business Council For
Sustainable Development

Patrick Verhagen, Holcim
Bonn, Germany, March 24-25, 2009

CSI 2005-2006 Average Coverage: 800 million tons cement



Sectoral Approach - What is it?

A combination of policies and measures, developed to enhance efficient sector-by-sector greenhouse gas mitigation, addressing data, policy, technology, and capacity building within each sector.

- Specific policies and measures ‘tuned’ to sector.
- Emission goals could differ depending on national ambition, common but differentiated responsibilities.
 - Cap and trade in some countries,
 - Emissions efficiency in others,
 - Best technology mandates in others, etc.
- Involves major producers and key countries covering minimum of 80% of production for sector.



Our main policy scenarios:

Scope of international commitment post Kyoto

8 world regions

Europe
Japan/Aus/NZ
North America
CIS
China
Asia excl China
Latin America
Africa/Middle East

	No commitments	Europe cap only	Annex I caps	Global goals	Sectoral approach	Global caps
Europe	No commitments	Absolute CO ₂ targets	Absolute CO ₂ targets	Emissions efficiency goals	Absolute CO ₂ targets	Absolute CO ₂ targets
Japan/Aus/NZ	No commitments	No commitments	Absolute CO ₂ targets	Emissions efficiency goals	Absolute CO ₂ targets	Absolute CO ₂ targets
North America	No commitments	No commitments	Absolute CO ₂ targets	Emissions efficiency goals	Absolute CO ₂ targets	Absolute CO ₂ targets
CIS	No commitments	No commitments	Absolute CO ₂ targets	Emissions efficiency goals	Absolute CO ₂ targets	Absolute CO ₂ targets
China	No commitments	No commitments	No commitments	Emissions efficiency goals	Emissions efficiency goals	Absolute CO ₂ targets
Asia excl China	No commitments	No commitments	No commitments	Emissions efficiency goals	Emissions efficiency goals	Absolute CO ₂ targets
Latin America	No commitments	No commitments	No commitments	Emissions efficiency goals	Emissions efficiency goals	Absolute CO ₂ targets
Africa/Middle East	No commitments	No commitments	No commitments	Emissions efficiency goals	Emissions efficiency goals	Absolute CO ₂ targets

Absolute CO₂ targets 

Emissions efficiency goals 

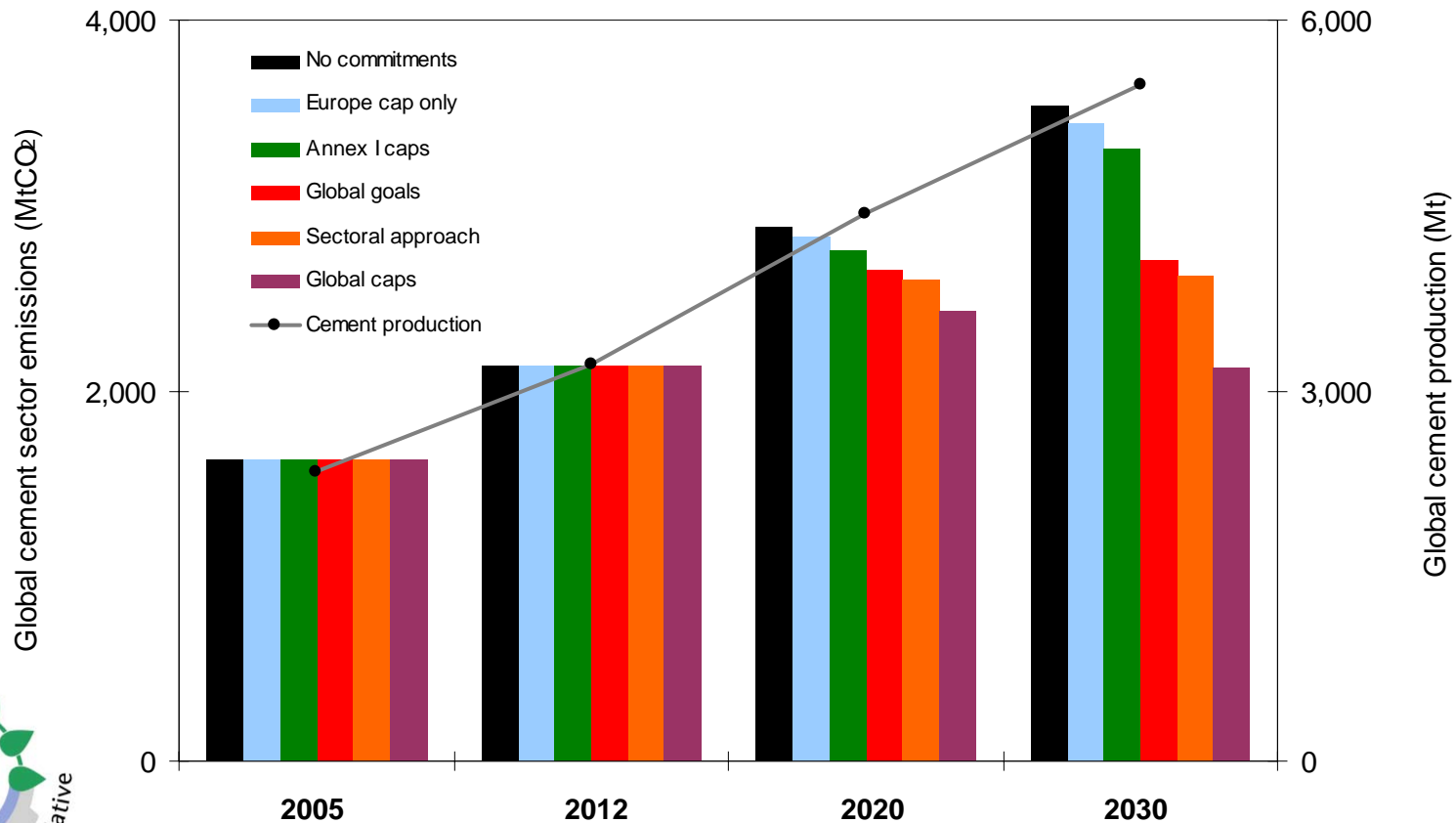
No commitments 

Scenarios involve different mixes of carbon prices, mitigation options, national or regional carbon policies and commitments, etc.



Comparison of scenario outputs: CO₂ emissions projections

- Emissions increase in all cases from 2005-2030
- Impacts occur late in the scenarios, if at all
- Only 'Global caps' 'Global goals' & 'Sectoral approach' show impact



Peer reviewed by IEA, LBNL and RITE



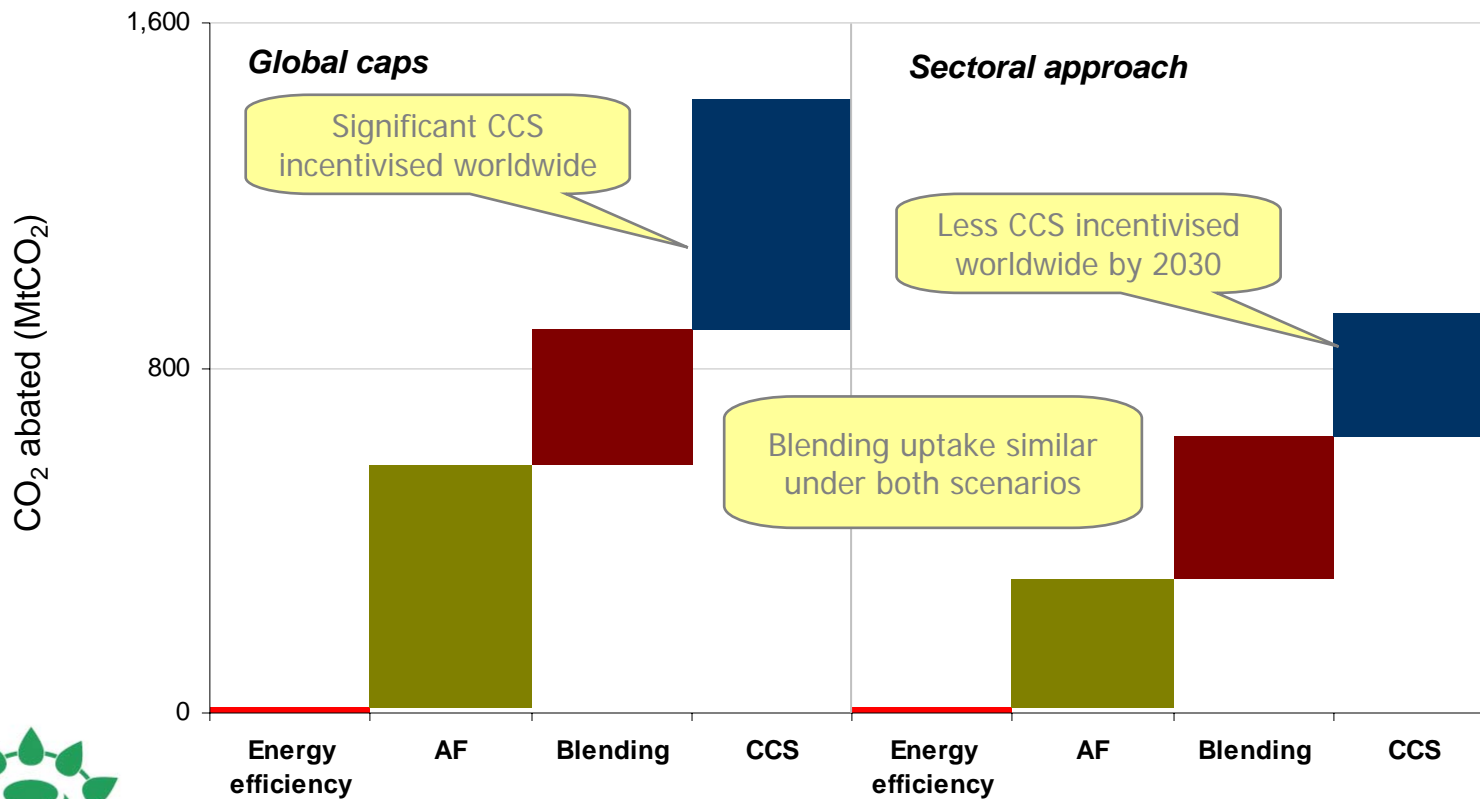
Levers for CO₂ Reductions

1. Energy Efficiency – small impact; new plants already highly energy efficient.
2. Alternative fuels – biomass and waste materials.
3. Blended cements – using substitutes for clinker.
4. Carbon Capture and Storage – not yet ready.

Business has good control of 1. Use of 2 & 3 depend heavily on national appropriate policies and practices. CCS requires funding for development, demonstration, and deployment.



Abatement options used (MtCO₂ abated) in 2030



Quantities shown are relative to the “no-commitments” baseline scenario in 2030



Key conclusions from Model Studies

1. Greater worldwide sector CO₂ abatement is possible under scenarios involving non-Annex I actions;
2. Only 'Global caps' 'Global Goals' and 'Sectoral approach' show real impact, from 2020; Sectoral approach seems most practical;
3. Cement-sector specific technology and CCS can make a difference:
 - Alternative fuels and clinker substitutes are two levers to manage emissions cost-effectively; More widespread use requires national political actions.
 - With current production technology, CCS is needed to achieve absolute reductions.
 - CCS implementation not yet ready for application.
 - The extent of CCS deployment is key to the CO₂ savings potential.



4. Abatement potential varies by region:
 - Blending and AF materials have uneven geographic distributions.
 - cement demand growth varies regionally.
 - Absolute and relative abatement potential will therefore vary.
 - Application of common goals (and/or absolute caps) does not seem feasible.

5. Risk of (trade and CO₂) leakage exists in cases where emissions in one region are capped, and uncapped in others:
 - Leakage impacts can be managed via:
 - Allowance allocation methodology choices,
 - Border Carbon Adjustments (BCAs),
 - Export tariffs.
 - Such measures may be necessary to allow capped regions to preserve domestic production while taking aggressive abatement actions.



Sectors - CSI Current Understanding

A sectoral approach to GhG management must:

- Be set within the UNFCCC, compatible with existing and future mechanisms (e.g. ETS, CDM/JI);
- Include key developed and developing economies;
- Use simple metrics and methodologies;
- Use verified emissions data to track compliance;
- Once established, be mandatory. Government involvement is needed to enforce agreed sectoral targets and efficiency goals;
- Provide a mechanism to review/adjust goals over time;

Enhance new technology development.



Summary: CSI Sectoral Approach

- CSI has developed a Sectoral Approach supported by 4 key features:
 - **Data:** via a common measurement protocol and a global cement energy and emissions database (MRV);
 - **Policy:** via policy modelling studies;
 - **Technology needs:** via Roadmap process with International Energy Agency;
 - **Capacity Building:** via technology and CO₂ measurement workshops.
- Most practical approach to engage business and key economies in mitigation action.
- Ability to move more quickly with a lesser number of parties.



www.wbcsdcement.org

www.wbcsdcement.org

➤ global issues

www.wbcsdcement.org

➤ thoughtful engagement

www.wbcsdcement.org

➤ responsible voluntary action

www.wbcsdcement.org

www.wbcsdcement.org

Thank you for your attention.



Annexes



CSI Participants (with headquarters country)

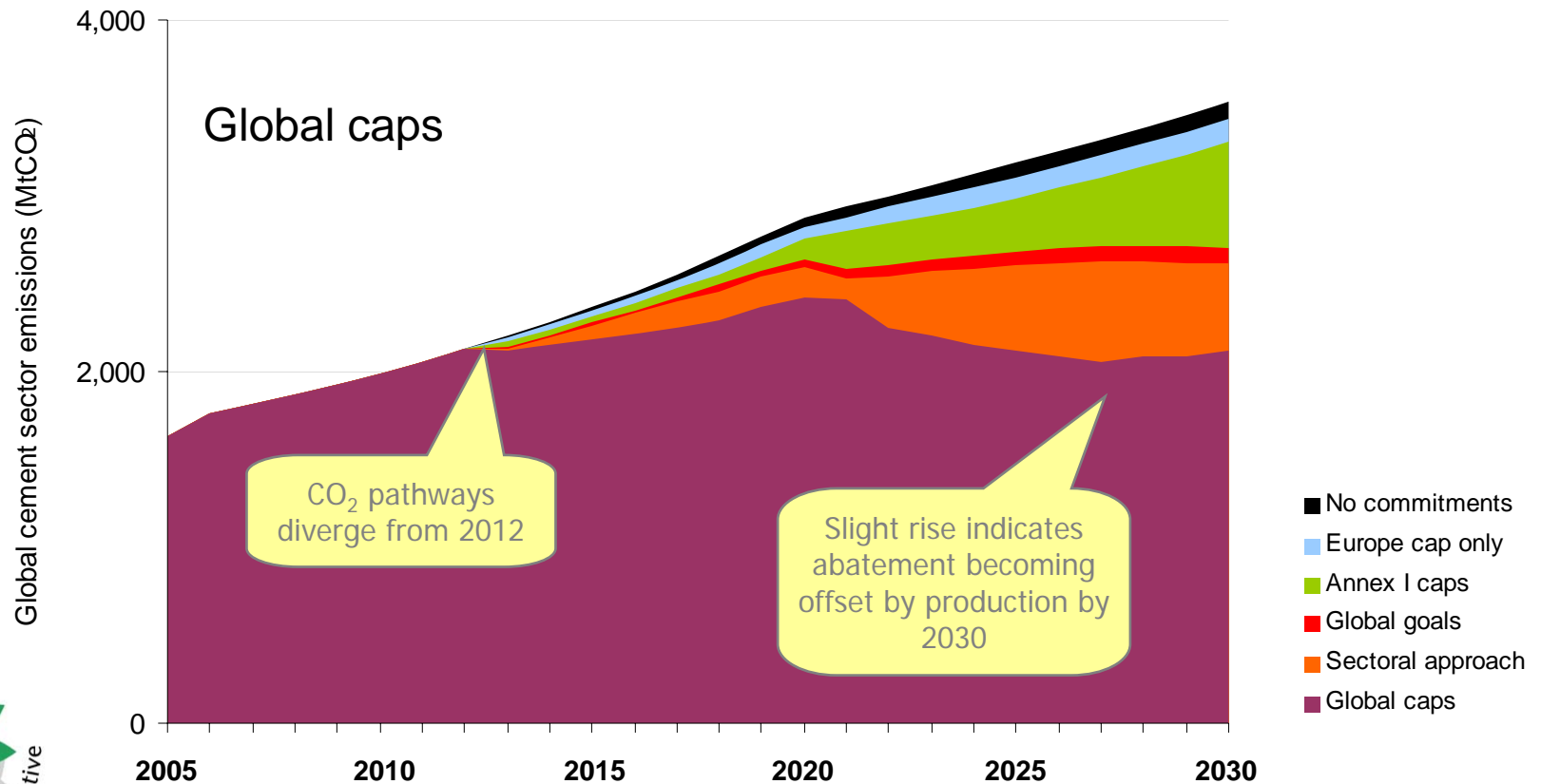
- Ash Grove Cement (USA)
- Camargo Correa (Brazil)
- CEMEX (Mexico)
- Cementos Molins (Spain)
- Cimentos Liz (Brazil)
- Cimpor (Portugal)
- CRH (Ireland)
- Grasim Cement (India)
- HeidelbergCement (Germany)
- Holcim (Switzerland)
- Italcementi (Italy)
- Lafarge (France)
- SCG (Thailand)
- SECIL (Portugal)
- Shree Cement (India)
- Taiheiyo (Japan)
- Titan (Greece)
- Votorantim (Brazil)



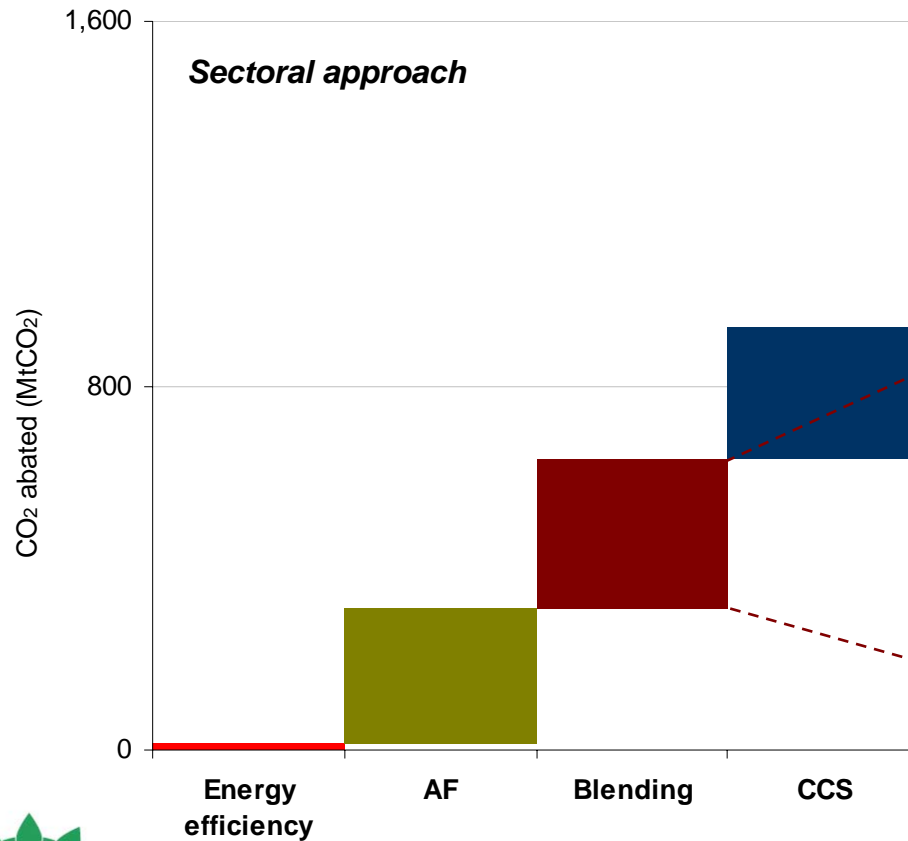
Collectively, participants have operations in more than 70 countries

Comparison of scenarios: tonnes of CO₂ reduced globally

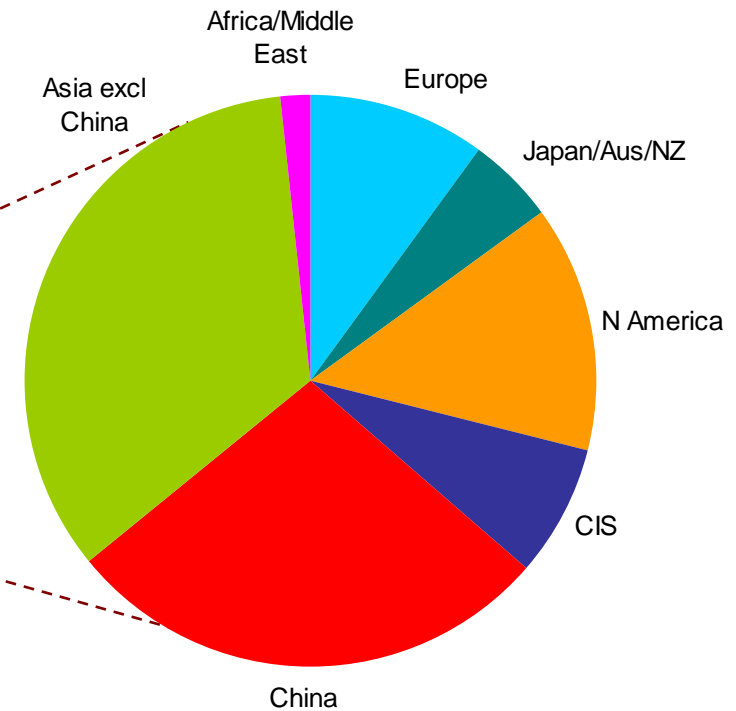
- Carbon prices incentivise CCS deployment from 2016 onwards
- Most significant CO₂ reductions occur with non-Annex I involvement



Abatement options used (MtCO₂ abated) in 2030



Abatement from **blending** by region:



Quantities shown are relative to the “no-commitments” baseline scenario in 2030

