



The IEA's G8 Gleneagles Programme: Towards a Clean, Clever and Competitive Energy Future

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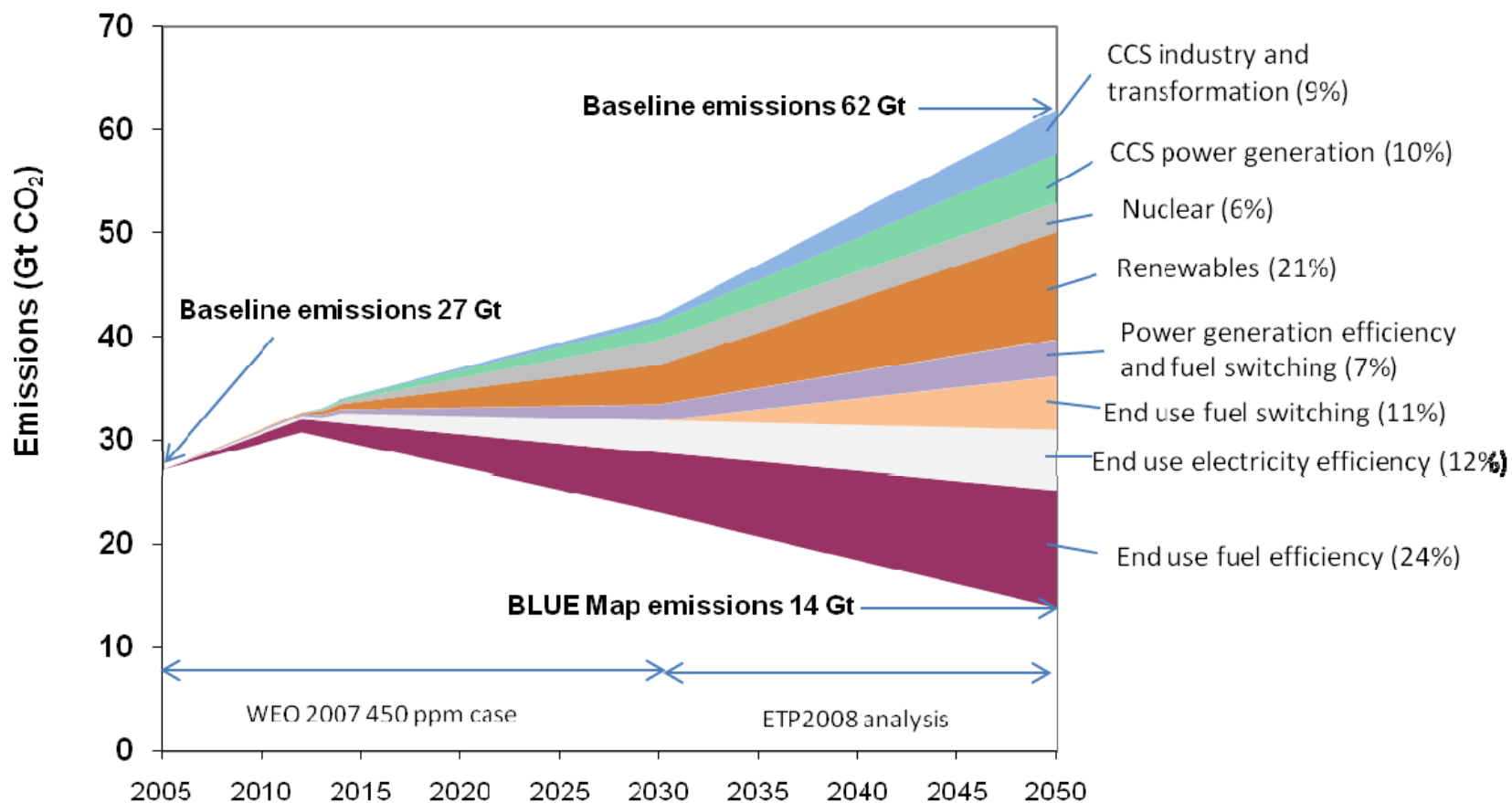
IEA's G8 Gleneagles Programme

- **Alternative energy scenarios and strategies**
- **“Best practice” in policies promoting energy efficiency in buildings, appliances, transport and industry**
- **Cleaner fossil fuels**
- **CO₂ capture and storage**
- **Renewable energy**
- **Enhanced international co-operation**



A New Energy Revolution....

Cutting Energy Related CO₂ emissions



Improved efficiency and decarbonising the power sector could bring emissions back to current levels by 2050. To achieve a 50% cut we would also have to revolutionise the transport sector.

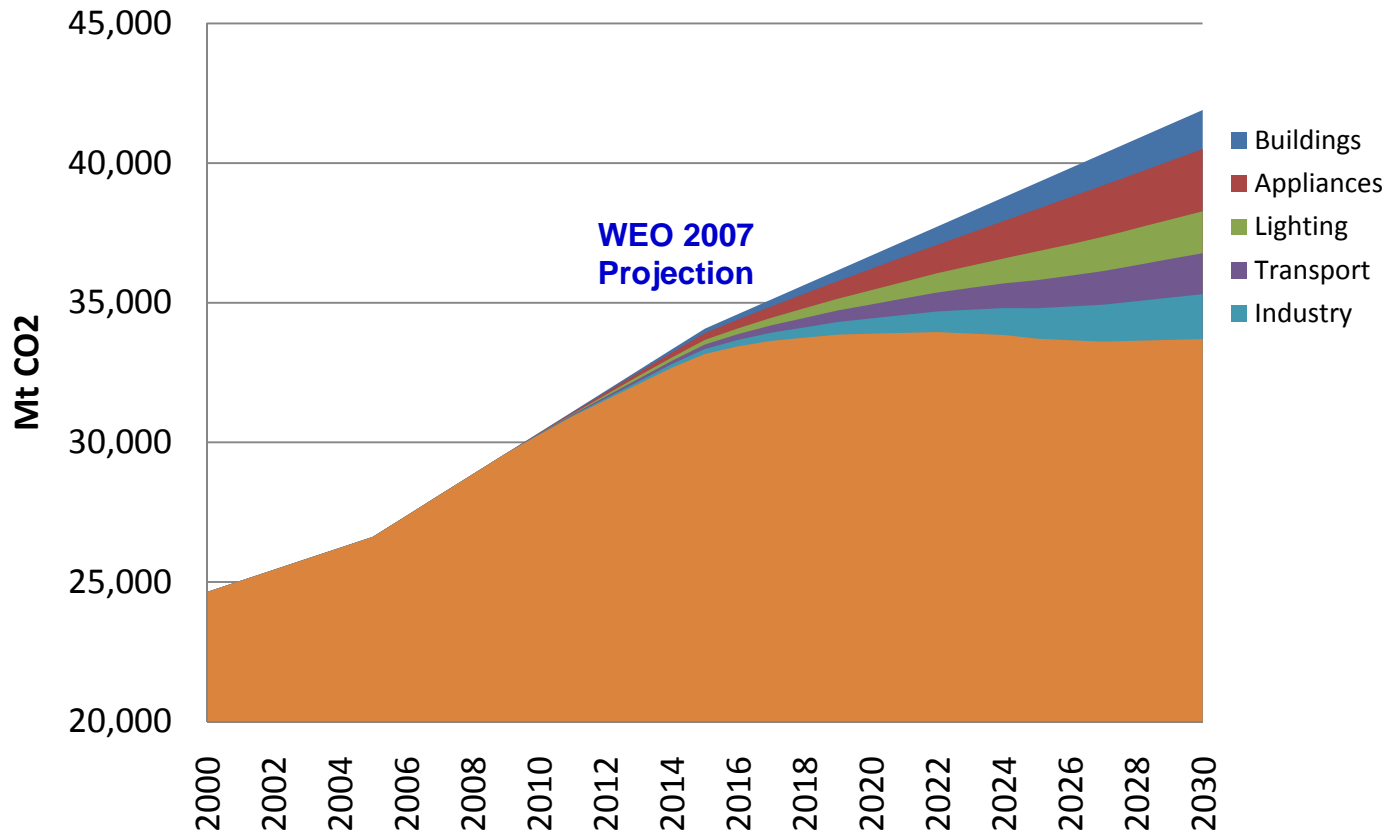
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The IEA's 25 Energy Efficiency recommendations to the G8 offer huge CO₂ savings potential

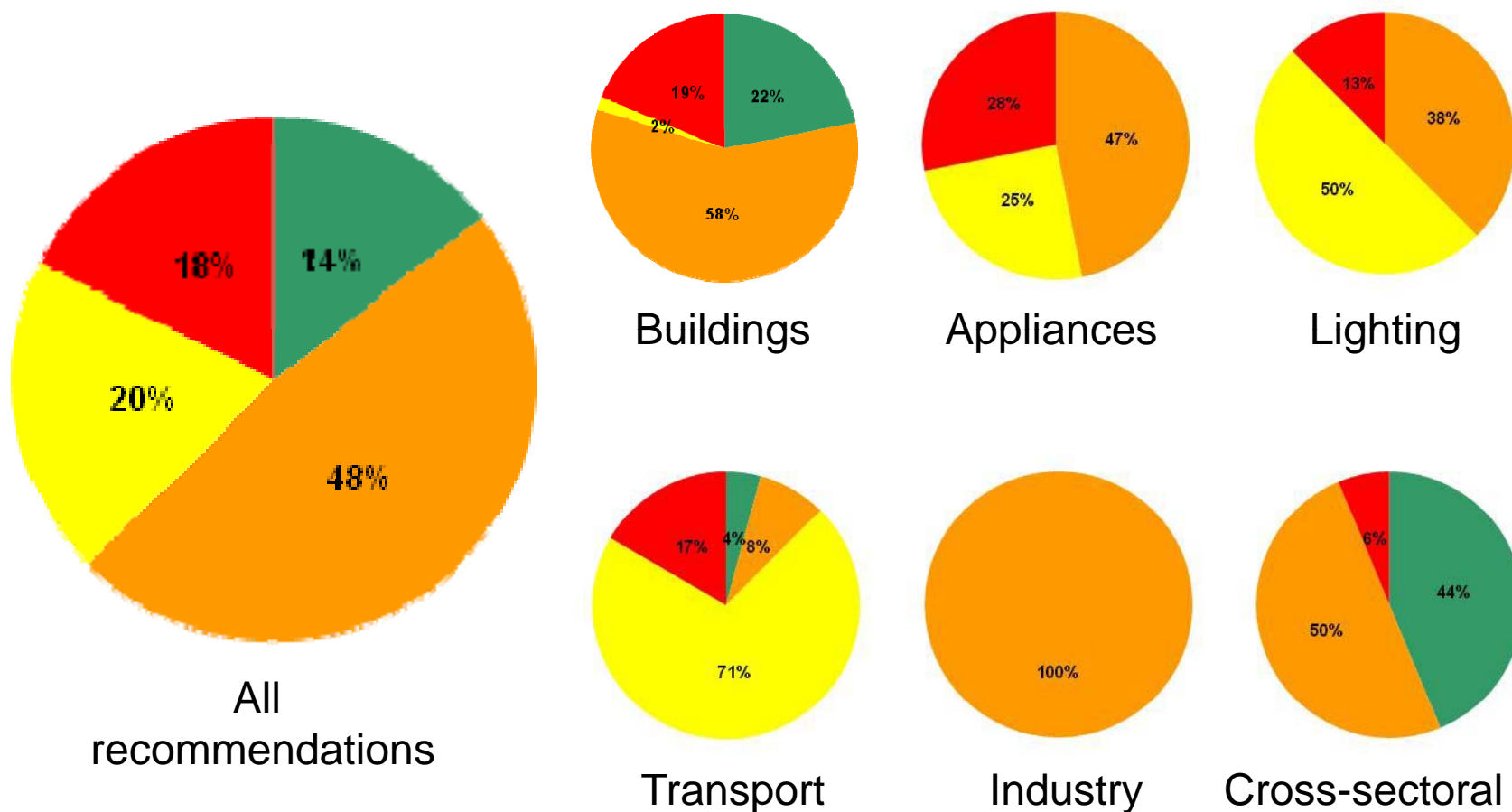


Global implementation of recommendations could save around 8.2 GtCO₂/yr by 2030. Equivalent to 20% of global reference scenario energy related CO₂ emissions in 2030.

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The IEA's Energy Efficiency recommendations: Scorecards of implementation

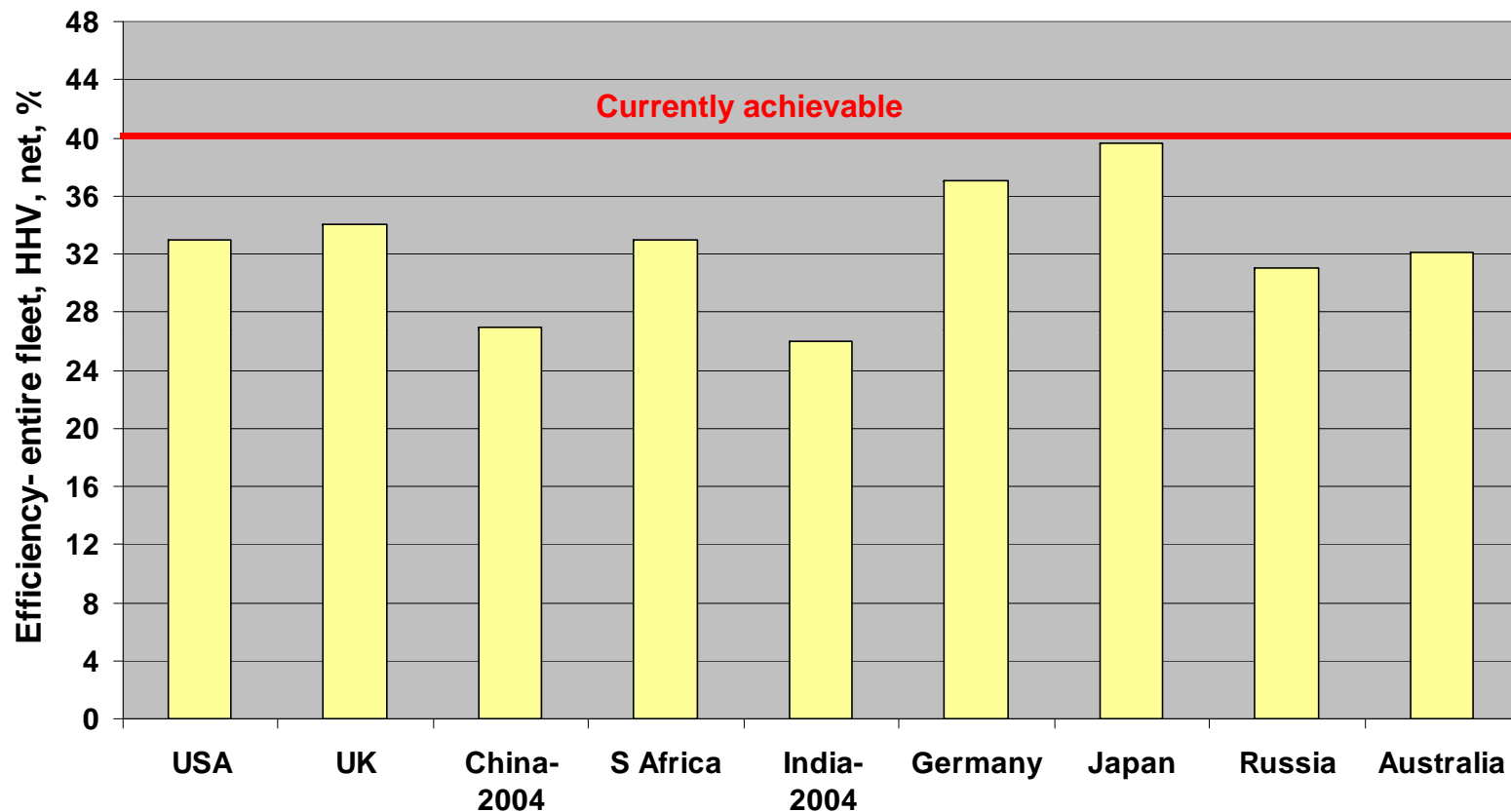


■ Full implementation ■ Partial implementation ■ Implementation Planned ■ Investigation underway/not implemented

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Energy Indicators, Tracking Trends & Identifying Potentials : The Example of Coal Power Generation

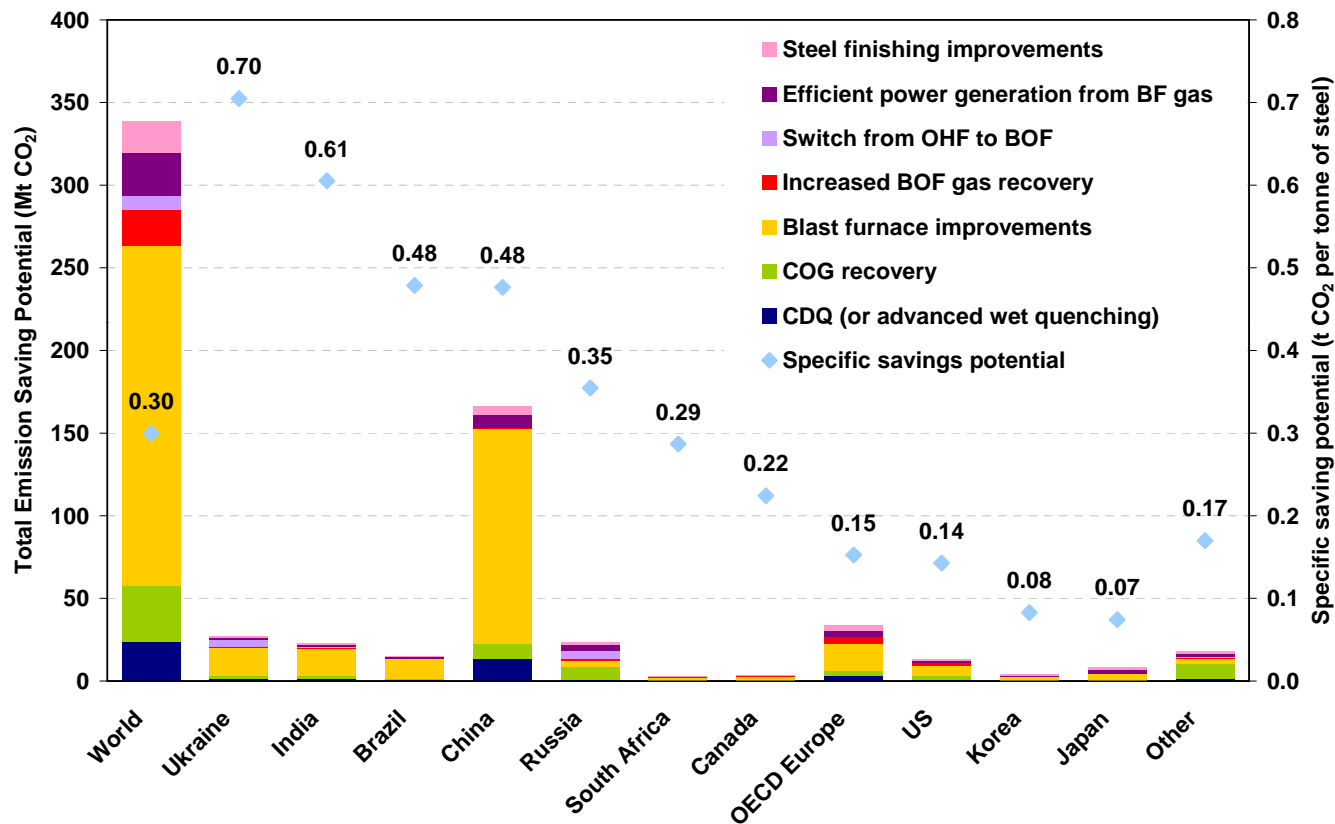


The average efficiency of coal power plants is between 26-39%. Over 1.7 GT CO₂ could be saved each year by raising this to 40%.

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Energy Indicators - Tracking Trends & Identifying Potentials : The Example of Iron & Steel

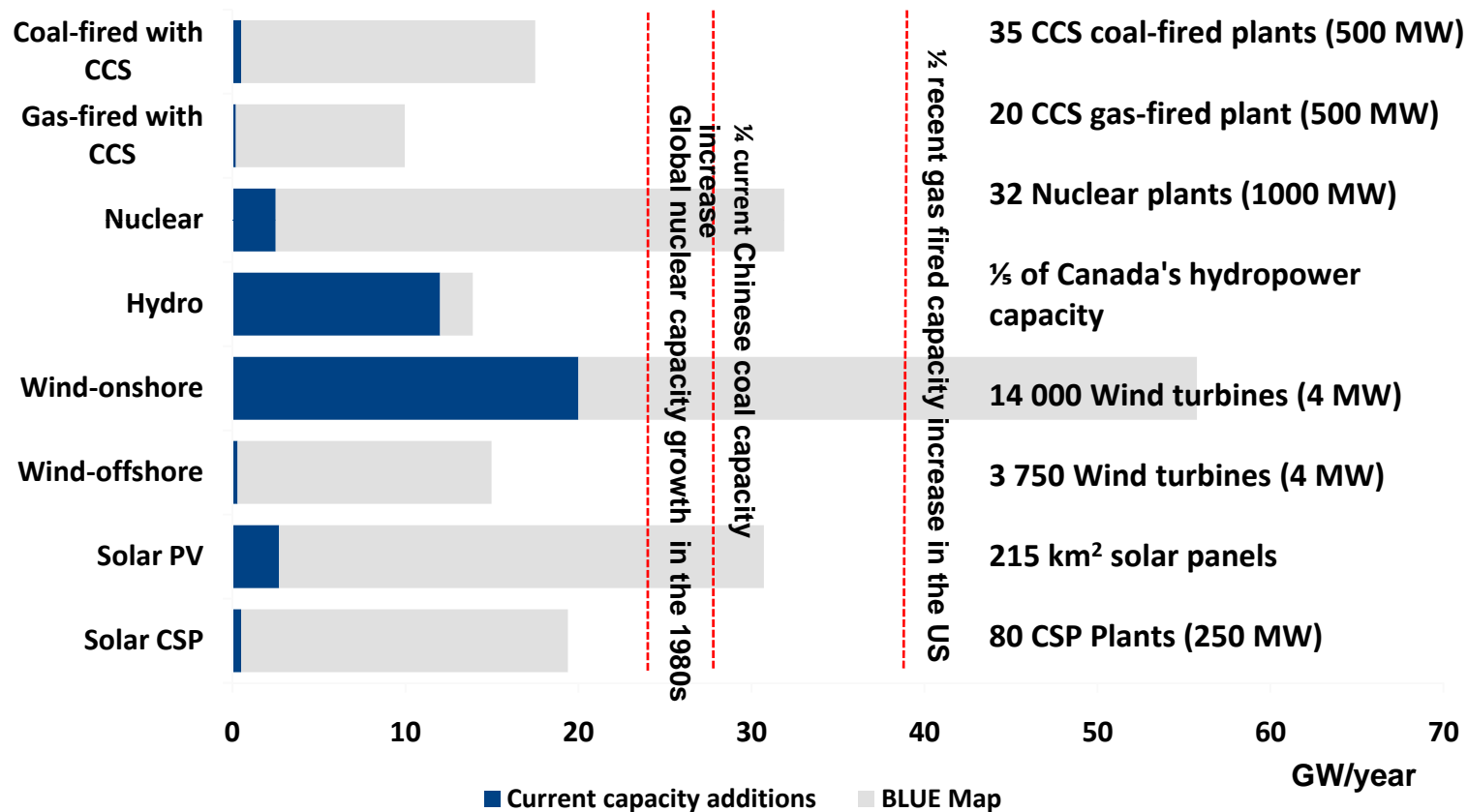


Adoption of best practice technologies in industry could save 1.9 – 3.2 Gt of CO₂ per year. The global technical potential in the iron and steel sector is 360 Mt of CO₂ per year, with the largest savings from blast furnace improvements

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Average Annual Power Generation Capacity Additions in the “50% Cut Scenario” 2010 – 2050

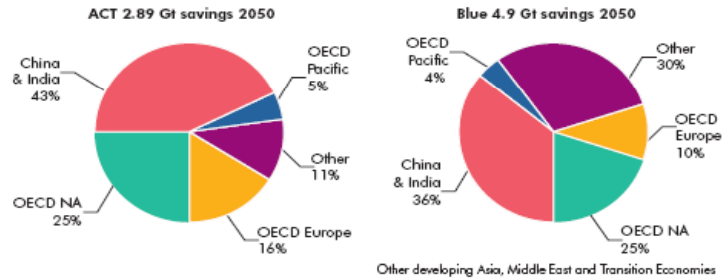


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Technology Roadmaps: The example of CCS (Work in Progress)

CO₂ Capture and Storage - Fossil-Fuel Power Generation

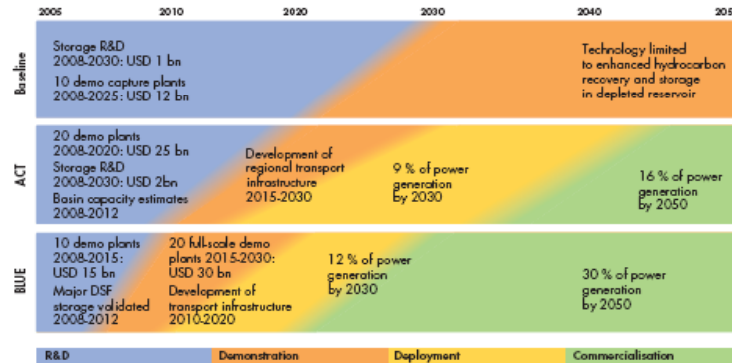


	Global Deployment Share 2030	RDD&D Inv. Cost USD bn 2005-2030	Commercial Inv. Cost* USD bn 2030-2050		Global Deployment Share 2030	RDD&D Inv. Cost USD bn 2005-2030	Commercial Inv. Cost* USD bn 2030-2050
OECD NA	35%	25-30	160-180	OECD NA	35%	30-35	350-400
OECD Europe	35%	25-30	100-120	OECD Europe	35%	30-35	150-200
OECD Pacific	10%	7-8	30-40	OECD Pacific	10%	10-12	70-80
China & India	15%	10-12	280-300	China & India	15%	12-14	450-500
Other	5%	3-4	60-70	Other	5%	4-5	300-350

Technology Targets

	ACT: Emissions Stabilisation	BLUE: 50% Emissions reduction
RD&D	Capture technologies for three main options (post-combustion, pre-combustion, and oxy-fuelling)	
	Technologies tested in small- and large-scale plants. Cost of CO ₂ avoided around 50 USD/t by 2020. Chemical looping tested	
Demonstration targets	20 large-scale demo plants with a range of CCS options, including fuel type (coal/gas/biomass) by 2020	30 large-scale demo plants with a range of CCS options, including fuel type (coal/gas/biomass) by 2020
New gas-separation technologies: membranes & solid adsorption	New capture concepts: next-generation processes, such as membranes, solid adsorbents and new thermal processes	
Technology transfer	Technology transfer to China and India	Technology transfer to all transition and developing countries
Deployment	Regional pipeline infrastructure for CO ₂ transport	
	Major transportation pipeline networks developed and CO ₂ maritime shipping	
Deployment targets	Early commercial large-scale plants by 2015 (ZEP, ZeroGen, GreenGen)	30% of electricity generated from CCS power plant

Technology Timeline



Key Actions Needed

- Develop and enable legal and regulatory frameworks for CCS at the national and international levels, including long-term liability regimes and classification of CO₂.
- Incorporate CCS into emission trading schemes and clean development mechanisms.
- RD&D to reduce capture cost and improve overall system efficiencies.
- RD&D for storage integrity and monitoring. Validation of major storage sites. Monitor and valuation methods for site review, injection & closure periods.
- Raise public awareness and education on CCS.
- Assessment of storage capacity using Carbon Sequestration Leadership Forum methodology at the national, basin and field levels.
- New power plants built after 2020 to have CCS.
- New power plants to be "capture-ready" after 2015.

Key Areas for International Collaboration

- Development and sharing of legal and regulatory frameworks.
- Develop international, regional and national instruments for CO₂ pricing, including CDM and ETS.
- Raise public awareness and education.
- Sharing best practices and lessons learnt from demonstration projects (pilot and large-scale).
- Joint funding of large-scale plants in developing countries by multi-lateral lending institutions, industry and governments.
- Development of standards for national and basin storage estimates and their application.
- Organizations: CSLF, IEA GHG, IEA CCC, IPCC.



Key Messages

- **Deep emission reductions by 2050 require unprecedented action**
 - Emission stabilisation = decarbonising power generation
 - Emission halving = also revolutionising transport
- **Enhancing energy efficiency is a priority**
- **Understand performance to drive effective change**
 - Energy efficiency indicators and sectoral approaches
- **New energy technologies are needed**
 - All options up to a cost of \$200 per tonne of CO₂ will be needed.
 - Technology roadmaps can help identify priorities
- **The transition to a low-carbon energy system will improve energy security**