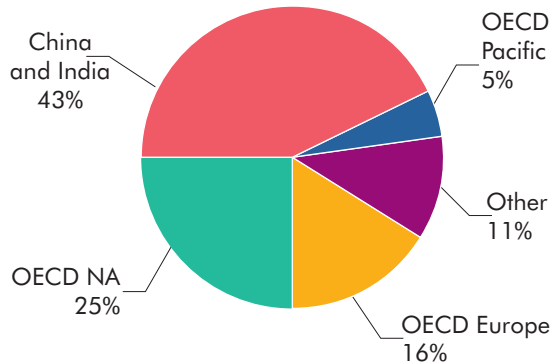
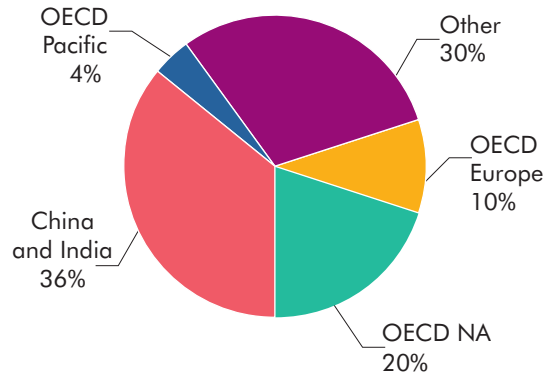


CO₂ capture and storage: fossil fuel power generation

ACT 2.9 Gt savings 2050



BLUE 4.9 Gt savings 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 Europe	35%	25-30	100-120
OECD Pacific	10%	7-8	30-40
China & India	15%	10-12	280-300
Other	5%	3-4	60-70

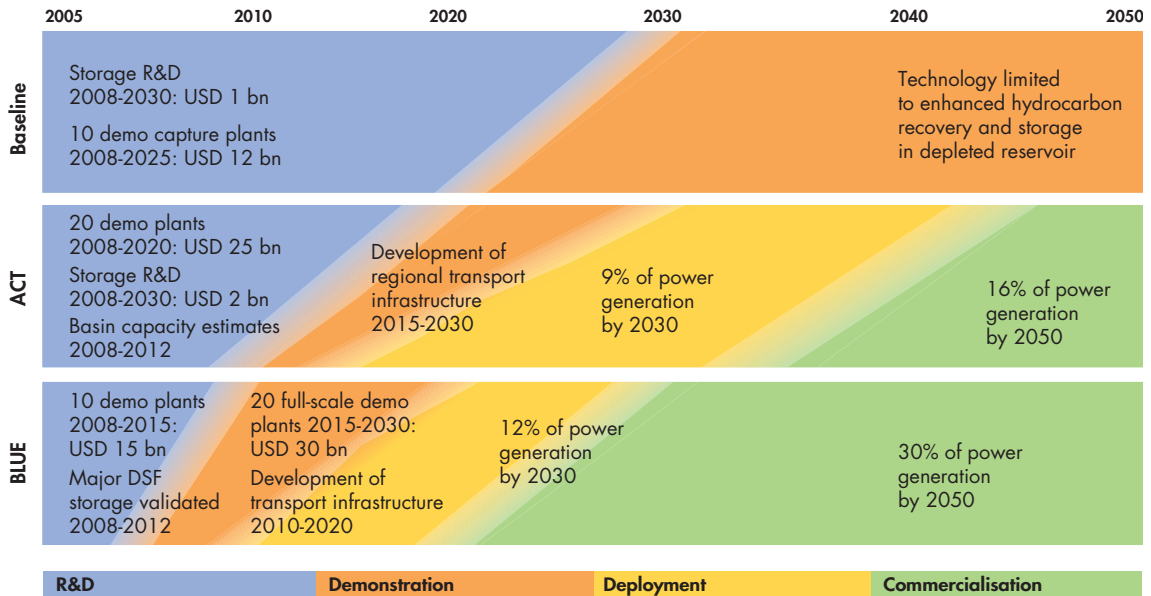
	Global Deployment Share 2030	RDD&D Inv. Cost USD bn 2005-2030	Commercial Inv. Cost* USD bn 2030-2050
OECD NA	35%	30-35	350-400
OECD Europe	35%	30-35	150-200
OECD Pacific	10%	10-12	70-80
China & India	15%	12-14	400-450
Other	5%	4-5	250-300

* Excludes operating costs. Total including OPEX is USD 1.3-1.5 trillion for ACT and USD 4.0-4.5 trillion for BLUE.

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 USD 50/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 absorbers 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 by 2050

Technology timeline



In this roadmap, commercialisation assumes an incentive of USD 50/t CO₂ saved.

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 post-Kyoto instruments.
- 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.
- Governments and private sector should address the financial gaps for early CCS projects to enable widespread deployment of CCS for 2020.
- New power plants to include capture/storage readiness considerations within design by 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.
- Organisations: CSLF, IEA GHG, IEA CCC, IPCC.