



E3G

Reclaiming CCS in the public interest

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Environmental NGO network on CCS



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North America:

- Clean Air Task Force, Environmental Defense Fund, Natural Resources Defense Council, Pembina Institute

Europe:

- Bellona, E3G, Green Alliance, Sandbag, Zero

Asia Pacific:

- The Climate Institute, World Resources Institute



ENGO network on **CCS**

<http://www.engonetwork.org>

Reclaiming CCS in the public interest: the view from E3G



- Must learn lessons from a lost decade.
- CCS will only be deliverable in Europe if we reclaim its public interest origins and motivations and act accordingly.
- Good news: the emerging CCS agenda is more compatible with the public interest and provides the basis for a fresh approach.
- Two challenges for today:
 - Policy makers must ensure that policy instruments are firmly anchored in the public interest AND fit for purpose.
 - CCS sector must look at itself through a public interest lens.

2005: the arrival of CCS



- Political good intentions to address coal growth, but resulted in narrow agenda (compare with IPCC SR).
- Inability to overcome instincts of incumbents (both policy makers and industry): focus on R&D not deployment, CCS seen as figleaf for business as usual.
- Public opposition to new coal and lignite across Europe, no social license to operate, not just climate.
- Advocacy coalitions absent in most countries: UK an exception, with CCS as an exit strategy.

2008-10: CCS incentives provided



Policy endeavours:

- EU: CO2 storage directive, NER300, EEP. UK: CCS levy, demonstration programme. US: Stimulus package (but not Waxman-Markey). Aus: GCCSI creation

Bad luck:

- Economic crash and impact on energy markets and carbon pricing, plus shale gas revolution made investment case more difficult.

Bad faith:

- Coal sector and utilities actively undermined policy initiatives and put pressure on pro-CCS advocates. Australian coal sector spent levy funding on promotion of coal. European utilities happy to see projects opposed.

Bad policy:

- Full chain projects. Carbon pricing logic. No planning for deployment. Weak capture readiness requirements. Slow to engage with finance. Blanket of silence.

2016: post-Paris reality check

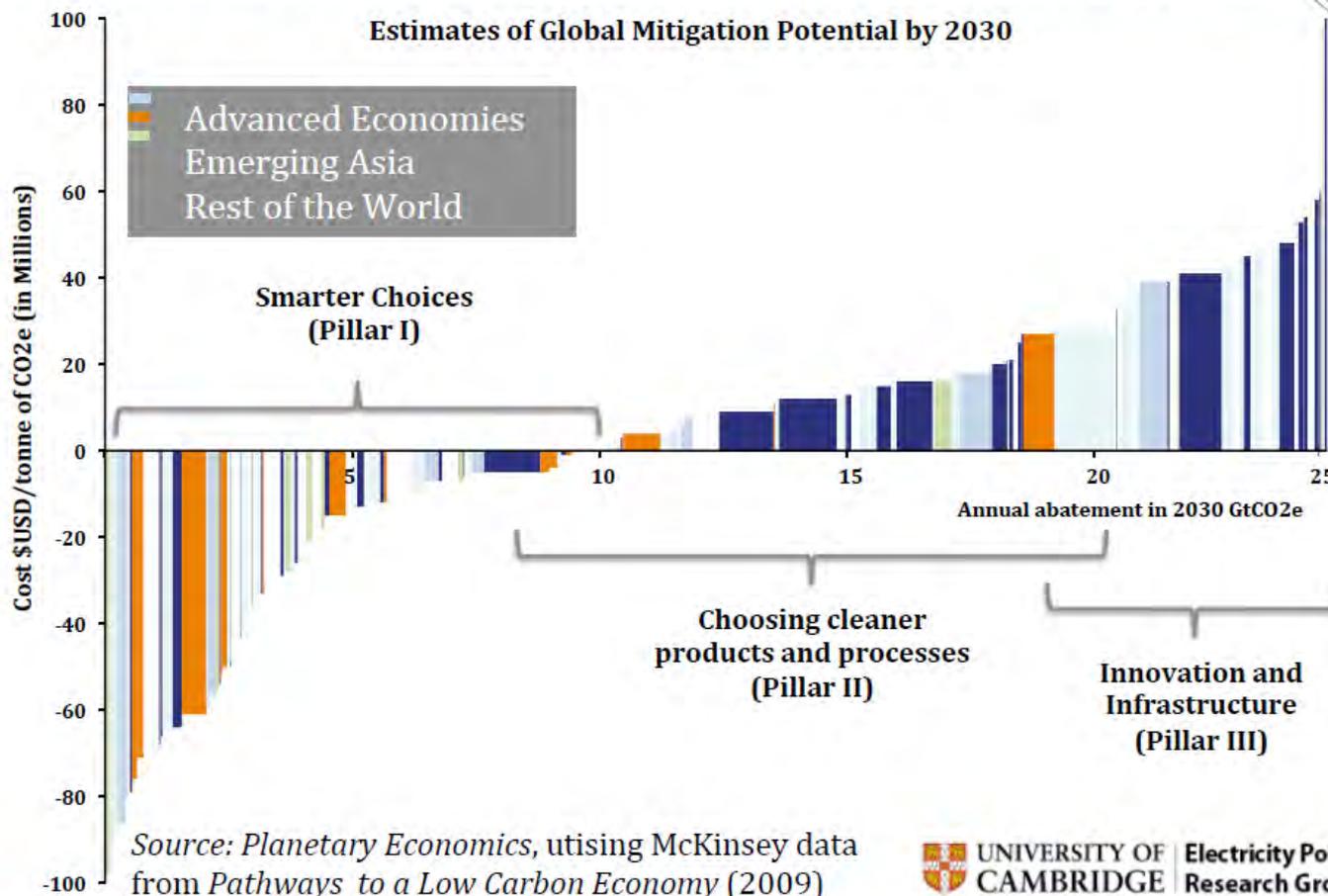


- Paris commitments to ‘well below 2C / 1.5C’ and balancing emissions and sinks provides framework within which CCS can play a valuable role.
- All countries now need to develop plans for deep decarbonisation, with energy sector facing 2050 timeframe = real risk of lock in / stranded assets.
- CCS is beginning to be recognised as more than just ‘coal for electricity’, with more positive responses. But: great new stories still stuck in the shadow.
- Models and scenarios are not seen as credible e.g. rates of deployment
- The “CCS Lobby” is overwhelmingly still seen as apologists for fossil fuel extraction. Not seen as credible on climate change: divestment pressure. The reality is that the “CCS Lobby” doesn’t want to do CCS, at least not quickly.
- UK decision to end Commercialisation Programme an act of political vandalism.
- CCS policies trapped in economic theory and unable to drive CCS deployment.

Rethink assumptions and mental models #1a: CCS is an Innovation and Infrastructure challenge

Three realms of abatement opportunities

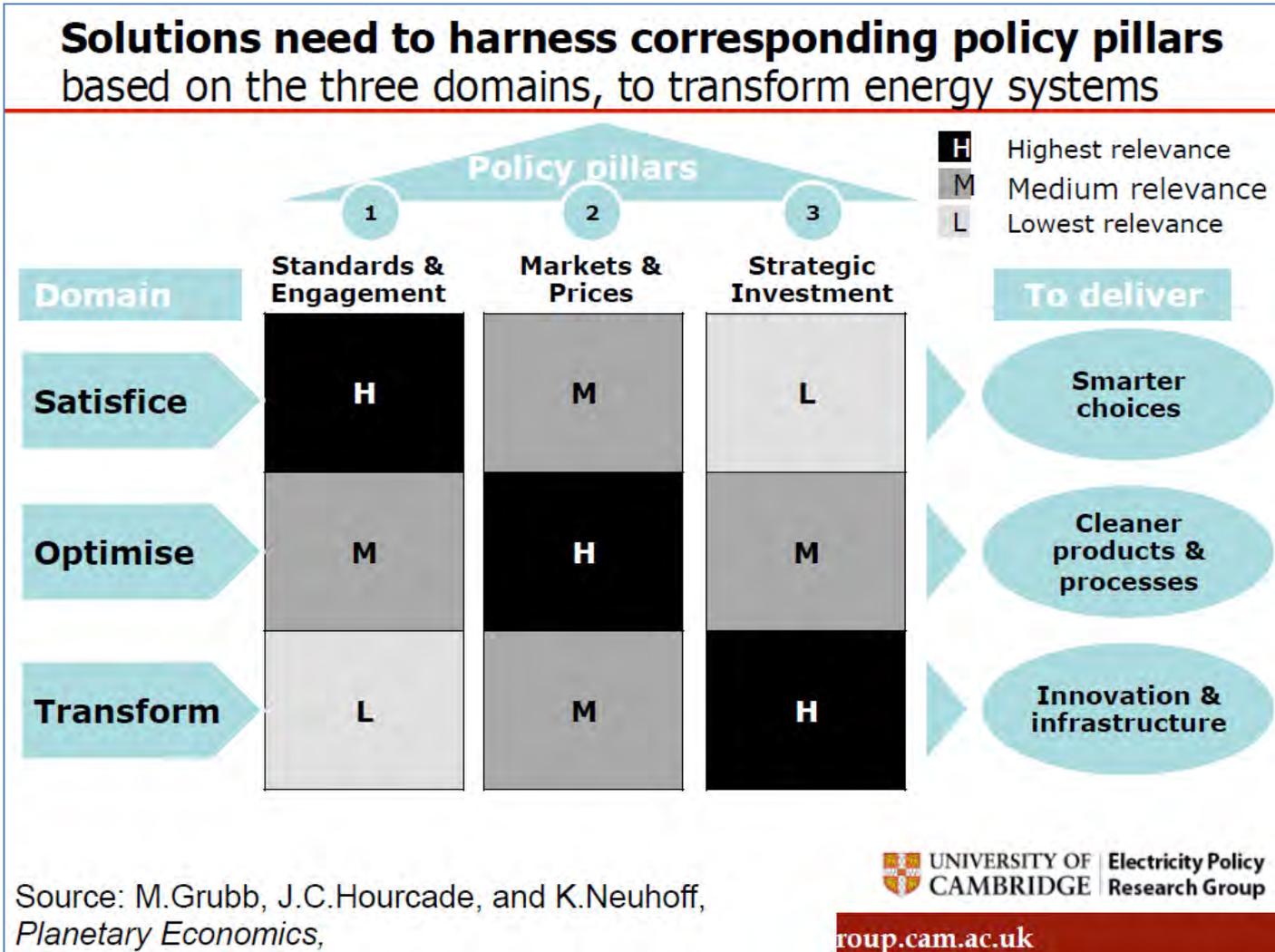
- Global estimates for 2030 highlight first two ..





Rethink assumptions and mental models #1b:

This requires strategic investment



Rethink assumptions & mental models #2:

Different applications, roles and values



There is no such ‘thing’ as CCS: it is a category.

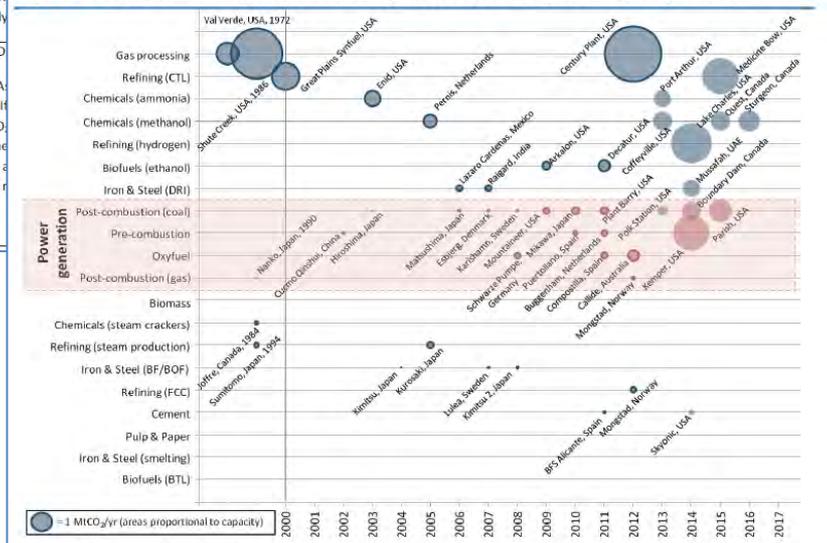
Not all forms of CCS are equal: they offer different outcomes for climate, economy, society, and environment.

In order to deliver in the public interest, policy makers need to drive deployment of highest value outcomes.

Table 1 Classes of CCS: definitions and examples (Chalmers et al, 2009; Chalmers and Gibbins, 2010)

	Definition and impact on CO ₂ emissions	Typical Example
1 Carbon-positive	Projects that produce gaseous and liquid fuels that contain carbon. When these products are used they will produce CO ₂ that often cannot viably be captured (e.g. when used in transport and buildings). Thus, although these projects will reduce CO ₂ emissions compared to production of the same fuels without CCS, they do not stop the emission of significant amounts of CO ₂ to the atmosphere.	Coal-to-liquids plants producing synthetic fuels. Stripping natural CO ₂ from oil or gas production
2 Near carbon-neutral	Projects that produce carbon-free energy (normally electricity, hydrogen and/or heat). These projects should lead to significant CO ₂ emissions reductions. It is likely that the project captures the majority of CO ₂ in the fossil fuel used as a feedstock.	Power plant producing electricity using natural gas
3 Potentially Carbon-negative	Class 3A: Direct air capture (DAC) projects that capture CO ₂ from the atmosphere. Class 3B: Algal biomass production. If the net CO ₂ emissions are negative, it means the project captures more CO ₂ than it emits.	

Figure 4.2 • Operational start year of the next largest CO₂ capture projects on various processes



Source : IEA analysis and GCCSI (2013)

Rethink assumptions and mental models #3:

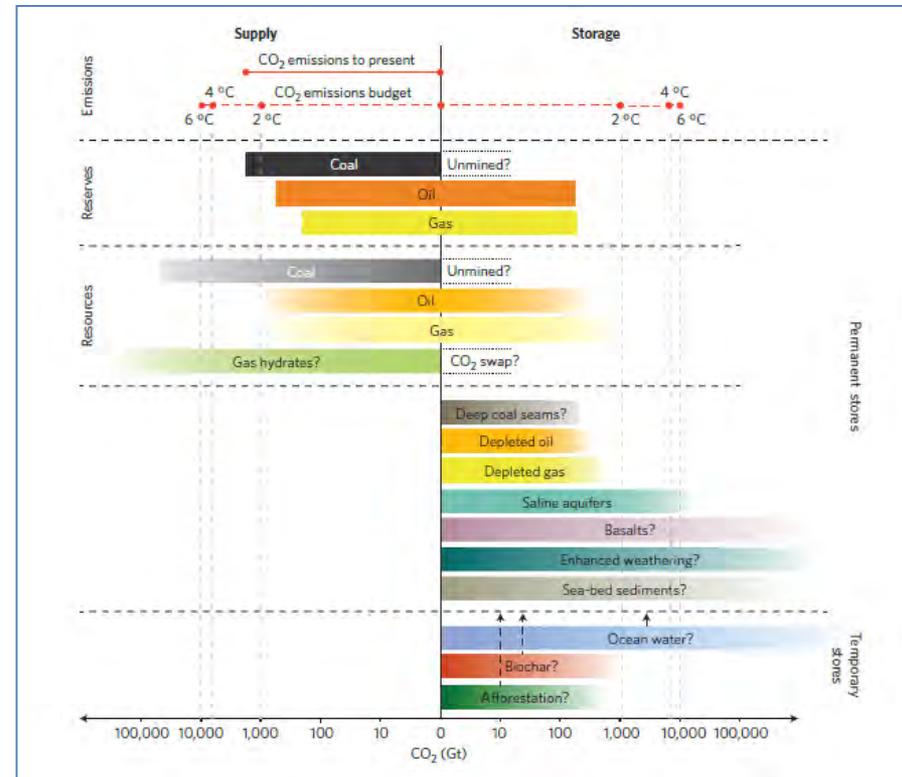
Accessible CO2 storage is scarce resource

Access to CO2 storage will be restricted by infrastructure development, injection rates and storage management requirements.

Hand waving at theoretical storage resources is meaningless without policy action to make it happen. Coal sector is still hiding behind CCS while pursuing new unabated power plants.

Focus must be on making CO2 storage available, incentivising highest value use of it, and reflecting this in models.

Carbon pricing is ill suited for this. The subsurface is not the same as the atmosphere.



Rethink assumptions & mental models #4: Recognising the CCS value hierarchy



- Highest value to **climate** is from **negative emissions**:
 - BUT: better not to emit in first place due to ocean-atmosphere rebalancing effects
 - AND: Net negative emissions require everything else to be at zero. Before this, negative emissions are an offset. Some may be high value, others are definitely not.
 - PLUS: big risks around bio-CCS, both real world and perceptions.
- Highest value to **society and economy** is from **industrial emissions**:
 - Enable decarbonisation of high carbon sectors and regions currently without alternatives. Enable retention & growth of jobs and economic value.
 - Emerging recognition of heat and transport challenges and combining CCS with Hydrogen economy.

Rethink assumptions & mental models #5: A targeted role for CCS in the power sector



- CCS is being out-competed by Renewables.
- Highest value within power sector is from providing most flexible electricity generation with lowest CO2 burden: CCS on gas provides close to double electricity per tonne stored compared to coal and lignite. Needs to be paid for on basis of clean electricity.
- CCS policy remains essential and must be strengthened. CCS must be the default requirement for new coal power plants. ‘Capture readiness’ must become ‘storage realistic’. If pursued, coal sector must carry cost of storage and not crowd out higher value uses.
- CCS retrofit pathway is dubious, perhaps only in China. Policy makers should not presume that CCS more likely than closure. Economic models assume lower levels of capital destruction than real world.

Rethink assumptions & mental models #6: Who pays? Who gets paid?



- Policy makers must move beyond magical carbon pricing.
- Carbon pricing on end user can't deliver infrastructure, industrial CCS or high capital investments – it might possibly support low-opex operations once constructed if infrastructure in place.
- Low appetite for taxpayers & treasuries to pay for CCS.
- Responsibility must be placed on fossil fuel producers and importers (both governments and private sector), with financial flows channelled into high value CCS applications.
 - Increasing proportion of carbon produced must be sequestered, in line with timeline for net zero.
 - No pain? No gain! Gas sector needs to learn lesson.

Getting real about CCS in Europe



- CCS needs to rewrite its story, to align with public interest concerns and make new friends. Must seize the emerging agenda to be part of the solution.
- A public interest CCS deployment pathway, as a route to deep decarbonisation by 2050, integrated into national plans:
 - strategic investment in T&S for regional clusters, using EU funding
 - Incentives for industrial CCS deployment, aimed at value not volume, to expand into negative emissions over time:
 - Immediate audit of oil and gas fields, and an upstream mandate for CCS on fossil fuel producers and importers to provide growing resource
 - Accelerated retirement of unabated power plants, with CCS to replace some of these. Much stricter capture readiness requirements.

Additional slides



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About the ENGO network



Created in 2011, the ENGO Network on CCS comprises organizations coming together around the safe and effective deployment of Carbon Capture and Storage (CCS) as a timely mitigation tool for combating climate change. Because urgent reductions in greenhouse gas emissions are needed to prevent dangerous climate change, a variety of innovative solutions is necessary. Given the world's current and projected reliance on fossil fuels, CCS should be considered a critical mitigation technology that will provide faster and deeper emission reductions. The mission of the International ENGO Network on CCS is to pursue domestic and international policies, regulations and initiatives that enable CCS to deliver on its emissions reduction potential safely and effectively.

Our shared goals include the following:

Ensure that CCS is performed and regulated safely, effectively and according to best practices, in a manner that protects our climate, human health and the environment

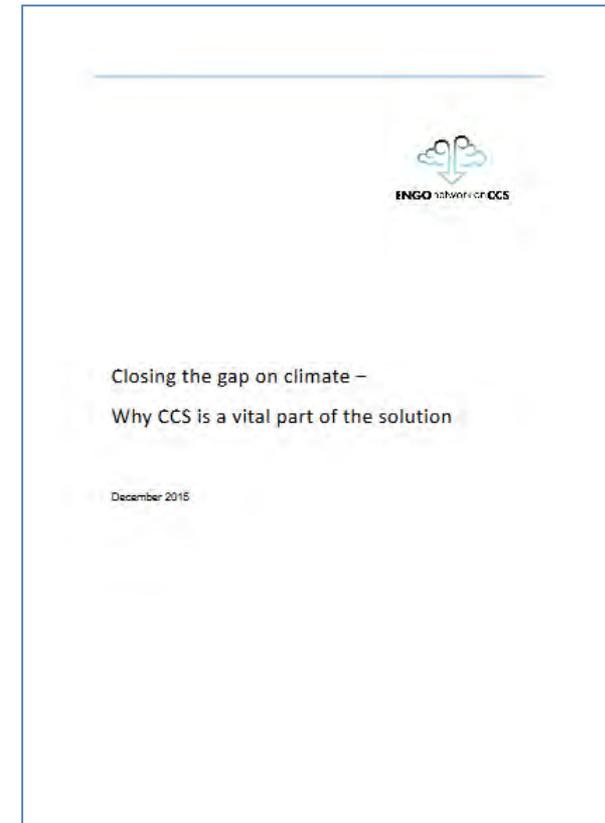
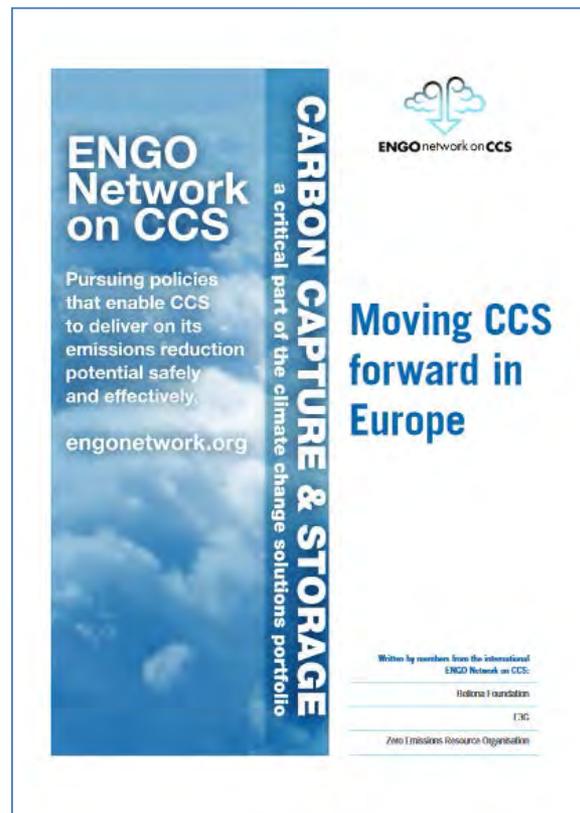
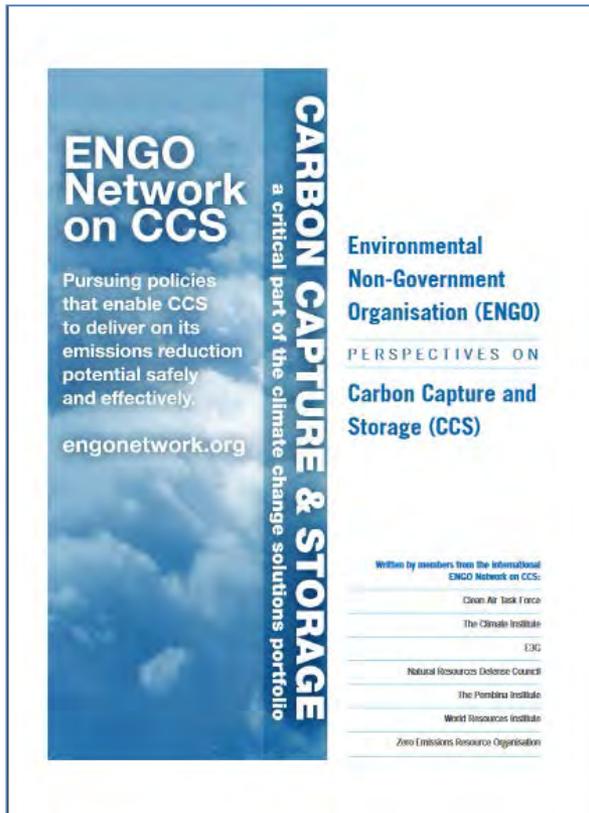
Disseminate scientifically sound and objective information on CCS technology

Work toward common positions and responses to international developments in the CCS arena

Work to phase out the construction of new unabated, conventional coal-fired power stations as soon as possible, with CCS playing a part of the solution. In developed countries, no new, conventional coal-fired generation should be constructed without CCS

Work to incorporate CCS in other types of fossil-fired power generation, industrial sectors, and in combination with sustainable biomass.

ENGO network reports: tracking progress and policy efforts





Defining “the public interest”

- “1. the welfare or well-being of the general public; commonwealth. 2. appeal or relevance to the general populace: a news story of public interest.”
- Different from private / corporate interest
- For CCS:
 - Climate, Environment, Health, Social, Jobs
 - Costs, Energy Security
- Assessed by government administration and expressed through policy decisions.

Policies must deliver deep decarbonisation



- Need to think carefully about value of CCS when considering economic incentives and drivers: requires specific policy interventions.
- ‘Technology Neutral’ discussion of CCS is at best confused, at worst a cover for fossil fuel resistance: Capture technology? Fuel? CCS compared with Renewables? Intellectually incoherent, bad policy, atrocious politics. ‘Policy parity’ is a better framing, but policies must be targeted on outcomes.
- CO₂-EOR+ approach has limited application and timeframe and negative perception dangers. But it is the sole form of EOR that has climate co-benefits. Requires strong policy wrapper to ensure compatibility.
- Post-Paris framework is designed to enable further ratcheting down of emissions and allow countries to move together. CCS policy makers need to find pathways to 2050 / deep decarbonisation that are deliverable and valuable. Must start by accelerating infrastructure development and storage access. This cannot be left for future decades. ‘Option value’ not enough.