

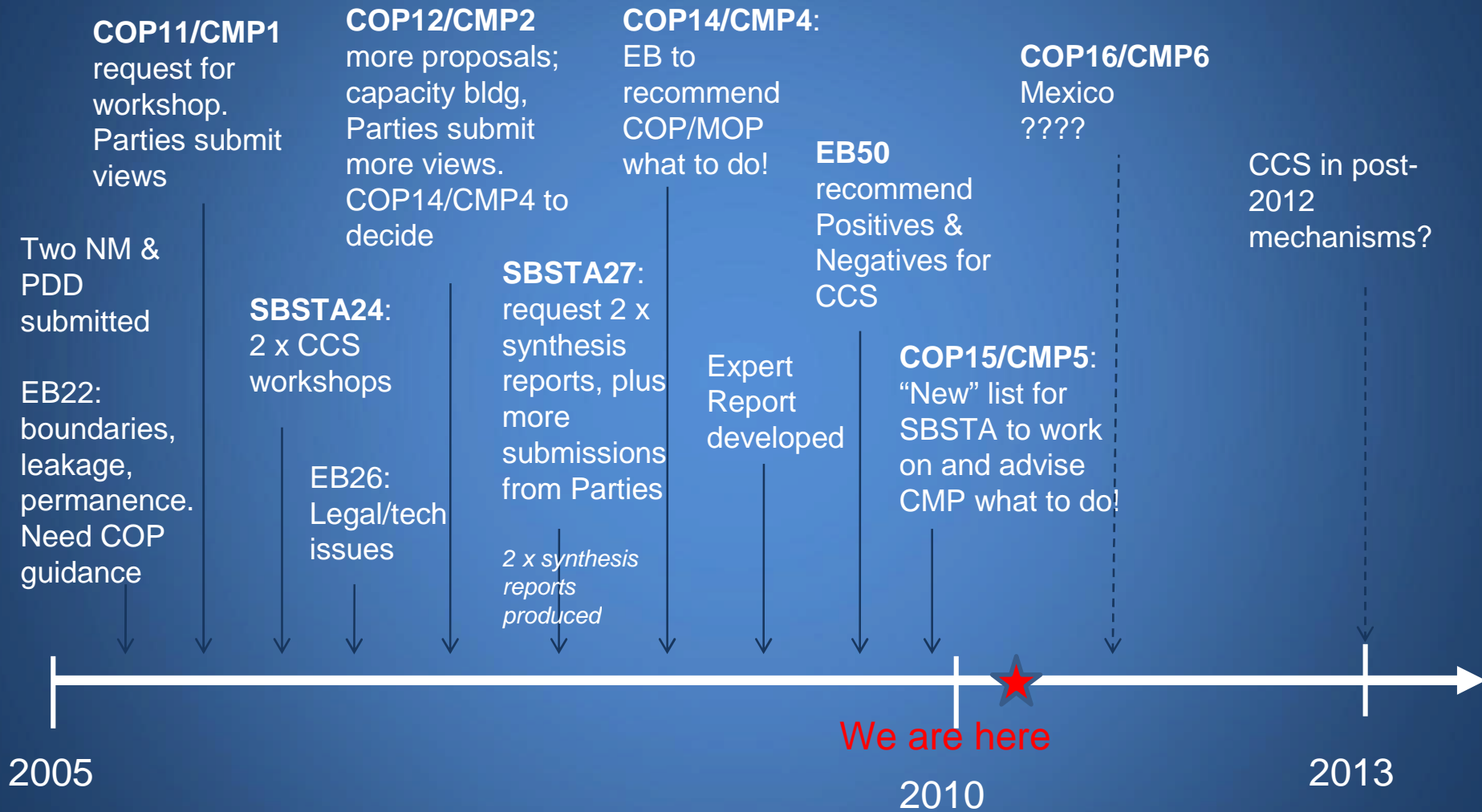
Accessing Carbon Finance for CCS Projects in Emerging and Developing Economies

UCL-NYU Carbon Capture and Storage
Global Legal Symposium

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Brief history of CCS in the CDM



COP/CMP = Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol
 EB = CDM Executive Board [meeting]
 SBSTA = Subsidiary Body for Scientific and Technical Advice [meeting]



Copenhagen “new” issues...

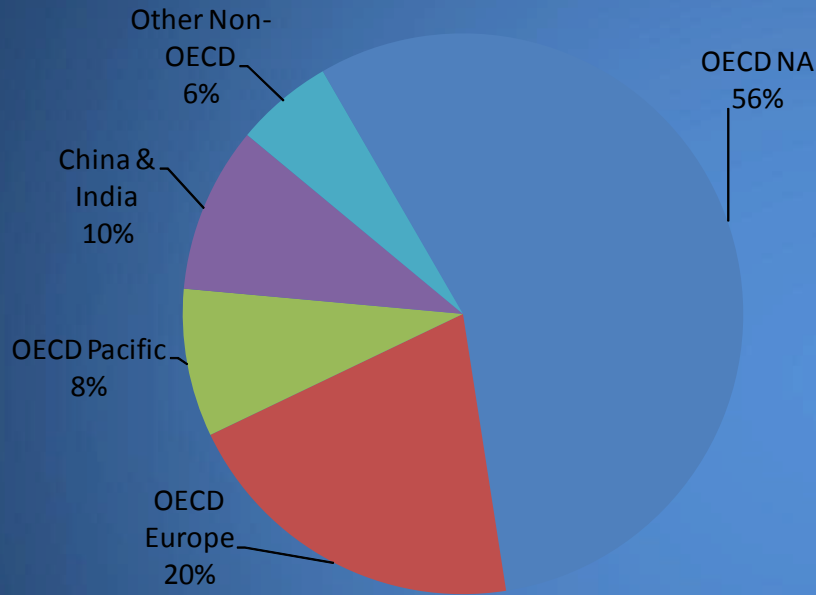
- (a) Non-permanence, including long-term permanence;
- (b) Measuring, reporting and verification;
- (c) Environmental impacts;
- (d) Project activity boundaries;
- (e) International law;
- (f) Liability;
- (g) The potential for perverse outcomes;
- (h) Safety;
- (i) Insurance coverage and compensation for damages caused due to seepage or leakage.

= Political impasse...

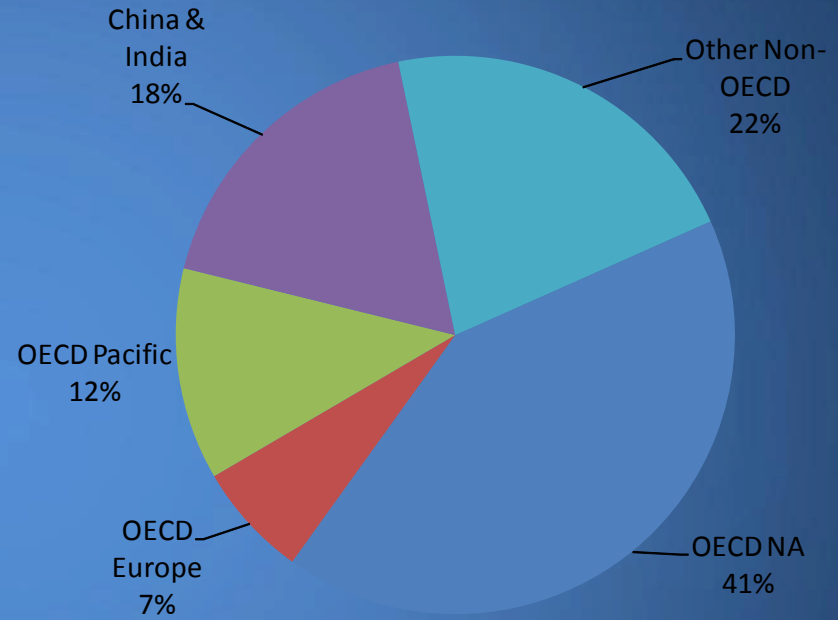
- All issues which have been discussed over last 5 years
- Obfuscation and capricious decision-making
- Need some political movement; *but* is CCS worth trading political capital? Why?
 - Important to get CCS going in emerging economies moving....now
 - Can be financed through market-mechanisms
 - Need debate on legal & regulatory approaches

Scale order of challenge

Power generation \$52bn required 2010-2020



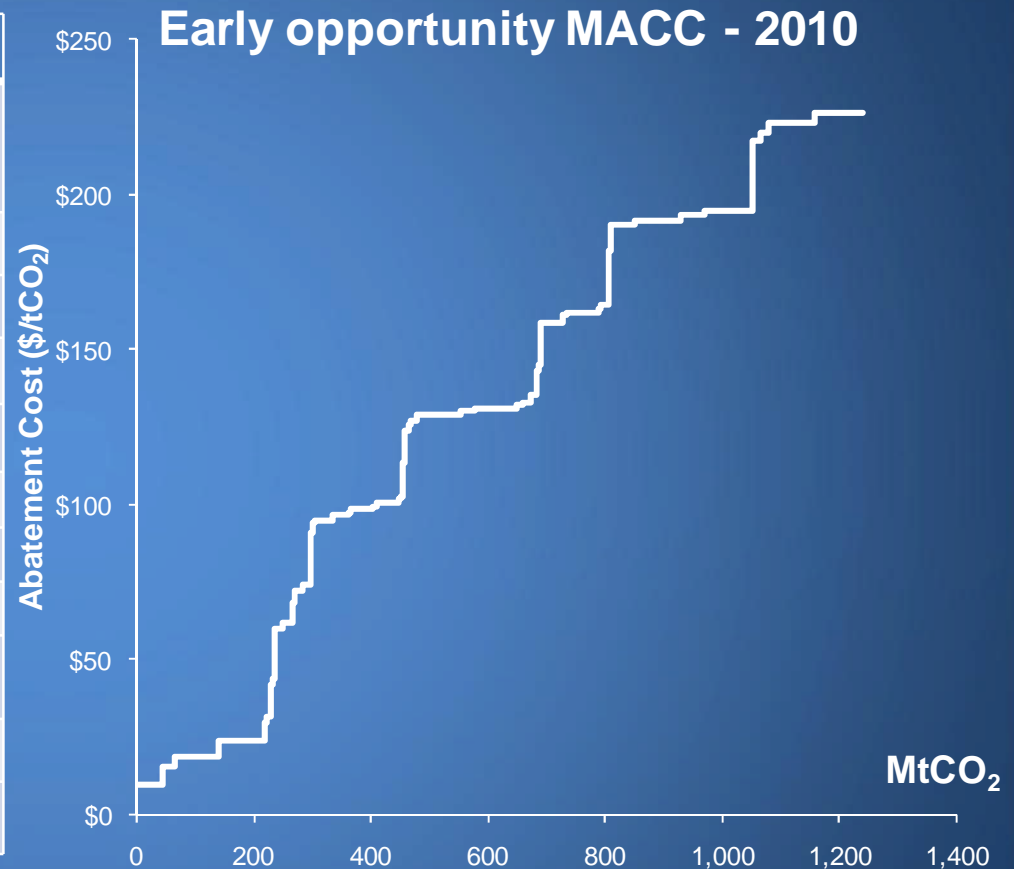
Industry & Upstream \$78bn required 2010-2020



	Total CCS projects in 2020	Captured 2020 (MtCO ₂ /yr)	Incremental CCS cost 2010-2020 (\$billion)		Total CCS projects in 2020	Captured 2020 (MtCO ₂ /yr)	Incremental CCS cost 2010-2020 (\$billion)
OECD NA	17	77	13.3	OECD NA	12	44	10.3
OECD Europe	9	26	4.8	OECD Europe	5	11	2.0
OECD Pacific	2	9	2.4	OECD Pacific	5	17	3.5
China & India	6	13	3.5	China & India	15	29	4.1
Other Non-OECD	4	6	2.1	Other Non-OECD	25	68	7.6
World	38	130	26.1	World	62	168	27.5

Costs – all “early opportunities”⁽¹⁾

	2010		2020	
	Abatement potential (MtCO ₂)	Average cost (\$/tCO ₂)	Abatement potential (MtCO ₂)	Average cost (\$/tCO ₂)
Gas Process	219	\$18	313	\$14
Ammonia	97	\$62	97	\$62
Fertiliser	97	\$92	12	\$92
Ethanol	14	\$104	14	\$103
Refineries	292	\$115	292	\$115
Hydrogen	6	\$115	6	\$115
Cement	600	\$138	600	\$138
Coal power	0	n/a	93	\$36
Gas power	0	n/a	28	\$48
TOTAL	1,240	-	1,455	-



Notes: ⁽¹⁾ IPCC define *early opportunities* as projects that [are likely to] “involve CO₂ captured from a high-purity, low-cost source, the transport of CO₂ over distances of less than 50 km, coupled with CO₂ storage in a value-added application such as EOR.” Early opportunities here includes longer transport distances and lower purity sources (e.g. cement)

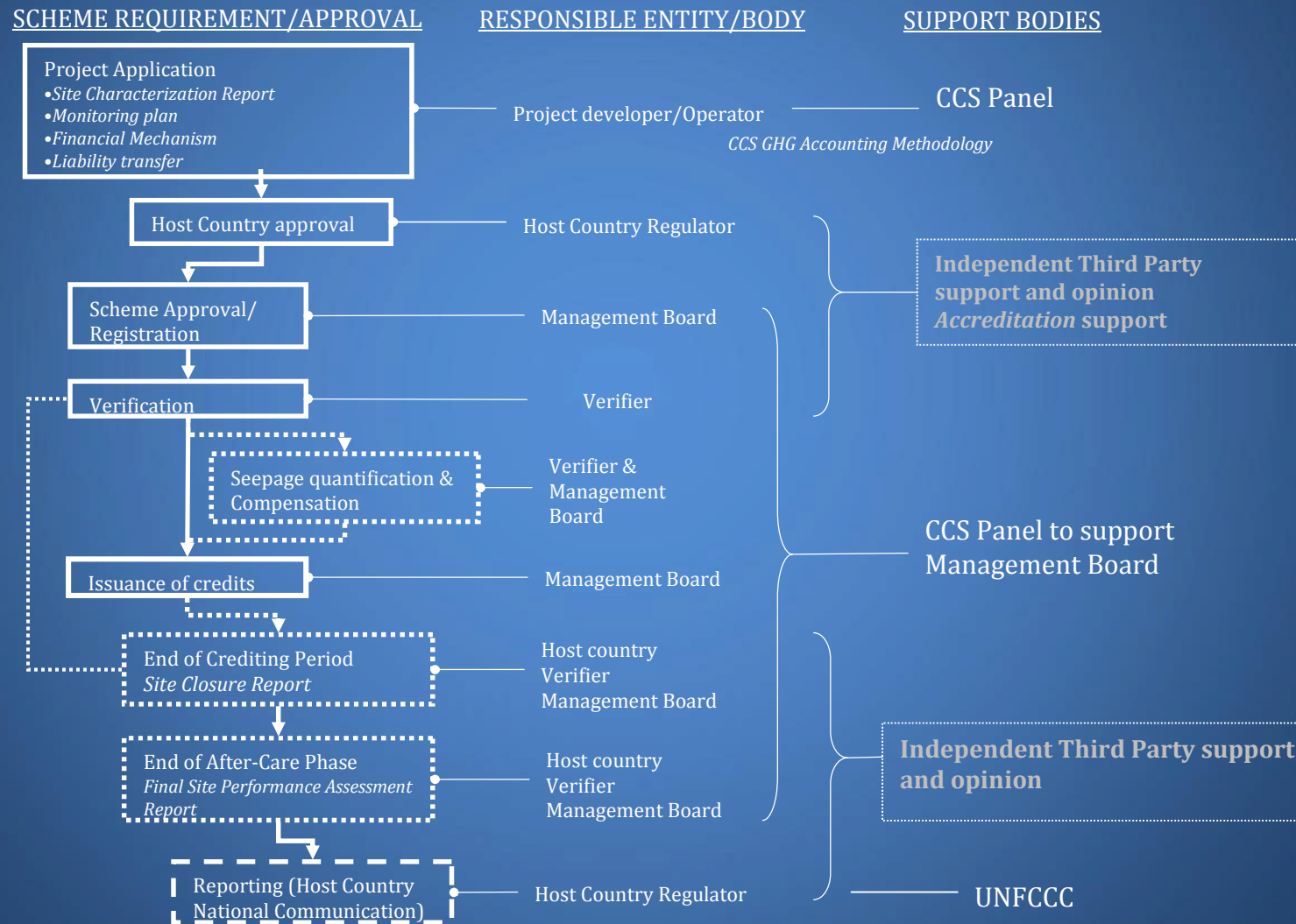
IEA/CSLF mandated to assess CCS ‘early opportunities’ by G8 leaders. Reported in 2007



Regulatory chicken or egg...

- Key question:
 - should the delivery of funds through any such mechanism be contingent on the introduction national level regulation by participating countries? *or*
 - can any mechanism be developed which – through appropriate design – provides *de facto* regulation for CCS at an international level?
- Difficult for countries to justify regulatory development absent of any incentive

A possible approach



Where next for CCS in Developing Countries?

- Seems to be two choices:
 1. Push for UNFCCC based agreement
 2. Carve out a smaller group and go it alone
- REDD-*plus* shows us that where there is appetite, things can move. But, the post-2012 text doesn't look promising right now
- G20, MEM, unilateral actions such as NZEC and APP may be the only way forward
- Any approach needs to address the challenges faced for CCS in developing countries

Thank-you

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