



Energy research Centre of the Netherlands

The global politics of CCS

Heleen de Coninck

Scottish CCS centre, University of Edinburgh

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Outline of this seminar

Introduce the Energy research Centre of the Netherlands

A global roadmap on CCS in industry

- Introduction to the UNIDO/IEA initiative
- Preliminary results

Understand how CCS features internationally

- Theories of International Relations
- History of CCS in international politics
- Which positions to international organisations take, and why?

Conclusion

Energy research Centre of the Netherlands

Petten



*Amsterdam-
Sloterdijk*





ECN Policy Studies

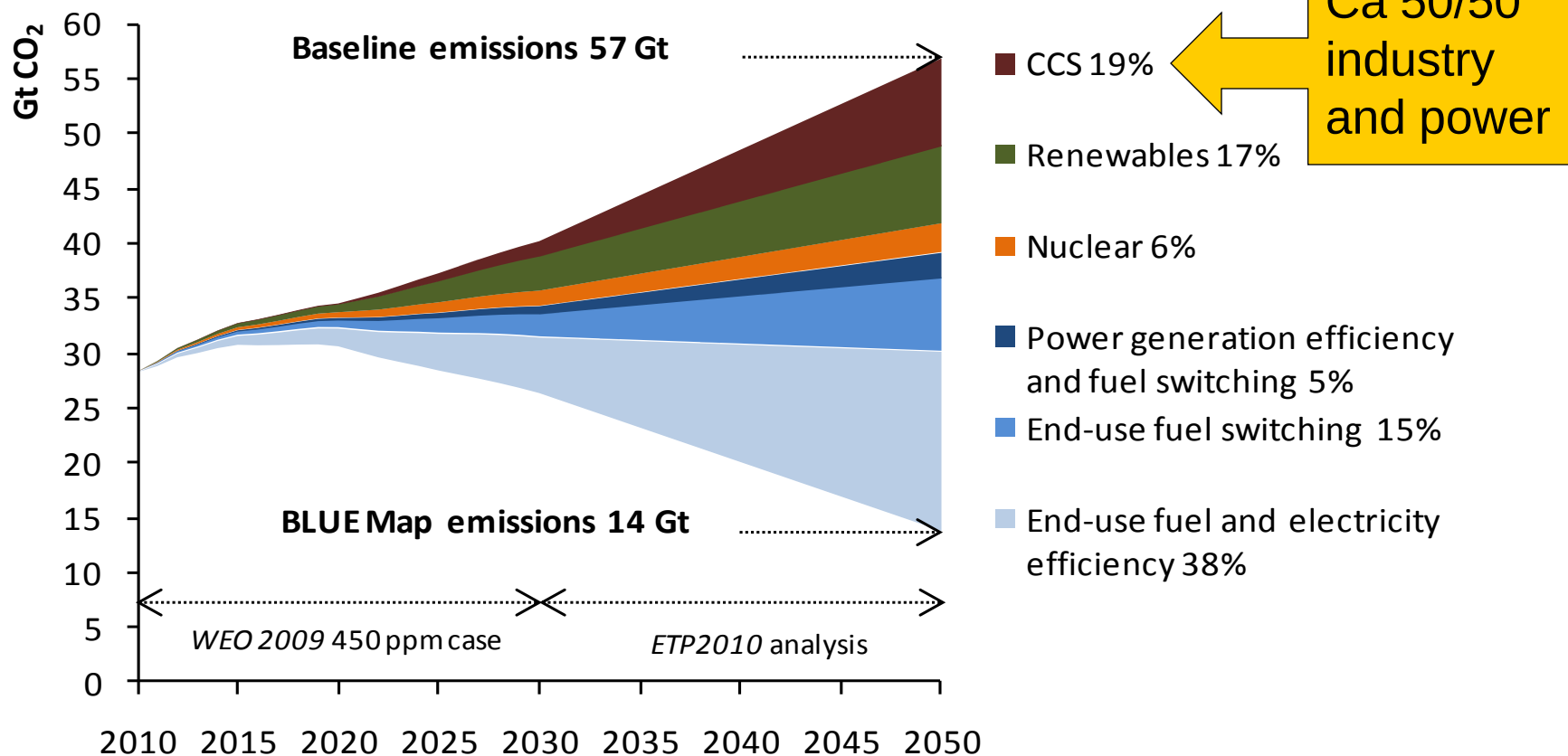
ECN Policy Studies provides knowledge and strategies that matter for a sustainable energy future

- Key in Dutch energy and climate policy, also active in EU and global energy and climate policymaking
- 65 researchers with backgrounds in engineering, economics, social science and environmental sciences
- Addressing energy and climate policy challenges using quantitative analysis and qualitative thinking

UNIDO/IEA Roadmap on CCS in industry

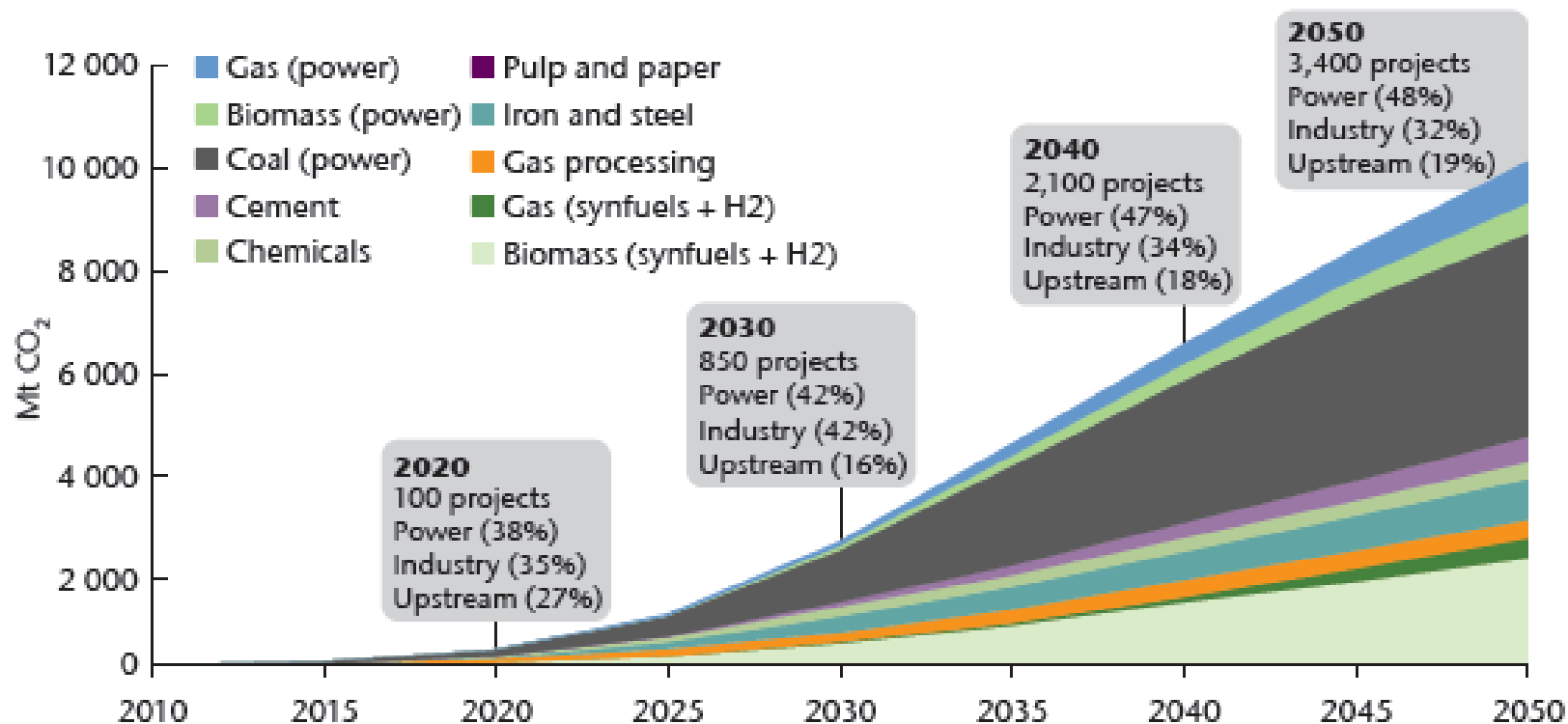
With Tom Mikunda, Stefan Bakker, Rodrigo Rivera

Projected role of CCS



IEA ETP (2010)

IEA roadmap on CCS (2009)



Why this roadmap?

Industry produces about

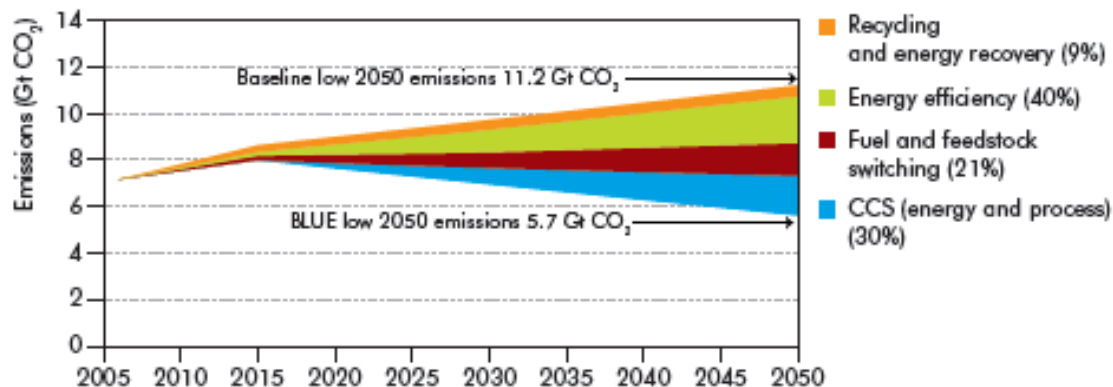
40% of global energy-related CO₂ emissions

Early deployment of CCS likely in industry, but policy attention going to (coal-fired) power

For deeper emission reductions, some industries have few alternatives than CCS

Biomass and CCS may be needed for negative emissions

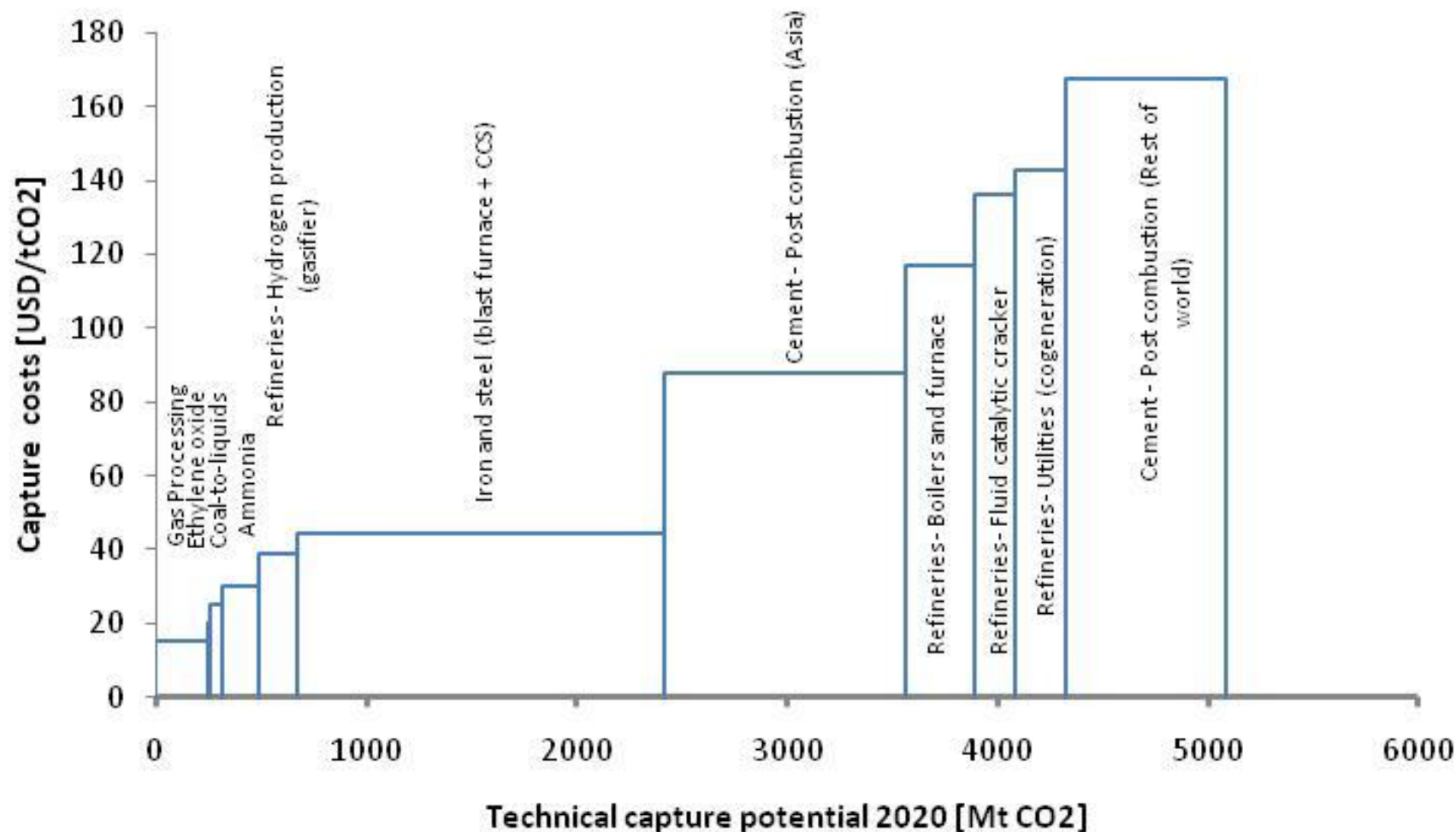
Developing countries have potential but are often poorly covered in OECD-organised roadmap processes



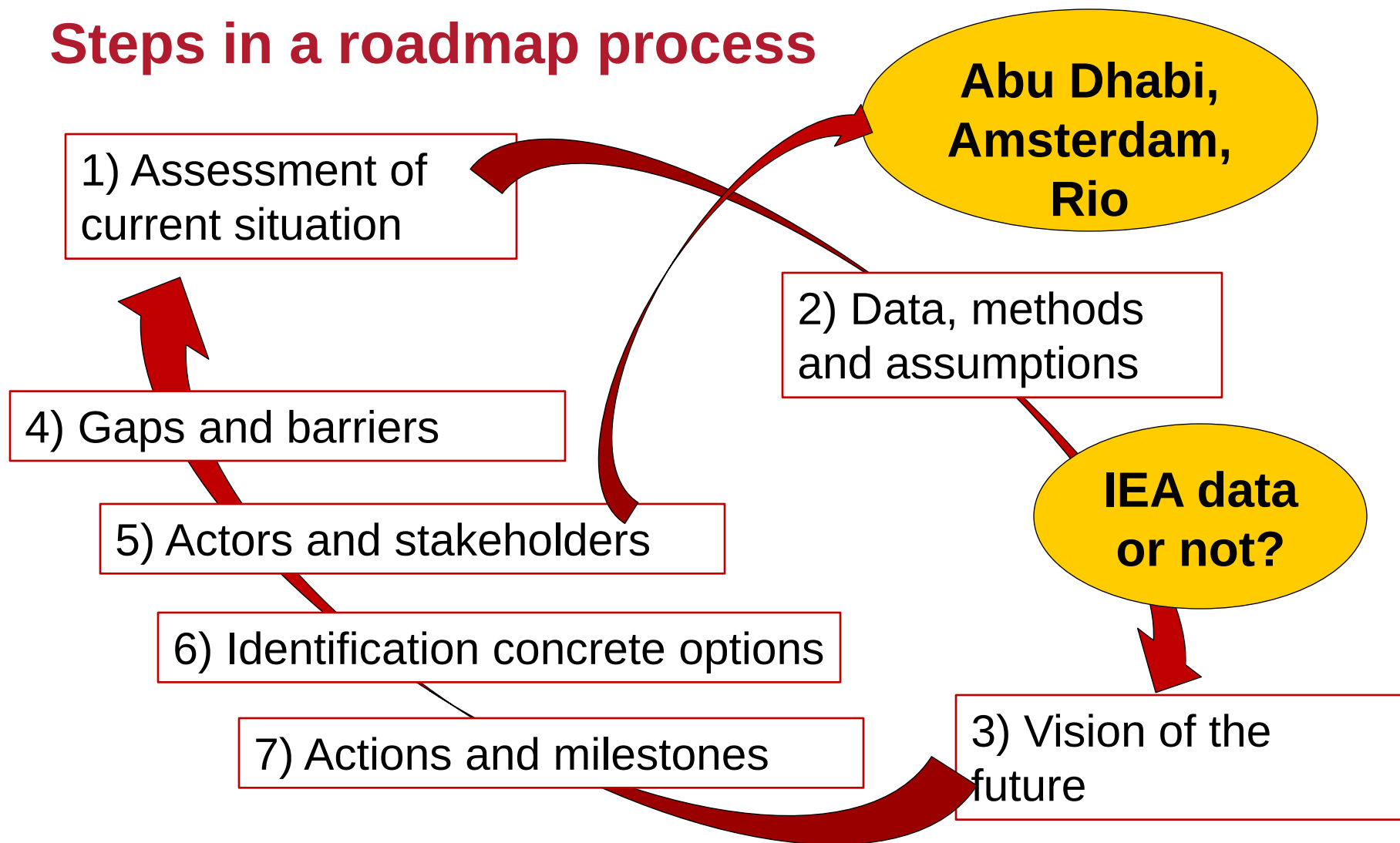
Sectors and technologies covered

Sector	Production processes	
High-purity industrial sources	Natural gas processing (onshore/offshore)	Ethylene oxide production
	Coal-to-liquids (CtL)	Ammonia production
Iron and steel	Blast furnace (pig iron)	FINEX technologies
	Direct reduction of iron (DRI)	The Hlsarna process
Cement	Kiln/calcination	Post/oxyfuel
Refineries	Hydrogen production	Fluidised catalytic cracking
	Hydrogen gasification residues	Process heat
Biomass conversion	Hydrogen production from biomass	Black liquor processing in pulp and paper manufacturing
	Ethanol production	Synthetic natural gas

CCS in industry: relatively cost-effective



Steps in a roadmap process



Preliminary conclusions

Current findings confirm early potential for CCS in industry, also in developing countries

Biomass conversion, gas processing, fertilizer, hydrogen production

Possibilities in EOR but not to be overestimated

Huge data gaps, particularly

- Projections and costs
- Refineries, steel, biomass

Business and policymakers should move beyond “global carbon price” rhetoric and figure out concrete policy options

Over to the politics...

UNIDO is the only UN initiative on CCS. Why interest in CCS?

- CCS part of sustainable industrial development
- Capacity development no-regret
- Opportunity to interact with oil industry

Funded by Norway and GCCSI (UK)

Stakeholder meetings hosted by Masdar, Shell, Petrobras

Differences between IEA and UNIDO notable:

- Focus on developed/developing countries
- Focus on policymakers/industry

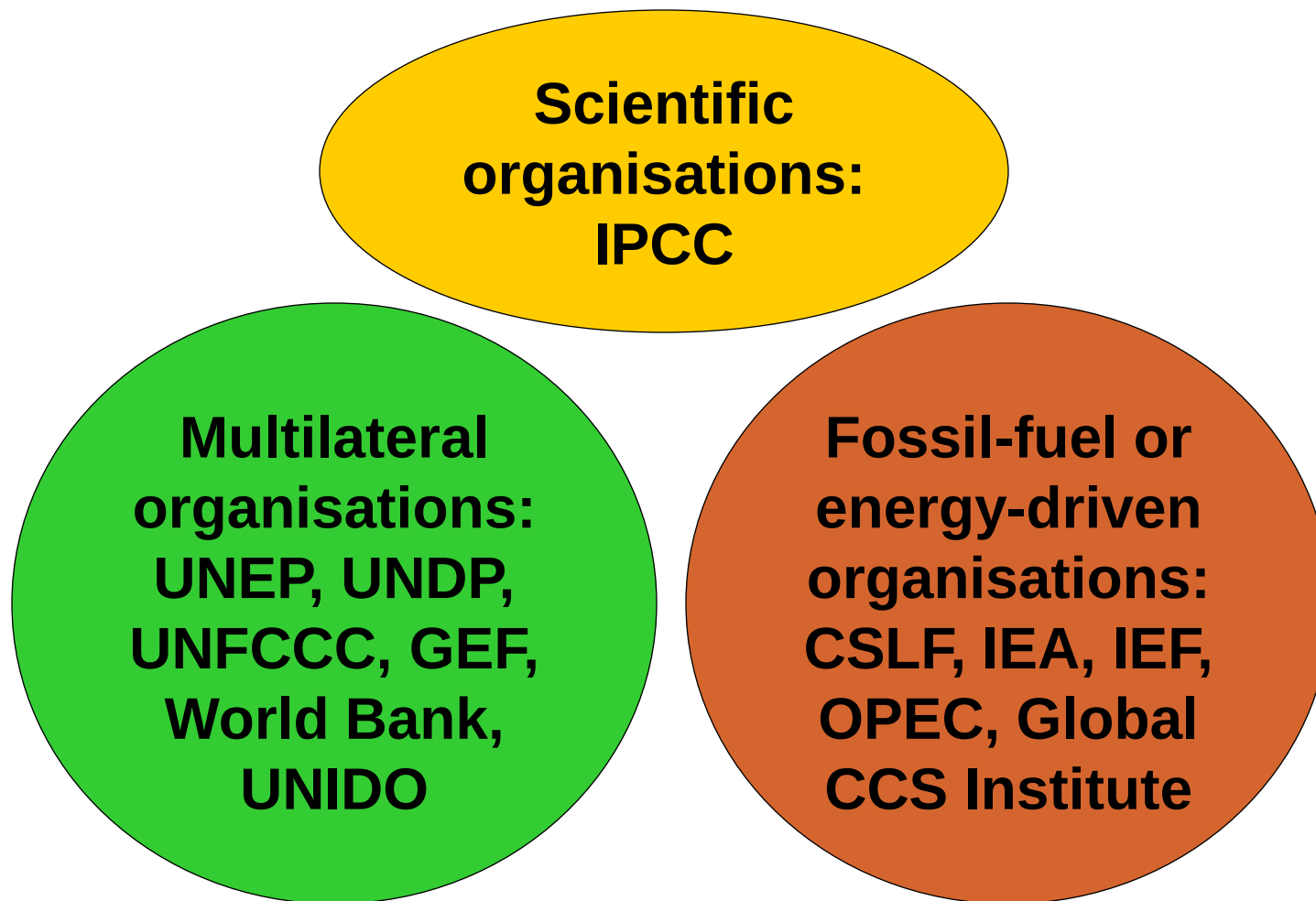
Understanding the international politics of CCS

With Karin Bäckstrand, Lund University

Theories of International Relations

- Realist
 - National interests drive international collaboration
 - E.g. economic or military interests
- Liberal-institutionalist
 - There is a demand for international organisations
 - E.g. role as neutral arbiter, bring down transaction costs, cooperation/coordination problems
- Constructivist (idealist)
 - International organisations are norm-changing,
 - E.g. through science

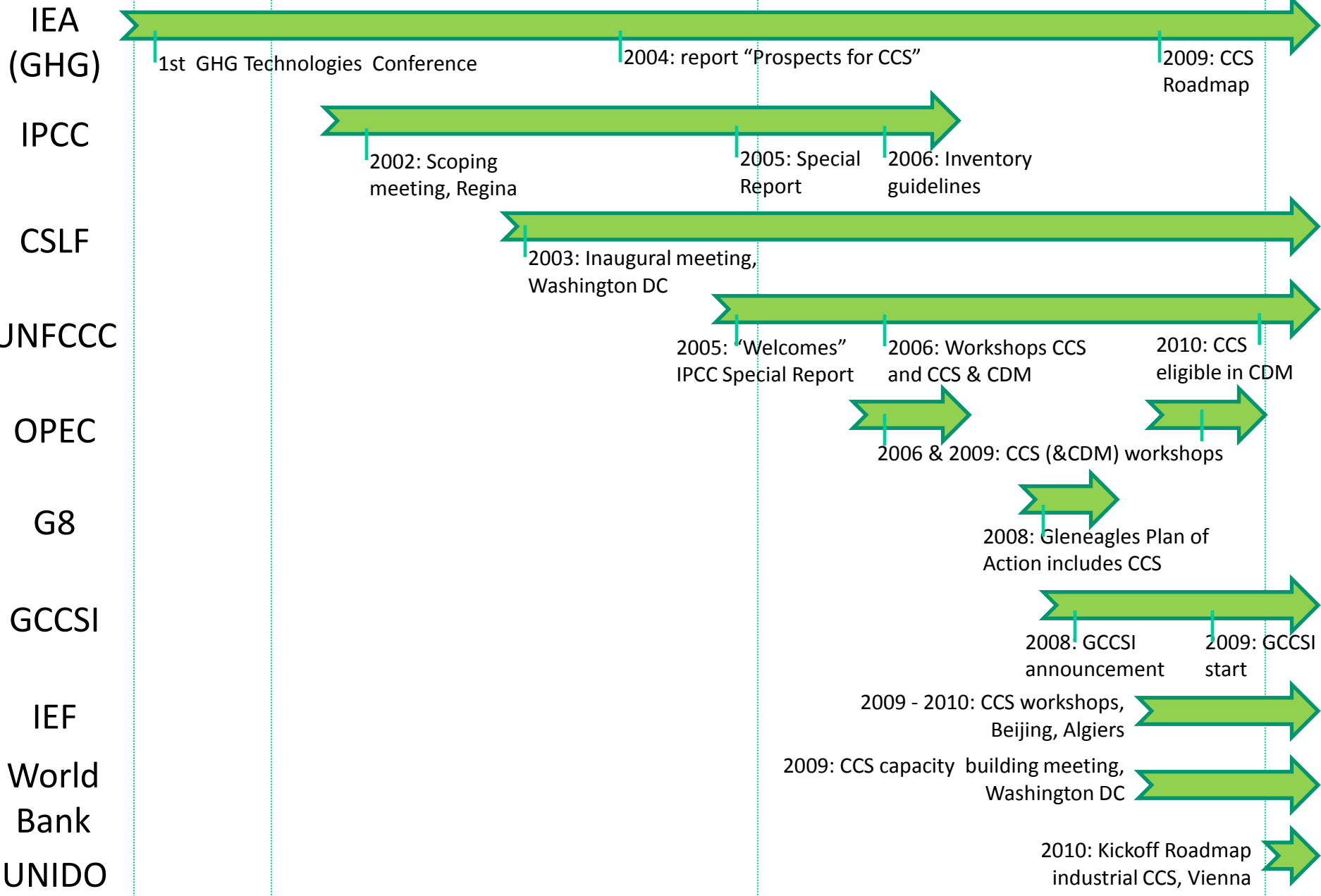
Mapping international organisations on CCS



1990 ~ 2000

2005

2010



Science-oriented and multilateral

<i>Organisation name</i>	<i>Topic area</i>	<i>Primary aim</i>	<i>CCS position</i>
Science-oriented organisations			
Intergovernmental Panel on Climate Change (IPCC)	Climate change	Assess scientific and technical information related to climate change	Neutral. Considers CCS a mitigation technology but does not advocate CCS.
Multilateral organisations (UN and Bretton Woods)			
United Nations Environment Programme (UNEP)	Environment	Improve the environment globally	CCS is not considered. Focus is on energy efficiency and renewable energy.
United Nations Development Programme (UNDP)	Development	Help people build a better life	Not considered

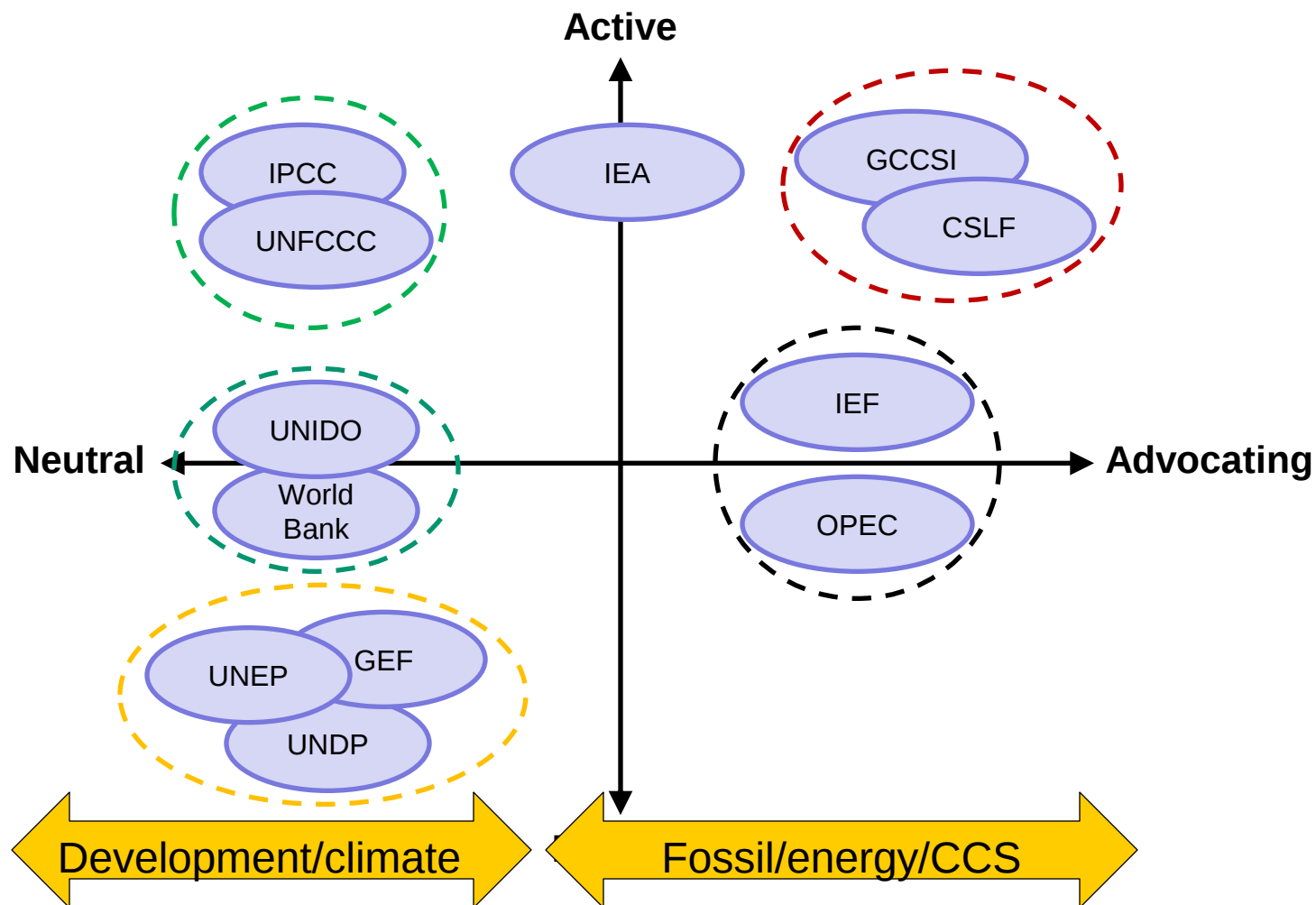
Multilateral ctd.

<i>Organisation name</i>	<i>Topic area</i>	<i>Primary aim</i>	<i>CCS position</i>
Multilateral organisations (UN and Bretton Woods)			
United Nations Framework Convention on Climate Change (UNFCCC)	Climate change	Prevent dangerous human interference with the climate system	Neutral. Considers CCS a mitigation technology but does not advocate CCS.
World Bank	Development	Fight poverty through financing for economic development	Neutral. On-demand funding of feasibility studies or capacity building.
Global Environment Facility (GEF)	Environment	Promote environmentally friendly technologies in developing countries	Not considered. No funding for CCS projects. Focus is on energy efficiency and renewable energy.
United Nations Industrial Development Organisation (UNIDO)	Development	Promote sustainable industrial development	Neutral. Facilitates but does not advocate, CCS

Fossil fuel or energy-driven

<i>Organisation name</i>	<i>Topic area</i>	<i>Primary aim</i>	<i>CCS position</i>
Carbon Sequestration Leadership Forum (CSLF)	CCS	Enable CCS through dialogue and study	Positive. Actively advocates CCS.
International Energy Forum (IEF)	Fossil fuels/energy	Align interests of energy importers and energy exporters through dialogue	Positive. Actively advocates CCS.
International Energy Agency (IEA)	Energy with a slight fossil fuel orientation	Improve energy security for OECD countries; represents interests of energy importers.	Positive. Facilitates CCS through independent studies.
Organisation of Petroleum Exporting Countries (OPEC)	Fossil fuel	Represent interests of energy exporters	Positive. Currently does not politically advocate CSS.
Global CCS Institute (GCCSI)	CCS	Facilitate demonstration of CCS projects	Positive. Actively advocates CCS.

Mapping the CCS positions



What functions can international organisations fulfil?

- Support for state and non-state interactions
- Management of substantive operations
- Procedures for elaborating norms
- “Laundering” (i.e., channelling money or resources through an independent organisation to “neutralise” it from national flavour) and pooling of funding
- Neutral provision of information
- Arbitration activities

	Information sharing	Awareness and capacity developing countries	Information provision, joint R&D and studies	Regulatory development	Feasibility studies	Project financing
CSLF	Meetings	Workshops				
IEF	Workshops	Workshops				
IEA	Publications	Summer schools (IEA GHG)	a/o Roadmap and IEA GHG studies	Workshops, publications		
OPEC	Workshops	Workshops				
GCCSI	Meetings, publications	Workshops, programmes	Publications	Publications	Uncertain	
GEF					Small scale, bio-fuel	Small scale, bio-fuel
IPCC	Through reports	Through Special Report	Special Report	Inventory guidelines		
UNEP	<i>No activities</i>					
UNFCCC	In negotiations			Uncertain (depends on CDM)		Uncertain (depends on CDM)
UNIDO	Through roadmap	Through roadmap	Roadmap			
World Bank		Programme under development			Specific countries	

Understanding the CCS international landscape

Initially, CCS science-driven

- Constructivist: IPCC determined the norm
- After IPCC CCS was transferred to UNFCCC, but Copenhagen and CDM discussions stalled progress

Strong fragmentation of the international landscape

- Liberal-institutionalist: fragmentation and “regime complex” possibility of evolving demand for CCS/climate change regime

Move from UN to fossil fuel/energy-driven organisations

- Realist: CCS case of national security for fossil-fuel exporting countries

Understanding the CCS international landscape

Energy, fossil fuel and CCS-driven organisations: information sharing and capacity development

Driving countries: US, Australia, Canada, Norway (all large fossil fuel producers)

- CCS demonstration in countries: no pooling of funding
- GEF, World Bank and UNFCCC (CDM) only candidates for demonstration funding: all development/

Speculative: Real motives of these countries? Not to deploy and roll out CCS?

- Delay aggressive climate abatement policies
- While symbolically promoting CCS information sharing and capacity building

Thank you!

Heleen de Coninck
ECN Policy Studies
deconinck@ecn.nl