

Overview on Knowledge Exchange Activities

Dr. Matthias Finkenrath, IEA CCS Unit
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BACKGROUND

**Working Party on Fossil Fuels (WPFF):
Workshop on Fossil Fuel Technologies**
June 2010, Beijing

Work streams identified by WPFF & MOST

- CCS knowledge sharing
- Early opportunities for CCS
- Financing CCS projects

**Focus of all activities:
China & Non-IEA countries**

IEA CCS UNIT FOCUS AREAS

New IEA CCS Unit since summer 2010

CCS Strategy & Policy

Technical & Economic

Legal & Regulatory

Global Collaboration







**Global Collaboration and Knowledge Exchange:
Shared IEA CCS Unit priorities with WPFF**

KNOWLEDGE EXCHANGE ACTIVITY

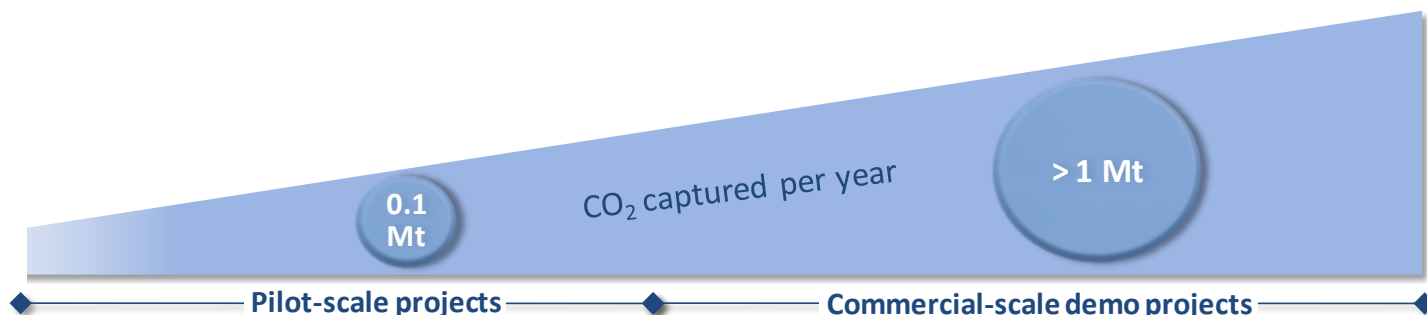
Initial participants identified by WPFF

- Porto Tolle
- Mongstad
- GreenGen IGCC
- Shenhua CTL
- Mountaineer
- FutureGen

Commercial-scale demo projects

	 ENEL	 AEP	 Mongstad Phase 2	 FutureGen	 Shenhua Phase 2-3	 GreenGen Phase 3
Location	Porte Tolle	Mountaineer	Mongstad	Illinois	Ordos	Tianjin
Operation	2015	on hold	FID: 2016	2016	?	2016
Capture rate	1 Mt/a @ 90%	1.5 Mt/a @ 90%	1 Mt/a @ 90%	1.3 Mt/a @ 90%	>1 Mt/a @ 90%	>1 Mt/a @ 90%
Type of capture	Post-comb.: amines	Post-comb.: NH ₃	Post-combust.	Oxy-combustion	Pre-comb. (CTL)	Pre-combustion
Retrofit	Yes	Yes	Yes	Repowering	No	No
Baseline plant	264 MW PC slipstream	235 MW PC slipstream	CHP	139 MW PC	2 Mt crude oil CTL	400 MW IGCC
CO₂ transport	Pipeline	Local injection	Pipeline	Pipeline		
CO₂ storage	Deep saline aquifer in North Adriatic Sea	Deep saline aquifer (Rose Run Sandstone)	tbd	Deep saline aquifer	tbd, Saline aquifer / EOR	tbd
Budget or funding	EEPR: 100 M€ applied for NER300	668 Mill. USD, 50% DOE share		1.3 Bill. USD (77 % DOE) CCS: 42%		

FROM PILOTS TO DEMO PLANTS



	ENEL	AEP	TCM	Shenhua Phase 1	GreenGen Phase 2	ENEL	AEP	Gassnova	FutureGen	Shenhua Phase 2-3	GreenGen Phase 3
Location	Brindisi	New Haven	Mongstad	Ordos	Tianjin	Porte Tolle	Mountaineer	Mongstad	Illinois	Ordos	Tianjin
Operation	2010	2009	2012	2011	2014	2015	on hold	FID: 2016	2016	?	2016
Capture rate	20 kt/a @ 90%	100 kt/a @ >85%	100 kt/a @ 90%	100 kt/a @ 90%	100 kt/a @ 90%	1 Mt/a @ 90%	1.5 Mt/a @ 90%	1 Mt/a @ 90%	1.3 Mt/a @ 90%	>1 Mt/a @ 90%	>1 Mt/a @ 90%
Type of capture	Post-comb.: amines	Post-comb.: NH ₃	Post-comb.: amines & NH ₃	Pre-comb.: (CTL)	Pre-combustion	Post-comb.: amines	Post-comb.: NH ₃	Post-combust.	Oxy-combustion	Pre-comb. (CTL)	Pre-combustion
Retrofit	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Repowering	No	No
Baseline plant	PC slipstream	20 MW PC slipstream	CHP & Cracker slipstream	1 Mt crude oil CTL	IGCC slipstream	264 MW PC slipstream	235 MW PC slipstream	CHP	139 MW PC	2 Mt crude oil CTL	400 MW IGCC
CO₂ transport		Local injection	(release)		17 km by truck (liq.)	Pipeline	Local injection	Pipeline	Pipeline		
CO₂ storage	(release)	Deep saline aquifer (Rose Run Sandstone)	(release)	Deep saline aquifer / EOR	Deep saline aquifer / EOR	Deep saline aquifer in North Adriatic Sea	Deep saline aquifer (Rose Run Sandstone)	tbd	Deep saline aquifer	tbd, Saline aquifer / EOR	tbd
Budget or funding						EEPR:100 M€ applied for NER300	668 Mill. USD, 50% DOE share		1.3 Bill. USD (77 % DOE) CCS: 42%		

Notes: FID = Final Investment Decision, NH₃ = Chilled ammonia, CTL = Coal-to-liquids plant, PC = Pulverized coal power plant, IGCC = Integrated Combined Cycle

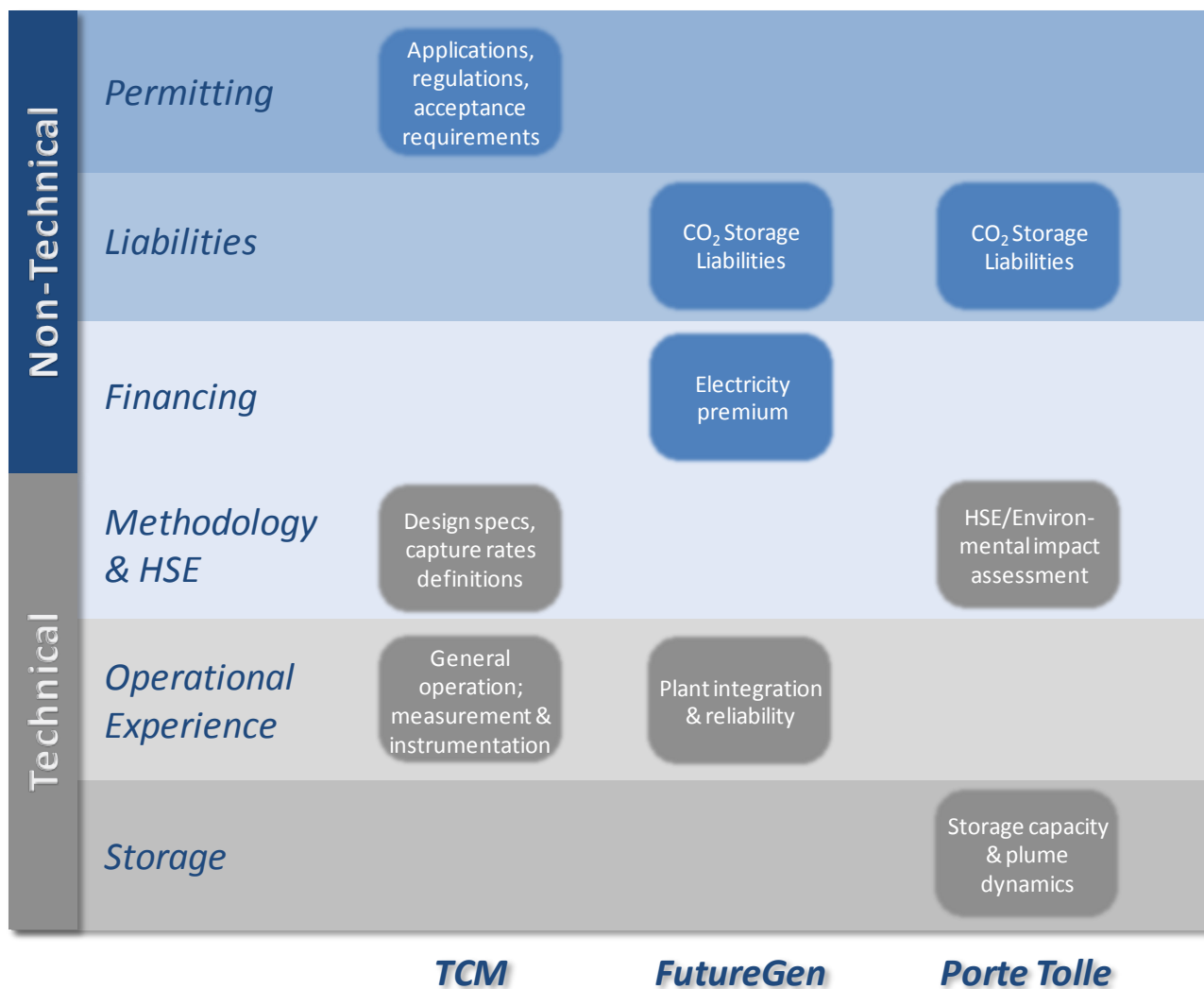
JOINT WORKSHOPS

- 1) TCM CO₂ Capture Pilot Mongstad, Norway, 3-4 March 2011
- 2) ENEL CO₂ Capture Pilot Brindisi, Italy, 16-17 May 2011



KEY PRIORITIES

Example of feedback from project owners



FUTURE COLLABORATION OPPORTUNITY



IEA WPFF – MOST/ACCA21 Initiative - Sharing Early Mover CCS Experience-



- Foster Knowledge Exchange between IEA and Non-IEA member countries
- Support dialogue on global CCS pilot or demonstration operation
- Synthesize policy-relevant messages from participants

Key CCS Pilot & Demonstration Projects from IEA and Non-IEA member countries



CCS Knowledge and Data Management, e.g.



- Provide legal and technical framework for data exchange between participants
- Support in-depth collaboration and related project management
- Link to regional CCS Knowledge Exchange Networks

**Coordination with existing Knowledge
Exchange networks is critical**



Thank you!

matthias.finkenrath@iea.org

**CARBON CAPTURE
AND STORAGE**