

International Test Center Network and Collaboration on CCUS R&D

Frank Morton – National Carbon Capture Center



International Test Center Network

- Overview of the NCCC
- International Test Center Network
- International Test Collaboration at the NCCC
- Summary
- Importance of operating facilities
 - Policy, messaging, funding commitment from industry and gov't, attorneys



National Carbon Capture Center



Offering a **world-class neutral test** facility and highly specialized staff to **accelerate the commercialization** of advanced technologies and enable coal-based power plants to achieve **near-zero emissions (low-cost CO₂)**.



- Highly leveraged
 - 80% funding by DOE and co-funding is shared by multiple partners
- Contract favorable to developers
 - Partners not interested in owning IP
 - Help the developers find partners
- Highly skilled staff that is shared with developers



CLEARPATH



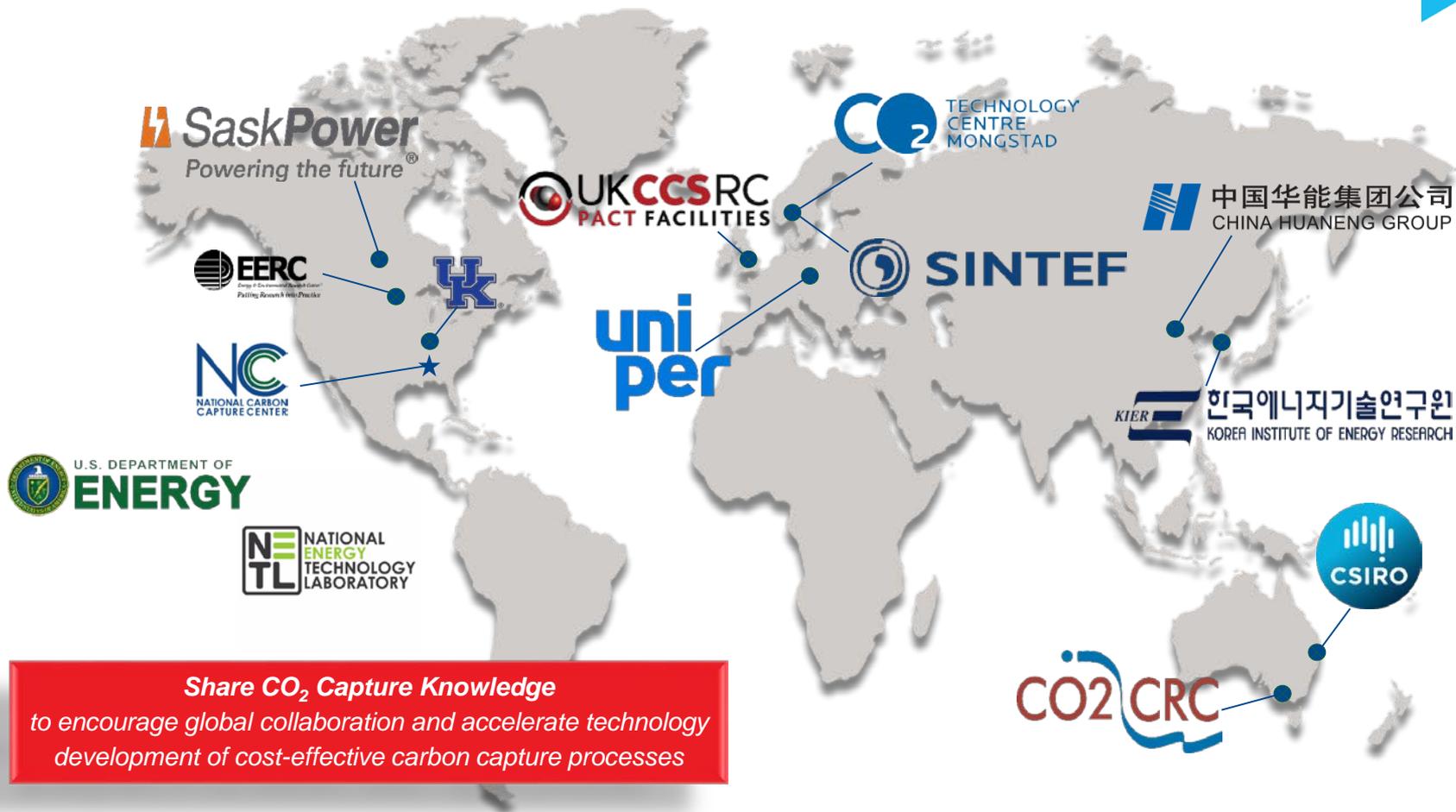
International Test Center Network

- Share public knowledge with carbon capture test facilities.
 - Facility operations
 - Safety
 - Analytical techniques
 - **Support on funding opportunities**
- Collaborate on one technical item per year.
 - Amine carry-over and measurement techniques
 - Support advanced simulations and model development with a focus on reducing capital and operating cost and minimizing scale-up risks
 - Next considering a new standard solvent beyond MEA

*Share CO₂ Capture Knowledge
to encourage global collaboration and
accelerate technology development of
cost-effective carbon capture processes*



International Test Center Network Members



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NCCC International Collaboration

Carbon capture R&D is an international issue that requires international collaboration

- Support DOE goal of international cooperation
- Multiple paths for involvement; partners, developers, network members, consulting services and workshops
- Ease of collaboration since intellectual property is not being shared
- Broad effort China, India, Middle East, Korea, Japan, EU, Australia, Canada, Norway



China

- Huaneng – Clean Energy Research Institute
Joined ITCN
Exploring test collaboration
- Shenhua - NICE
MOU for knowledge sharing
Exploring test collaboration
- China Partner 1
Research group partnered with major power company
Signed MOU 2015
Negotiating contract for collaboration
- Initial Meetings
Sinopec, Datang, CPI, Tsinghua Univ, Zhejiang Univ,
Guodian, CATF, Wuhuan



Signing Ceremony
GDCCUS Facility



Post-Combustion

India



CCSi Test at Solvay Chemical in India

- Could become largest emitter of CO₂
- CCSi – Tested at the NCCC
- TIFAC within the Dept of Science and Tech is coordinating collaboration with government agencies
- In discussion with Secretary of Coal and major coal, oil & gas and power companies for knowledge sharing.

Middle East

- Growing interest in EOR
- Countries want to participate in advanced power projects internationally
- UAE - Advanced negotiation with ADNOC on NCCC membership.
- Interested in additional carbon capture for existing EOR project.



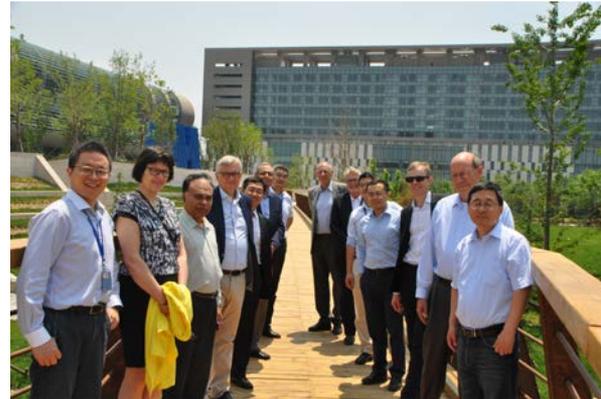
Emirates Steel -
CCUS



Minister of Oil -
Oman

Summary

- Collaboration and relationship building of ITCN is benefiting operation of test facilities but also contribution to supporting additional projects.





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