



# What Developing Countries can do to Implement CCUS

**Tim Dixon**

General Manager IEAGHG

Making CCS/CCUS Affordable: Enabling CCUS Deployment in G20 and Beyond  
Indonesia G20 Workshop – 13 April 2022



## Who are we?

Our internationally recognised name is the IEA Greenhouse Gas R&D Programme (IEAGHG). We are a Technology Collaboration Programme (TCP) and are a part of the International Energy Agency's (IEA's) Energy Technology Network.

## Disclaimer

The IEA Greenhouse Gas R&D Programme (IEAGHG) is organised under the auspices of the International Energy Agency (IEA) but is functionally and legally autonomous. Views, findings and publications of the IEA Greenhouse Gas R&D Programme do not necessarily represent the views or policies of the IEA Secretariat or its individual member countries.

# COP26 Glasgow Climate Pact



UN CLIMATE  
CHANGE  
CONFERENCE  
UK 2021  
IN PARTNERSHIP WITH ITALY

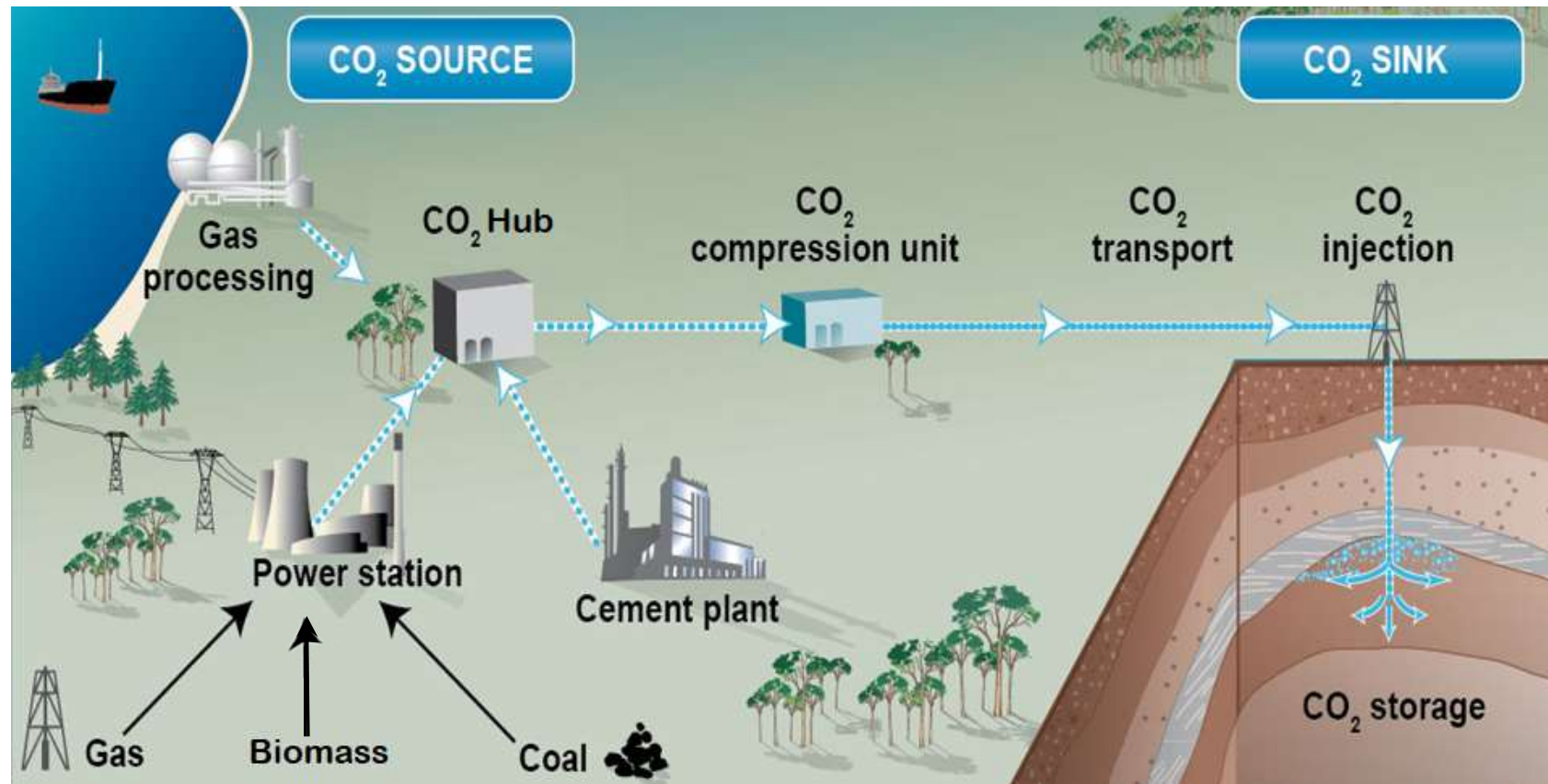


- Nationally Determined Contributions (NDCs), which were required to be updated every five years (ie 2020, 2025, 2030) are now requested to be “*revisited and strengthened*” by the end of 2022 (still with the target year of 2030).

**NDC updates:** As of 9 November 2021, **123** submitted, and just **16** include CCS (Norway, UAE, Australia, Iceland, USA, Canada, Malawi, Qatar, Tunisia, Pakistan, Kuwait, Togo, Bahrain, Saudi Arabia, China, Mongolia) and **3** that implicitly include CCS (UK, EU, Indonesia)

**Long-term GHG strategies** (mid-century): As of 9 November 2021, **43** countries have submitted these, and **33** contain CCS as a mitigation activity

# Carbon Capture & Storage (CCS) value chain



CO2CRC



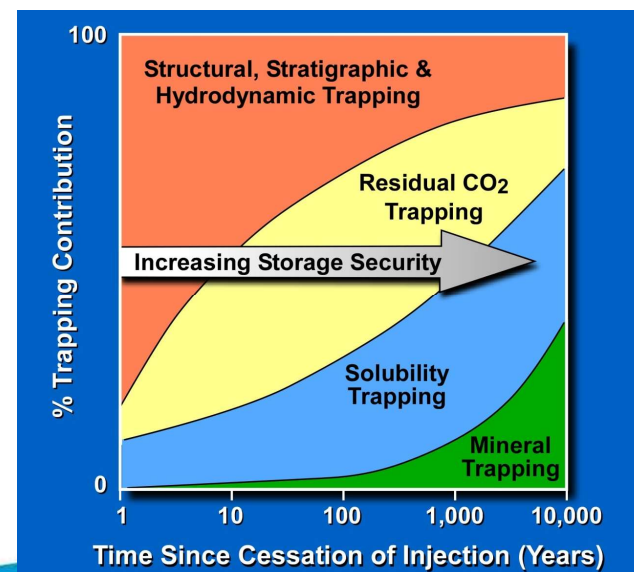
# CO<sub>2</sub> Geological Storage to Scale: Aquistore (Canada)



PTRC



## CO<sub>2</sub> Storage Trapping Mechanisms (IPCC 2005)

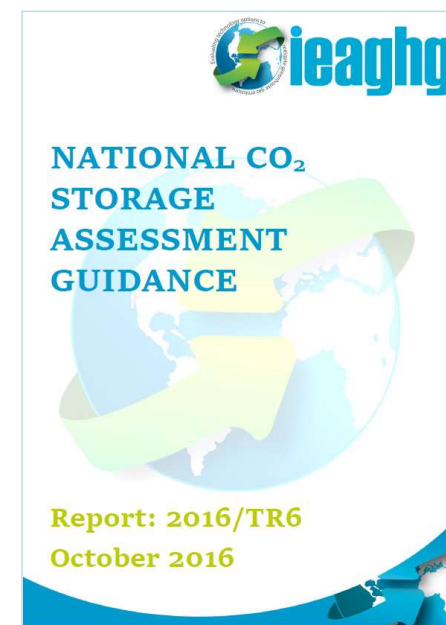


# What Developing Countries can do to implement CCUS - 1



- **Understand their National Potential**

- Identify CO<sub>2</sub> sources
- Assess geologic storage potential
- Assess national regulations (eg GCCSI Toolkit)



# How do we ensure it is safe and secure?

## CCS-specific Regulations



**United Nations**  
Framework Convention on  
Climate Change

Modalities and Procedures  
for CCS in CDM (2011)



**London Protocol**  
CCS amendments to allow and regulate  
offshore CO<sub>2</sub> storage (2006, 2009, 2019)



**ISO TC-265** – standards on Capture  
Performance, Pipeline Transport, Geological  
Storage, Storage in EOR, Vocabulary

**USA**

**EU**

**Australia**

**Japan**

**Canada**

EPA : Storage 2010 and GHG 2010

CCS : Directive 2009 and ETS Directive 2009

IPCC GHG Inventory  
Guidelines 2006



# What Developing Countries can do to implement CCUS - 2



- **Capacity Building**

- Awareness raising workshops with stakeholders
- Re-training oil and gas professionals  
+ Training/educating students



- Join international CCS knowledge sharing organisations, eg IEAGHG, GCCSI, CEM CCUS



# What Developing Countries can do to implement CCUS - 3



- **Establish a Centre of Excellence in CCUS**

- Can lead on understanding the national potential
- Can lead on capacity building
- Can help seek international climate funding, eg ADB, World Bank, GCF, International carbon markets (Paris Agreement Article 6)
- Can help develop regulations
- **To inform government, advise on CCUS in climate policy, including NDC updates – be a national resource of expertise**
- Develop a pilot project



THE PROCESS OF  
DEVELOPING A CO<sub>2</sub>  
TEST INJECTION:  
EXPERIENCE TO  
DATE AND BEST  
PRACTICE

Report: 2013/13  
October 2013

# What Developing Countries can do to implement CCUS - 4



- **Share Experiences and Learn from Other Developing Countries – *South-South Cooperation***

- eg at ADB's Asia Clean Energy Forums or at UNFCCC COPs



## **COP26 Side-event on CCS in Emerging Economies** (IEAGHG and UT, Bellona Pavilion)

- Tim Dixon, IEAGHG – Moderator and Scene-setting
- Dr Katherine Romanak, University of Texas – CCS Technology Transfer
- Dr Rachmat Sule, Institute Technology Bandung, Indonesia – **CCS progress in Indonesia**
- Professor Raffie Hosein, University of the West Indies – **CCS progress in Trinidad and Tobago**
- Dr Victor Richard Osu, Nigeria Office of the Vice President – **Nigeria's strategy on CCS**
- Dr Vaibhav Chaturvedi, Council on Energy, Environment and Water, New Delhi – **CCS and India**

[Link to recordings on CCUS-related events at COP26 \(ieaghg.org\)](https://ieaghg.org)



# What Developing Countries can do to implement CCUS - Summary



- **Understand their National Potential**
- **Capacity Building**
- **Establish a Centre of Excellence in CCUS**
- **Share Experiences and Learn from Other Developing Countries**



# IEAGHG Primary Activities

- Funding research into development and deployment of CCUS technologies
- Technical Reports >356 reports published on all aspects of CCUS
- International Expert Networks Risk Management; Monitoring; Modelling; Environmental Research; High Temperature Solid Looping; Costs; Social Research
- Conferences
  - GHGT conferences (the largest global conference on CCS)
    - GHGT16 – 23-27 Oct 2022, Lyon France.
  - PCCC conferences - PCCC6, UKCCSRC, virtual, 19-21 Oct 2021
  - Negative CO<sub>2</sub> Emissions conference – 14-17 June 2022 Gothenburg
  - International CCS Summer Schools





Input to WPFE and CCUS Unit



CSLF Technical Group  
IEAGHG inputs

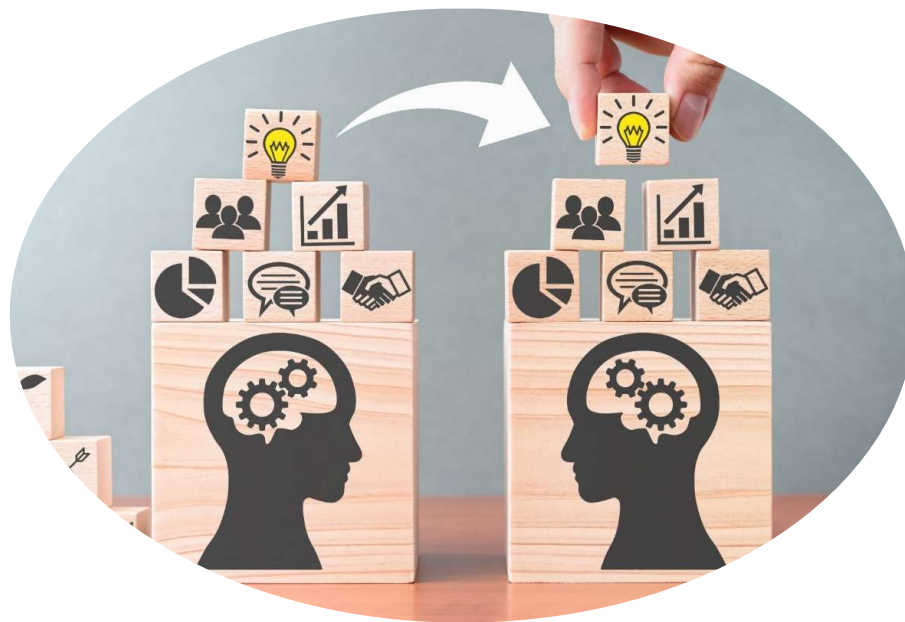


CCUS Initiative  
IEAGHG inputs



London Convention:  
Regular updates on CCS:  
ROAD permit assessment, Offshore workshops  
**CO<sub>2</sub> Export Resolution 2019 – Report 2021-TR02**

# IEAGHG Knowledge Transfer



United Nations  
Framework Convention on  
Climate Change

CCS Side Events at COP22,  
COP23, COP24, COP25, COP26



Expert Reviewers,  
Accredited Observer  
**1.5SR, AR6 reviews**

ISO TC-265  
IEAGHG inputs







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