

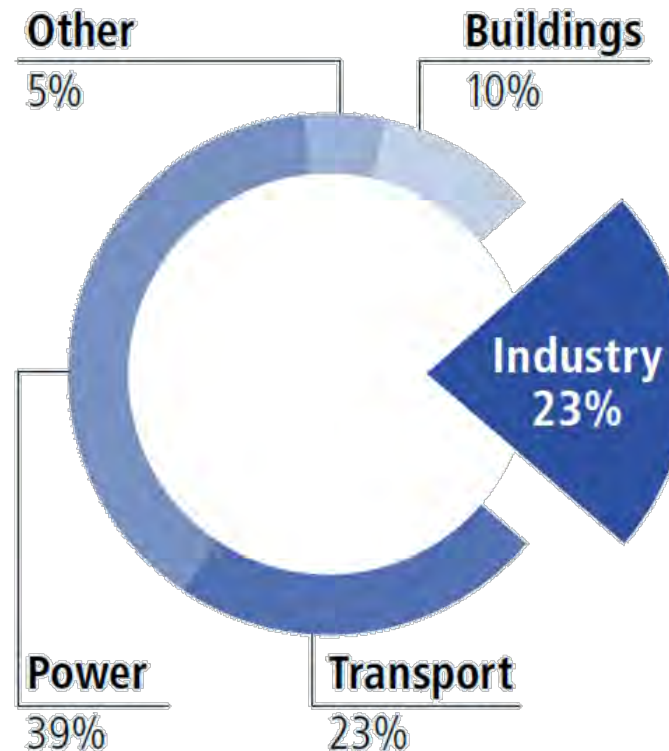
# Oil & Gas Climate Initiative

## Deploying CCUS now and at scale: OGCI's CCUS Kickstarter

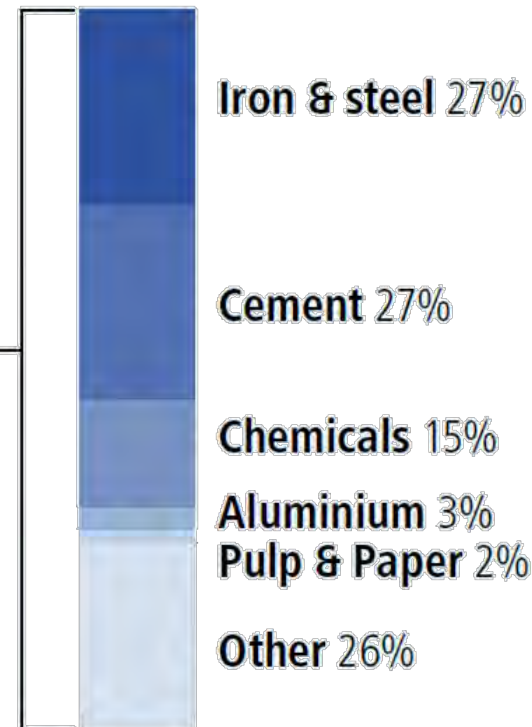
4<sup>th</sup> November, 2019 – Carbon Sequestration and Leadership Forum

# Tackling Industrial Carbon Dioxide Emissions:

Share of global direct carbon dioxide emissions by sector, 2017

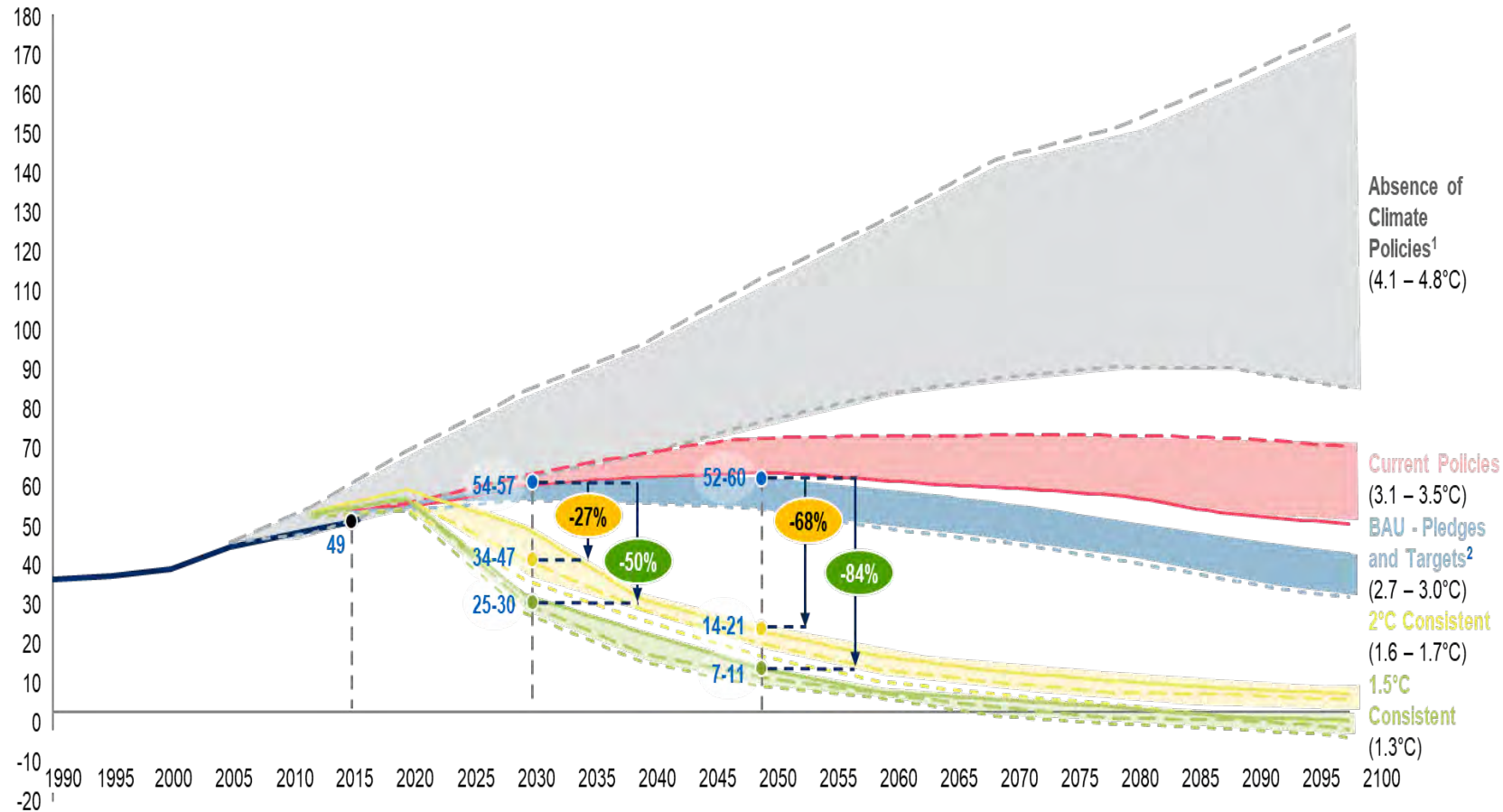


Share of global direct carbon dioxide emissions from industry by subsector, 2017



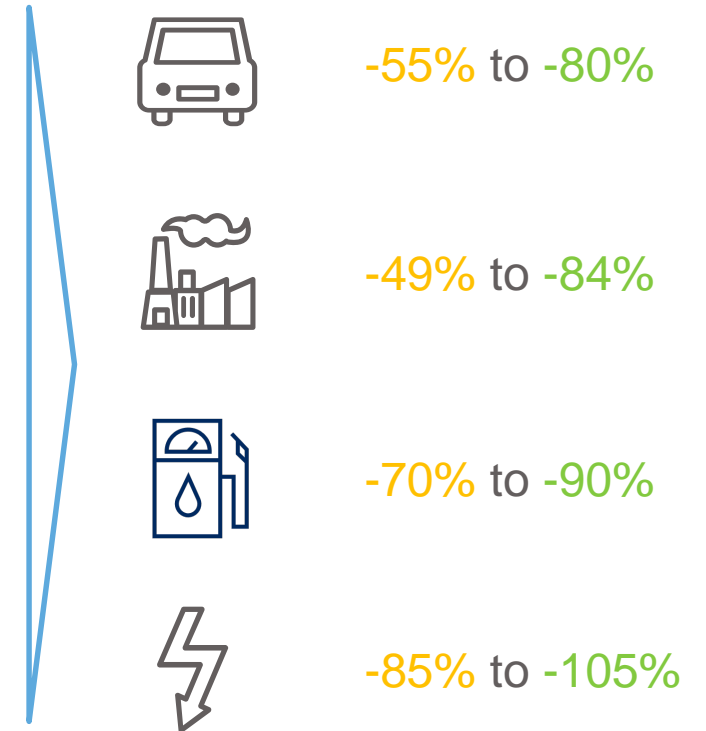
Source: [IEA \(2019\)](#)

# GHG emissions: urgent need for actions

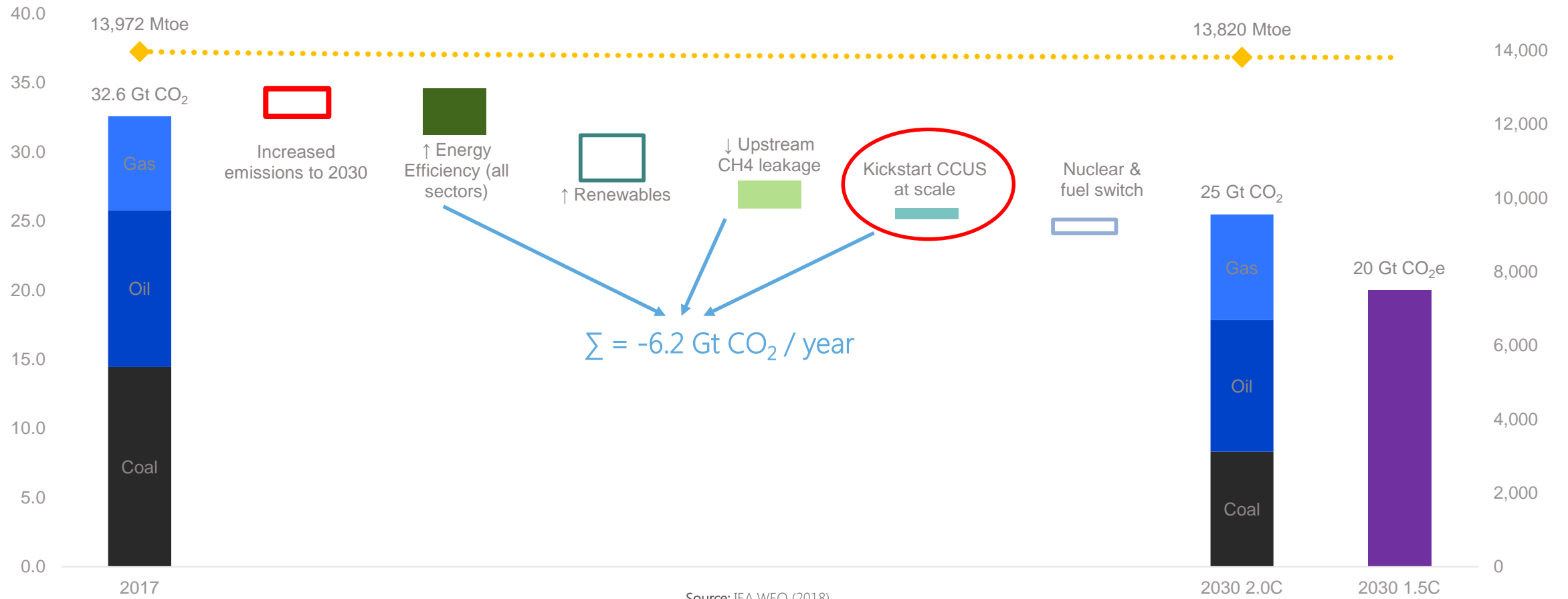


Source: Carbon Tracker, EC GECO

## GHG 2050 vs 2015



# Multiple ways to reach <math><2^{\circ}\text{C}</math> – zoom on energy



# Oil and Gas Climate Initiative

## History

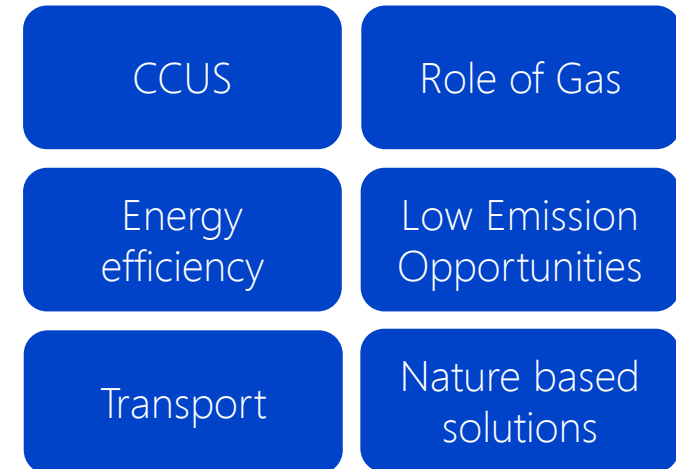
- September 2014: Launch of OGCI at UN Climate week
- September 2019: 13 members, IOCs and NOCs, >30% of global oil & gas production (equivalent to >20% of energy needs)

## Mission Statement

- CEO-led, voluntary, ambitious, additional
- **Action oriented** to accelerate development low carbon economy and support the Paris Agreement goals (reach net zero as early as possible).
- OGCI programs include **exploring reduction on the energy value chain, acceleration of low carbon solutions and enabling a circular carbon model.**
- Values and scales **collaboration with external stakeholders**

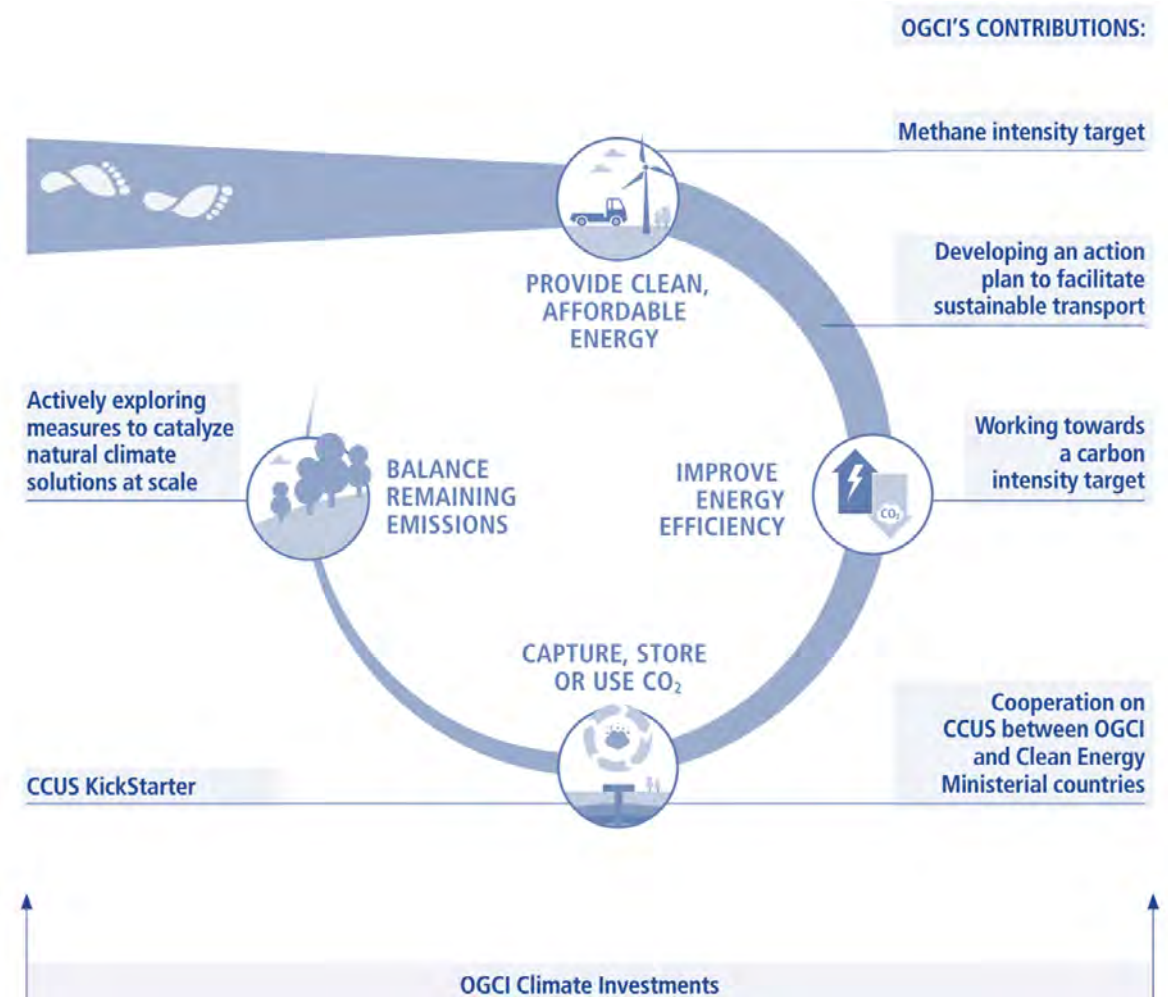
## Structure

OGCI is structured around 6 thematic workstreams and 1 investment fund of \$1bn+

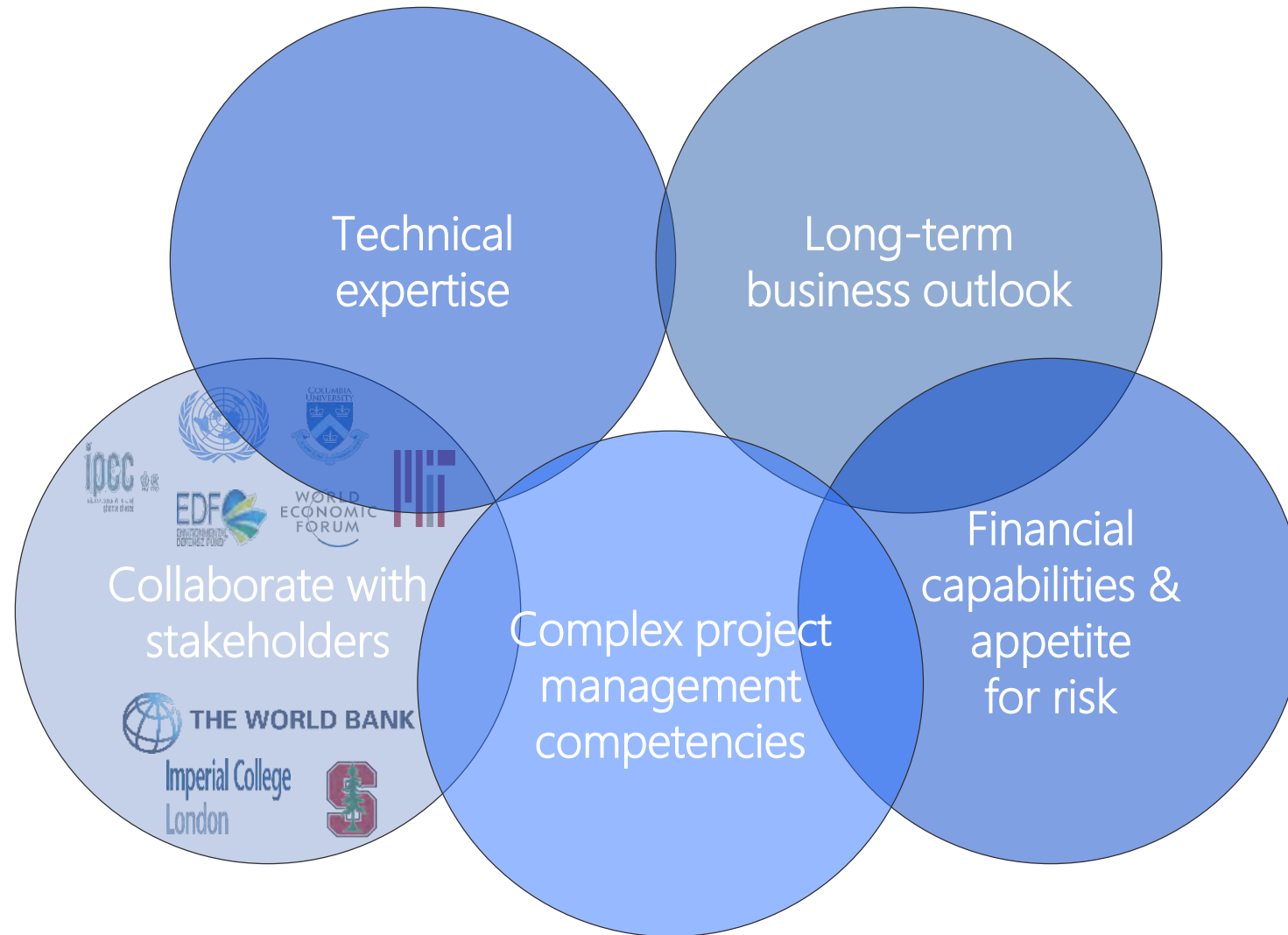


# Towards a Circular Carbon Model

- A circular carbon economy is needed to accelerate the reduction of net-GHG emissions
- Negative carbon emissions necessary to limit effects of global climate change, while continuing to provide reliable, affordable and clean energy to all
- Recognition that climate change is not the only threat to sustainable development means that a holistic approach to the UN Sustainable Development Goals is essential



# How to contribute to the climate change solutions?





# The case of CCUS – What is hampering its deployment?

## Policy, Legal & Regulatory Barriers

Policy confidence is a prerequisite for investment in long lived capital intensive assets like CCUS infrastructure. Only 5 of 55 countries analysed by the Global CCS Institute have laws in place that incentivise and regulate aspects of CCUS.

Source: Global CCS Institute – The Global Status of CCS (2018)

## Lack of Trust

Many people involved in climate action worry that oil & gas support for CCUS is an attempt to preserve business as usual.

Governments can't be seen to subsidize oil & gas companies. Emitting industries are worried that oil and gas companies want to transfer the cost of decarbonization to them.

## Financial Barriers

Unclear legal and regulatory regime increases risk/reward ratio, critical to attract private investments:

- Long term storage liabilities
- Access to storage pore space
- Investment horizon mismatch
- CO<sub>2</sub> supply uncertainty
- Volatile carbon credits market conditions

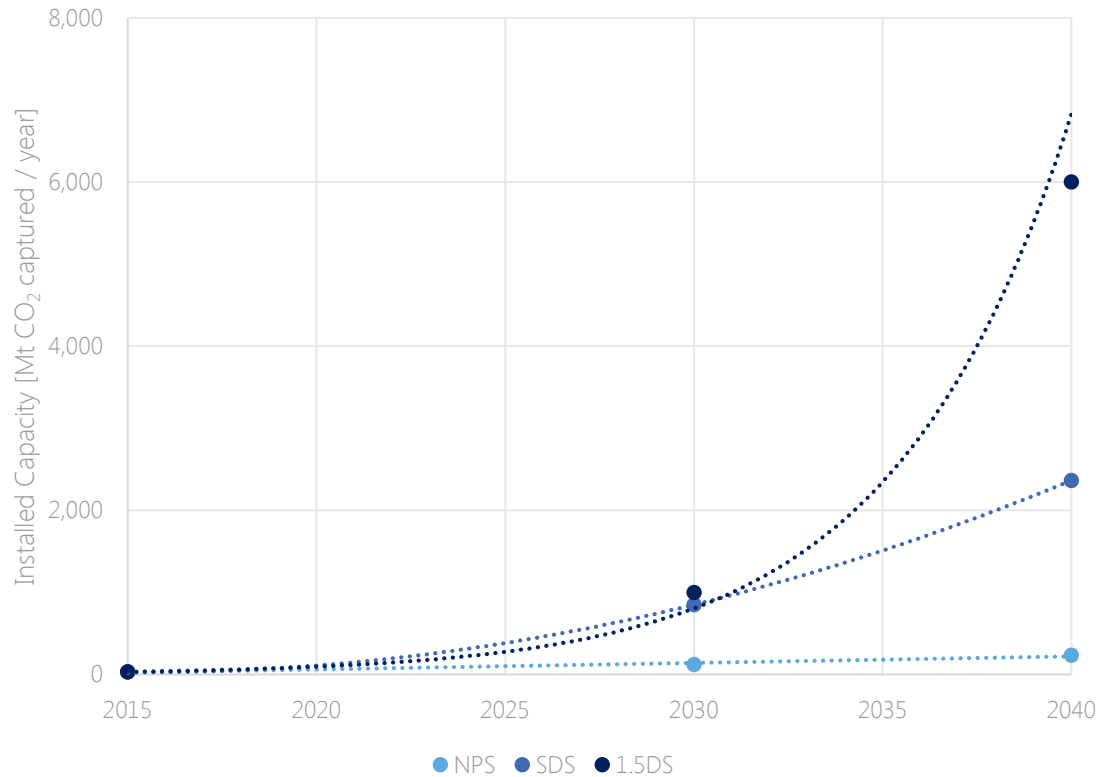
➔ Future cash flow instability

Future lack of investments to realize CCUS projects  
High cost of money affecting bankability



# Contributing to the CCUS agenda

CO<sub>2</sub> Captured and Stored from the Energy & Industry sectors, per year



Source: IEA Website CCUS (Last Accessed: 2019)



**Collaborate:** Clean Energy Ministerial, KAPSARC, GCCSI, IEA, etc.



**Close policy gaps:** UK, Gulf, China, US, etc. / storage credit mechanism



**Share knowledge:** CO<sub>2</sub> SRMS, protocol, storage data, business model, policy white paper, narrative

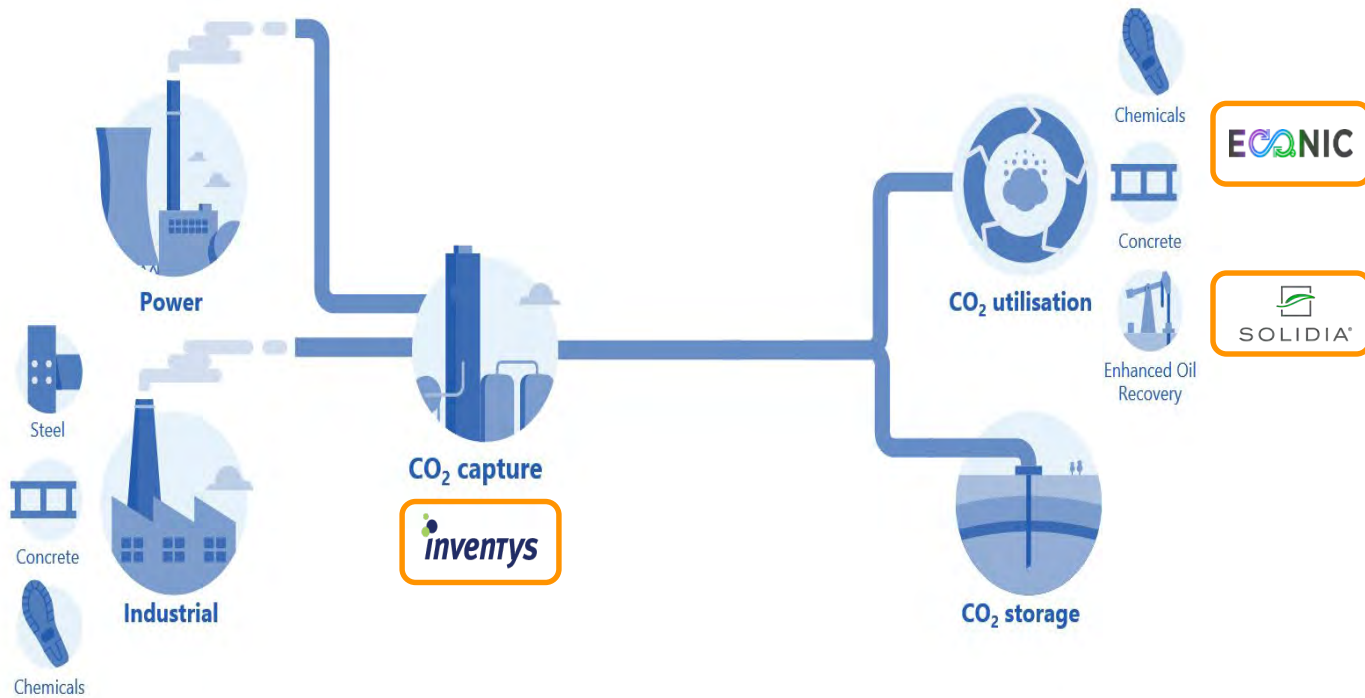


**Demonstrate** through projects like the Clean Gas Project or Wabash Valley

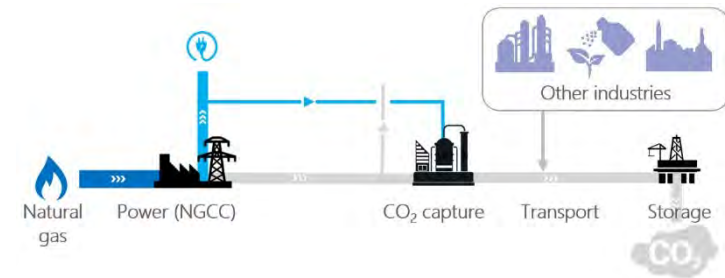


**Accelerate:** CCUS KickStarter – 5 hubs, x2 mtpa/world, by 2030

# Investing in solutions & projects

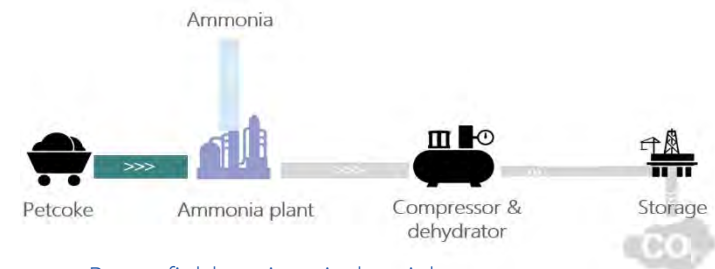


## UK – Teesside Project (Net Zero Teesside)



- Greenfield project: power & industrial
- Potential impact over 6 Mtpa
- Start date ~ mid-2020's
- Policy structure: hybrid

## USA – Wabash Valley



- Brownfield project: industrial
- Potential impact 1.5 Mtpa
- Start date ~ 2023
- Policy structure: 45Q

# OGCI CCUS KickStarter

Facilitate large-scale commercial investment in CCUS,  
by enabling multiple low-carbon industrial hubs

Start with 5 Emerging Industrial CCUS hubs by 2030

HUB 1: Teesside, UK – Getting to net zero

HUB 2: The Full-Scale Open Source CCS  
Project, Norway

HUB 3: Rotterdam, The Netherlands

HUB 4: Xinjiang, China

HUB 5: Gulf of Mexico, USA

3 Key areas OGCI can support hubs

- Consensus-building
- Credibility
- Capabilities

3 Key factors for high priority hubs

- Policies
- Regulations
- Organization

Global KickStarter to investigate barriers to hub  
development in countries showing signs of CCUS  
materiality and maturity

# Hub 1: Teesside, UK – Getting to net zero



Potential impact by 2030:  
Over 6 mtCO<sub>2</sub>/year

Potential emitters:

Biomass power, gas power, fertilizers, petro-chemicals, hydrogen, CO<sub>2</sub> imports

OGCI's role:

- Develop anchor project with collective pipeline and storage
- Work with UK government on policies
- Engage with other emitters
- Share knowledge with other hub



© Tees Valley Combined Authority

# Hub 2: Full-Scale Open Source CCS Project, Norway



Potential impact by 2030:  
5 mtCO<sub>2</sub>/year

Potential emitters:

Cement, waste incineration, hydrogen, biomass. steel, refineries

OGCI's role:

- Member companies Equinor, Shell and Total responsible for transport and storage operations
- Convene governments and industries interested in leveraging CCUS
- Share knowledge with other hubs



# Hub 3: Rotterdam Hub, The Netherlands



Potential impact by 2030:  
10 mtCO<sub>2</sub>/year

Potential emitters:

Refineries, hydrogen production, CO<sub>2</sub> imports from Antwerp and Germany

OGCI's role:

- Provide storage expertise
- As member companies, develop capture options
- Engage with other emitters
- Share knowledge with other hubs





# Hub 4: Xinjiang CCUS Hub, China



Potential impact by 2030:  
3 mtCO<sub>2</sub>/year

Potential emitters:  
Refineries, chemicals, power

OGCI's role:

- CNPC to invest in transport and storage infrastructure
- Work with Chinese ministries on policies
- Support R&D on storage and EOR
- Convene and cooperate with other emitters
- Share knowledge with other hub





# Hub 5: CCUS Hubs in the Gulf of Mexico, USA

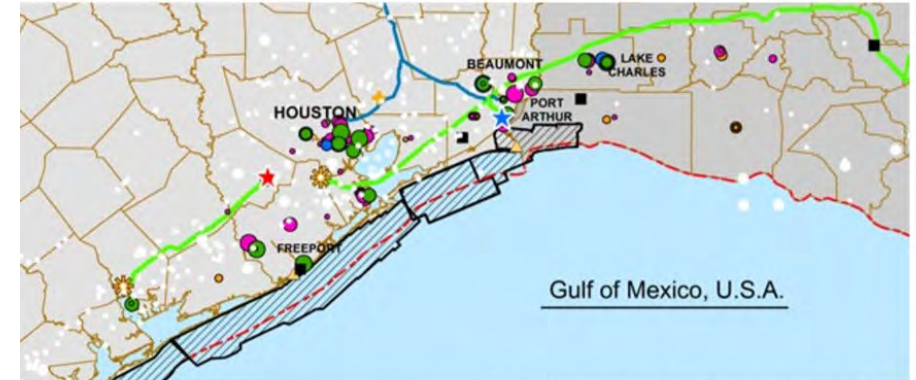


Total CO<sub>2</sub> emissions:  
200 mtCO<sub>2</sub>/year of which 35mtCO<sub>2</sub>/year is pure streams

Potential emitters:  
Power plants, refineries, chemical plants, fertilizers, hydrogen

OGCI's role:

- Convene and engage with stakeholders
- Identify commercialization pathways
- Identify investments
- Work on policies and regulations
- Share knowledge with other hubs



© Gulf Coast Carbon Center, Texas Bureau of Economic Geology

# Engagement with external stakeholders

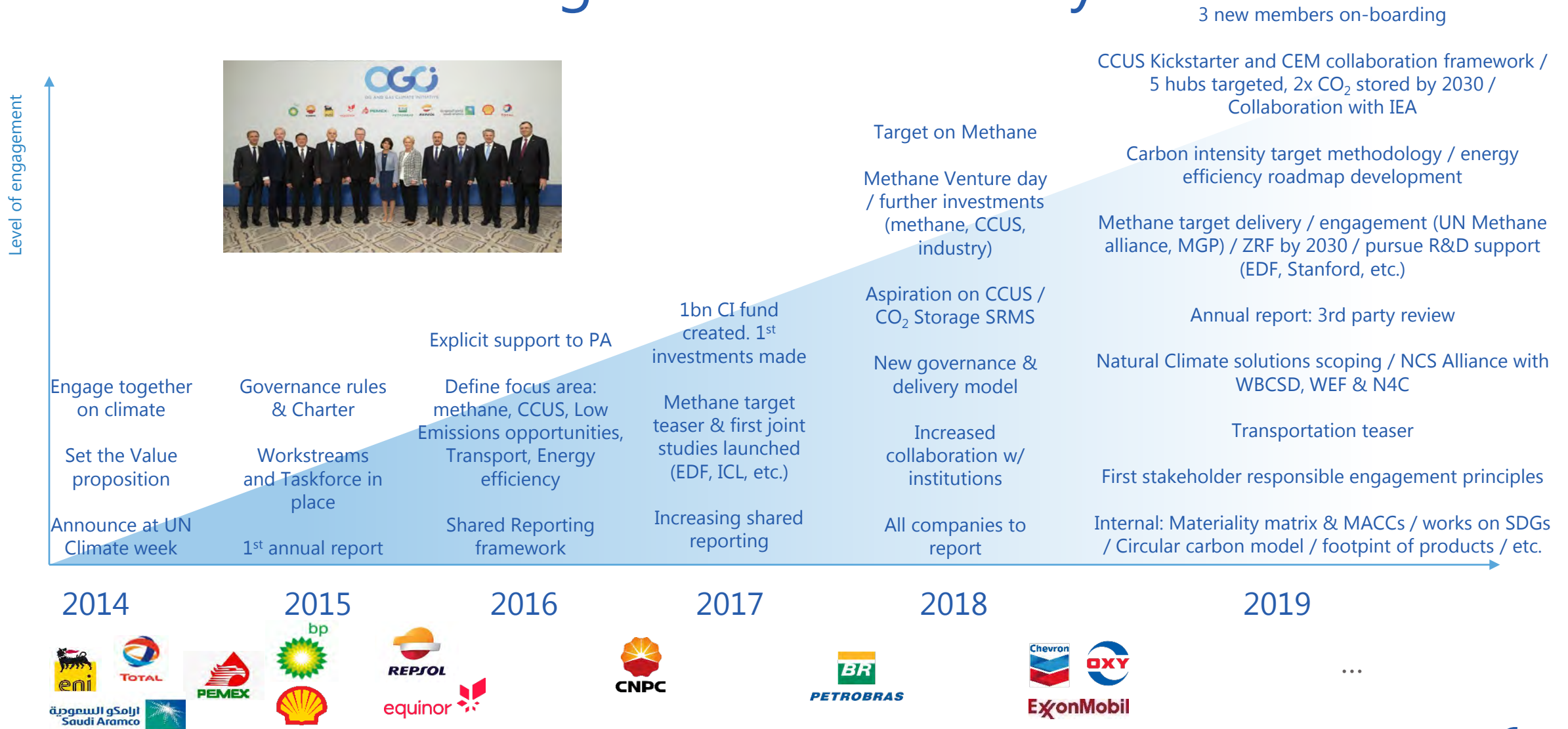
## Clean Energy Ministerial CCUS Task Force

Breakthrough Energy Coalition • Clean Energy Ministerial • Center on Global Energy Policy, Columbia University • Climate and Clean Air Coalition • Environmental Defense Fund • GIE Marcogaz • Global Carbon Capture and Storage Institute • Imperial College London • International Energy Agency • Intergovernmental Panel on Climate Change • Methane Guiding Principles • King Abdullah Petroleum Studies and Research Center • SEforALL • Stanford University • UN Economic Commission for Europe • UN Environment • UN Framework Convention on Climate Change • World Energy Council • World Bank-managed Global Gas Flaring Reduction Partnership • World Business Council for Sustainable Development • World Economic Forum

Any questions

Back-up

# Background and History



# The case of CCUS: what to look at?

Collaborate with stakeholders to accelerate the enabling environment

## CCUS – OGGI focus in 2019



Expand policy work with new government (Gulf, China, US, etc.) on CCUS



Collaborate through private-public partnerships to accelerate the business cases at scale and bring support to projects worldwide



**CO<sub>2</sub> Storage Data**  
Launching several initiatives to standardise & share CO<sub>2</sub> storage data & methodologies



Demonstrate through project like the Clean Gas Project, bringing the first CCS project coupled with a gas fired power plant to FEED stage

- Share best practices & learnings
- Expand policy work
- Develop public / private partnerships to pool technical, financial, commercial and policy resources
- Confirm long term safe storage capabilities
- Develop new standards and protocols
- Confirm business models for CCUS
- Balance regional & international efforts
- Construct an inclusive CCUS narrative through the Alliance of Champions
- Fund academic research and help progress on science