



CCS Activities and Engagement

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IEA Global Iron and Steel Roadmap

20 November 2017



Disclaimer

Forward-looking statements

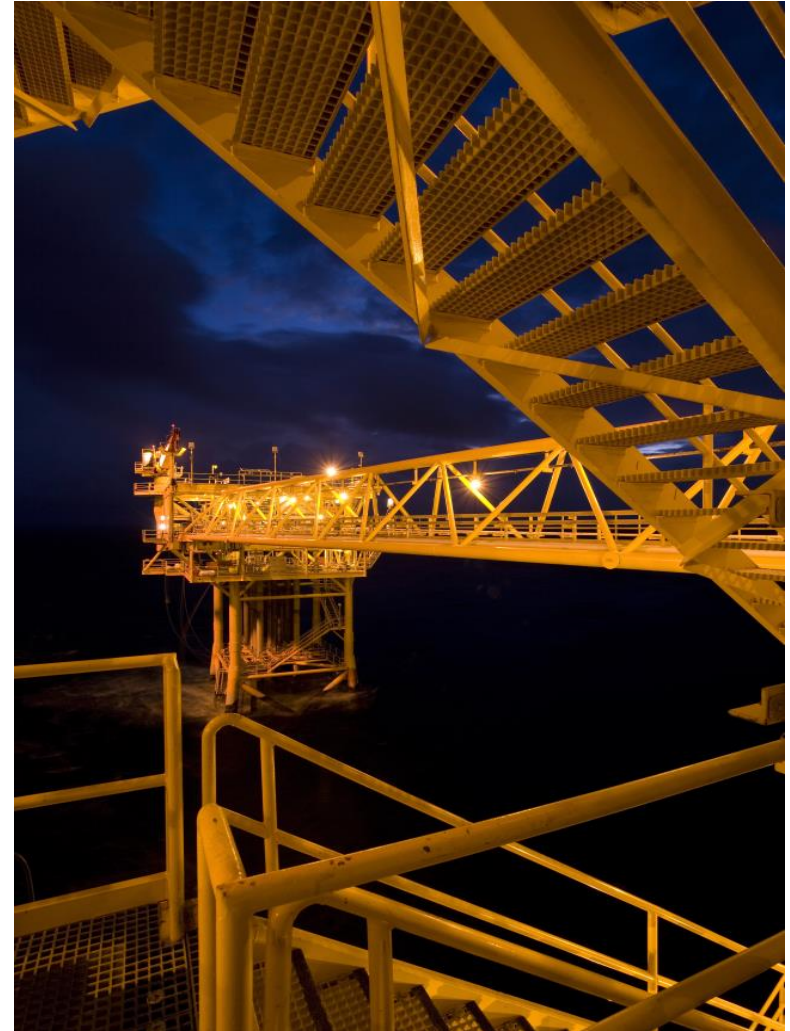
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About BHP

- We are a leading global resources company.
- Our purpose is to create long-term shareholder value through the discovery, acquisition, development and marketing of natural resources.
- Our strategy is to own and operate large, long-life, low-cost, expandable, upstream assets diversified by commodity, geography and market.
- At BHP, we have a unique perspective on the potential of natural resources and the role our products contribute to the essential building blocks of progress.



Strength in diversity

Petroleum



Iron ore



Copper



Coal



Implementation of climate change strategy

Integrated approach to managing climate risk:

- Mitigation
- Low Emissions Technology
- Adaptation
- Stakeholder engagement
- Portfolio evaluation

Our position on climate change

We accept the Intergovernmental Panel on Climate Change (IPCC) assessment of climate change science, which has found that warming of the climate is unequivocal, the human influence is clear and physical impacts are unavoidable.

We believe the world must pursue the twin objectives of limiting climate change to the lower end of the IPCC emission scenarios in line with current international agreements, while providing access to reliable and affordable energy to support economic development and improved living standards. We do not prioritise one of these objectives over the other – both are essential to sustainable development.

Under all current plausible scenarios, fossil fuels will continue to be a significant part of the energy mix for decades. Therefore, an acceleration of effort to drive energy efficiency, develop and deploy low-emissions technology and adapt to the impacts of climate change is needed. We believe there should be a price on carbon, implemented in a way that addresses competitiveness concerns and achieves lowest cost emissions reductions.

Our approach to Low Emissions Technology is focused on research, development, demonstration (RD&D) and commercialisation of technologies which have the potential to significantly reduce global greenhouse gas emissions but are not currently available at commercial scale or acceptable cost (including CCS).



Ongoing use of fossil fuels

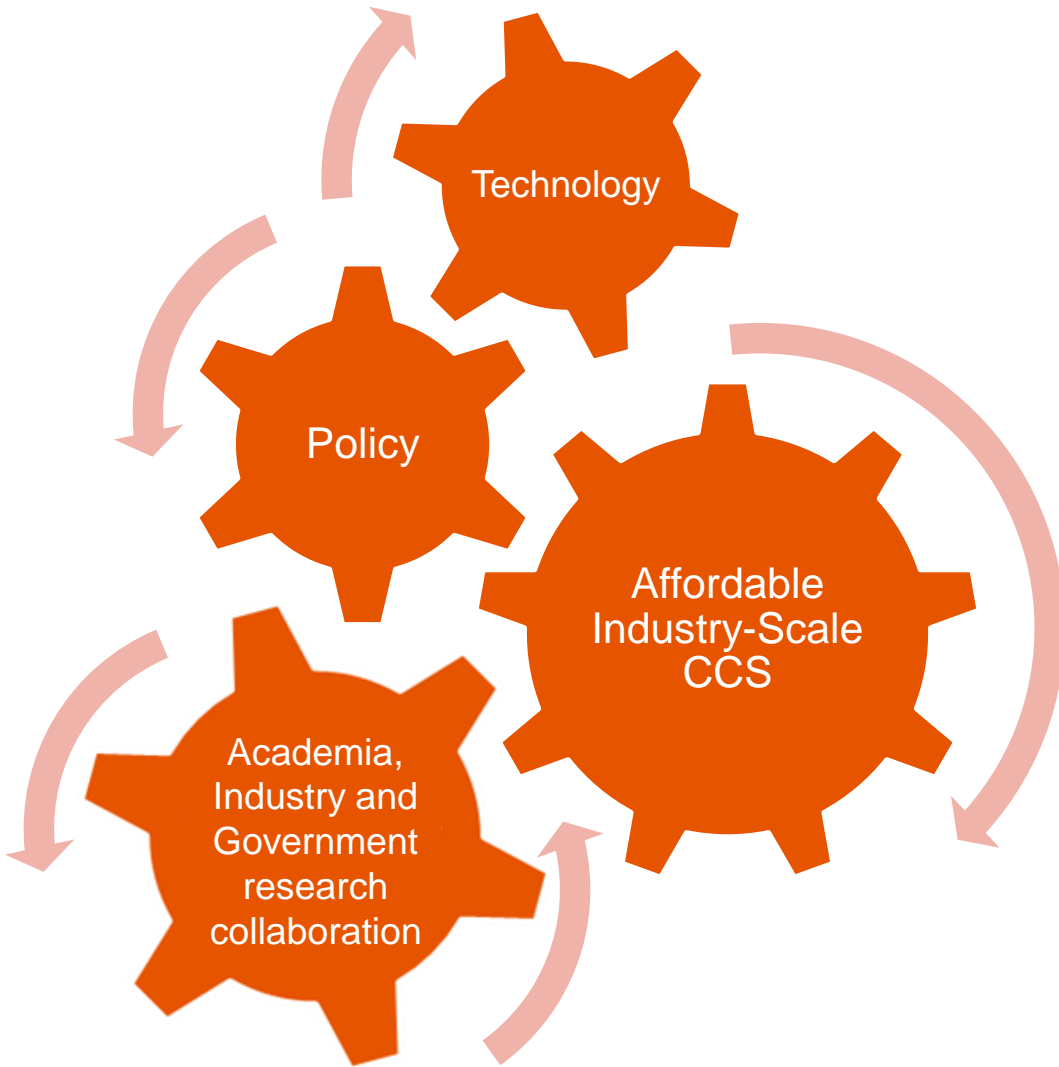
The ongoing demand for fossil fuels requires a response

- Ongoing demand for fossil fuels for energy and industrial applications is significant.
- Demand will be greater in non-OECD countries.
- To meet development and climate goals, the world must find ways to progressively reduce emissions from the production and use of fossil fuels, improve energy productivity, promote fuel switching and increase the use of alternative energy sources such as renewables and nuclear power.

CCS for all fossil fuels

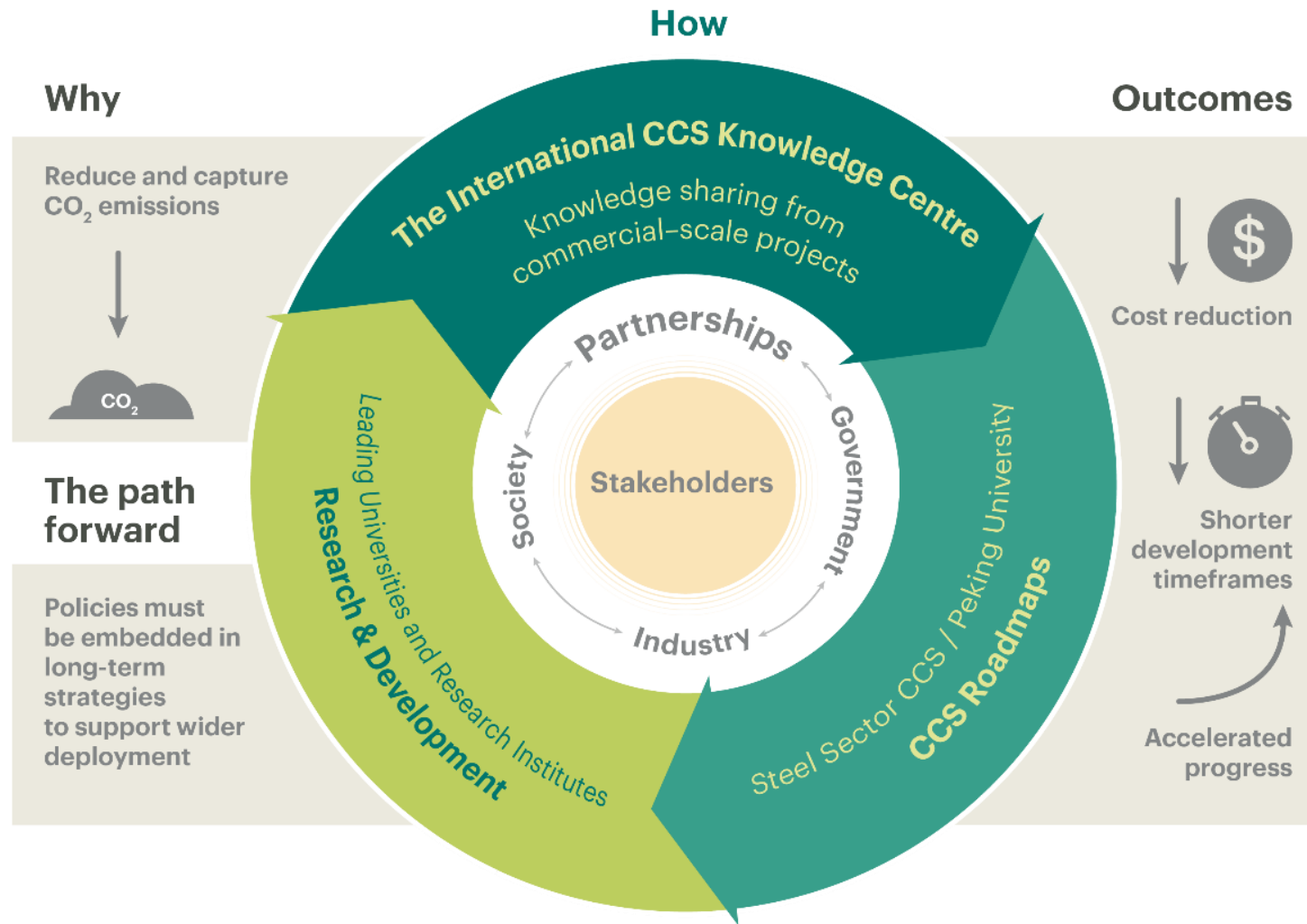
- Despite differences in emissions profile, all fossil fuels are emissions intensive.
- CCS has a role to play in reducing emissions across the range of fossil fuels and across a range of sectors.

How do we accelerate CCS?



- Building a net zero emissions world will require technology and policy to move ahead together.
- We must gain support for large-scale, first-of-a-kind low-emissions technology projects (including CCS), as we recognise the urgent need to accelerate the development of commercial scale solutions.
- Long-term policy settings must be in place. This includes a price on carbon.
- Collaborative work between industry, government and academia.

Investment in CCS



What is BHP doing?

BHP SaskPower CCS Knowledge Centre

- In 2014, SaskPower's Boundary Dam CCS Project became the first post-combustion, coal-fired CCS project integrated with a power station.
- BHP founded the International CCS Knowledge Centre in February 2016 with the objective of sharing the knowledge and learnings from the Boundary Dam project.
- The Knowledge Centre, a non-profit company based in Canada, has significant international profile and engagement with project developers.
- The Knowledge Centre will host the 11th Annual CCS Summer School in July 2017.



What is BHP doing?

CO₂ storage research

- Many aspects of the science and technology of CCS are well understood and the concept has been successfully tested at a range of scales, including at a commercial scale.
- However, it is important to further improve our understanding of some key aspects of the long term geological storage of carbon dioxide.
- With this in mind, BHP has identified two high priority storage research questions:
 - How can we most effectively use capillary, solution and mineral trapping to store carbon dioxide safely in reservoirs lacking structural or stratigraphic closure?
 - How can we more confidently predict how much carbon dioxide can be stored safely in what kinds of reservoirs?

What is BHP doing?

Peking University and partners – Steel sector CCS

- BHP, Peking University (PKU) and China's National Centre for Climate Change Strategy and International Cooperation agreed in June 2016 to establish an industry-university-research collaborative center focused on CCS in the steel sector.
- The centre is focused on addressing policy, economic and technical barriers to the application of CCS to the steel sector.



What is BHP doing?

Peking University and partners – Steel sector CCS



Work Plan – CCS in steel sector

Technical

- Barriers to CCS in the steel sector
 - *Capture techniques*
 - *CO2 storage potential in China*
 - *Deep-dive into areas of specific interest*

Policy

- Current state of play
 - *Industry-specific policy*
 - *Emissions trading schemes*
 - *Regulation*
 - *Border adjustment etc*
- Future potential for supportive policy
 - *What policy mix can best support CCS development in the industrial sector in China?*

Work Plan – CCS in steel sector

Economics and the business case

- Techno-economic assessment of CCS for steel/iron industry
 - *Compare different technology approaches and pathways for decarbonizing the steel sector in China, including an overview of the current status and perspective of the steel/iron industry in China*
 - *Analyse requirements for CCS Readiness in the steel/iron sector*
- Financial and business model development
 - *Conduct an economic impact assessment based on supply chain analysis, incl. industry benefits*
 - *Investigate potential models for two-way international technology transfer, considering UNFCCC and Mission Innovation*
 - *Investigate the potential for inclusion of CCS/CCUS in the steel/iron sector into China's regional or national emissions trading schemes*
- Capacity building
 - *Industry engagement and workshops*

What is BHP doing?



The ETC is comprised of a diverse group of leaders from public, private and social sectors with the aim **to accelerate change towards low-carbon energy systems that enable robust economic development and limit the rise in global temperature to well below 2°C**. The ETC believe that:

- Decarbonisation of activities which cannot be easily electrified will be vital after 2040 to tackle remaining emissions from transport or industrial activities.
- Technologies such as biofuels, hydrogen or CCS/CCUS therefore require substantial R&D and deployment support before 2040.
- Total CO₂ emissions from the energy system need to be net zero by 2080 requiring both a decline in fossil fuel use and CO₂ abatement from CCS/CCUS.

Additional Organizational Involvement:

- International Emissions Trading Association (IETA)
- Australian Coal Association Low Emissions Technologies (ACALET)
- Global CCS Institute (GCCSI)

Conclusion

- Carbon Capture and Storage needs significant collaboration across industries, supply chains and with policy makers and government. This has challenges but present unique opportunities.
- BHP is building a long term roadmap for our CCS investments that will allow us to play our part in accelerating global deployment of low emissions technologies.
- We will continue to look for opportunities to work with others, making contributions that align with our skillset and experience, address barriers to the uptake of CCS and offer the potential for leverage through partnership.
- Specifically, the outcomes of the CCS work we are doing with PKU and others in China will be shared widely.

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