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| **Title:** International Carbon Capture, Usage and Storage (CCUS) Programme | | |
| **Programme Value:** £70m | | **Review period:** January to December 2020  **Review date:** July 2021 |
| **Programme Code:** GB-GOV-13-ICF-0001-CCUS | **Programme start date:** December 2012 | **Programme end date:**  December 2023 |

**Summary of Programme Performance**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| Overall Output Score | A | A | A | A | A | B | B | C |
| Risk Rating | Major | Major | Major | Major | Major | Major | Major | Severe |

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| --- | --- |
| Link to Business Case: | Original - [2012](http://www.aidstream.org/files/documents/CCS-Business-Case.pdf)  Extension *-* [2017](https://aidstream.org/files/documents/CCS-Business-Case-Extension-Sept-17-20180711120738.pdf) |
| Link to Results Framework: | [2015-2019](https://aidstream.org/files/documents/CCS-Business-LogFrame-August2017-20171102031133.pdf), [2019](https://science-and-innovation-network.s3.eu-west-2.amazonaws.com/BEIS+ICF/CCUS/CCUS+Programme+Logframe+(June+2019).xlsx), [2020](https://eur02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fscience-and-innovation-network.s3.eu-west-2.amazonaws.com%2FBEIS%2BICF%2FCCUS%2FCCUS%2BLogframe%2B2020.xlsx&data=04%7C01%7CEllen.Paton%40beis.gov.uk%7C3b2fd2954ac84ed10a0008d950e3e480%7Ccbac700502c143ebb497e6492d1b2dd8%7C0%7C0%7C637629761980396203%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=sq2Y3ZA8lgMfkr8%2F9tC%2FYCNYLEHXjS7bKvj4GKAfwdg%3D&reserved=0), [2021](https://eur02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fscience-and-innovation-network.s3.eu-west-2.amazonaws.com%2FBEIS%2BICF%2FCCUS%2FCCUS%2BLogframe%2B2021.xlsx&data=04%7C01%7CEllen.Paton%40beis.gov.uk%7C3b2fd2954ac84ed10a0008d950e3e480%7Ccbac700502c143ebb497e6492d1b2dd8%7C0%7C0%7C637629761980396203%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=IehzpZtTxBKONv2ceqJuJIwtXM4ZNN0ba9yQ1EdwMHM%3D&reserved=0) |
| Link to previous Annual Reviews: | [2015-2016](https://aidstream.org/files/documents/CCS-Annual-Review-2016-20161010091059.pdf), [2016-2017](https://aidstream.org/files/documents/CCS-Annual-Review-2017-20171102031115.pdf), [2017-2018](https://aidstream.org/files/documents/CCUS-Annual-Review-2018-20180719120721.pdf), [2019](https://science-and-innovation-network.s3.eu-west-2.amazonaws.com/BEIS+ICF/CCUS/CCUS+Annual+Review+2019.docx), [2020](https://science-and-innovation-network.s3.eu-west-2.amazonaws.com/BEIS+ICF/CCUS/CCUS+Annual+Review+2020.pdf) |

**A. SUMMARY AND OVERVIEW**

**Description of programme**

The Department for Business, Energy and Industrial Strategy’s (BEIS) International Climate Finance (ICF) £70 million international carbon capture, usage and storage (CCUS) programme is delivered through the World Bank (£35m) and the Asian Development Bank (ADB) (£35m). The programme aims to increase the technical and institutional knowledge of CCUS within key developing countries by supporting pilot projects, capacity building, and the development of policy and regulatory frameworks.

The original business case provided £60m of Official Development Assistance (ODA) in 2012, primarily to support Indonesia, South Africa and China. In 2017, a further £10m ODA capital contribution was provided to the World Bank to support pilot project development in South Africa and Mexico.

The UK is the largest investor in multilateral interventions in CCUS globally. Domestically, the UK is committed to deploying CCUS this decade, with our ambition laid out in the ten-point plan for a green industrial revolution announced in November 2020.

**Summary of progress and supporting narrative for the overall score in this review**

Longer-term delays (originating in 2018) to the implementation of pilot project activities and legal, regulatory and policy activities continued in 2020. Technical issues at pilot project sites and on-going delays to their final approvals in supported governments were further exacerbated by the impacts of the COVID-19 pandemic putting pressure on the public budgets of those countries. The disbursement rate of the programme is off-track with 53% of BEIS’s investment yet to be encashed. The £35m provided to the ADB was originally expected to be fully encashed by December 2014. The £35m provided to the World Bank was expected to be fully encashed and disbursed by December 2023, which BEIS judges as unlikely. These issues mean that the programme is no longer on track to fully meet the objectives of the business cases.

This year the Programme is assessed to be substantially failing to meet expectations (a C score) having been assessed in the two prior Annual Reviews as moderately failing to meet expectations. Five out of six output statement milestones were not met in 2020. BEIS expected four countries to move pilot projects into the implementation phase and two countries to undertake seismic or other related geological tests. None were conducted in 2020. Capacity building events were hosted virtually, and the global decarbonising natural gas study capacity building activities faced further delays and will not conclude until 2021. Mexico showed intent to conduct pre-feasibility studies for new pilot projects in 2020 and two commenced in India in 2020.

Key highlights from 2020:

* Mexico: The Secretariat of Environment and Natural Resources (SEMARNAT) officially requested technical assistance. Activities for the Mexican Official Standard on CCUS progressed (World Bank).
* South Africa: discussions began on the restructure of the Grant Agreement to transfer responsibility for the Technical Assistance Programme from the South African National Energy Development Institute (SANEDI) to the Council for Geosciences and to move the carbon storage pilot project away from the Zululand Basin (World Bank).
* Bangladesh: Bangladesh’s Ministry of Power was supported with a Carbon Capture and Usage (CCU) readiness study (ADB).
* India: two pre-feasibility studies commenced with Indian Oil Corporation Ltd and Dalmia Cement (ADB). Early engagement with a private cement manufacturer (World Bank, in partnership with the International Finance Corporation (IFC)).
* China: a consultant was appointed to conduct feasibility studies at the Yanchang demonstration project (ADB).

**Progress against recommendations from the last review**

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| **Recommendation** | **Progress** |
| 1. To accelerate progress in both Mexico and South Africa, the World Bank to target engagement activities with relevant Ministries at the official level to ensure that supported pilot projects can move from the planning phases to the implementation phases in 2020 (by 31st January 2021). | Partially achieved: World Bank engaged at official level to address delays in Mexico. This resulted in confirmation of a new Mexican government counterpart in December 2020. In South Africa, officials engaged with ESKOM (South Africa’s public electricity utility) during the negotiation of the revised grant agreement. However, pilot projects did not move from planning to implementation phases in 2020 in either country. |
| 2. The ADB to accelerate activities at the Sukowati project in Indonesia, the Yanchang project in China, and to build a pipeline of projects and activities in India (by 31st January 2021). | Partially achieved: The ADB began building a pipeline of projects and activities in India (two pre-feasibility studies commenced in and a further activity is in the pipeline). A consultant has been appointed to undertake technical assistance activities at the Yanchang project in China although progress is not working to accelerated timescales. There has been no major change in programme activities at the Sukowati site in Indonesia due to government delays in deciding on next steps for a new pilot project site and the next steps for a regulatory framework. |
| 3. The World Bank and the ADB should work with BEIS to develop clear protocols for bringing HMG staff in British Embassies and High Commissions into policy discussions and the planning of key events in supported countries (by 31st January 2021). | Not achieved: the COVID-19 pandemic limited engagement in target countries and so protocols for engagement were de-prioritised. Instead, BEIS officials briefed Posts as necessary. The World Bank has been active in engaging Posts in Mexico, including seeking guidance and assistance with overcoming post-election delays (a key reason for pilot project delays). |
| 4. The ADB and the World Bank to focus their involvement in workshops and events on stakeholders important to the acceleration of construction/testing of in-country CCUS pilot projects (by 31st January 2021). | Not achieved: Due to the COVID-19 pandemic, the World Bank limited stakeholder engagement in 2020. The ADB’s virtual events focused on access to finance, enabling implementation of CCUS, and showcasing new CO2 abatement technologies. |
| 5. The ADB to produce a full project pipeline for how the remaining UK funding will be spent, and the World Bank to finalise the allocation of the remaining funding in the Trust Fund. When scoping new pipeline activities, it is expected that a greater proportion of projects will focus on industrial applications of CCUS (by 31st September 2020). | Not achieved: In 2020, the ADB did not produce a full project pipeline for remaining UK funds and significant underspend remains. Two new ADB activities focused on industrial applications of CCUS in India. As of the 9th November 2020, the World Bank Trust Fund has a total unallocated balance of USD $25.6m (~£19.9m) although if activities in Mexico progress, it is expected that this unallocated balance will be reduced to USD $9m (~£7m). Three new pipeline activities focused on industrial applications of CCUS in India. |
| 6. The ADB and the World Bank to increase the amount and share of private finance leveraged for CCUS activities in developing countries, with private finance (including from state-owned enterprises) mobilised in at least four countries by the end of 2020, as per the revised logframe (by 31st January 2021). | Not achieved: The only new private finance mobilised was for a South African case study on the gas-based synthetic fuel industry. |
| 7. The World Bank and the ADB to ensure the successful legacy of the international CCUS programme beyond its lifetime by proactively seeking greater opportunities to capture and disseminate lessons learned at events and in projects. To advance this work, the ADB and the World Bank should develop and share effective stakeholder engagement plans with BEIS that include targeted events and how success stories at the fund-level and project-level will be disseminated, particularly for industrial applications. The plans should also include how participant feedback from the events will be captured and acted upon (by 31st January 2021). | Not achieved: Stakeholder plans were deprioritised due to uncertainty throughout the year. The ADB did produce a note on the lessons learnt from the Gundih pilot project. The TA completion report published in July 2020 highlighted several of the main points from this note, but no dissemination of the lessons learned was conducted. |
| 8. BEIS to develop indicators to formally assess against value-for-money as well as considering the development of methodological approaches to report against additional KPIs pending the outcome of the piloting of BEIS’s new technical assistance KPIs (by 31st September 2020). | Achieved: BEIS developed a new value-for-money rationale that is applied in this annual review. The international CCUS programme will report against TA KPI 1 in 2021. Methodologies for TA KPI 2,3 and 4 have been drafted. |
| 9. BEIS to make a decision on the value of undertaking an end-of-programme independent evaluation of the programme (by 31st January 2021). | Not achieved: A decision on this was deferred from 2020 to 2021. |
| 10. BEIS to revise the outcome indictor for this programme to focus on private finance mobilised for CCUS development and publish the revised logframe (by 31st July 2020). | Achieved: logframe published on the 15th July. A composite indicator tab was added and the outcome indicator and output 2 were amended. |

**Major lessons and recommendations for the year ahead**

Major lessons from 2020:

1. Although there have been small positive steps to unblock delays in Mexico and China in 2020, project activities continue to be severely delayed (in South Africa since November 2018, in Mexico since July 2018 and in Indonesia since December 2019). Although delays are less severe in China, activities are still delayed by one year.
2. Delays were mostly continuations of existing issues, primarily due to challenges in receiving final government approvals for CCUS pilot projects in recipient countries (Mexico, Indonesia, South Africa) and technical issues at pilot project sites (South Africa). Noting the unprecedented challenges that target countries faced in 2020 due to COVID-19, competing pressures have squeezed the bandwidth for governments to engage in, and approve, planned pilot projects.
3. The COVID19 pandemic exacerbated existing delays due to travel restrictions and limited government resources.
4. Project-level delays and a lack of demand have disrupted the disbursement rate, and the programme now significantly deviates from the original encashment schedule. Pilot project delays means that no Capital Departmental Expenditure Limits (CDEL) has been encashed to date, only Resource Departmental Expenditure Limits (RDEL).

Recommendations for 2021:

1. BEIS to conduct an internal review of the programme’s performance to date and decide on appropriate actions for the future of the programme (by 1st August 2021).
2. In light of the internal review, the ADB and the World Bank to provide BEIS with a full pipeline for all unencashed funds, including detailed forecast encashment schedules (by 1st October 2021).
3. The World Bank and the ADB to engage at official and senior levels with target country governments to ensure that already approved activities that support policies, regulations, legislative frameworks and pilot projects in target countries commence (by 31st January 2022).
4. The ADB and the World Bank to provide weekly updates by email and hold fortnightly calls with BEIS to communicate the effectiveness of project-level risk mitigations and other relevant data requested by BEIS to inform the internal review of the programme (by 1st October 2021).
5. In the context of the internal review, the World Bank and the ADB to work in partnership with BEIS to capture lessons learnt from the programme (by 31st January 2022).
6. Building on recommendations from the previous annual review for 2021, BEIS to review the KPI 15 methodology (including the addition of weightings to the rubric statements), the Theory of Change and the Logframe (including additional Logframe indicators to capture information for BEIS ICF’s pilot TA KPIs 2 and 4) to ensure that they are fit-for-purpose for assessment against the 2021 milestones (by 20th August 2021).

## B: THEORY OF CHANGE AND PROGRESS TOWARDS OUTCOMES

**Summarise the programme’s theory of change, including any changes to outcome and impact indicators from the original business case.**

The Programme provides technical assistance for strengthening capacity, conducting technical analysis, planning and engagement to robustly prepare and implement pilot projects. This is intended to increase the capacity of industry and key institutions, increase knowledge and support for CCUS within government, and increase understanding of regional geology and storage potential. This is expected to increase industrial and organisational preparedness to deploy CCUS when the technology is sufficiently mature and to promote the introduction of policy frameworks to support CCUS development. The goal is for participating countries to recognise the role of CCUS and take action to promote its development where appropriate.

**Describe where the programme is on/off track to contribute to the expected outcomes and impact. What action is planned in the year ahead?**

As the programme has been running since 2012, it can be assessed against the Logframe impact and outcome indicators discussed below.

Impact indicator 1: At least one developing country establishes a legal, policy or regulatory framework for CCUS in order to enable projects to move forward: In 2020, no new legal, policy or regulatory frameworks were established by target country governments. A study supporting the Government of Mexico with the development of the Mexican Official Standard commenced in 2020 and is ongoing in partnership with SEMARNAT. The study will be completed in 2021. A CCUS legal and regulatory study in South Africa and a regulatory framework in Indonesia have been delayed since November 2018 and December 2019, respectively and are yet to be approved by the respective governments. In China, the ADB supported the update of the CCUS Roadmap for Deployment, building on technical assistance activities in 2015 but the document is not expected to be published until June 2021.

Impact indicator 2: At least one developing country takes forward a full-chain CCUS demonstration project: The 2020 annual review discusses ADB’s support to the full-chain CCUS project at the Yanchang coal-to-chemical plant in China. Completion of current technical studies to scale-up the initial pilot-scale project are delayed by one year. The Logframe expected an additional country to be identified for a full-chain or mid-scale CCUS project which was not achieved.

Outcome indicator: Private finance (£) mobilised for CCUS development activities: BEIS’s Logframe expects private finance (excluding from state-owned enterprises) to be mobilised for CCUS activities in at least five countries by the end of the programme. In 2020, private finance (including from state-owned enterprises) was expected to be mobilised in at least four countries. No new private finance was mobilised by the ADB in 2020 although other in-kind support was provided by Dalmia Cement, Indian Oil Limited Corporation, and Bangladesh’s Ministry of Power. New private finance was mobilised for a South African case study on the gas-based synthetic fuel industry in 2020.

**Has the logframe been updated since the last review?**

Yes, see page 2 under progress against recommendation 10 from the 2020 annual review.

**Justify whether the programme should continue, based on its own merits and in the context of the wider portfolio**

Global progress on CCUS is well off-track to reach the expectations set out in the IEA’s Sustainable Development Scenario, with the IEA describing the story of CCUS as ‘one of unmet expectations’. Of the $60bn venture capital invested in clean technology between 2013-2019, CCUS received less than 1% (PwC, 2020). However, there are early indications of renewed momentum.

Programme performance suggests very slim prospects for successful delivery. The BEIS programme team is consulting widely about credible options for balancing VFM interests with partnership momentum to date and is preparing advice for BEIS senior decision-makers.

## C. DETAILED OUTPUT SCORING

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| --- | --- | --- | --- | --- |
| **Output Title** | *Increased capacity in industry and key institutions to aid the development of CCUS.* | | | |
| Output number: | | 1 | Output Score: | **C** |
| Impact weighting (%): | | 50% | Weighting revised since last AR? | No |
| Risk rating | | Severe | Risk revised since last AR? | Yes |

|  |  |  |
| --- | --- | --- |
| **Indicator(s)** | **Milestone(s) for this review** | **Progress** |
| 1.1 - Pilot projects established in developing countries. | End of 2020: 4 countries move at least one pilot project from the planning phase to the implementation phase (construction or test injections) and 1 additional country declares an intention to move to the planning phase for at least one pilot project. | **Output substantially did not meet expectation** – no pilot project moved from the planning phase to the implementation phase. No country declared an intention to move to the planning phase for at least one pilot project. |

**Briefly describe the output and provide supporting narrative for the score.**

The 2019 annual review noted delays in all target countries. In 2020, delivery partners, those contracted by delivery partners, and governments in target countries, faced unprecedented challenges to delivery in light of the COVID-19 pandemic (such as travel restrictions delaying in-country missions, and competing pressures affecting the public budgets and resources available in target country governments). This is one reason that caused continued delays to the programme and resulted in a further year of pilot projects remaining in the planning phase rather than moving into the implementation phase. In China, activities progressed at an established pilot project site but activities remain in the planning phase.

In Indonesia, the ADB awaits discussions with the government on the next steps since the pilot project in Gundih was cancelled in January 2020. In September 2020 it was announced that the Japanese Government was now supporting a demonstration CCUS carbon storage project at the Gundih gas fields, building on technical assistance activities previously funded by BEIS but not directly linked to current BEIS support. The new project funded by the Japanese Government could not be supported through the ADB CCUS Fund as upstream production of natural gas is outside of the scope of UK and ADB support. Furthermore, all new activities in Indonesia must align with the UK’s international fossil fuel phase out policy – BEIS will work with UK posts based in the country and the ADB to identify demand for eligible activities.

CCUS activities at the Brilliante pilot site and Poza Rica power plant in Mexico were delayed throughout 2020 due to limited engagement from the Secretariat of Energy. Mexico’s Ministry of Environment and Natural Resources became a new counterpart to the CCUS programme in December 2020.

The South African government paused activities at the pilot capture project in 2020 and requested that activities at the pilot storage project be re-focussed on potential storage locations closer to CO2 emissions sources, following ongoing stakeholder challenges at the original Zululand Basin area of interest.

**Assess the VfM of this output compared to the proposition in the Business Case, based on performance over the past year.**

Continued delays to implementation of pilot projects hinders the original business case objective of: ‘increasing the capacity of industrial actors in the various target countries to take forward CCS demonstrations’.

Furthermore, continued delays to implementation mean that the further £10m contribution through the extension business case cannot be encashed due to a lack of demand. As Capital Departmental Expenditure Limit (CDEL), it can only be used to finance pilot project implementation and associated activities.

**Describe any changes to this output, and any planned changes as a result of this review.**

In 2020, there were no changes to the indicator but the 2020 milestone was amended to include the line ‘and 1 additional country declares an intention to move to the planning phase for at least one pilot project’.

In light of this year’s results, BEIS will consider whether the 2021 milestone is still a feasible goal for the Programme (currently 4 countries implementing pilot projects and 1 additional country is in the planning phase for at least one pilot project).

**Progress on recommendations from the previous AR, lessons learned this year and recommendations for the year ahead.**

The World Bank and the ADB to engage at official and senior levels with target country governments to ensure that approved activities that support policies, regulations and/or legislative frameworks and pilot projects in target countries commence (by 31st January 2022).

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| --- | --- | --- | --- | --- |
| **Output Title** | *Increased knowledge of and support for the implementation of CCUS pilot projects within the targeted governments.* | | | |
| Output number: | | 2 | Output Score: | ***C*** |
| Impact weighting (%): | | 20% | Weighting revised since last AR? | Not tracked in 2019 |
| Risk rating | | Moderate | Risk revised since last AR? | Not tracked in 2019 |

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| **Indicator(s)** | **Milestone(s) for this review** | **Progress** |
| 2.1 - Lessons learned from pilot projects are used to improve future CCUS activities. | Number of stakeholders stating an intention to use lessons learned to improve CCUS activities. | **Output substantially did not meet expectation**  No data was produced by the World Bank due to limited stakeholder engagement in 2020. The ADB received supportive feedback from their workshops but partners did not explicitly state their intention to use lessons learned to improve CCUS activities. |
| 2.2 - Raised awareness of government stakeholders on approaches to decarbonise natural gas. | Number of stakeholders stating raised awareness of on approaches to decarbonise natural gas from programme activities. | **Output substantially did not meet expectation**  Preliminary findings from the global decarbonising natural gas study were originally scheduled for May 2020 but were delayed by nearly one year. |

**Briefly describe the output and provide supporting narrative for the score.**

In previous years, both delivery partners consistently scored well on capacity building activities and regularly achieved ‘exceeding’. Due to the COVID19 pandemic, in-person capacity building events were not feasible through most of 2020 but the following events and webinars were held virtually. Participant feedback data from the ADB shows that the right stakeholders were targeted, with strong attendance from industry actors in developing countries.

* The World Bank presented an overview of the CCUS Programme at the Saudi Arabia CCUS conference held in Riyadh in February 2020.
* Led by the ADB with the World Bank presenting: CCUS deep dive workshop at the Asia Clean Energy Forum in June 2020 to generate awareness of CCUS technology amongst the stakeholders of Asia (the World Bank presented) - 139 attendees. Participant feedback forms found that 93% of responders found were ‘satisfied’ or ‘very satisfied’ by the session.
* Led by the ADB with the World Bank presenting: CCUS side event facilitated by the Clean Energy Ministerial at the Asia Clean Energy Forum in June 2020 discussed how to finance and catalyse low carbon development through CCUS - 350 attendees.
* The World Bank and ADB both later participated in the launch event for the Key Financing Principles which was held as part of the Clean Energy Ministerial event hosted by Saudi Arabia in September 2020.
* Led by the ADB: CO2 mineralisation webinar in October 2020 to provide better insights into the technical and regulatory aspects of the CO2 mineralisation in Asia – 134 attendees. 39 people filled in participant feedback forms. In answering the statement ‘as a result of the session, I gained new knowledge applicable to my work’ out of 1-5 (with 5 being the highest), the average score was 4.03.
* Led by the ADB: CCUS game changers webinar in December 2020 to introduce novel CCUS technologies and concepts and build connection between technology providers and stakeholders in Asia – 132 attendees. 89 people filled out a participant feedback form. 93% of people were ‘satisfied’ or ‘very satisfied’ and 99% of people responded that their awareness of innovative technologies was increased.

Vivid Economics were appointed as lead consultants for the Global Decarbonising Natural Gas Study in 2020 and work commenced on a case-study in South Africa. However, the study was delayed in 2020 with delivery partners citing COVID-19 impacts as the reason.

Quantitative milestones were not used in 2020 as this was intended to be a testing year which would inform future milestones.

**Assess the VfM of this output compared to the proposition in the Business Case, based on performance over the past year**

The ADB’s efforts to convene stakeholders virtually (e.g. the CCUS workshop at the Asia Clean Energy Forum in June 2020) was successful, demonstrating that virtual-based capacity building and knowledge-sharing activities are possible. However, only one event shared lessons learnt in order to promote pilot projects moving into the implementation phase.

**Describe any changes to this output, and any planned changes as a result of this review.**

In 2020, the above output indicators replaced previous indicators: ‘Number of well-attended workshops and events on CCUS focusing on demonstration and lesson learning (cumulative) (including government officials from the targeted countries)’ and ‘New joint-report published by the World Bank and the ADB on revising the case for CCUS in certain sectors’.

BEIS will set quantitative milestones for 2021 that also capture data from the Global Decarbonising Natural Gas workshop (which will now share findings in 2021 as noted above).

**Progress on recommendations from the previous AR, lessons learned this year and recommendations for the year ahead**

The World Bank and the ADB to engage at official and senior levels with target country governments to ensure that approved activities that support policies, regulations and/or legislative frameworks and pilot projects in target countries commence (by 31st January 2022).

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| --- | --- | --- | --- | --- |
| **Output Title** | *Increased understanding of regional geology and storage potential in developing countries.* | | | |
| Output number: | | 3 | Output Score: | ***C*** |
| Impact weighting (%): | | 10% | Weighting revised since last AR? | No |
| Risk rating | | Major | Risk revised since last AR? | No |

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| --- | --- | --- |
| **Indicator(s)** | **Milestone(s) for this review** | **Progress** |
| 3.1 - Suitable sites for the geological storage of CO2 identified. | **End of 2020:** 2 countries undertake seismic or related geological tests for at least one CO2 storage pilot. | **Output substantially did not meet expectation**  No country undertook seismic or related geological tests at a CO2 storage pilot due to slow decision-making by the Indonesian government and activities stopping in South Africa while the Grant Agreement was restructured. |

**Briefly describe the output and provide supporting narrative for the score.**

Two proposed pilot carbon storage sites were expected to move into the implementation phases in 2020. However, activities in South Africa and Indonesia were not in a position to move into the implementation phases due to delays.

Activities in South Africa’s Kwazulu-Natal region were paused while in the planning phase. This was due to difficulty in obtaining stakeholder permissions at the site and a formal request from the National Treasury to relocate the project. At the end of 2020 the World Bank initiated a technical Expert Review of the proposed new storage site.

In Indonesia, no seismic or related geological tests were undertaken in the country as no new pilot carbon storage project has been approved by the government since the previous pilot site was cancelled in January 2020.

**Assess the VfM of this output compared to the proposition in the Business Case, based on performance over the past year**

UK support for carbon storage pilot projects in Indonesia and South Africa were specifically identified as key interventions to increase in-country capacity and technical understanding to develop CCUS. These activities have been subject to sustained delays as noted in previous annual reviews and have not sufficiently contributed to meeting this objective.

**Describe any changes to this output, and any planned changes as a result of this review.**

In 2020, minor changes were made to the wording of indicator 3.1 (previously ‘number of seismic and related geological tests leading to the selection of suitable storage sites undertaken’). The milestone for 2020 previously focused on test injections occurring in both the Gundih and South Sumatra proposed storage sites in Indonesia. As the Gundih pilot project closed in January 2020, the milestone for 2020 was amended to aim for any two countries to undertake seismic or related geological tests.

In light of this year’s results, BEIS will consider amending the 2021 milestone to aim for a pilot storage project in South Africa to confirm a storage location and continue the planning phase, and a pilot storage project to be identified in Indonesia and Mexico.

**Progress on recommendations from the previous AR, lessons learned this year and recommendations for the year ahead.**

The World Bank and the ADB to engage at official and senior levels with target country governments to ensure that approved activities that support policies, regulations and/or legislative frameworks and pilot projects in target countries commence. (by 31st January 2022).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Output Title** | *Developing countries store and capture CO2 safely and sustainably.* | | | |
| Output number: | | 4 | Output Score: | ***B*** |
| Impact weighting (%): | | 20% | Weighting revised since last AR? | No |
| Risk rating | | Major | Risk revised since last AR? | No |

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| --- | --- | --- |
| **Indicator(s)** | **Milestone(s) for this review** | **Progress** |
| 4.1 - CO2 stored safely and sustainably in pilot CO2storage projects. | 1 country undertakes test injections and 1 additional country declares an intent to begin planning test injections. | **Output substantially did not meet expectation**  No country undertook test injections and no new country declared an intent to begin planning test injections.  Test injection activities were paused in South Africa while a new pilot storage project site was identified. Petróleos Mexicanos remain interested in the development of the pilot injections in Mexico but no new progress was made in 2020. |
| 4.2 - CO2 captured safely and sustainably in pilot CO2capture projects. | 1 country declares an intent to undertake pre-feasibility studies for a pilot CO2capture project. | **Output moderately exceeded expectation**  In December 2020, through the exchange of formal letters, the Secretariat of Environment and Natural Resources in Mexico declared a strong interest in being the counterpart for a Recipient-executed pilot CO2 capture project with the World Bank.  The ADB is now working on pre-feasibility studies in two projects in India. |

**Briefly describe the output and provide supporting narrative for the score.**

No test injections occurred in 2020 (see output 3). Although the Mexican Secretariat of Energy remains interested in pilot injections in Mexico, no new progress was made in 2020 due to delays in decision-making on CCUS activities by the Mexican government. Mexico’s Secretariat of Environment and Natural Resources have declared an intent to undertake pre-feasibility studies. Two studies are already underway in India and final reports are expected in May 2021. In Mexico, a pilot site has not yet been identified.

**Assess the VfM of this output compared to the proposition in the Business Case, based on performance over the past year**

For indicator 4.1 please see the value-for-money section for output 3. For indicator 4.2, interest in new pilot carbon capture projects is a positive sign, but existing pilot project activities have demonstrated less value-for-money in 2020 than anticipated. Delivery partners must therefore work to accelerated timescales if these activities are to achieve transformational change by the end of the programme.

**Describe any changes to this output, and any planned changes as a result of this review.**

No changes were made to this output in 2020. In light of this year’s results, BEIS will consider amending the 2021 milestone to aim for a pilot storage project in South Africa to confirm a storage location and continue the planning phase, and a pilot storage project to be identified in Indonesia and Mexico.

**Progress on recommendations from the previous AR, lessons learned this year and recommendations for the year ahead**

The World Bank and the ADB to engage at official and senior levels with target country governments to ensure that approved activities that support policies, regulations and/or legislative frameworks and pilot projects in target countries commence (by 31st January 2022).

**D: PROJECT PERFORMANCE NOT CAPTURED BY OUTPUTS**

In 2020, the World Bank CCS Trust Fund submitted a proposal to the Industrial Decarbonisation window of the wider Energy Sector Management Assistance Programme Umbrella Trust Fund (ESMAP) to receive funds for a screening study to identify and rate low-cost industrial CCUS projects in developing countries. The project aims to commence activities in July 2021. Together, ESMAP and the World Bank CCS Trust Fund also released an internal call for proposals to identify additional countries and projects to support. BEIS would normally expect these types of activities to occur in earlier phases of programme delivery. Although the screening study aligns with BEIS’s policy priority to support industrial CCUS applications in developing countries and this study targets a current knowledge gap, BEIS expects funds from the International CCUS Programme to be drawn upon for CCUS activities, rather than those from ESMAP’s industrial decarbonisation window.

Of the nine countries/regions engaged by the World Bank CCS Trust Fund to date, five countries (South Africa, Mexico, Indonesia, Egypt, China) have included CCUS as part of their Nationally Determined Contribution under the Paris Agreement.

**E: RISK**

**Overall risk rating: Severe**

The risk rating increased from ‘major’ to ‘severe’ in 2020, noting that the programme has scored a ‘C’ and has substantially not met expectations. The original business case judged the programme to be medium-to-high risk, and the extension business case judged the further £10m contribution as high risk. This was found to be in-line with BEIS ICF’s risk appetite as the potential reward of success was high. BEIS judges that active and pipeline projects do have the potential to be transformational. BEIS also views CCUS as a critical ‘transformative’ technology to combat climate change, noting that it accounts for 15% of the global cumulative emissions reductions needed to reach net-zero in 2070 (IEA, 2020). Demonstration in developing countries needs to take place in parallel with demonstrations in developed countries to improve visibility of the technologies in a range of countries. According to the Global CCS Institute, five of the top ten countries that require CCUS are eligible to receive aid. However, only China is in the top 10 countries ready for commercial deployment of CCUS.

Given the lack of progress in Indonesia and South Africa in 2020, and limited progress in Mexico and China, the programme is no longer on track to deliver all objectives by the end of December 2023. This is primarily due to delays to pilot project implementation partly as a result of delays in decision-making on CCUS activities by recipient governments (Mexico, Indonesia, South Africa) or technical issues at pilot project sites (Indonesia and South Africa). Project activities have been delayed in South Africa since November 2018, in Mexico since July 2018, and in Indonesia since December 2019. Although delays are less severe in China, activities are still delayed by one year. As such, although these existing delays were exacerbated by the COVID-19 pandemic, they are longer-term issues that pre-date the pandemic. Delays have had a knock-on effect at the portfolio-level, leading to slow allocation and disbursement of funds by both Trust Funds.

|  |  |  |
| --- | --- | --- |
| **Risk description** | **Mitigation strategy** | **Residual Risk rating** |
| Expected outcomes not met by the end of the Programme due to significant underspend (£37.5m) and slower than expected disbursement in both Trust Funds. | Full pipelines and expected encashment schedules were a recommendation of the 2020 annual review. Despite requests from BEIS, this recommendation was not achieved. | Severe |
| Expected outcomes not met by the end of the Programme due to developing countries not demonstrating sustained political will to develop CCUS (e.g. due to competing priorities in-country, fiscal situation and impact of COVID-19 pandemic). | BEIS worked with UK Embassies and High Commissions in target countries and both Trust Funds monitored political contexts to promote CCUS development. There were positive steps taken by the Government of Mexico in 2020, limited progress in Indonesia and limited progress in South Africa whilst the Grant Agreement was restructured. | Severe |
| Expected outcomes not met by the end of the Programme due to technical issues delaying pilot project activities. | This is a long-term issue in all target countries that primarily impacted South Africa in 2020. The World Bank worked to identify a new pilot carbon storage site due to technical issues at the original site. Other target countries that have faced technical issues (Indonesia, China) did not accelerate progress at pilot sites to ensure that Programme objectives could be met by the end of the Programme. | Major |

**Overview of risk management**

All grants financed by the World Bank and ADB Trust Funds are subject to respective operational policies and procedures that apply to their financing, including frameworks for governance and anti-corruption. Risks are communicated to BEIS in annual donor meetings and through regular progress updates.

**F: PROGRAMME MANAGEMENT:** **DELIVERY, COMMERCIAL & FINANCIAL PERFORMANCE**

**Monitoring strategy**

This annual review was informed by data submitted by delivery partners and fact checked by BEIS through monitoring calls with both delivery partners, data collected through calls with British Embassies, High Commissions and other external stakeholders (including in the private sector and a think tank), annual donor consultation meetings, participation in events and review of participant feedback forms, delivery partner annual reports and other international reports (e.g from the International Energy Agency).

**Partnership performance**

Coordination by delivery partners with British Embassies and High Commissions and communication on project risks was ad hoc, despite substantial in-country risks. Furthermore, an encashment schedule for all remaining unencashed funds was not provided by the ADB or the World Bank following repeated requests.

In late 2020, the World Bank’s CCUS Trust Fund formally came under the Umbrella of the wider Energy Sector Management Assistance Programme Trust Fund within the World Bank. BEIS is supportive of this as it enables better coherence and visibility of BEIS funds.

**Financial performance**

*Economy*

**Are fees appropriate?** Yes, as discussed in the previous annual review, BEIS is content with the fee arrangement. There has been no change in fees in 2020. The ADB charges a service fee of: i) 5% of the amount disbursed for grant components of investment projects up to US $5 million, or 2% (with a minimum of US $250,000, whichever is greater) of the amounts disbursed for the same type of grants above US $5 million; and ii) 5% of the amounts disbursed for technical assistance operations. These are the ADB’s standard charges and they are in-line with BEIS’s other programmes that are delivered through the ADB and competitive with other delivery partners. The World Bank’s standard charges are 2% of the contributions received to cover the standard costs of Trust Fund administration incurred by the World Bank. In addition, for costs incurred by the World Bank for CCUS Trust Fund programme management, the World Bank may charge up to a maximum of 8%. These fees were agreed in the original business case and were maintained in the £10 million extension business case in 2017. The World Bank has agreed to maintain the same fees for the remainder of the programme. This strengthened the value-for-money of BEIS’s £10 million extension in 2017, as the World Bank increased their rates across all programmes in 2018.

**Are due diligence processes in place?** Yes, BEIS is content with the due diligence processes of the ADB and the World Bank. Both delivery partners review and implement projects through their internal governance structures in-line with applicable policies. BEIS expects these processes to be strengthened by the World Bank CCUS Trust Fund coming under the umbrella of the wider ESMAP Umbrella Trust Fund.

**Are competitive processes in place?** Robust internal policies guide all investments to ensure fair and open competition. For example, the appointment of the consultant at the pilot capture site in China in 2020 was conducted through a competitive process.

**Are projects appraised fairly?** Yes, they are reviewed and approved through robust internal governance structures and in-line with business case objectives.

**Are robust risk management processes in place?** Delivery partner internal risk management processes are in place and were considered robust at the time of business case approvals and BEIS deems them to remain fit-for-purpose (see Section E).

Based on the above economy assessment of the VfM, there is sufficient evidence to suggest that delivery partners have robust processes in place to ensure appropriate investments are made which are considered good value for money. Fees have also stayed the same, and are as expected, keeping in-line with the judgement that the inputs into CCUS are appropriate. Delivery partners draw down fees from existing encashments (the last encashments were in 2013 for the ADB and 2017 for the World Bank).

*Efficiency*

**Are funds disbursed as expected?** No, funds have not been disbursed as expected in the original and extension business cases. The slow disbursement for project activities represents reduced value-for-money (e.g. in South Africa, $23m was allocated in 2018 but no disbursement has occurred).

**Are funds delivered on time?** No new funds were allocated in 2020 and the programme has significantly deviated from the original encashment schedules, with no new funds encashed to the ADB since 2013 or the World Bank since 2017 due to a lack of demand by delivery partners for funds to be encashed. 53% of BEIS funds are yet to be encashed. Considering the UK’s burden share of each Trust Fund, there is ~£4.3m of unallocated funds not covered by pipeline in the World Bank CCUS Trust Fund and ~£21.8m unallocated funds not covered by pipeline in the ADB CCUS Trust Fund.

As discussed in previous annual reviews since the start of the Programme, both delivery partners successfully established activities in target countries, undertook capacity building activities, obtained government and industry support to plan pilot projects, established and strengthened CCUS Centres of Excellence, and identified regulatory frameworks to enable CCUS development. However, activities in 2020 demonstrate that the approval and implementation of these policy, legal and regulatory frameworks in recent years continue to be a persistent issue, as has the timescales for pipeline project construction. Largely due to these delays, the programme has not met five out of six output milestones in 2020.

**Are delivery risks appropriately addressed?** Both delivery partners have lacked a consistent and proactive communication of emerging risks to BEIS and development of long-term risk strategies at the portfolio-level. These actions could have mitigated against key issues in the programme, notably the sustained delays and underspend.

**Is the delivery model fit for purpose?** Activities must align with in-country government priorities, improving the likelihood of transformational change but also causing substantial delays where decision-making on CCUS activities in recipient countries is delayed. Noting the delays and underspend mentioned above, this delivery model does not adequately deliver outputs in the timescales expected.

**Are delivery partners responsive to changing circumstances?** Both delivery partners faced unprecedented challenges in 2020 in navigating restrictions caused by the COVID-19 pandemic. The ADB has demonstrated that virtual engagement for capacity building activities is an efficient method of delivery, noting that this also reduces the cost of staff expenses and the hiring of assets to host events. It is unclear why similar levels of virtual stakeholder engagement were not achieved by the World Bank. The ADB’s CCUS game changers webinar, CO2 Mineralisation webinar, and the World Bank-led Global Decarbonising Natural Gas Study show that both delivery partners have responded to technological developments in 2020.

The ADB produced a note on the lessons learned from the Gundih pilot project in Indonesia to explain how they responded to changing circumstances. However, the ADB did not proactively disseminate these findings widely, which is a missed opportunity (instead, the report was simply published on the ADB’s website in July 2020).

Despite proficient risk management and appraisal processes in place to support the efficiency and rational decision-making of CCUS, currently BEIS does not judge this programme to be efficient in producing the outputs intended. Due to the significant underspend, sustained delays and slow progress in disbursing funds, there is not enough evidence in 2020 to show CCUS is operating efficiently enough to be considered good value-for-money.

*Effectiveness*

**Are new policies, legislation and regulations been implemented?** No, legislative or regulatory activities in Indonesia and South Africa saw continued delays in 2020 due to delays in decision-making by the respective governments. A study to support the development of a Mexican National Standard for CCS/CCUS was commenced in 2020 and is due to be completed in 2021. In China, the ADB supported the update of the CCUS Roadmap for Deployment, building on technical assistance activities in 2015 but the document is not expected to be published until June 2021. It is expected that these activities could be transformational if they can be completed by the end of the Programme.

**Is public and private finance been leveraged?** To date, private finance (including from state-owned enterprises) has been mobilised in China, Mexico, Indonesia and South Africa. However, no new private finance was leveraged this year by the ADB, although other in-kind support was provided. The World Bank mobilised new private finance for an activity in South Africa. The programme is not on track to deliver outcome expectations for private finance mobilised (see section B).

**Are expenditures at the project-level in line with expectations?** No, of the $23m committed by the World Bank CCUS Trust Fund to South Africa in 2018, no funds have been disbursed to date. Similarly, $16.5m was allocated by the World Bank to Mexico in 2017 but is yet to be disbursed.

**Is transformational change likely?** The Annex below explains that BEIS judges that there is tentative evidence that transformational change will be achieved by the end of the Programme.

Considering the above assessment, and progress mentioned in the previous sections against the output indictors (in particular 1.1, 1.2, 2.2), BEIS does not judge that the programme was sufficiently effective in achieving the intended outcomes in 2020, particularly in: supporting pilot projects; capacity building; and the development of policy and regulatory frameworks. Currently, BEIS’ assessment of the International CCUS Programme is that it does not represent good value-for-money at this time due to the significant underspend and sustained delays. A further analysis will inform decisions on next steps for the programme.

*Equity*

**Are Social and Environmental safeguards adhered to?** Yes, for example, the pilot storage project in South Africa was halted due to social issues. The consultant appointed to conduct technical studies in China in 2020 will carry out environmental and social impact assessments and community involvement activities.

**Do the services provided promote equality of opportunity, including for those with protected characteristics?** BEIS is confident that this programme does not adversely affect Protected Groups.BEIS did not directly monitor these data through the Logframe in 2020 but is now collecting data on the gender split of participants in events and workshops. BEIS expects both delivery partners to ensure gender balance in events and to strive for achieving a gender balance within their projects (both through the number of women employed and the type of job). Data provided by the ADB showed that female participation in ADB-led events in 2020 ranged from 16-27%. Data were not provided by the World Bank due to limited virtual stakeholder engagement in 2020. BEIS will consider what further measures the programme can take to promote the equality of opportunity for other protected groups.

In terms of equity, BEIS judges that this programme followed appropriate guidelines to ensure social and environmental safeguards for supported stakeholders and staff.

Considering the value-for-money framework above, BEIS judges that the delivery partners’ capacity to deliver funds equitably and through robust policies and governance structures is appropriate. However, delivery partners are not effectively or efficiently delivering within the expected timeframes nor meeting all of the expectations set out in the business cases. The programme is therefore substantially not meeting expectations.

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| --- | --- |
| Date of last narrative financial report | World Bank: November 2020  ADB: December 2020 |
| Date of last audited annual statement | World Bank: September 2020  ADB: August 2020 |

**Annex I: International Carbon Capture, Usage and Storage (CCUS) Programme Methodological Note on KPI 15 (Transformational Change) and Results Assessment**

1. **Programme Aims and Background**

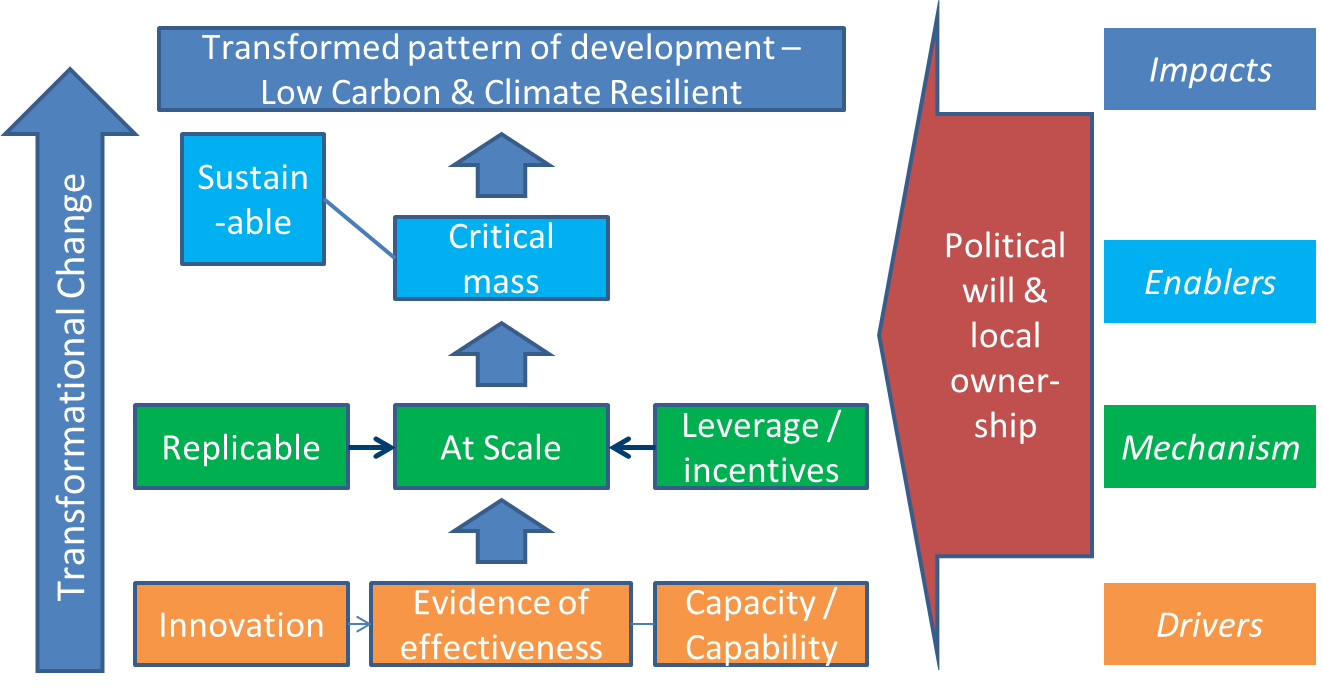
* Since December 2012, the UK has provided £70 million of international climate finance through the international Carbon Capture, Usage and Storage (CCUS) programme, which aims to raise the level of technical understanding of CCUS within key developing countries and emerging economies with high emissions (such as South Africa, Mexico, Indonesia and China), leading to the establishment of the necessary policy frameworks and incentive structures to support commercial, large-scale CCUS demonstration and ultimately accelerate the deployment of CCUS. £60 million was provided as part of the original business case in 2012 and £10 million extension was provided as part of an extension business case in 2017.
* Of the £70 million, £35 million was provided through the Asian Development Bank (ADB)’s CCUS Fund, and £35 million was provided through the World Bank’s CCUS Trust Fund. The programme runs until December 2023.
* The UK provides support for technical assistance (TA), which includes activities such as building the knowledge and skills base of the industries and governments in the supported countries, undertaking feasibility studies, developing CCUS roadmaps and reports, supporting the development of pilot projects, setting up CCUS Centres of Excellence, and supporting the development of CCUS policies, regulations and legislation.

1. **Methodological Note Overview**

* This methodological note aims to provide a summary of the approach developed to assess the effectiveness of the international CCUS programme using Key Performance Indicator (KPI) 15 (“Extent to which ICF intervention is likely to have a transformational impact”). KPI 15 is an indicator that all ICF programmes must report against and is particularly useful for determining the effectiveness of TA programmes.
* Transformational change is defined here as a change that catalyses further change, enabling either a shift from one state to another (e.g. from unabated fossil fuel use in the industrial and power sectors to abated use through CCUS) or faster change (e.g. accelerating the development and deployment of CCUS by increasing the deployment of CCUS capital and lowering the barriers to investment). Transformational change entails a range of simultaneous transformations to political power, social relations, markets and technology.
* Across the UK’s international climate finance (ICF) portfolio, many of the transformations that the ICF is seeking to achieve will only be evident with a time lag. Though it is necessary to monitor these longer-term changes, most are unlikely to materialise within the period of the current ICF (5 years from 2016-2021). Therefore, KPI 15 tracks early signs of transformation and the extent to which activities are facilitating transformation or have a high likelihood of being transformational.

1. **Methodological Approach**

* The methodological approach uses proxies to account for the time lag in achieving transformations. The KPI 15 Theory of Change sets out several criteria that are likely to result in transformational change:



*Figure 1: KPI 15 Theory of Change (monitored parts in the international CCUS programme are circled)*

* Progress against the relevant criteria in Figure 1 are assessed using the following box markings (as per the process for assessing KPI 15 in all ICF programmes):

0 Transformation judged unlikely

1 No evidence yet available

2 Some early evidence suggests transformation likely

3 Tentative evidence of change – transformation judged likely

4 Clear evidence of change – transformation judged very likely

* The overall goal of the international CCUS programme is to achieve box marking 4 (transformation judged very likely). The overall TA box marking is assessed each year as part of the annual review process (which runs from April to June each year for this programme). This is calculated as the median score across all of the assessed criteria. In the 2020 annual review, the programme achieved box marking 3. It is one of ICF’s longest running programmes (over 8 years as of March 2021) and outcomes can now start to be assessed rather than just the assessment of outputs.

* The international CCUS programme assesses the degree of transformation against three of the criteria shown in Figure 1: ‘fostering political will to act on climate change’, ‘encouraging innovation and testing new approaches and ideas’, and ‘demonstrating replication by others’.

1. **Rubric Statements**

* The performance of the international CCUS programme is summarised as a box marking (0-4). Twelve rubric statements for assessing transformational change have been identified based on the experiences of the first eight years of the programme (December 2012 to December 2020), as well as the experiences of other ICF programmes that have historically reported against KPI 15.
* The rubric statements are not weighted but this is something that we will consider discussing with analysts.
* To achieve a given rubric statement, the programme must answer ‘Yes, Achieved’ to the given question (as outlined in table 2). If the answer is ‘No, Partially Achieved’ or ‘No, Not Achieved’, then the rubric statement in question is not yet achieved. In the case of ‘Partially Achieved’, this could be due to projects in some countries meeting the milestone in question but not in all supported countries.

*Table 1: Rubric statements for assessing box marking 1*

|  |
| --- |
| **Rubric Statements for 1 (No Evidence Yet Available)** |
| CCUS-related finance has not been successfully deployed or there are delays in deployment that make any measurement of indicators impossible |
| Lack of evidence and data to assess more than half (>6) of the rubric statements |

*Table 2: Rubric statements for assessing box markings 2-4 and 2019 assessment*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Rubric Statements for 2, 3, 4** | **Most Relevant KPI 15 Criteria** | **Evidence** | **2020 Scoring (2019 CY)** | **2021 Scoring (2020 CY)** |
| Pilot-scale capture or storage project planned as a result of UK funding | * Political will * Innovation * Replication | 1. ***Is a pilot-scale capture or storage project planned?*** | **Yes, Exceeded (A+)** – six pilot projects are planned (Mexico (x2), South Africa (x2), Indonesia (x1) and China (x1)). | **Yes, achieved (A)** – In 2020, Two pilot projects in South Africa have been paused. New pilot projects were scoped in India and Mexico, but they were not agreed between the delivery partner and the supported governments’. Two other pilot projects in Mexico were planned but delayed (Brilliante oil fields and Poza Rica gas plant). One pilot project is planned but delayed in China (Yanchang pilot capture project). |
| Pilot-scale capture or storage project operational as a result of UK funding | * Political will * Innovation * Replication | 1. ***Is a pilot-scale capture or storage project operational?*** | **No, Not Achieved (B)** – despite a range of pilot projects planned in the four currently supported countries (Mexico, South Africa, Indonesia and China), movement from the planning phase to the implementation phase has been slow. | **No, Not Achieved (B) –** despite a range of pilot projects planned in three supported countries (Mexico, South Africa and China), movement from the planning phase to the implementation phase has been slow. |
| CCUS regulatory or legislative framework developed | * Political will | 1. ***Has a regulatory or legislative framework for CCUS been developed?*** | **No, Partially Achieved (B)** – regulatory frameworks are currently being considered or developed in Mexico (a NOM), South Africa (a regulatory and legal study) and Indonesia (a draft framework has been produced). | **No, Partially Achieved (B)** – regulatory frameworks are currently being considered or developed in Mexico (a NOM), South Africa (a regulatory and legal study) and Indonesia (a draft framework has been produced). There was no progress on this in 2020. |
| CCUS supporting policies or incentives implemented | * Political will | 1. ***Have supporting policies or incentives for CCUS been implemented?*** | **No, Partially Achieved (B)** – CCUS roadmaps have been produced in China, South Africa and Mexico, and CCUS government financing arrangements for pilot projects and CCUS Centres of Excellence have been agreed in China and South Africa (a CCUS Centre of Excellence has also been established in Indonesia). However, delays continue in the signing of the agreements for the pilot projects in Mexico and the implementation of policies or incentives to stimulate the development of a CCUS industry in each of the supported countries is still lacking. | **No, Partially Achieved (B)** – no change since 2019. Governments have not made decisions on the draft standards and regulations developed by the Trust Funds. |
| Private sector support (financial or non-financial) for CCUS | * Political will | 1. ***Has the private sector provided either financial or non-financial support for CCUS?*** | **Yes, Achieved (A)** – the private sector has been involved in the development of the pilot projects in each of the supported countries (Mexico, Indonesia, South Africa and China) if state-owned oil and gas companies are included in the definition of ‘private sector’. | **Yes, Achieved (A)** – the private sector has been involved in the development of the pilot projects in each of the supported countries (Mexico, South Africa and China) |
| CCUS included in NDCs to meet climate targets and CCUS deployment pathways established | * Political will | 1. ***Has CCUS been included in NDCs to meet climate targets?*** 2. ***Have CCUS deployment pathways been established?*** | **No, Partially Achieved (B)** – CCUS has been successfully included in the NDCs of China, Mexico and South Africa – future efforts will focus on including CCUS in the NDCs of other supported countries, particularly Indonesia and India.  **No, Partially Achieved (B)** – CCUS roadmaps have been produced in China, South Africa and Mexico, but not yet in Indonesia or India. | **No, Partially Achieved (B)** – CCUS has been successfully included in the NDCs of China, Mexico and South Africa – future efforts will focus on including CCUS in the NDCs of other supported countries, particularly Indonesia and India.  **No, Partially Achieved (B)** – No progress in 2020. CCUS roadmaps have been produced in China, South Africa and Mexico, but not yet in Indonesia or India. |
| Large-scale full-chain CCUS project planned | * Political will * Innovation * Replication | 1. ***Is a large-scale full-chain CCUS project planned?*** | **Yes, Achieved (A)** – the large-scale full-chain Yanchang CCUS project in China is currently being scaled-up from the existing 50,000 tCO2/year stored to 150,000 tCO2/year stored by the end of 2020 (construction on the scale-up began in September 2018). Following this, the project will be scaled-up to 0.36 mtCO2/year stored by the end of 2022. | **Yes, Achieved (A)** – the Yanchang CCUS project in China is still in the planning phase due to continued delays in 2020. |
| Large-scale full-chain CCUS project operational | * Political will * Innovation * Replication | 1. ***Is a large-scale full-chain CCUS project operational?*** | **No, Partially Achieved (B)** – the full-chain Yanchang CCUS project in China is currently being scaled-up from the existing pilot-scale of 50,000 tCO2/year stored to a mid-scale 100,000 tCO2/year stored (to be completed by the end of 2020). The scale-up to a large-scale project of 0.36 mtCO2/year stored will not be operational until the end of 2022. | **No, not achieved (C)** – the full-chain Yanchang CCUS project in China is delayed due to a lack of applications to conduct the technical assessments in 2019, followed by lockdowns and travel restrictions due to the COVID-19 pandemic in 2020. |
| Local CCUS expertise, knowledge and capacity developed | * Political will * Innovation * Replication | 1. ***Has local CCUS expertise, knowledge and capacity been developed?*** | **Yes, Achieved (A)** – in 2019, the ADB facilitated 12 workshops for CCUS: 3 deep dive workshops, 2 regulatory workshops in Indonesia, 2 workshops in Bangladesh, 2 workshops in China (in Guangdong and Shanghai), and 3 meetings of the Centres of Excellence). In 2019, the World Bank organised (or attended) 8 events: 1 CCUS Master’s programme, 2 capacity building courses on CCUS, 3 conference presentations on CCUS, 1 international CCUS workshop, and 1 international capacity building tour for traditional leaders in South Africa. | **Yes, Achieved (A) –** Due to global COVID-19 restrictions in 2020, the ADB facilitated 4 virtual workshops for CCUS and the World Bank postponed all stakeholder engagements. |
| Replication and dissemination of UK-supported projects within or between countries | * Replication | 1. ***Has replication of UK-supported projects been demonstrated within or between countries?*** 2. ***Have results and experiences of UK-supported projects been disseminated within or between countries?*** | **No, Not Achieved (B)** – although it is challenging to attribute wider CCUS activities in each of the supported countries to the success of UK support, currently the countries supported have primarily focused their efforts on completing the planning phases of their first CCUS pilot projects.  **Yes, Achieved (A)** – in all of the supported countries, results and experiences have been disseminated through workshops and at events. | **No, Not Achieved (B)** – although it is challenging to attribute wider CCUS activities in each of the supported countries to the success of UK support, currently the countries supported have primarily focused their efforts on accelerating progress of their first CCUS pilot projects.  **No, Not, Achieved (C)** – in-country in-person events were cancelled in 2020 due to the COVID19 pandemic. The ADB did host 4 virtual workshops but these did not specifically share the results and experience of UK-supported projects. |

*Table 3: Description and rationale for assessing the degree of transformational change using the identified rubric statements for box markings 0-4.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Rubric** | **Definition** | **Methodology** | **Rationale** |
| 0 | Transformation judged unlikely | 0 / 12 statements in table 2 are true | Adapted from the CP3 programme's approach |
| 1 | No evidence yet available | 2 / 2 statements in table 1 are true | Uses the CP3 programme's approach |
| 2 | Some early evidence suggests transformational change is likely | 1-2 / 12 statements in table 2 are true | Improves upon the CP3 programme's approach by providing a list of the same ten statements for rubrics 0, 2, 3 and 4 with the categories split to be middle-heavy to reflect global CCUS deployment and transformational experiences to date |
| 3 | Tentative evidence of change – transformation judged likely | 3-8 / 12 statements in table 2 are true | As above. The rubric statements are developed from the ICF global CCUS evidence review (completed in September 2017 and updated in September 2018) and the experiences of the ICF CCUS programme to date. |
| 4 | Clear evidence of change – transformation judged very likely | 9-12 / 12 statements in table 2 are true | As above. No country has yet reached transformational change with CCUS, usually due to 1-2 of the rubric statements missing. This provides the rationale for requiring (almost) all of the rubric statements to be true |

* Data to assess the three criteria (‘fostering political will to act on climate change’, ‘encouraging innovation and testing new approaches and ideas’, and ‘demonstrating replication by others’) are obtained each year as part of the annual review process, which runs from January to April for the international CCUS programme.
* The data are collected in three main ways:
  + Data submitted by the delivery partners (the ADB and the World Bank) through the programme logframe, through their annual CCUS Trust Fund reports (which are presented each year at the respective annual donors consultation meetings), and via calls with the World Bank and the ADB CCUS Trust Fund management team. Timescale: twice per year
  + Data collected independently by the BEIS programme manager, such as through CCUS missions to collect participant feedback forms from events and workshops, conduct (informal) interviews with key stakeholders, and observe supported activities directly. Timescale: twice per year
* Overall assessment:
  + Score – 3 (Tentative evidence of change – transformation judged likely)

4/12 rubric statements scored “Yes, Achieved” with 4/12 rubric statements scoring “No, Partially Achieved” and 4/12 statements scoring ‘No, not achieved’. BEIS expected progress against the ‘No, partially achieved’ statements in 2020 but progress was impacted by COVID-19 restrictions and delays to decision-making in target countries.