



Indonesia Regulates CCS and CCUS – MEMR Regulation 2/2023

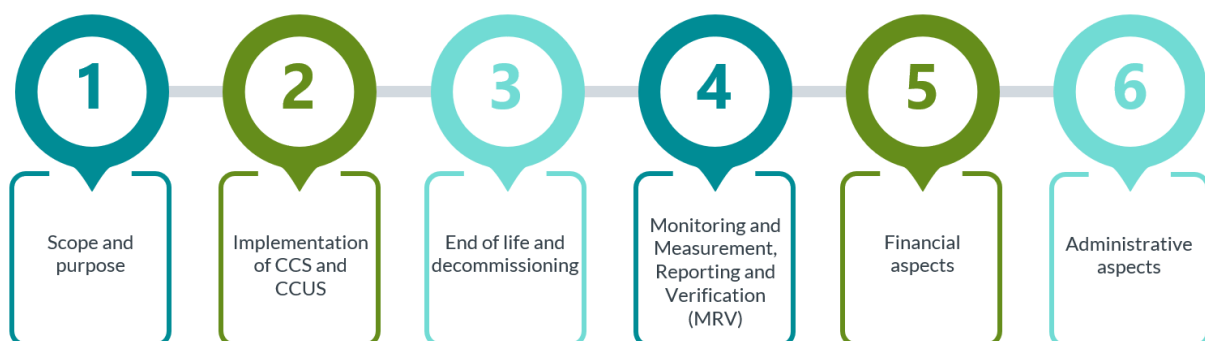
March 2023

Introduction

The Ministry of Energy and Mineral Resources (**MEMR**) of Indonesia has recently issued MEMR Regulation No. 2 of 2023 on the Organization of Carbon Capture and Storage (**CCS**) and Carbon Capture, Utilization and Storage (**CCUS**) for Upstream Oil-and-Gas Business Activities (**MEMR 2/2023**)¹.

This regulation fits within the broader framework of recent regulations issued by the Government of Indonesia to lay the ground for the country's energy transition and the fulfilment of its international commitments under the Paris Agreement and other instruments. The new regulatory framework established by MEMR 2/2023 builds on existing regulations and principles applicable to the upstream oil & gas sector and also on similar regimes which have been developed over recent years in various countries which are looking to kickstart CCS and CCUS utilisation and projects as a means to mitigate CO₂ emissions in hard-to-abate sectors.

In this article, we provide an overview of the coverage and key principles of MEMR 2/2023.



¹ MEMR 2/2023 has become effective on the date of enactment, i.e. 3 March 2023.

1. Scope and Purpose of the Regulation

MEMR 2/2023 covers the implementation of CCS and CCUS activities in the upstream oil & gas sector and within certain "Injection Target Zones" in the onshore or offshore environment (which can be depleted reservoirs, non-conventional reservoirs, saline aquifers or underground coalbed methane seams).

Generally, MEMR 2/2023 defines **CCS** as an effort to reduce greenhouse gas emissions by injecting and storing CO₂ and other greenhouse gases (**GHG**) that can be converted as CO₂ equivalent (**Carbon Emissions**) in certain upstream oil & gas work areas within Indonesia (**Work Area**).

CCUS is defined as an effort to reduce emissions and increase oil and gas production through the injection, utilization, and storage of Carbon Emissions in Work Areas (i.e. enhanced oil & gas recovery).

MEMR 2/2023 regulates the intended application of CCS and CCUS in Indonesia from the emissions themselves through to their capture, transport, storage and utilization, as summarised in the below infographic:²

Emissions

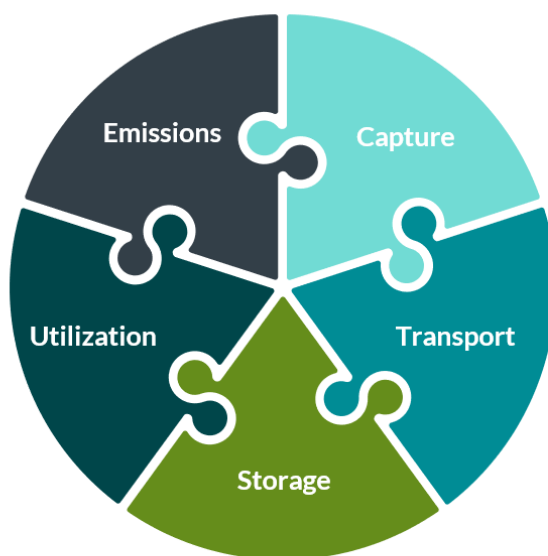
Carbon Emissions includes emissions originating:

- from upstream oil and gas business activities;
- other industries; and
- the atmosphere (through direct air capture technology).

Utilization

Utilization of Carbon Emissions is carried out to increase oil production and natural gas through:

- enhanced recovery crude oil;
- enhanced recovery natural gas; or
- enhanced recovery GMB.



Capture

Capture of Carbon Emissions is carried out through:

- segregation of Carbon Emissions at oil and gas production facilities;
- capturing emissions resulting from combustion
- pre-ignition and combustion capture;
- oxyfuel burning capture and/or
- other ways in accordance with science and technology.

Transport

Transportation of Carbon Emissions is carried out by:

- pipe
- truck
- shipping; and/or
- other ways in accordance with science and technology.

Storage

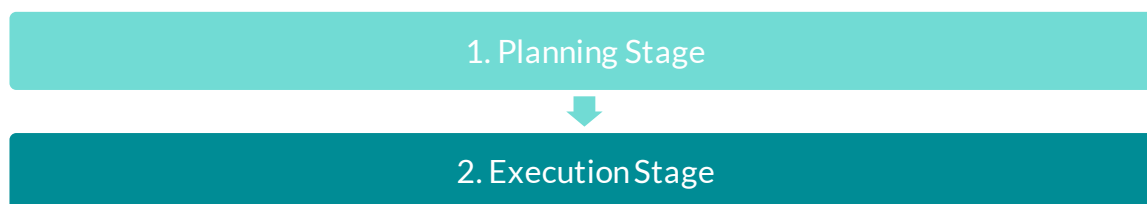
Injection and storage of Carbon Emissions is in the form of:

- reservoirs in oil and gas fields;
- unconventional oil and gas reservoirs;
- salt aquifers; or
- coal seams for coalbed methane (GMB).

² Articles 6-9.

2. Implementation of CCS and CCUS

The implementation of CCS and CCUS is conducted in 2 separate stages:



a. Planning Stage

In order to prepare and apply for CCS and CCUS activities, a contractor must propose a plan for implementing CCS or CCUS in its Work Area.

Such **implementation plan** must be submitted to:

- (i) the minister of energy and mineral resources, through the Special Working Unit for the Organization of Offshore Oil-and-Gas Business Activities (*Satuan Kerja Khusus Pelaksana Kegiatan Usaha Hulu Minyak dan Gas Bumi* or **SKK Migas**) or the Aceh Migas Organizational Body (*Badan Pengelola Migas Aceh* or **BPMA** for Work Areas located within its area of supervision), if the CCS or CCUS implementation plan is a part of the initial field development plan; or
- (ii) SKK Migas or BPMA, if the CCS or CCUS implementation plan is a part of the advanced field development plan.³

For the purposes of MEMR 2/2023, a **contractor** is defined as a business entity or permanent establishment determined to carry out exploration and exploitation in a Work Area based on a cooperation contract with SKK Migas or BPMA.⁴

The implementation plan must be based on certain studies which assess the feasibility of the proposed CCS or CCUS project and execution (including geology, geophysics, reservoir, transportation, storage, injection operations, economy, engineering, safety, environment, evaluation and risk mitigation, monitoring, and MRV aspects) and an estimation of Carbon Emissions storage capacity which may involve independent certification.⁵

The list of requirements and areas of coverage of the implementation plan to be prepared and submitted is extensive and we include the full list of topics and requirements as an **Appendix** to this article.

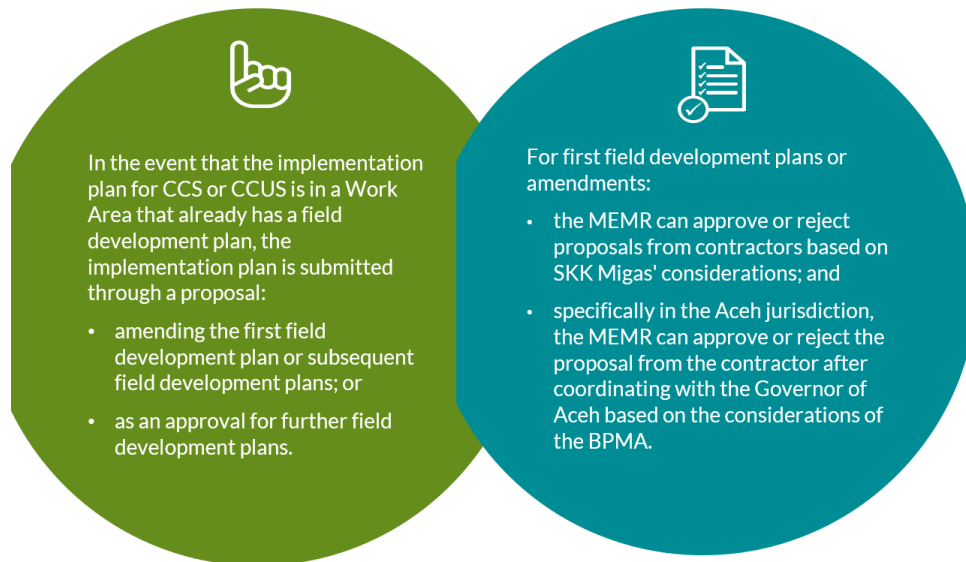
SKK Migas or BPMA must then consider the implementation plan submitted as part of the Work Area/field development plan and submit their considerations to the minister.⁶

³ Article 11(2).

⁴ Article 1(32).

⁵ Article 12(1).

⁶ Articles 13-14.



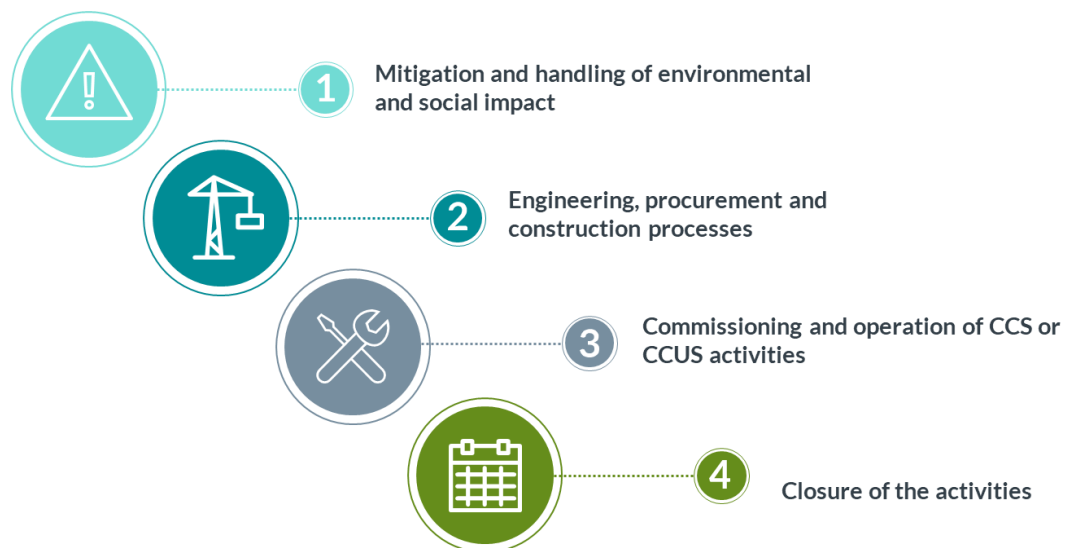
As the CCS or CCUS implementation plan becomes a part of the field development plan or the approved amendments thereto, the **cooperation contract** for the Work Area can then also be amended to reflect any necessary adjustments.⁷

In order to support the implementation of CCS or CCUS in their Work Areas, contractors that generate carbon emissions may also propose plans to **implement CCS or CCUS in other contractors' Work Areas**.⁸ MEMR 2/2023 does not provide any detail on the conditions and process for such implementation of CCS or CCUS, including the participation and approval of the contractor/operator in charge of such other Work Area. We assume that details of such conditions may be further developed in future implementing regulations or guidelines.

b. Execution Stage

The execution of CCS and CCUS may only be carried out after the contractor obtains approval of the proposed CCS or CCUS implementation plan for its Work Area.⁹

The execution stage includes **various activities** as set out below:¹⁰



⁷ Article 17(1).

⁸ Article 18(1).

⁹ Article 19(1).

¹⁰ Article 19(2).

The execution stage must also consider operational safety management, environmental aspects, emergency response activities, repair and maintenance activities, monitoring and MRV.¹¹

Third party access

MEMR 2/2023 also regulates the access to CCS or CCUS infrastructure and provides that Contractors may inject and **store Carbon Emissions produced by third parties in their Work Areas** based on an agreement between the contractor and such third parties.¹² The cooperation agreement must consider technical aspects, the reduction of Carbon Emissions, economic aspects, and security of CCS or CCUS operations. The contractor must submit the concept of the cooperation agreement to SKK Migas or BPMA for consideration and approval.

For the purposes of MEMR 2/2023, a third party is defined as a party producing Carbon Emissions outside the Work Area.¹³

Furthermore, MEMR 2/2023 **allows third parties to utilize the facilities operated by the contractor of a Work Area**¹⁴ for the implementation of CCS or CCUS, as long as the facilities meet technical, economic, and operational safety eligibility criteria, and the utilization is carried out in accordance with applicable laws and regulations.

The ability of third parties to utilise a Work Area could facilitate the creation of multi-user CCS hubs. This will promote the most efficient use of existing infrastructure and storage reservoirs, and subject to the requirements of the London Protocol¹⁵, could encourage carbon emissions imports from other regional sources.

Further details on these third party access modalities may be required to fully give effect to them as well as to the related business models and potential revenue streams.

Utilization of Depleted Reservoirs

Articles 58-59 of MEMR 2/2023 address the utilization of depleted reservoirs, particularly in the event that there is potential for utilizing them as a storage location for Carbon Emissions from other contractors and that CCS activities become the main activity of such reservoirs due to a decrease in oil and gas production.

In these circumstances, the contractor may submit a proposal for the utilization of the depleted reservoir for CCS activities by submitting a field development plan.

In the event that a contractor in a Work Area does not plan to utilize a depleted reservoir which has the potential to store Carbon Emissions, then cooperation with other parties can be carried out in managing the depleted reservoir for CCS activities with the responsibility for implementation still remaining with the contractor (with the approval of SKK Migas or BPMA). Alternatively, the MEMR may request the contractor to return part of the Work Area where the depleted reservoir is located to be used by other contractors determined by the MEMR to carry out CCS activities.

¹¹ Article 19(2).

¹² Article 20(1).

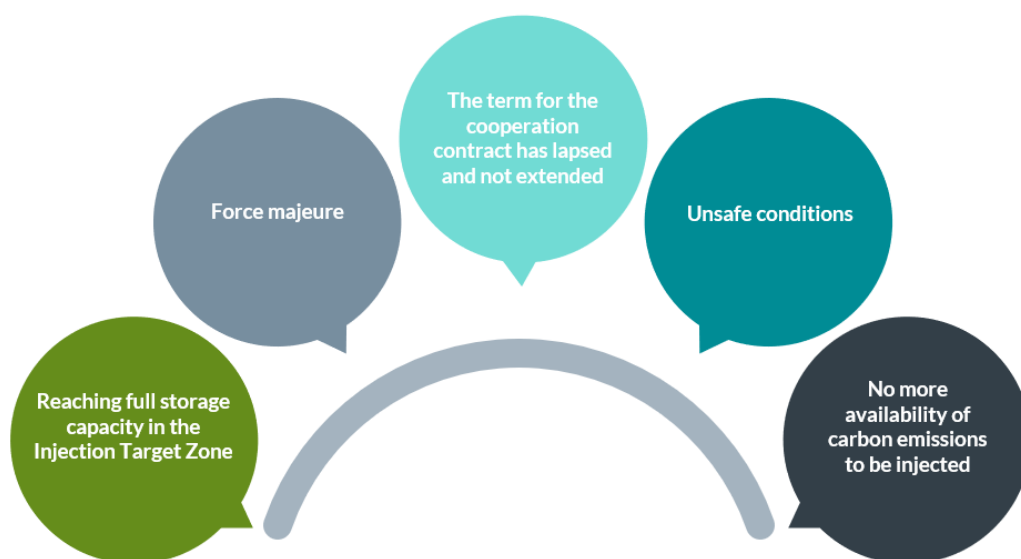
¹³ Article 1(28).

¹⁴ Article 21.

¹⁵ 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972.

3. End of life and decommissioning

Part 4 of Chapter 3 of MEMR 2/2023 addresses the closure of CCS or CCUS activities, which can occur due to **various reasons** such as:¹⁶



The contractor is responsible for submitting a **closure plan** of CCS or CCUS activities to the MEMR through the Head of SKK Migas or the Head of BPMA, which should include information on the reservoir, equipment, installations, facilities, and wells that are to be closed, the total reduction of Carbon Emissions, cost estimation, timeframe for closure, and mitigation plan against any environmental and other impact from the closure.¹⁷

The MEMR approves or rejects the plan. If rejected, improvements must be made and the plan must be submitted again. The costs incurred for the closing of CCS or CCUS activities are the responsibility of the contractor. The Directorate General of Oil and Gas (**DGOG**) is responsible for verifying the completion of the closure of CCS or CCUS activities and may appoint an independent surveyor to determine if the closure meets applicable standards and good technical principles.¹⁸

4. Monitoring and Measurement, Reporting and Verification (MRV)

As part of the responsibilities of contractors undertaking CCS/CCUS, contractors must carry out a **range of monitoring activities** to ensure worker safety, installation and equipment safety, environmental safety, and public safety.¹⁹

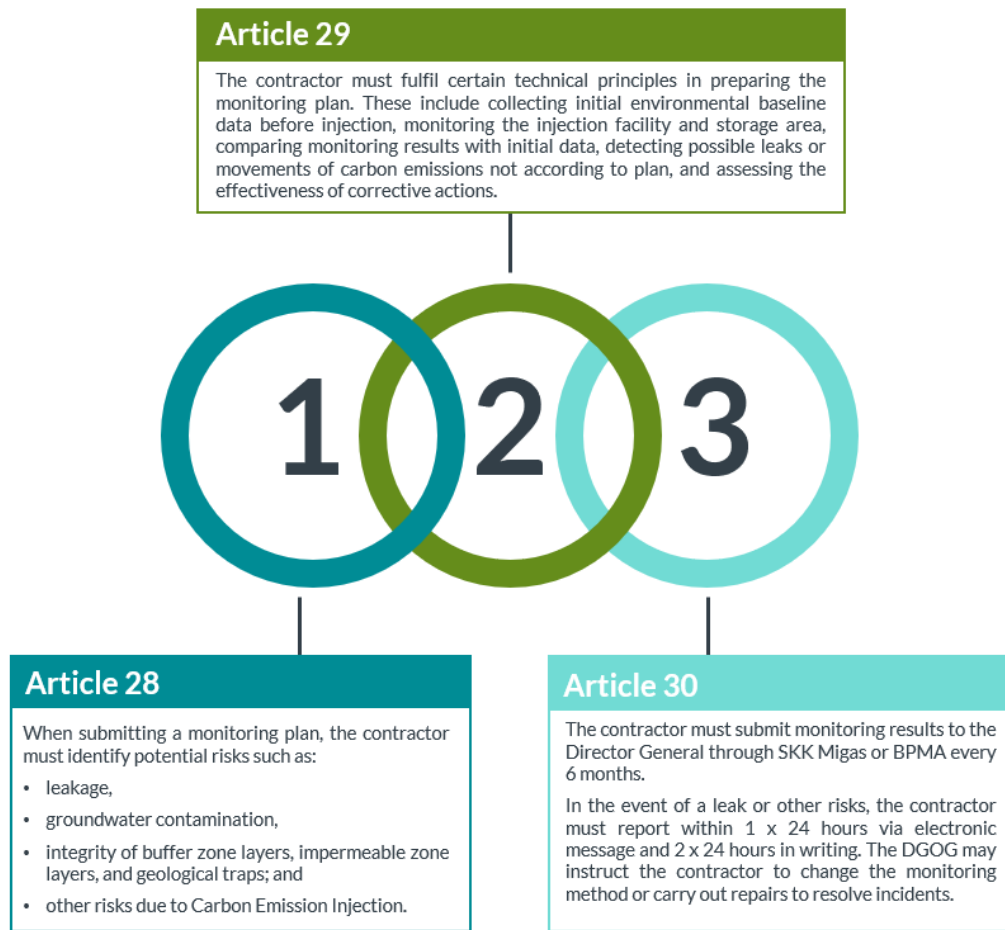
Monitoring activities must be carried out according to the approved CCS or CCUS implementation plan and for a **period of up to 10 years after the closure of CCS or CCUS activities** based on the determination of verification results. Monitoring costs for this period must be included in the contractor's operating costs in accordance with laws and regulations and a joint account is to be set up on behalf of the contractor and SKK Migas / BPMA to ensure appropriate funding is available for monitoring activities after decommissioning.

¹⁶ Article 22(1).

¹⁷ Article 23(2).

¹⁸ Articles 24-25.

¹⁹ Article 27(1).



End of Contractor's Rights, Obligations, and Responsibilities

Under **certain conditions** the contractor's rights, obligations, and responsibilities for CCS or CCUS implementation in a Work Area may **come to an end and be transferred to the state**.

For this to happen, the following cumulative conditions must be fulfilled:

- (i) the contractor has received a stipulation of verification results from the DGOG for the completion of CCS or CCUS closure activities;
- (ii) the monitoring result shows no leakage, ground water contamination or other risks caused by carbon emission injection; and
- (iii) the cooperation contract period has ended.

The contractor may also submit a proposal to return part of the Work Area to the MEMR through SKK Migas or BPMA before the end of the cooperation contract period where there is a **depleted reservoir** that has carried out CCS or CCUS activities. The MEMR will then provide its approval based on consideration from the SKK Migas or BPMA following which the contractor's rights, obligations, and responsibilities for CCS or CCUS implementation in the Work Area will cease.

Following the cessation of the contractor's rights, obligations and responsibilities, the supervision and responsibility for the depleted reservoir where CCS or CCUS activities have been carried out will transfer to the DGOG.²⁰

Measurement, Reporting and Verification (MRV)

MEMR 2/2023 sets out the obligation for contractors to carry out certain **MRV activities**. In summary:²¹

- contractors carrying out CCS or CCUS activities must conduct a measurement program at least once a year.
- the measurement program should be specific to the CCS or CCUS location and must include an inventory of carbon emissions and CCS or CCUS operating parameters.
- the program must use measurement methods that can be in the form of direct or indirect methods.



Furthermore, the CCS or CCUS and carbon economic value reporting must contain the following general and technical data:²²

<u>General data reporting</u>	<u>Technical data reporting</u>
<ul style="list-style-type: none"> • the identity of the contractor; • the title and type of activity; • the selected CCS or CCUS and carbon economic value activity mechanism; and • technology transfer, capacity building, and financing. 	<ul style="list-style-type: none"> • the calculation of the amount of Baseline GHG Emissions; • the selection of the reference period; • the method for calculating the achievement of reducing Carbon Emissions; • the results of monitoring activity data; • the progress of achieving the targets for reducing and/or absorbing Carbon Emissions; and • a description of the managerial system.

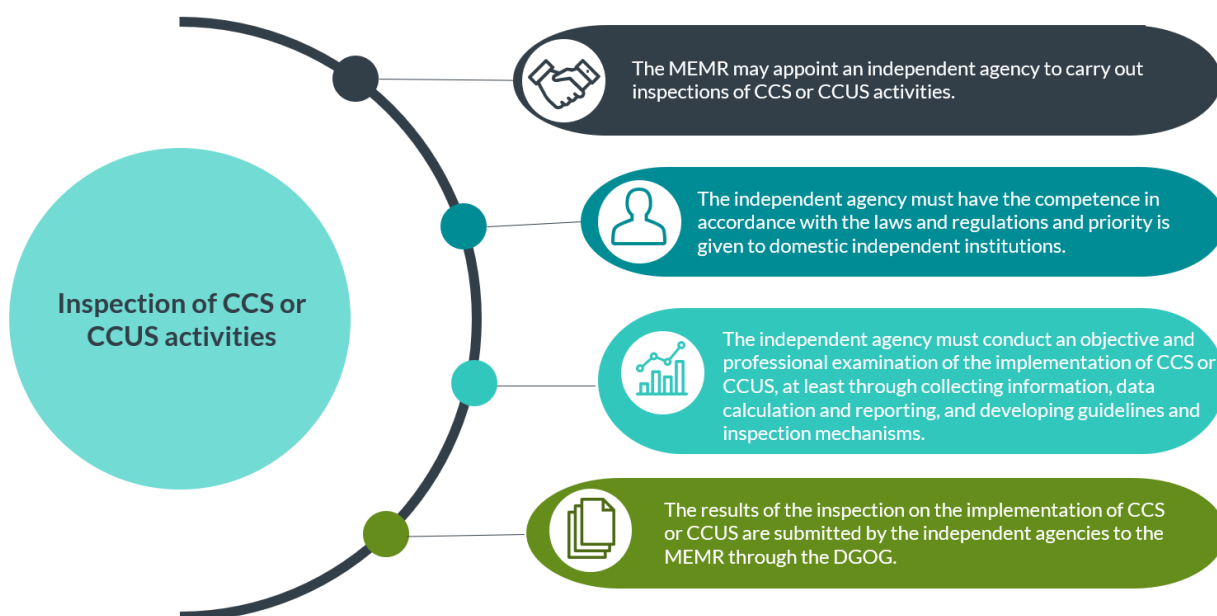
We note that **technical data reporting** is the basis for examining the implementation of CCS or CCUS by the MEMR.

²⁰ Article 31(6).

²¹ Article 34.

²² Article 35(2) and 35(3).

The MEMR may delegate its inspection duties to independent agencies as summarised in the following diagram:²³



MRV Submission Timeline

The contractor must submit the MRV results in writing to the MEMR through the DGOG no later than March of the current year. The MEMR then reports the MRV results of CCS or CCUS activities as part of the GHG reduction inventory to the Ministry of Environment and Forestry no later than June of the current year.²⁴

5. Financial aspects

Chapter V of MEMR 2/2023 addresses the financial aspects of implementing CCS or CCUS.

Costs

As a general principle (and an important one), the implementation of CCS or CCUS for sources of Carbon Emissions originating from upstream oil and gas business activities is part of the operations of each Work Area in accordance with the provisions of the applicable cooperation contract.²⁵

If on the other hand the Carbon Emissions are not sourced from upstream oil and gas business activities, CCUS activities which are petroleum operations activities begin when the Contractor receives Carbon Emissions to be injected into the contractor's Work Area as agreed upon contractually with the third party.

Pursuant to Article 40(3) of MEMR 2/2023, all costs of implementing CCS or CCUS in the framework of petroleum operations can be treated as operating costs in accordance with the provisions of the cooperation contract for the Work Area.

²³ Articles 36 and 37.

²⁴ Article 39(2).

²⁵ Article 40(1).

Funding

Contractors may use funding from third parties for implementing the study stages, constructing facilities, and GHG emission reduction certification. The types of funding schemes that can be used by the contractor include project financing, grants, and/or other schemes in accordance with laws and regulations.²⁶

Monetization

If the source of Carbon Emissions comes from upstream oil and gas business activities, the monetization of CCS or CCUS consists of carbon trading in accordance with statutory provisions and the reimbursement of operating costs for the use of shared facilities.²⁷

If the Carbon Emissions are not sourced from upstream oil and gas business activities, the monetization of CCUS operations consists of revenue from injection and storage services.

Incentives

Contractors may be given certain incentives in accordance with the provisions of laws including tax incentives applicable to the upstream oil and gas business activities to support the implementation of CCS or CCUS.²⁸

Insurance

In carrying out CCS or CCUS activities, the contractor may appoint an insurance company to cover the payment obligations for part or all the risks that arise in the implementation of CCS or CCUS activities, including environmental risks.²⁹

6. Administrative aspects

The **closing articles** of the regulation (Articles 45-60) address various administrative aspects of the new regime including the ownership of the assets used in the context of CCS/CCUS, emergency response, supervision, and administrative sanctions for contractors involved in CCS or CCUS activities.

In particular, we note the following provisions and principles:

- Asset Ownership - Article 45 stipulates that goods and equipment used directly for the implementation of CCS or CCUS activities purchased by the Contractor become state property, and their management is carried out in accordance with the provisions of the laws and regulations.
- Emergency Response - Articles 46-52 impose an obligation on contractors to establish an emergency response system to deal with dangerous conditions that have the potential to threaten worker safety, installation and equipment safety, environmental safety, and/or public safety. The emergency response system is to be structured to control the impact of damage that may occur during CCS or CCUS activities swiftly and accurately and includes periodic training and emergency response equipment.
- Guidance and Supervision - Articles 53-55 mandate the authority of MEMR to provide guidance and supervision over the implementation of CCS and/or CCUS activities and that of the Oil and Gas Inspectorate to carry out safety inspections and monitoring of CCS or CCUS equipment, installations, and facilities.

²⁶ Article 41(2).

²⁷ Article 42(1).

²⁸ Article 43(1).

²⁹ Article 44(4).

- Sanctions - Articles 56-57 stipulate that contractors who violate the provisions related to CCS or CCUS activities are subject to administrative sanctions, such as written warnings and a temporary suspension of activities. In case contractors fail to comply with their obligations after receiving 3 written warnings (each of up to 30 days), they may face a temporary suspension of activities.

Conclusion

The Indonesian Government has openly declared that CCS and CCUS will form an important and integral part of its energy transition policy towards a net-zero target. Whilst certain pilot projects have already been initiated (such as the Gundih project in Central Java), there is no doubt that the new regime provided by MEMR 2/2023 will now pave the way and provide a more stable and legally robust framework to allow for the development of commercial scale projects in Indonesia.

The enactment of MEMR 2/2023 (which has been 4 years in the making) lays the framework underpinning the Indonesian Government's commitment to support the development and use of CCS & CCUS in Indonesia. The regulation provides much needed substance and clarity to the scope and requirements of CCS/CCUS activities across the archipelago. The new regulatory framework complements the recent stream of regulations, which provides a new and complementary framework for carbon pricing and trading which we have addressed in recent articles.³⁰

Implementation of MEMR 2/2023 will undoubtedly raise a host of other legal issues, such as ensuring quality specifications, addressing leakage risk and allocating title and risk in the context of commingled carbon. These issues will also need to be worked through.

We anticipate Malaysia will be watching these developments closely as it has CCS regulations currently under development, as well as Thailand which has indicated that it will also develop legislation. The details of the new Indonesian regime, particularly in relation to the somewhat controversial area of enhanced oil & gas recovery, will also be of interest to various Middle Eastern jurisdictions which are currently in the process of developing CCS/CCUS regulatory frameworks.

A space to watch will be whether the Indonesian Government decides to follow in the footsteps of the US, the UK, Europe and others in offering significant financial incentives to attract investment across the CCS/CCUS value chain.

The appetite for regional cooperation, including shared infrastructure and cross-border CCS services is also a nascent issue in this area. Transboundary storage raises complex issues in terms of proponents or users getting appropriate recognition under relevant national and international carbon accounting schemes, as well as navigating the legislative gaps which may exist in the interplay between various jurisdictions. Inevitably, some regimes will develop more quickly than others, in the absence of one clear set of overarching international laws and the international marine industry provides some relevant learnings here, as do the amendments to the London Protocol.³¹

³⁰ [Indonesia carbon pricing and trading regime for power generation | Ashurst](#); [Regulatory Overview of Carbon Pricing and Trading in Indonesia | Ashurst](#).

³¹ Global CCS Institute 'Global Status of CCS 2022', page 13.

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Appendix

Contents of the Implementation Plan Study

Article 12(3) of MEMR 2/2023 provides that the study for the implementation plan must provide certain results which at least consist of the following:

- a) estimation of Carbon Emissions storage capacity by means of static and dynamic modeling of the Injection Target Zone;
- b) depth and width of the Injection Target Zone;
- c) injection target zone hydraulic conductivity;
- d) composition of Carbon Emissions and their impact on the Injection Target Zone;
- e) integrity of the buffer zone layers, impermeable zone layers, and geological traps that contain at least:
 - 1. the highest limit of injection pressure in the wellbore which does not exceed the fracture gradient/minimum *insitu* stress; and
 - 2. geomechanics and rock geochemistry study.
- f) well integrity in injection wells, production wells, surveillance wells, and/or abandoned wells in the vicinity which have the potential to become a source of Carbon Emission leakage;
- g) flow rate and injection pressure;
- h) injection period;
- i) design and implementation plan for injection well drilling;
- j) increase in injection target zone pressure due to injection activities;
- k) the need for and specification of surface facilities for injection operations;
- l) integrity of required surface facilities;
- m) dynamic modeling of the distribution of Carbon Emissions during and after a certain period of injection;
- n) estimation of increased production of oil and gas for the results of CCUS activities;
- o) estimated reduction of Carbon Emissions;
- p) economic analysis;
- q) risk assessment and mitigation for long-term storage including environmental, social and public engagement impacts;
- r) carbon emission storage capacity utilization plan; and
- s) monitoring and MRV plans which include the preparatory phase for activities up to after the closing of the CCS or CCUS activities, which are prepared according to the referenced standards and good technical principles.

