

VEMW Position Paper CCS

Embrace CCS as a chance at creating an advantageous business climate in the Netherlands

1. *Creating a level playing field for first movers in the short term*
 - *Competitive pricing for integrated CCS services by fair allocation of proactive investment costs.*
 - Broaden SDE ++ scope: Include subsidy for Dutch companies using CCS-services abroad
2. *Encourage and enable a competitive CCS-market in the NL in the medium and long term*
 - Unbundle transportation and storage
 - Development of regulation for CSS transport infrastructure tariffs and conditions
 - Encourage transparency on the tariff setting and tariff development
 - Enable competitive supply storage options

As part of the EU's climate policy agenda, several instruments, such as the EU ETS or the renewable energy directive, are put in place to achieve CO₂ emission reductions at the lowest possible costs. Specifically in the Netherlands, more ambitious CO₂ emissions reduction targets have been set in the 'Klimaatakkoord' enforcing extra measurements such as a CO₂ levy. This levy aims to incentivize industries to lower their CO₂ emissions. Consequently, industries are looking for the most efficient methods to realize structural reductions of their CO₂ emissions. However, some industries do not have options available to them (yet) to reduce CO₂ emissions because of lacking infrastructure, excessive costs or underdeveloped technology. Carbon Capture and Storage (CCS) can, in short to mid-term, mitigate the so called 'hard to abate' CO₂ emissions for which there are no other technological solutions yet. The energy-intensive industries in the Netherlands, united in VEMW, consider that CCS offers an opportunity to timely mitigate CO₂ emissions from the industry, and that there is potential for the development of a functioning CCS-market in the Netherlands. This position paper aims to outline these views and point out possible solutions needed for a functioning CCS-market. Key elements that will be addressed are the need for CCS, the challenges for its implementation, and solutions in the long and short-term. The solutions make emphasis in the development of a competitive Dutch CCS market and the minimization of additional cost for the first movers.

The need for CCS

The energy-intensive industries play a pivotal role in achieving the ambitious CO₂ emission reduction targets established by the Dutch government. Nevertheless, most of energy-intensive industries have no available alternatives to transition to a low-carbon production yet. Examples of alternatives are electrification, utilization of low-carbon hydrogen, and the transition to new low-carbon technologies. These alternatives are hindered by 1) grid congestion, 2) limited supply of affordable low-carbon hydrogen, and the 3) absence of low-carbon technologies at a high technology readiness level. Without viable alternatives to decarbonize their processes, these industries must explore other avenues to reduce CO₂ emissions until essential conditions are met.

CCS emerges as a short to mid-term solution for a significant and timely CO₂ emission reduction. This is in contrast to popular belief that CCS is a way for industrial businesses to delay their transition to sustainable and carbon-neutral energy sources, CCS is simply necessary for a successful energy transition. The Dutch government is aware of the significance of CCS for the energy transition as it has incorporated CCS in the 'Nationaal Plan Energiesysteem', a plan that aims for a carbon-neutral energy system in the Netherlands.

In the broader context of the energy transition, CCS can make another crucial contribution in the development of a sustainable low-carbon hydrogen market. Green hydrogen production goals are challenging to be met within the proposed timeframe. The addition of blue hydrogen to the low-carbon hydrogen mix could be a possibility by the implementation of CCS. This would offer an alternative to kickstart the sustainable hydrogen market. Furthermore, for some industries low-carbon hydrogen is necessary due to off gasses that are created during their production processes, which are sources of process emissions. For them, low-carbon hydrogen would not be a kickstarter but rather an efficient decarbonisation option providing process flexibility in the longer run.

The long-term use for CCUS

In the long term, CCUS can be used to reach negative CO₂ emissions. Governments, including the Dutch Ministry of Economic Affairs and Climate, are looking for ways to reach negative emissions. CCS, and further down the line CCU (Carbon Capture and Usage), is a very efficient way of reaching these negative emissions. CCS infrastructure will after all already be in place to capture and store industrial CO₂ emissions.

The development of CCS infrastructure is compatible with the unique characteristics of the Netherlands. An example of these characteristics is the empty gas fields under the North Sea, which are ideal locations for storing CO₂. The large storage capacity in the Netherlands is also attractive for neighbouring countries, making CCS an appealing export option and providing a greater economic potential.

CCS technology

The CCS technology value chain is relatively new. This does not mean that CCS technologies are new as well. Industries in the Netherlands have been capturing, transporting and storing CO₂ for nearly 50 years. This means all individual technologies are proven and safe. The new technological aspect of CCS is the underground storage in empty gas fields at scale. While this has not been done in the Netherlands with CO₂, the gas that was present in these fields had to be contained as well, so even these technologies are tried and tested.

Challenges

To utilize the Dutch full CCS-potential, a number of challenges need to be addressed. The main challenge at this stage is the absence of a competitive CCS-market. With only two storage options for CCS within the Netherlands, one (Porthos) already booked at its full capacity, and the other option (Aramis) is still in development. This leaves potential CCS-users as captive costumers with just one potential option (Aramis) within the Netherlands.

The lack of a competitive market and the hands-off approach of the Dutch government with regards to CO₂ transport and storage investments leaves emitters with no room for negotiation with regards to tariffs and contractual terms. This becomes even more of a problem when the same party is offering combined transport and storage. The domestic monopoly is reinforced by the SDE++ subsidy system, which grants subsidies to Dutch CCS-users using Dutch CCS solution providers only.

With regards to CO₂ specifications, certain issues have to be addressed. Firstly, each storage provider needs a different purity and accepts different contaminants due to geological differences in the actual storage site. This makes it difficult to formulate universal rules and regulation regarding CO₂ specifications. Secondly, the question arises who should purify the CO₂ to those standards. Each CCS user has a different production process which ultimately leads to different contaminants and CO₂ purities. Each user could purify their own CO₂ stream but this would lead to higher costs for each user and it would be more difficult to regulate. Also, the user would be dependent on one provider as the provider is responsible for the standardization of CO₂ quality up to its requirements. If the storage provider were to purify CO₂ to its own standards, this would raise the price for all CCS users, including those who already provide on-spec CO₂. Still, this last option seems the most cost-effective and workable. It would also lead to a more transparent market, as each user would have the option to change provider if needed without having to change their purifying process.

Another hurdle in creating a fully functional and efficient CCS-market in the Netherlands is the risk that first movers take when contracting CCS-services. These risks are financial problems that may occur when storage providers cannot deliver the agreed upon services at the agreed upon date. This leaves first movers exposed to ETS costs that they were hoping to avoid using CCS. Lastly, first movers should not pay for the over dimensioning of CCS infrastructure. This makes the cost inexorably high for first movers, which will restrict them to make use of CCS. The infrastructure for CCS should be built with a larger and cross-border CCS-market in mind.

Solutions

Long term

The first and preferred solution is to increase competition between national storage providers as well as in the EEA. To increase competition, more CCS projects should be designed and approved. Increasing options for CCS users will enable the market to become and remain competitive and attractive for businesses within and outside of the Netherlands. Using Dutch CCS services should always be the most attractive option for businesses based in the Netherlands. Additionally, the European Commission in the Industrial Carbon Management (ICM) strategy envisions the development of a regulatory framework for CCS with emphasis in the transport of CO₂. The availability of infrastructure for the transportation of CO₂ and storage is supported. Therefore, national and European Union CCS frameworks should be aligned.

To increase the competitiveness of the CCS market, storage and transport should be offered as an unbundled service, because transportation, especially by pipeline, is highly susceptible to

monopolization. We suggest mandatory third party access for EU and EEA storage providers with designated and regulated transport providers. This system has had a proven track record for gas and electricity and should therefore also be suitable for CCS.

The Norwegian government, who sees CCS as a long-term business opportunity for the country, has significantly invested in the developing of the Norwegian CCS market. The investment guarantees over dimensioning of infrastructure without burdening first movers with its cost. This opens doors for further investments and stimulate a (cross-border) CCS market. The Netherlands should follow suit by seeing CCS not only as a way to achieve CO₂-targets, but also as a business opportunity.

Short term

The current system leads to a monopoly for CCS storage providers in the Netherlands. Since it is unfeasible in the short term to increase the number of domestic storage providers, the only possible solution is the use of international services. Furthermore, the inclusion of foreign CCS services will stimulate the development of a competitive market. This would encourage the Dutch storage providers to adjust their pricing and conditions to those of their international competitors, creating a competitive market and an intentional level playing field. To achieve this, the SDE++ subsidy system should be amended to include the deployment of CCS by emitting industries in the Netherlands regardless of where CO₂ is stored, whether domestically or abroad. Additionally, as the ICM regulatory framework is developed, cooperation among member states would be encouraged in the establishment of CCS value chain.

Another possibility to encourage transparency on tariff setting and tariff development is the intervention of the Dutch government via the SDE++ subsidy system in setting a capped pro-rata subsidy. The subsidy would be based on the actual reserved capacity in the storage site and actual throughput and not include costs related to over dimensioning. If over-dimensioning is considered desirable from a societal or commercial perspective, these costs should be covered by the developers or potentially as a long-term Dutch government guarantee.

Most importantly, for short term CCS-success in the Netherlands, kickstarting the CCS market is necessary. As mentioned before, the Dutch government should start embracing CCS as a chance at creating an advantageous business climate. In order to make CCS a success in the Netherlands and not fall behind, the market should emerge and its infrastructure has to be built. The Dutch government should make policies that create the necessary conditions for CCS, which will speed up the development of a CCS market and taking process and remove significant hurdles for first movers.