The world doesn't realise how much we need CO2 storage

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We need energy efficiency, renewable energy and carbon capture and storage of CO2 in order to avoid a climate crisis. Credit: Thinkstock

The world will not be able to reach the goals of the Paris Agreement without technology capable of capturing, transporting and storing CO2.

As part of the most recent international climate accord, all nations committed themselves to a reduction in their greenhouse gas emissions. The cuts are intended to ensure that the global temperature will not rise

by more than 2 degrees celsius by 2100.

Several ways of cutting emissions exist. The International Energy Agency (IEA) says that carbon capture and storage (CCS) is one of the most important means by which the world can reach its climate targets. This means that we need to be able to both capture CO2 and to store it – securely.

This is what Norway's new research centre – the Norwegian CCS Research Centre – will help to do. The Centre opened on November 4th 2016, the same day as the Paris Agreement came into effect.

Could reduce harmful carbon emissions

"If we are to reach our climate targets, many different sectors will have to be involved. During a transition period, coal- and gas-fired generating stations will need to have CCS technology – i.e. capture and storage – installed," says Mona Mølnvik of SINTEF.

As far as industry is concerned, CCS will still be needed even after we have managed to create a sustainable supply of energy from renewable sources, because industrial processes also emit CO2. For example, the cement industry is the world's third largest source of CO2 emissions.

We also need to reduce the CO2 that is already in the atmosphere

Additionally, we will have to adopt technologies that are capable of capturing existing emissions. So far, only one type of technology can manage this, and it is known as BioCCS:

This process captures CO2 from sources that as a point of departure are

CO2-neutral. The result will be "negative emissions," or in other words, a fall in the existing level of CO2 in the atmosphere.

"BioCCS can thus help to reduce harmful carbon emissions, but we will need to adopt all these measures as quickly as possible. That would be the smart thing to do, and it is not as expensive as some people believe," says Mølnvik.

New business potential in the North Sea

The new centre has set itself ambitious targets. It intends to:

- identify and develop new generations of CCS technologies suiable for electricity generation and industrial processes
- carry out research on more efficient transport, which has great potential to slash costs
- further develop methods for secure storage of CO2 and new mearurement techniques
- investigate the many possibilities for storing enormous quantities of CO2 under the North Sea
- train MSc and PhD students in CCS technologies. Their key knowledge will be transferable in their future employment in research or industry.

The efforts of the Centre have gained support at ministerial level:

"We know that there is enormous storage capacity for CO2 on the Norwegian continental shelf, so this presents us with a commercial opportunity for several decades into the future," said Tord Lien, Minister of Petroleum and Energy.

Lack of time

"Today we have celebrated our opening, but there is no time to waste," says SINTEF's Mona Mølnvik, who will be leading the Centre. "I am looking forward to coming back to the office to work together with industry and NCCS's partners, and to develop innovative solutions for CCS that will enable this technology to be implemented."

Although it took eight years for the Kyoto Agreement to be implemented, the Paris Agreement needed only a single year.

"The world still doesn't understand how much we need CCS to achieve the goals of the Paris Agreement. Eighty per cent of our energy systems are dependent on fossil fuels," said Professor Philip Ringrose of NTNU and Statoil .

"Fossil-fuel energy cannot be switched off overnight. This is a part of the transition process, and that is why CCS is important. I hope that all politicians understand the message, and that we need to do everything we possibly can," he said. We need improved energy efficiency, renewable energy and means of dealing with CO2 from fossil fuel sources.

Provided by SINTEF

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