

EKN's and SEK's Scientific Climate Council meeting: Methane - 10 October 2022

About EKN's and SEK's Scientific Climate Council

The climate council is an advisory expert body with the aim to guide the Swedish export finance system in its ambition to adapt their full operations to be in line with the Paris Agreement's 1.5°C target. The climate council is a knowledge resource and a discussion partner for EKN and SEK concerning principled positions.

The climate council meetings are held under Chatham House Rule. The purpose of the meeting notes is to reflect and summarize the council's primary take-home messages to EKN and SEK.

Participants 10 October 2022 (physical meeting)

Climate Council: Anna Krook-Riekkola, Max Åhman, Måns Nilsson, Tomas Kåberger.

EKN: Anna-Karin Jatko, Peter Tuving, Karin Wessman, Frida Arounsavath

SEK: Magnus Montan, Maria Simonson, Jens Hedar, Pontus Davidsson

Topics for the climate council's fourth meeting

- **The role of methane in climate transition, focussing on sectors which are relevant for the Swedish export industry**, for example mining, agriculture, forestry, and power production
 - **How will different sectors and countries manage the issues**, for example in connection with COP27? How can methane emissions impact EKN's and SEK's businesses and climate targets? **Possibilities to measure and reduce emissions** – are there low hanging fruits?
- COP27: brief exchange on topics and expectations.

The role of methane in climate transition

A fast reduction of methane emissions is a prerequisite for achieving the Paris Agreement's 1.5-degree target

- Methane gas is a significantly more powerful greenhouse gas than carbon dioxide, but with a shorter lifespan in the atmosphere.

In addition to the climate impact, methane emissions are negative for human health and the surrounding environment.

- Efforts to reduce methane emissions therefore produce several positive effects (co-benefits), in addition to reduced climate impact.

120 countries have committed to reduce methane emissions by 30% by 2030 (Global Methane Pledge)

- The commitment was launched during COP26 in November 2021 and corresponds to avoiding 0,2 degrees of warming until 2040.
- All participating countries shall produce an action plan¹. Neither China nor Russia have signed the commitment.

¹ Sweden's plan: <https://www.regeringen.se/4ad45b/contentassets/eba3c73348294c28be87c9b6f0bb4bd5/swedens-methane-action-plan---mapping-of-swedens-methane-emissions-projections-policies-and-measures.pdf>

The largest emissions sources of methane gas from human activity are natural gas/coal mines, agriculture, and waste management.

- The production chains for natural gas and coal mines leak methane. Flaring of methane gas, for example during oil and gas extraction, converts methane into carbon dioxide, which has a lower climate impact but a longer lifespan in the atmosphere.
- Within the agricultural sector, cattle are the largest source of emissions, partly from the animals' digestive systems, partly from the handling of manure and agricultural waste that leaks methane. There are generally lower net emissions from natural grazing animals. Rice cultivation in water is also a major source of emissions.
- In landfills, anaerobic conditions cause methane gas emissions.
- There is uncertainty about methane emissions from changes in land-use. For example, in Swedish forestry, it is believed that emissions have increased because of dry laying and that rewetting land can halt emissions, but this has not been established.
- Emissions from hydroelectric dams depend on the type of land the dam covers. Land with a lot of organic matter produces higher emissions, for example if a rainforest is covered by a dam.

There are also non-human sources of methane.

- The Siberian tundra and other arctic permafrost areas are expected to release a lot of methane at increased temperatures, as thawing permafrost releases trapped organic carbon. Newer research has shown that the effect may be lower than previously assumed, but more research is still needed to verify the impact. On the other hand, emissions from tropical ecosystems are increasing, but it is uncertain why.

Methane emissions occur regionally and are not evenly distributed. The potential for reduced emissions depends on where you are.

- Great potential for reductions in methane emissions exists, for example in Europe/India (waste), China (coal mines), the Middle East and North America (oil/gas and waste). In all countries where waste is landfilled, there is great potential for reducing methane emissions from waste management.
- Carbon Capture and Storage (CCS) technologies for capturing methane are at a very early stage. It is considered unlikely that it would be a solution that would have a large effect.
- The US environmental protection agency EPA's Global Methane Initiative² contains an interactive database that presents project collaborations³ to reduce methane emissions. It can be a useful source for EKN and SEK to see examples of good practice.
- EKN's and SEK's greatest opportunities for meaningful contributions are the reduction and avoidance of methane emissions in oil and gas projects, including flaring, as well as through improved waste management and biogas initiatives.

Measuring methane emissions is challenging because emissions are scattered

- Methane emissions can be measured with optical methods such as lasers. A challenge has been that the emissions are scattered and not concentrated, for example, in a chimney as is the case for carbon dioxide emissions. However, new possibilities are being developed, including via drones and satellite surveillance.

² <https://www.epa.gov/gmi/>

³ <https://www.globalmethane.org/sites/index.aspx>

Methane gas from biogas can replace fossil natural gas and results in double profit and long-term profitability

- Examples of raw materials for biogas production are treatment plant sludge which can become biogas for buses, by-products from food production, decentralized production in agriculture with biogas from manure. A potential future market is Eastern Europe where there is great interest and large investments in waste management are expected in the coming years. The Ukraine can also become an interesting market.
- Methane gas during oil production, co-called associated gas, is also captured to make petrochemical products, including plastics. Then you postpone the carbon dioxide emissions by 2 to 3 years, but there will at least be an additional benefit from it. Plastics that do not end up in waste management have other major environmental problems with micro plastics that pollute the ocean.
- Biogas can be used for flexible power generation, which is becoming increasingly important as countries switch their power systems from fossil power sources to more weather-dependent power sources.

Improved waste management increases societal benefits in several ways

- Waste management is a complex problem in many countries and largely takes place in informal sectors, often characterized by high levels of corruption. Efforts to improve waste management benefit society 'whatever you do' where the climate benefit is one part.
- The option of burning waste also in developing countries can provide flexibility in electricity systems with a large proportion of renewable energy. Recycling is important, but there are always final residual products where incineration – with proper purification to prevent air pollution – is often a better option than landfill.
- Water treatment plants are often characterized by lower degrees of corruption. Combining efforts to improve water treatment with biogas production from treatment plant sludge contributes to achieve two sustainability goals.
- Several Swedish companies work with waste management, water treatment and biogas.

Bioeconomy is a concept that is being discussed

- Bioeconomy will be a relevant and hotly debated topic during the Swedish presidency of the EU. The concept should be broadened to include all value chains from the biological resource base.
- Stockholm Environment Institute (SEI) works with bioeconomy strategies in countries in the South, for example biogas production from agricultural waste.

COP27

Both EKN and SEK participate in COP27. Message from the Climate Council: Spread what you do!

- The purpose of EKN's and SEK's participation is to raise Swedish companies' contribution to climate change, increase knowledge about export credits as a (currently underutilized) instrument for climate investments, and influence regulations to phase out fossil fuels and facilitate green investments.
- Export finance is well suited to support the climate transition even more importantly in a recession.

No major political commitments are expected during COP27.

- NDCs will be updated prior to COP28 (2023).
- Focus COP27: follow-up of commitments from COP26, e.g. in the financial sector's various Net Zero commitments, the oil-gas alliance NOGA and the Global Methane Pledge. Interesting things can happen in these side events, outside of the formal negotiations.

- The negotiations are not expected to result in any major new commitments. There are conflicts between north and south, for example linked to promised funding that has not materialized. Regarding “loss and damages”: developing countries want another mechanism that can provide compensation for damages.
- Adaptation: more money for adaptation compared to emissions reductions, for example within the Green Climate Fund.
- Community Rooted Pathways: a simple solution is ‘solar and wind’ but must check conditions for each country. The challenge is to find non-fossil solutions that provide flexibility and stability: batteries, biogas, etc.

Greater risks of misinformation with increased focus on climate issues

- Who owns the reporting and what comes out of the meetings. In line with increased focus on climate issues, there are more people who have an interest in distorting information.
- Several countries are designing subsidies to speak to voters – not to address climate change.

This document has been translated from Swedish. In the case of any discrepancies between the Swedish and English versions, the Swedish version is the original.