EKN's and SEK's Scientific Climate Council: Notes – April 28, 2026

About EKN's and SEK's Scientific Climate Council:

The Climate Council is an advisory body of experts whose purpose is to guide the Swedish export finance system in its efforts to align its operations with the Paris Agreement's 1.5-degree target. The Climate Council serves as a source of expertise and a discussion partner for EKN and SEK regarding matters of principle.

The Climate Council's meetings are held under the Chatham House Rule. The meeting minutes are intended to reflect and summarize the key takeaways that EKN and SEK will carry forward.

Participants, April 28, 2026:

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Agenda items for the Climate Council's thirteenth meeting

- **Fuel choices in the transportation sector's transition**
  Globally, the transportation sector is facing a structural shift in which electrification, new fuels, and systemic changes are interacting. Fuel selection is central to this shift and is closely linked to infrastructure, access to raw materials, geopolitics, and development conditions.
  What overarching principles can serve as a basis for selecting and prioritizing different fuels, taking into account regional differences, resource availability, and varying time horizons?

- **Physical Climate Risks**
  Physical climate risks are becoming an increasingly significant threat to infrastructure as global temperatures rise. For organizations such as EKN and SEK, which often support long-term projects, this means there are both challenges and opportunities associated with identifying, assessing, and managing these risks throughout the projects' entire lifecycle.
  How can we ensure that projects are prepared for various scenarios related to future climate events?

Fuel Choices in the Transportation Sector's Transition

The transition of the transportation sector is central to achieving climate goals and limiting greenhouse gas emissions globally. The Council noted that the sector is undergoing a structural shift, driven by electrification, the development of alternative fuels, and changing system solutions. Fuel choices in the transportation sector have a major impact on both its climate impact and international competitiveness.

It was pointed out that Sweden is primarily a supplier of technical solutions rather than a fuel producer, which affects its dependence on other countries for raw materials and finished fuels. One dilemma is which technologies to prioritize when the "winners" of the future are still uncertain. The Council therefore proposed parallel initiatives rather than committing to individual solutions at an early stage.

The Council discussed the principles that should underpin the selection of a specific fuel:

1. **Energy Efficiency** – The goal is to achieve the greatest possible climate benefits and socioeconomic efficiency by minimizing energy demand in the transportation system. This can be achieved through reduced demand for transportation, more efficient logistics, increased load factors, a higher share of energy-efficient modes of transportation, and reduced fuel consumption, all of which contribute to efficient resource utilization and reduced greenhouse gas emissions.
2. **Electrification First** – Electrification should be prioritized wherever possible, as it is often the most resource-efficient option. Alternative fuels should be reserved for modes of transportation where electrification is not fully feasible (such as aviation, shipping, and certain types of heavy transport).
3. **A holistic view of fuel alternatives** – Each fuel has its advantages and disadvantages depending on factors such as geography, cost, type of transport, and safety considerations. The choice must therefore be based on the specific circumstances. This is particularly true for shipping, where a range of different fuels is emerging. Multiple fuels will be needed to replace the enormous demand for fossil fuels currently in use.
4. **Technology maturity** – Some fuels are sufficiently mature for large-scale use (such as biofuels), while others are still in the development phase (such as electrofuels). The choice of fuel must take this maturity level into account.
5. **Policy Measures and Incentives** – Policy measures are necessary because conventional fossil fuels are cheaper. Without sufficient policy measures, climate-friendly fuels risk being at a competitive disadvantage and delaying the climate transition.

Shipping remains almost entirely dependent on fossil fuels (99% of the global fleet uses fossil fuels), although there are some ships that run on methanol, biogas, and electricity. The most suitable fuels for shipping depend on the ship's design, distance traveled, and speed, but more often than not, it is not physical constraints but customers' willingness to pay that determines the choice.

In the biomass sector, competition for raw materials is increasing from multiple sectors, and countries with abundant supplies often prioritize their own needs. Sweden has an advantage thanks to fossil-free electricity and abundant access to bio-based raw materials, which provides favorable conditions for developing new sustainable fuels. The technical solutions used in Sweden need to be compatible with those used internationally. This also facilitates the export of technical solutions developed in Sweden.

The transition carries risks of lock-in effects in long-lived fossil-based systems, but at the same time creates new strategic dependencies in the future when fuel and critical raw materials need to be imported. Geopolitics is playing an increasingly important role, as exemplified by developments following Russia's invasion of Ukraine, which has accelerated electrification but also highlighted vulnerabilities in energy supply chains. It was noted that electrification and increased renewable fuel production can be a competitive advantage for Swedish industry. The climate transition presents both business opportunities and risks for Swedish export companies, partly through changes in demand and partly through technological shifts.

Conclusions on fuel choices in the transportation sector's transition

- Fuel and technology choices require flexibility and strategic considerations to reduce the risks of lock-in and dependence.
- Swedish companies are well-positioned to act in the ongoing transition, but their heavy reliance on fuel imports makes them dependent on global trends and geopolitics.
- The transition requires parallel efforts rather than unilateral choices, as the outcome is uncertain and the technology landscape is changing rapidly.

Physical climate risks

The Council discussed the importance of assessing physical climate risks in both individual projects and at the portfolio level. In addition to direct risks to local infrastructure and facilities—which are difficult to assess in and of themselves—there are also indirect risks. Physical climate risks can lead to complex spillover effects and chains of events that may be difficult to predict and manage. Climate risks can, for example, contribute to social instability—such as when difficulties in cooling power plants lead to electricity rationing, which can affect a country's stability and, consequently, its future ability to make payments. Countries may also be indirectly affected by climate risks through disruptions in global trade flows. Individual sectors may be exposed. The agricultural sector is a well-known example where the effects of climate change can lead to greater variations in harvest levels from year to year. Other commodities are also exposed. Another example is the mining sector, where metals such as lithium are extracted in areas that are already climate-sensitive and arid.

Physical climate risks entail significant uncertainty, as both the probability of and the consequences of these chains of events are difficult to quantify. Pricing physical climate risks is challenging, but companies and financial actors are attempting to quantify both the probability of the risk and its potential consequences. "Robust decision theory" and similar methodologies were highlighted as an approach in which decisions are made under uncertainty and with an understanding that future knowledge may alter the initial situation. AI can now be used to interpret and summarize large amounts of data regarding various scenario outcomes. The Climate Council's discussions underscored the importance of integrating climate-related considerations early in the decision-making process, as it is often difficult to change course once a project is underway.

The Council emphasized the importance of using forward-looking scenarios that take climate risks into account, as well as assessing the long-term credibility of companies' and countries' climate plans. For

example, it was noted that many companies have struggled to meet their long-term climate goals and that it is sometimes easier to make promises than to actually deliver on them. At the national level, there is also a discrepancy between what is communicated in national commitments and what is actually implemented.

Conclusions on physical climate risks

- Physical climate risks need to be identified and managed systematically at the project level as well as at the country level and in portfolio-wide analyses.
- Decision-making must be robust and adaptive, with an understanding of deep uncertainty and long-term consequences.
- There is a need to continuously strengthen knowledge of both risk chains and opportunities for adaptation and resilience, particularly in sectors and regions with high climate risk exposure.

Closing note

Next meeting: September 28