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Consultation – Measures for accelerated phasing in of zero- and low-emission aircraft in Norwegian aviation

1 Introduction

In January 2023, the government published the white paper Meld. St. 10 (2022–2023) *Sustainable and safe aviation – National aviation strategy*.¹ The white paper provides a comprehensive review of the government's policy with objectives, means and measures for sustainable aviation in regard to climate and environmental, social, geographical and economic matters. The white paper was debated in the parliament on 2 May 2023, cf. Innst. 301 (2022–2023).²

One of the central topics in chapter 7 *Climate and environmentally sustainable aviation* of the white paper is the need to phase in zero- and low-emission solutions so that aviation can develop in step with, and be compatible with, international climate goals.³ The government's overall climate goal for Norwegian domestic aviation is therefore to accelerate the transition towards zero and low emission aviation, so that the first commercial zero emission aircraft are phased in in Norway as soon as technology permits.

The domestic regional aviation segment is crucial to ensure the entire country's access to health services, education and other public services, efficient business and private travel domestically and abroad and opportunities for the development of tourism. A transition to zero- and low-emission solutions in Norway must in particular be seen in light of the aging aircraft fleet that operates most of the regional routes today. These flight operations are generally more challenging than in other countries, as many go to/from airports with short

¹ See [Meld. St. 10 \(2022–2023\) \(regjeringen.no\)](#) (exists only in Norwegian)

² See decisions and recommendations [Sak - stortinget.no](#).

³ "Zero emission" are considered technologies or solutions that have no direct emissions of greenhouse gases and exhaust during use. "Low emission" are technologies or solutions with significant emission reductions compared to conventional technology.

runways and with challenging weather and topographical conditions. If the regional aviation segment is to be maintained long-term and contribute to reaching national and international climate goals, it is crucial that available alternatives are put in place early enough. Considering this, the parliament has asked the government to plan for how the PSO⁴ routes are to be handled if it is not possible to replace the current aircraft fleet, cf. resolution 634 (2022–2023).⁵ The decision will be followed up in the ongoing process of phasing in zero and low emission solutions in regional aviation.

Sustainable aviation fuel is an important part of the transition to greener aviation, especially in the short and medium term, and the quota obligation (blending mandate) for advanced biofuel will be the main measure of promoting the use of this type of fuel in aviation.⁶ Two of the decisions from the parliamentary proceeding of the white paper Meld. St. 10 (2022–2023) concerned advanced biofuel, cf. resolutions 632 and 633 (2022–2023). The main advantage of sustainable aviation fuel is that it can be used in aircraft with conventional technology and in existing infrastructure. For other forms of energy, such as batteries and hydrogen etc., the possibility of early use is greatest within the regional segment with smaller planes, shorter travel distances and fewer travellers. It is this segment of the aviation sector, and other forms of zero- and low-emission energy carriers than sustainable aviation fuel, that are relevant for this consultation. Sustainable aviation fuel will be followed up through other processes.

The Ministry of Transport has commissioned the Norwegian Civil Aviation Authority and Avinor, the state airport operator, to facilitate the phasing in of zero- and low-emission technology in Norwegian aviation. Their work includes, among other things, participation in relevant forums, dialogue with European authorities (particularly EASA⁷) and relevant aircraft manufacturers, carrying out various research assignments commissioned by the Ministry of Transport, as well as other practical arrangements. We refer to, among other things, to Avinor and the Norwegian Civil Aviation Authority's report "*Proposal for a program for the introduction of electrified aircraft in commercial aviation*" from 2020⁸, which was also the subject of a consultation, and the studies carried out by the transport agencies and Avinor as part of the preparatory work for the National Transport Plan 2025–2036 (NTP). Of the NTP studies, the Ministry of Transport considers Avinor's report "*Adapting the airports to zero- and low-emission aircraft*" of 18 January 2023⁹ and the transport agencies and Avinor's climate report to the prioritization assignment to be particularly relevant.¹⁰ The NTP related reports are included as part of the consultation of the transport agencies' and Avinor's response to

⁴ Public Service Obligations, government procurement of scheduled air services

⁵ [Sak - stortinget.no](#)

⁶ [Regulations on restrictions on the use of health and environmentally hazardous chemicals and other products \(the product regulations\) - Chapter 3. Sales requirements for biofuel and sustainability criteria for biofuel and liquid b... - Legal data](#)

⁷ Since 2019, the Norwegian Civil Aviation Authority has had an agreement with the European Union Aviation Safety Agency (EASA) on an innovation collaboration on technology development, regulatory framework and other measures and incentives that can contribute to accelerating the phasing in of zero and low emission technologies, see more in Meld. St. 10 (2022-2023).

⁸ [200305_rapport-elektrifiserte-fly-i-kommersiell-luftfart_final.pdf \(regjeringen.no\)](#) (exists only in Norwegian)

⁹ [avinor-null-og-lavutslippsfly-180123-v2-med-vedlegg.pdf \(regjeringen.no\)](#) (exists only in Norwegian)

¹⁰ [klima.pdf \(regjeringen.no\)](#) (exists only in Norwegian)

the NTP assignments with a deadline of 3 July 2023.¹¹ In the assignment to the transport agencies and Avinor for the next NTP, they have also been asked to update the expected technology and cost development for the various means of transport with a deadline in October 2023. Relevant input was also obtained through a separate consultation ahead of the publication of the government's aviation strategy, cf. Meld. St. 10 (2022–2023).

Another important initiative is the establishment of the aviation program "Green aviation" in May 2022. The program is a collaboration between the Norwegian Civil Aviation Authority, Avinor, SINTEF and The Federation of Norwegian Industries. The Green aviation's aim is to bring together private and public actors and contribute to making it easier for national and international actors and innovators to use Norway as an arena for development. The government has said that it will support this programme in the white paper Meld. St. 10 (2022–2023).

There are several reasons why the Norwegian regional market can be interesting for the development and use of zero- and low-emission aircraft. Norwegians travel a lot by plane domestically and there are relatively short distances between the airports. We depend on the market actors, i.e. aircraft manufacturers and airlines, to find solutions that enable zero and low emission technology to be phased into Norway at an early stage and in an appropriate way. The Norwegian Civil Aviation Authority and Avinor will facilitate this within their areas of responsibility. Also, there are a number of financial grant schemes designed with research, development and innovation administrated by agencies like Enova, the Norwegian Research Council, Innovation Norway and Siva. An important issue for the Ministry of Transport, is to clarify whether there is a need for measures beyond these, to reach the objective of an early transition to zero- and low-emission solutions in regional aviation. At the same time, the government wants to make sure that Norwegian industry and business, as well as European and other international actors, both within and beyond the traditional aviation industry, can contribute to the transition to zero and low emission technology in Norwegian aviation.

Through this consultation, the Ministry of Transport would like to obtain views and assessments on how the authorities, through framework conditions and other measures, best can contribute to the early phasing in of zero- and low-emission solutions in regional aviation and whether it is necessary to go beyond already existing measures. In order to follow up on the government's goal of speeding up the phasing in of zero- and low-emission aircraft, a working group has been set up with participation from the Ministry of Transport, the Ministry of Climate and the Environment, Avinor and the Norwegian Civil Aviation Authority. The group will work towards the upcoming National Transport Plan, and in this context, we are asking for input.

2. Consultation questions

As described in part 1, the Ministry already has information from several studies and other consultation rounds related to the goal of greener aviation. The Norwegian Civil Aviation

¹¹ See page 31 in the prioritization assignment nasjonal-transportplan-2025-2036-prioriteringsoppdrag.pdf (regjeringen.no) (exists only in Norwegian)

Authority and Avinor are also in close dialogue with market actors and have worked nationally and internationally to highlight Norway as a suitable area for the development and testing of new concepts and technology. Previous relevant input includes:

- access to the national incentive structure for innovation/financial support and other risk-reducing measures for actors and early adopters of new technology
- predictable signals about future reward/prioritization of zero and low emission solutions
- access to renewable energy – both hydrogen and electricity
- access to ground infrastructure for development and testing
- cooperation with/involvement of aviation authorities and parallel development/adaptation/interpretation of regulations
- opportunities to showcase/demonstrate opportunities with their solutions to investors, politicians and other important actors
- increased cooperation and a comprehensive approach

The aim of this consultation is therefore to obtain input regarding, and to clarify the need for, specific government measures beyond already existing measures and facilitation from the Norwegian Aviation Authority and Avinor. In addition, we seek to clarify how the measures should be organized to provide the greatest benefit compared to expected costs and get input on when different measures should be prioritized in terms of the timeline. The government's overall ambition is to facilitate Norway becoming an early market for zero- and low-emission solutions in regional aviation. While emissions are reduced, all parts of the country must still have access to efficient and geographically accessible air services. Facilitation must be made for new types of aerial mobility, increased value growth in Norwegian industry and business and new opportunities for Norwegian research and innovation communities, as well as from European and other international actors.

Chapter 7 of Meld. St. 10 (2022–2023) can serve as a starting point for those taking part in the consultation assessments and input, see the review of:

- Support for research, development, and innovation (Enova, Innovation Norway, the Research Council etc.)
- Public procurement (PSO routes and innovative procurement such as a pilot/development contract)
- Establishment of a centre for climate-neutral regional aviation
- Financial support schemes/incentives
- Facilitation of the airport infrastructure to new energy carriers

In Meld. St. 10 (2022-2023) the government has also stated that it will consider a possible pilot/development contract (innovative procurement) for a suitable route or routes. Those taking part in the consultation are asked to assess whether such a measure can be suitable compared to other current measures.

We ask those taking part in the consultation to be as specific as possible in describing what is wanted from the authorities. Also, public agencies/companies such as Avinor and the Norwegian Aviation Authority is relevant in this respect. We further ask that the expected effects and costs of the proposals are described - whether there are international cooperation constellations that are particularly important, and possible coinciding energy needs with other sectors/industries.

As stated in Meld. St. 10 (2022–2023), the effect of various measures must be considered in the context of the technological development. The market possesses the best knowledge of what are the most cost-effective and suitable technological solutions. Designing of new government measures must not lead to unfavourable market incentives, leading to the delay of other development processes pending expectations of public financial support. At the same time, the use of state funds must be assessed against other important government objectives. The time gained from accelerating the phasing in of zero- and low-emission aircraft must therefore be assessed against the costs of various measures.

Based on this, the Ministry of Transport is asking for input that assesses and explains:

- Which measures/instruments should the authorities prioritize for an accelerated phasing-in of zero- and low-emission aircraft adapted to Norwegian conditions (short runways, challenging climate and topography)?
 - The proposals should be assessed against the entire aviation ecosystem, from education, research and regulatory development, to testing and the initiation of regular scheduled traffic.
 - The proposals should be seen in the context of both Norway's comparative advantages and the need for international cooperation in various parts of technology development, testing and phasing in.
 - The proposals should explain any special risks that the authorities should be aware of.
 - If several measures are proposed, they should be ranked according to expected effects, costs and, if applicable, synergies, as well as when they should be implemented if they do not need to coincide in time.
- What can the market be expected to achieve without increased public involvement?
- How can one maintain a long-term perspective, but at the same time flexibility in the use of measures?
- How should a possible pilot/development contract (innovative procurement, pre-commercial procurement etc.) be set up, as well as which parts of the development cycle should it first be aimed at, for example R&D, testing of new technology, etc.? In addition, the Ministry is asking for an assessment of whether this is a suitable measure both in itself and compared to other measures.
- How can the Norwegian authorities, including the Norwegian Aviation Authority and Avinor, best facilitate Norway becoming an attractive arena for the development of new technology?

- We here ask those taking part in the consultation to bear in mind the authorities' role as regulator, owner (Avinor), buyer (public procurement), responsible for support schemes for research and innovation, as well as framework conditions for the aviation industry more generally.
- How can it best be facilitated so that different relevant parties both within and outside the aviation sector find each other and thus contribute to knowledge exchange, including the possibilities for cross-sector cooperation on access and production of alternative energy carriers to meet overlapping needs, for example hydrogen?
- How to organize measures to avoid malinvestments and a narrowing down to certain technological solutions too soon?
- Which measures are best suited, and how can these be organized, to contribute to value creation in Norway as part of the transition?

The list of questions above is not exhaustive. We encourage the participants of the consultation to comment on matters other than those mentioned above if they are considered relevant. We do not expect all listed questions to be answered by everyone taking part in the consultation.

3. Conference

The Ministry of Transport, in collaboration with Green Aviation,¹² is planning a conference on 20 September 2023 where an accelerated phasing in of zero and low emission solutions in regional aviation will be the main topic. Together with this consultation, the conference will be an important part of the decision-making basis for the government's further work.

4. Consultation deadline

The Ministry of Transport requests input by 29. September 2023.

The consultation page is available on the ministry's website ([link](#)) and the input can be sent electronically using the digital solution for consultation statements (under "Submit consultation responses" on this page). If there is a special need for submission in another way, input may be sent to the Ministry of Transport by e-mail to: postmottak@sd.dep.no. All inputs will be made public.

Yours sincerely

Tone Kristin Aursland
Deputy Director General

Andreas Neumann
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This document is signed electronically and has therefore no handwritten signature

¹² The program established by the Norwegian Civil Aviation Authority, Avinor, SINTEF and The Federation of Norwegian Industries mentioned earlier in the letter.

