Government resolution on reducing greenhouse gas emissions from aviation

MINISTRY OF TRANSPORT AND COMMUNICATIONS

Publications of the Ministry of Transport and Communications **2021:22**

lvm.fi/en

Publications of the Ministry of Transport and Communications 2021:22

Government resolution on reducing greenhouse gas emissions from aviation

Ministry of Transport and Communications Helsinki, Finland 2021

Julkaisujen jakelu
Distribution av publikationer

Valtioneuvoston julkaisuarkisto Valto

Publikations-
arkivet Valto

julkaisut.valtioneuvosto.fi

Julkaisumyynti
Beställningar av publikationer

Valtioneuvoston verkkokirjakauppa

Statsrådets
nätbokhandel

vnjulkaisumyynti.fi

Ministry of Transport and Communications

ISBN pdf: 978-952-243-616-0
ISSN pdf: 1795-4045

Layout: Government Administration Department, Publications

Helsinki, Finland 2021

Description sheet

22.6.2021

Government resolution on reducing greenhouse gas emissions from aviation

Publications of the Ministry of Transport and Communications 2021:22		**Subject**	-
Publisher	Ministry of Transport and Communications		
Group Author	Government		
Language	English	**Pages**	21

Abstract

According to the Programme of Prime Minister Sanna Marin's Government, Finland will be carbon neutral by 2035. The targets for reducing emissions from transport must be in line with this goal. In accordance with the Government Programme, a roadmap for fossil-free transport will be drafted during this government term, indicating concrete means for achieving the Government's objectives. This resolution determines the means for air transport and consolidates, in terms of the air transport sector, the Government's shared view on the objectives for reducing greenhouse gas emissions and on Finland's priorities for exerting influence internationally.

Keywords	emissions, air transport, climate, renewable energy sources		
ISBN PDF	978-952-243-616-0	**ISSN PDF**	1795-4045
URN address	http://urn.fi/URN:ISBN:978-952-243-616-0		

Kuvailulehti
22.6.2021

Valtioneuvoston periaatepäätös lentoliikenteen kasvihuonekaasupäästöjen vähentämisestä

Liikenne- ja viestintäministeriön julkaisuja 2021:22		**Teema**	-
Julkaisija	Liikenne- ja viestintäministeriö		
Yhteisötekijä	Valtioneuvosto		
Kieli	Englanti	**Sivumäärä**	21

Tiivistelmä

Pääministeri Sanna Marinin hallitusohjelman mukaan Suomi on hiilineutraali vuonna 2035. Liikenteen päästövähennystavoitteiden tulee vastata tähän tavoitteeseen. Hallitusohjelman mukaan tällä hallituskaudella luodaan tiekartta fossiilittomaan liikenteeseen, jossa osoitetaan konkreettiset keinot hallituksen tavoitteisiin pääsemiseksi. Nyt annettavalla periaatepäätöksellä on tarkoitus osoittaa nämä keinot lentoliikenteen osalta sekä vahvistaa valtioneuvoston yhteinen näkemys tavoitteista ja kansainvälisen vaikuttamistyön painopisteistä lentoliikenteen kasvihuonekaasupäästöjen vähentämiseksi.

Asiasanat	päästöt, lentoliikenne, ilmasto, uusiutuvat energialähteet		
ISBN PDF	978-952-243-616-0	**ISSN PDF**	1795-4045
Julkaisun osoite	http://urn.fi/URN:ISBN:978-952-243-616-0		

Presentationsblad

22.6.2021

Statsrådets principbeslutom minskning av flygtrafikens växthusgasutsläpp

Kommunikationsministeriets publikationer 2021:22		**Tema**	-
Utgivare	Kommunikationsministeriet		
Utarbetad av	Statsrådet		
Språk	engelska	**Sidantal**	21

Referat

Enligt statsminister Sanna Marins regeringsprogram är Finland koldioxidneutralt år 2035. Målen för att minska utsläppen från trafiken och transporterna ska motsvara detta mål. Enligt regeringsprogrammet ska det under den här regeringsperioden skapas en färdplan för fossilfria transporter där man visar konkreta sätt att uppnå regeringens mål. Avsikten med principbeslutet som nu ges är att påvisa dessa metoder för flygtrafikens del samt att förstärka statsrådets gemensamma uppfattning om målen och prioriteringarna i det inter-nationella påverkansarbetet för att minska växthusgasutsläppen från flygtrafiken.

Nyckelord	utsläpp, flygtrafik, klimat, förnybara energikällor		
ISBN PDF	978-952-243-616-0	**ISSN PDF**	1795-4045
URN-adress	http://urn.fi/URN:ISBN:978-952-243-616-0		

Contents

GOVERNMENT RESOLUTION ON REDUCING GREENHOUSE GAS EMISSIONS FROM AVIATION

Air traffic plays an important role in transport within Finland and especially in international connections. Finland's geographic location makes air transport the most important mode of transport in cross-boundary passenger traffic, also enabling business and leisure travel for Finnish people. Well-functioning air connections also have an impact on the placement and operating preconditions of companies and investments made in Finland, and they are vital for the development of the travel industry, for example. From a financial point of view, air cargo plays a significant role in Finland's foreign trade, accounting for roughly ten per cent of its value. As all societal sectors and modes of transport must, however, reduce their greenhouse gas emissions, it is important to examine ways to increase the sustainability of air transport.

Regardless of the significantly advanced energy efficiency of aircraft, emissions from air traffic have increased steeply in Finland and Europe, as well as globally. In particular, this results from the significant increase in vehicle-kilometres, the limited availability of alternative power sources and the minor use of sustainable aviation fuels. The coronavirus epidemic has affected the sector with an unusual force, reducing the volume of traffic and emissions. Nevertheless, air traffic is expected to recover in a few years, after which it will continue its strong growth[1]. On a global scale, the increase in air traffic is maintained by the growing wealth of developing high-population countries, which most likely will also affect air traffic in Finland through increases in travel and transit connections. In an international comparison, Finland is among the most frequent travellers. To achieve the traffic emissions reduction goals and the goals of the Paris Agreement, it is necessary to adopt new measures that reduce emissions from aviation.

1 ICAO Stocktaking Seminar on aviation in-sector CO_2 emissions reductions, 8–11 September 2020 .

Globally, aviation is an intensely competitive sector, which means that global measures within the scope of the International Civil Aviation Organization (ICAO) have the highest impact and distort competition the least. This is why it is important to focus on the preparation and adoption of effective emissions reduction measures in international cooperation. The acceptance of global decisions can, however, be promoted and accelerated not only through active influencing, but also by showing leadership and ambition. As a result, global measures must be supplemented by means of national and EU measures.

Despite the urgency of the adoption of emissions reduction measures, it is important that cost pressures are not significantly increased in the sector, until air transport has started to recover from the serious market disruption caused by the coronavirus epidemic. Following the principles of green recovery, national and international policy measures must, however, be adopted to ensure that the expected increases in air traffic do not jeopardise the achievement of climate goals. This calls for a significant decrease in aviation emissions from the pre-pandemic level, already before 2030.

This resolution on reducing emissions from aviation addresses the opportunities of international influencing and national measures. This resolution was prepared using the roadmap for fossil-free transport, in which the means of reducing emissions from aviation and their impact were assessed extensively for the first time on a national level. The implementation of the roadmap's measures will be monitored regularly, as described in Chapter 3.

1 Current state and expected development of greenhouse gas emissions from aviation

In 2018, emissions from domestic aviation accounted for less than two per cent of total traffic emissions, and the volume of emissions has decreased by 33 per cent between 2005 and 2019. Furthermore, domestic aviation emissions are not expected to grow significantly in the near future, because vehicle-kilometres are estimated to remain roughly at the current level. Instead, the volume and emissions of outgoing international flights from Finland have increased considerably, nearly 13 times higher than domestic aviation emissions in 2019. From 2005 to 2019, total emissions increased by 74 per cent, mainly due to increased long-distance flight routes to Asia and North America and the expansion of Helsinki Airport into a significant European transit airport. Emissions from domestic and international flights departing from Finland totalled 2.802 Mt CO2 in 2019[2]. In 2019, Finnair's CO2 emissions from aviation operations increased by 9.8 per cent[3] from the previous year.

During the preparation of the roadmap for fossil-free transport, it was estimated that domestic and outgoing international flights will increase by 15–20 per cent and emissions by 20–25 per cent by 2030, compared with the 2018 level, provided that no new emissions reduction measures are adopted. Considering the expected deceleration in the increase in transport during the 2030s and the accelerating electrification of aircraft, it is estimated that the flight volume will increase by 30–40 per cent and emissions by 25–40 per cent by 2045, compared with the 2018 level. In other words, the strongest growth phase in air traffic is estimated to have already passed in Finland, but there is no decrease in sight if any temporary market disruptions, such as the coronavirus epidemic, are not considered.

In the EU, aviation accounted for 3.6 per cent of all CO2 emissions and 13.4 per cent of total emissions in the transport sector in 2017. Emissions increased by 16 per cent from 2005, and they are expected to increase by another 21–37 per cent by 2040[4]. Aviation accounts for roughly 2.5 per cent of global CO2 emissions. The ICAO estimates that, regardless of the annual improvements in energy efficiency, fuel consumption in

2 Statistics Finland's greenhouse gas emissions information 2019
3 Finnair Annual Report 2019.
4 European Aviation Environmental Report; EASA 2019

international aviation (roughly 65 per cent of all air traffic) will be 2.2–3.1 higher by 2045 than in 2015[5].

It should also be noted that aviation generates other emissions in addition to carbon dioxide, such as nitrogen and sulphur oxides, unburnt hydrocarbons, particulates and water vapour, some of which increase global warming, while others reduce it. Combined, these emissions accelerate global warming and, according to a recent study[6], 66 per cent of the total impact of aviation, increasing global warming, comes from emissions other than carbon dioxide. While more research is required of these emissions and the occurrence and measurement of their impact, it is clear on the basis of the aforementioned study that the use of sustainable aviation fuels can reduce not only carbon dioxide emissions, but also other emissions that increase global warming. This further increases the importance of the rapid adoption of more sustainable aviation fuels.

5 Environmental Trends in Aviation to 2050, ICAO 2019

6 Updated analysis of the non-CO2 climate impacts of aviation and potential policy measures pursuant to the EU Emissions Trading System Directive Article 30(4), EASA 2020

2 Goals and measures to reduce greenhouse gas emissions from aviation

Finland is committed to the goals of the ICAO and the EU to reduce emissions from aviation. While Finland has not had any separate numerical targets based on these goals, the opportunities to reduce emissions from domestic and outgoing international flights were assessed during the preparation of the roadmap for fossil-free transport. According to the working group, CO2 emissions could be reduced by roughly 15 per cent by 2030 from the 2018 level by adopting an ambitious climate policy, regardless of the expected increase in vehicle-kilometres. To achieve this goal, the distribution obligation for sustainable aviation fuels must be adopted as defined in Prime Minister Sanna Marin's Government Programme (targeting 30 per cent by 2030). Correspondingly, emissions could be reduced by 35–60 per cent by 2045, depending on the level of the distribution obligation for sustainable aviation fuels, which should be 50–70 per cent to achieve the aforementioned emissions reductions and therefore probably higher than potential international obligations.

The EU does not have any actual goal to reduce emissions from aviation. However, aviation is the only mode of transport within the scope of emissions trading at present and is therefore part of the emissions reduction goals in the emissions trading sector. Currently, this is 43 per cent of 2005 levels by 2030, but it will be increased because in December 2020 the European Council approved a binding net reduction target for greenhouse gas emissions within the EU of at least 55 per cent of the 1990 level by 2030. The Commission is also preparing proposals to increase the effectiveness of emissions trading in aviation and the use of sustainable aviation fuels.

The ICAO has set carbon-neutral growth as a goal for international aviation from 2020 onwards and a two per cent annual improvement in fuel efficiency by 2050. However, the ICAO estimates that it is unlikely that both of these goals can be achieved[7]. At its meeting in 2019, the ICAO also agreed upon the start of preparations for a long-term emissions reduction goal and the measures required to achieve it with the aim of reaching an agreement at the 2022 meeting.

7 Environmental Trends in Aviation to 2050, ICAO 2019

The standard methods to reduce aviation emissions include the introduction of new technologies (the next aircraft generation may be up to 25 per cent more energy efficient than its predecessor), operational improvements (e.g., the development of airspace management and airfield operations), and sustainable aviation fuels. In addition, emissions can be reduced by means of pricing, either through various taxes or market mechanisms. In the ICAO and the EU, Finland has supported agreements on ambitious measures to reduce aviation emissions.

In this resolution, the measures to reduce greenhouse gas emissions from aviation have been divided according to whether they concern a transition to alternative power sources and fuels (Chapter 2.1), increases in the energy efficiency of the transport system and modes of transport (Chapter 2.2) or pricing (Chapter 2.3). Guidelines concerning international cooperation have been discussed under each theme, together with national measures. Through the implementation of the measures listed in this resolution, the Government aims to reduce the emissions of domestic and outgoing international flights by 15 per cent from the 2018 level by 2030 and by 50 per cent by 2045. Domestic aviation should be emissions-free by 2045. Regarding the achievement of the goals, CO2 emissions from aviation registered in statistics are only taken into account, including emissions reductions during the lifecycle of sustainable aviation fuels. Any indirect emissions reductions resulting from different market mechanisms in other sectors are not included in the goals.

The implementation of the resolution must be monitored closely to ensure that climate measures in aviation are in line with the global average temperature increase of 1.5 degrees Celsius set as a goal in the Paris Agreement. Achieving this is likely to require that the global warming potential of aviation be completely eliminated by 2050.

2.1 Promoting alternative power sources

The lack of alternative power sources in aviation and the slow electrification due to the insufficient energy density of batteries highlight the importance of the adoption of sustainable aviation fuels. According to current knowledge, liquid aviation fuels will be used extensively at least until the 2050s. This means that to reduce emissions it is necessary to make attempts to replace the use of fossil kerosene with sustainable aviation fuels as quickly as possible. In various contexts, the ICAO has urged its member countries to adopt effective policy measures to reduce emissions by using sustainable aviation fuels, but the ICAO is not expected to issue any global obligations for their adoption in the near future. Instead, the European Commission is preparing the ReFuelEU Aviation initiative to increase the currently low use of sustainable aviation fuels in the EU. As preliminary options, the Commission has presented the distribution obligation, a higher number of

different incentives and the adoption of a centralised auction mechanism for sustainable aviation fuels, for example. Currently, the price of sustainable aviation fuels is up to three times higher than that of fossil kerosene, due to which its use is not likely to increase without any obligatory policy measures or strong incentives.

In the Government Programme, the aim is to reduce emissions from aviation by adopting a blending obligation for sustainable aviation fuels, and the target for the ratio of renewables has been set at 30 per cent by 2030. According to the roadmap working group's estimates, the blending or distribution obligation is the most effective national policy instrument to increase the ratio of sustainable aviation fuels in traffic both in the short term and the long term. Along with the implementation of the Government Programme, it will be assessed how the different levels of obligations impact the sector, as well as the more detailed ways to implement the obligations and international development. The obligation could be implemented, as in road transport, as a distribution obligation for the energy content of fuel or as an obligation to reduce greenhouse gas emissions to reduce a certain volume of carbon dioxide emissions caused by the use of fuel. The latter method could provide incentives to use more sustainable and advanced fuels that help to reduce CO2 emissions the most. This would support the development and production of electric fuels generated using renewable energy. The significance of electric fuels in reducing emissions from aviation is very high in the long term, as it would be otherwise difficult to effectively reduce emissions from long-distance flights, in particular.

Imposing the obligation would gradually increase the use of sustainable aviation fuels in stages, with a very small share in the first years, but rising sharply towards 2030. This would also address the impact of the coronavirus epidemic and provide the sector with opportunities to prepare for sustainable growth. According to estimates, a ratio of up to 30% of sustainable aviation fuels would have very little impact on the price of an airline ticket. It should be noted, however, that airlines' ticket-specific margin is also very low and, due to the competitive situation, the additional cost could not always be transferred to the price of a ticket. Therefore, a considerably high national obligation would most likely have a negative impact, especially on Finnair's operations, whose operations focus heavily on Finland, unlike those of its competitors. However, a number of other countries in Europe planning the adoption of a national distribution obligation for sustainable aviation fuels would lower this impact. Sweden will adopt an obligation to reduce greenhouse gas emissions in 2021, corresponding to a distribution obligation of roughly 30% in 2030, and Norway launched its distribution obligation in aviation at the beginning of 2020 with the aim of increasing the ratio of sustainable fuels to 30% by 2030. Furthermore, several countries in Central Europe, including France, Germany, Spain, the Netherlands, and the UK, have either decided on the adoption of an obligation with a lower percentage or are planning its adoption.

If Finland had an obligation for sustainable aviation fuels that was clearly higher than in Central European countries and at competing transit airports or other climate measures that increased the price of flights, this could have a negative impact, in particular, on the number of transit passengers from Asia at Helsinki Airport. This would also affect the development of flight connections between Finland and Central Europe, and could lead to carbon leakage to some extent by increasing the popularity of longer southern routes. With regard to transit connections to Asia, Helsinki Airport's competitors are locations in the Middle East that have significantly increased their passenger volumes, such as Istanbul, Dubai, and Doha. Price competition with the airports and routes is challenging because they have low fuel prices and few climate measures, and operators are supported heavily in the region. It is therefore expected that the popularity of southern connections will continue to increase strongly as a result of airport expansions, regardless of Finland's decisions to adopt measures to reduce emissions from air traffic. Then again, the increased popularity of southern connections during the 2000s has not stopped the significant increase in transit connections via Helsinki Airport. It is therefore likely that, as air traffic towards Asia continues to grow strongly during the next few decades, faster and more sustainable northern connections would also have good opportunities to develop in line with national climate targets. In the further preparation of the distribution obligation, it would be important to find a balance between risks associated with the sector and ambitious emissions reductions. Furthermore, the impact of the obligation should be monitored closely to better consider its impact and the impact of the pandemic on the sector, as well as any changes in international regulations.

Alongside the adoption of a national distribution obligation, it would be important to promote the adoption of ambitious international obligations in the EU and the ICAO. However, in the light of current knowledge, any EU distribution obligation would be adopted in 2025 at the earliest, and its level would most likely be considerably lower than that of the obligations planned in the Nordic countries (in the Commission's preliminary investigations, a possible level was 5% by 2030). In addition, it would be important that, as the use of electricity and other alternative power sources increases in road transport, renewable fuels would especially be allocated to air transport, in which there are fewer options for reducing emissions. The availability and costs of renewable fuels must also be assessed accurately so that policy measures for different modes of transport can be targeted correctly and climate benefits can be maximised cost-effectively. Similarly, it is necessary to provide incentives to increase the development and production of sustainable aviation fuels through credible long-term national and international measures. From the point of view of the export policy, it should also be noted that Finnish companies have highly significant expertise and production capacity in sustainable aviation fuels, also on a global scale.

Measures:

1. The level of the distribution obligation for sustainable aviation fuels or a comparable obligation to reduce greenhouse gas emissions, its impact on the sector and international development will be assessed in conjunction with the legislative process concerning the implementation of the Government Programme.

2. Finland actively promotes the introduction of sustainable aviation fuels in the ICAO through international binding decisions, also as part of the long-term emissions reduction goal in international aviation, which is currently under preparation, and the related package of measures.

3. Finland supports the adoption of ambitious measures in the EU to promote the use of sustainable aviation fuels, such as a distribution obligation that sets a minimum level.

4. Finland considers it important that the promotion and sustainability of the use of sustainable aviation fuels are addressed more extensively in conjunction with amendments to the EU law, including regulations on emissions trading in aviation and the Carbon Off-setting and Reduction Scheme for International Aviation (CORSIA), as well as the renewable energy directive.

5. As the electrification of road transport is increasing, the use of renewable fuels will be allocated towards air transport through national and international decisions.

6. Technologies and production related to sustainable aviation fuels and electric fuels, in particular, will be promoted through research and innovation funding.

7. Finland actively supports the aims of the ICAO and the European Union Aviation Safety Agency (EASA) to build a standardisation base for fully electric and hybrid aircraft, as well as alternative power source solutions.

8. A study of the electrification of flying and the development needs required in the charging infrastructure at Finnish airports will be prepared. At the same time, long-term opportunities for the use of other alternative power sources, hydrogen in particular, in air transport in Finland will be assessed.

2.2 Increasing the energy efficiency of the transport system and modes of transport

In air transport, the energy efficiency of the transport system can be increased, in particular, by improving the functioning of airspace and by adopting various flight and operating methods that reduce emissions. Since the early days of aviation, these operational functions have primarily been developed from the point of view of air safety but, as traffic volumes have increased, it has become increasingly important to improve the smooth flow of traffic and minimise emissions. The ICAO already considers operational methods to be part of the four key types of emissions reductions. As a rule, operational emissions reduction means can be regarded as relatively cost-effective, because their adoption does not usually require the introduction of new aircraft technologies, for example.

The Single European Sky (SES) legislative project aims to reduce the fragmentation of European airspace, resulting from differences between Member States, the civilian and military use of airspace, and various technologies. The purpose of the project is to improve the efficiency of air traffic management and air navigation services. SES may provide significant benefits through increased capacity and safety and lower air navigation service costs and emissions. As flight costs and emissions can be reduced by shortening flight routes and preventing delays, for example, the further development of SES is in Finland's best interests. In 2015, the North European Free Route Airspace (NEFRA) was established, in which airlines can fly either along the most direct route possible or use additional waypoints to benefit from winds, for example. NEFRA is highly advanced in terms of airspace management and it has been studied to reduce aviation emissions. This means that its operating principle should be expanded.

The rapid development of unmanned aviation presents a new challenge for the development of airspace management and the safety of aviation. As a rule, unmanned aviation does not, however, increase aviation emissions because drones and other unmanned aircraft are usually battery-powered. However, unmanned aviation solutions can help to achieve emission reductions in the transport system, particularly as an environmentally friendlier option to replace road transport.

Finavia Corporation operates and maintains 21 airports in Finland. In addition to Finavia's airport network, locally operated airports are located in Lappeenranta, Mikkeli and Seinäjoki. Ground handling companies provide aircraft ground handling services for airlines. As a result of Finavia's emissions reduction measures and emissions off-setting, the airport network's operations are carbon neutral. However, its emissions could be reduced further by increasing the use of renewable fuel oil in machinery and equipment, promoting the electrification of ground handling equipment, and increasing

the transparency of the environmental impact of ground handling services and the monitoring of emissions. In the interface of air transport and other modes of transport, total emissions of the transport system can be reduced by developing sustainable travel chains and new logistics solutions enabled by unmanned aviation. By actively opening up data interfaces and engaging in cooperation for the use of data, it is possible to increase the popularity of sustainable passenger services and ensure seamless logistics between line haul transport and hubs. Airports, Helsinki Airport in particular, are significant transport hubs, whose development as part of the sustainable transport system must be addressed in the implementation of the national transport system plan. Similarly, it is important to develop the transport system so that comprehensive and low-emission public transport services are available as options for air transport.

The energy efficiency of aircraft can be improved by developing aerodynamics, otherwise modifying the aircraft structure to improve its efficiency rate, reducing the weight of aircraft and developing more energy-efficient engines. In a historical context, the energy efficiency of aircraft has increased considerably. Measured by available seat miles, modern aircraft is over 80% more energy-efficient than aircraft in the 1960s. However, modern planes are introduced fairly slowly, as the average service lifespan of a plane is approximately 20–25 years. Improving the energy efficiency of aircraft is an important part of the reduction of aviation emissions but, due to the magnitude of the expected increase in vehicle-kilometres and the required reductions in greenhouse gas emissions, the introduction of new technologies alone is not enough, as indicated by the development of aviation emissions in Finland.

Measures:

9. Finland supports the reform of the performance and payment regulations included in the SES2+ proposal in a way that provides encouragement to improve the achievement of environmental goals and the reduction of emissions.

10. Finland promotes regulations on unmanned aviation in a direction that also enables the flexible use of airspace and unmanned aviation operations in a safe and controlled manner without any visual connection.

11. Finland supports the expansion of NEFRA to shorten flight routes and reduce emissions.

12. The proposals presented in the national transport system plan for the development of key transport hubs, such as airports, as part of sustainable and smoothly flowing travel chains must be implemented immediately, while using the full opportunities of digitalisation.

13. During the implementation of the national transport system plan, comprehensive and low-emission public transport services will be developed as alternatives for domestic air transport.
14. The implementation of the logistics digitalisation strategy must be prioritised to promote the sustainability of transport chains through the production, dissemination and use of data, while applying new operating models at a transport system level, such as unmanned aviation solutions.
15. Finland aims to increase the focus of the EU's research and innovation programme Horizon Europe funding on the development of new energy-efficient technologies in aviation and the promotion of their introduction.
16. The Government's travel strategy will be changed so that the volume of air travel will be reduced especially by using long-distance connections. In addition, environmental responsibility will be increased by favouring low-emission alternatives in central government's travel procurement.

2.3 Pricing

Different pricing alternatives serve to reduce traffic emissions by promoting more sustainable consumption behaviour, for example. In aviation, interest in pricing alternatives has also been boosted by the fact that technological measures have not been able to prevent the increase in emissions.

Air transport has been a pioneer in the introduction of international pricing and market mechanisms. Air transport was the first mode of transport to join the EU's emissions trading system in 2012. Currently, the system includes all flights within the European Economic Area (EEA). The European Commission estimates that emissions trading has reduced CO2 emissions from aviation by roughly 100 Mt in 2012–2018. Despite this, emissions from aviation within the scope of emissions trading have continued to increase generally in the EU and also in Finland. The Commission is expected to propose legislative changes in 2021 to improve the efficiency of the system. Emissions trading is regarded as a relatively cost-effective emissions reduction mechanism, and improving its efficiency is justified from Finland's point of view. Returning the geographic scope of application of emissions trading to its original size includes significant risks from the perspectives of Finland and the EU.

Through the decision of the ICAO's meeting in 2016, international aviation became the first industrial sector which decided to adopt a global market mechanism for emissions.

The off-setting obligations of CORSIA entered into force at the beginning of 2021. While participation in the system is voluntary for the ICAO's member countries until 2027, Finland and the other 43 member countries of the European Civil Aviation Conference (ECAC) have announced that they will join it immediately. CORSIA is implemented in the EU through amendments to the emissions trading directive, which the Commission has not, however, yet proposed. Speeding up this matter would be very important so that Finland and the other member countries can fulfil the commitments given to the ICAO and that airlines, national authorities and other operators within the scope of the scheme would have time to prepare for the fulfilment of their obligations. Being global in scope, CORSIA also covers flights from the EU to third countries. This means that the launch of the scheme will reduce the need to investigate the expansion of the geographic scope of application of emissions trading.

There have also been discussions in the EU over the adoption of an EU-wide tax on flights or fuel. According to the Government Programme, Finland has an open approach to the development of broader regional taxation. It could slightly less distort global competition in the sector, and it could have a higher steering impact, considering the environment, compared with a combination of various national tax schemes. However, the Commission has not proposed any tax on air transport, but it has announced its intention to investigate taxation on air transport during the preparation of amendments to the energy taxation directive.

Promoting the pricing of global greenhouse gas emissions from international aviation would, when dimensioned correctly, most likely be an effective way to reduce aviation emissions, as it would help, for example, to promote the transition from fossil kerosene to sustainable aviation fuels. As a global obligation, it would also treat all airlines equally and would not distort competition. The ICAO is preparing a long-term emissions reduction goal and different methods to enable its achievement. The aim is to reach an agreement at the 2022 meeting. However, it is highly unlikely that tax solutions, for example, would be supported widely among the ICAO's member countries. In the near future, the ICAO will focus on the adoption of CORSIA and the efficiency measures it enables alongside promoting conventional emissions reduction alternatives. Nevertheless, Finland should, in international cooperation, draw attention to carbon pricing and effective global measures that promote the transition from fossil to renewable fuels.

Finland has no air passenger tax, and its application has not been investigated in more detail, but an initiative concerning taxation has been submitted to the Parliament. The effectiveness of tax on airline tickets has not been studied extensively at an international level. Based on indicative estimates, emissions reductions achieved through a national tax would be modest relative to the negative impact of such taxation on air transport and Finland's accessibility, as well as the increased use of sustainable aviation fuels. However,

a national study of a tax on flights should be prepared to draw a more detailed overview of the matter, especially considering the special characteristics of Finland's air traffic, different emissions reduction alternatives and the initiative submitted to the Parliament.

Measures:

17. The aim for Finland is that the free allocation of allowances of the emissions trading system for aviation be gradually reduced and eventually abandoned altogether. Emissions trading should, also otherwise, be developed to reduce emissions from aviation in the EEA.

18. Finland aims to influence the EU Commission so that it would issue the legislative proposals required as quickly as possible to ensure that Member States can participate in the first phase of CORSIA.

19. In the ICAO, Finland is actively promoting the effectiveness of CORSIA in reducing aviation emissions. Influencing must especially focus on the use of high-quality emissions units, the avoidance of double calculations and the broad adoption of the scheme among the ICAO's member countries.

20. Finland's goal is to achieve the ambitious long-term emissions reduction goal in international aviation and fulfil the mechanisms to achieve it to be decided on at the ICAO's meeting in 2022.

21. Finland is playing an active role in the EU and the ICAO to promote the pricing of greenhouse gas emissions in aviation.

22. A study of the impact and effectiveness of a national tax on flights in the reduction of aviation emissions relative to other emissions reduction mechanisms will be prepared.

23. The role of airport fees in reducing greenhouse gas emissions from aviation will be assessed after the Commission has issued its legislative proposals.

3 Monitoring and indicators

The measures will mainly be implemented within the limits of the Budget and the existing appropriations. Decisions on additional appropriations or other measures affecting the Budget will be made separately within the central government spending limits and in the annual budgets.

The progress of the implementation of the resolution will be monitored every six months in the Ministerial Working Group on Climate and Energy Policy. The links between these measures and other projects will be established during the implementation phase. In addition, the development and impact of greenhouse gas emissions from aviation will be monitored by the Finnish Meteorological Institute by conducting regular research and by Statistics Finland and VTT Technical Research Centre of Finland by calculating emissions.

Statistics Finland's official statistics on emissions from domestic and outgoing international flights is a key indicator.

Twitter: @lvm.fi
Instagram: lvmfi
Facebook.com/lvmfi
Youtube.com/lvm.fi
LinkedIn: Ministry of Transport and Communications

lvm.fi/en

MINISTRY OF TRANSPORT
AND COMMUNICATIONS

ISSN 1795-4045
ISBN 978-952-243-616-0