

FINAVIA

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Net Zero Carbon Finavia Roadmap

Väylät ja Liikenne 2023

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The picture that triggered unprecedented climate actions globally

IPCC's 5. Assessment Report, 10/2018

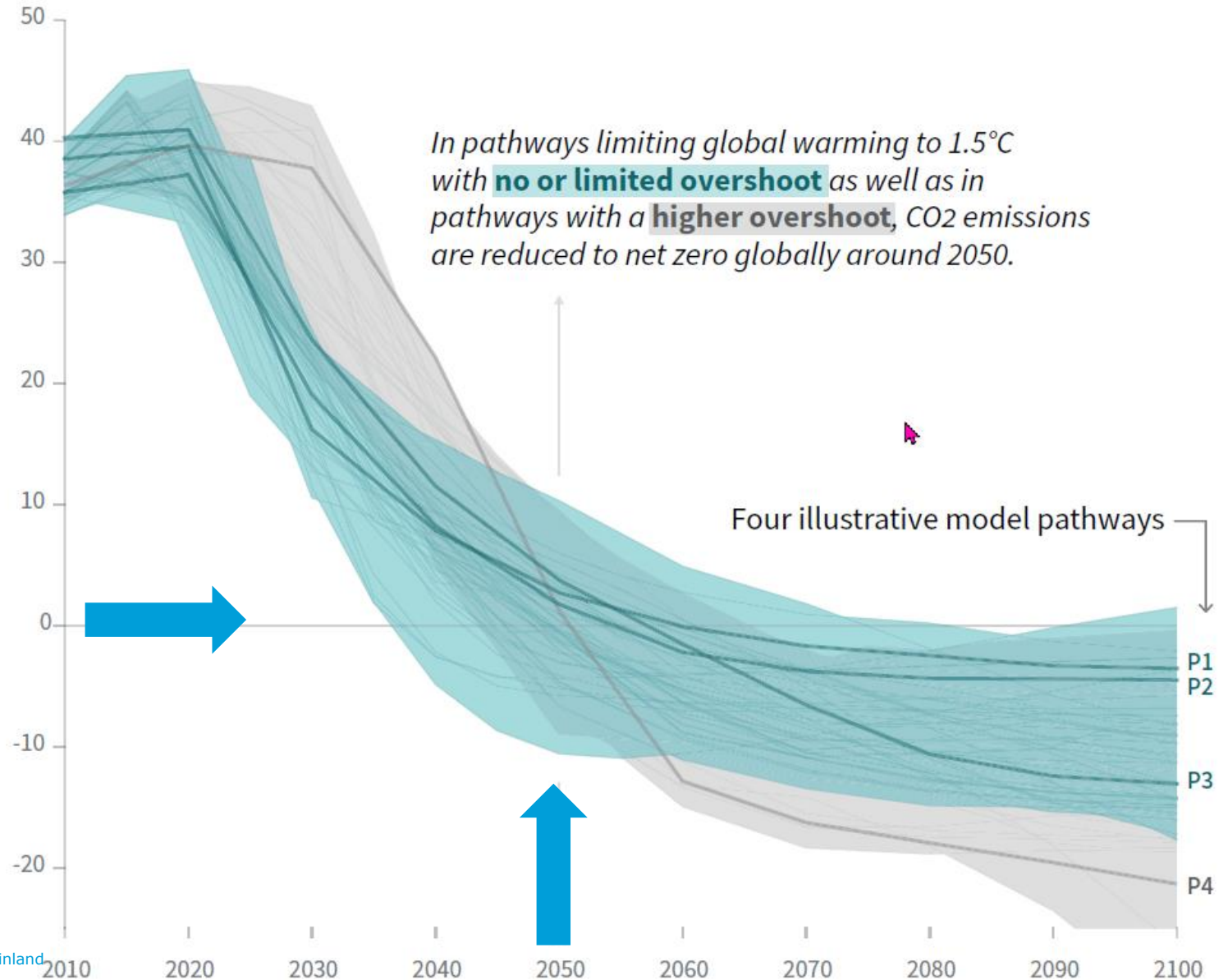
The increase of temperature shall remain below +1,5 C in order to cope with the impacts.

This means that global man-made carbon emissions shall be net zero in 2050.

This is the core of the Paris Agreement.

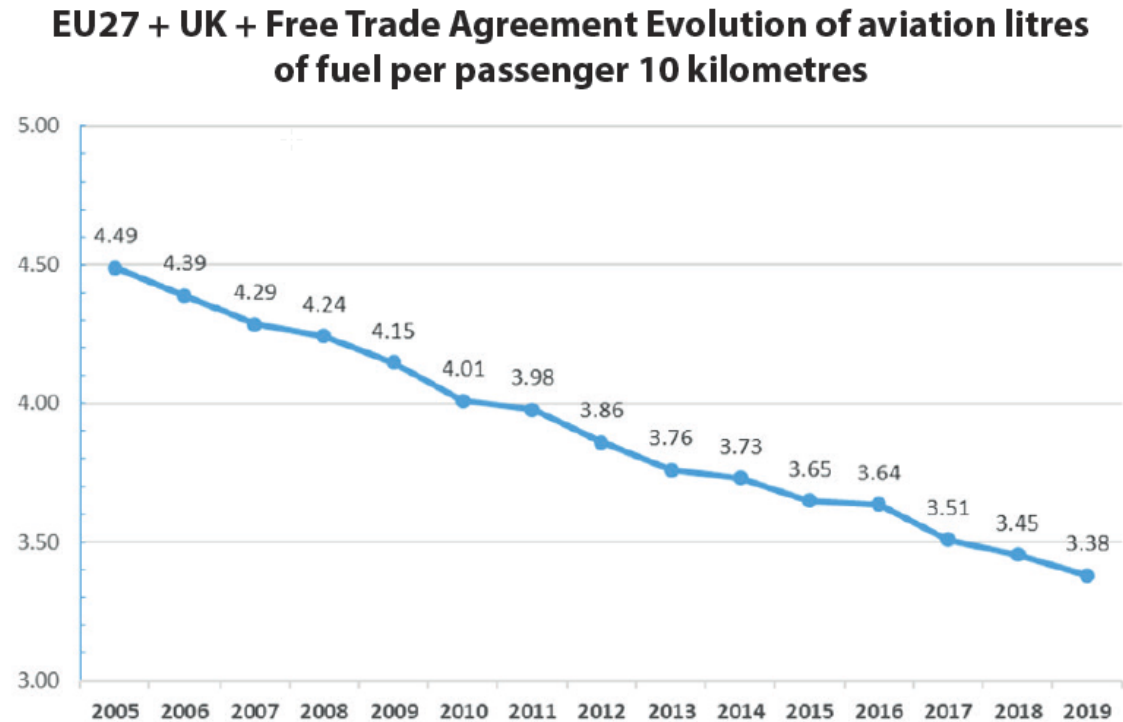
Global total net CO₂ emissions

Billion tonnes of CO₂/yr



Aircraft emissions: 2% of all, 3 litres fuel per 100km

FIGURE 3: EVOLUTION OF AVIATION LITRES OF FUEL PER PASSENGER 100 KMS



Source: EUROCONTROL

- The rule of thumb on energy efficiency: 3 litres per seat per 100 km
- Global aircraft CO₂ emissions approximately the same as from maritime – around 2 % of man-made emissions
- Warming impact is around 3-4% without “contrail cirrus”
 - Direct impact of CO₂
 - Oxides of nitrogen (NO_x) produce ozone (O₃), which is a warming gas
 - Induced cloudiness – the impact is not scientifically quantified
 - “No hole in the ozone layer!”

The European Air Transport Industry has committed to reaching Net Zero Emissions by 2050

The ground-breaking joint-industry report by European stakeholders was published 11.2.2021 (<https://www.destination2050.eu/>)

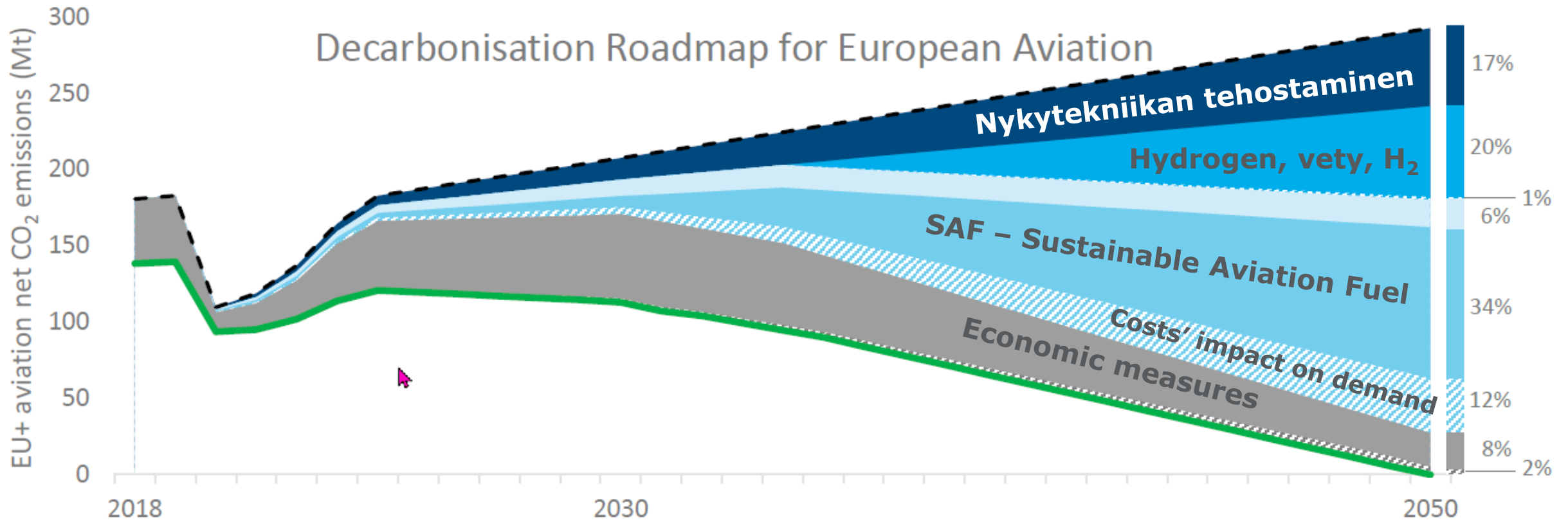
Simultaneously the stakeholders published a joint resolution on the Net Zero target (e.g. A4E including AirFranceKLM, Lufthansa, Finnair).

Destination 2050 shows a credible pathway to Net Zero Emissions in European Air Transport.



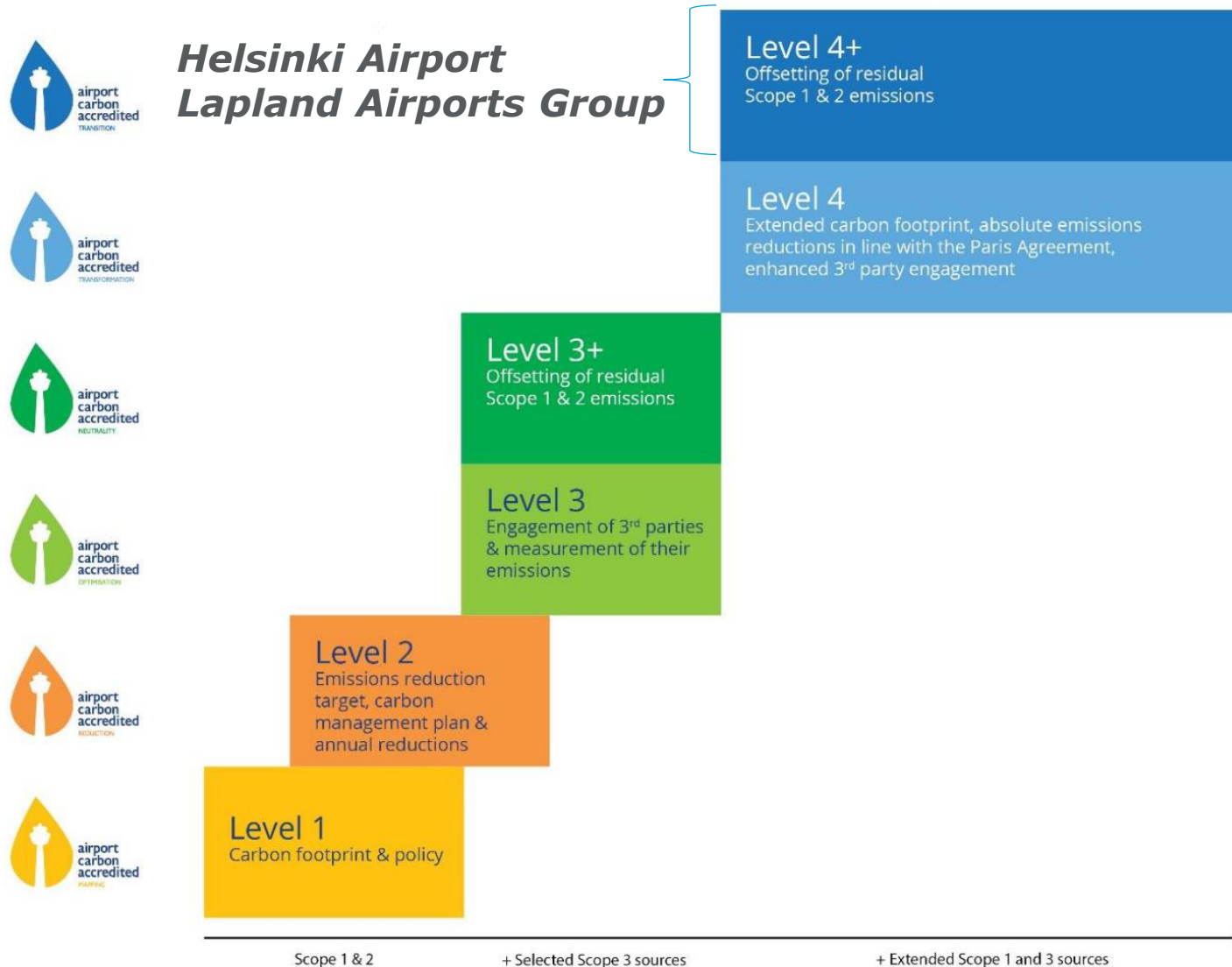
A ROUTE TO
NET ZERO EUROPEAN
AVIATION

Decarbonisation Roadmap for European Aviation



- Hypothetical reference scenario
- Net CO₂ emissions
- Improved technology (kerosene)
- Improved ATM and operations
- Improved technology (hydrogen)
- Sustainable aviation fuels (SAF)
- Economic measures
- Effect of economic measures on demand
- Effect of hydrogen on demand
- Effect of SAF on demand

Airport Carbon Accreditation – The Global Voluntary Carbon Management Standard for Airports



Launched in 2009 by Airports
Council/ EUROPE

Twofold objective

- technical guidance for airport carbon management
- framework for public recognition

Approx. 460 airports accredited, in
87 countries across the world,
welcoming 4,6 billion passenger a
year

Emission scopes



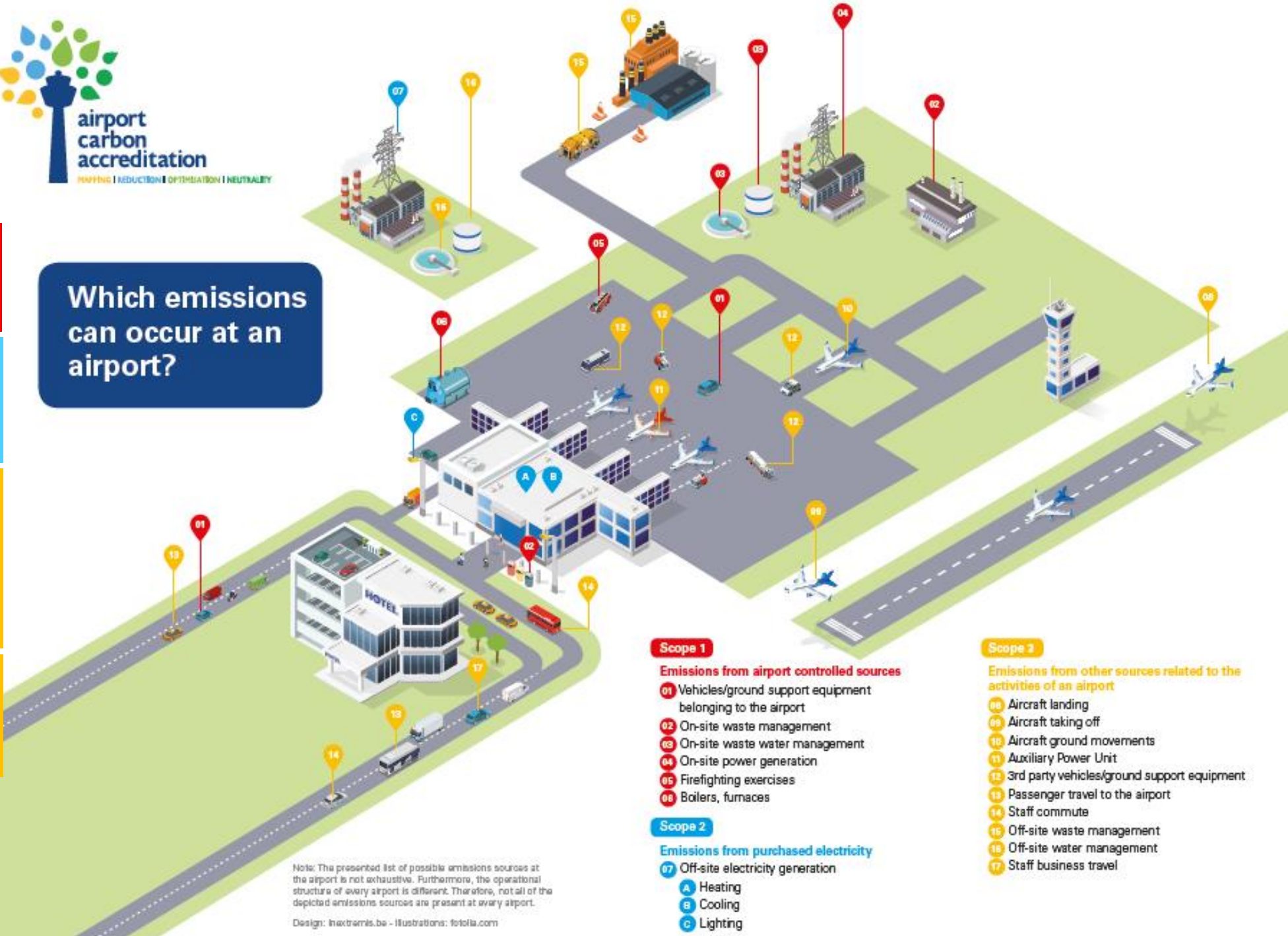
Which emissions can occur at an airport?

Scope 1 : Direct emissions the airport can control (e.g. airport's own vehicles)

Scope 2: Indirect emissions the airport can control (e.g. electricity supply)

Scope 3: Indirect emissions the airport can **guide** (e.g. third party Ground Support Equipment, use of Auxiliary Power Units)

Scope 3: Indirect emissions the airport can **influence** (e.g. LTO, surface access)



Scope 1

Emissions from airport controlled sources

- 01 Vehicles/ground support equipment belonging to the airport
- 02 On-site waste management
- 03 On-site waste water management
- 04 On-site power generation
- 05 Firefighting exercises
- 06 Boilers, furnaces

Scope 2

Emissions from purchased electricity

- 07 Off-site electricity generation
- A Heating
- B Cooling
- C Lighting

Scope 3

Emissions from other sources related to the activities of an airport

- 08 Aircraft landing
- 09 Aircraft taking off
- 10 Aircraft ground movements
- 11 Auxiliary Power Unit
- 12 3rd party vehicles/ground support equipment
- 13 Passenger travel to the airport
- 14 Staff commute
- 15 Off-site waste management
- 16 Off-site water management
- 17 Staff business travel

Note: The presented list of possible emissions sources at the airport is not exhaustive. Furthermore, the operational structure of every airport is different. Therefore, not all of the depicted emissions sources are present at every airport.

Design: Inextremis.be - Illustrations: fotofila.com

Airport Industry Reconfirms and Accelerates Net Zero CO2 Targets

20 May 2021

- 235 airports across Europe committed to Net Zero by 2050 at the latest, up from 211 pre-pandemic
- More than 90 airports now set to achieve Net Zero by 2030
- Renewed and stepped up ambitions must be matched by aligned regulatory and financial support
- Reflecting stepped up ambitions, 91 airports run by 16 operators are set to deliver on their Net Zero commitment already by 2030.

This includes 10 airports operated by Swedavia (including Stockholm-Arlanda), which have recently become the first ones globally to become Net Zero. Athens International Airport should follow as of 2025, with Aéroports de la Côte d'Azur (3 airports including Nice), Aeroporti di Roma, Amsterdam Schiphol, AvinOR (44 airports including Oslo), Copenhagen, Eindhoven, EuroAirport Basel-Mulhouse-Freiburg, Finavia (21 airports including Helsinki), Luxembourg, Lyon-Saint Exupéry, Marseille-Provence, SEA Milan airports and Tallinn all targeting 2030.

Net Zero Carbon (Airports Council International /Europe) 2/2

Lentoasemien Net Zero sitoumukset ja suunnitelmat on kerätty sivustolle <https://aci-europe.org/netzero>



Repository of Airports' Net Zero Carbon Roadmaps

“Net Zero targets for 2050 without credible plans including short-term targets is greenwashing”

A commitment to Net Zero Carbon emissions defines the destination of an airport's decarbonisation journey. The next step is to set out the trajectory towards and milestones. And once you are on your way, you have to acknowledge that the assumptions under which you prepared your journey might change in the your roadmap.

To support airports that are in the process of charting their roadmaps, ACI EUROPE, jointly with its World Business Partner To70, has developed a guidance d to Net Zero Carbon, and relies on good practice identified amongst already existing airport roadmaps, as well as examples from other industries.

GUIDANCE - DEVELOPING AN AIRPORT NET ZERO CARBON ROADMAP

A number of airports have already prepared their roadmaps to Net Zero Carbon. These roadmaps are presented in this repository. By doing so, ACI EUROPE facilitates membership, but also by the wider public.



daa - Towards net zero emissions

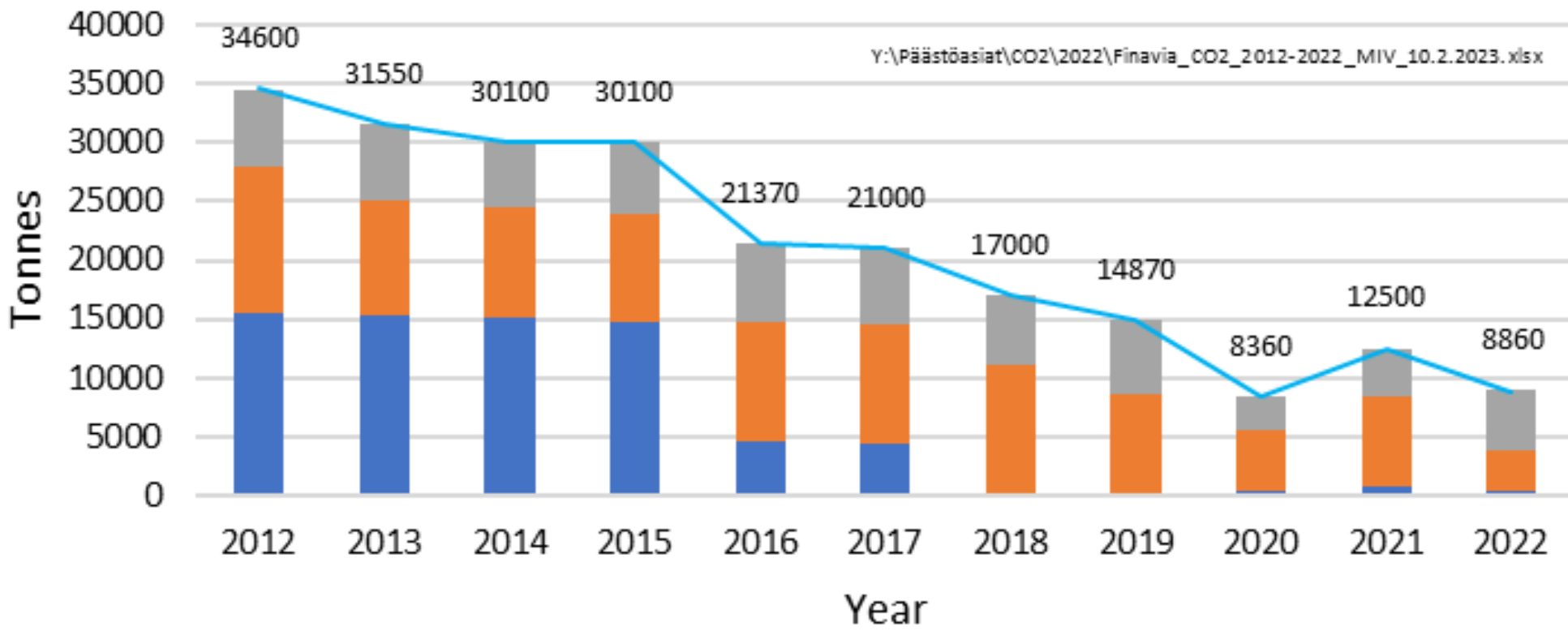


Roadmap to “Net Zero 2050” - Decarbonization of Flughafen Zürich AG



Schiphol Group - Sustaining your world: Vision and strategy towards the most sustainable airports

Finavia's CO₂ emissions t/a



- Sähkö, Electricity
- Lämpö, Thermal Energy
- Kalusto, Vehicles
- Total

Finavia: Carbon Neutral Today – Net Zero Carbon Tomorrow

Finavia has reduced emissions and compensated the residuals in voluntary carbon markets.

Finavia's operations at all of its 20 airports are carbon neutral.

Gradually, in 2023-2025 Finavia will switch to using of renewable energy only and will eliminate the residual CO₂ emissions by carbon capturing measures.

Lapland Airports will become Net Zero Carbon in 2023, Helsinki Airport in 2024 and the rest in 2025.

NET ZERO CARBON FINAVIA ROADMAP

Finavia's commitment to Net Zero Carbon emissions defines the destination of Finnish airports' decarbonisation journey



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Further CO₂ Reduction Measures

Vehicles and machinery

- Electric machinery or renewable fuels only

Heating, local or district heating

- Geothermal power and green district thermal energy

Electricity

- Own production of solar electricity and sourcing of wind power from the grid

Other use of energy (e.g. emergency power)

- Use of renewable fuels only

The remains

- Carbon removals (elimination credits)



Hydrogen – No Longer Looming Behind the Corner

- Light airport vehicles will switch to batteries, but for the heaviest machinery it is not an option
 - The solution could be GH_2 (if not renewables)
- Gaseous hydrogen (GH_2) will be introduced to airports to power vehicles and machinery
- GH_2 driven aircraft will arrive well before 2030
- In 2030s liquid H_2 (LH_2) will be introduced to airports to power larger hydrogen aircraft
- Finavia is a member in a project consortium which applied for EU funding for a GH_2 research programme including a pilot maintenance machine converted to hydrogen





”Every Flight Begins
At The Airport!”

Thank you!

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