



The European Green Deal “repowered” – the sky is the limit!

Andrea Voigt, Danfoss Climate Solutions

euramm^on Symposium, 4 July 2022



Introduction and Global Context



Who is Danfoss?

Key facts

 **40,000** employees

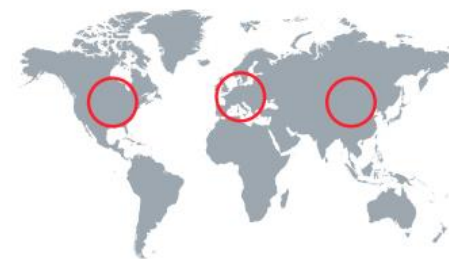
 **95 factories** in more than **20 countries**

 **7,5bn EUR** in net sales

 Customers in more than **100 countries**

Worldwide sales

Headquarters in Denmark.



Top 3 markets

United States | Germany | China

Founded by Mads Clausen in 1933.

We are a **privately held** company owned by the Bitten & Mads Clausen's Foundation and the founding family.

Today, we are **engineering solutions** that improve productivity, boost energy efficiency and reduce emissions to enable the green transition.

Three segments – **One company**



Danfoss Power Solutions

Full solutions capabilities in mobile and industrial hydraulics, fluid conveyance, electrification and software.



Segment president
Eric Alström

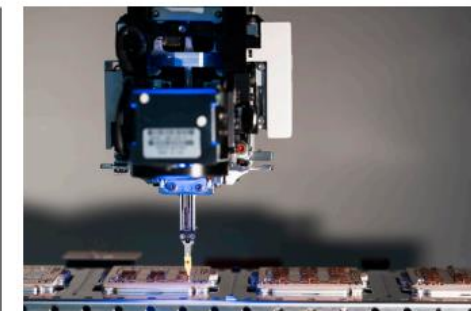


Danfoss Climate Solutions

Sustainable heating and cooling solutions for buildings, cold chains, industry and infrastructure.



Segment president
Jürgen Fischer



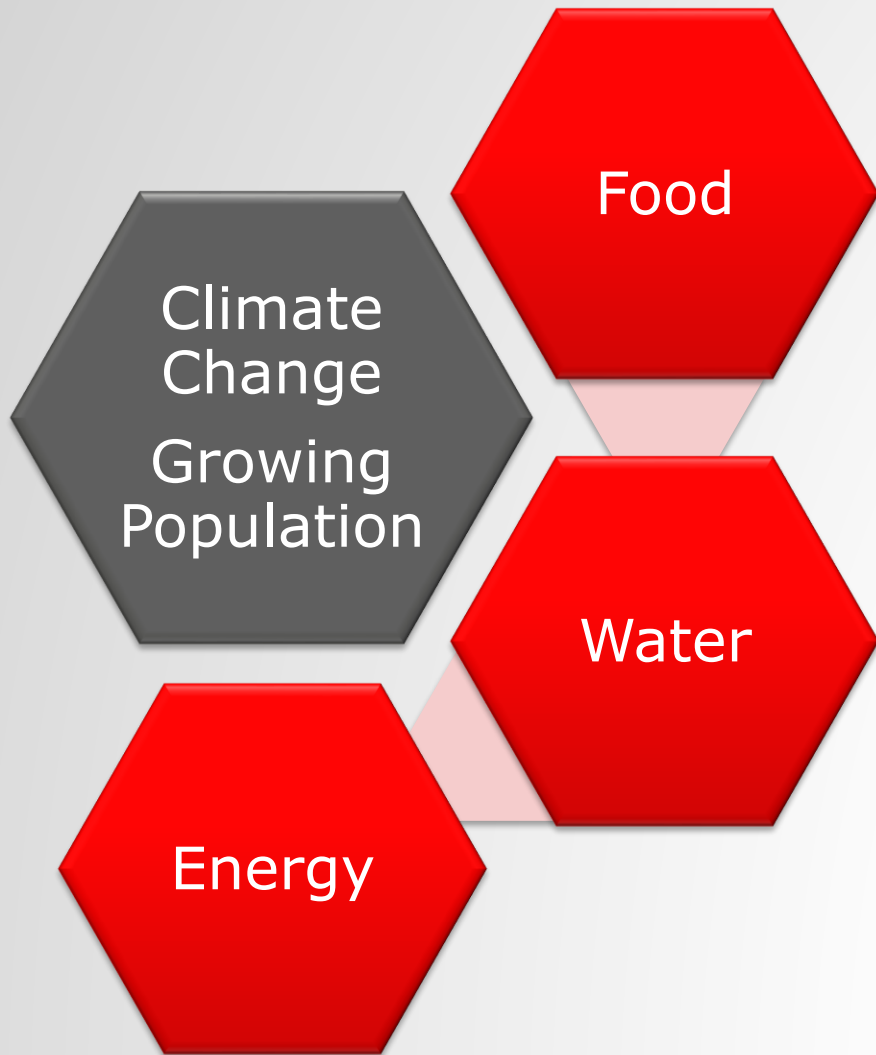
Danfoss Drives

Clean-energy solutions such as AC drives, power semiconductor modules, and electrification in automotive and various industries.



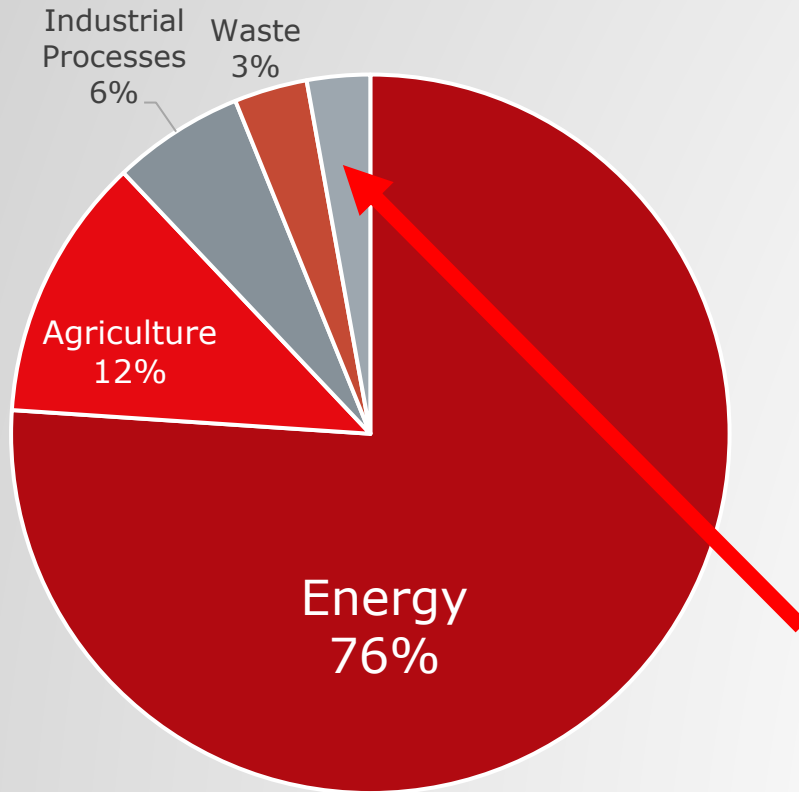
Segment president
Vesa Laiši

Introduction: The Food – Water – Energy Nexus



- By 2050, we will be 10bn people – up from 7.7bn today. More people means more food, more energy, and more water. At the same time, the earth warms faster than expected. A warming climate increases water scarcity, heat stress and the need for energy to counter these.
- If we don't adapt to and mitigate climate change and if food, energy and water production and consumption are not sustainable, the entire ecosystem will collapse, threatening humanity.

What priorities to tackle climate change



Share of greenhouse gas emissions by sector

- **Energy:**
CO2 (75% of total GHG) represents most of the energy related emissions. Half of the energy use comes from heating and cooling.
- **Agriculture & Waste:**
Methane (17% of total GHG) represents most of the emissions related to agriculture.
- **HVACR & Switch gear**
F-Gases have the smallest share of total GHG (2%) but are the fastest growing gas. Therefore they are addressed under the Kigali amendment

Drives need for:

- Decarbonisation of electricity
- Electrification of heating, cooling, transport
- Energy Efficiency
- Circularity and Resource Efficiency
- A Sustainable Food System
- Non-fluorinated / low global warming potential refrigerants

Is enabled by:

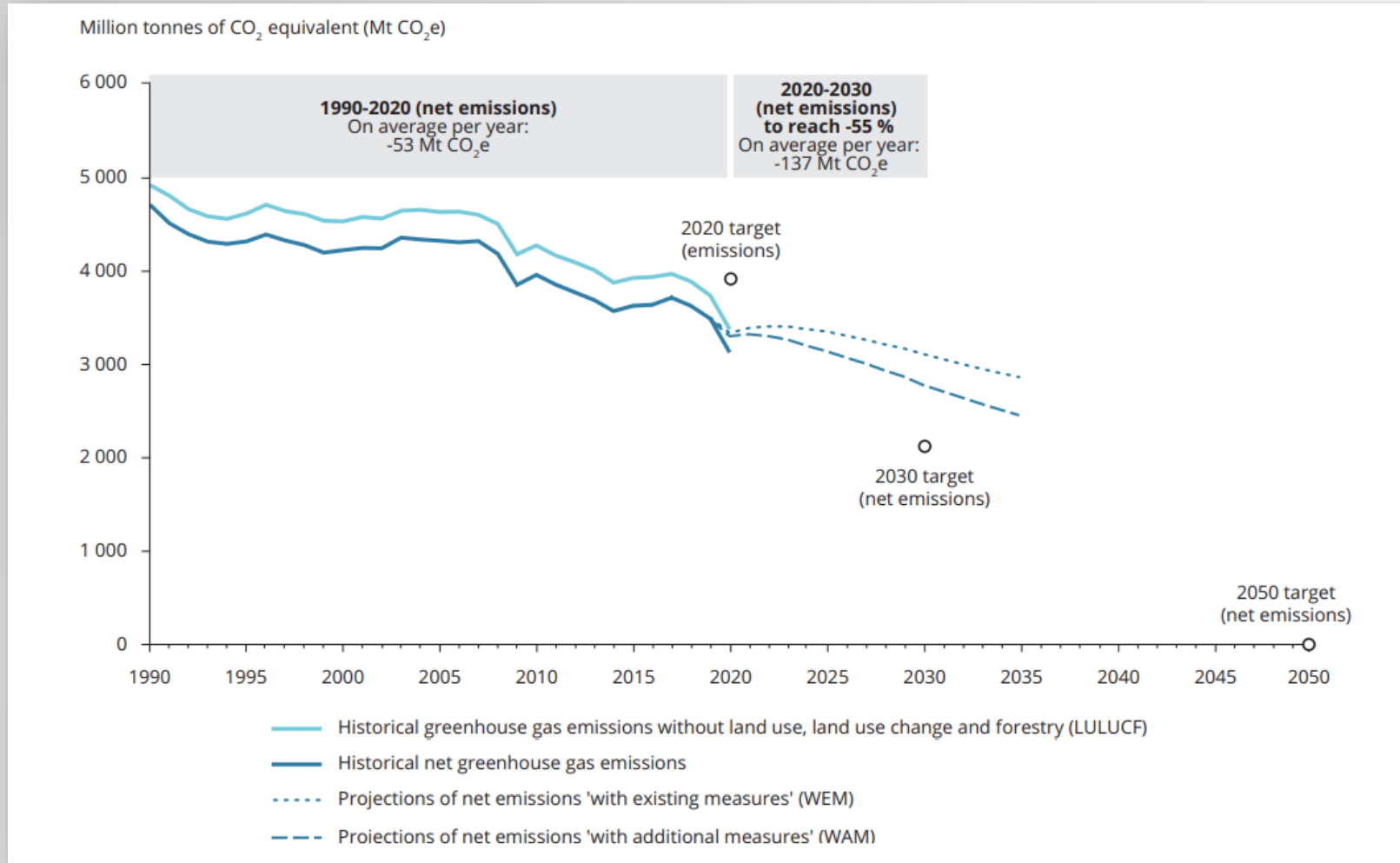
- Digitalisation
- Finance

Source: Our world in data

The EU's Answer – The European Green Deal

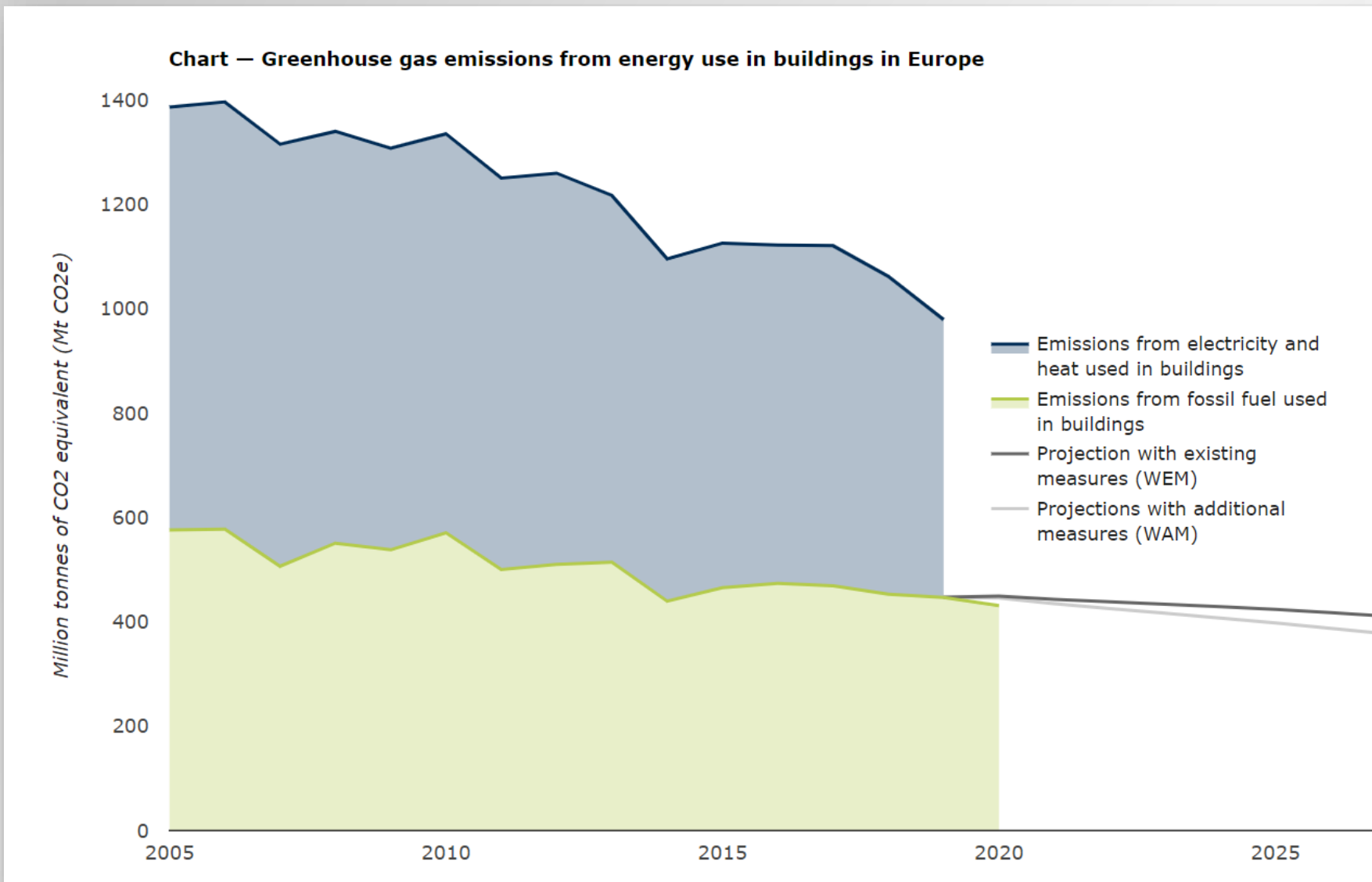


The European context: We need to act



- Latest IPCC report: the science is clear, we need to act
- Mainly due to Covid-19, the EU's 2020 target was overachieved, since then, however, emissions have gone up again
- The gap that needs to be closed between 2020 and 2030 is significant. Existing policy measures need to be strengthened; new measures need to be introduced

Buildings are essential to achieve the targets



- Buildings represent **40%** of the total energy use in Europe and **36%** of total greenhouse gas emissions
- Emissions from the energy use in buildings stem from electricity, heat and the direct use of fossil fuels
- **75%** of today's building stock is energy inefficient. But the renovation rate is with < 1% per year far too slow and needs to be at least doubled.

Emissions from Energy Use in Buildings: all is interlinked

Emissions from direct use of fossil fuels



446mt CO2-eq

Emissions from electricity



533mt CO2-eq

Emissions from heat



- **Fossil fuels** account for roughly 80% of the energy used for heating and cooling
- **Energy Efficiency** helps to optimise and reduce energy use
- **Electrification** of heating and cooling with heat pumps supports moving away from fossil fuel-based thermal systems
- **Electricity** needs to be decarbonised, renewables share is currently at approx. 40%
- **District Energy and Sector Coupling** will support the energy transition by moving towards renewables based heat generation, integrating low temp heat sources such as waste heat from cooling, and providing flexibility and storage to cater for fluctuating renewables based electricity

Source: EEA, 2019

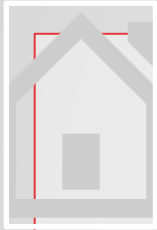
The EU's answer: The Green Deal and its main pillars



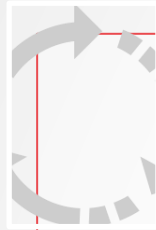
Climate Ambition



Clean Energy



Building & Renovating



Sustainable Industry



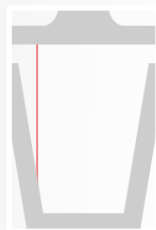
Sustainable Mobility



From Farm to Fork



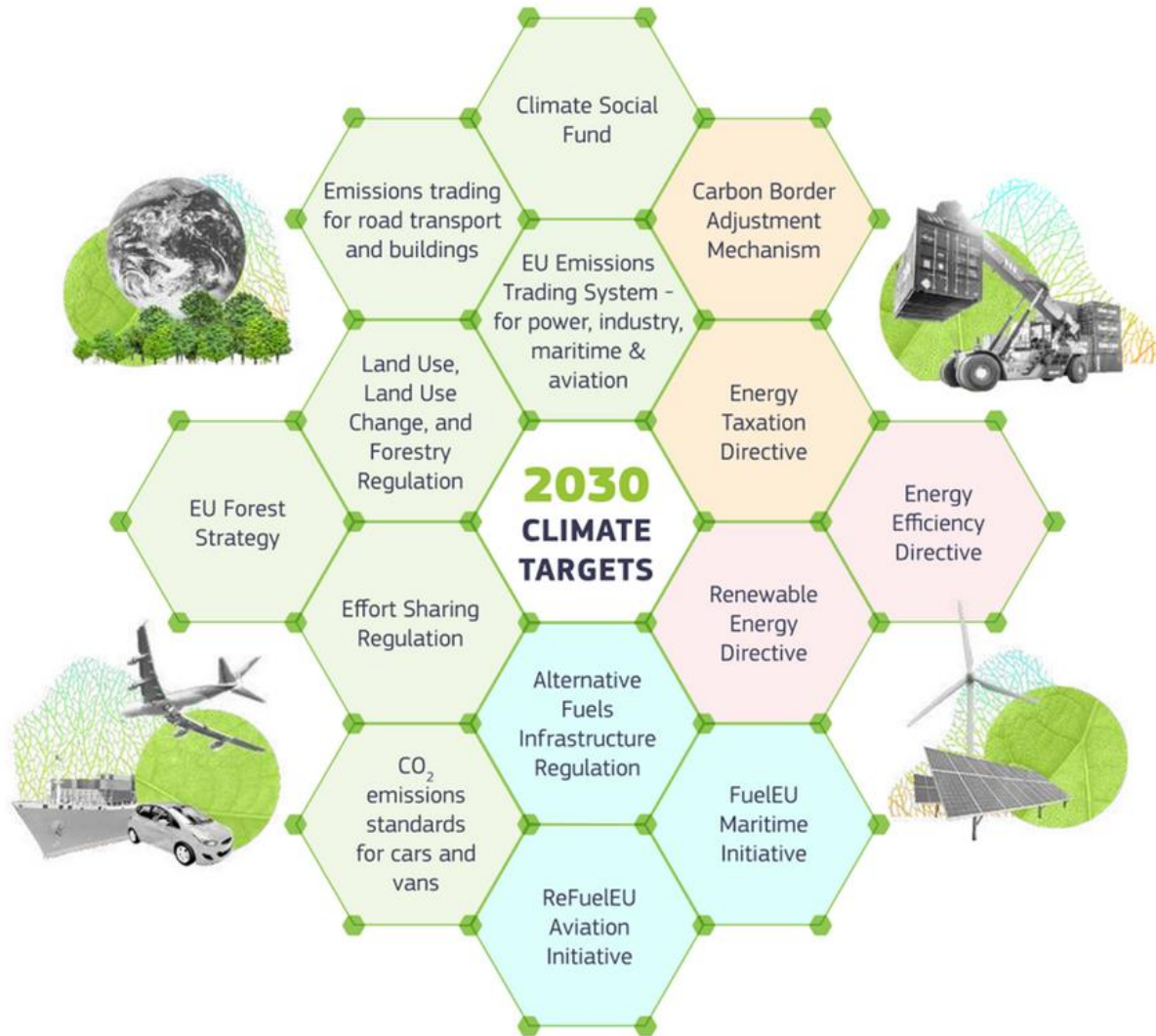
Biodiversity



Eliminating Pollution

- Worldwide probably the most comprehensive framework on climate, energy and environment
- **Enshrines climate neutrality by 2050 in law**
- Fit-for-55 is just one part of the EU Green Deal, next to many other policy measures

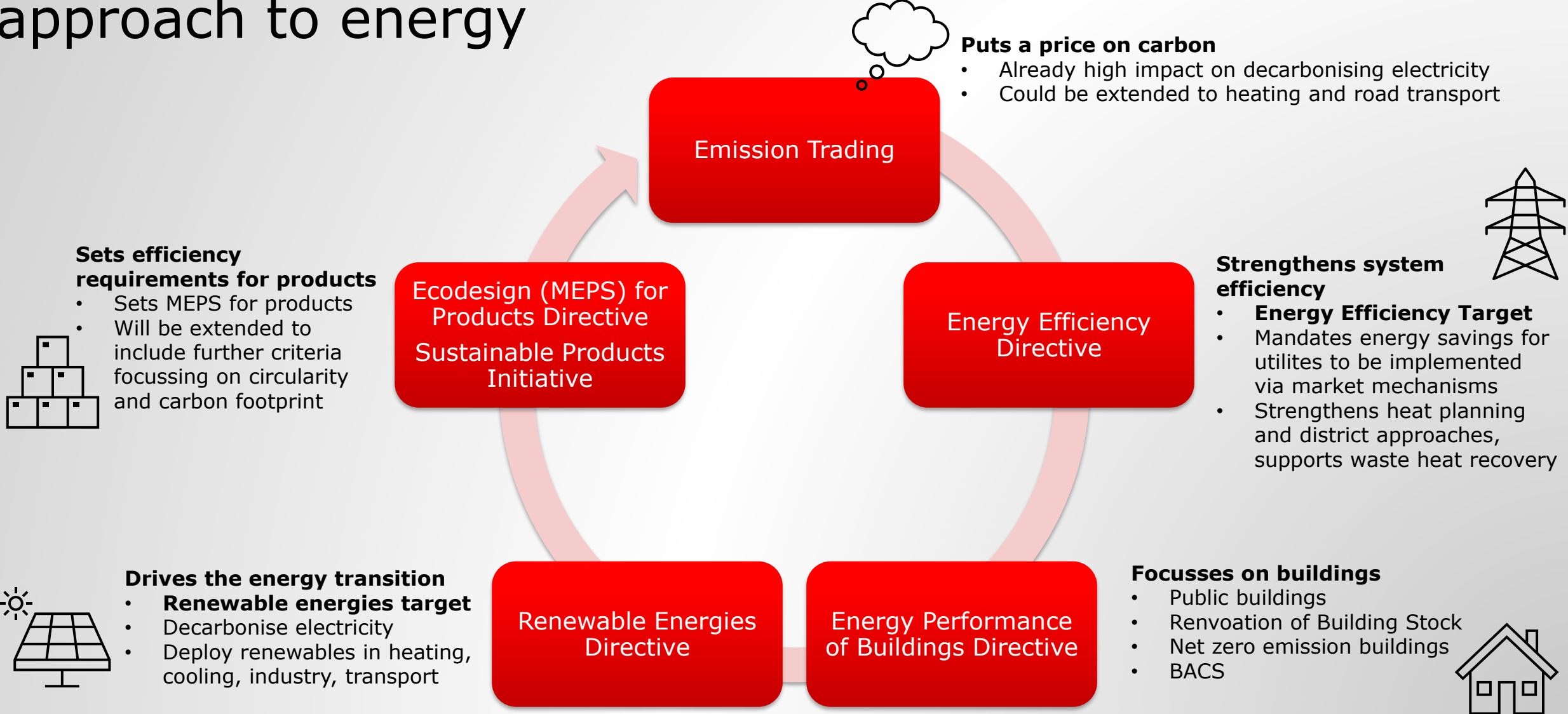
The Fit-For-55 Package



The EU on a journey:

- **The EU started with 2020 Targets:** 20% GHG reduction, 20% renewable energies, 20% energy efficiency
- **2020 Targets were increased to 2030 Targets:** 40% GHG reduction, 32% renewable energies, 32.5% energy efficiency
- **To achieve climate neutrality by 2050,** the 40% target was increased to a 55% target in the EU's climate law
- **55% GHG reduction by 2030** requires re-opening several crucial policy files: The fit-for-55 package

Fit-For-55 energy policy files provide an integrated approach to energy



REPower Europe – Makes the case even stronger








REPower EU to cut our dependence on Russian gas

1. More roof-top solar panels, **heat pumps** and energy savings to reduce our dependence on fossil fuels
2. Speeding up **renewables** permitting
3. Diversifying gas supplies
4. Decarbonising industry (**electrification**, hydrogen...)
5. Doubling the EU ambition for biomethane
6. A hydrogen accelerator

REPower Europe aims to further strengthen the Fit-For-55 energy policy proposals, for example:

- Double the current deployment rate of individual heat pumps, resulting in a cumulative 10 million units over the next 5 years;
- Accelerate the deployment and integration of large-scale heat pumps by e.g. developing and modernizing district heating and exploiting industrial waste heat;
- Use fiscal measures to encourage energy savings (i.e. reduced VAT rates on energy efficient heating systems, appliances and products)

Buildings: What major trends can be expected ?

	Major Trends Fit-for-55	What does it mean?
	Boosts renovations	<ul style="list-style-type: none"> • Stimulates financing of all types of energy efficiency measures • Special focus on the exemplary role of public buildings
	Extends the focus from net zero energy to net zero emissions	<ul style="list-style-type: none"> • Accelerates the transition towards renewable energies • Extends the focus from emissions in use towards total lifecycle and embodied carbon
	Establishes a link between energy poverty and health	<ul style="list-style-type: none"> • Raises awareness on the impact of thermal comfort and indoor air quality on health • Makes available financial support for vulnerable households (social housing, etc.)
	Taps into the potential of digital solutions	<ul style="list-style-type: none"> • Promotes the integration of buildings into the energy system • Supports information and documentation of building performance via digital tools
	Highlights the importance of skills	<ul style="list-style-type: none"> • Promotes upskilling of installers to support the energy transition + digital

- Heat Pumps
- District Energy
- Thermal Storage
- Demand Side Flexibility
- BACS & Digital
- Controls & Monitoring
- IAQ

Indoor Air Quality: The new rising star!



- Health has become a major topic
- Indoor Air Quality (IAQ) can suffer from too tight buildings
- Digital solutions such as BACS improve IAQ via control of temperature, humidity, ... while improving energy efficiency
- Insulation manufacturers, for example, are now using the Indoor Environmental Quality (IEQ) angle with a view to noise reduction to position on this topic

Requirements on products will be further strengthened

The circular economy action plan



A sustainable product policy framework

Key product value chains

Less waste more value

Implement circularity in regions, cities, for people

The Sustainable Products Initiative (SPI):
Towards a new, and more comprehensive Ecodesign, addressing all stages of a product lifecycle, notably:



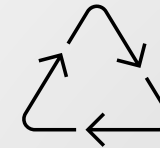
Reparability
Maintenance
Refurbishment



Upgradability



Durability
Reliability



Recycled content in products
Resource efficiency



Energy Efficiency
Energy use



Substances of concern

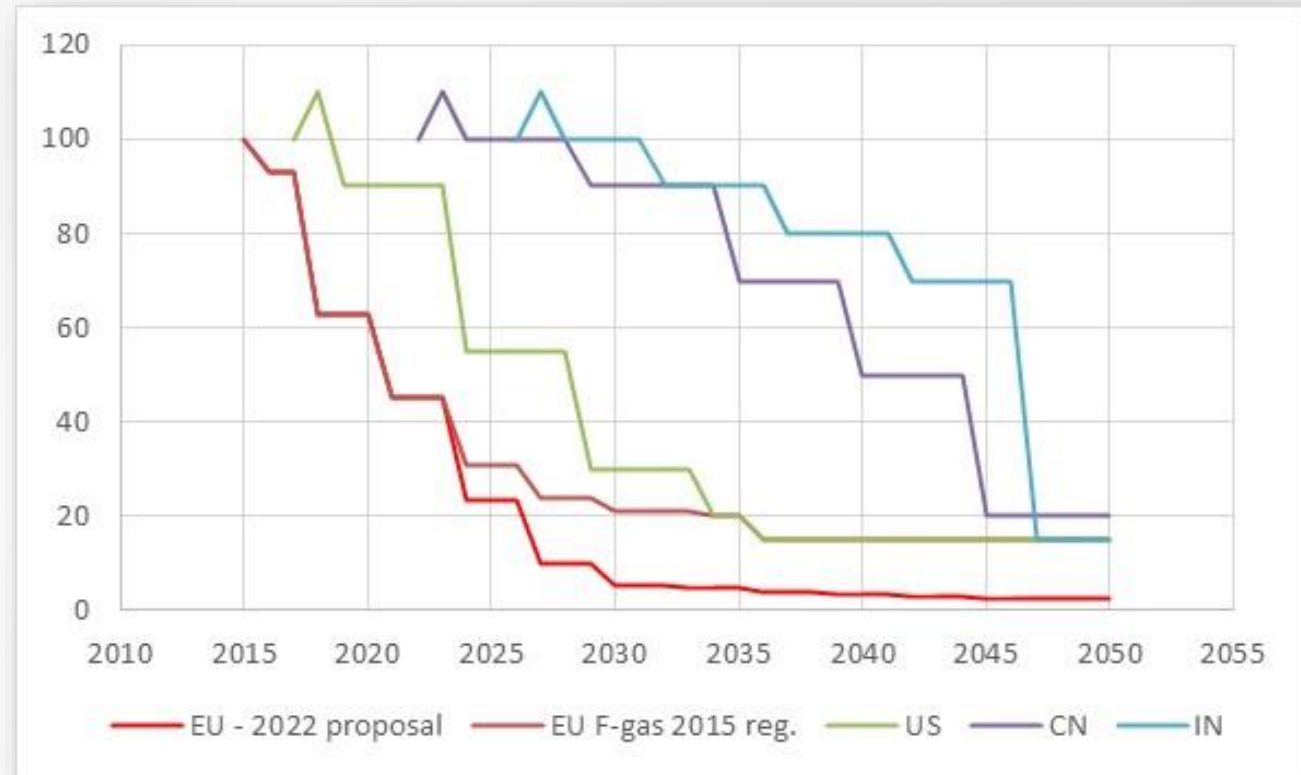


Environmental Impact
Carbon and environmental footprint

The F-Gas Regulation is likely to be tightened

New proposed provisions by the European Commission – work in process

- **Severely steepened phase-down:**
Reduction steps previously set for 2027, now proposed for 2024
- **Placing on the market bans extended:**
 - No F-gases above GWP 150 as of 2024 in refrigerators and freezers for commercial use
 - No F-Gases above GWP 2500 as of 2024 in stationary refrigeration equipment, except for applications below -50°C
 - GWP limit of 150 for split systems of up to and including 12kW and of 750 for splits above 12kW, except when required to meet safety standards as of 2027
 - GWP limit of 150 for plug-in room and other self-contained a/c and HP equipment, and of self-contained refrigeration equipment as of 2025. But definitions remain unclear!



Potential restrictions on PFAS (Per- and polyFluoroAlkyl Substances)

Overview

- **Separate from the F-Gas revision**, five countries have agreed to prepare a joint REACH* restriction proposal about using PFAS
- PFAS = thousands of substances
- Some HFCs and the HFOs have breakdown products (TFA) assigned to the PFAS definition. These are included in the Registry of Intention (ROI)
- Non-TFA producing—like R32—**may** be out

**The ROI is an investigation phase:
no restrictions have been decided so far**

**the EU Chemicals Agency ; REACH is a regulation of the European Union, adopted to improve the protection of human health and the environment from the risks that can be posed by chemicals, while enhancing the competitiveness of the EU chemicals industry
RAC: Risk Assessment Committee – SEAC: Social Economical Assessment Committee – EC : European Commission.*



Timeline (indicative)



- Regulatory Management Option Analysis (RMOA)
- Mid 2021 – Registry Of Intentions (ROI)
- Jan 2023 – Submission of restriction dossier
- Jan 2024 – RAC and SEAC opinions
- H1 2024 – EC receives final recommendations
- H1-H2 2024 – Draft restriction proposal + Council and EP decisions
- 2025 (late) – Adoption of the Proposal

Most HFC/HFOs are in the ROI. A few (R32, R152a, R1132a) are out. Means in **worst case uncertainty for up to 3 years**



Conclusions



- **The European Green Deal** holds many opportunities for the HVACR sector.
- **Heating and cooling** has a crucial role to play as it represents half of the total final energy consumption, most of it still based on fossil fuels. Acting on heating and cooling will therefore contribute massively to energy security and to decarbonisation.
- **Technologies are available** and now need to be scaled. But companies will also be challenged to move out of their comfort zone and anticipate new trends.
- **Thinking in silos** will be more detrimental than ever – for policy makers and for industry! Sector integration will become essential.
- **Europe is not acting in isolation.** We see an energy and refrigerant transition happening at global level, driven by climate change and decarbonisation.

Thank you for your attention!
Questions?

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eurammon e. V. is always available as a sparring partner for questions on refrigeration with natural refrigerants.

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