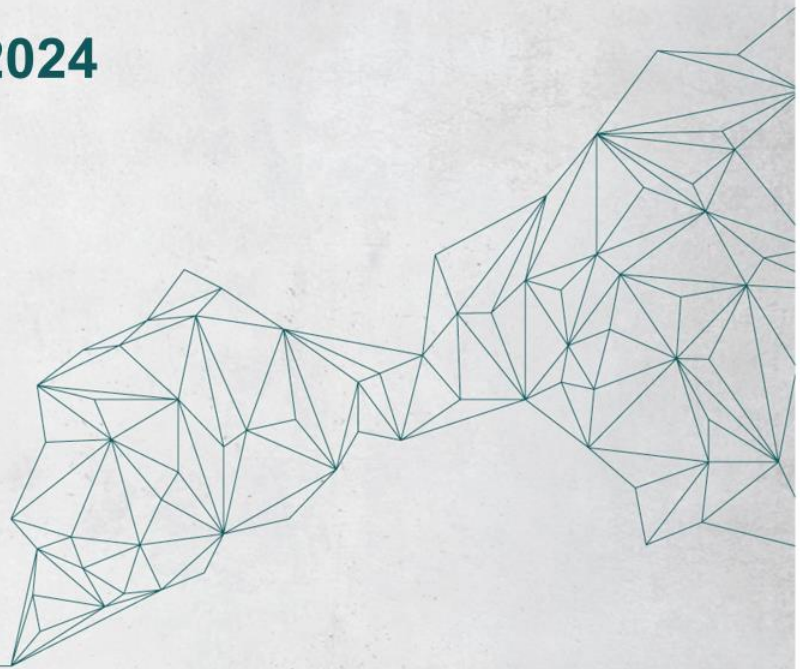
CHILLVENTA

Chillventa Specialist Forums 2024
Chillventa Fachforen 2024

CONNECTING EXPERTS.



ADVANSOR

HOW TO SOLVE THE COMPETENCY CHALLENGE WITHIN COOLING AND HEATING

Lisette Lykke Hansen, CMO

Thanks for coming

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CMO
Advansor A/S

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Advansor
We design and produce the world's best sustainabile CO2 climate solutions

From refrigeration racks to climate solutions combining cooling, freezing, air-conditioning and heating

Agenda

- Status, trends & challenges within cooling and heating
  - Lack of skilled workers is slowing down the green transition
  - Legal requirements and end-user demands
  - Phase out fossil fuels
- Solutions – our obligations as manufacturer
  - Climate solutions combining the hot and cold
  - Plug & Play solutions
  - Training
- Questions

Lack of skilled workers on-site is slowing down the green transition

News European Countries

The persistent and spread lack of skilled workers can threaten the energy transition in Europe

15 December 2023

ur workforce to deliver the

REHVA
Federation of European Heating, Ventilation and Air Conditioning Associations

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News > EU Faces Clean Energy Transition Challenges Due to Skilled Worker Shortage

14 December 2023 EU Policy News

EU Faces Clean Energy Transition Challenges Due to Skilled Worker Shortage

European Commission

EU Science Hub

EN

Home > JRC news and updates > Do we have sufficient skills for the energy transition in the changing labour market?

GENERAL PUBLICATIONS | 16 January 2024 | Joint Research Centre | 3 min read

Do we have sufficient skills for the energy transition in the changing labour market?

The energy transition will accelerate demand for labour at a time when industry is already struggling with shortages. The disruption caused by structural changes needs to be managed well to ensure that the labour market is fit for the net-zero age.

FINANCIAL TIMES

D US COMPANIES TECH MARKETS CLIMATE OPINION LEX WORK & CAREERS LIFE & ARTS HTSI

Employment + Add to myFT

Green skills shortage threatens Europe's climate ambitions

Creating low carbon jobs that pay as well as high carbon alternatives will not be easy

High demand for sustainable products

- **Consumer demand** – 73% of Gen-Z consumers say they are willing to spend more on sustainable products.

- **End-user demands –** Above and e.g. SBT(I) - almost 10,000 applicants, Chemsec (no to PFAS), CSR in general, EcoVadis ratings, sustainability reports

- **Investor demand** – Gartner research finds that 85% of investors considered ESG factors in their investments in 2020 while 91% of banks monitor ESG performance of investments

- **Attracting Talent** – In a Deloitte survey, 49% of Gen-Zs and 44% of millennials said that they had made career choices based on their personal ethics. A recent survey shows that 51% of US business students would take lower pay if the company is environmentally responsible

- **Regulatory demands** – ESG Reporting (The EU's Corporate Sustainability Reporting Directive (CSRD) is transforming ESG reporting. Starting from 2024, almost 50,000 companies are subject to mandatory sustainability reporting

Source: Why sustainability is crucial for corporate strategy - Climate Champions (unfccc.int)

Regulatory Requirements Increasing

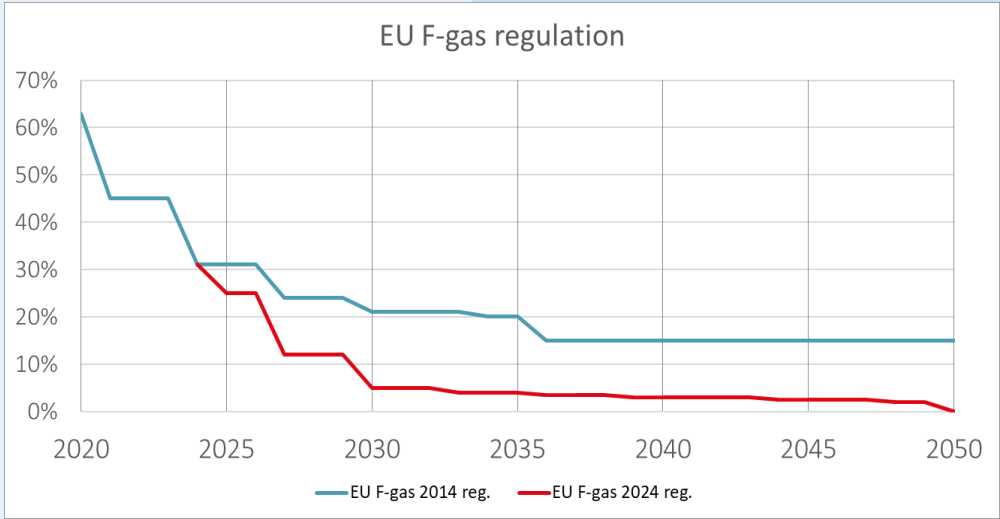
UN Protocols

- Montreal 1987 - Ozone layer (CFC)
- Kyoto 1997 - Global warming (HFC)
- Paris Agreement - Limit global temperature increase to 1,5 °C
- Kigali amendment 2016 (HFC)

EU F-Gas Regulation

- 2006: Leakage prevention during the use phase and limited F-Gas ban
- 2014: Reduce F-Gases
- 2024: Phase-out F-Gases – heat pumps no longer exepted

ESG reporting mandatory EU



Stop burning things to stay warm

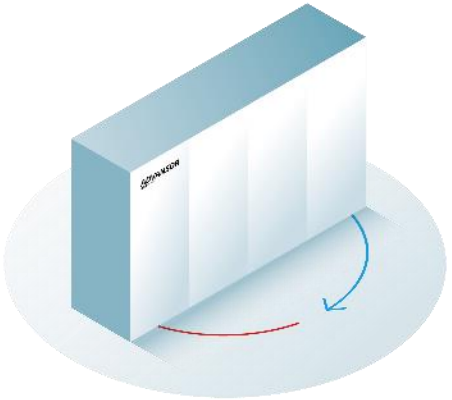
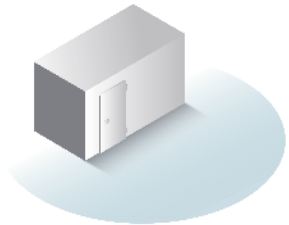
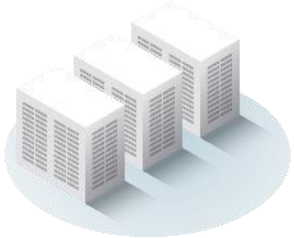
Oil boilers → Gas boilers → Straw-fired boilers → Wood pellet boilers

- Fossil fuels
  - Non-renewable
  - Depletion of ozone layer
  - Dangerous to produce
  - Causes water and air pollution
  - Acid rain
- Wood and straw
  - Limited supply
  - Combustion releases carbon dioxide into the atmosphere
  - Negatively affects global warming
  - Causes particle pollution
  - Carbon emissions 2,5 times higher than natural gas

As manufacture we need to take responsibility

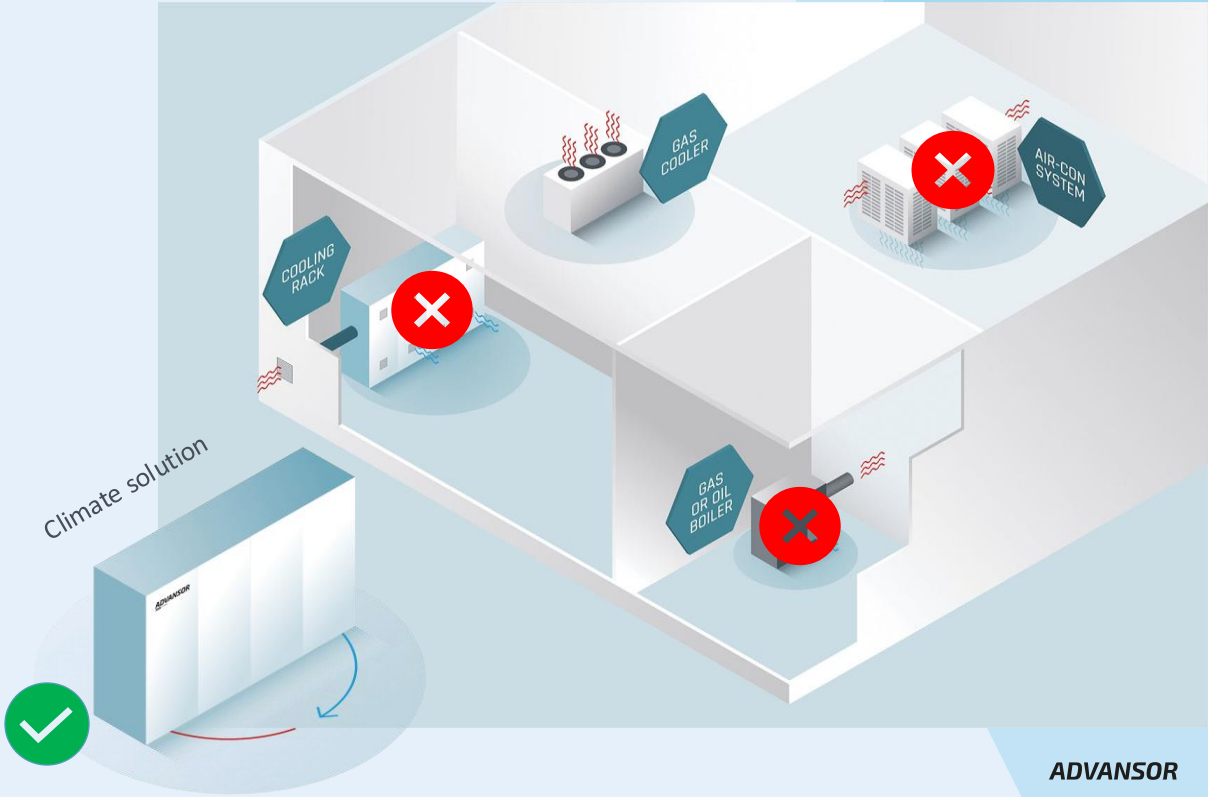
SOLUTIONS

Climate solutions instead of separate systems

Separate systems	Climate solution
 Cooling	 One system for cooling, freezing, air conditioning & heating
 Heating	
 Freezing	
 Air-conditioning	

Combine the hot and the cold

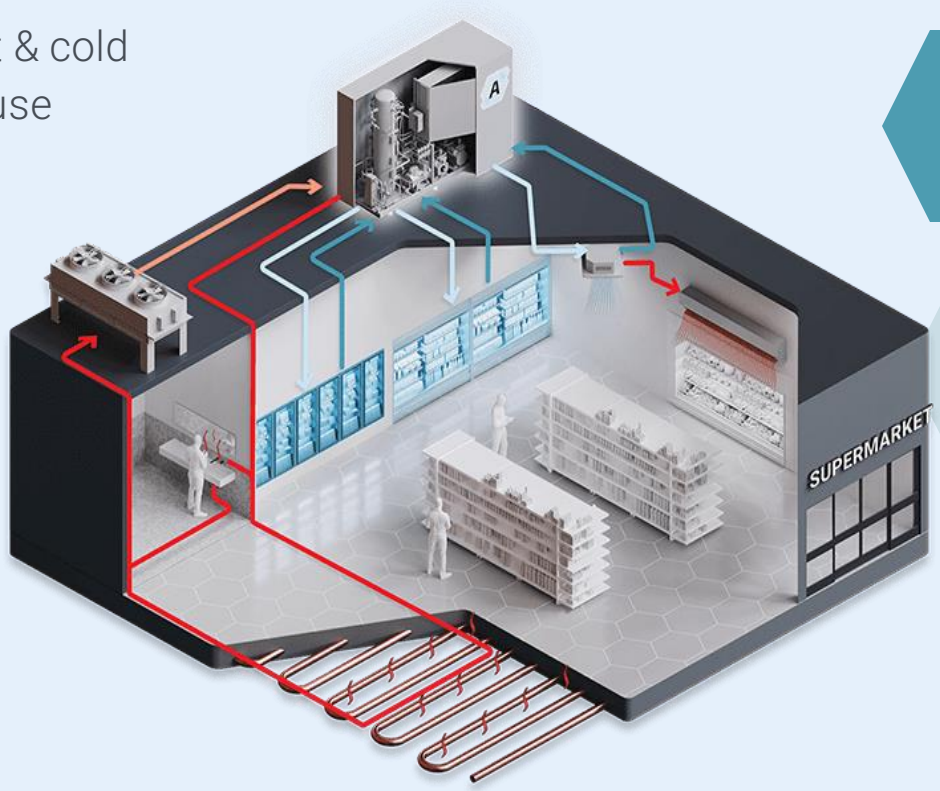
- No fossil fuels needed
- Heating almost for free
- Less installations
- Less maintenance
- No machine room needed



We need to stop burning things to stay warm

Climate solution for food retail

- Combine the hot & cold
- Recover and re-use



Cooling

Freezing

Air-con

Heating

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Plug-and-play units save time on-site

- Example: Heat pump with chiller function
- Less units to install and maintain
  - No fossil fuel boiler
  - No refrigeration rack
  - No air-con units
- No need for machine room
- Use of existing installation with same pipe sizing
- Ideal temperature profile for old building mass (Eg. heat return +60°C to heat supply +95°C)

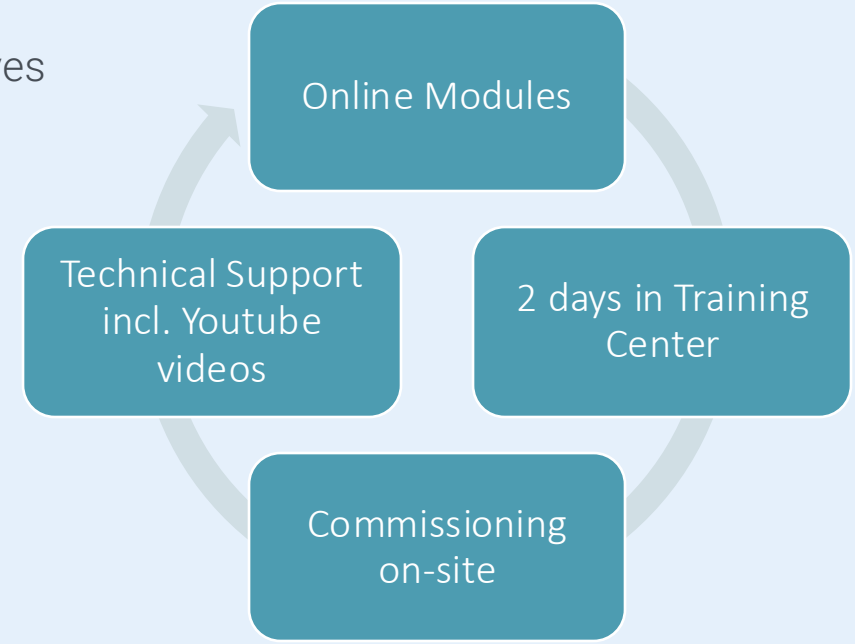
OEM-fications

- Production in factories is
  - Faster
  - More safe
  - Higher quality

- Factory tests

Technical support and CO_2 trainings for free

- More than 15,000 trained every year
- Aim: Contractors able to commission themselves
- Online, in our training center or onsite



Online technical trainings

- 9 modules Spring
- 9 modules Autumn
- 7 languages
- Topics like
  - Commissioning
  - Energy efficiency
  - Refrigerants
  - Heat pumps
  - Etc.

2-days technical trainings

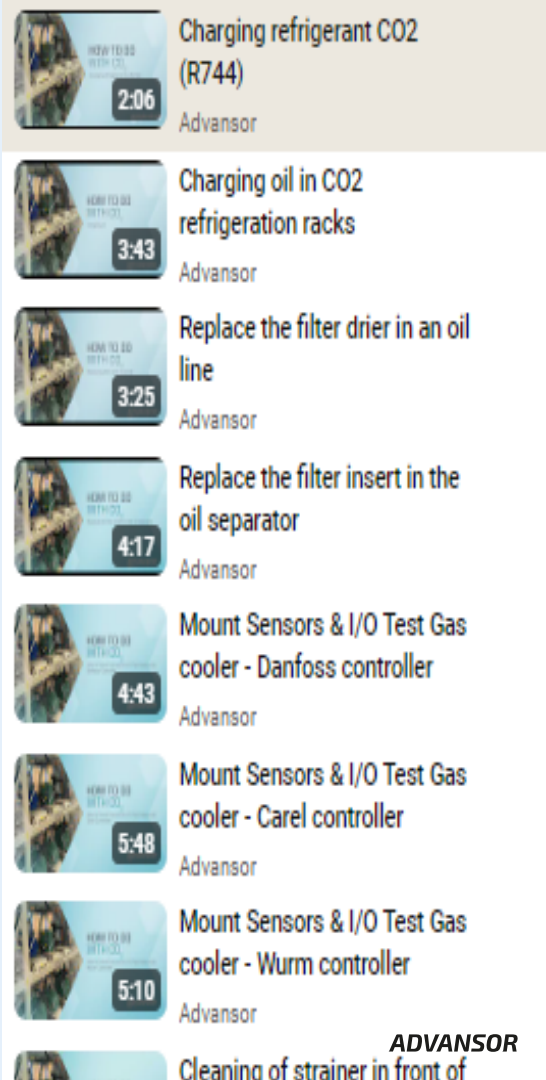
- 2-days Spring
- 2-days Autumn
- 7 languages
- In Training Center
- Max 20 participants
- Hands-on

On-site technical training

- Pre-commissioning on Teams
- Training when commissioning
- Often 2-6 people trained

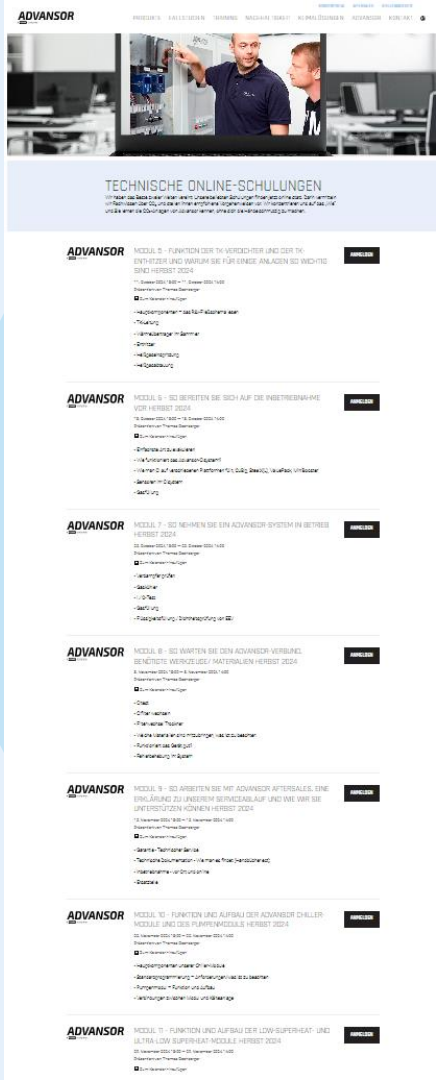
How to do with CO2

- YouTube videos always available
- From anything like charging oil or replacing filters



Structure, centralize and localize

- Spring & Autumn Program
- Masters in English
- Dedicate trainers (after sales technicians) for each language
- Same automated sign-up flow
  - All sign-ups via web
  - Automatic confirmations
  - Automatic reminders
  - Automatic sign-ups thank you with materials



Interested?

Sign-up at advansor.com/CO2-training

- Online technical trainings
- Physical technical trainings
- Webinars with solutions and cases

- Follow us on Facebook and LinkedIN to get notifications and see all events

Advansor
Favorites · August 27 ·

Free CO2 training - online or at our factory!

Next week, we're kicking off our Autumn training season, and you'll have the chance to team up with the best.

You will learn, among other things, how to achieve optimal energy savings, commission an Advansor climate solution, and the function and design of low and ultra-low superheat.

12 online one-hour modules in 6 languages:

English: https://www.advansor.com/technical-training-online#en
German:https://www.advansor.de/technical-training-online#de
French:https://www.advansor.de/technical-training-online#fr
Spanish:https://www.advansor.de/technical-training-online#es
Polish:https://www.advansor.de/technical-training-online#en
Swedish:https://www.advansor.de/technical-training-online#sv

You can also join our 2-day training at the training center in Denmark

https://www.advansor.com/2-day-training

You can go ahead and secure your seat for Autumn now.

We hope to see you!

#technicaltraining #weareadvansor #co2 #gonatrefs

QUESTIONS?

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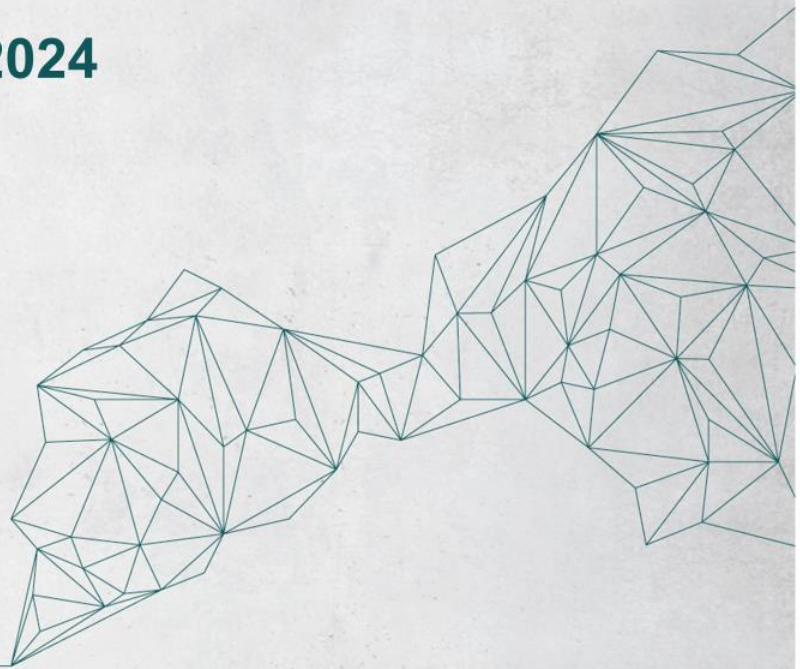


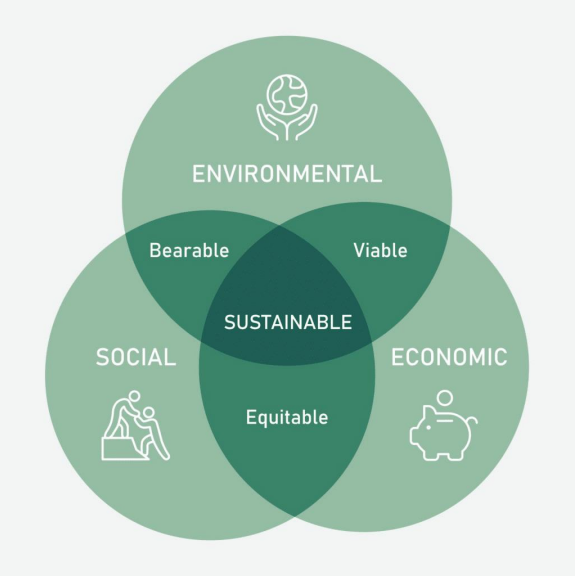
BACK-UP SLIDES

Is the green transistion really urgent?

- Approximately $44 trillion of economic value generation – more than half of the world's total gross domestic product – is moderately or highly dependent on nature.

- "Meeting the needs of the present without compromising the ability of future generations to meet their own needs."

  Definition of sustainability by United Nations Brundtland Commiss



*New Nature Economy report
**https://unfoundation.org/who-we-are/our-board/gro-harlem-brundtland-norway-vice-chair/
The 3 Pillars Of Sustainability (gevme.com)

Do we really need cooling and heating?

- High modern living standards to secure:
- Fresh food
- Medicine
- Data and communication
- Independency of fossil fuels

- This all requires cooling and heating

- Cooling and heating requires a refrigerant

- Everybody should have same possibilities - it requires changes

Refrigerants total effect – Green House Gases

- Refrigeration ranked as number 1 solution
- (Project Drawdown, 2017)
- (Project Drawdown 2022 – refrigeration split in 2)

- Refrigerant management
  - Phase out HCFCs
  - Introduce low-GWP and energy efficient alternatives
  - Control leaks of refrigerants
  - Ensure recovery/recycling and destruction of refrigerants at end of life

- Natural refrigerants
  - Safe for environment
  - Low GWP and low ODP

Refrigeration Management and Alternative refrigerants together still number 1 when it comes to greenhouse emissions reduction potential

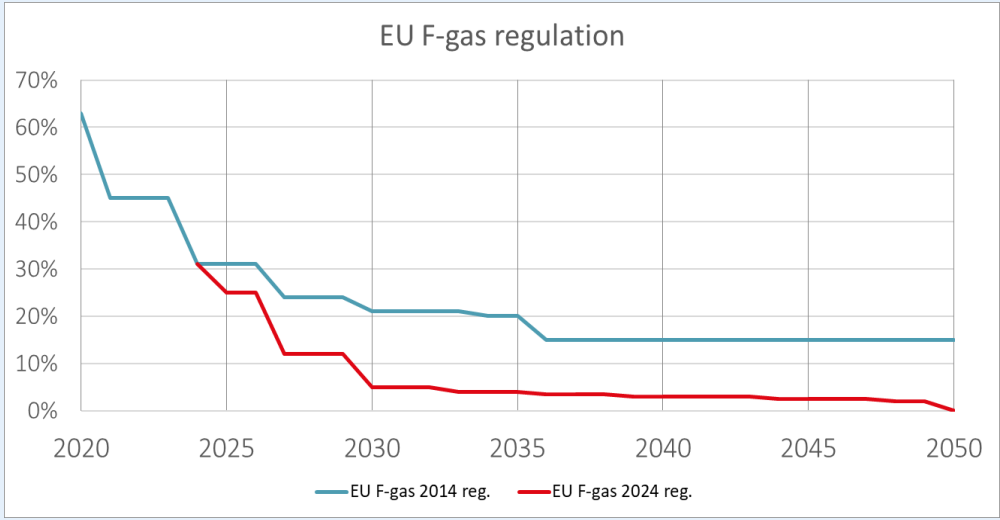
** Gigatons CO2 Eq*

SOLUTION	SECTOR(S)
Reduced Food Waste	Food, Agriculture, and Land Use / Land Sinks
Health and Education	Health and Education
Plant-Rich Diets	Food, Agriculture, and Land Use / Land Sinks
Refrigerant Management	Industry / Buildings
Tropical Forest Restoration	Land Sinks
Onshore Wind Turbines	Electricity
Alternative Refrigerants	Industry / Buildings
Utility-Scale Solar Photovoltaics	Electricity
Improved Clean Cookstoves	Buildings
Distributed Solar Photovoltaics	Electricity
Silvopasture	Land Sinks
Peatland Protection and Rewetting	Food, Agriculture, and Land Use / Land Sinks
Tree Plantations (on Degraded Land)	Land Sinks
Temperate Forest Restoration	Land Sinks
Concentrated Solar Power	Electricity
Insulation	Electricity / Buildings
Managed Grazing	Land Sinks
LED Lighting	Electricity

Source: https://drawdown.org/solutions/table-of-solutions

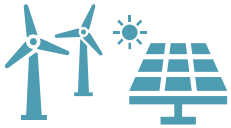
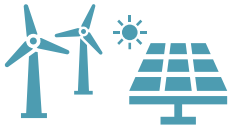
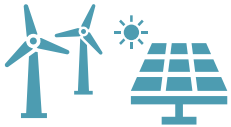
EU F-Gas directive

- The EU F-Gas directive limits and phases out all refrigerants containing F-Gases
- F-Gas focus on global warming potential (GWP)
- Quota based system
- 2024 update - Heat pumps and small systems are no longer exempted



Source EUR-LEX

Possibilities with electrified alternatives

	Electricity from	Energy loss*	Energy remaining	COP	Heat available	Equals X number of households**
Hydrogen	 40 kW →	20 kW →	20 kW →	0.5	20 kW	
Electricity	 40 kW →	2 kW →	38 kW →	1	38 kW	
Heat pump	 40 kW →	2 kW →	38 kW →	3	114 kW	

*Hydrogen heat loss due to electrolysis, compression & transmission, and H2 boiler. Electricity and heat pump heat loss due to electrical grid transmission
**In this example 1 household's heating need is 19 kW

Use Natural Refrigerants for cooling & heating

	HCFC	HFC	HFC/HFO BLENDS	HFO	NATURAL
Climate effects	✗ ODP 0.05	✓ ODP 0.0	✓ ODP 0.0	✓ ODP 0.0	✓ ODP 0.0
	✗ GWP < 1500	✗ GWP 600-4000	✗ GWP<1500	✓ GWP <10	✓ GWP <1
Environmental effects	✗ PFAS	✗ PFAS	✗ PFAS	✗ PFAS	✓ PFAS free
	✗ Flammable	✗ Flammable	✗ Flammable	✗ Flammable	✓ Non-Flammable
Examples of refrigerants	R22 R123 R142b	(R404A) R407A R410A R407C R134A R32	R448A R452B R513A R454B	HFO-1234yf HFO-1234ze	R744 - CO_2 R718 - Water/steam R729 – Air (R290 - Propane) (R717 - Ammonia)

ODP: Ozone Depletion
GWP: Global Warming Potential