

Termodagen 2022 - Samspel i energisystemet -

Torsdag 20 oktober 2022 - Stockholm



Mer info på: <https://termoinnovation.se/>

TERMO
FRAMTIDENS VÄRME OCH KYLA

 **Energimyndigheten**

Värmepumparnas roll i Europas energiomställning

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Overarching EU-2030 targets (set 2018)

- GHG-Emission reduction 40 %
- Energy Efficiency 32,5 % (measured as a reduction of final energy use)
- Renewable energy 32 %

11 December 2019



The European Green Deal

Europe to become the first climate neutral continent by 2050



- *ZERO POLLUTION*
- *AFFORDABLE AND SECURE ENERGY*
- *SMARTER TRANSPORT*
- *HIGH QUALITY FOOD*

Overarching EU-2030 targets – Legislative measures

1. GHG-Emission reduction ~~40%~~ ^{55%} (aiming at net zero by 2050 and negative beyond 2050)

EU-Emission trading system (ETS)

F-gas regulation

All Directives under revision!

2. Energy Efficiency ~~32%~~ ^{36%} (measured as a reduction of final energy use)

Eco-design regulation and Energy labelling regulation

Energy performance of buildings Directive (EPBD)

Energy Efficiency Directive

3. Renewable energy ~~32,5%~~ ^{40% → 45%} (binding on EU level, non binding on MS-Level)

Renewable Energy Directive III

8 July 2020

European strategy for energy system integration



Circular economy

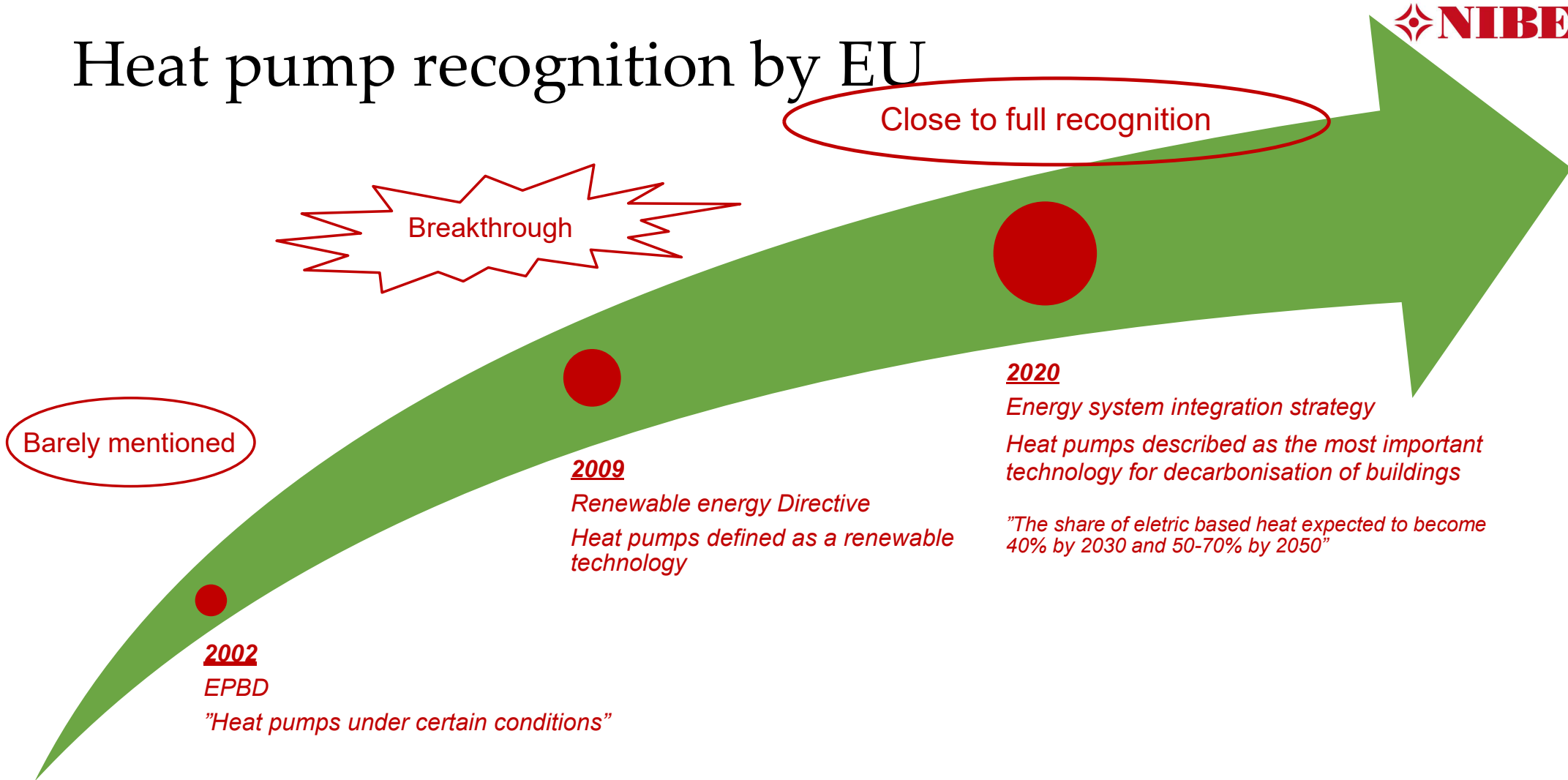
Electrification

*Extensive roll-out of heat pumps
The share of electric based heat expected to become
40% by 2030 and 50-70% by 2050*

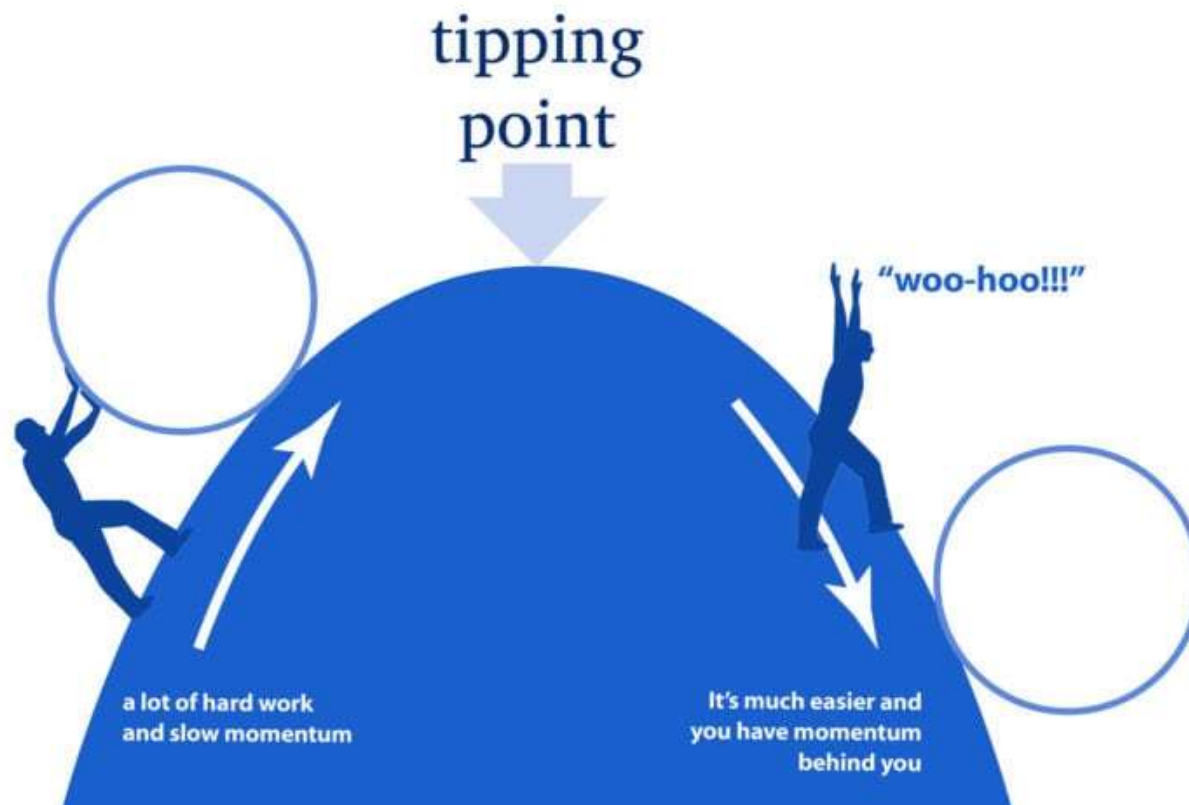
Buildings

Energy flexibility

Heat pump recognition by EU



Recognition from policy makers



18 May 2022

RePowerEU and cut our dependence on Russian gas



#EUGreenDeal

Insights

- EU aims at doubling current deployment rate of individual HPs => cumulative 10 million (hydronic) HPs over 5 years
- EHPA extrapolation to all technologies
- 20 million by 2027 & 60 million by 2030

Boris Johnson 10 point climate plan

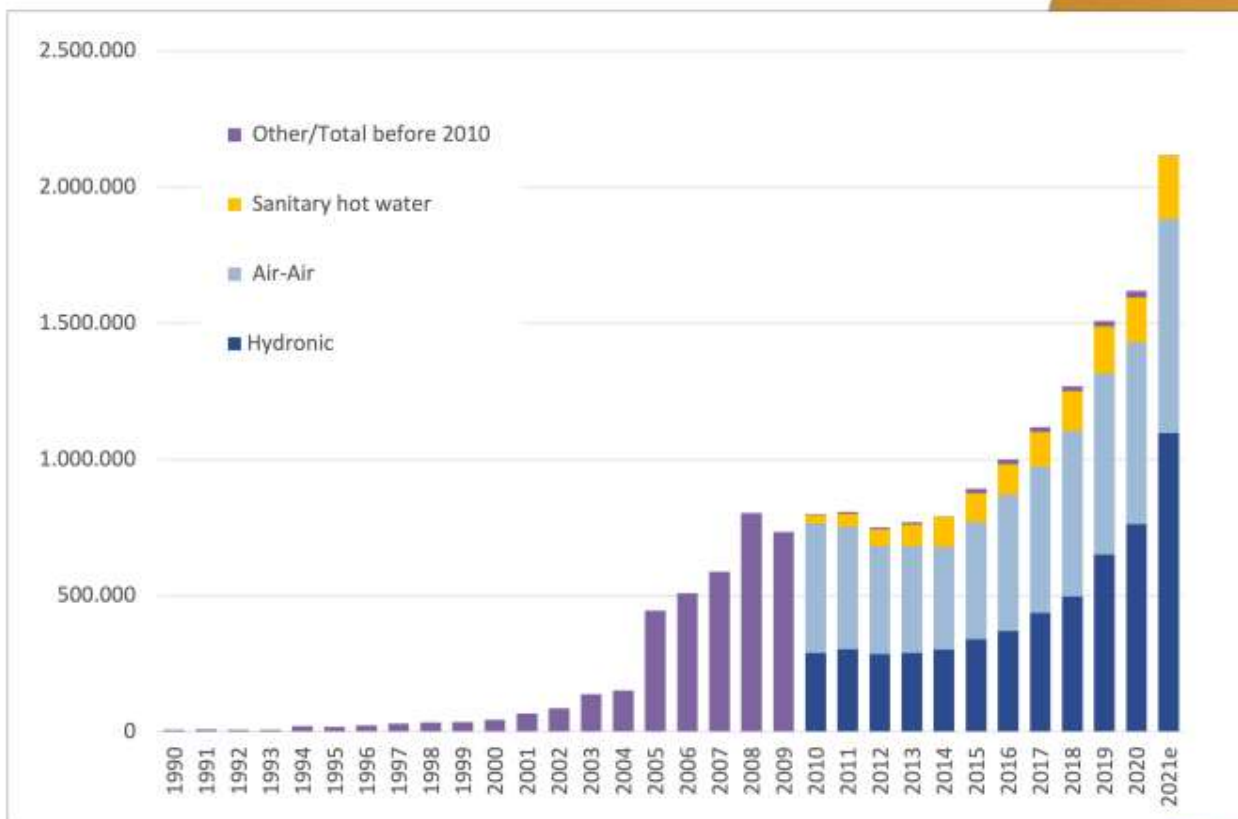
7. Homes and public buildings: Making our homes, schools and hospitals greener, warmer and more energy efficient, whilst creating 50,000 jobs by 2030, and a target to install 600,000 heat pumps every year by 2028.

We want to open the market of homes not on the gas grid to heat pumps or other clean energy alternatives, representing some 50,000 to 70,000 installations a year.¹⁶¹ We will therefore consult in early 2021 over new regulations to phase out fossil fuels in off-grid homes, businesses and public buildings, including a backstop date for the use of any remaining fossil fuel heating systems.

Reducing emissions from buildings will require an annual market for heat pumps by 2028 at least 20 times the size of today's market, a scale which can help realise the economic benefits of a domestic supply chain. We will work with equipment manufacturers, wholesalers and installers to ramp up supply chain capacity and reduced technology and installation costs. In early 2021, we will consult on policy approaches to underpin the development of the UK heat pump market, including voluntary up-take by consumers in current on-gas-grid homes.

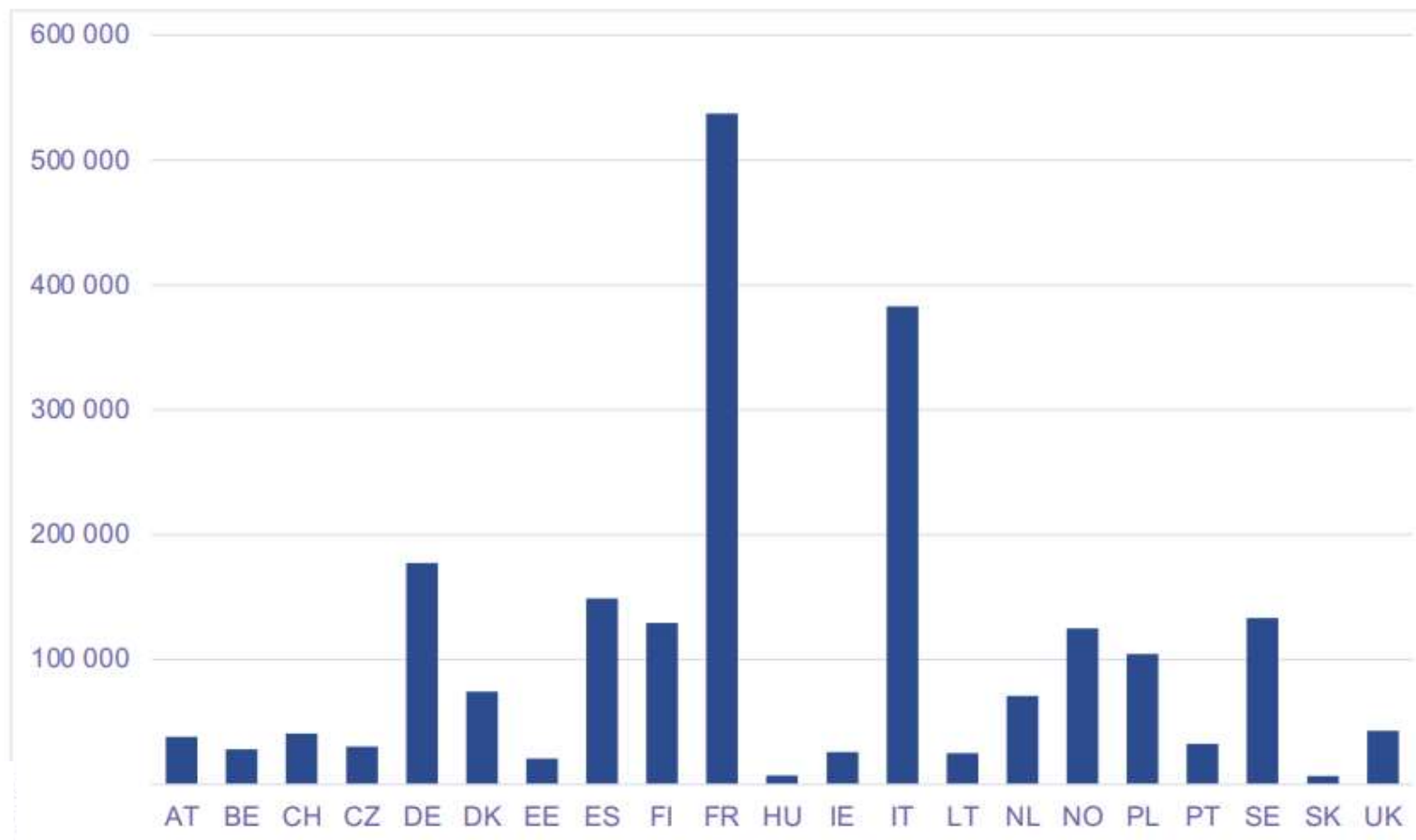


Heat pump sales in 21 European markets



Source: EHPA

HP sales by country | 2021



Heat Pump Market Data H1 2022



Belgium +29,5 % (Q1)



The Netherlands +40 %



France +63,6 % (Q1)



Germany +40 %



Italy +118,3 (Q1) %



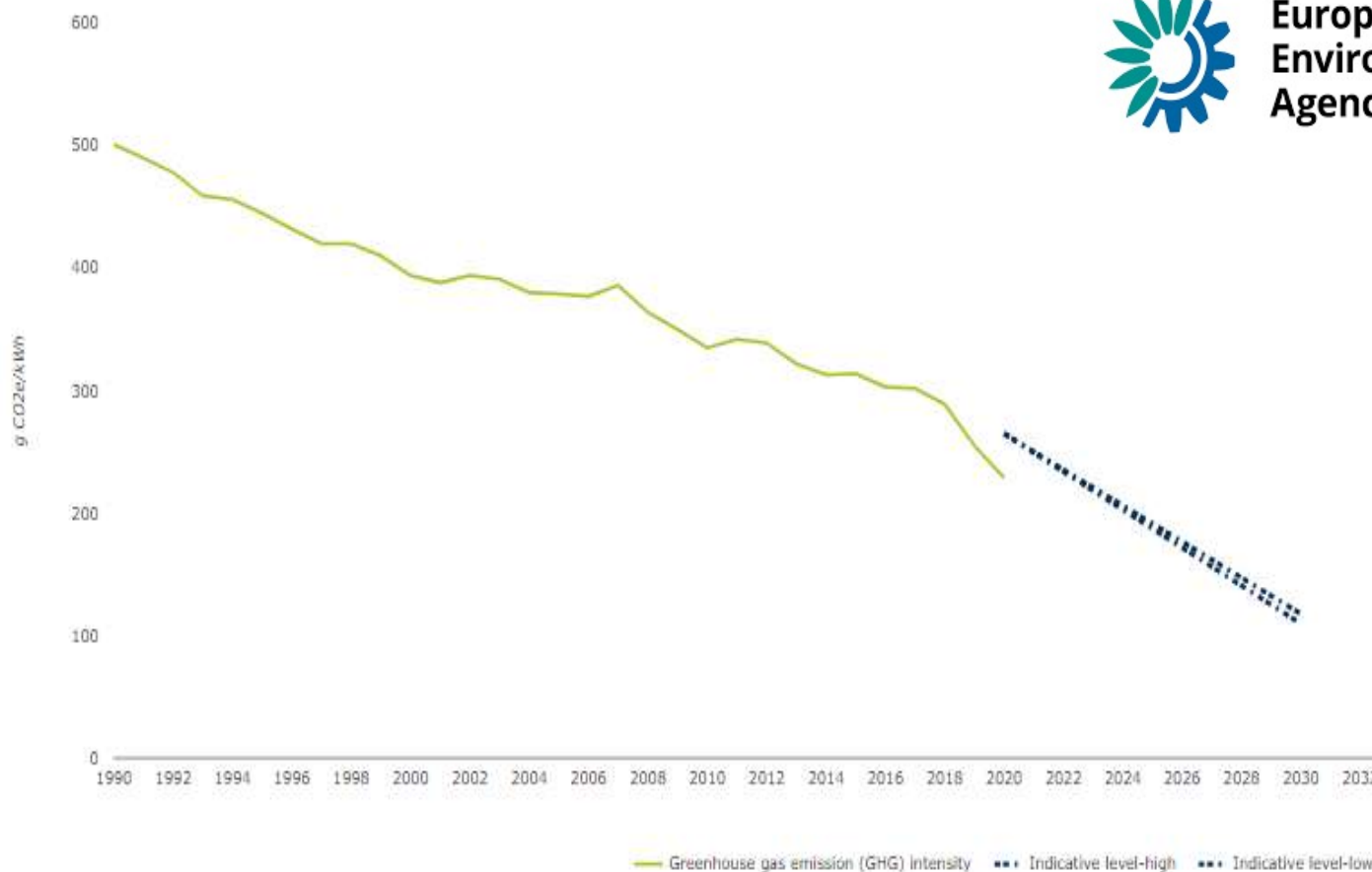
Denmark + 80 %



Poland + 60 %

Greening of the Grid

European level – Greenhouse gas emission intensity of electricity generation



EU power fully decarbonised well before 2050

2000



2021



2030



2035-2040



Source: Eurelectric

Hammarbyverket



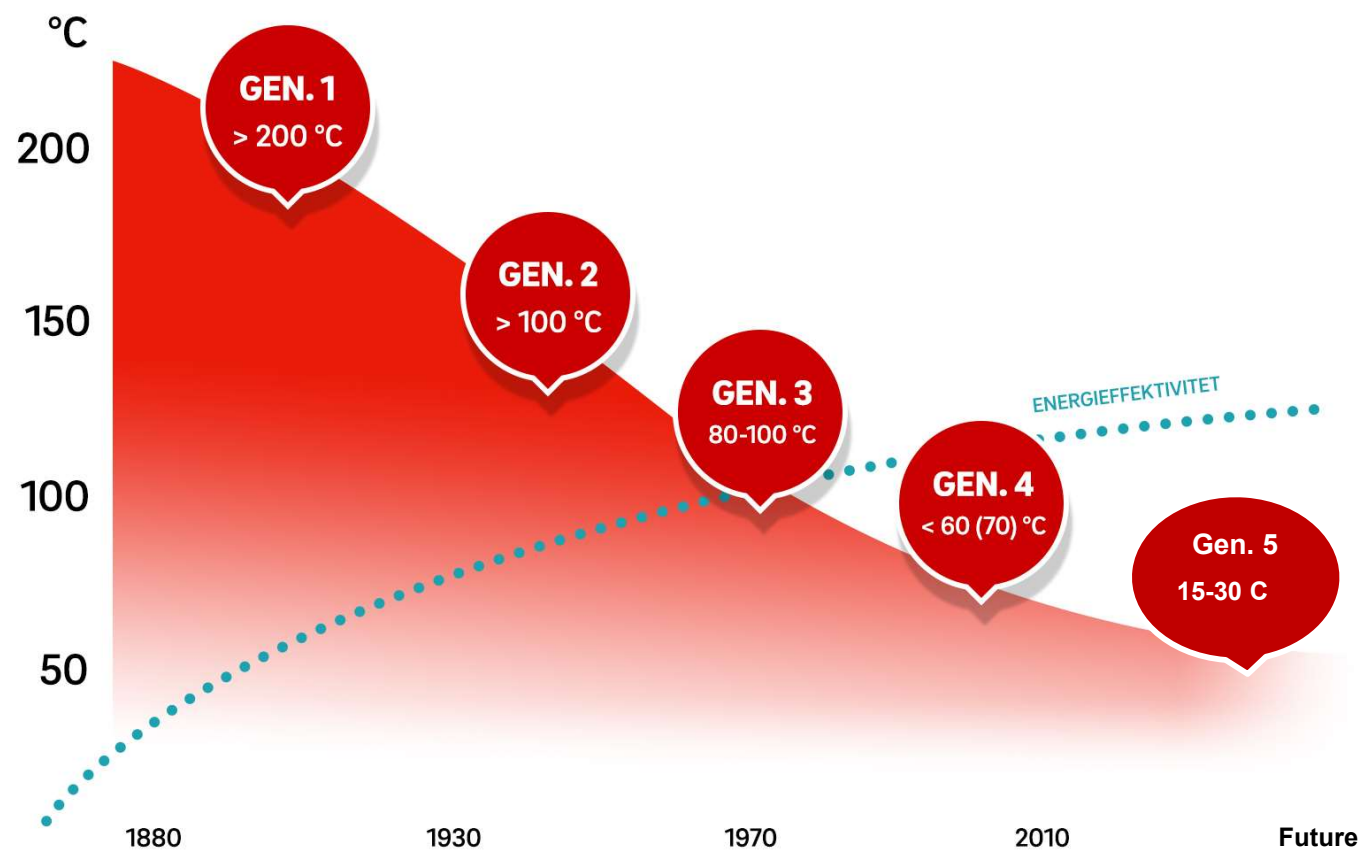
- 7 st värmepumpar
- Totalt 225 MW_{värme}
- Total eleffekt för värmepumpar ca 70 MW_{el}
- Årlig avgiven värme cirka 1 - 1,2 TWh

Världens största värmepumpsanläggning

Verket är världens största värmepumpsanläggning som hämtar värme ur renat avloppsvatten. Med samma teknik produceras fjärrkyla ur det kalla vatten som är resultatet av värmeproduktionen. På så sätt utnyttjas energin maximalt – miljöanpassat och ekonomiskt. Det är ett varmt exempel på kretsloppstänkande och verket är en integrerad del av miljöstadsdelen Hammarby sjöstad.

Källa: <https://www.stockholmexergi.se/om-stockholm-exergi/vara-anlaggningar/hammarbyverket/>

Development of District Heating



Ectogrid – Smart Thermal Grid by EON



ectogrid™

Energirevolutionen är äntligen här



The background of the slide is a vibrant photograph of a tea plantation. The hills are covered in neat, terraced rows of green tea bushes. Several tall, leafy trees are scattered across the landscape. In the upper left, a clear blue sky meets a body of water, likely a lake or sea. The overall scene is bright and lush.

Tack för uppmärksamheten

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