Green Deal challenges growing cities

Future-proofing cities – STARDUST solutions and next steps 7.6.2023

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STARDUST
Enlightening european cities

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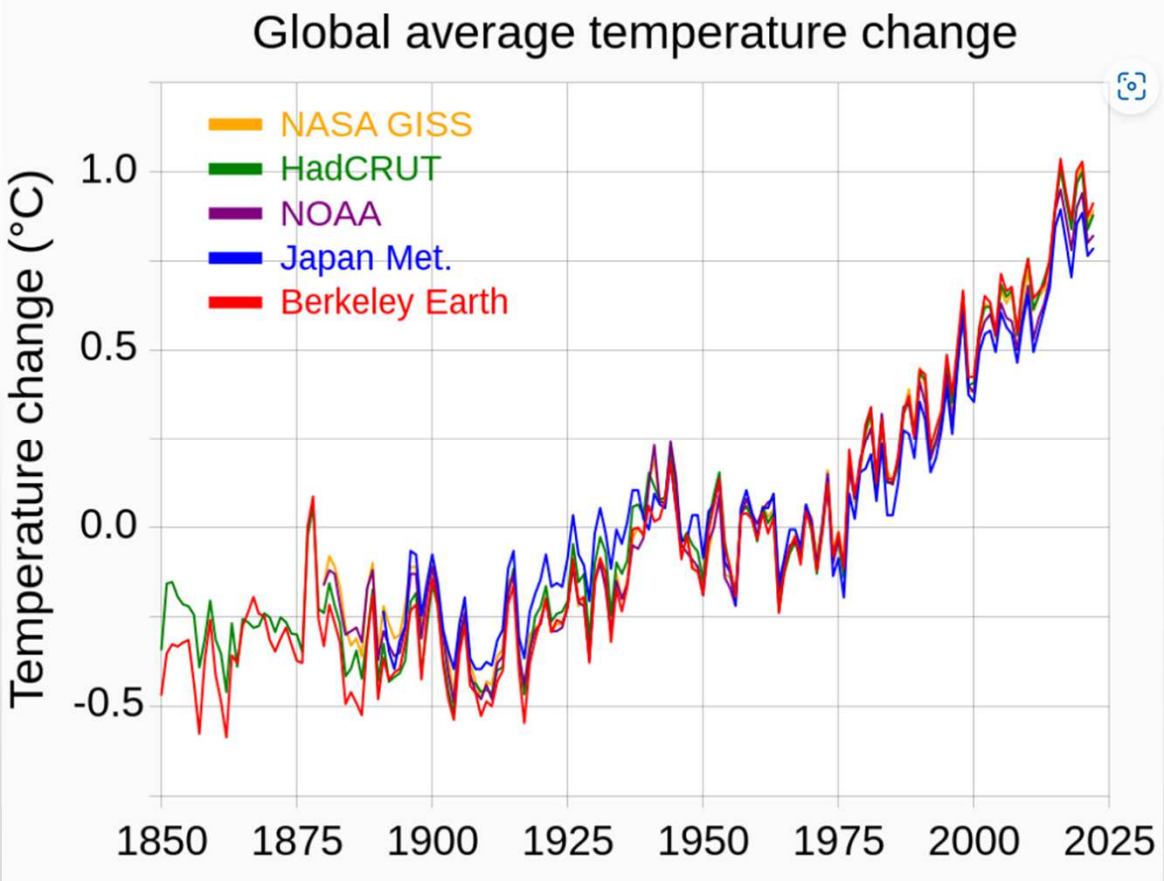
Why


Global average temperature change
NASA GISS
HadCRUT
NOAA
Japan Met.
Berkeley Earth
Temperature change (°C)
1.0
0.5
0.0
-0.5
1850
1875
1900
1925
1950
1975
2000
2025


Russia's war in Ukraine

What

UNITED NATIONS
PARIS CLIMATE AGREEMENT
SIGNING CEREMONY
22 APRIL 2016

Going CLIMATE-NEUTRAL by 2050

Renewable Energy Directive (RED) √

Energy Efficiency Directive (EED) √

Energy Performance of Buildings Directive (EPBD) ?

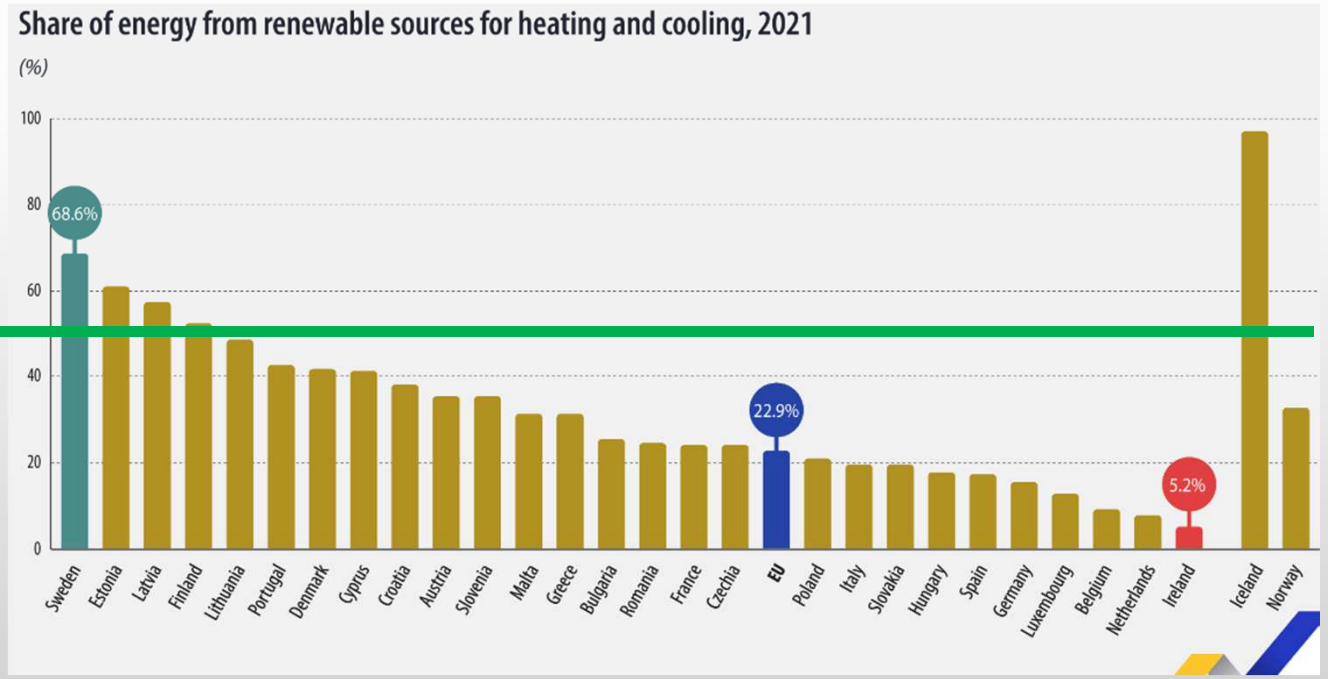
Renewable Energy Directive (RED)

Press release | 30 March 2023

Council and Parliament reach provisional deal on renewable energy directive

- The share of renewable energy in the EU's **overall energy consumption** to **42.5 %.**
- An indicative target for buildings (heating, cooling) is of at least a **49 %** renewable energy share **in 2030.**

49 % in 2030



Energy Efficiency Directive (EED)

A more energy efficient public sector

Public sector: national, regional or local authorities like municipalities

- Reducing its final energy consumption by 1.9 % annually
- Renovating buildings equal to 3 % of public building floor space per year

EPBD – existing buildings ?

Energy classes in EPCs:

- the worst 15 % to energy class G or not ?

Minimum energy performance for each existing building:

- EU Commission E-class E (non-res 2030/res 2033)
- EU Parliament E-class D (non-res 2030/res 2033)
- EU Council Exceeding the weakest 25 % threshold (non-res 2034) Only average D (res 2033)

EU Presidency 1-6.2023 Sweden
EU Presidency 7-12.2023 Spain

EPBD – new buildings

Zero-emission new buildings

- Public buildings from 1.1.2028
- All new buildings from 1.1.2030

Minimum energy performance

- All new buildings should be “solar ready”

New feature to EPC

- Life-cycle GWP by a numeric indicator

Stardust case: Härmälänrannan Sampo

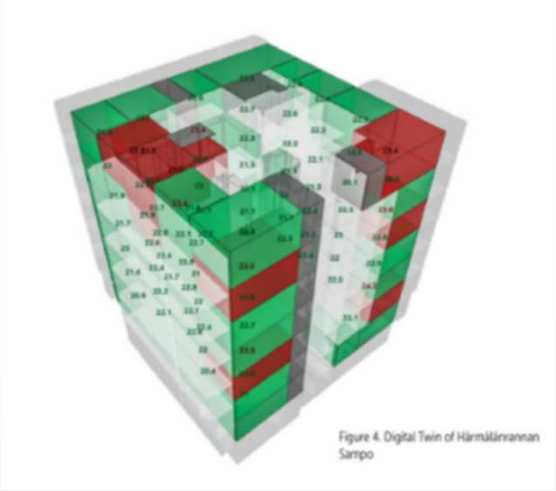


Figure 4. Digital Twin of Härmälänrannan Sampo

- 40 private apartments completed in the 2020. The real building has a digital twin.
- Various options for generating and storing solar energy were explored.
- Decision was solar panels on the rooftop without batteries, due the legislation at the time of construction.

Stardust case: Ilokkaanpuisto

As Oy Auringonsäde A	2022
As Oy Auringonsäde B	2022
ASO Mangrove (num 5)	10/2022
ASO Mangrove (num 6)	10/2022
As Oy Auringonkukka	6/2023
As Oy Auringonpaiste	11/2023

- Six buildings completed in the 2022-2023.
- Housing companies own jointly solar power plant outside the city in rural area.
- Ilokkaanpuisto project developed with Tampere Utility company a net zero concept in which energy production from sunny days is banked for use in the dark months of winter.

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… kuuluu parhaaseen A ryhmään

		
Energy mean	GSHPs PV farm outside city	District heating PV panels on rooftop
E-value $kWh_e/m^2/a$	27-32	73
E-class	A	A
GWP $kgCO_{2e}/a$	9.9-16.0	13.9

Closing words

- We are excited what kind of solution either Sweden during June 2023 or Spanish during autumn will end up with EPBD in terms of content
- Based on preliminary information, the challenge will be more enormous on the part of existing buildings than in new buildings
- Stardust new building cases show that future construction is already here. Technology and competencies exist. Still, awareness of clients is needed.

THANK YOU

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