2030 NEUTRALPATH

NEUTRALPATH: direct and indirect emissions of Positive Energy Districts

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The role of buildings on the way of making our cities and communities more sustainable

Europe’s building stock, which includes both residential and commercial buildings, is responsible for nearly half of the EU's primary energy consumption and more than a third of its CO_2 emissions.

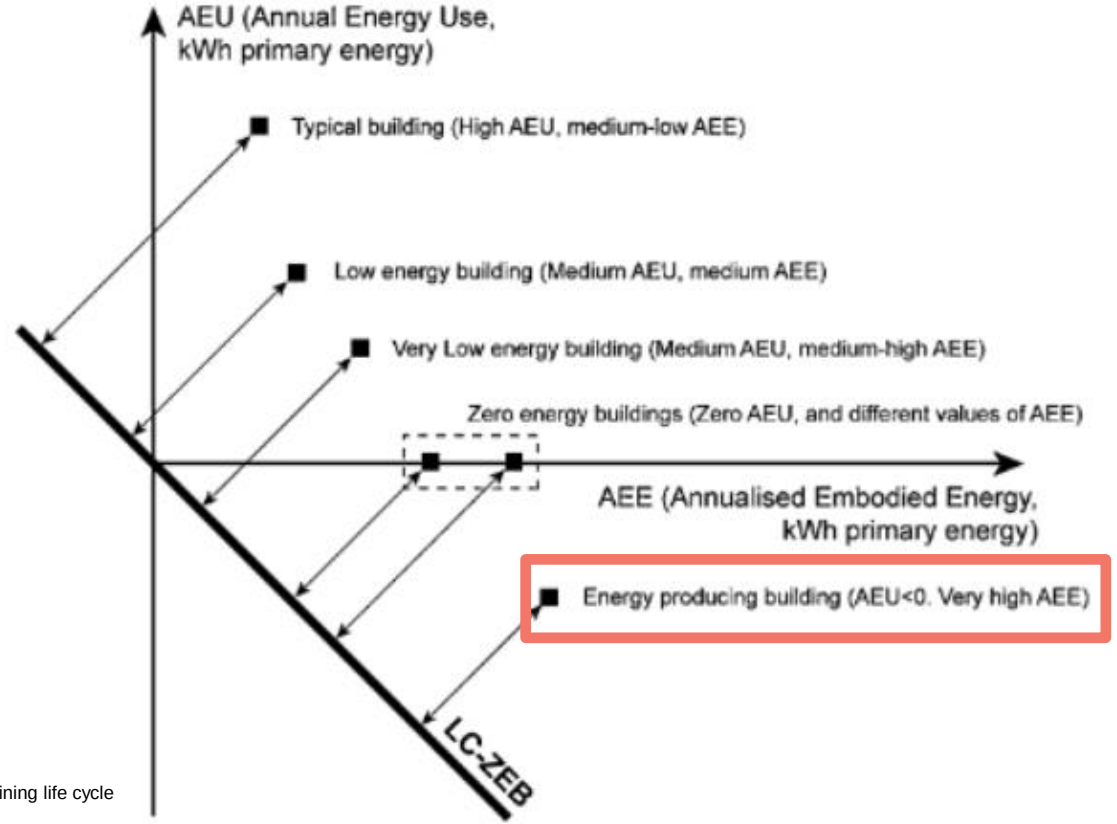
The building sector is crucial for achieving the EU's energy and environmental goals.

The priority is the design and construction of new or retrofitting of existing buildings as zero-emission/zero-pollution, positive energy-buildings in sustainable green neighbourhoods.

The role of buildings on the way of making our cities and communities more sustainable

Life cycle zero energy buildings (LC-ZEB)

"A LC-ZEB can now be redefined as one whose annualized life cycle energy is zero."



Source: Patxi Hernandez, Paul Kenny, From net energy to zero energy buildings: Defining life cycle zero energy buildings (LC-ZEB), Energy and Buildings, Volume 42, Issue 6, 2010

The role of buildings on the way of making our cities and communities more sustainable

Life cycle zero energy buildings (LC-ZEB)

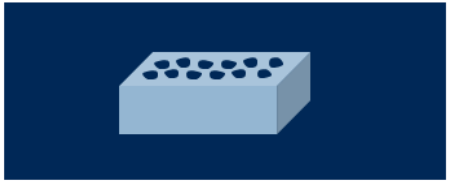
Sustainable building = a balance between

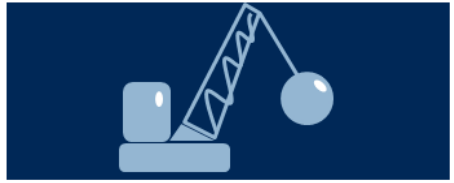
- The production of materials
- Their energy and material consumption during the construction and/or refurbishing of buildings
- The use of the necessary natural resources

Reuse and recycling.
Minimizing the transport of the starting materials and products.
Promoting the use of resources available in local areas.

The role of buildings on the way of making our cities and communities more sustainable

Life cycle perspective



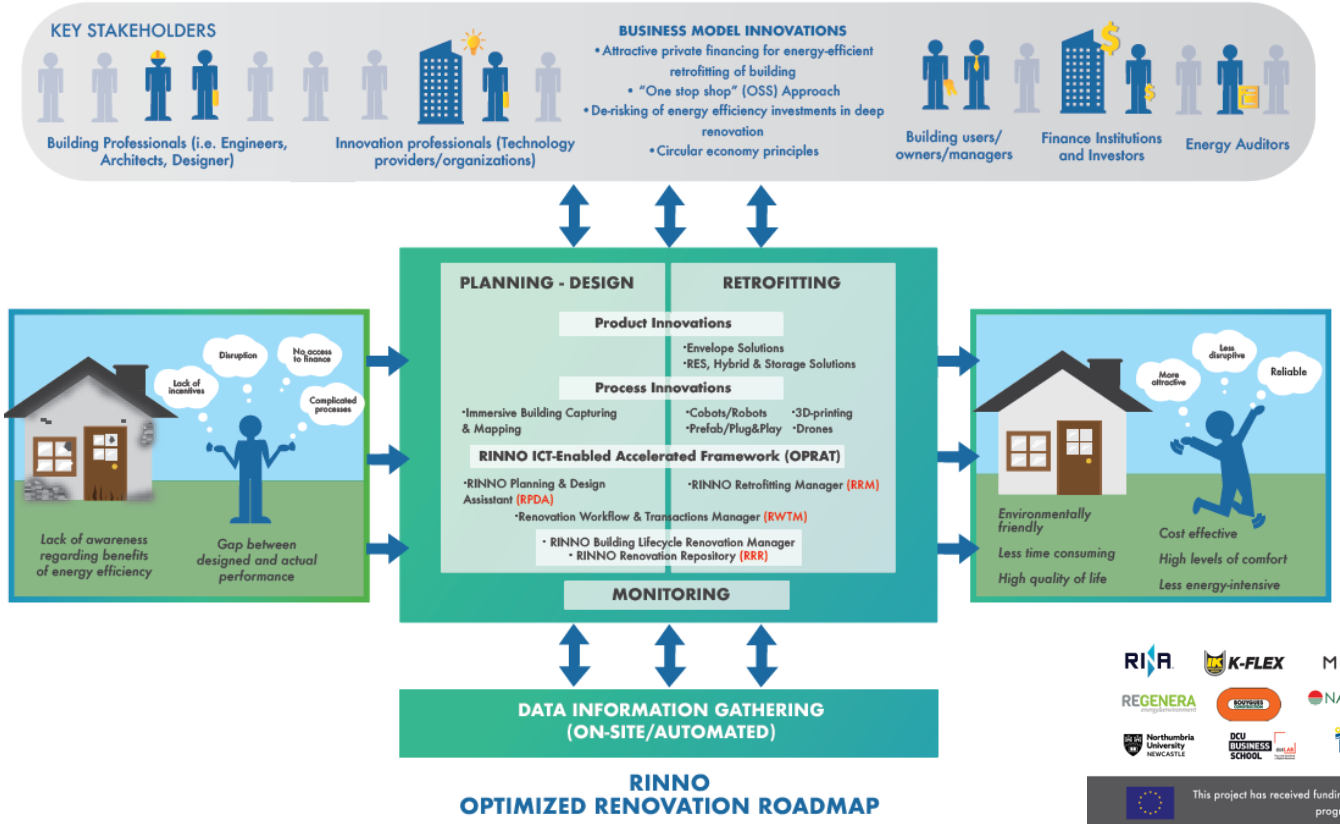
PRODUCTION CONSTRUCTION USE EOL

Life Cycle Thinking approach

Decision-making: selection of the best available technologies to minimise the environmental impacts through their entire life cycle

BUILDING A LOW-CARBON, CLIMATE RESILIENT FUTURE: SECURE, CLEAN AND EFFICIENT ENERGY

Transforming energy efficiency in European building stock through technology-enabled deep energy renovation



RINNO

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NEUTRALPATH project

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NEUTRALPATH aims at demonstrating that positive and clean-energy districts (PCEDs) designed and implemented under participative and human-center principles are cost-effective and feasible solutions to contribute significantly to the cities’ transformation towards climate-neutrality, allowing to speed up the process even to reach SCOPE 2 emissions reduction in 2030.

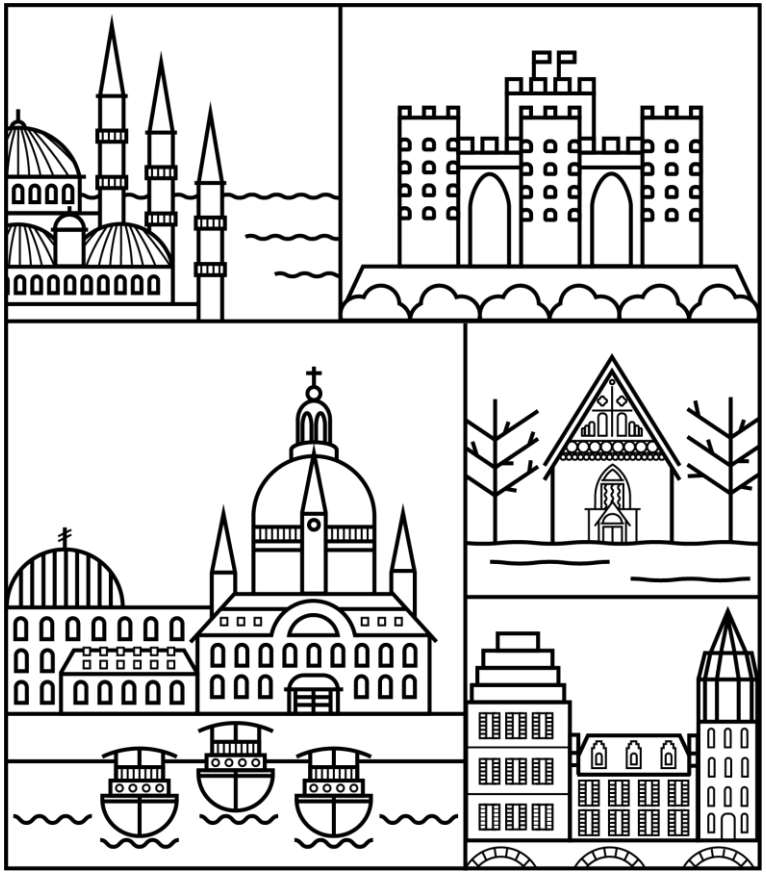
About

NEUTRALPATH contributes to the European mission of achieving at least 100 climate-neutral and smart cities by 2030. It sets an example for other cities to replicate the process themselves by 2050.

Cities

NEUTRALPATH involves five cities. Dresden (Germany) and Zaragoza (Spain) act as frontrunners in the implementation of their PCED, as a fundamental strategy to reach climate neutrality by 2030.

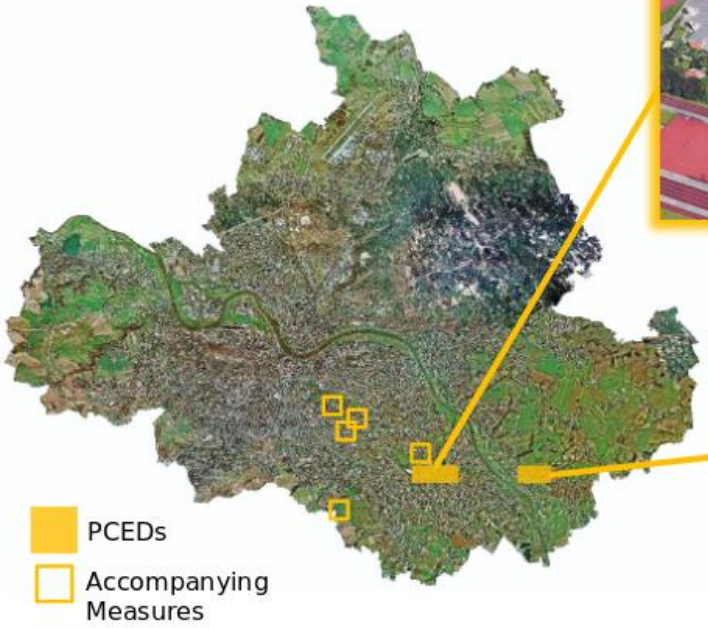
Istanbul (Turkey), Ghent (Belgium), and Vantaa (Finland) are the fellow cities, which will follow the examples of the two frontrunners (known as lighthouse cities) to design their own PCED.



ZARAGOZA

Zaragoza will focus on the reduction of thermal energy demand through façade renovation, window replacement and the use of innovative insulation materials in two residential and four public buildings in the Actur Rey Fernando district.

DRESDEN



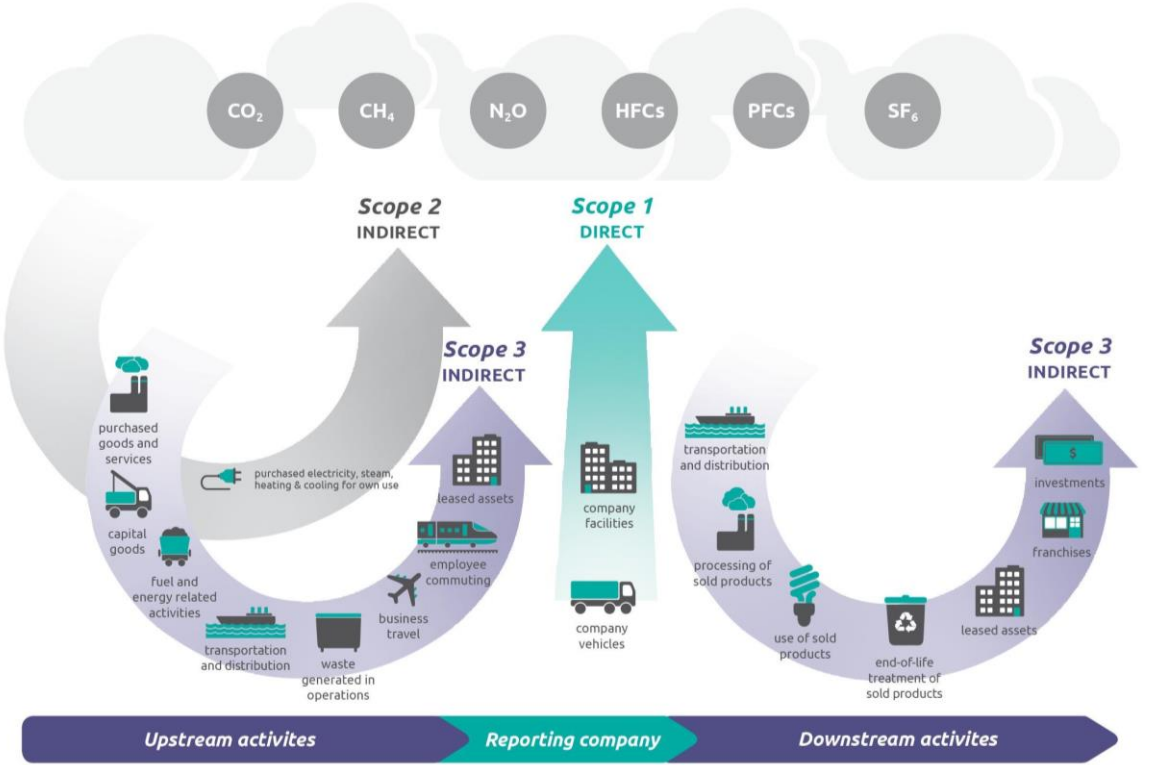
Jessener Straße (Dresden-Leuben)
168 apartments + Supermarket (Netto)

Pillnitzer Landstraße / Van-Gogh-Straße
(Dresden-Pillnitz/Hosterwitz)

Dresden will focus on decarbonising district heating with geothermal energy and waste heat and the development of a low-ex branch from the district heating. The PCED will be developed in two areas involving 17 buildings.

NEUTRALPATH in a nutshell

Direct and indirect emissions of Positive Energy Districts

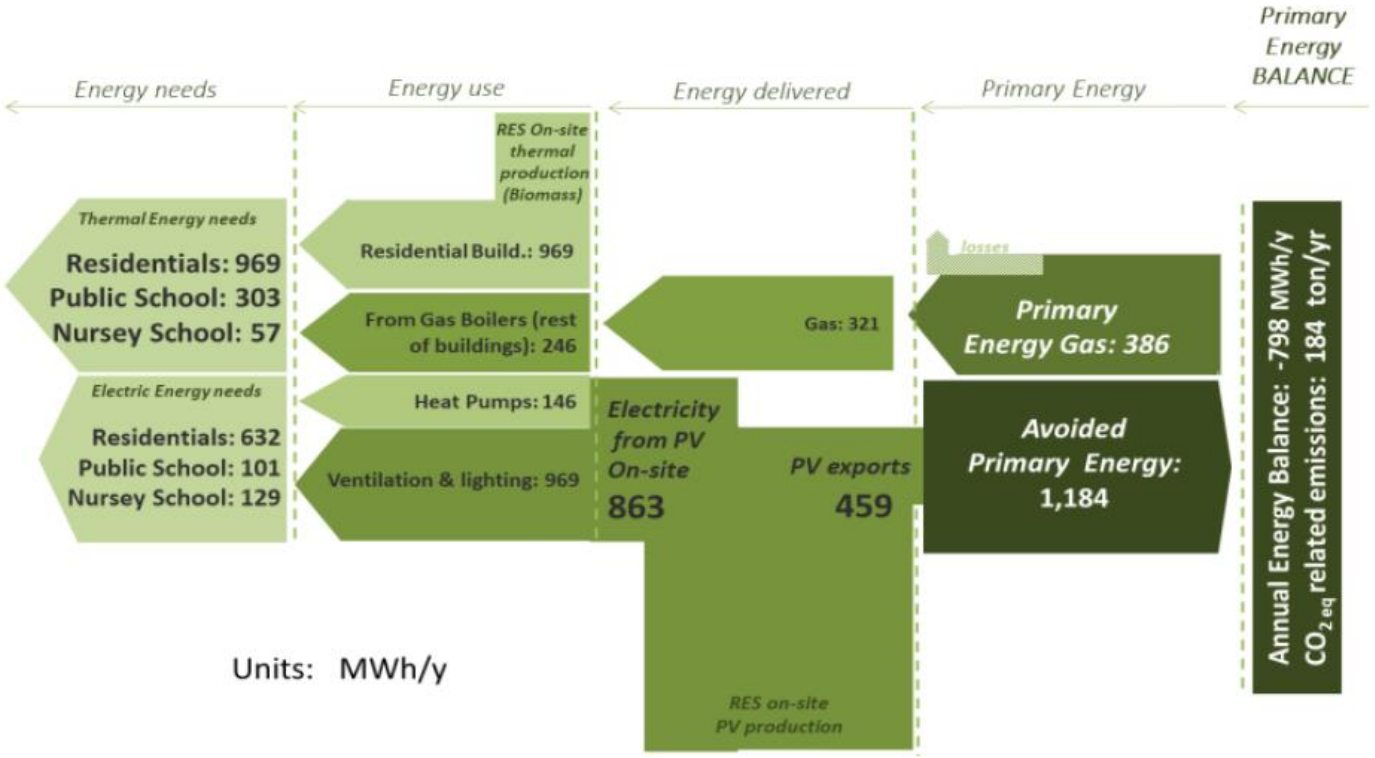


Source: http://www.carbontrust.com/about-us/press/2013/04/carbon-trust-ghg-protocol-pragmatic-guidance-scope-3-emissions-measurement

Direct and indirect emissions of Positive Energy Districts

Scope 1:
- Fuel combustion

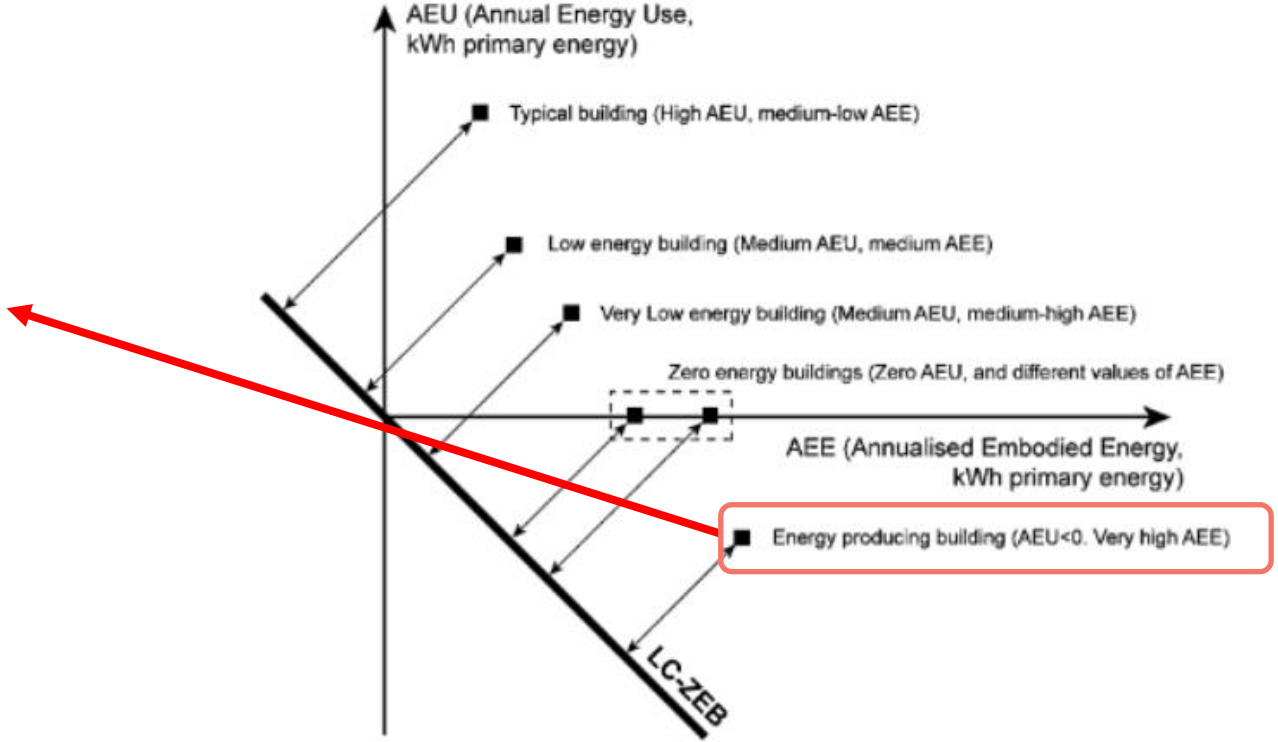
Scope 2:
- Electricity + purchased heating&cooling



Direct and indirect emissions of Positive Energy Districts

Other indirect categories:

- Production of materials
- Energy and material consumption during the construction and/or refurbishing of buildings (+transportation)
- Urban mobility (eMobility)



Some conclusions

LCA of products

Data (LCA results) of products is needed:

- ISO 14067 Carbon footprint of products
- Environmental Product Declarations

Digitalization

- Digital twins
- BIM
- ICT
- Monitoring

Carbon footprint

- Suppliers
- Urban level (municipalities)
- Scope 3

Thank you!

2030
NEUTRALPATH