

# ECOFYS



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## **Choosing Pathways for Future Buildings: Cost optimality and future energy performance requirements in the EU**

**36th Euroheat & Power Congress, 27-28 May 2013, Vienna, Austria**

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# Energy performance requirements in the EPBD

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The first version of the Energy Performance of Buildings Directive from 2002 demanded Member States to have a scheme to calculate the energy performance of buildings. It did not fix an ambition level.

Within the EPBD recast, two topics deal with performance levels:

- “cost optimal requirements” for new buildings and for renovation
- „Nearly zero energy buildings” for new buildings as from 2019 (new public buildings) respectively 2021 (all new buildings)

# The (political) vision

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Cost optimal requirements



nearly zero energy

# Derivation of cost optimal levels

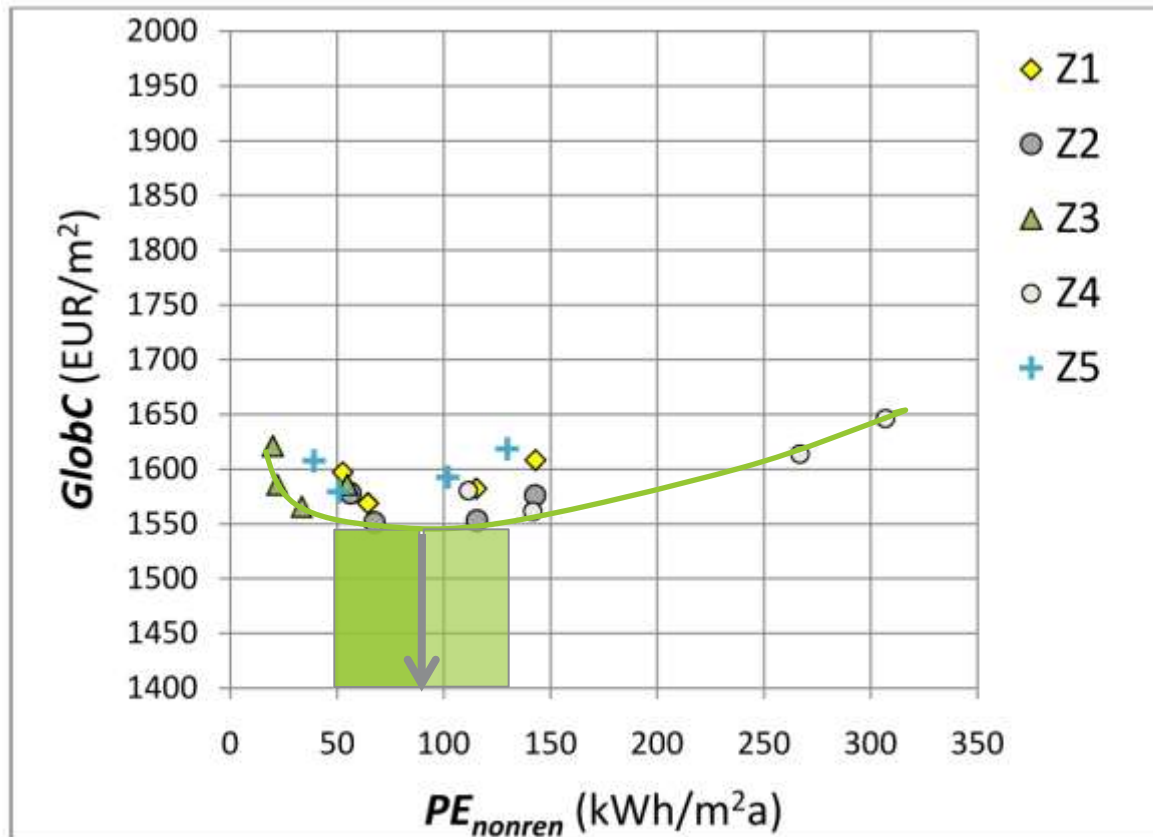


Figure 2 Global costs related to non-renewable part of primary energy for reference building in 20 variants (basic case)

Source calculation example: Czech Technical University in Prague for JRC

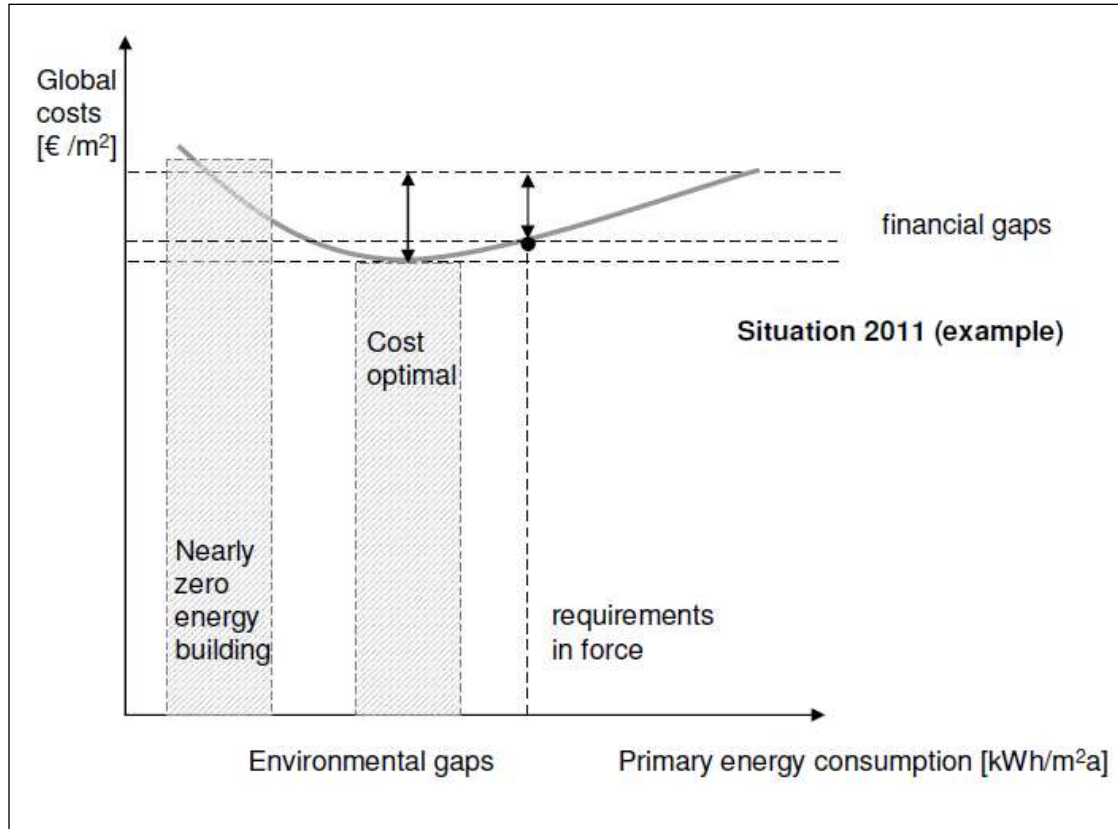
# Nearly zero energy building definition in the EPBD

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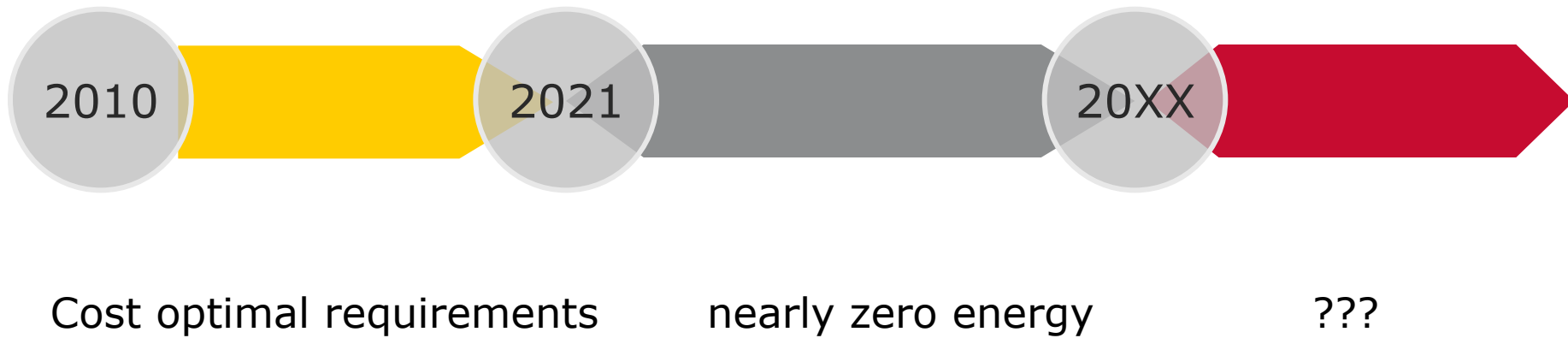
'nearly zero-energy building' means a building that has a very high energy performance [...].

The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby.

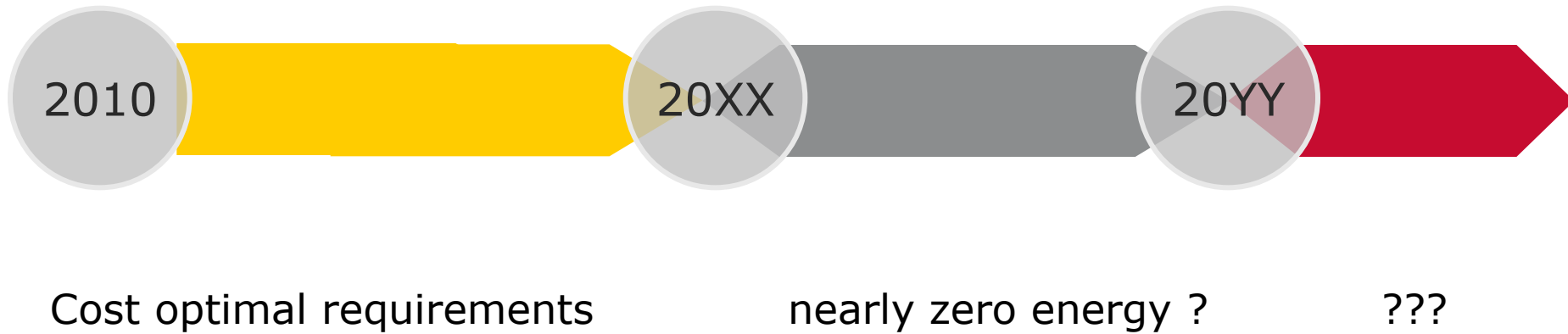
# Towards cost optimal nZEBs



# Timelines – new buildings



# Timelines - retrofit





# Scenarios until 2050 – final energy

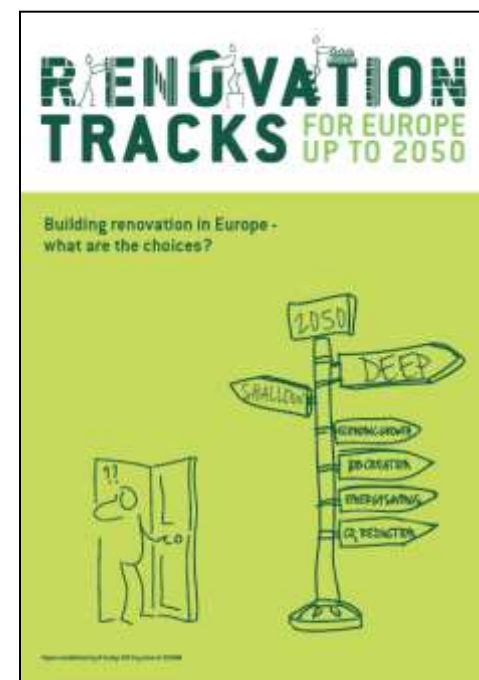
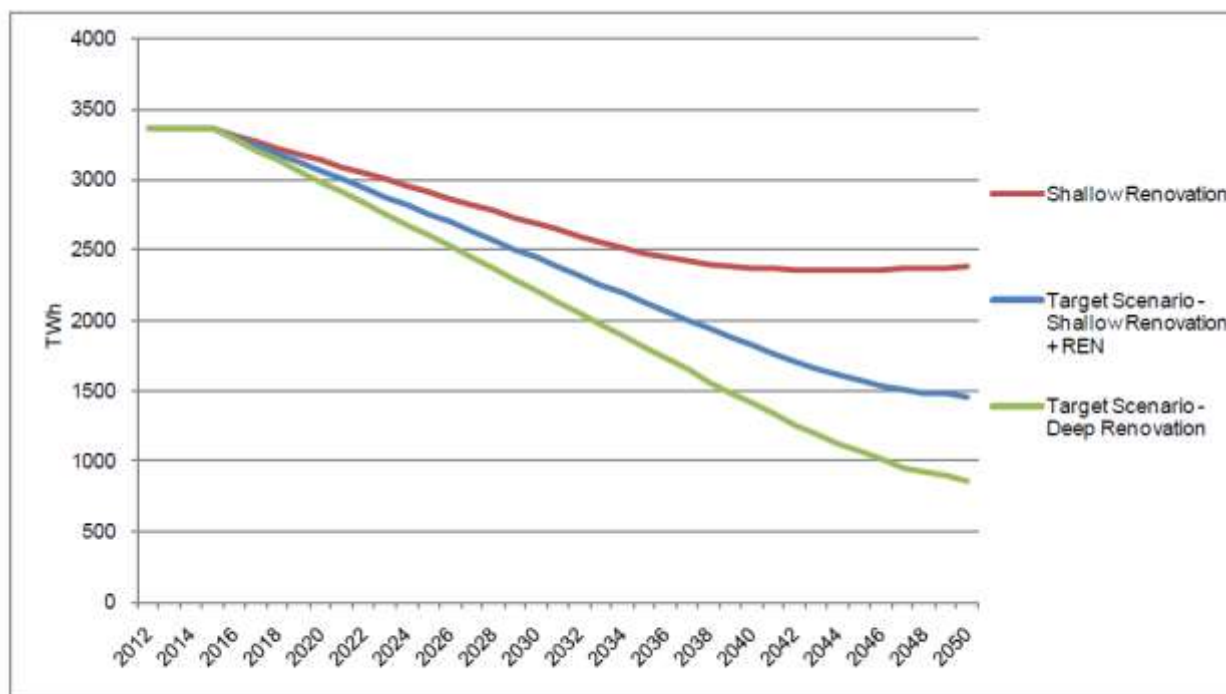


Figure 22 Final Energy for space heating and domestic hot water EU27 [TWh/a] without new buildings

Source: Renovation tracks for Europe up to 2050, Ecofys for Eurima, 2012

# Future thermal demands in buildings: the role of DHC

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- Demand for heating, domestic hot water and cooling will not be zero, also not in 2050. Smart solutions for energy supply are still needed in our future energy system.
- Infrastructure for DHC needs to be feasible despite lower use of energy -> high density areas, existing grids, cluster of buildings.
- DHC can bring the required renewable energy to nearly zero energy buildings.

# Thank you!



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