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What is a nearly zero energy hotel?

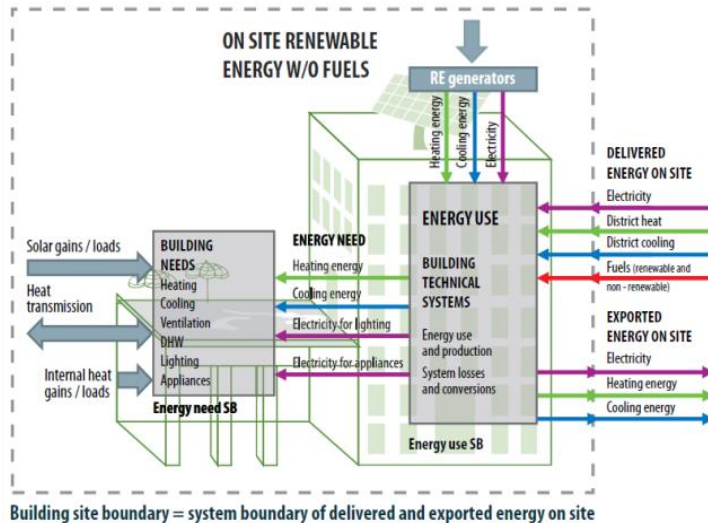
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11/09/2015, neZEH workshop in CLIMAMED 2015, Juan-les-Pins, France



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EPBD perspective

- ❑ No MS level nZEB definitions and reference values
- ❑ Need for numerical indicators for refurbished nZEB hotel buildings in partner countries for the pilot cases
- ❑ Testing the feasibility of nZEB refurbishment in pilot hotels

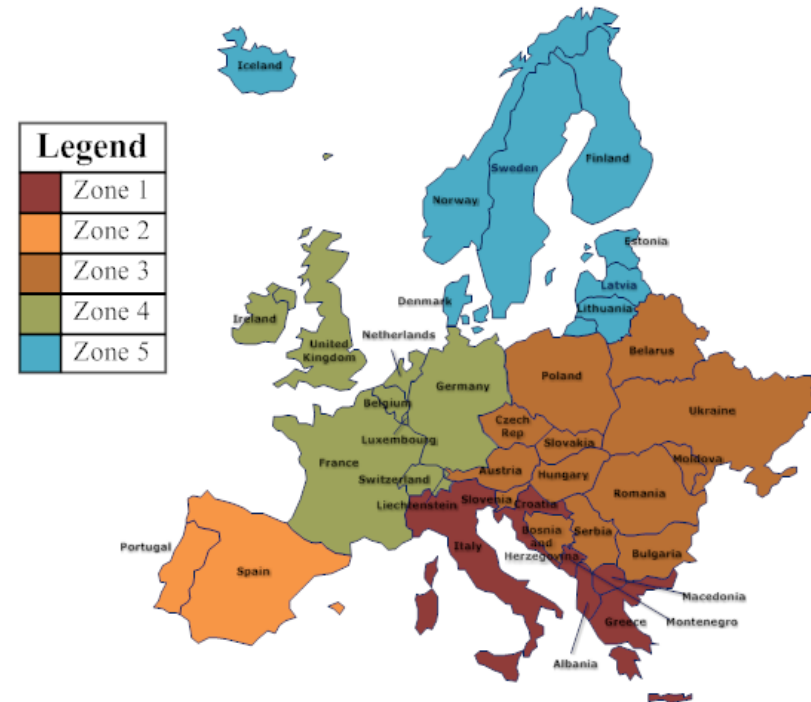
Hotels' perspective

- ❑ Existing voluntary eco-certification schemes for tourism sector based on environmental impact of the accommodation industry
- ❑ Holistic approach, not building energy performance related criteria
- ❑ Sustainability is a marketing tool creating market advantage



- ❑ nZEH benchmarks (EP, RES%) for 5 European climatic zones
- ❑ Energy use data of existing building stock, achievable deep renovation energy savings, existing nZEB definitions considered
- ❑ neZEH benchmarks defined for hotel's hosting function all energy end uses
- ❑ Extra EP amount added due to higher cooling and ventilation need of hotels
- ❑ 30% increase of final EP values for refurbished hotels

Map of European climatic zones



EP requirements for nZEH in partner countries

No.	Country	Primary energy indicator - new built [kWh/m ² ·a]	Primary energy indicator - renovated [kWh/m ² ·a]
1	Croatia	77	100
2	France	115	150
3	Greece	76	99
4	Italy	71	93
5	Romania	80	104
6	Spain	72	94
7	Sweden	134	175

RES % for nZEH in different climatic zones

No.	European climate zone	RES [%]
1	Zone 1 (Southern)	50
2	Zone 2 (Southern)	50
3	Zone 3 (Central)	35
4	Zone 4 (Western)	35
5	Zone 5 (Nordic)	25



- The benchmarks are calculations based on existing reference values, EU level studies, projects and databases.
- The primary energy use of existing hotels hosting function (2008 level building stock) was reduced by factor of 4 in average (cc. 75%).
- Values refer only to the hosting function. Other energy uses, which will increase the actual nZEH primary energy indicator values, need to be assessed case by case.



How to use neZEH benchmarks



5 pre-audits
for potential
pilots

General suggestions on the possible measures to be implemented

2 audits
for pilots

Specific suggestions on the possible measures to be implemented

neZEH
benchmarks!

2 feasibility
studies
for pilots

Definition and preliminary energy and economic **evaluation** of the measures
to be implemented

In the feasibility study

several design options were evaluated in terms of costs and energy performances.

These results are compared to the **neZEH benchmarks to define which solution can lead to the nZEB level** and to check whether the chosen ones are convenient and/or affordable for the hotelier.

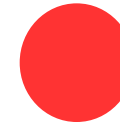


EXAMPLE OF APPLICATION

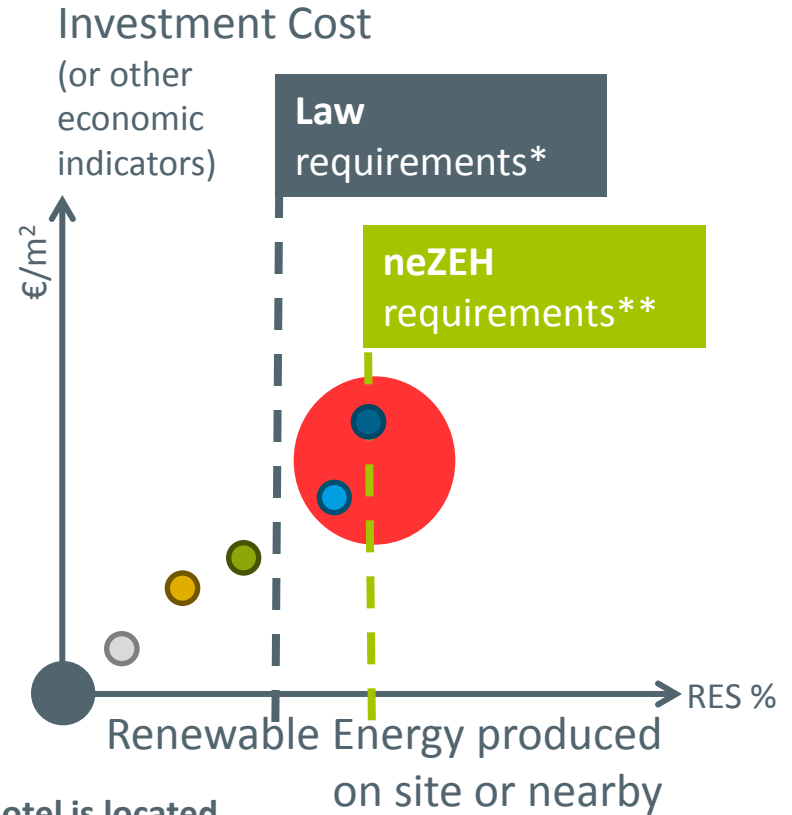
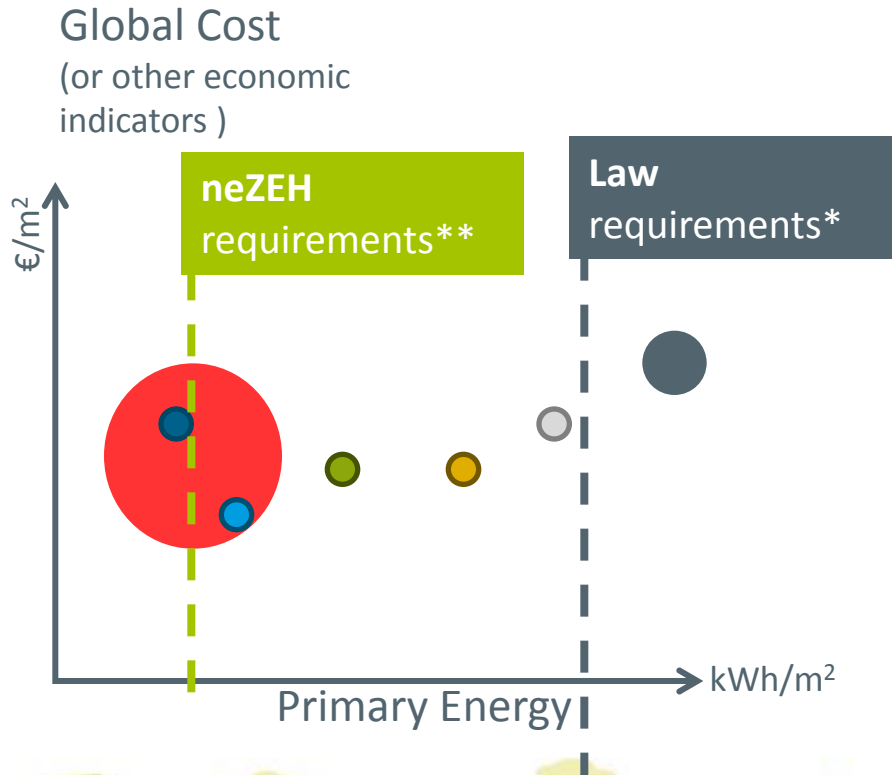
INITIAL DESIGN



DESIGN OPTIONS



SOLUTIONS COHERENT WITH neZEH



* National requirements of the country where the hotel is located

** neZEH requirements of the Climatic Zone where the hotel is located



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PROJECT COORDINATOR



TECHNICAL UNIVERSITY OF CRETE (TUC)
SCHOOL OF ENVIRONMENTAL ENGINEERING
RENEWABLE AND SUSTAINABLE ENERGY
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