The implemention of the EU Buildings Directive in Austria



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The Region of Upper Austria Oberösterreich

OBERÖSTERREICH

- Capital: Linz
- Population: 1.4 million
- Area: 12,000 km²
- Gross inland cons: 300 PJ; 35 % renewables
- Economic activities: industry, service sector, Upper Austria tourism, 25% of the Austrian industrial exports









OÖ Energiesparverband

OÖENERGIESPARVERBA

Organisation

- energy agency of Upper Austria
- founded (in 1991) and mostly funded by the regional government
- promotes energy efficiency and renewable energy
- provides services to private households, public bodies & businesses



Services

- Energy advice (10,000 sessions/a)
- Building certification (>100,000 buildings rated since 1993)
- Training programmes
- Management of regional subsidy programmes
- Public awareness campaigns, events, publications
- Pilot projects
- Municipal energy strategies
- European cooperation
- World Sustainable Energy Days
- OEC network



Renewable energy & energy efficiency Energy Action Plan of Upper Austria

- Share of renewable energy:
- 35 % of total primary energy demand(16 % biomass, 14 % hydro,5 % solar & other renewables)
- Share of renewable energy:
- 50 % of total heating demand > 80 % of total electricity demand
- Avoided imports of fossil fuels: > 1 billion Euro per year

Energy Action Plan:

By 2030, all electricity and space heating will come from renewables!

- ➔ reduction of heat demand by 39 %
- → reduction of electricity demand by 0.5 %/year
- ➔ minus 65 % CO₂ emissions





Member States must draw up national plans for **increasing the number** of NZEBs which include - among others:

the **definition** of **NZEBs**, reflecting their national, regional or local conditions, and including a **numerical indicator of primary energy** use expressed in kWh/m² per year.

In Austria, joint **implementation by the 9 regions**, supported by the OIB (joint institutes of the regions).







Defined energy performance indicators in Austria



Why 4 indicators?

- Looking at the overall efficiency of buildings is complex!
- Different needs need to be satisfied

HWB (heat demand): insulation levels (thermal quality of the building)PEB (primary energy demand): use of resources CO_2 : climate protection f_{GEE} (total energy performance factor): energy performance (costs)





Primary energy -> final energy -> heating energy demand



Variations to achieve similar energy performance



National Plan – Austria Example new homes

	HWB _{max} [kWh/m²a]	f _{GEE,max} [-]	PEB _{max} [kWh/m²a]	CO _{2max} [kg/m²a]
2014	16 × (1 + 3,0 / ℓ _c) 54	0,90	190	30
2016	$14 \times (1 + 3,0 / l_{c}) \overset{(48)}{48}$	ler 0,85	180	28
2018	$12 \times (1 + 3,0 / \ell_c) \underbrace{41}_{00}$	ler 0,80	170	26
2020	$10 \times (1 + 3,0 / \ell_{c}) 34$ oc 16 × (1 + 3,0 / \ell_{c}) 54	der 0,75	160	24





Cost – optimal levels



Österreichisch es institut für Blautechnik

OIB-Richtlinie 6

OiB - Dokument

zum Nachweis der

Kostenoptimalität

der Anforderungen der OIB-RL6 bzw. des Nationalen Plans gemäß

Artikel 4 (2) zu 2010/31/EU

Cost-optimal levels of

minimum energy performance requirements

Dieses Rahmendolament baelert auf den Berähngsengebresen der von der Landesantsdirektereitung konsonteinung der Umsetzung der RICHTLINIE 2010/31EU DES EUROPA/ISOCHEN PARILAMENTS UND DES RATES vom 19. Mal 2010 über die Gesam Herregileitlicher und Gestunden eingeleszten Läudereperteingruppe in der Vertrindingslabile der Bundesander und des Sacherstän digerberatals für bautechnische Richtlinfen – Untergruppe Ehergileinsparung und Währmeschutz (SVBBTRL 6) im Österreichische Institt für Bautechnik.



OIB-Rahmendokument zum "Nachweis der Kostenoptimalität der Anforderungen der OIB-RL5 bzw. des Nationalen Plans" gemäß GEEG-2010 Stand 17. März 2013

Selfe 1 von 151



NZEB combine energy efficiency and renewables



Many combinations possible: more efficiency - more renewables

Separation of "insulation" and "heating systems" has come to an end





Examples from Upper Austria (1): Single-family home







Examples from Upper Austria (2): Single-family home



biomass heating *OR* heat pump *AND* PV *OR* gas condensing boiler *AND* solar thermal *OR* district heating





Examples NZEB-buildings (1)

- Public building (school building), Altmünster, Upper Austria
- treated floor area: 13,000 m²
- heat demand: 15 kWh/m²a
- 400 kW wood chip boiler
- solar thermal collectors 90 m²
- 10 kW_{peak} PV







Examples NZEB-buildings (2)

- One-family house
- prefabricated elements
- heat demand: 5 kWh/m²a
- ventilation system with heat recovery
- 15 m² solar heating system,
 10 kW wood pellet stove







Examples NZEB-buildings (3)

- Multi-family building (social housing)
- 9 flats, low energy building standard
- heat demand : 21 kWh/m²,a
- 50 kW wood pellet heating system
- 22 m² solar thermal collectors







TAG DER OFFENEN TÜR IN NIEDRIG TENERGIEHÄUSERN

1,090 visitors

Der OÖ Energiesparverband lädt ein!

HEUTE SCHAUEN – MORGEN BAUEN: Holen Sie sich Anregungen für effizientes Bauen & Sanieren, über 80 Gebäude öffnen ihre Türen!

more than 80 NZEBs opened their doors

Freitag, 15. 11. 2013 & Samstag, 16. 11. 2013 in ganz Oberösterreich

Anmeldung & Info: www.haeuserschauen.at





- decreasing heat demands per m² → with implications on the choice of heating systems
- higher requirements in the overall system efficiency of heating systems (including distribution systems) → requires more interaction with between building technologies
- **complexity** increases significantly!
- primary energy (and CO₂) becomes slowly a decision making reality on building owner level







- energy performance certificate has step by step fundamentally changed the building market (e.g. for young families thinking about their new single-family homes, energy efficiency and renewables are key elements in their planning process)
- heating installers were quicker in learning about efficient buildings, architects were slower in the uptake of renewables
- policy leadership resulted in numerous leading renewable energy companies (especially in the heating sector): number of employees in the Oekoenergie-Cluster grew from 1,600 to 8,900 in 12 years





Greenhouse gas emissions Austria - buildings



Thank you!



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