The role of cities and regions in the transition to high efficiency buildings

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European Federation of Agencies and Regions for Energy and the Environment

Who we are

- **60** member regonional/local energy agencies and regions
- **25** years
- **18** European countries
- **4** staff members
- based in Brussels

What we do

- **Exchange of ideas and experiences**
- **Information and advice**
- **Joint proposals**
- **Lobbying European institutions**

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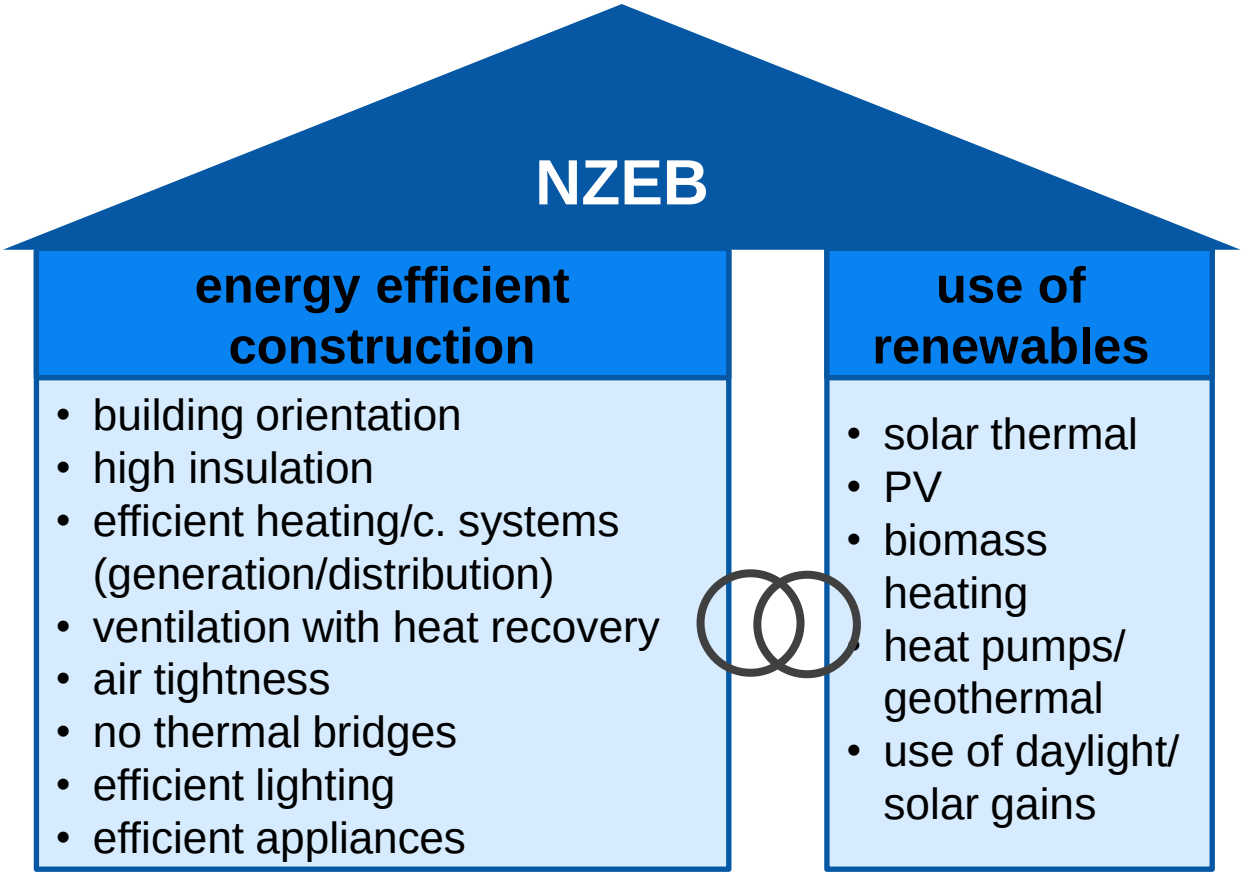
Nearly Zero Energy Buildings (NZEBs) combine energy efficiency and renewables



Many combinations possible: more efficiency or more renewables

The separation of "insulation" and "heating systems" has come to an end

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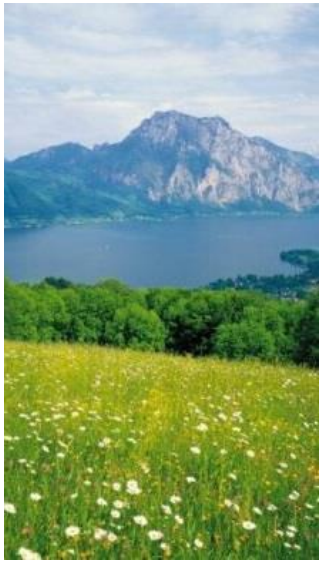
The Region of Upper Austria - Oberösterreich
Regional energy agency - OÖ Energiesparverband

- 1.4 million inhabitants, capital Linz, industrial region
- the OÖ Energiesparverband
  - funded by the regional government
  - provides services to private households, business and municipalities (energy advice, training, building certification etc,
  - manages the Ökoenergie-Cluster (170 companies)



Sustainable energy:

- today:
  35 % renewable energy (16 % biomass, 14 % hydro, 5 % other)
  avoided imports of fossil fuels: > 1 billion Euro/a
- **by 2030, 100 % electricity and space heating from renewables**
  (requiring e.g. a reduction of heat demand by 39 %)

Co-funded by the Intelligent Energy Europe Programme of the European Union

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Case study Upper Austria
Long tradition in high-efficiency buildings

- comprehensive and ambitious building policies since 15+ years
- today, several 10,000 NZEBs (residential, public, commercial buildings) in the region
- a third of all new residential homes are NZEBs (with strong upward trend)
- 100 % of all new regional buildings are NZEBs
- 60 % of the space heat demand in the region is covered by renewables

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The building market - resistant to change: Carrots, sticks and tambourines

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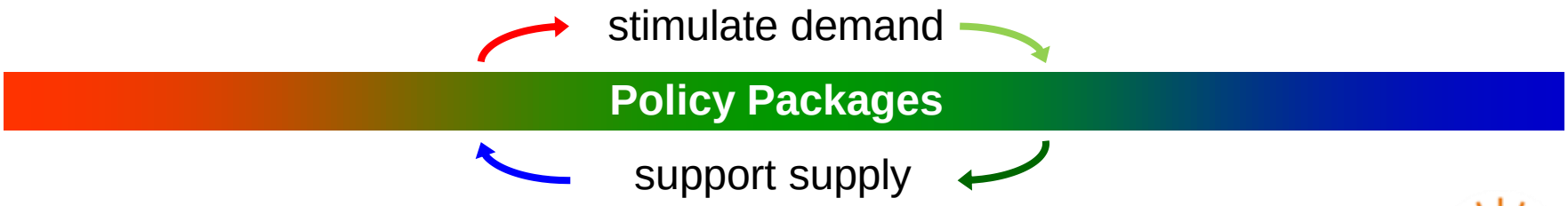
Upper Austria's sustainable energy strategy – example: sustainable buildings

"sticks"	"carrots"	"tambourines"
Regulatory measures	**Financial measures**	**Information & training**
• Energy performance requirements & certification • Minim. requirements heating & cooling • Inspection of boilers & AC systems • Renewable heating obligations (public and large new buildings)	• Soft loans for efficient construction & renovation • Grants for renewable heating & efficiency measures • Pilot projects, regional R & D programme, contracting	• **Energy advice & audit programmes** • Training programmes • Publications, campaigns • Local energy action strategies • OEC - sustainable energy business network



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Lesson from an advanced NZEB market: Changes for the HVAC sector

- increasing importance of energy issues in **real estate markets** (e.g. performance indicators in advertising)
- more **interest in renewable heating**, also in renovation
- **decreasing heat demands** per m² have implications on **the choice** of heating systems
- higher requirements for the **overall system efficiency** of heating systems (including distribution systems) requires **more interaction** between building technologies
- **complexity** increases significantly!
- primary energy (and **CO_2**) becomes slowly a decision making reality on building owner level

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What cities and regions can contribute in changing buildings

- leading by example TODAY:
  - energy accounting in own buildings
  - use NZEB standard for new punlic buildings and renovation
  - apply a quality approach (good planning & implementation & operation
  - define clear targets for own buildings
- support awareness and information on benefits of energy efficiency in buildings and renewables
- as building authority full implementation of existing energy efficiency and renewable requirements
- take a strategic approach!

The transition to non-fossil-fuel based economies will happen anyway - now is the time to decide whether to be an "actor" or a "victim" of this process!

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How can the HVAC sector support NZEB market development?

- understand and make use of economic opportunities from NZEB market transition
- become more knowledgable about the building as a whole (building envelope and HVAC system and how they interact)
  -> training is key
  -> quality market development
- active contribution to renewable targets (offering biomass, solar and heat pump/geothermal solutions to customers)
- reach out to the community of experts in energy-efficient building envelopes
- support communication on good NZEB solutions (internally, to customers, to stakeholders)

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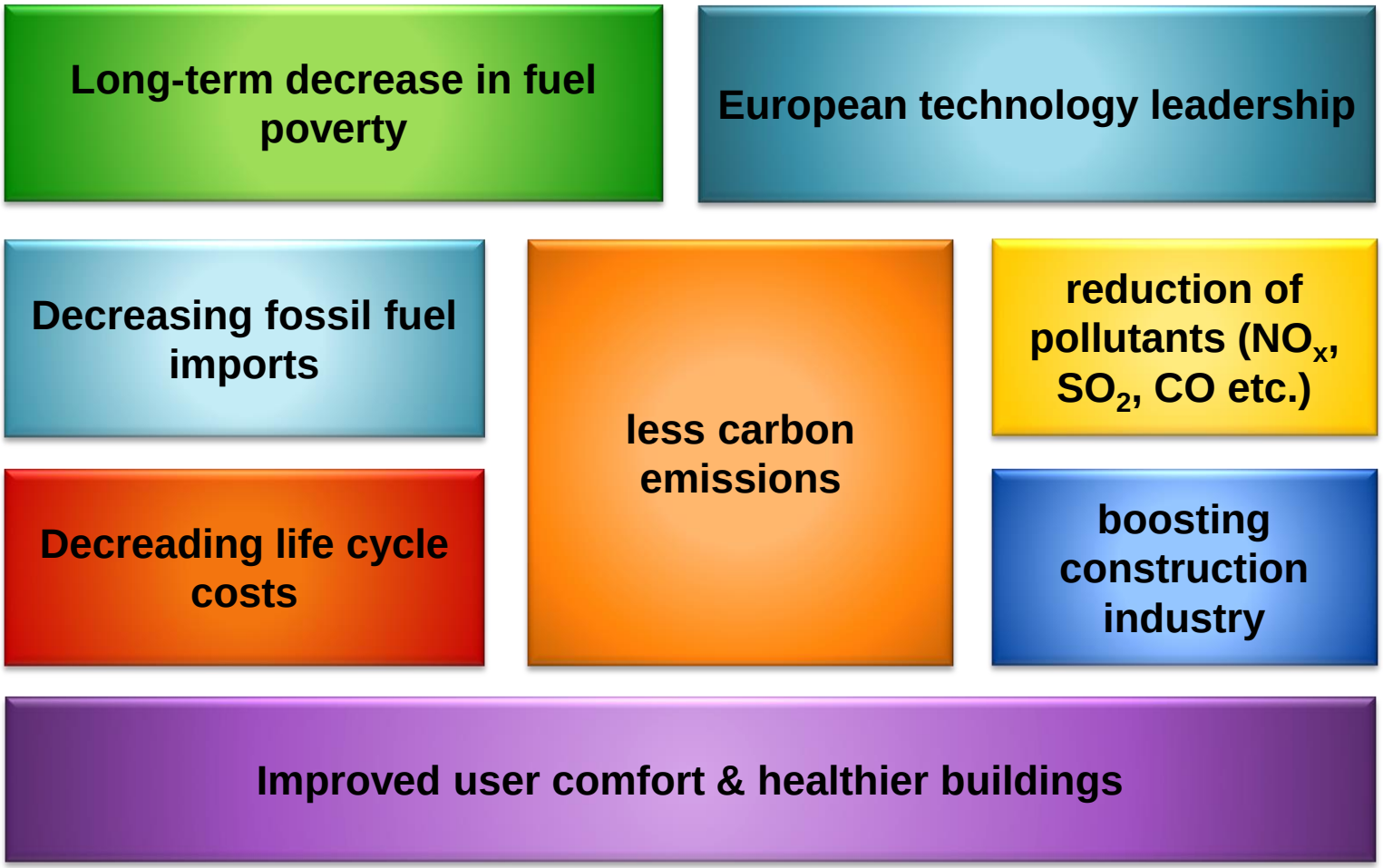
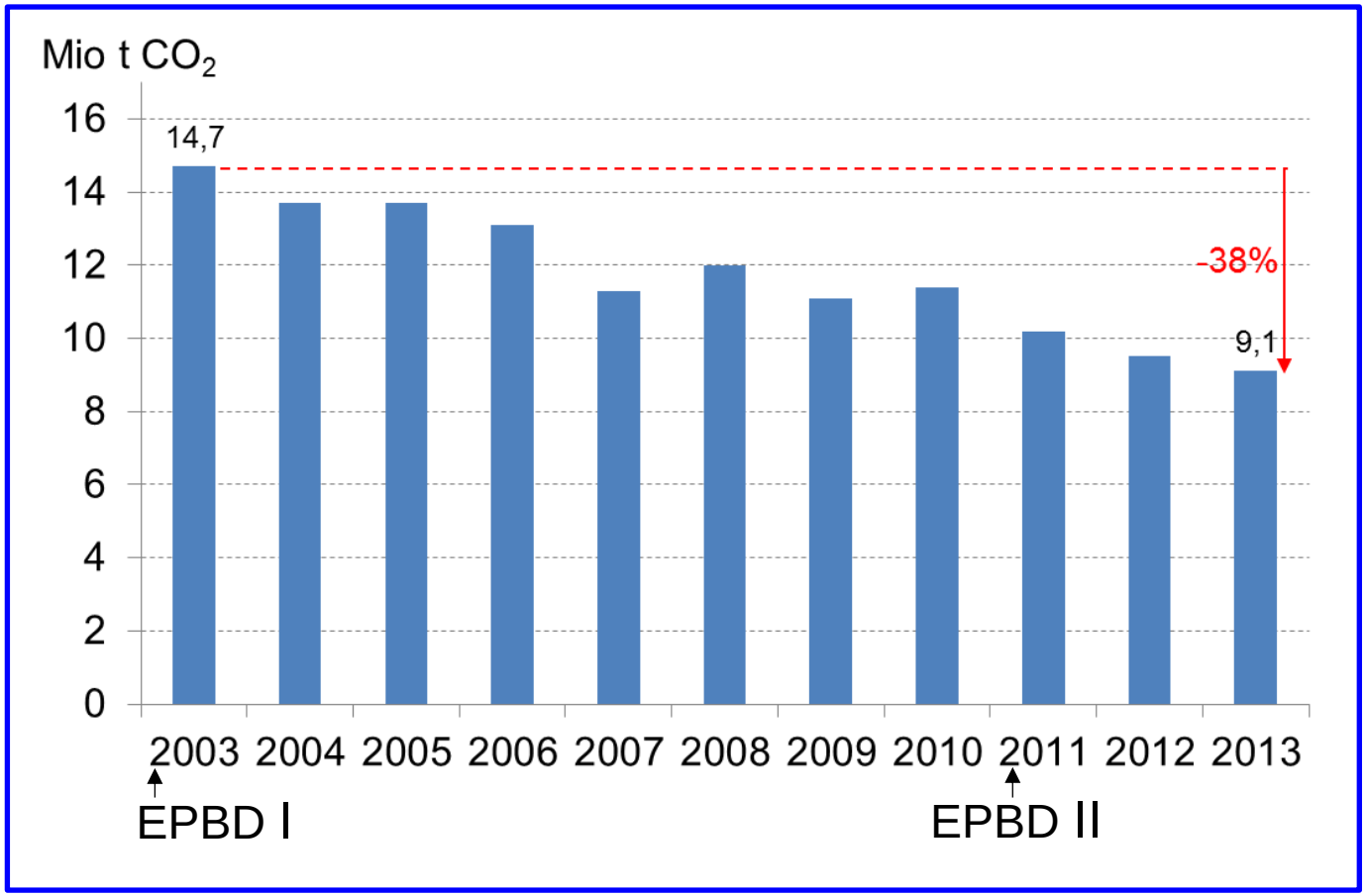
The multiple benefits of NZEBs to our society



The multiple benefits of NZEBs in Upper Austria

- 260 million Euro/year investment in new renewable heating and PV on buildings
- more than 9,000 employees in energy efficiency and renewables in the region



Source: UBA

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World Sustainable Energy Days 2016: 24 - 26 February

- European Nearly Zero Energy Buildings Conference
- Energy Efficiency Watch Conference
- Young Researchers Conference
- European Pellet Conference
- Trade Show - Energiesparmesse: +1,600 exhibitors

Call for Papers: 9 October 2015

www.wsed.at

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World Sustainable Energy Days 2016

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What needs to be considered when planning building-integrated renewables (examples)

solar thermal		roof/facade orientation, integration of hot water into heating system, back-up system
PV		roof/facade orientation, electric connections
biomass heating		storage system, access for delivery, chimney
heat pump		space requirements ground loops/backcooler; how is the electricity generated around the year (e.g. winter)
district heating		space requirements for supply pipes, how is the heat generated, system losses

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The challenge...

Changes planning and construction

Lack of knowledge

Public opinion

Higher investment costs

Stakeholder opinions

More cooperation among building actors needed

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