INOGATE Project
Energy Saving Initiative in the Building Sector in Eastern Europe and Central Asia

Energy performance certification of buildings Seminar,
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EU framework for Energy Performance Certification of Buildings

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Context

• **Cancun’s conclusions:**
  - Key new principles agreed – writing new chapter in history of international climate action
  - First global recognition of **objective to hold global temperature increase below 2°C** – idea championed by EU for more than ten years
  - Insufficiency of current pledges ("scaled-up overall mitigation efforts necessary to achieve desired levels")
  - Climate change recognised "**one of the greatest challenges of our time**"
  - Adaptation and mitigation at same level of priority
  - Addressing climate change requires "a **paradigm shift towards a low-carbon society** that offers substantial opportunities".
  - Establish the **Green Climate Fund**: detailed structures to be developed by interim committee
  - Recognize goal of developed countries to mobilise jointly US$ 100 billion per year by 2020 (in the context of mitigation action)

⇒ Climate change mitigation requires a strong development of RE and EE!
# Energy Efficiency Drivers

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<th>Driver</th>
<th>Typical objectives</th>
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<tr>
<td>Energy security</td>
<td>• Reduce imported energy</td>
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<td>• Reduce domestic demand to maximise exports</td>
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<td>• Increase reliability</td>
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<td>• Control growth in energy demand</td>
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<td>Economic development and competitiveness</td>
<td>• Reduce energy intensity</td>
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<td>• Improve industrial competitiveness</td>
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<td>• Reduce production costs</td>
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<td>• More affordable energy customer costs</td>
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<tr>
<td>Climate change</td>
<td>• Contribute to global mitigation and adaptation efforts</td>
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<td>• Meet international obligations under the United Nations Framework Convention on Climate Change (UNFCCC)</td>
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<td>• Meet supra-national (e.g. European Union) accession requirements or directives</td>
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<td>Public health</td>
<td>• Reduce indoor and local pollution</td>
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Source: WEC, 2008.
# Barriers to EE Development

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<th>Barrier</th>
<th>Examples</th>
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<td>Market</td>
<td>• Market organisation and price distortions that prevent customers from appraising the true value of energy efficiency.</td>
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<td>• The principal agent problem, in which the investor does not reap the rewards of improved efficiency (the classic case being the landlord-tenant situation) (IEA, 2007a).</td>
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<td>• Transaction costs (project development costs are high relative to potential energy savings).</td>
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<td>Financial</td>
<td>• Lack of understanding of EE investments, or aversion to perceived risk on the part of financial institutions.</td>
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<td>Information and awareness</td>
<td>• Lack of sufficient information and understanding on the part of consumers to make rational consumption and investment decisions.</td>
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<td>Regulatory and institutional</td>
<td>• Energy tariffs that discourage EE investment (such as declining block prices).</td>
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<td>• Incentive structures that encourage energy providers to sell energy rather than invest in cost-effective energy efficiency.</td>
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<td>• Institutional bias towards supply-side investments.</td>
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<td>Technical</td>
<td>• Lack of affordable EE technologies suitable to local conditions.</td>
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<td>• Insufficient local capacities for identifying, developing, implementing and maintaining EE investments.</td>
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Need for an Energy Efficiency Governance

Energy efficiency governance is the combination of legislative frameworks and funding mechanisms, institutional arrangements, and co-ordination mechanisms, which work together to support implementation of energy efficiency strategies, policies and programmes.

How Energy Performance Certification is used as a powerful EE policy tool to improve EE in the building sector in the EU?
Why buildings?

- 40% of EU energy use
- 36% of EU CO₂ emissions
- 9% of EU GDP
- 7-8% of EU employment

- Significant cost-effective savings potential – 30% in 2020
- Imply CO2 emissions reduction at no additional cost
- Jobs creation/retention
- Social and health aspects
What is an Energy Performance Certificate?

- Energy performance certification provides a means of rating individual buildings on how efficient they are in relation to the amount of energy needed to provide users with expected degrees of comfort and functionality.
- Buildings as "integrated systems", rather than simply the sum of their parts => an energy consumption objective is fixed for the whole building.
- Energy certification of buildings typically involves three main steps:
  - The assessment of the energy performance of a building by a competent assessor using a nominated methodology.
  - The issuance of a certificate rating the building’s energy performance which includes, in some cases, information on possible improvements likely to yield energy savings.
  - The communication of this information to stakeholders through publication of the certificate.
Why is energy certification of buildings important?

• **Raising awareness of energy consumption**
  - EPC increases awareness => provides builders and owners with an incentive to improve EE in buildings / tenants and buyers to require EE buildings

• **Addressing market failures**
  - Securing investment in EE => does not solve the split incentive issues but incentivise EE measures
  - Push for market evolution: buyers and tenants interests for more EE buildings will influence the market

• **Tool for EE policy**
  - Public Buildings
  - Public authorities lack data on the building stock
  - Based on data collected, elaborate suitable policy
  - If EPC is mandatory, could be used as a fiscal tool
General policy context
An extensive EU legal framework

Overarching
- Energy end-use efficiency and energy services Directive
- Effort Sharing Decision

Buildings
- Energy performance of buildings Directive (recast and original) 2002/91/EC and 2010/31/EU
- RES Directive
- Construction products regulation

Products
- Ecodesign Directive (recast and original)
- Energy Labelling Directive (recast and original)
- Regulation of Energy Star labelling for office equipment
The new Europe 2020 strategy

- Successor to Lisbon strategy, agreed upon at EU Spring summit 2010
- Sustainability/Energy as one of the five headline targets: Reaffirmation of 20-20-20 target agreed in 2007
  - reducing greenhouse gas emissions by 20% compared to 1990 levels
  - increasing the share of renewables in final energy consumption to 20%
  - and moving towards a 20% increase in energy efficiency

Member States will set national targets to underpin headline targets

- (...)”Special attention should be given to the sectors with the largest potential to make energy efficiency gains, namely the existing building stock and transport sector. (…)”

- (...)”Measures need to be developed to speed up significantly the rate of refurbishment using energy-efficient products and technologies. In the residential sector, the issue of divided incentives between owners and tenants needs to be addressed. (…)”

- (...)”The public sector needs to lead by example. Ambitious objectives ought to be set for public sector consumption. (…..)”

- Offers a holistic approach to addressing energy uses in buildings
- Scope: new and existing, residential, commercial and public buildings, not: industry sites
- Framework Directive – no harmonisation of requirements
- The areas covered by the Directive are:
  - Methodology for calculating the energy performance of buildings
  - Setting minimum requirements to achieve cost-optimal levels
  - Objective: Nearly zero-energy buildings
  - Financial incentives and market barriers
  - Energy performance certificates
  - Putting in place a system of regular inspections of heating and air-conditioning system
  - Establish independent control systems for EPC and reports on the inspection of heating and air-conditioning systems
EPBD - EPC

• What shall include an EPC to comply with the directive?
  – EPC shall include the energy performance of a building and reference values to compare and assess its energy performance
  – EPC shall include recommendations for the cost-optimal or cost-effective improvement of the energy performance
  – EPC shall inform the owner or tenant on where to find detailed information on these recommendations (on the cost-effectiveness of the recommendations made in the energy performance certificate)

• Public authorities are encouraged to play a leading role by implementing the recommendations

• Certification for building units may be based: (a) on a common certification of the whole building; or (b) on the assessment of a similar building units

• Certification for single-family houses may be based on the assessment of a similar building

• The validity of the energy performance certificate shall not exceed 10 years

• The Commission shall, by 2011, adopt a voluntary common European Union certification scheme for the energy performance of non-residential buildings
EPBD – Issue of EPC

• EPC shall be issued for (a) buildings constructed, sold or rented out to a new tenant; and (b) buildings where a total useful floor area over 500 m² (250 after July 2015) is occupied by a public authority and frequently visited by the public.

• EPC shall be shown to the prospective new tenant or buyer and handed over to the buyer or new tenant when buildings or building units are constructed, sold or rented out.

• Where a building is sold or rented out in advance of construction, the seller is required to provide an assessment of its future energy performance. The EPC shall be issued at the latest once the building has been constructed.

• When buildings having an EPC, the energy performance indicator of the EPC shall be stated in the advertisements in commercial media.

• EPC shall be visibly displayed for >500m² public buildings (250 after July 2015 for public buildings).
Cost Optimal Requirements

Ambition of energy performance requirements
(e.g. thickness of insulation and/or efficiency of heating system/air-conditioning system/lighting etc.)

* = sum of (Investment + maintenance costs) and (Energy cost saving)
EPBD - Independent control system

- Ensure that independent control systems for EPC and reports on the inspection of heating and air-conditioning systems are established.
- Random selection of at least a statistically significant percentage of all the energy performance certificates issued annually and subject those certificates to verification
- Require the energy performance certificates and the inspection reports to be made available to the competent authorities or bodies on request.
EPBD recast: Main Changes

- Published in OJ in June 2010, Transposition July 2012 and application by Jan/July 2013
- Continuity with 2002 Directive: Main principles are kept, but made more effective
- Initiates transformation of the building sector towards nearly zero energy buildings
  => All new buildings in the EU to be nearly zero energy buildings by 1 Jan 2021
- Introduces for the first time cost effectiveness and life cycle cost thinking into the development of building codes in the EU
- Exemplary role of public authorities – their new building have to be nearly zero energy buildings already two years earlier than the private ones!
- Elimination of the 1000 m² threshold for existing buildings: the new Directive covers now all buildings (exception: heritage buildings), not only the very large ones!
EPBD recast: EPC

- **Better visibility** and quality of information provided by Energy Performance Certificates: mandatory use of the energy performance indicator in advertisements; **recommendations on how to improve cost-optimally/cost-effectively the energy performance**, can also include indication on where to obtain information about financing possibilities
- Certificates to be issued to all new buildings/building units and when existing buildings/building units are rented/sold
- Public authorities occupying office space of > 500m² will have to display the certificate (lowered to > 250m² after 5 years)
- Commission to develop a voluntary common European certification scheme for non-residential buildings by 2011
- Obligatory use of the performance indicator given in the certificate in all **advertisements** for sale or rent
- **Independent quality control** of the energy certificates and inspections
## Support measures and networks

### EPBD implementation support
- Committees
- Concerted action EPBD

### Financial & fiscal instruments
- Cohesion policy funds
- ELENA EERP U funds

### Possibilities for
- State Aid
- VAT reduced rates

### Networks
- Sustainable Energy Europe Campaign
- ManagEnergy network

### Committees
- CEN EPBD standards

### Other instruments
- State Aid
- VAT reduced rates

*Source: [Build Up](https://buildup.eu)*
EPBD Recast - Expected Impact

- 5 - 6 % saving of EU's total energy consumption by 2020 (equivalent to the current consumption of Romania + Belgium!)
- 5 % saving of EU's total CO2 emissions by 2020
- 280,000 – 450,000 potential new jobs
EPBD certification schemes in EU Member States
EPBD certification
different methods, designs across MS

- No uniform design as is the case for appliances in the EU, although most MS use also A-G scheme
- Certification done either by flat or by building
- Either based on calculated or on measured rating (to note: for metered rating, need to install meters and submeters in buildings!)
- Even calculation of energy performance differs from MS to MS so that it is difficult to compare requirements and classes across countries
- Need to further develop benchmarks for mixed use buildings and statistics for energy use in typical buildings in all MS
Energy Performance Certificate
EPBD certification-
first experience in EU MS

- Both metered and calculated ratings have pros and cons, no clear winner
- Recommendations given on the certificates should not be general, but targeted at the building
- The front page should be eye-catching, expressing the energy performance graphically
- Challenge in the near future will be: re-scaling issue!
Evidence of impact of certification

- Evidence of impact is still weak as most Member States have only transposed recently (deadline was 1 Jan 2009) but recent study from Netherlands indicates that there is a higher transaction price (+ 2.7 %) for A, B and C labelled dwellings!

- Public acceptance increases with the solidity of the system (see Ireland and Portugal as good examples, Dutch scheme of 2008 had to be re-designed to make it more acceptable)
Additional Information

• For more information on the EU framework
• The European portal for energy efficiency in buildings:
  http://www.buildup.eu/
• For more information on how to design certification schemes: IEA policy pathways report 2010 on:
• For more information on MS certification schemes: BPIE 2010 study on 12 EU MS on:
  http://www.bpie.eu/buildings_certification.html

Thank you!