

# Handbook: Holistic energy efficient planning and construction



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## INTENSE – Intelligent energy saving measures for municipal housing in Central and Eastern European countries

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## Introduction

### About the Handbook

On 19 May 2010, the European Parliament and the Council of the European Union adopted the recast of the Energy Performance of Buildings Directive (2010/30/EU). The aim of the Directive is to strengthen the energy performance requirements and to clarify and streamline some of the provisions from the 2002 Directive, which it replaces. The Directive clearly states that as of 31 December 2020 new buildings in the European Union will have to consume 'nearly zero' energy and the energy will have to be 'to a very large extent' from renewable sources.

Meeting these requirements means that construction is implemented properly and in a high quality. Already the building boom in many Central and Eastern European countries in 2006-2008 showed that quality differs greatly. Many buildings erected in this period have constructional defects that also affect their energetic efficiency. Settlements were built in the outskirts of larger cities without proper infrastructure and connection to the urban public transport system.

Due to that reason there was a need for a training program having a holistic approach by bringing together different aspects of energy efficient urban planning down to details of construction and finding out how to make energy efficient houses more attractive and desirable for citizens.

Such a training programme should be targeted not only to the immediate decision-makers on municipal level, but also the executing stakeholders both from design and implementation levels. Experts from these two levels are the most important key actors for the implementation of energy efficiency in construction.

In the frame of the project "From Estonia till Croatia: Intelligent Energy Saving Measures for Municipal housing in Central and Eastern European Countries (INTENSE)", which is financed by Intelligent Energy – Europe program, such a training program was elaborated in order to provide tools for further dynamic developments at the pan-European level and to promote the know-how transfer between nations in order to achieve the goal of implementing the European Union standards at a national level.

The focus of the INTENSE training program is on the low energy/passive house standard, i.e. how to achieve the standard and to go further ('nearly zero'-buildings, required by the Directive Recast). The training program has a modular approach consists of 9 modules and it allows combining different units according to local needs:

1. Legislation
2. Quality control
3. Settlement planning and design principles
4. Energy carriers and renewable energy sources
5. Ecological materials
6. Cost-benefit assessment
7. Building physics
8. Construction of elements
9. Systems engineering

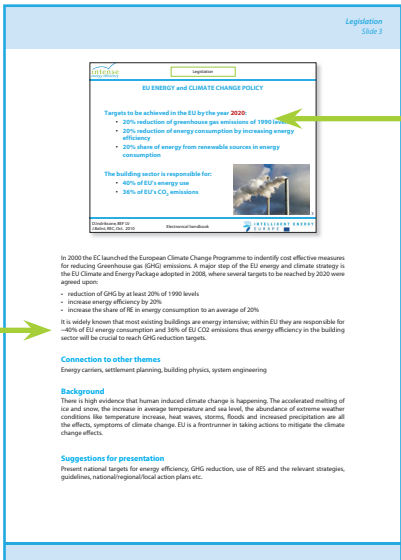
The handbook is divided into 2 parts – a paper version consisting of key slides with comments of each module and an extended electronic version having deeper information on each module (on CD).

## How to use the Handbook

Each chapter contains key slides, which summarize the main contents in form of a presentation and below you can find further explanations on the content, as well as hints for further information or suggestions for how to present the content to your audience. Where applicable you will also find here information about connecting topics.

**Notes**

*Further explanations for you as a trainer with suggestions for further reading and how to present the content.*



**Slide**

*The presentation you can find on the enclosed CD.*

For each topic the CD will also contain an extended version of the presentation with more detailed explanations and more examples.

## Using and adapting the slides

You are free to use these presentations as a whole or only parts of it in your trainings and you are also free to modify these presentations provided that you give credit to those who have prepared them. In that case we would appreciate a note from you with some information how you have used the slides.

Further information is also available on [www.intense-energy.eu](http://www.intense-energy.eu)

## Abbreviations used in this handbook

<b>AC</b>	Air conditioning
<b>A/V</b>	Outer surface to inner volume
<b>BEF</b>	Baltic Environmental Forum
<b>CAD</b>	Computer-aided design
<b>CAPEM</b>	Cycle Assessment Procedure for Eco-Materials
<b>CEE</b>	Central and Eastern Europe
<b>CHP</b>	Combined Heat and Power generation
<b>COP</b>	coefficient of performance
<b>CPC</b>	Compound Parabolic Concentrator
<b>DHW</b>	Domestic hot water
<b>EE</b>	Energy efficiency
<b>EER</b>	Energy efficiency ratio
<b>EC</b>	European Commission
<b>EPBD</b>	Energy performance of buildings directive
<b>EPC</b>	Energy performance certificate
<b>ESD</b>	Energy end-use efficiency and energy services directive
<b>EU</b>	European Union
<b>e.u.z.</b>	energie + umwelt zentrum (energy + environment centre)
<b>GEMIS</b>	Global Emission Model for Integrated Systems
<b>GHG</b>	Greenhouse gas
<b>HR</b>	Heat recovery
<b>HVAC</b>	Heating, ventilation and air conditioning
<b>HVACR</b>	Heating, Ventilation, Air Conditioning and Refrigeration
<b>IEE</b>	Intelligent Energy Europe
<b>INTENSE</b>	From Estonia till Croatia: Intelligent Energy Saving Measures for Municipal housing in Central and Eastern European countries
<b>LCA</b>	Life cycle analyses
<b>LCC</b>	Life cycle costs
<b>LV</b>	Latvia
<b>MS</b>	Member State
<b>PC</b>	Personal computer
<b>PHPP</b>	Passive House Planning (Design) Package
<b>PVC</b>	Polyvinyl chloride
<b>RE</b>	Renewable energy
<b>REA</b>	Riga Energy Agency
<b>REC</b>	Regional Environmental Center
<b>RES</b>	Renewable energy sources
<b>ST</b>	Solar thermal
<b>SWOT- analysis</b>	Strengths, Weaknesses, Opportunities, and Threats analysis
<b>US EPA</b>	United States Environmental Protection Agency