INTEND
Integrated Energy Design in Public Buildings

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INTEND project background

• Integrated Energy Design IED is an evolving method to shape the building investment process into responsible one by informing decision makers of their impact on energy consumption pattern and performing optimised, energy efficient design solutions.

• Energy consumption pattern is considered the most important factor in maintaining sustainable future.

• 36-60% of overall energy consumption is related to construction industry.

• Processes shaping energy consumption model include spatial planning, building investment decisions, construction commissioning process, building design process, real estate market transactions, building maintenance, end-user behaviour and building demolition or adaptation.

• Decisions made at building design stage have a lasting impact on physical environment and subsequently on human life and energy consumption pattern.
IED in principle

• IED is a process of reorganising information flow and decision priorities in such a way, that long-term building value is not missed.

• Design decisions determine the possible structure of future energy cost of the building construction, operation, and adaptation.

• IED attempts to optimise energy performance and high environmental quality (for humans) of the building as possible by confronting design solutions with cost of energy over building's life time.
INTEND project scope

• To create comprehensive guidelines for IED application in building investment process.

There is a considerable body of academic knowledge on sustainability, but only 4 practical ways of behaviour change:

1. **Educate individuals**
2. **Impose laws and regulations**
3. **Propagate best market strategies.**
4. **Develop appropriate business culture** for professionals to use their knowledge.

**INTEND** explores possibilities of market driven approach to test if:

• **buisness model** is able to adapt
• **individuals** are educated enough
• the **market** is able to see an **opportunity**
INTEND way of operation and results

• Map existing IED methods
  explicit Map of IED and IDP Methods at www.intendesign.com

• Propagate best practices to the public
  best practices overview at www.londonmet.ac.uk/~intend

• Inform professionals
  series of seminars and conferences publications
  including SB’08 Melbourne World Sustainable Building Conference

• Involve INTEND professionals in IED practice on the market
  12 new projects in 5 countries undergo IED process
  facilitated directly by INTEND

• Analyse INTEND IED process experience
  The network of knowledge exchange across
  European Economic Area involving both industry and academia.

• Create guidelines for IED
  guide available at www.intendesign.com
INTEND impact

• Academia  INTEND allowed to establish lasting cooperation among EU academics and to free the education from country-specific constraints of Business-As-Usual-Practice.

• Professionals  INTEND did involved some professionals into IED. They may lead industry, provided that there is favourable legal and cultural environment for them to operate on the market. Another impact was to acquire some world sustainability experts to work for EU.

• Investors  Investors seem to practically reject any information that is not from the market itself. Market competition is based on actual marginal supply-demand, but not on long-term planning.

• End users  End users are more a subject to industry propaganda to buy new energy efficient products, than to analyse their own behaviour. The way to align IED with the marketing is
  - to inform consumers and
  - to label products.

• Transactions  There shall be a legal way for transactions to pass energy efficiency as a product to the consumer. Unfortunately, designers rely on the knowledge which is not understandable by financial institutions.
INTEND – IED case studies

• Two types of case studies analyzed:
  1. Success stories
  2. IED in practice

• Success There is a considerable demand from investors for advertising sustainability of investments in public discussion in order to advocate their investment plans. Success stories are not the wide-shared practice however.

• Practice Investors deal with microeconomy of their enterprises. There is no clear price mechanism of supply-demand for buildings energy efficiency. Some factors like adaptability of the building design to the final end-user expectations are more powerful than IED in the course investment process. It is very difficult to convince investors to take measures that are not readily demanded by the end-users.

• Transactions Real estate market is driven by the developer – client market transactions. Neither of those are interested in public good unless it is a vital part of their enterprise. In contrary, they are interested in public services, they do not have to pay for. In the case of public-owned buildings, the control over expenditures tend to push IED out of the annual budget.

• Knowledge base Real estate market efficiently produces successful and powerful business people. From the perspective of their exemplary success new knowledge is inferior to their experience.
INTEND – IED case studies

• Full list of case studies at www.intendesign.com
INTEND – IED guidelines

9 STEPS for a successful Integrated Energy Design:

1. Select interdisciplinary design team, which are skilled in energy / environmental issues.
2. Analyse the boundary conditions of the project, client needs and demands and set specific energy efficiency goals.
3. Make a Quality-Assurance program and a Quality Control Plan.
4. Arrange the meeting to make sure that all team members have a common understanding of design task.
5. Facilitate close cooperation among architect, engineers and relevant experts.
6. Follow and update critical points in Quality Control Plan.
7. Make contracts, that encourage IED and energy efficient construction.
8. Motivate and control construction contractors and staff.
9. Provide training and operation manual to building operator and end user.
INTEND – IED conclusions

• 2 issues identified:
  1. Market transactions
  2. Business Culture

• Market Transactions  EPBD directive seems to satisfy the need for making building energy performance a subject to market transactions. It gained a big propaganda coverage, and it would be interesting to compare INTEND project with the similar one conducted in the new propaganda environment to see the direct reaction from real estate developers. INTEND project was mostly led on assumption of EPDB to come into involved countries by-laws. Advocacy to pre-prepare investment processes to upcoming regulations had have been generally rejected by developers. Much time of INTEND programme was consumed on trying to find partners among developers.

• Business Culture  There is no commitment from businesspeople to follow long-term sustainability and it may not be expected. In Poland none of the biggest real estate developers agreed to share reference data on actual energy performance of their new buildings out of the fear that researchers would use the data for black marketing.
INTEND – Future targets

• Future targets and research:
  1. The impact of legal regulations
  2. The impact of propaganda
  3. Business Culture

• Impact of legal regulations  INTEND project proved that in absence of legal regulations there is very scarce interest among real estate developers to take a chance of new business opportunities. INTEND programme should be extended to monitor attitude change among real estate developers in the face of Energy Performance of Buildings Directive in force.

• Impact of propaganda  Media effort to pass information on EPBD made a huge impact on developer’s minds, which professionals like architects, engineers and academics were not at a position to make on their own. It is then proposed to continue European Commission support for research as an most effective way to translate it's results to the minds of the businesspeople.

• Business Culture  seems to be most conservative in terms of sustainable development. Contrary to popular opinion sucessful businesspeople, which were INTEND target at first place due to their ability to allocate financial resources, are the least to risk. More incentives should be directed to designers and researchers for their practice to result in good design than for developers for their investments to result in bad practice.
INTEND – information

• INTEND project website:
  www.intendesign.com

• best practices
• case studies
• guide for IED / IDP
• IED assessment Methods and Tools
• network for professionals