Feasibility studies for alternative energy systems in large new buildings: state of the art, possible barriers and how to overcome them?

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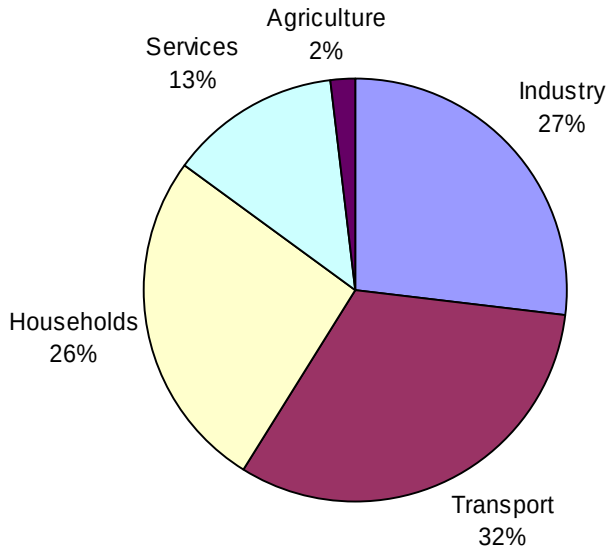
Content

- Framework presentation: EPBD & SENTRO-project
- Feasibility studies Alternative Energy Systems (AES)
  - State of the art
  - Barriers
  - Possible solutions
- Summary and further activities

Large energy saving potential in buildings

- In buildings: 40% of EU's energy requirements
- Estimated saving potential one fifth

- Energy Performance of Buildings Directive (EPBD)
- One of its aspects feasibility study of AES



Part of Article 5 EPBD

For new buildings with a total useful floor area over 1000 m^2 Member States shall ensure that the technical, environmental and economic feasibility of alternative systems such as:

- decentralised energy supply systems based on renewable energy
- CHP
- District or block heating or cooling, if available
- Heat pumps, under certain conditions,

is considered and is taken into account before construction starts.

Sustainable Energy systems in New buildings- marketinTROduction of feasibility studies (SENTRO) Why?

- Barriers, such as higher cost and lack of knowledge and confidence, are hindering alternative energy systems.
- Contribute to tackling these barriers by additional support –e.g. method and checklist tools- and intervening at the beginning of the design phase of a building.
- Resulting in first recommendations for policy makers based on the lessons learned in the field trial and during the evaluation.

SENTRO, project summary

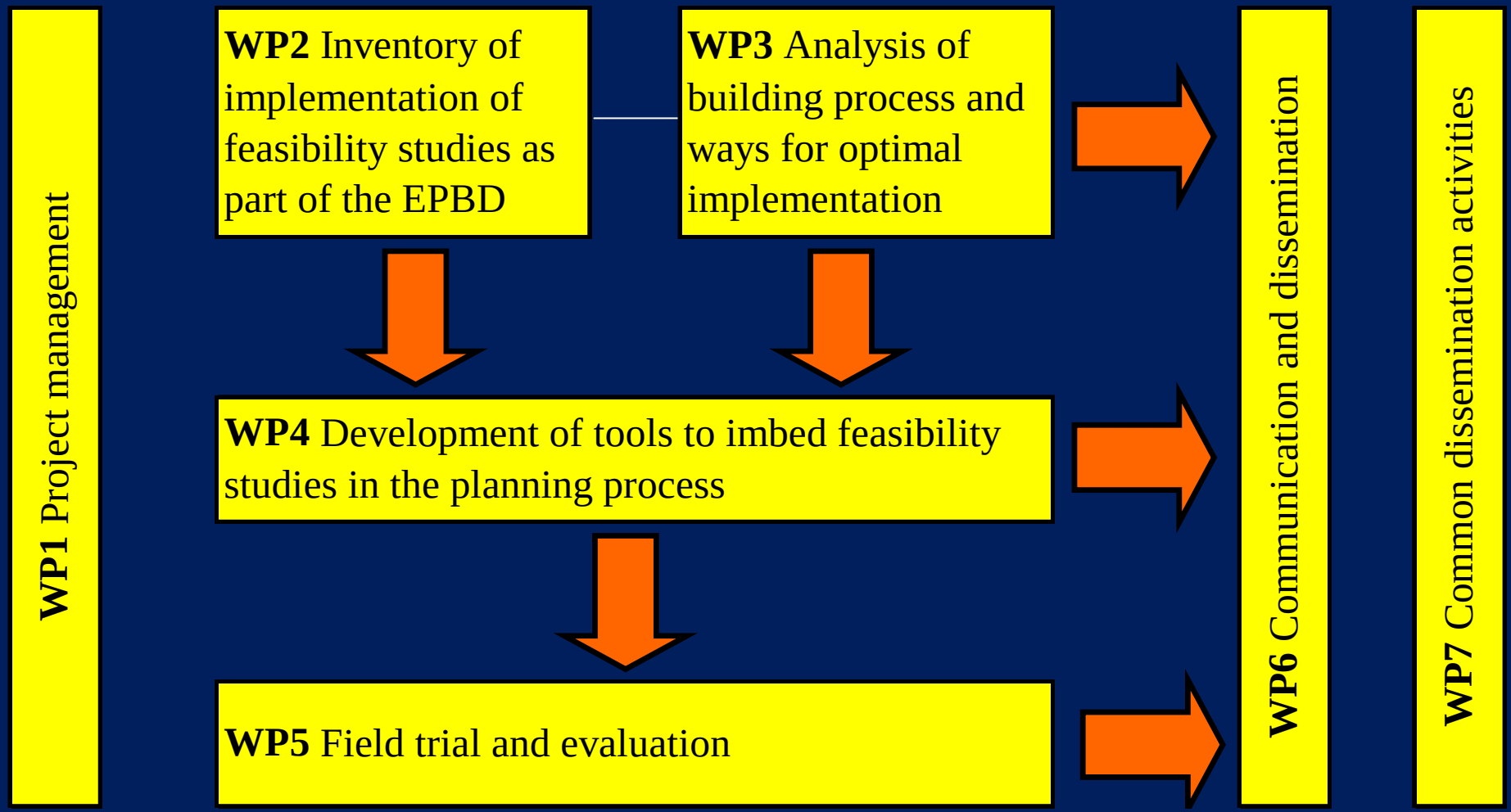
Aim: Develop and Promote “Optimal” Approach in order to effectively incorporate the feasibility studies of alternative energy systems (art. 5 EPBD) in the common building process

7-EU MS: Denmark, France, Lithuania, Poland, Slovenia, Sweden, the Netherlands

Main results:

- Insight how to overcome barriers implementation alternative energy systems in practice
- Information transfer of lessons learned

Work Programme



Inventory on Art. 5 implementation status

- EU-27, Norway
- Status on February - March 2007
- Interviews, questionnaires
- 100% response from key persons for EPBD transposition

General Approaches in Art. 5 transposition differ:

General Approaches in Art. 5 transposition differ:

a) Transposition of Art.5 at legal level (direct approach) + subsidiary legislation
   - Definition of the protocol for feasibility studies (Slovenia, Finland, France)
   - List of selected alternative energy systems (Spain, Portugal)

b) Implicit transposition
   - with already existing regulation or as a part of calculation methodology
   - Art. 5 is integrated in EPBD calculation procedure and tools (The Netherlands, Bulgaria, Luxemburg)
   - other legislation concerning heat supply and/or planning predefine the use of RES corresponding to the scope of Art.5 (Denmark, Lithuania)

Art. 5 – implementation status (3/2007, EIE SENTRO)

SUMMARY Art 5. implementation level (country status: March 2007)	Art.5 implemented at legal level			Art. 5 technical regulation and/or other adequate support for implementation of alternative systems (i.e. technology list) ready			Support measures for enforcement of Art.5 regulation (tools, checklists, information, promotion…)		
	Not yet / action just started	Draft law ready	Law adopted / finished	Not yet / action just started	Draft ready	Adopted / finished	Only some technology promoted, not systematically	Promotion programmes, incentives available	Tools available, good promotion, advisory programmes, demonstration projects
Austria									
Belgium									
Bulgaria									
Cyprus									
Czech Republic									
Denmark									
Estonia									
Finland									
France									
Germany									
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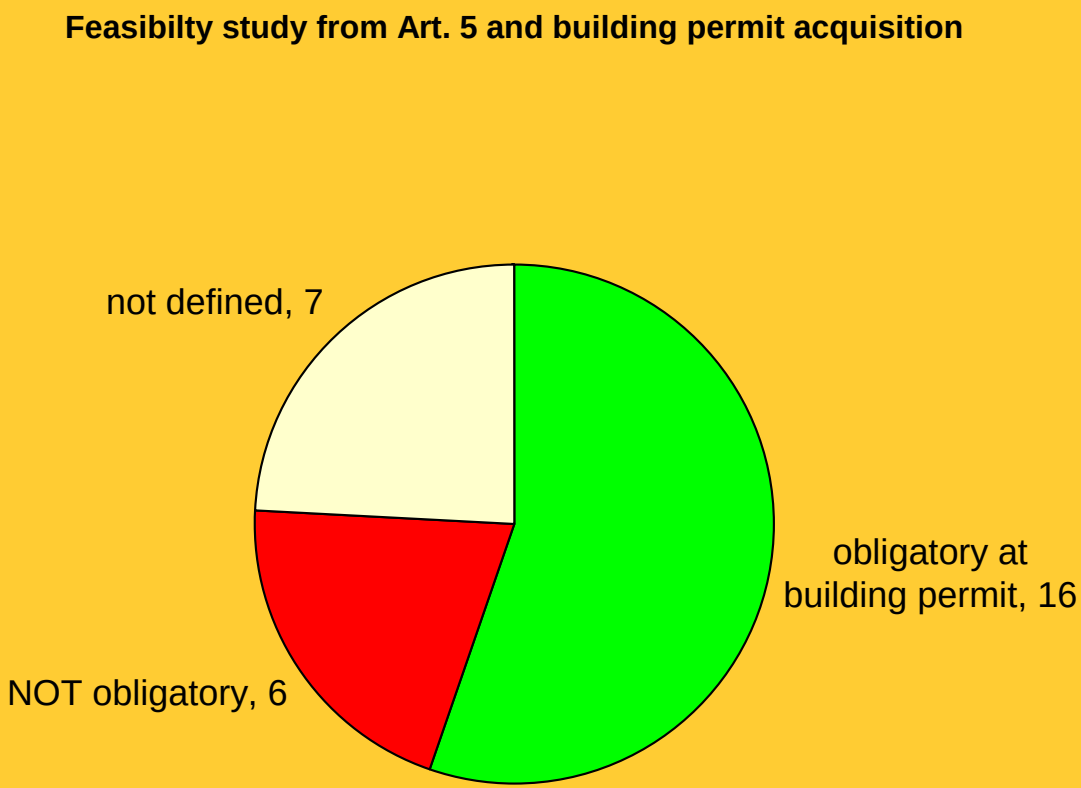
Luxembourg									
Malta									
The Netherlands									
Poland									
Portugal									
Romania									
Slovakia									
Slovenia									
Spain									
Sweden									
United Kingdom									
Norway									

Feasibility study in the process of building permit acquisition



Inventory about building practice and barriers for introduction of Alternative Energy Systems

- Interviews with 40-50 European actors
  - Municipalities, Clients, developers and investors, Architects, Engineers
  - Energy equipment companies, contractors and installers, research institutes, ministries and national agencies

- 7-EU MS: Denmark, France, Lithuania, Poland, Slovenia, Sweden, the Netherlands

Where in the building process are AES considered and decided upon?

Possible Barrier: obligation too late in the process, at building permit stage

The impact of the obligation depends highly on its':

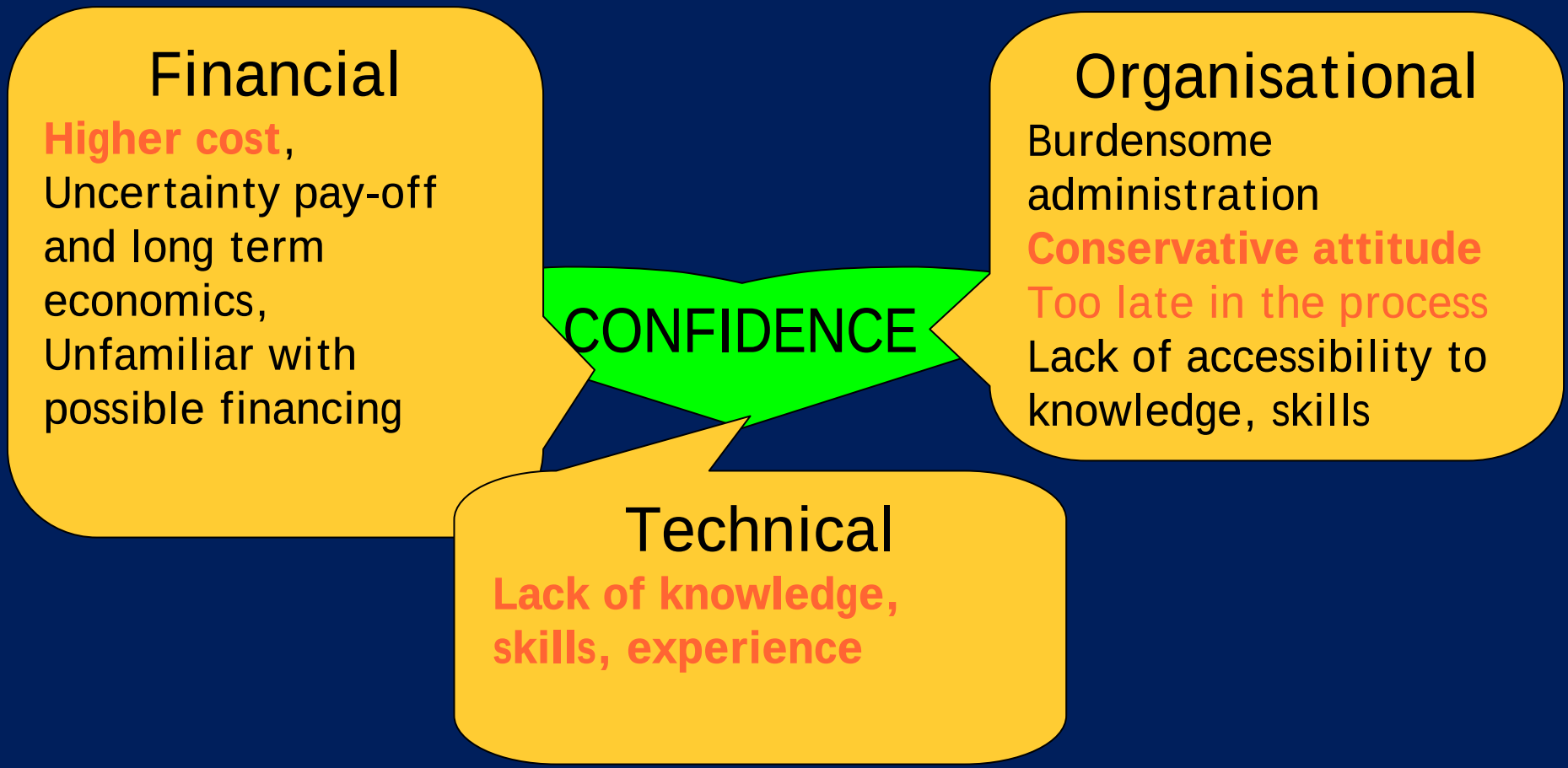
- Content:
  - What information is needed to get a building permit?
    - feasibility studies themselves?, checklist?, energy performance calculation?, proof of well consideration?,
  - Required energy performance level, valuation of AES
- Enforcement:
  - Check and control information, calculations (capacity, skills)
  - Possibilities to arrange adjustments (penalties etc)

Possible solutions

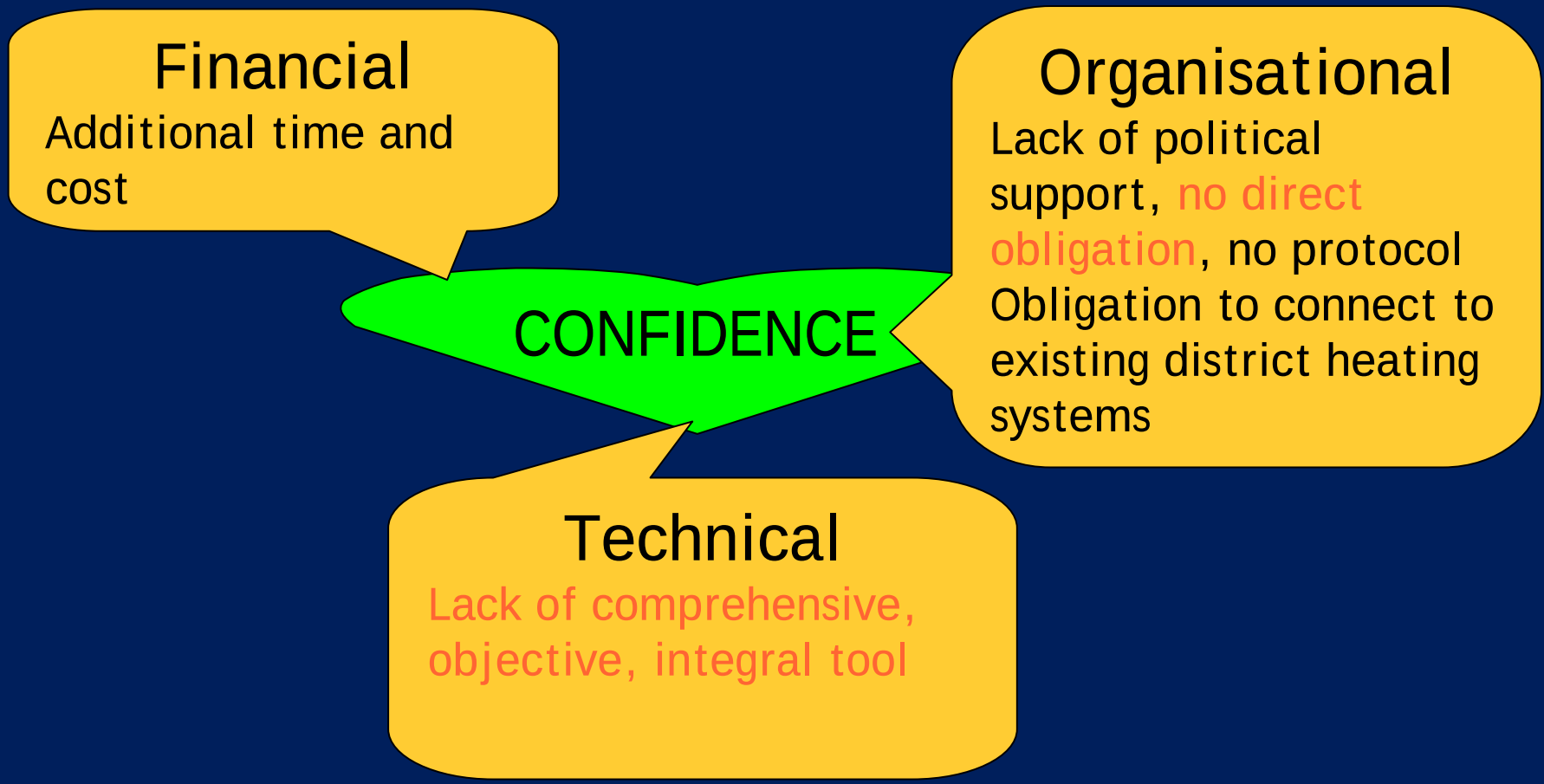
- Strong driving force, use of reverse burden of proof: certain AES is obliged, unless … (Spain, Portugal)

- Supplementary conditions:
  - Easy adaptation to keep up with new developments
  - Dispensation, in case of building with very low energy demand (eg. from CHP network, in Denmark)
  - Assure there is enough capacity and skills to value and to enforce the feasibility study requirements

Barriers use Alternative Energy Systems



Specific barriers for feasibility studies



Indicated possible solutions to tackle general AES barriers

Main constraints to tackle	Possible solution
Higher investment cost	Financial support, tax incentives
Lack of knowledge, skill and experience, Conservative attitude	Demonstration projects, good practice examples Provision of specific data needed for building design and energy calculations
Uncertainty in pay-off	Good practice examples of dealing with split-incentive imbalance

Indicated possible solutions to tackle specific feasibility study AES barriers

Main constraints to tackle	Possible solution
Lack of political support, no direct obligation	Stronger inclusion of AES in the energy performance regulations, (incl. obligatory feasibility studies and protocol)
Lack of comprehensive, objective, integral tool	Protocol, development of tools/approach

Summary 1, state of the art

- Most of the EU MS are planning to have legislation regarding this aspect of the EPBD in place before the end of 2007
- Implementation ways: (1) direct transposition or (2) incorporation in existing procedures
- Technical guidelines and supporting tools in many countries still under development or not yet started.

Summary 2, barriers and their possible solutions (1)

- Usually a combination of technical, organizational and financial constraints are hindering the use of AES -> so need for incentives which are addressed to overcome them all

- Most researched countries have the feasibility study requirement included in the building permit procedure, as the decision upon energy systems is usually is made before, for properly functioning (impact) of art 5 attention has to be paid to the content and enforcement of the specific requirements

Summary 2, barriers and their possible solutions (2) – focus SENTRO

Barrier

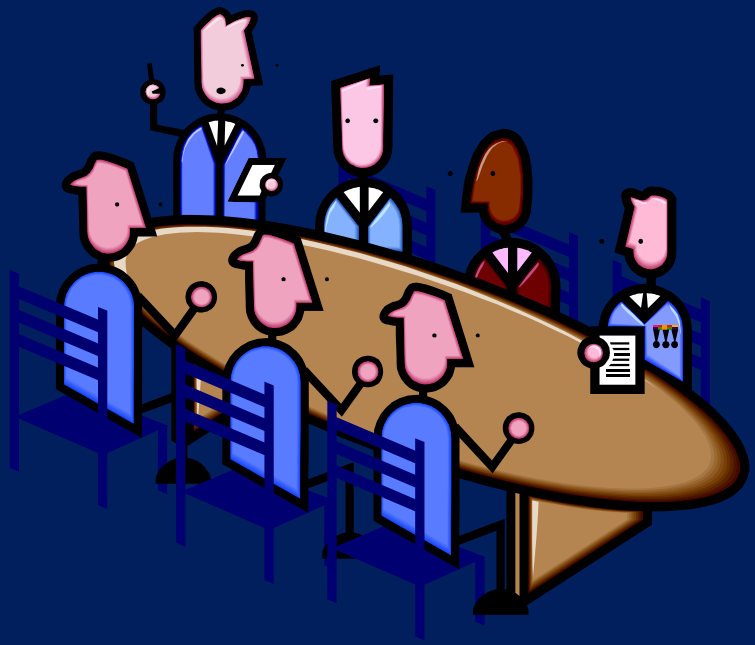
- Lack of knowledge, skill and experience, Conservative attitude
- Lack of comprehensive, objective, integral tool

Possible solutions

Demonstration projects, good practice examples

Provision of specific data technical, financial, organisational/institutional needed for building design and energy calculations

Partners and Contact



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Project website: www.sentro.eu