European ICT network for energy efficiency

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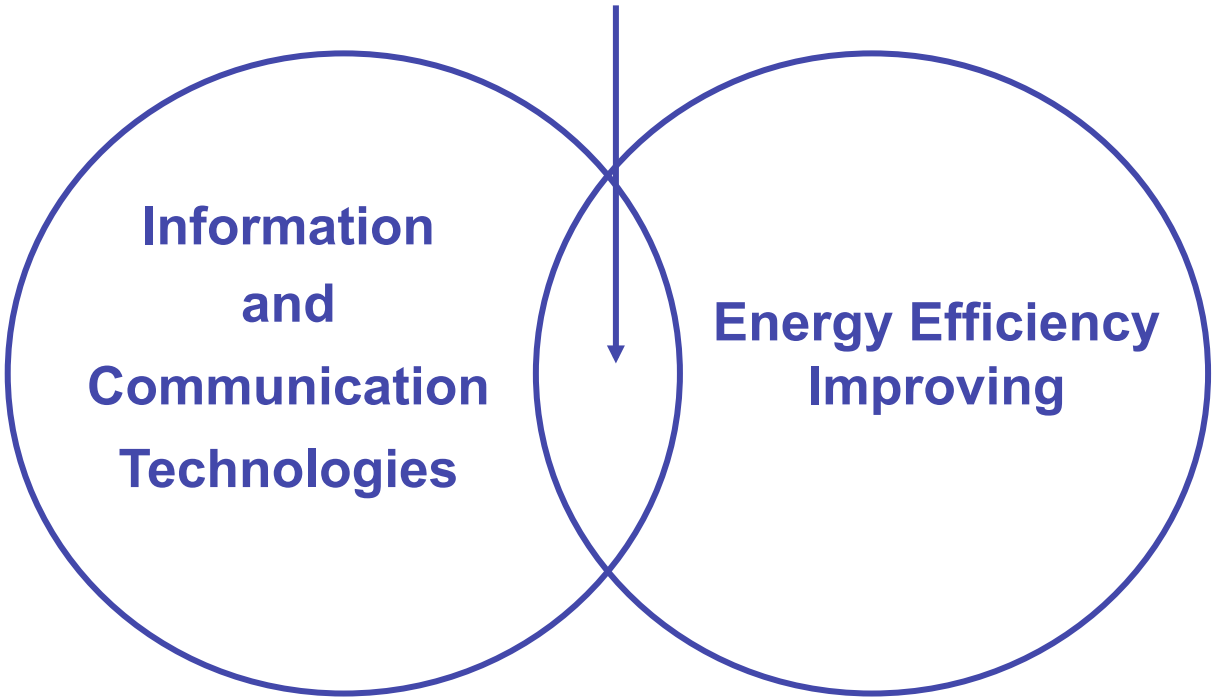
1. European ICT Network for Energy Efficiency



2. Energy Efficiency Improvement

- **Traditional definition:**

  - Improving energy efficiency means acting so that to maintain the same unit of product (goods or services) without diminishing the quality or performance of the product, while diminishing the amount of energy consumed for producing the same product.

  (Protocol of the Energy Charter Treaty on energy efficiency, Lisbon 1994)

- **Actual concept**

  Improving energy efficiency is a broad term. It covers:

  - **a better use of energy through improvements in energy efficiency (NB traditional concept);**
  - **energy saving through changes in behavior– requiring modifications in the amount/structure/type of goods / services obtained).**

  (Green Paper on Energy Efficiency or doing more with less COM(2005)265 final)

2. Energy Efficiency Improvement (continuation) Potential savings

- EU could save at least 20 % of its present energy consumption in a cost effective manner, equivalent to EUR 60 billion per year.
- An average EU household could save between EUR 200 and EUR 1000 per year in a cost-effective manner, depending on its energy consumption

  (Green Paper on Energy Efficiency or doing more with less COM(2005)265 final)

3. EU Objectives

- **Reduction in final energy consumption by at least 1% annually between 2007 and 2016**
  (Directive 2006/32/EC)
- **Reduction in energy consumption by 20 % in 2020**
  (Legislative Package Energy 2007)

Means

- **“We don’t have oil but we have ideas”**
  (French advertising slogan for promoting energy efficiency programmes quoted in the Green Paper)

4. Obstacles in the way of energy efficiency

- Financial obstacles;
- Inadequate energy prices;
- Lack of action of the public authorities;
- **Lack of information and education, against which actions at three levels are mentioned:**
  - **information to citizens on issues such as how to reduce energy consumption in homes;**
  - **information to industrial customers;**
  - **Information to energy efficiency experts (NB including those in the central and local administration) and energy services suppliers on how to increase energy efficiency and the establishment of a functional expert network in all the Member States.**

Green Paper on Energy Efficiency or doing more with less COM(2005)265 final

5. National Energy Efficiency Action Plans

(NEEAP)

- Directive 2006/32/EC stipulates that each Member State should develop NEEAPs that should be submitted to the European Commission as follows:
  - The first plan the latest by June 30, 2007(NB finalized stage);
  - The second plan the latest by June 30, 2010;
  - The third plan the latest by June 30, 2014.

- The second and the third plan should include:
  - an analysis and an evaluation of the stage of development of the previous plan;
  - Complementary measures to the previous plan;
  - Evaluation of the ex-ante and ex-post proposed measures by means of harmonized indicator systems

- The plans are evaluated by the European Commission that publishes reports including its conclusions.

6. Specific ICT Measures for Increasing Energy Efficiency in Buildings

Domain	Technical Measures	Behavioural Measures
Heating ventilation and air conditioning	Working Group on Buildings	Working Group on Behaviour
Water heating		
Cooking		
Lighting		
White goods		
ICT end-user devices		

7. Specific ICT Measures for Increasing Energy Efficiency in Transport

<table>
<tr><th colspan="3">Domain</th><th>Technical Measures</th><th>Behavioural Measures</th></tr>
<tr><td rowspan="3">Road transport</td><td colspan="2">Freight transport</td><td rowspan="4">Working Group on Transport</td><td rowspan="4">Working Group on Behaviour</td></tr>
<tr><td rowspan="2">Passenger transport</td><td>Cars</td></tr>
<tr><td>Public transport</td></tr>
<tr><td colspan="3">Railway transport (subway, tram, city-train)</td></tr>
</table>

8. Energy Indicators for Sustainable Development (EISD)
Project IAEA+UNDESA+IEA+EUROSTAT+EEA final 2005

- Social dimension: 4 indicators (SOC1- SOC4)
- Economic dimension: 16 indicators (ECO1- ECO16)
- Environmental dimension: 10 indicators (ENV1- ENV10)

Each indicator may represent a group of related indicators needed to assess a particular issue.

8. General EISD Indicators of interest for the project (continuation)

- **ECO1 Energy use per capita**

  Definition

  Energy use in terms of
  - **total primary energy supply (TPES)**
  - **total final consumption (TFC)**
  - **final electricity use**

  per capita

Units **Energy: toe per capita**
Electricity: kWh per capita

8. General EISD Indicators of interest for the project (continuation)

- **ECO2 Energy use per unit of GDP**

  Definition

  Ratio of
  - **total primary energy supply (TPES)**
  - **total final consumption (TFC) and**
  - **electricity use**

  to GDP

  Units **Energy: toe per EURO**

  Electricity: kWh per EURO

General EISD Indicators of interest for the project (continuation)

- **ECO8 Service/commercial energy intensities**

  Definition

  Final energy use per
  - **unit of service and commercial value added**
  - **floor area**

  Units **toe for final energy and kWh for electricity per**
  - **EURO (value added), in constant EURO (purchasing power parity)**
  - **square meter of floor area**

8. General EISD Indicators of interest for the project (continuation)

- **ECO14 End-use energy prices by fuel and by sector**

  Definition

  Actual prices paid by final consumer for energy with and without taxes and subsidies

  Units **EURO (purchasing power parity) per unit of energy** **(different units)**

8. General EISD Indicators of interest for the project (continuation)

- **ECO9 Household Energy Intensities**

Definitions

Amount of total residential energy used per

- **person**
- **household**
- **unit of floor area**

Units toe per

- **capita**
- **household**
- **square metre of floor area**

8. General EISD Indicators of interest for the project

- **ECO9 Household Energy Intensities (continuation)**

Definitions

Amount of energy used by residential end users (space heating, cooking, lighting, water heating, electric appliances, etc) per

- **person**
- **household**
- **unit of floor area**
- **electric appliance**

Units

- **toe and kWh of electricity for space heating per unit of floor area**
- **kWh of lighting per unit of floor area**
- **toe and kWh for cooking per household**
- **toe and kWh for water heating per capita**
- **unit electricity consumption for electric appliances**

8. General EISD Indicators of interest for the project (continuation)

- **ECO10 Transport Energy Intensities**

  Definitions

  Freight transport
  Energy used per unit of freight-km hauled
  Unit: toe per ton-km

  Passenger transport
  Energy used per unit of passenger- km traveled
  Unit: toe per passenger-km

  Note: These indicators are defined by mode of transport (road,rail,water,air, pipeline)

8. General EISD Indicators of interest for the project (continuation)

- **Behavior Indicators**

  There are no indicators to explicitly define behavior.

9. Intelligent Energy Europe Programme
ODYSSEE Project
Energy Efficiency Indicators

1. Objectives

- Planning of future activities, including research-development programmes;
- Ex-ante evaluation of the energy efficiency programmes and policies by the ministries, energy agencies, etc;
- Monitoring of projects and programmes relating to energy efficiency increase and CO2 emission reduction;
- Provision of primary information for the energy consumption forecast models;
- International comparisons.

9. Intelligent Energy Europe Programme
ODYSSEE Project
Energy Efficiency Indicators
(continuation)

2. Efficiency indicators are defined at the level of:

- **Economy on its whole;**
- **An economic sub-sector (industry, services, transport, etc);**
- **A type of final utilization (space heating or food preparation in the household sector, freight or passenger transport, in transports, etc).**

9. Intelligent Energy Europe Programme
ODYSSEE Project
Energy Efficiency Indicators
(continuation)

3. Types of indicators

- Energy efficiency trend monitoring indicators;

- Indicators for comparing energy efficiency performances between a country and other countries;

- Diffusion indicators measuring market penetration of the efficient technologies and practices

10. Project Utilization

- Our project aims at providing information on:
  - specific ICT measures for increasing energy efficiency;
  - specific methodologies for the ICT measure potential evaluation.

- Information can be disseminated by the network members and used by the Member States for:
  - developing the second and the third NEEAP;
  - ICT measure potential evaluation.

11. Activities / Actions

- Inventory of ICT for energy efficiency (according to literature)
- Inventory completion by the network members;
- Questionnaires on the utilization of these technologies in the Member States (at least in the states participating in the consortium);
- Sheets / utilization guide books for each technology;
- Specific efficiency indicators for each measure;
- Experimental utilization of the indicators- definition, methodology.

Thank you!

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