

12th EU Hitachi Science and Technology Forum

“Smart Energy Usage for a Sustainable Society”

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Session II: Key technologies to move to zero carbon emission by 2050:

Construction and Urban Development :

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ABSTRACT.

1. CLIMATE CHANGE AND LOW ENERGY CITIES:
A MULTI-LEVEL CHALLENGE (international, regional, national and local)

At world level, the climate change awareness has been remarkably fast (some 20 years) but the belated collective commitment towards effectively mitigating climate change, expressed by the Copenhagen Conference non-results, suggests looking at adaptation to inevitable consequences of climate change, and possible actions by regional, national and local decision makers, and putting emphasis on energy issues. The EU policy is to encourage energy efficiency. According to the European Environment Agency reports, namely its Energy and environment report (EEA Report 6/2008 – www.eea.europa.eu), the most promising are photovoltaic concentration, wind farms and at a later stage, the tapping of the coastal energy resources.

2. CONSTRUCTION –

- 2.1. New Buildings

The best alternative kilowatts are the ones not used (“negawatts”), through increased energy efficiency and thriftier consumption. Therefore “Buildings are the powerhouses of tomorrow” (Jeremy Rifkin – <http://www.foet.org>).

This happens through lowering consumption (e.g. through improved isolation) and using the sunlight and other features. Today’s roofs can embody the photovoltaic (PV) panels. Windows can be PV captors and micro energy savings may be adding up to a positive energy balance. (Ill.)

However the innovations in energy supply and demand can only be achieved if strong regulations give them an economic justification, namely the possibility to download the energy not locally used in the electricity distribution network (ill.).

That is why Germany has been a pioneer in energy savings on new building.

Subsidies to alternative energy devices have proven to be incorporated by manufacturers in their price. When subsidies have been suppressed prices went down by the same amount (PV).

2.2. Existing buildings and neighbourhoods.

- Retrofitting of buildings.

Making use of the energy incorporated in blgs and the energy spent in demolition & reconstruction vs alterations.

- Tightness of neighbourhoods (Ill. Berlin).

3. URBAN DEVELOPMENT.

- Savings through sustainable transport.

Electric transport (ill. Hitachi A-Train)

Batteries progress. Nano technologies in the batteries. Condensators allowing electric PT Vehicles to run in central cities without catenaries.

- Savings through urban form

Urban design (Malmoe, Vauban, Louvain-la-Neuve (Ill)).