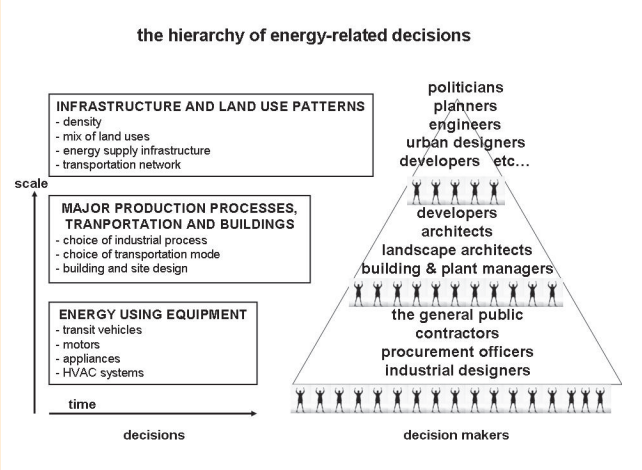
International Energy Agency
Energy Conservation in Buildings and Community Systems Programme

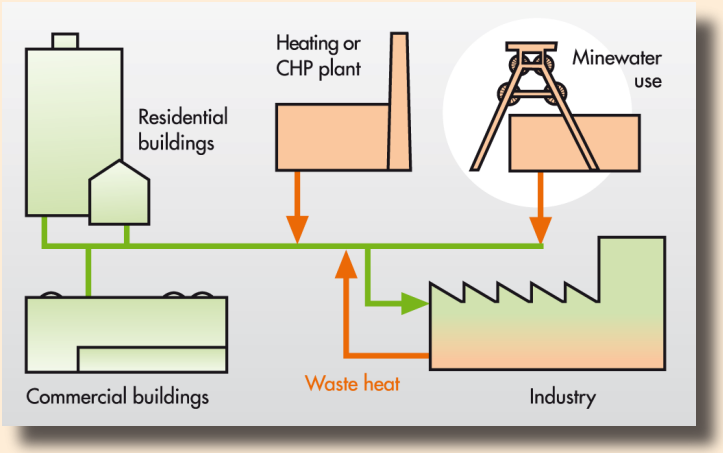
Low Exergy Systems for High Performance Buildings & Communities

ECBCS Project Factsheet

Annex 49



Hierarchy of energy decision makers



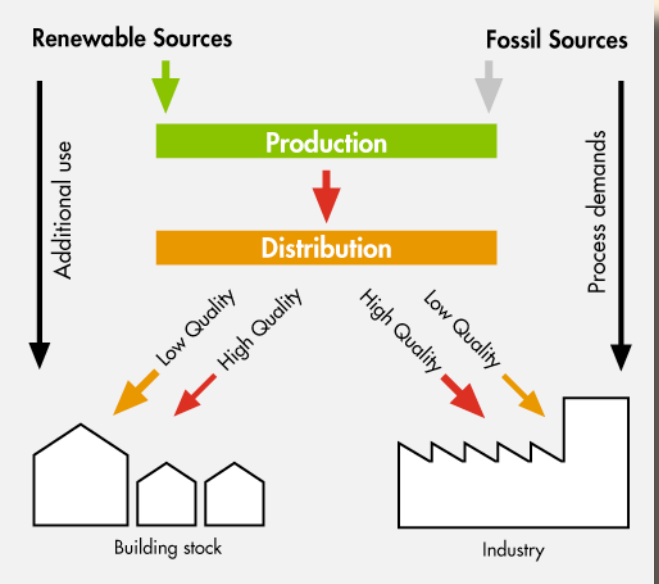
Sources from our environment, e.g. the use of water from abandoned mines for heating or cooling of buildings, requires exergy efficient supply systems at the community level and adapted building service systems.

Exergy allows us to quantify the potential of a given energy source for providing a certain end use, by evaluating both the quantity and quality of an energy flow. Exergy demand for space heating and cooling of buildings is very low, since a room temperature level of about 20°C is very close to the ambient conditions. Thus, appropriate systems making use of equally low exergy sources (i.e. low temperature environmental heat such as ground heat, solar or waste heat) are advisable. However, high quality energy sources like fossil fuels are commonly used to satisfy these small exergy demands.

From an economic and environmental point of view, exergy should mainly be used in industry to allow for the production of high quality products. The Low Exergy (LowEx) approach entails matching the quality levels of exergy supply and demand, in order to streamline the utilisation of high-value energy resources and make best use of low-value energy before it reaches the ambient environment.

Products

- Guidebook on LowEx technologies in the built environment for communities and buildings
- Design guidelines
- Best practice examples for new and retrofit buildings
- Demonstration projects
- Pre-normative proposals



Desirable energy / exergy flow to the building stock and industry

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ECBCS Annex 49

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For more information:

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www.ecbcs.org/annexes/annex49.htm

ECBCS Mission

To develop and facilitate the integration of technologies and processes for energy efficiency and conservation into healthy, low emission, and sustainable buildings and communities, through innovation and research.

ECBCS Vision

The vision of ECBCS is for near-zero primary energy use and carbon emission solutions to be adopted in buildings and communities, where energy is produced on demand.

Participating countries for this project

Austria
Canada
Denmark
Finland
Germany
Italy
Japan
Poland
Sweden
Switzerland
The Netherlands
USA

The International Energy Agency (IEA) was established as an autonomous body within the Organisation for Economic Co-operation and Development (OECD) in 1974, with the purpose of strengthening co-operation in the vital area of energy policy. As one element of this programme, member countries take part in various energy research, development and demonstration activities. The Energy Conservation in Buildings and Community Systems Programme has co-ordinated various research projects associated with energy prediction, monitoring and energy efficiency measures in both new and existing buildings. The results have provided much valuable information about the state of the art of building analysis and have led to further IEA co-ordinated research.

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