An overview of the IEA EUWP Implementing Agreements

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The International Energy Agency (IEA) has been founded during the oil crisis of 1973-74, the IEA's initial role was to co-ordinate measures in times of oil supply emergencies.

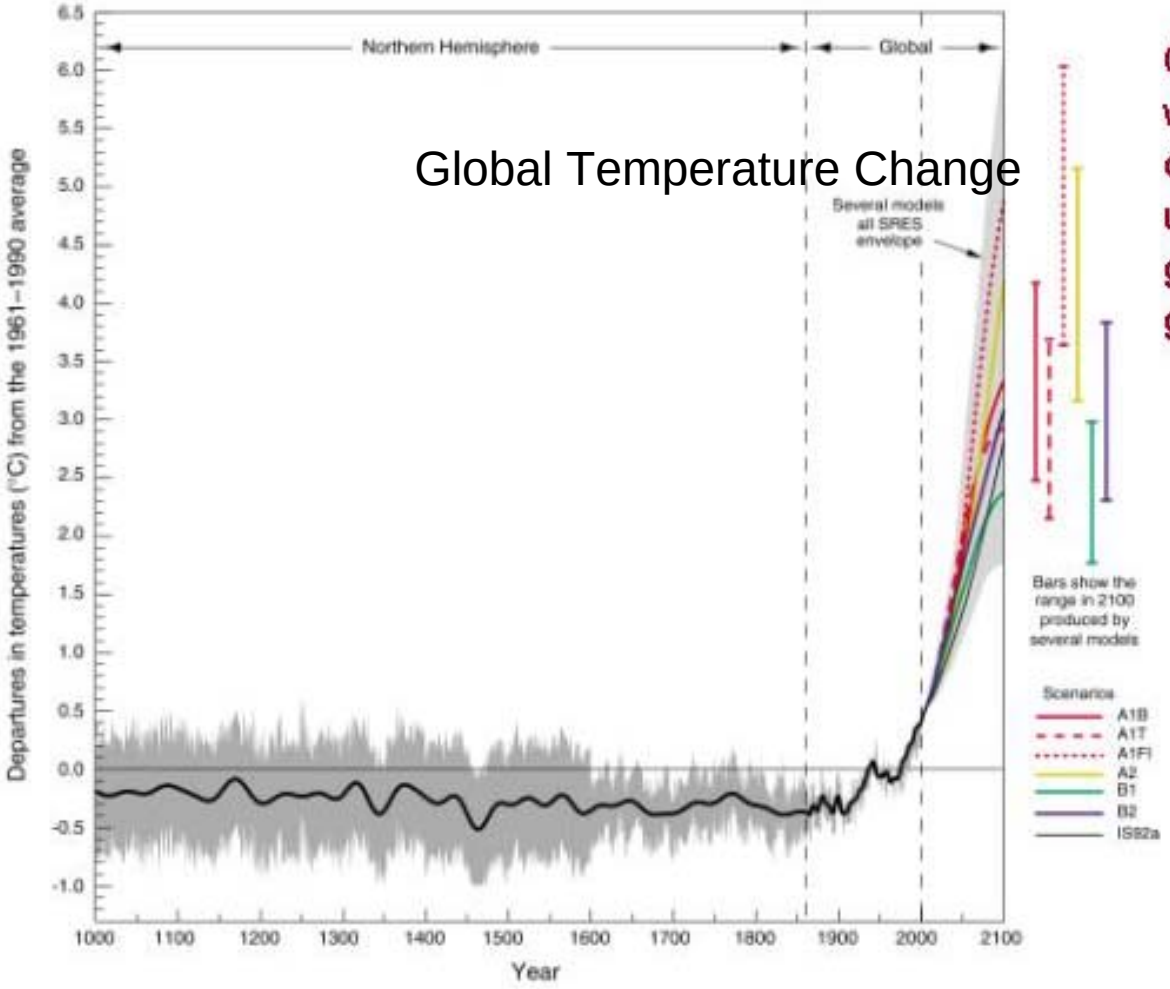
The IEA is an intergovernmental organisation which acts as energy policy advisor to their member countries in their effort to ensure reliable, affordable and clean energy for their citizens.

As energy markets have changed, so has the IEA. Its mandate has broadened to incorporate the "Three E's" of balanced energy policy making:

- energy security,
- economic development and
- environmental protection.

Current work focuses on

- climate change policies,
- market reform,
- energy technology collaboration,and
- outreach to the rest of the world, especially major consumers and producers of energy like Brazil, China, India, Mexico, Russia, South Africa, and the OPEC countries.



Global temperature will rise from 1.4-5.8°C over this century unless greenhouse gas emissions are greatly reduced

Source: IPCC Third Assessment Report, WG1

The IEA is an autonomous agency linked with the Organisation for Economic Co-operation and Development (OECD) and based in Paris.

The main IEA decision-making body is the **Governing Board**, composed of energy ministers from each member country or their senior representatives.

The **IEA Secretariat**, supports the work of the Governing Board and subordinate bodies. It collects and analyses energy data, organizes high-level workshops on new topics and themes, assesses member and non-member countries' domestic energy policies and programmes, makes global energy projections, and prepares studies and policy recommendations for governments on key energy topics.

Standing Group on Emergency Questions (SEQ)
is responsible for all aspects of IEA oil emergency preparedness and collective response to supply disruptions.

Standing Group on the Oil Market (SOM)
monitors and analyses short- and medium-term developments in the international oil market to help IEA Member countries react promptly and effectively to changes in market conditions.

Standing Group on Long-Term Co-operation (SLT)
encourages co-operation among IEA member countries to ensure their collective energy security, improve the economic efficiency of their energy sector and promote the environmental protection in provision of energy services. The SLT has the

- Working Party on Energy Efficiency.

Standing Group for Global Energy Dialogue (SGD) is responsible for work with countries and regions outside of the IEA membership, including China, Russia and India. Many SGD projects draw upon both regional and sectoral expertise and are carried out jointly with other IEA divisions.

Committee on Energy Research and Technology (CERT) co-ordinates and promotes the development, demonstration and deployment of technologies to meet challenges in the energy sector. The CERT has established four expert bodies:

- Working Party on Fossil Fuels;
- Working Party on Renewable Energy Technologies;
- Working Party Energy End-Use Technologies and
- Fusion Power Co-ordinating Committee.

The **End Use Working Party** (EUWP) has served since 1982, as the principal advisory body to the IEA Committee on Energy Research and Technology on all matters relating to energy end-use technologies and technology policies.

The EUWP serves as a reference body for end-use technology issues within the IEA and represents the IEA to outside parties on these issues.

It oversees, supports and adds value to the RD&D efforts of the implementing agreements, and policy experts from member countries share experience in energy end-use technology and innovation (research, development, demonstration, and technology deployment).

The EUWP is the focus for the IEA's extensive international network for RD&D of technologies to increase the efficiency of energy end use.

The network comprises 16 **Implementing Agreements** on individual technologies, for cooperative research, development and demonstration in buildings, industry, transport and electricity network technologies.

The network has more than 150 contracting parties from more than 30 countries world wide to guide the work. Under their leadership national experts collaborate on joint research projects. Outreach to industry and other experts involve thousands in research activities.

1. Buildings and Community Systems – ECBCS
2. District Heating and Cooling - DHC
3. Efficient Electrical End-Use Equipment – 4E
4. Energy Storage - ECES
5. Heat Pumping Technologies – HPT with
6. Industrial Energy-Related Technologies and Systems - IETS
7. Emissions Reduction in Combustion
8. Advanced Fuel Cells – AFC
9. Advanced Materials for Transportation - AMT
10. Advanced Motor Fuels - AMF
11. Hybrid and Electric Vehicles – HEV
12. Demand-Side Management - DSM
13. Electricity Networks Analysis, Research & Development - ENARD
14. High-Temperature Superconductivity – HTS
15. Energy Technology Data Exchange - ETDE
16. Energy Technology Systems Analysis Programme – ETSAP

IEA Combustion

iets
Industrial Energy-Related Technologies and Systems
An Implementing Agreement established under the auspices of the International Energy Agency

ADVANCED MOTOR FUELS
IEA-AMF

IEA Implementing Agreement on Advanced Motor Fuels

IEA INTERNATIONAL ENERGY AGENCY
HYBRID & ELECTRIC VEHICLE
IMPLEMENTING AGREEMENT

IEA-IA-AMT.org
Implementing Agreement on Advanced Materials for Transportation Application

Energy Conservation in Buildings and Community Systems

ECES

IEA DHC|CHP

IEA OECD

4E
Efficient Electrical End-Use Equipment
International Energy Agency

ENARD
Electricity Networks Analysis, Research and Development

ieadsm
energy efficiency

High-Temperature Superconductivity
INTERNATIONAL ENERGY AGENCY

IEA ETDE

ETSAP
IEA OECD
ENERGY TECHNOLOGY SYSTEMS ANALYSIS PROGRAM

Structure of the EUWP IAs

- **End-Use Technologies / Buildings**
- **End-Use Technologies / Industry**
- **End-Use Technologies / Transport**
- **End-Use Technologies / Electricity**
- **Cross-Cutting Agreements**

- **End-Use Technologies / Buildings**

Buildings and Community Systems – ECBCS with
Air Infiltration Centre and Future Buildings Forum

District Heating and Cooling - DHC

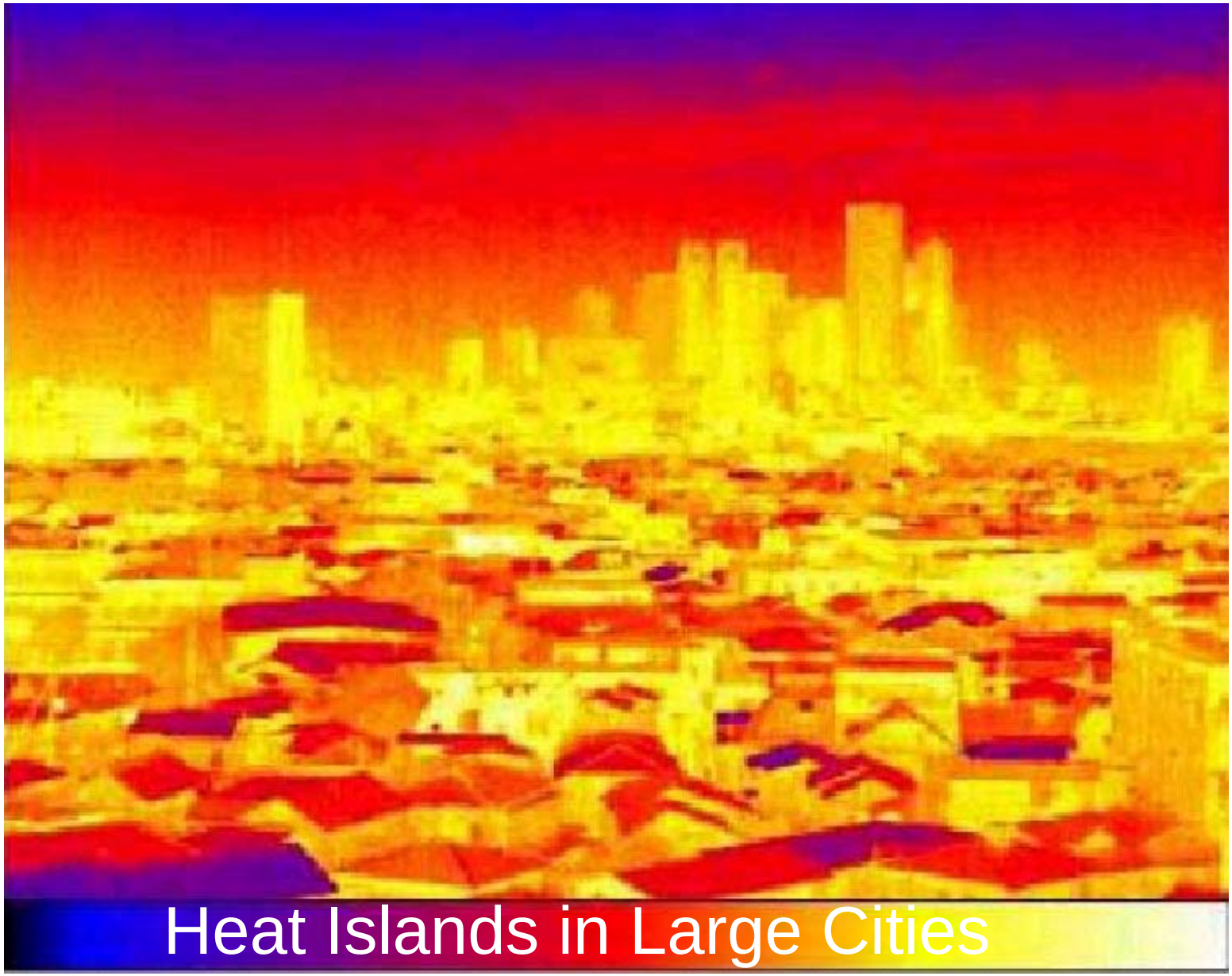
Efficient Electrical End-Use Equipment – 4E

Energy Storage - ECES

Heat Pumping Technologies – HPT with
Heat Pump Centre

Buildings Co-ordination Group – BCG with

Demand-Side Management - DSM
Photovoltaic Power Systems - PVPS
Solar Heating and Cooling - SHC


Heat Islands in Large Cities

- **End-Use Technologies / Transport**

  Advanced Fuel Cells - AFC

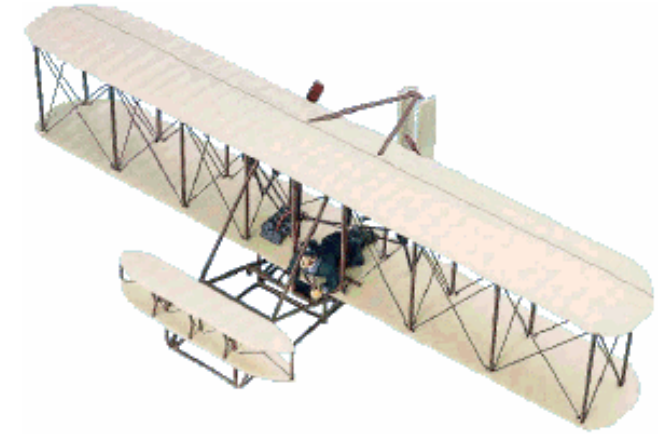
  Advanced Materials for Transportation - AMT

  Advanced Motor Fuels - AMF

  Hybrid and Electric Vehicles – HEV

  Transport Co-ordination Group – TCG with

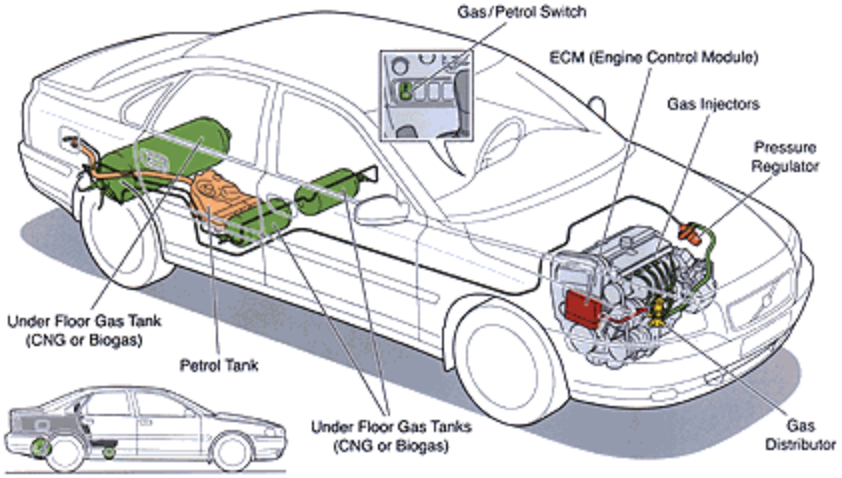
  Bioenergy
  Renewable Energy Technology Deployment - RETD




A380
A380


747
BOEING 747-400


OOCL


Gas/Petrol Switch
ECM (Engine Control Module)
Gas Injectors
Pressure Regulator
Under Floor Gas Tank (CNG or Biogas)
Petrol Tank
Under Floor Gas Tanks (CNG or Biogas)
Gas Distributor


Zafira


Pius-Bus


D SP 109


i-EV

- **End-Use Technologies / Electricity**

  Demand-Side Management - DSM

  Electricity Networks Analysis, Research & Development - ENARD

  High-Temperature Superconductivity on the Electric Power Sector – HTS

  Electricity Co-ordination Group – TCG with

  Energy Storage
  Wind



Windkraftanlagen



- **End-Use Technologies / Industry**

  Industrial Energy-Related Technologies and Systems - IETS

  Emissions Reduction in Combustion

- **Cross-Cutting Agreements**

  Energy Technology Data Exchange - ETDE

  Energy Technology Systems Analysis Programme - ETSAP

Buildings Co-ordination Group

Buildings account for close to 40% of energy used in most countries. The potential for energy savings is large and compelling and can often be achieved at low or no costs. For users and owners of buildings in general, energy efficiency will most often be feasible, as savings will pay for the additional investment costs over time.

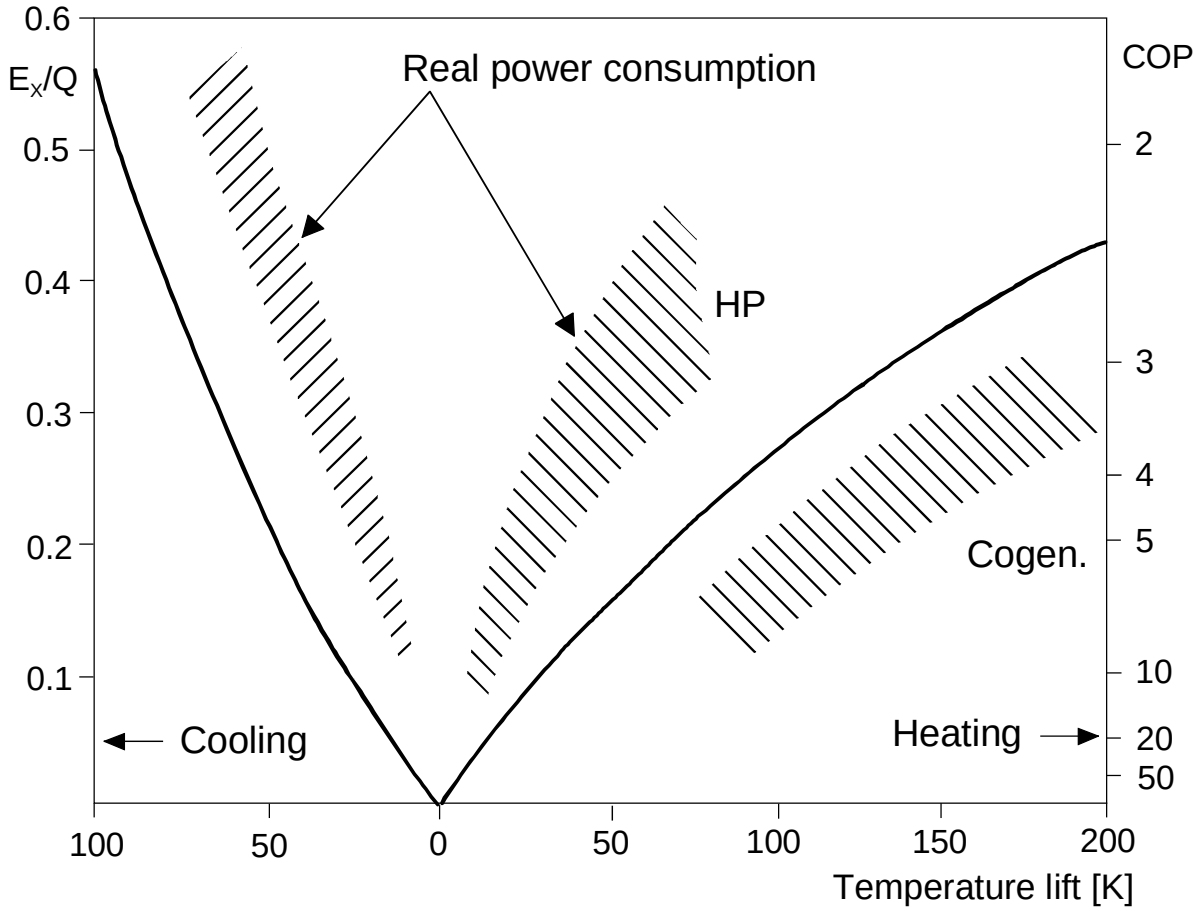
Many barriers work against energy efficiency in buildings such as: split incentives, incremental costs, lack of information, and the complex and fragmented structure in the construction industry. There is a need for a package of policies to address these barriers both in new and in existing buildings.

Buildings Co-ordination Group

• The main IA in the area of buildings was and is Buildings and Community Systems (ECBCS), which from its very beginning has been dedicated to buildings and community systems, i.e. covering the requirements of the user (health, comfort etc.) in an energy efficient and sustainable way.

• District Heating and Cooling (DHC) addresses the heating and cooling demand of communities. District Heating and Cooling has proven to be a major contributor to Greenhouse Gas reduction and its importance is growing with respect to the rapidly growing urbanisation. DHC is extremely flexible making use of any fuel including waste energy, renewables and the application of combined heat and power (CHP).

Ideal and Real Power Consumption E_x/Q for Refrigeration and Air Conditioning and Space Heating by Heat Pumps and by Cogeneration



Buildings Co-ordination Group

• Solar Heating and Cooling (SHC) deals with the application of solar thermal systems, appropriate for both heating and cooling. Key applications for solar technologies require low temperature heat, such as domestic hot water heating and space heating. Solar applications also can meet cooling needs, where the supply and the demand are well matched.

• Energy Storage (ECES) was originally focused on large underground storage systems required by solar systems, now its focus is the strategic and necessary component for the efficient utilization of renewable energy sources and energy conservation.

Buildings Co-ordination Group

• Heat Pumping Technologies (HPP) strives to achieve widespread deployment of appropriate high quality heat pumping technologies for heating, cooling, air conditioning and refrigeration. In producing heat, heat pumping technologies upgrade free low-temperature heat from renewable sources, such as air, water, ground and waste heat, to useful temperatures in order to obtain energy conservation and substantial environmental benefits.

• Demand Side Management (DSM) is finding solutions to problems such as load management, energy efficiency, strategic conservation and related activities.

Buildings Co-ordination Group

• Photovoltaic Power Systems (PVPS) is concentrated on the electricity production directly from solar covering grid connected systems as well as stand-alone systems.

• Energy Efficient Electrical Equipment (4-E) deals with the improvement of the efficiency of electrical equipment and appliances in the building sector.

Buildings Co-ordination Group

The BCG is a platform for communication and personal contacts between the building related IAs.

But this platform is not limited to the IAs.

Communication should also be active between the IAs and the IEA Secretariat, which provides a lot of information, which will ensure fruitful communication between the two sources to foster the developing and disseminating of information on end-use energy technologies.

Challenges and Capabilities of the BRIAs

Today, energy use in residential and commercial/public buildings accounts for 35% of the global final energy consumption – approximately 1.179 Mtoe in the OECD countries; 221 Mtoe are used in the economies in transition; and 1.169 Mtoe in developing countries.

The 2005 Gleneagles G8 Summit ended with an agreement on a new Dialogue on Climate Change, Clean Energy and Sustainable Development between G8 countries and other interested countries. It was also noted that, without the Plus-5 countries, such activities cannot be successful. We must think globally, and not as regions.

Challenges and Capabilities of the BRIAs

The rapid and continuous urbanisation gives challenges for the design of communities, but it also provides opportunities, like possibilities to increase the use of district heating and cooling systems.

Aging of people and buildings in industrialised countries creates need to adapt buildings to life-cycles of the population and to increases need for renovation.

Lack of skilled resources in industrialised countries necessitates product development towards more prefabricated and industrially produced buildings and systems.

This in turn requires changes in education.

Mexico City

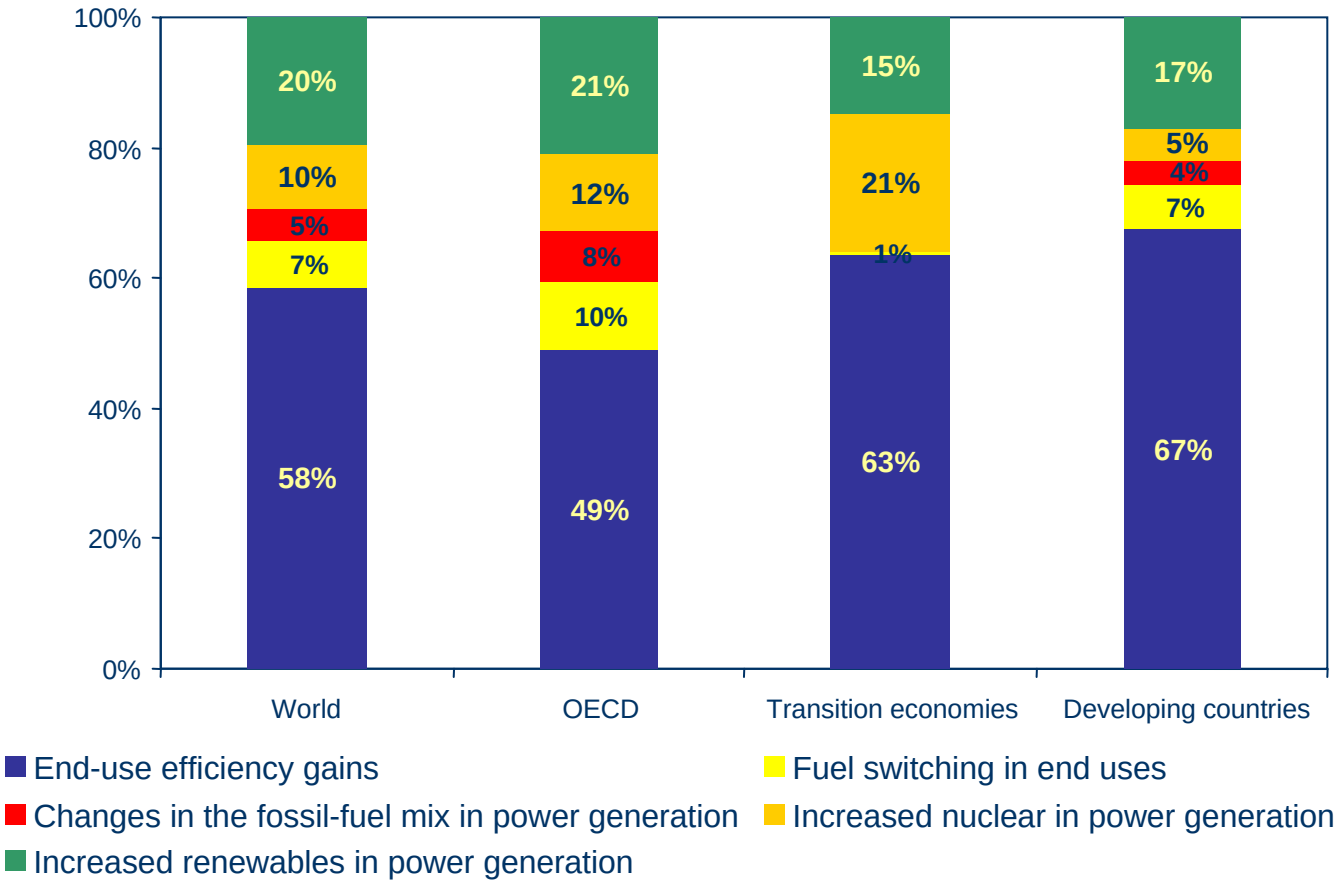
Challenges and Capabilities of the BRIAs

There is an increasing pressure to reduce significantly the energy consumption of communities and buildings. The industry seeks a new generation of highly efficient buildings with much lower energy use. The goal is to shift emphasis from technology development to market-oriented development.

Many technologies are ready for the market, but the market is not ready for the new technologies. This means a move from first-cost-based-business towards life-cycle-performance-based business. This, however, does not mean departure from technological advances.

Solutions need to fulfill ecological and economical demands as well as social acceptance and sustainability.

Contributory factors in CO2 reduction, 2002-2030



Improvements in end-use efficiency contribute for more than half of decrease in emissions, and renewables use for 20 %