



ENERGY EFFICIENCY IN THE REFRIGERATION AND AIR-CONDITIONING (RAC) SECTOR



Providing the same cooling, using less energy and living better!

WHAT IS ENERGY EFFICIENCY?

Being energy-efficient means doing the same amount of work while using less energy to fulfil the same needs.

For example, an energy-efficient refrigerator can keep your food cool, but at a lower rate of energy consumption compared to an older model. Similarly, the well-insulated ducts of an air-conditioning system make it more energy-efficient because less cooling load is required to maintain a comfortable living environment.

We say something is more energy-efficient if it delivers the same service for less energy input or more service for the same energy input. Energy efficiency can be a way of managing and restraining the fast growth in energy consumption that has occurred over the last few decades.

DID YOU KNOW

About **40%** of the emission reductions required by 2050 to limit the global temperature increase to less than **2°C** could potentially come from energy efficiency.*

WHY IS ENERGY EFFICIENCY IN THE RAC SECTOR IMPORTANT?

The RAC sector represents a major share of energy use in most developing countries as RAC applications consume large amounts of electricity for cooling requirements, resulting in a rapid increase in energy consumption in the commercial and residential sectors of many countries.



Furthermore, the number of RAC applications used in many developing countries is rising rapidly due to improved standards of living and a reduction in the price of these products globally.

This has put a tremendous strain on national grids for power generation and has contributed significantly to electrical grid peak loads in these countries, making it in the national interest to promote the use of energy efficiency in the RAC sector. At the national level, employing energy efficient RAC applications could in turn help reduce the current use of electricity and fossil fuels required for cooling; reduce pollution; and sustain economic development.

For example, in countries with high ambient temperatures, an air-conditioner uses more energy during the afternoon and therefore the impact of energy efficiency at peak demand depends on when the RAC application is in use. Peak loads can result in “black-outs” and planned shut-down of power “brown-outs”.

DID YOU KNOW

More than **75%** of the summertime peak electricity load in the Indian cities of Mumbai and New Delhi comes from residential and commercial air conditioning units.**

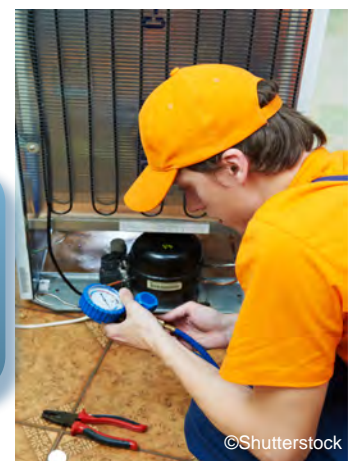
Energy efficiency can deliver a wide range of benefits to the RAC sector, such as:

- * Reduced energy and operation/maintenance costs, for businesses and end-users, that can result in financial cost-savings to increase productivity;
- * Better matching of cooling load and equipment/system capacity; and
- * Safeguarding the planet from the impact of global warming by reducing emissions from human activities such as burning of fossil fuels to generate electricity.



DID YOU KNOW

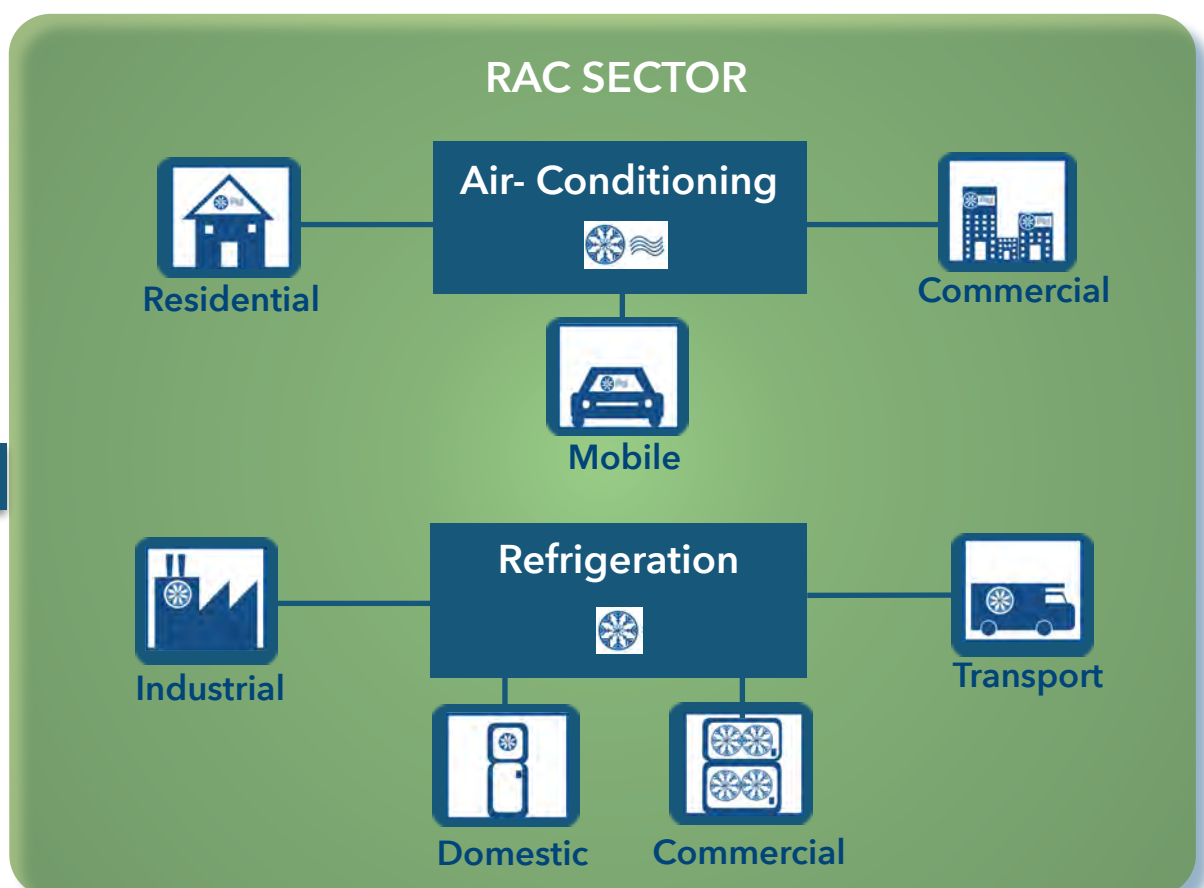
Modern energy-efficient refrigerators use **40%** less energy than those made in 2001.*



WHO ARE KEY STAKEHOLDERS?

The key stakeholders in the RAC sector who need to be aware and informed about the importance of energy efficiency include:

- ❄️ National Ozone Units (NOUs) and public authorities;
- ❄️ Local RAC equipment/product manufacturers, dealers and installers;
- ❄️ National, regional and international standardisation organisations;
- ❄️ Local power utilities;
- ❄️ End-users and businesses; and
- ❄️ Banking associations and other financing entities.



WHAT

KEY POLICIES/INSTRUMENTS CAN BE USED TO PROMOTE ENERGY EFFICIENCY IN THE RAC SECTOR?

Even though RAC applications significantly impact energy use globally, a number of developing countries have not yet adopted many of the policies and instruments that can be used to promote energy efficiency in RAC applications.

This promotion can include, among others, of:

- ❁ Inclusion of energy-efficient RAC applications into building codes or other appropriate building sector regulations either as mandatory or voluntary measures (for example, mandatory building insulation regulations);
- ❁ Financial and/or fiscal incentives such as specific subsidies or favourable taxation regimes, reduction of import duties for dedicated energy-efficient RAC applications, and its components, small and medium enterprises (SMEs) investment opportunities and similar facilities;
- ❁ Development of appropriate demand-side management programs with local power utilities;
- ❁ Public awareness-raising and marketing campaigns;
- ❁ Introduction and development of quality assurance measures that can be applied to the RAC applications such as standards, certification and labelling schemes, in order to create and maintain customer confidence and better communicate the energy savings potential.



Labelling Schemes



Label Endorsement
Brazil



Label Comparative
Australia



Label Endorsement
United States

Sources:

1. International Energy Agency (IEA)*
2. Council for Energy, Environment and Water (CEEW)**
3. Intergovernmental Panel on Climate Change (IPCC)
4. Organisation for Economic Co-operation and Development (OECD)
5. United Nations Environment (UN Environment)
6. United States Department of Energy (US DOE)

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