

## Energy effectiveness, efficiency, and their measurement indicators

### Some terms

#### 1. Energy economics:

Energy efficiency is the use of less energy to perform the same task or produce the same result. The concept of energy efficiency refers to the ability to get the best results in any given activity by utilizing the least amount of energy resources possible. It enables us to reduce the consumption of any type of energy including the associated environmental impacts. This is applicable from production to consumption of energy.

With energy efficiency, we try to maintain the same operating efficiency but incorporating a series of responsible habits, sustainable management models, and investments in technological innovation.

Energy efficiency brings a variety of benefits: reducing greenhouse gas emissions, reducing demand for energy imports, and lowering our costs on a household and economy-wide level. While renewable energy technologies also help accomplish these objectives, improving energy efficiency is the cheapest – and often the most immediate – way to reduce the use of fossil fuels. There are enormous opportunities for efficiency improvements in every sector of the economy, whether it is buildings, transportation, industry, or energy generation.

2. **Energy Intensity:** is measured by the quantity of energy required per unit output or activity, so that using less energy to produce a product reduces the intensity.

At the level of the aggregate economy (or even at the level of an end-use sector) energy efficiency is not a meaningful concept because of the heterogeneous nature of the output.

The production of a huge number of goods, the mixing of the transport of freight and people, and the variety of housing and climates makes an aggregate energy intensity number based on Gross Domestic Product (GDP), a number that disguises rather than illuminates.

A simple intensity measure can be calculated (as Energy/GDP), but this number has little information content without the underlying sector detail.

#### 3. Other terms:

Energy effectiveness, energy policy, CO<sub>2</sub> emissions, energy tax, carbon tax, energy scenarios, etc.