

DECOMPOSITION ANALYSIS

Decomposition analysis provides a greater understanding of the impact of various factors on energy use. Analysis involves the decomposition of energy demand into three distinct factors:

- Activity – the change in the level of action that creates demand for energy.
- Structure – the mix of activities within an economy or sector.
- Efficiency – the amount of energy used per unit of activity. The term “efficiency effect” is used in this report to avoid confusion with the term “energy intensity”.

Table A.1 Sectors and indicators included in the IEA decomposition analysis

Sector	Service/sub-sector	Activity	Structure	Efficiency effect
Residential and non-residential buildings	Space heating	Population	Floor area per population	Space heating energy* per floor area
	Water heating	Population	Occupied dwellings per population	Water heating energy per occupied dwellings
	Cooking	Population	Occupied dwellings per population	Cooking energy per occupied dwellings
	Space cooling	Population	Floor area per population	Space cooling energy* per floor area
	Lighting	Population	Floor area per population	Lighting energy per floor area
Residential buildings	Cooking	Population	Occupied dwellings per population	Cooking energy per occupied dwellings
	Appliances	Population	Appliance stock per population	Appliances energy per appliance stock
Passenger transport	Car; bus; rail; shipping; aviation	Passenger kilometre	Share of passenger kilometres by mode, share of LDPV passenger kilometres in light trucks and persons per vehicle	Energy per vehicle kilometre
Freight transport	Truck; rail; domestic shipping; aviation	Tonne kilometre	Share of tonne kilometres by mode, share of road freight tonne kilometres by vehicle type	Energy per tonne kilometre
Industry	Food, beverage and tobacco; paper, pulp and printing; chemicals and chemical products; non-metallic minerals; primary metals; metal products and equipment; motor vehicles and transport equipment; and other manufacturing	Value-added	Share of value-added	Energy per value-added
Services	Service	Value-added	Share of value-added	Energy per value-added
Other industries**	Agriculture and fishing; construction	Value-added	Share of value-added	Energy per value-added

* Adjusted for climate variation using heating and cooling degree-days.

** Because they are energy producing sectors and outside the scope of this analysis, the following sectors are not included: mining and quarrying; fuel processing; and electricity; gas and water supply. “Other industries” are analysed only to a very limited extent.

The decomposition analysis presented in *Energy Efficiency 2018* covers 75% of global energy use and includes all IEA member countries plus Argentina, Brazil, the People's Republic of China, India, Indonesia, Mexico, the Russian Federation and South Africa. "Energy use" excludes non-energy use (i.e. feedstocks) and energy supply.