

Socioeconomic representation

Results computed by energy- and climate- economic models are driven by certain specific parameters, which are determined either endogenously (i.e. within a model's own calculations) or exogenously as an input from an external source. Most models share a common set of drivers, namely GDP and population, and this is why these two socioeconomic dimensions are largely considered in all PARIS REINFORCE models. Their projections are used to define the socioeconomic context to compare scenarios with and without climate policies. In all models, economic growth assumptions can be adjusted to reflect scenario input choices. Each model has a particular set of input requirements driving the sectoral changes. In most cases, as the underlying driver increases, energy demand also increases, but tends to do so at a slower rate, to reflect the fact that there is a decreasing demand for additional energy services as incomes rise; this is defined as the income elasticity of energy demand: when dropping down to zero, it is an indication of saturation levels for energy service demand being reached. The analysed models also incorporate the concept of energy price elasticity of energy demand, which captures the dynamics of rising energy prices leading to a fall in the demand for energy services. The combined impact of these two concepts can capture, to some extent, behaviour changes in terms of uptake of more efficient modes of travel, or the responsible use of appliances in buildings. However, more profound behaviour changes, such as large-scale shifts from private motorised transport to public transport or active transport (i.e. walking and cycling) are not directly captured in the project models, and scenarios assuming policies to implement and support such shifts can be implemented through exogenous input assumptions. As energy- and climate-economic models, the tools comprising the PARIS REINFORCE ensemble cover most socioeconomic dimensions like economic activities and incomes, while public finances and employment metrics to a lesser extent.

Such as population & urbanisation

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Demographics

GDP

Including private consumption, public consumption, gross fixed capital formation, exports, imports, trade balance

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Economic activity

Including production, value added, imports/exports, employment, energy expenditure, investments, raw/other material consumption

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Employment

Including by educational attainment level, age, sex, or economic activity

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Expenditures, receipts, social benefits, balances

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Public finances

Incomes

Gross/real disposable, capital, labour, social transfers, by quantities, energy poverty

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Investments

Macroeconomic, private, public

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