



## THE OECD ENV-GROWTH MODELLING FRAMEWORK

### Projecting long-term economic growth

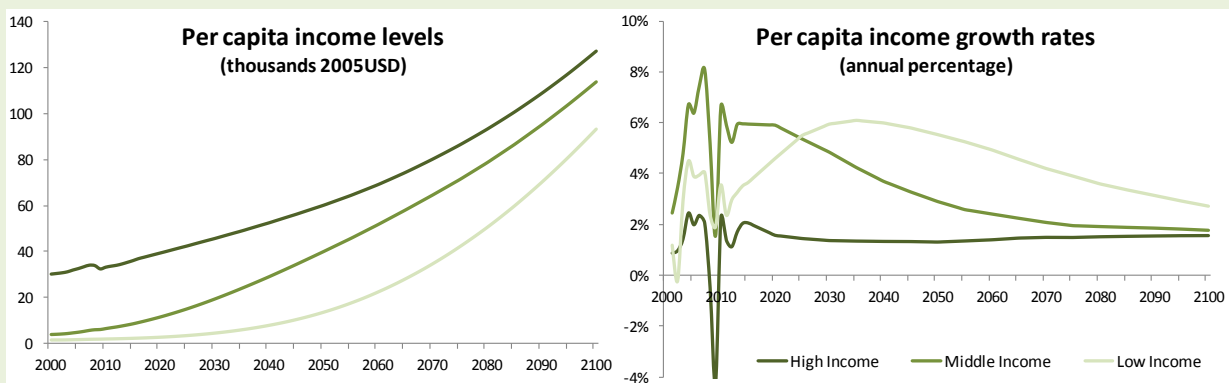
#### Background

The OECD regularly produces country-specific long-term macroeconomic projections for OECD countries. These provide a reference scenario for socio-economic development against which the consequences of alternative policy settings can be projected.

The OECD's ENV-Growth model extends the

methodology used so far to produce economic growth projections for both OECD and non-OECD countries. The model explicitly considers energy and some natural resources (oil and gas) as productive inputs. The methodology provides long-term pathways of national income until 2100 for 184 countries.

#### Stylised representation of conditional income convergence

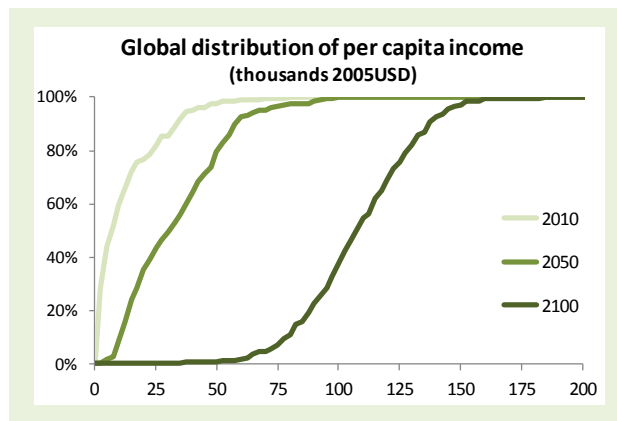


#### Elements of the framework

The ENV-Growth modelling framework for projecting future global and country-specific GDP and per capita income levels is based on a neo-classical model of exogenous growth augmented with accumulating human capital (i.e. augmented Solow growth model). Countries' income levels converge towards their country-specific long-term frontier ("conditional convergence"), which is determined by the key drivers of economic growth.

Short- to medium-term (2012-2017) economic projections are in line with the OECD and the International Monetary Fund (IMF) forecasts.

The projections typically show higher growth rates for developing countries and partial income convergence across countries over the century.

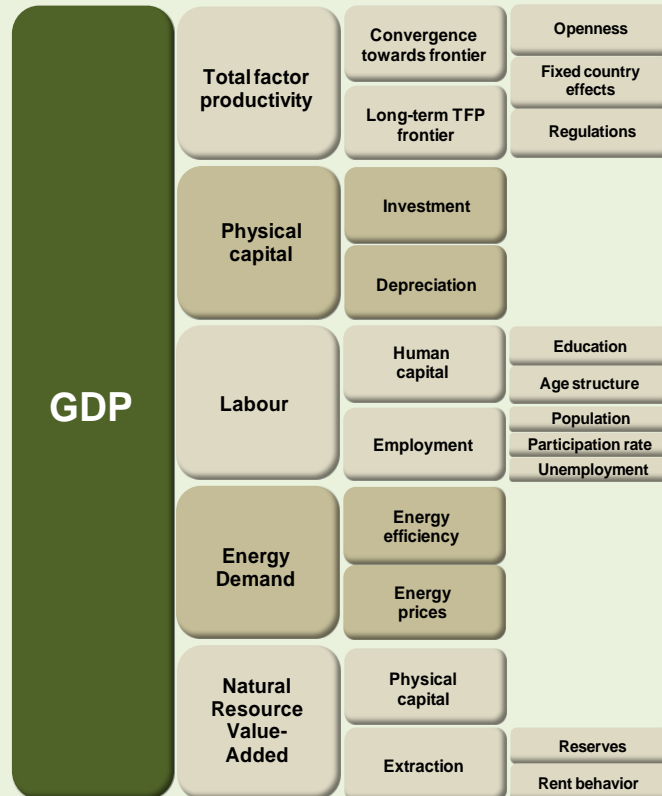




### Overview of the modelling framework

The OECD's ENV-Growth model considers six drivers of long-term economic growth:

- **Total factor productivity (TFP)**, as an indicator of exogenous technical progress;
- **Physical capital**, as driven by standard capital accumulation;
- **Labour**, as driven by human capital, which depends on education, and employment, which depends on demographic trends, labour participation rates and unemployment scenarios;
- **Energy demand**, as driven by autonomous energy efficiency;
- **Natural resource revenues** stemming from extraction and processing of oil and gas.



### Potential uses of ENV-Growth

ENV-Growth provides essential inputs for the OECD's multisectoral ENV-Linkages model, which focuses on economy-environment interactions in the coming decades. ENV-Linkages and ENV-Growth are mutually consistent.

It is also used in the construction of Shared Socioeconomic Pathways (SSPs), as a basis for climate change assessment. More information on the SSP projections is available at:

<https://secure.iiasa.ac.at/web-apps/ene/SspDb>

### Further information:

J. Chateau, R. Dellink, E. Lanzi and B. Magné, 2013, "The ENV-Growth model: global reference scenarios for future economic growth", *OECD Working Paper*, forthcoming.

[www.oecd.org/environment/modelling](http://www.oecd.org/environment/modelling)

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ENV-Growth can provide quantitative support for a variety of OECD studies, including OECD-wide analysis of new sources of economic growth. The model will also play a key role in the analysis of the long-term costs of environmental inaction and resource scarcity. As the key ENV-Growth projections are publicly available, the methodology can also serve as a basis for other quantitative assessments that involve long-term economic baselines.