Short Description of the GEM-E3 model

GEM-E3 is an applied general equilibrium model designed for medium and long term economic scenario building to support economic and restructuring policy analysis drawn by comparing counter-factual scenario results to a baseline projection. The model provides projections for multiple countries and for multiple sectors and covers the entire economy, including national accounts, investment, consumption, public finance, foreign trade and employment. The ***GEM-E3*** model has been built in the mid-90s and has since continuously be updated and extended. ***GEM-E3*** has been very widely used by the European Commission for several studies, including the Single Market Act, the Lisbon Agenda, the tax reform, Climate Action policies, Energy policies, Transport policies, Employment policies (for different respective DGs); the model also operates at the European Commission premises and is handled and maintained by E3MLab. The model uses Eurostat and GTAP data. ***GEM-E3***:

- is a global multi-country model, representing 37 regions including EU27 by country, U.S.A., Japan, Canada, Oceania, CIS, Rest of Annex-I, Brazil, China, India, Med and Gulf countries, etc., with endogenous foreign trade by product
- includes all production sectors (aggregated to 25) and economic agents
- performs dynamic multi-period simulations, covering the period up to 2050 with a five year time step
- formulates the labour market through the efficiency wages approach and projects involuntary unemployment.
- formulates foreign trade endogenously and can simulate oligopolistic or perfect competition
- represents major aspects of public finance including all substantial taxes, social policy subsidies, public expenditures and deficit financing, as well as policy instruments; it can handle current account or public budget constraints endogenously by readjusting taxes and interest rates
- projects to the future the entire National Accounts, investment, consumption, activity by sector, prices, employment and trade
- handles energy in more detail representing energy savings, electricity production with different technologies, transport sector restructuring and biofuels
- calculates emissions of pollutants and greenhouse gases and represented various policy instruments, including ETS, for emission reduction and control
- can represent infrastructure as a factor enabling productivity changes simultanesouly with the financing of infrastructure building
- can assess distributional consequences of restructuring programs and policies, including social equity, employment and cohesion for less developed regions
- computes a market equilibrium solution, respecting the Walras law, simultaneously for all domestic markets of all regions and foreign trade links.