

Macro-economic modelling

MACROECONOMIC IMPLICATIONS OF DIFFERENT ENERGY SYSTEM CONFIGURATIONS UNDER ALTERNATIVE CONTEXTS/SHOCKS

E3Modelling analyses the macroeconomic implications of different energy system configurations under alternative contexts/shocks.

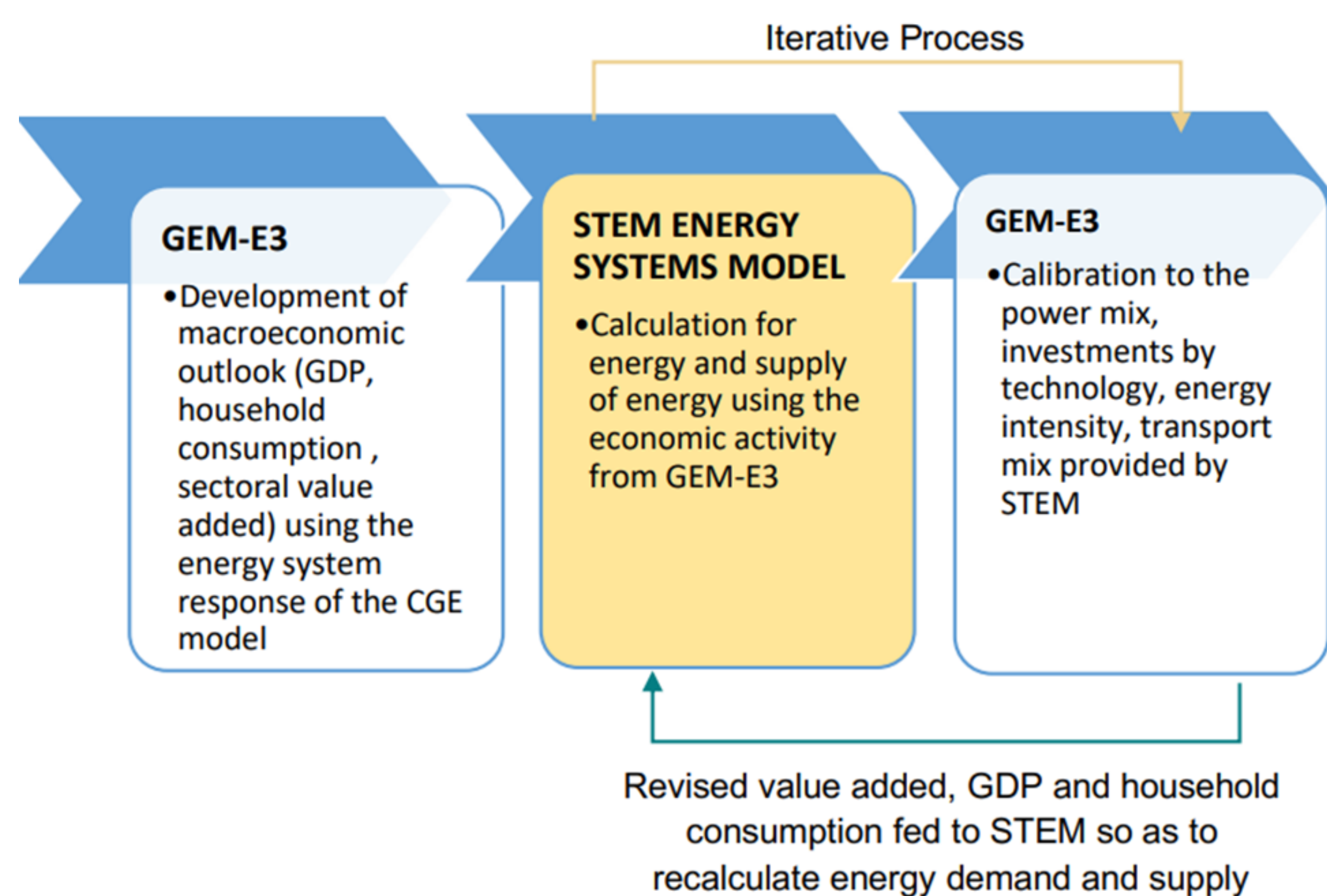
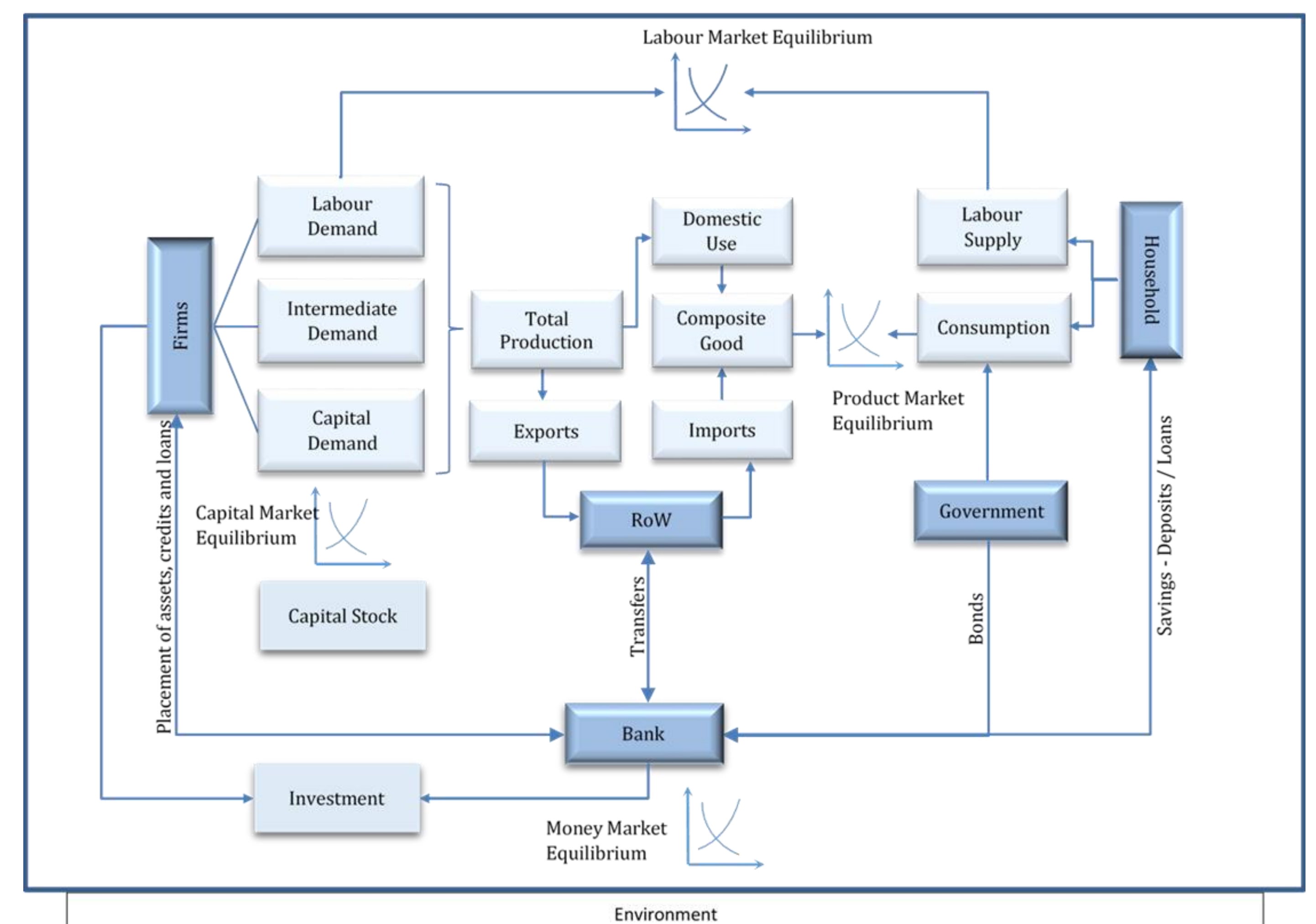
A wide range of sustainability and resilience indicators are used to evaluate the performance of the alternative scenarios.

The macroeconomic model GEM-E3-CH is used, which captures all economic transactions among economic agents. The model is soft linked with SURE bottom-up models.

Nr	Economic Activities	Nr	Economic Activities
AGR01	Agriculture	IND01	Ferrous metals
ENE01	Coal	IND02	Non-ferrous metals
ENE02	Crude Oil	IND03	Fabricated Metal products
ENE03	Oil	IND04	Chemical Products
ENE04	Gas	IND05	Basic pharmaceutical products
ENE05	Power Supply	IND06	Rubber and plastic products
ENE06	Biomass Solid	IND07	Paper products, publishing
ENE07	Biofuels	IND08	Non-metallic minerals
ENE08	Hydrogen	IND09	Computer, electronic and optical products
ENE09	Clean Gas	IND10	Other Equipment Goods
PGT01	Coal fired	IND11	Transport equipment (excluding EV)
PGT02	Oil fired	IND12	Consumer Goods Industries
PGT03	Gas fired	IND13	Construction
PGT04	Nuclear	IND14	Batteries
PGT05	Biomass	IND15	EV Transport Equipment
PGT06	Hydro electric	IND16	Advanced Electric Appliances
PGT07	Wind	IND17	Advanced Heating and Cooking Appliances
PGT08	PV	IND18	Equipment for wind power technology
PGT09	Geothermal	IND19	Equipment for PV panels
PGT10	CCS coal	IND20	Equipment for CCS power technology
PGT11	CCS Gas	IND21	CO2 Capture
PGT12	CCS Bio		

Key features of GEM – E3 – CH

- ✓ Recursive dynamic 2100 in increasing time steps: annually 2017-2030 | 5-year period 2030-2050 | 10-year period 2050-2100
- ✓ Discrete representation of power generation technologies
- ✓ Endogenous bilateral trade
- ✓ Alternative macroeconomic closures allowing for endogenous interest rates and versatile financing schemes
- ✓ Explicit representation of clean energy technologies
- ✓ 5 occupations by economic activity / Endogenous labour supply and Unemployment rate



Model results

- ✓ GDP by component, jobs – unemployment rate, consumer prices, sectoral production / exports - imports, budget deficit, competitiveness, balance of payments, energy use, GHG emissions, welfare

