

Snapshot of - AIM-Enduse Japan

Archive of AIM-Enduse Japan, version: V2.1

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Reference card - AIM-Enduse Japan

The reference card is a clearly defined description of model features. The numerous options have been organized into a limited amount of default and model specific (non default) options. In addition some features are described by a short clarifying text.

Legend:

not implemented

implemented

implemented (not default option)

About

Name and version AIM-Enduse Japan V2.1

Model link	https://kenoshiro.github.io/AIM-Technology-doc/ ; https://github.com/KUAtmos/AIMTechnology_core
Institution	Kyoto University (KU), Japan, https://www.kyoto-u.ac.jp/en/ ., National Institute for Environmental Studies (NIES), Japan, .
Documentation	AIM-Enduse Japan documentation is limited and consists of a reference card
Process state	published

Model scope and methods

Model type	<input type="checkbox"/> Integrated assessment model	<input type="checkbox"/> CGE
	<input checked="" type="checkbox"/> Energy system model	<input type="checkbox"/> CBA-integrated assessment model
Geographical scope	<input type="checkbox"/> Global	<input checked="" type="checkbox"/> Regional
Solution concept	<input type="checkbox"/> Partial equilibrium (price elastic demand)	demand)
	<input checked="" type="checkbox"/> Partial equilibrium (fixed	<input type="checkbox"/> General equilibrium (closed economy)
Solution horizon	<input checked="" type="checkbox"/> Recursive dynamic (myopic)	<input type="checkbox"/> Intertemporal optimization (foresight)
Solution method	<input type="checkbox"/> Simulation	<input checked="" type="checkbox"/> Optimization
Temporal dimension	Base year:2010, time steps:1, horizon: 2050	
Spatial dimension	Number of regions:10	
Time discounting type	<input checked="" type="checkbox"/> Discount rate exogenous	<input type="checkbox"/> Discount rate endogenous
Policies	<input checked="" type="checkbox"/> Emission tax	<input checked="" type="checkbox"/> Fuel taxes
	<input type="checkbox"/> Emission pricing	<input checked="" type="checkbox"/> Fuel subsidies
	<input type="checkbox"/> Cap and trade	<input type="checkbox"/> Feed-in-tariff

- Portfolio standard**
- Capacity targets**
- Emission standards**
- Energy efficiency standards**

- Agricultural producer subsidies
- Agricultural consumer subsidies
- Land protection
- Pricing carbon stocks

Socio-economic drivers

Population	<input checked="" type="checkbox"/> Yes (exogenous)	<input type="checkbox"/> Yes (endogenous)
Population age structure	<input checked="" type="checkbox"/> Yes (exogenous)	<input type="checkbox"/> Yes (endogenous)
Education level	<input type="checkbox"/> Yes (exogenous)	<input type="checkbox"/> Yes (endogenous)
Urbanization rate	<input type="checkbox"/> Yes (exogenous)	<input type="checkbox"/> Yes (endogenous)
GDP	<input checked="" type="checkbox"/> Yes (exogenous)	<input type="checkbox"/> Yes (endogenous)
Income distribution	<input type="checkbox"/> Yes (exogenous)	<input type="checkbox"/> Yes (endogenous)
Employment rate	<input type="checkbox"/> Yes (exogenous)	<input type="checkbox"/> Yes (endogenous)
Labor productivity	<input type="checkbox"/> Yes (exogenous)	<input type="checkbox"/> Yes (endogenous)
Total factor productivity	<input type="checkbox"/> Yes (exogenous)	<input type="checkbox"/> Yes (endogenous)
Autonomous energy efficiency improvements	<input type="checkbox"/> Yes (exogenous)	<input type="checkbox"/> Yes (endogenous)

Macro-economy

Economic sector

Industry	<input checked="" type="checkbox"/> Yes (physical)	<input type="checkbox"/> Yes (economic)
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Yes (physical & economic)

Energy

Yes (physical)

Yes (economic)

Yes (physical & economic)

Transportation

Yes (physical)

Yes (economic)

Yes (physical & economic)

Residential and commercial

Yes (physical)

Yes (economic)

Yes (physical & economic)

Agriculture

Yes (physical)

Yes (economic)

Yes (physical & economic)

Forestry

Yes (physical)

Yes (economic)

Yes (physical & economic)

Macro-economy

Trade

Coal

Oil

Gas

Uranium

Electricity

Bioenergy crops

Food crops

Capital

Emissions permits

Non-energy goods

Cost measures

GDP loss

Welfare loss

Consumption loss

Area under MAC

Energy system cost mark-up

Categorization by group

Income

Urban - rural

Technology adoption

Age

Gender

Education level

Household size

Institutional and political factors

Early retirement of capital allowed

Interest rates differentiated by country/region

Regional risk factors included

Technology costs

differentiated by country/region

Technological change differentiated by country/region

Behavioural change differentiated by country/region

Constraints on cross country financial transfers

Resource use

Coal

- Yes (fixed)** Yes (process model)
 Yes (supply curve)

Conventional Oil

- Yes (fixed)** Yes (process model)
 Yes (supply curve)

Unconventional Oil

- Yes (fixed)** Yes (process model)
 Yes (supply curve)

Conventional Gas

- Yes (fixed)** Yes (process model)
 Yes (supply curve)

Unconventional Gas

- Yes (fixed)** Yes (process model)
 Yes (supply curve)

Uranium

- Yes (fixed)** Yes (process model)
 Yes (supply curve)

Bioenergy

- Yes (fixed)** Yes (process model)
 Yes (supply curve)

Water

- Yes (fixed) Yes (process model)
 Yes (supply curve)

Raw Materials

- Yes (fixed) Yes (process model)
 Yes (supply curve)

Land

- Yes (fixed) Yes (process model)
 Yes (supply curve)

Technological change**Energy conversion technologies**

- No technological change
 Exogenous technological

change

- Endogenous technological change

Energy End-use

- No technological change
 Exogenous technological

change

- Endogenous technological change

Material Use

- No technological change
 Exogenous technological

change

- Endogenous technological change

Agriculture (tc)

- No technological change

- Exogenous technological change

- Endogenous technological change

Energy

Energy technology substitution

Energy technology choice

- No discrete technology choices
- Logit choice model
- Production function

Linear choice (lowest cost)

- Lowest cost with adjustment penalties

Energy technology substitutability

- Mostly high substitutability
- Mostly low substitutability

- Mixed high and low substitutability

Energy technology deployment

- Expansion and decline constraints

- System integration constraints

Energy

Electricity technologies

- Coal w/o CCS
- Coal w/ CCS
- Gas w/o CCS
- Gas w/ CCS
- Oil w/o CCS
- Oil w/ CCS
- Bioenergy w/o CCS
- Bioenergy w/ CCS
- Geothermal power
- Nuclear power

- Solar power
- Solar power-central PV
- Solar power-distributed PV
- Solar power-CSP
- Wind power
- Wind power-onshore
- Wind power-offshore
- Hydroelectric power
- Ocean power

Hydrogen production

- Coal to hydrogen w/o CCS
- Coal to hydrogen w/ CCS
- Natural gas to hydrogen w/o CCS
- Natural gas to hydrogen w/ CCS
- Oil to hydrogen w/o CCS

- Oil to hydrogen w/ CCS
- Biomass to hydrogen w/o CCS
- Biomass to hydrogen w/ CCS
- Nuclear thermochemical hydrogen
- Solar thermochemical hydrogen

Electrolysis**Refined liquids**

- Coal to liquids w/o CCS
- Coal to liquids w/ CCS
- Gas to liquids w/o CCS
- Gas to liquids w/ CCS

 Bioliquids w/o CCS

- Bioliquids w/ CCS

 Oil refining**Refined gases**

- Coal to gas w/o CCS
- Coal to gas w/ CCS
- Oil to gas w/o CCS

- Oil to gas w/ CCS
- Biomass to gas w/o CCS
- Biomass to gas w/ CCS

Heat generation

- Coal heat**
- Natural gas heat**
- Oil heat**
- Biomass heat

- Geothermal heat
- Solarthermal heat**
- CHP (coupled heat and power)

Grid Infra Structure**Electricity**

- Yes (aggregate)

- Yes (spatially explicit)**

Gas

- Yes (aggregate)**

- Yes (spatially explicit)

Heat

- Yes (aggregate)**

- Yes (spatially explicit)

CO₂

- Yes (aggregate)

- Yes (spatially explicit)

Hydrogen

- Yes (aggregate)**

- Yes (spatially explicit)

Energy end-use technologies**Passenger transportation**

- Passenger trains**
- Buses**
- Light Duty Vehicles (LDVs)**
- Electric LDVs**
- Hydrogen LDVs**

- Hybrid LDVs**
- Gasoline LDVs**
- Diesel LDVs**
- Passenger aircrafts**

Freight transportation

- Freight trains**
- Heavy duty vehicles**

- Freight aircrafts**
- Freight ships**

Industry

- Steel production**
- Aluminium production**

- Cement production**
- Petrochemical production**

Paper production **Pulp production** Plastics production**Residential and commercial** **Space heating** Refrigeration **Space cooling** Washing **Cooking** **Lighting**

Land-use

Land cover Cropland Managed forest Cropland irrigated Natural forest Cropland food crops Pasture Cropland feed crops Shrubland Cropland energy crops Built-up area Forest**Agriculture and forestry demands** Agriculture food Agriculture non-food crops Agriculture food crops Agriculture non-food livestock Agriculture food livestock Agriculture bioenergy Agriculture feed Agriculture residues Agriculture feed crops Forest industrial roundwood Agriculture feed livestock Forest fuelwood Agriculture non-food Forest residues**Agricultural commodities** Wheat Sugar crops Rice Ruminant meat Other coarse grains Non-ruminant meat and eggs Oilseeds Dairy products

Emission, climate and impacts

Greenhouse gases **CO2 fossil fuels** N2O land use **CO2 cement** **N2O other** CO2 land use **CFCs** **CH4 energy** **HFCs** CH4 land use **SF6** **CH4 other** **PFCs** **N2O energy****Pollutants** CO energy NOx energy CO land use NOx land use CO other NOx other

- | | |
|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> VOC energy | <input type="checkbox"/> BC other |
| <input type="checkbox"/> VOC land use | <input type="checkbox"/> OC energy |
| <input type="checkbox"/> VOC other | <input type="checkbox"/> OC land use |
| <input type="checkbox"/> SO2 energy | <input type="checkbox"/> OC other |
| <input type="checkbox"/> SO2 land use | <input type="checkbox"/> NH3 energy |
| <input type="checkbox"/> SO2 other | <input type="checkbox"/> NH3 land use |
| <input type="checkbox"/> BC energy | <input type="checkbox"/> NH3 other |
| <input type="checkbox"/> BC land use | |

Climate indicators

- | | |
|---|---|
| <input type="checkbox"/> Concentration: CO2 | <input type="checkbox"/> Radiative forcing: Kyoto gases |
| <input type="checkbox"/> Concentration: CH4 | <input type="checkbox"/> Radiative forcing: aerosols |
| <input type="checkbox"/> Concentration: N2O | <input type="checkbox"/> Radiative forcing: land albedo |
| <input type="checkbox"/> Concentration: Kyoto gases | <input type="checkbox"/> Radiative forcing: AN3A |
| <input type="checkbox"/> Radiative forcing: CO2 | <input type="checkbox"/> Radiative forcing: total |
| <input type="checkbox"/> Radiative forcing: CH4 | <input type="checkbox"/> Temperature change |
| <input type="checkbox"/> Radiative forcing: N2O | <input type="checkbox"/> Sea level rise |
| <input type="checkbox"/> Radiative forcing: F-gases | <input type="checkbox"/> Ocean acidification |

Carbon dioxide removal

- | | |
|---|--|
| <input checked="" type="checkbox"/> Bioenergy with CCS | <input type="checkbox"/> Soil carbon enhancement |
| <input type="checkbox"/> Reforestation | <input type="checkbox"/> Direct air capture |
| <input type="checkbox"/> Afforestation | <input type="checkbox"/> Enhanced weathering |

Climate change impacts

- | | |
|--|--|
| <input type="checkbox"/> Agriculture | <input type="checkbox"/> Economic output |
| <input type="checkbox"/> Energy supply | <input type="checkbox"/> Built capital |
| <input type="checkbox"/> Energy demand | <input type="checkbox"/> Inequality |

Co-Linkages

- | | |
|--|--|
| <input checked="" type="checkbox"/> Energy security: Fossil fuel imports & exports (region) | <input type="checkbox"/> Air pollution & health: Health impacts of air Pollution |
| <input type="checkbox"/> Energy access: Household energy consumption | <input type="checkbox"/> Food access |
| <input type="checkbox"/> Air pollution & health: Source-based aerosol emissions | <input type="checkbox"/> Water availability |
| | <input type="checkbox"/> Biodiversity |

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