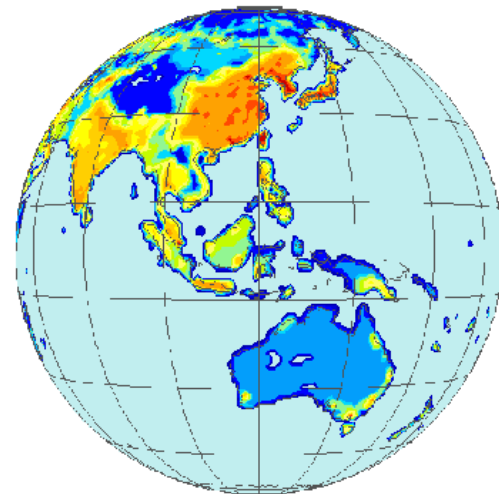


# **Land-Use model in AIM (Asia-Pacific Integrated Model)**



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**EMF22: Climate Policy Scenarios for Stabilization and in Transition  
Tsukuba International Congress Center, Tsukuba, Japan  
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# Purposes of land use model in AIM

- GHG emissions from land use
- Ecosystem services (e.g. forest area)
- Direct impact of global warming on agriculture and indirect impact on economic activity
- Achievement of MDGs (e.g. hunger)

Check consistency among development paths and the above elements.



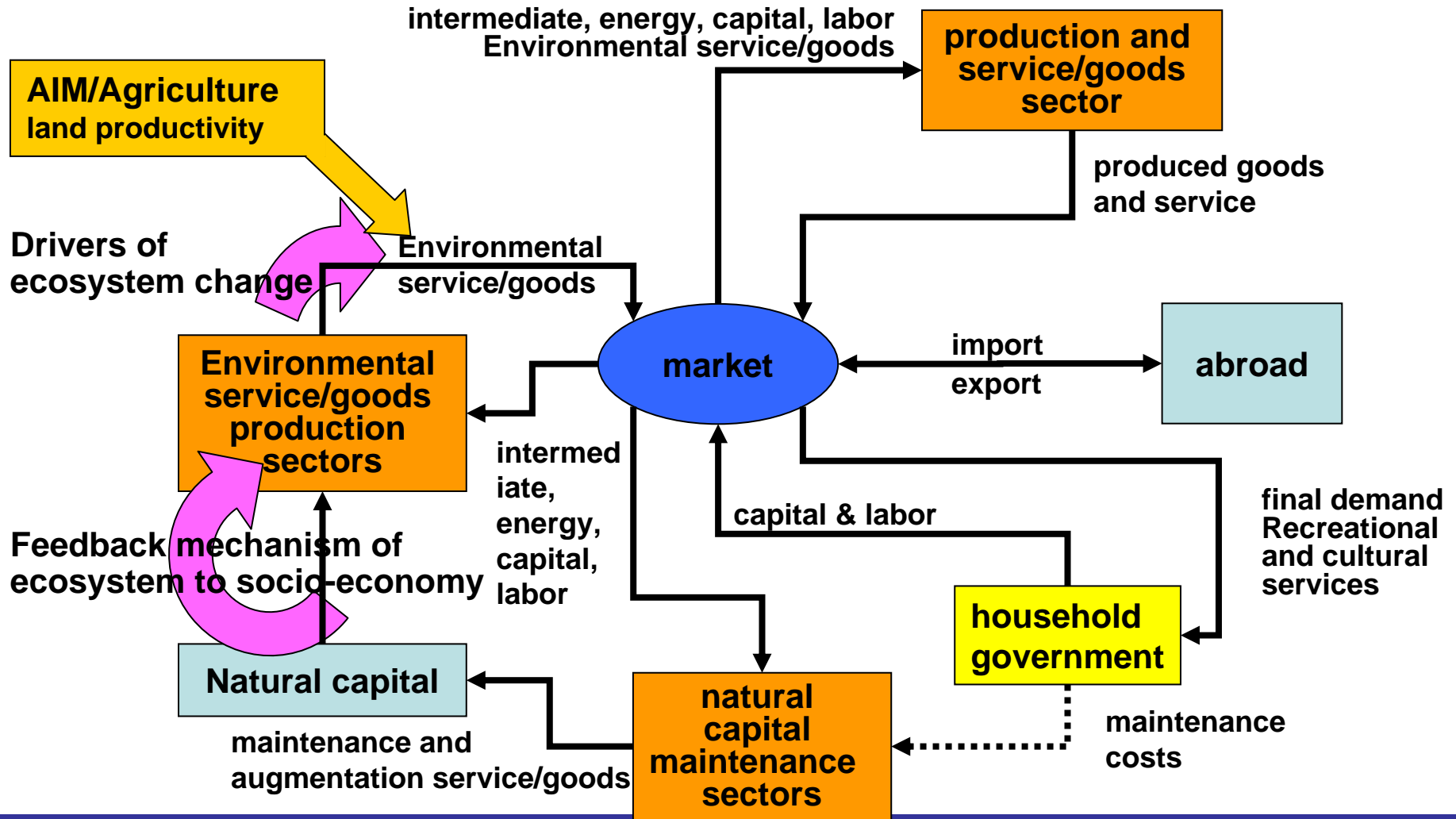
# Overall of AIM/Ecosystem

AIM/Ecosystem is a model in order to assess the interaction among economic activities and natural services from the view point of long-term global environmental change.

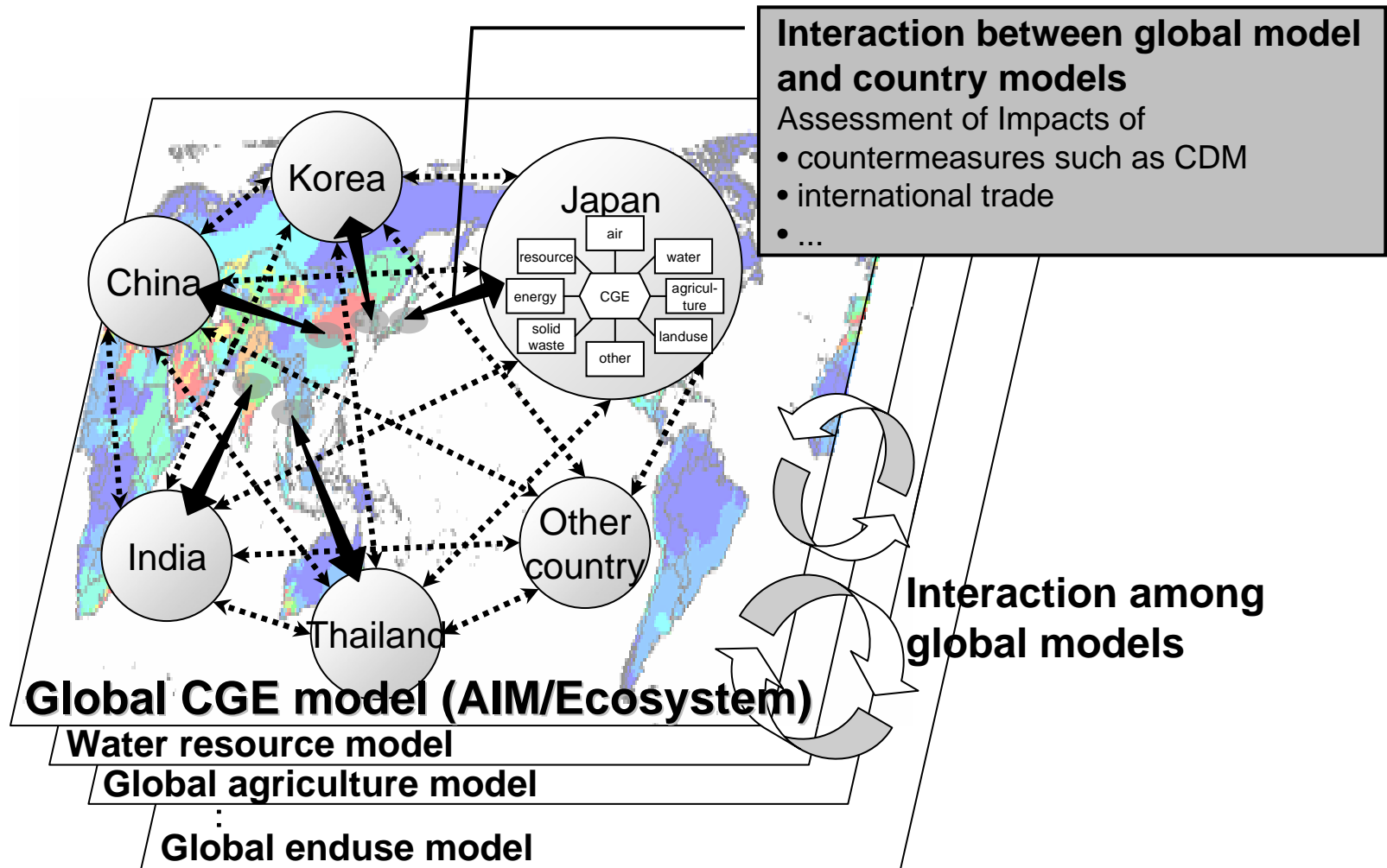
- Global CGE model with recursive dynamics
- Based on GTAP ver.6 and IEA energy balance table
- Air pollutant emissions and GHG emissions from fuel and land use/land use change
- Land is treated as one of production factors
- Feedback from climate change
  - Agriculture, water, ...
- Linked with other models
  - With country model: Key parameters between global model and country model are international price and trade.
  - With simple climate model: GHG emissions and global mean temperature change.
  - With agriculture productivity change model: global mean temperature and land productivity change.



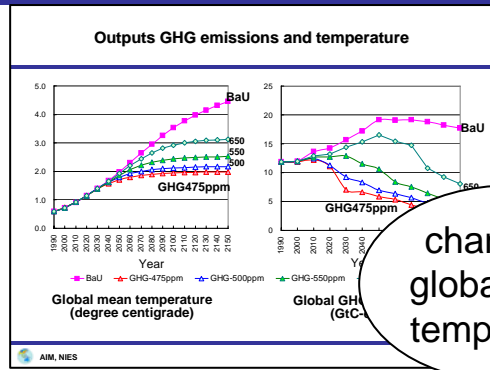
# Structure of AIM/Ecosystem



# AIM/Ecosystem and other models



# Climate change and agricultural productivity



Simple climate model in AIM/Ecosystem

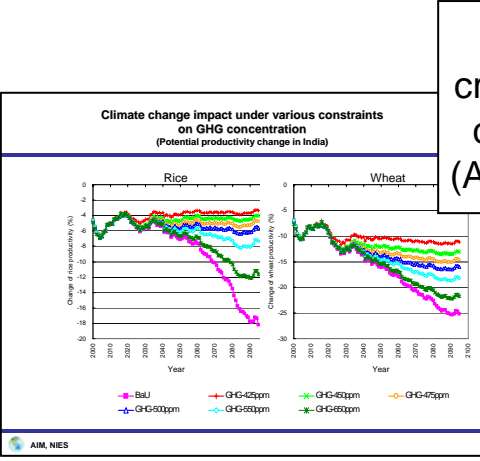
CO2 emissions

change in global mean temperature

downscale based on GCM results

Main module in AIM/Ecosystem (CGE model)

change in precipitation & temperature in country



Potential crop productivity change model (AIM/Agriculture)

crop productivity change in country

agricultural productivity change in model region

# Preliminary model

## Goods (16 goods)

- AGR Agriculture
- LVK Livestock
- FRS Forestry
- FSH Fishing
- COL Coal
- CRU Oil
- OIL Petroleum coal products
- GAS Gas
- WTR Water
- OMN Minerals nec
- EIS Energy intensive industry
- IDY Other industry
- CNS Construction
- ELE Electricity
- SER Service
- T\_T Transport

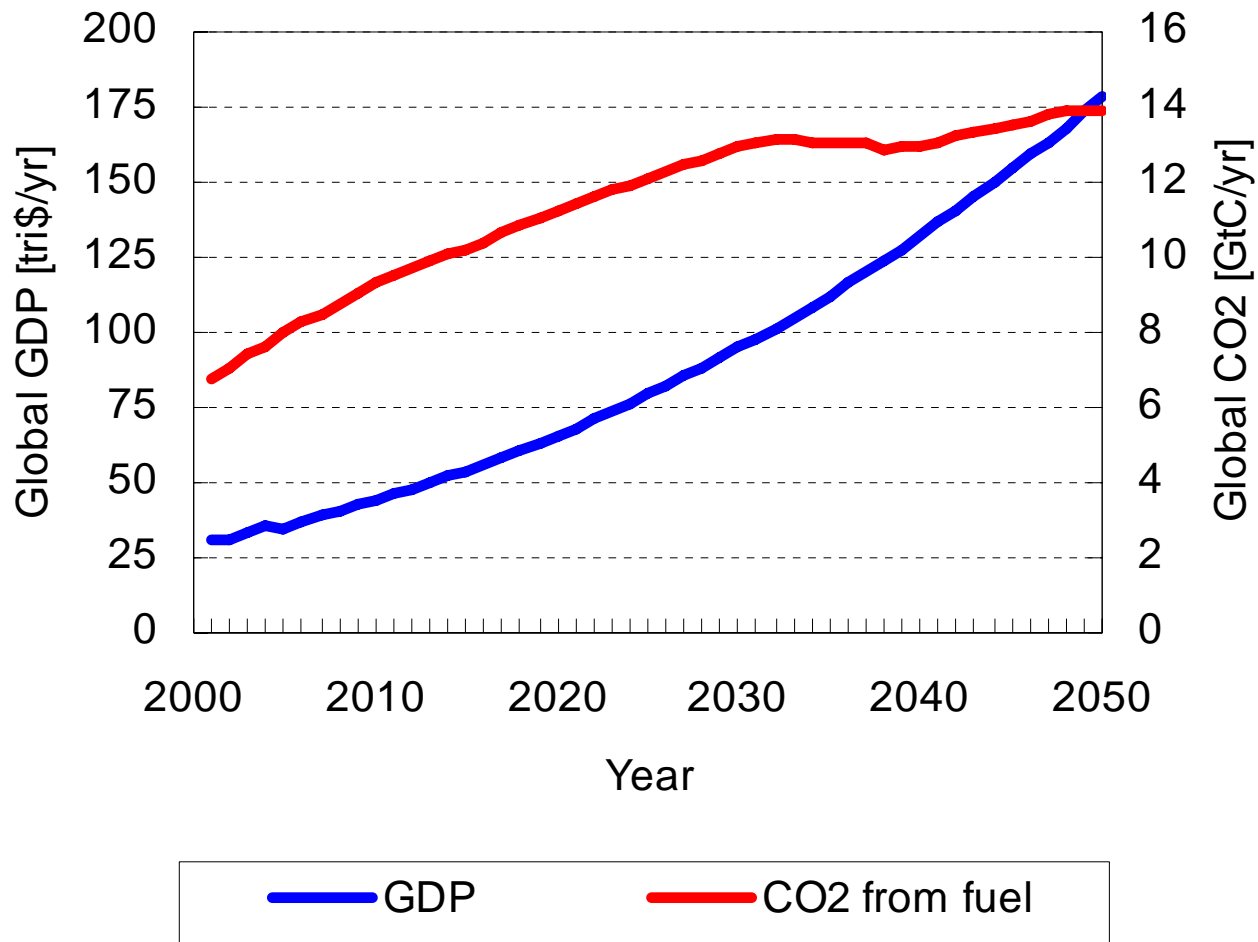
\* Electricity is supplied by various power sectors such as coal fire, nuclear, hydro and so on.

## Region (14 regions)

- CAN Canada
- USA USA
- JPN Japan
- OCN Australia and New Zealand
- WEU OECD Europe
- EEU Eastern Europe
- CIS CIS
- MEA Middle East
- NAF Northern Africa
- SAF Sub-saharian Africa
- LAM Latin America
- EAS East Asia
- SAS South Asia
- SEA South East Asia

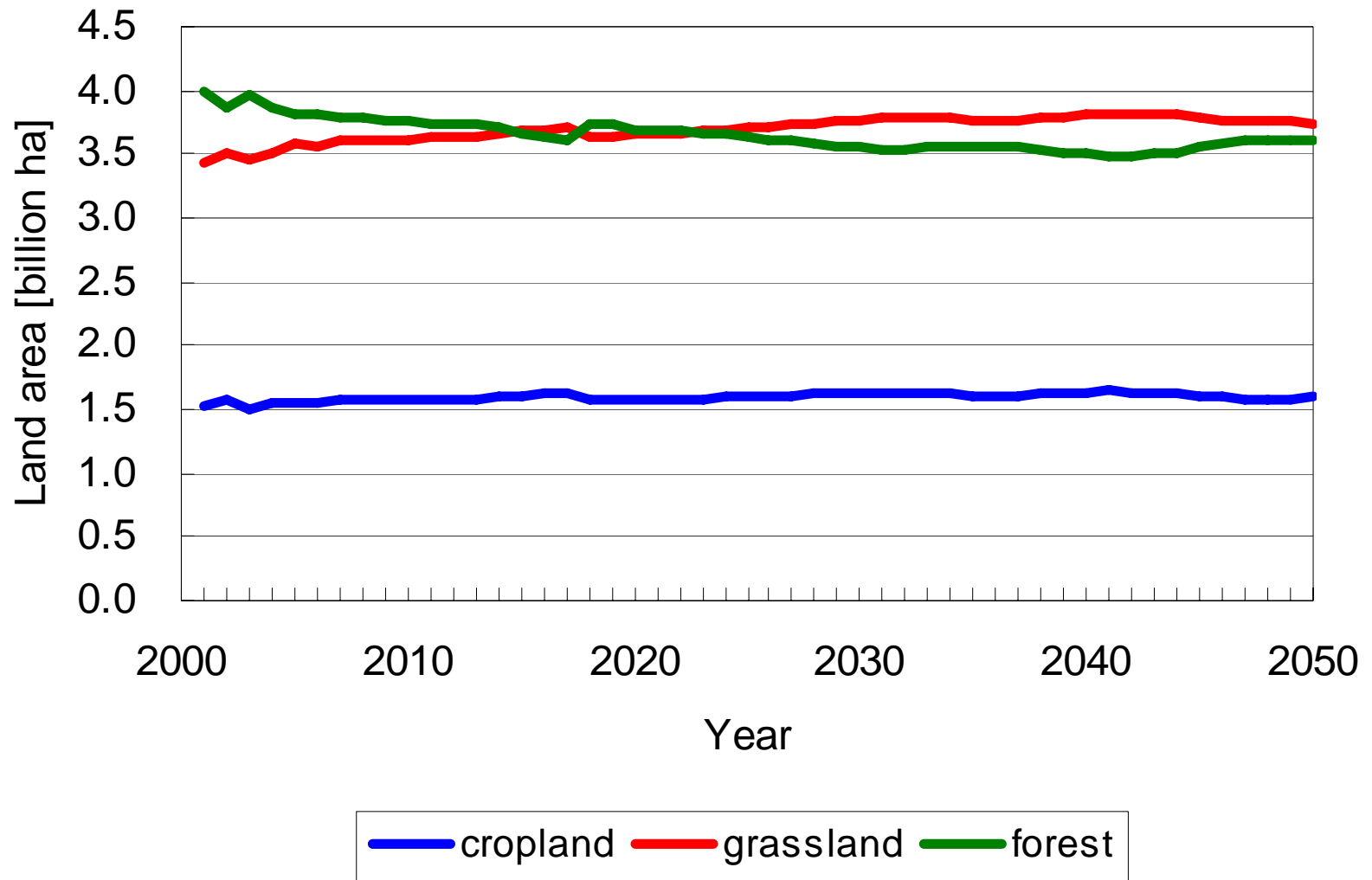


# Preliminary results (1)





## Preliminary results (2)



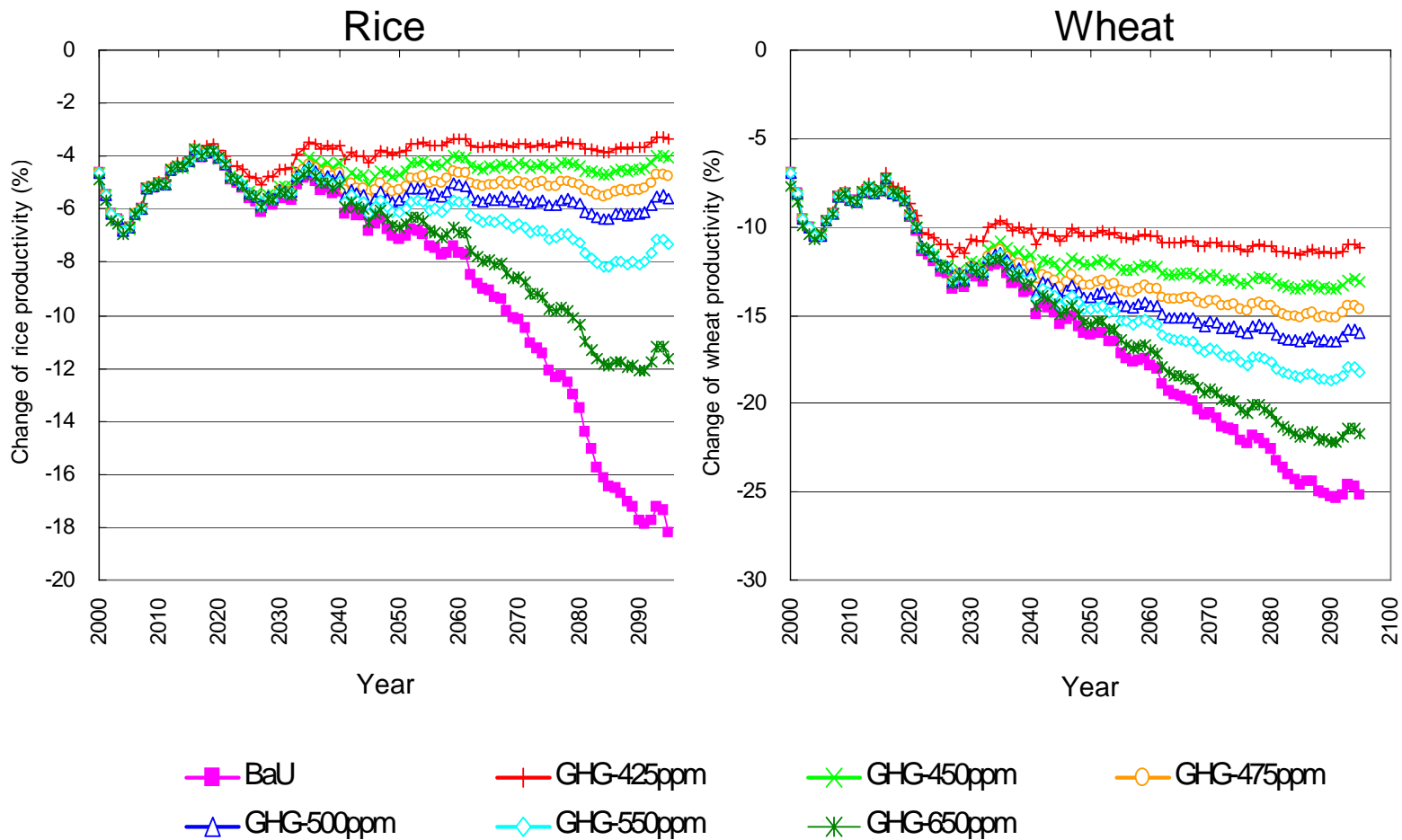
# Future works

- Many things will have to be done...
  - Updating several modules
    - GHG and air pollution emission and management
    - Climate
    - Preference change in household
  - Coupling with other modules
    - Energy supply, especially bio-fuel
    - Country models
    - Other impact models
  - Assessing climate policies
    - Mitigation
    - Adaptation





# Results from AIM/Agriculture



Potential productivity change in India

