

GTAP Related activities at FAO for 2010-11
Submitted to the GTAP Advisory Board
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1. Modeling climate mitigation policies for livestock sector (FAO Officer: Benjamin Henderson, AGAL)

Under a collaboration with Purdue University/GTAP Center, the staff at AGAL continued working on the model GTAP-AEZ-GHG, which is used to simulate global/regional mitigation policies, mainly in agriculture and forestry. Specific activities include:

- Improve the allocation of livestock land rents by AEZ, using spatial information on livestock productivity.
- Increase disaggregation of livestock commodities
- Alter the livestock aggregation for the dairy farm sector - specify milk and meat as joint dairy farm products
- Incorporate livestock intensification parameter in the model.
- Recalibration of abatement responses for agriculture based on related FAO projects.

2. Use of GTAP database in a CGE model, a component of a climate change impact assessment tool: MOSAICC (Lead Officer: Michele Bernardi, NRC)

In the framework of the EC/FAO Programme on “Linking information and decision making to improve food security” (GCP/GLO/243/EC), the FAO Climate Impact Team within the Climate, Energy and Tenure Division (NRC) is developing an integrated toolbox called **FAO-MOSAICC** (for **MO**delling **S**ystem for **A**gricultural **I**mpacts of **C**limate **C**hange) to assess climate change impacts on agriculture at national levels in a view of decision-making support. This toolbox will comprise a set of components to carry out each step of the impact assessment from climate scenarios downscaling to economic impact analysis. The four main components of the methodology are a statistical downscaling method for processing GCM (Global Circulation Models) output data, a hydrological model for estimating water resources for irrigation, a crop growth model to simulate future crop yields and finally a Dynamic CGE (Computable General Equilibrium) model to assess the effect of projected crop yields variations on national economies.

A dynamic CGE model (based on IFPRI dynamic CGE model), using GTAP database, was developed by Onno *Kuik and Frédéric Reynès* of the Institute for Environmental Studies (Free University of Amsterdam). Climate change is modeled through exogenous shocks to yields (derived from crop models) and exogenous decreases in water endowments (reflecting changes in irrigation water as predicted by the model STREAM). A test run for the model was carried out with a Social Accounting Matrix (SAM) of Morocco, derived from the GTAP 6 database (Dimaranan, 2006), combined with GTAP Land Use Data (Huey-Lin et al., 2009).

3. CGE analysis of the effects of agricultural investments on food sector in Africa (Officer: Manitra Rakotoarisoa, EST)

This GTAP-based analysis is presented to the 2011 GTAP conference under the title of "A Contribution to the Analyses of the Effects of Foreign Agricultural Investment on the Food

Sector and Trade in Sub-Saharan Africa". This paper analyses the effects of foreign agricultural investment with a focus on the impacts on the food sector by simulating the effects of the reduction of investment risks triggering an entry of investment inflow to SSA. The analysis is based on three investment scenarios that affect land uses, labor market conditions, and technological progress. The paper is available on-line through the GTAP website.