



Global Trade Analysis Project

# GTAP-BIO Model and Data Base: Main Components and Improvements

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Virtual Meeting



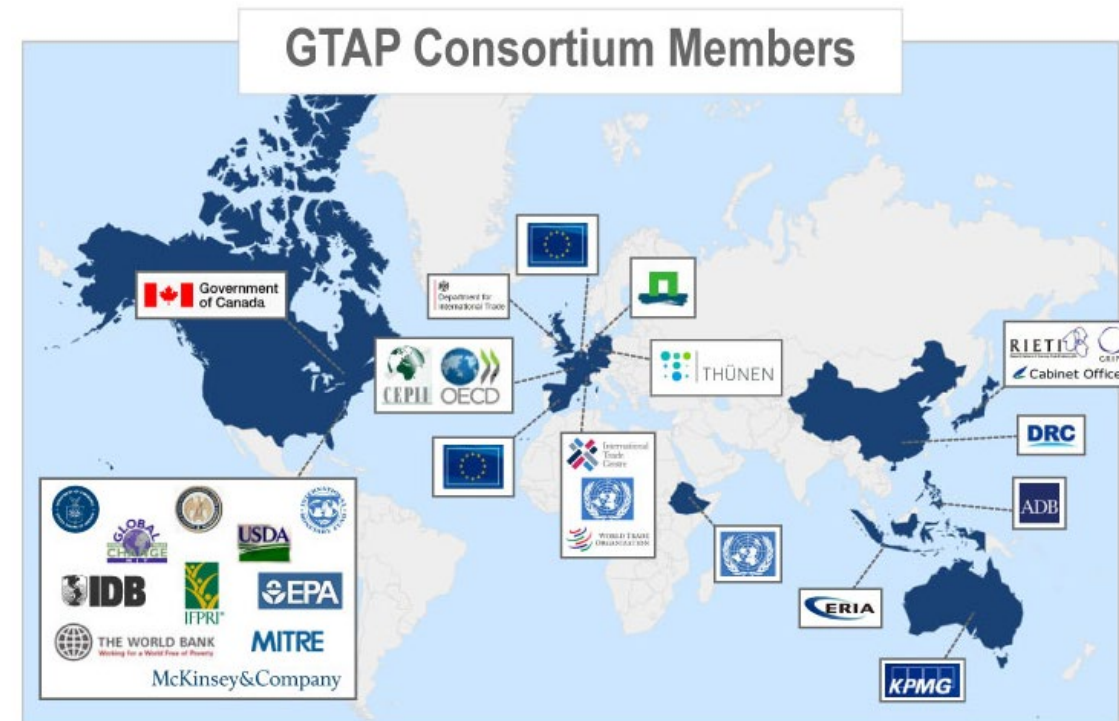
# Overview

- **What is GTAP**
  - Institutional structure
  - Key resources
  - Impact
- **Standard GTAP model and data base.**
- **GTAP-BIO model and data base**
  - Modifications in Standard GTAP
  - Improvements overtime

# GTAP Combines Advantages

- **Publicly funded project with core support from GTAP Consortium**

- Currently 31 member agencies
- GTAP Advisory Board keeps project policy-focused illusion



- **Based in academia**

- Home base is the Center for Global Trade Analysis, Purdue University
- Supports a global economic data base and model: fully documented, publicly available, regular courses, accessible to non-modelers

# Key Resources: Data Base

- **Philosophy:**

- Comparative advantage: Find the best person to do the job and sell them on it!
- Documentation, public availability, and regular updates

- **GTAP establishes standards and brings it all together into ONE analytical data base. Currently,**

	Version 9	Version 10
<b>Global Coverage</b>	120 countries 20 composite regions	121 countries <i>(98% of world GDP and 92% of world population)</i> 20 composite regions
<b>Sectoral Detail</b>	57 sectors	65 sectors <i>(20 ag/food, 25 manufactures, 20 services)</i>
<b>Reference Years</b>	2004, 2007, 2011	2004, 2007, 2011, 2014

- Bilateral tariffs and trade data/shipping margins, global land use, GHG emissions

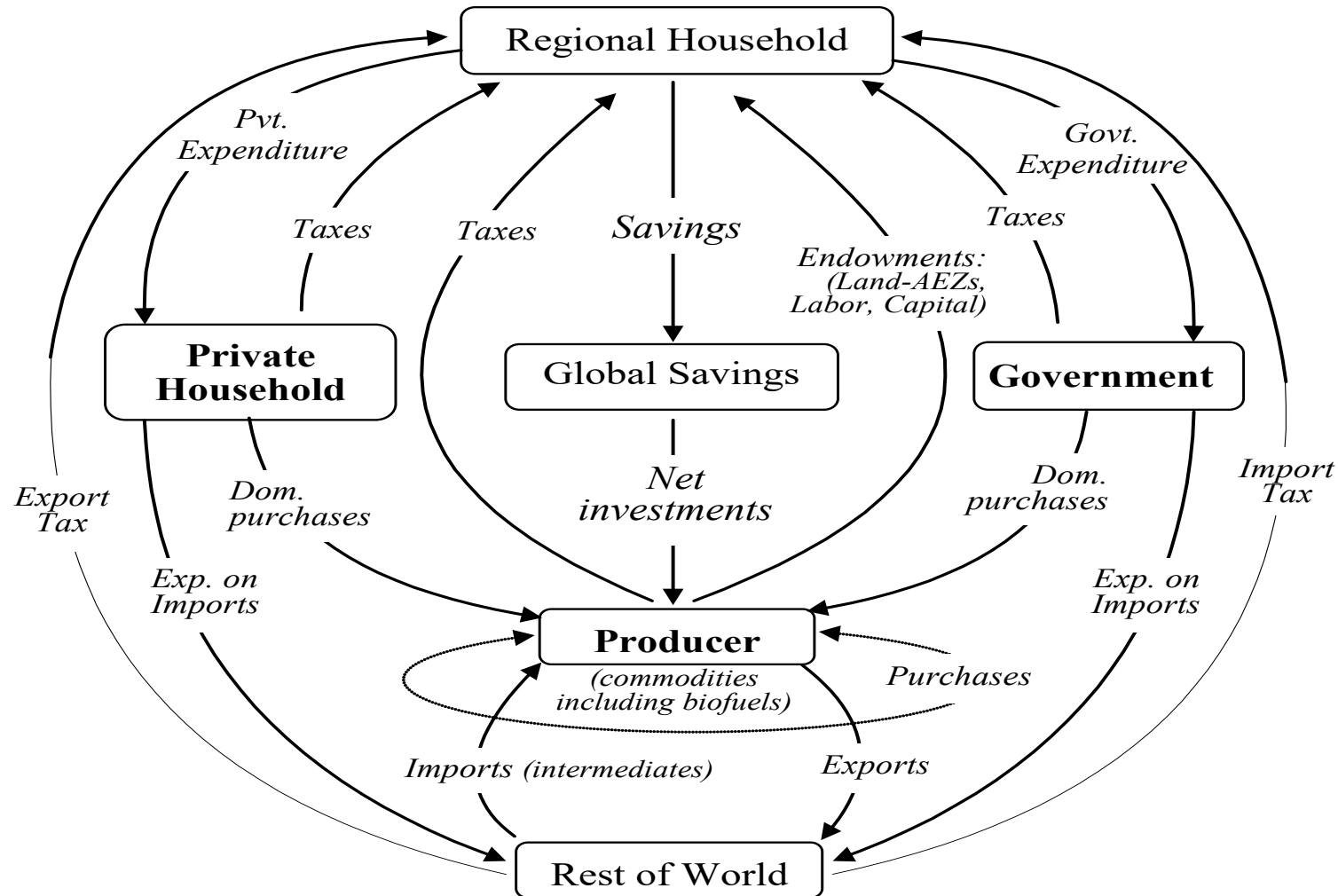
# Key Resources: Model

- **Core model: Hertel (ed.), 1997, CUP**
  - Fully documented, easy to modify: 4,300+ citations in Google Scholar
- **Special purpose extensions include (and many more)**
  - Energy, biofuels, emissions and climate change mitigation, global land use impacts of trade/environmental policies
- **GTAP is:**
  - the most widely used data base and analytical framework in the world for trade policy analysis
  - widely used for analysis of issues related to climate change, land use and environmental policy

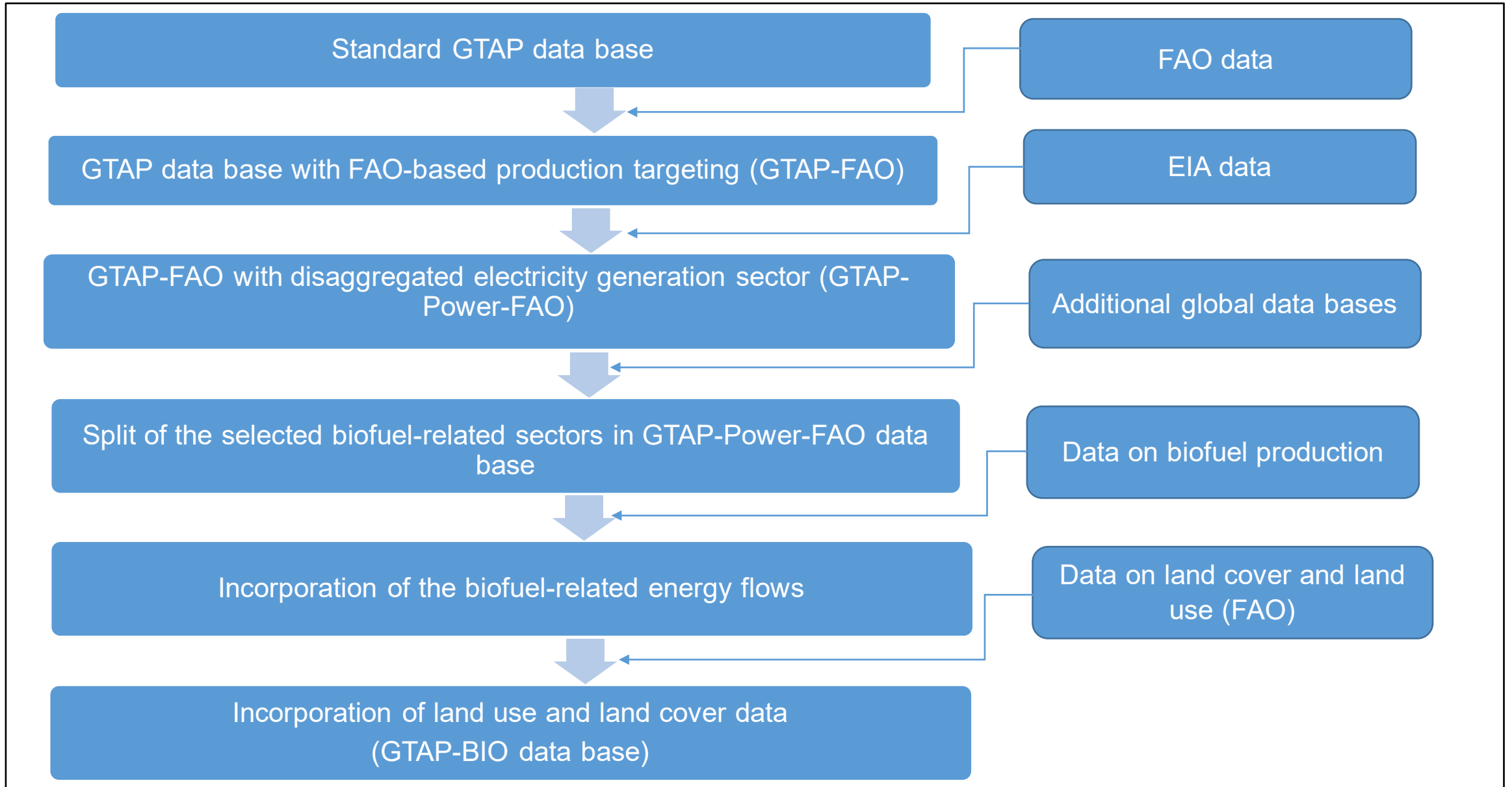
# Key Resources: GTAP Network

- **GTAP website:** [www.gtap.agecon.purdue.edu](http://www.gtap.agecon.purdue.edu)
  - Key to communication and dissemination of information
  - 24,500+ members from 179 countries
    - Contributing data, altering the model, writing papers, attending conferences
  - Thousands of GTAP-based applications
- **GTAP Courses: GTAP 101, GTAP Short Course, GTAP Dynamic**
- **Annual Conferences on Global Economic Analysis**
  - Notable past hosts:
    - World Bank, Washington DC (2004, 2016)
    - IFPRI, Senegal (2014)
    - WTO/ITC/UNCTAD, Switzerland (2012)
    - UN ECLAC, Chile (2009)
    - UN ECA, Ethiopia (2006)

# Analytical framework – GTAP standard model



# GTAP-BIO database construction steps



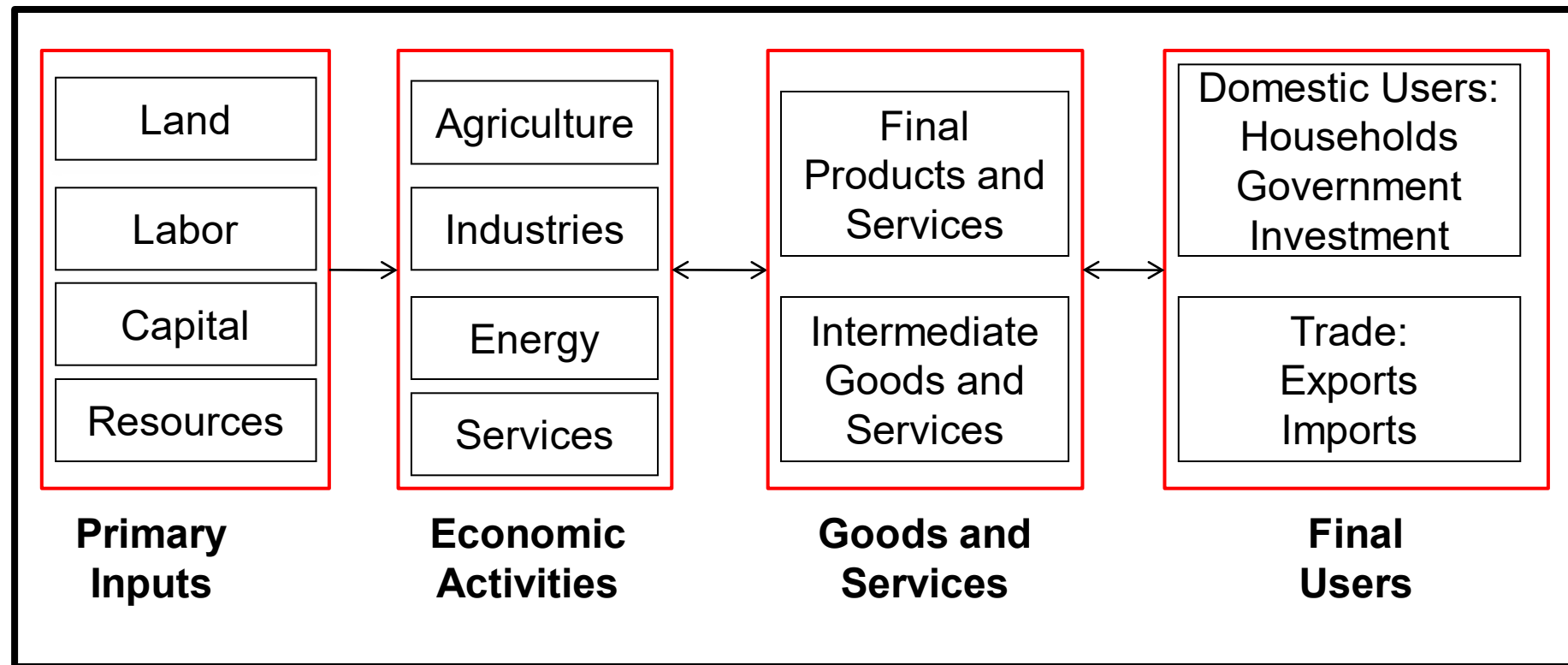


# Sectoral splits

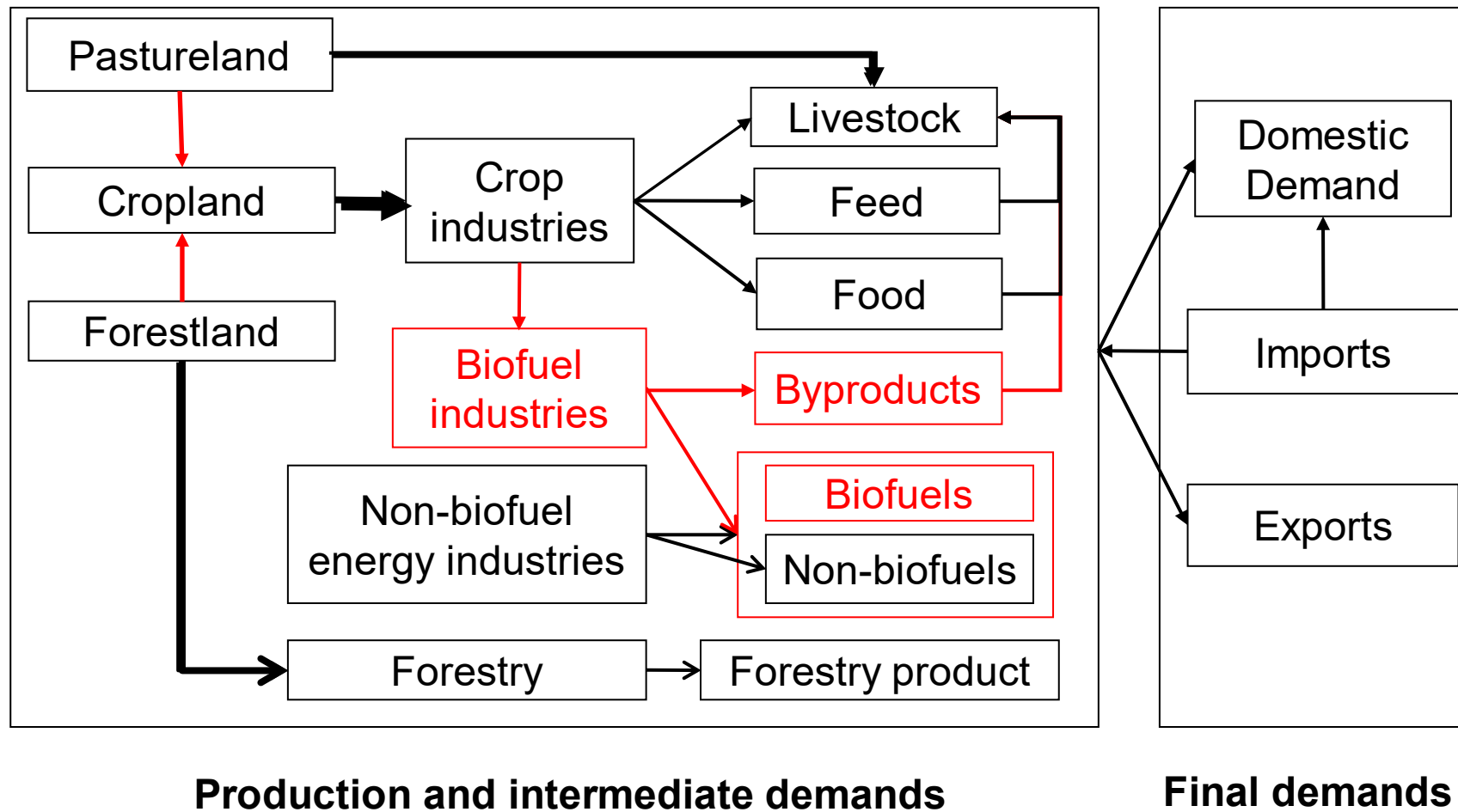
## GTAP-Power Data Base: Disaggregated sectors

No.	New sector	Description	Original GTAP sector	Description
1	Corn	Corn	gro	Other grains
2	Sorghum	Sorghum		
3	Oth_CrGr	Other cereal grains		
4	Soybeans	Soy	osd	Oil seeds
5	Palm_f	Palm		
6	Rapeseed	Rapeseed		
7	Oth_Oilseeds	Other oil seeds		
8	vol_soy	Soy oil	vol	Vegetable oils and fats
9	vol_palm	Palm oil		
10	vol_rape	Rapeseed oil		
11	vol_othn	Other oil		
12	Food	Food	ofd	Food products
13	Feed	Feed		
14	p_c1	Petroleum production (excl. blending)	p_c	Petroleum and coal products
15	Blender	Blender		
16	eth1	Corn ethanol	Varies by country	
17	eth2	Sorghum ethanol		
18	eth3	Wheat ethanol		
19	eth4	Sugarcane and beat ethanol		
20	Biod-Soy	Soy oil biodiesel	Varies by country	
21	Biod-Rape	Rapeseed oil biodiesel		
22	Biod-Palm	Palm oil biodiesel		
23	Biod-Oth	Other Biodiesel		

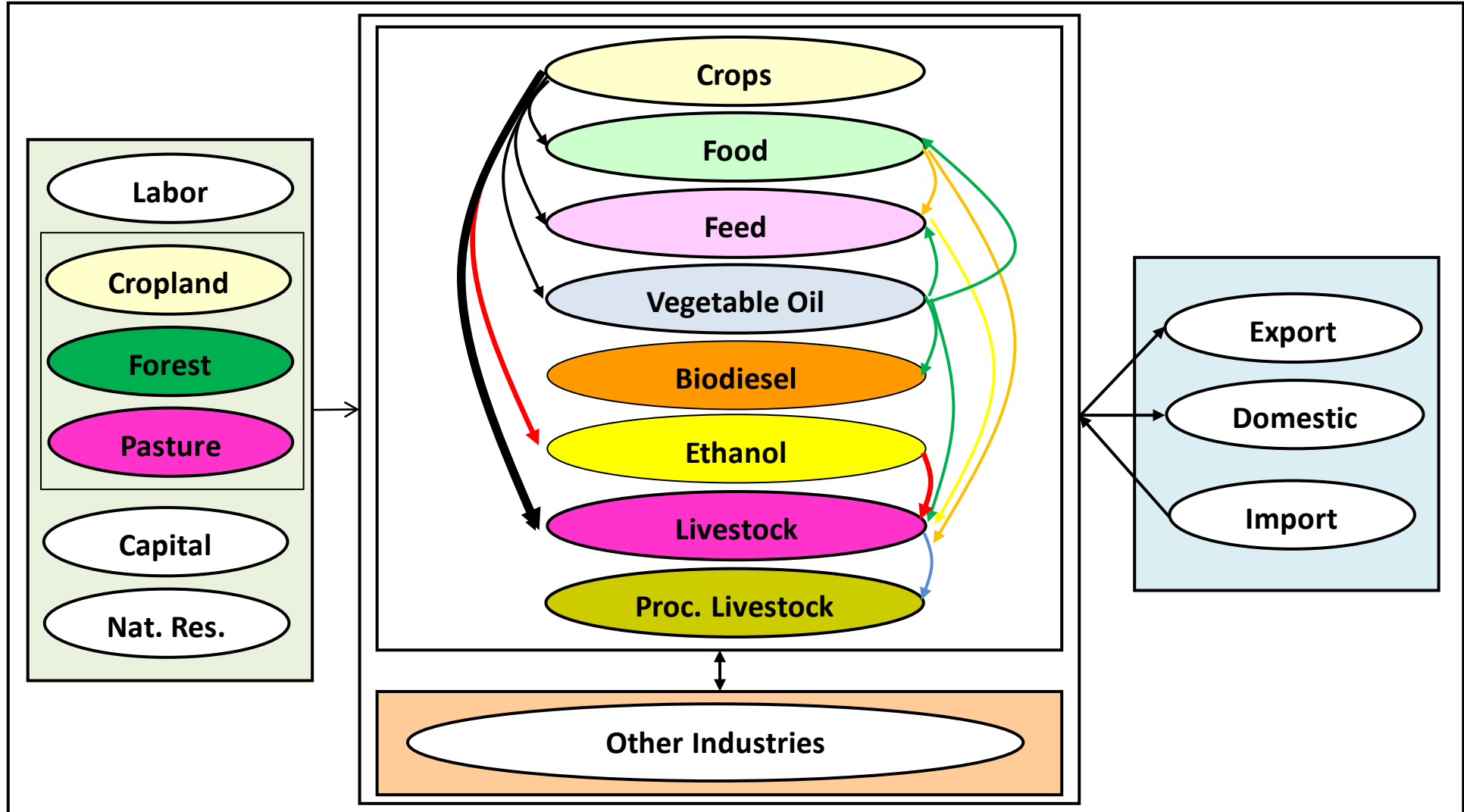
# Major components of a computable general equilibrium model (CGE)



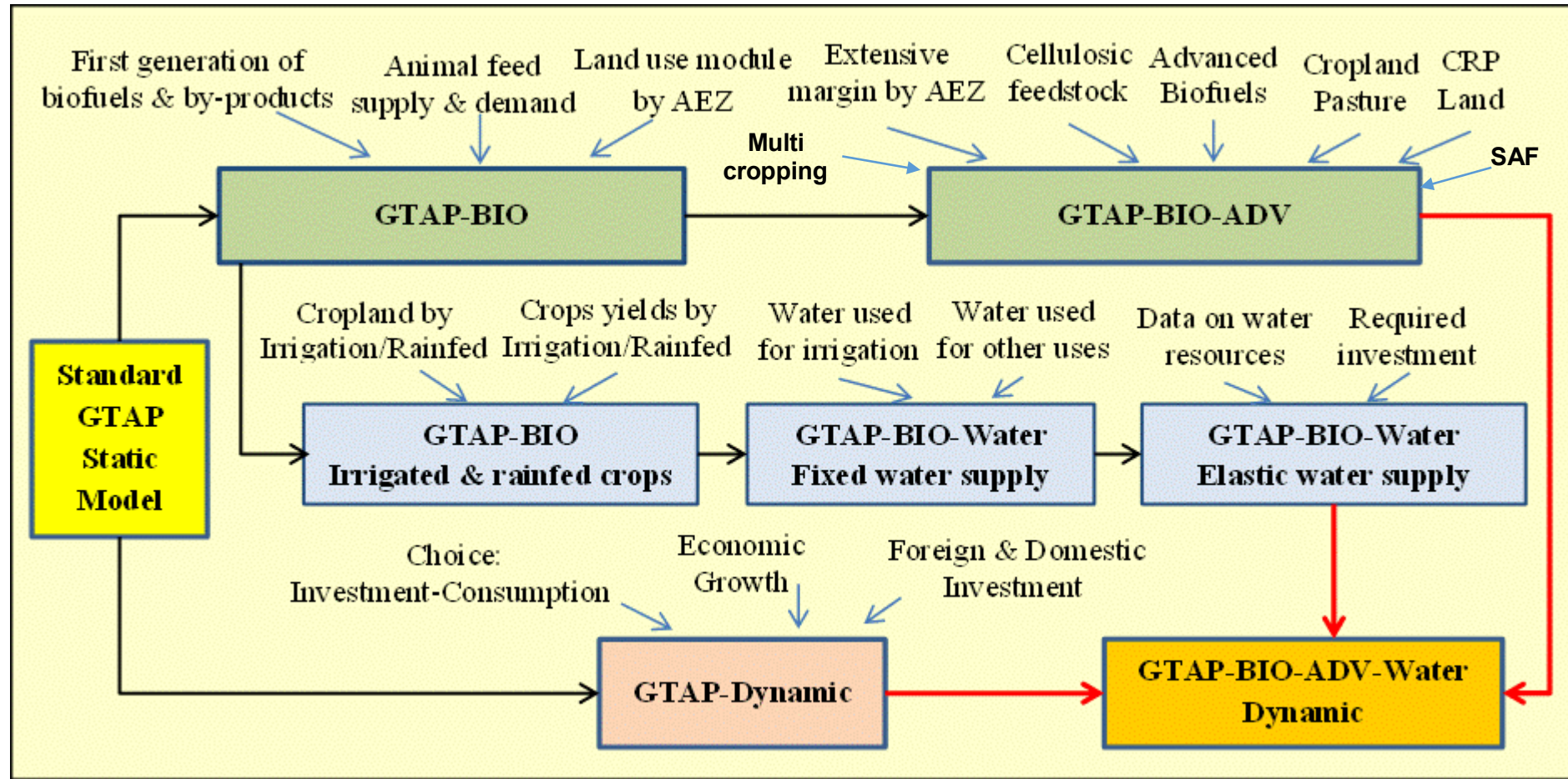
# Major biofuel links included in GTAP-BIO



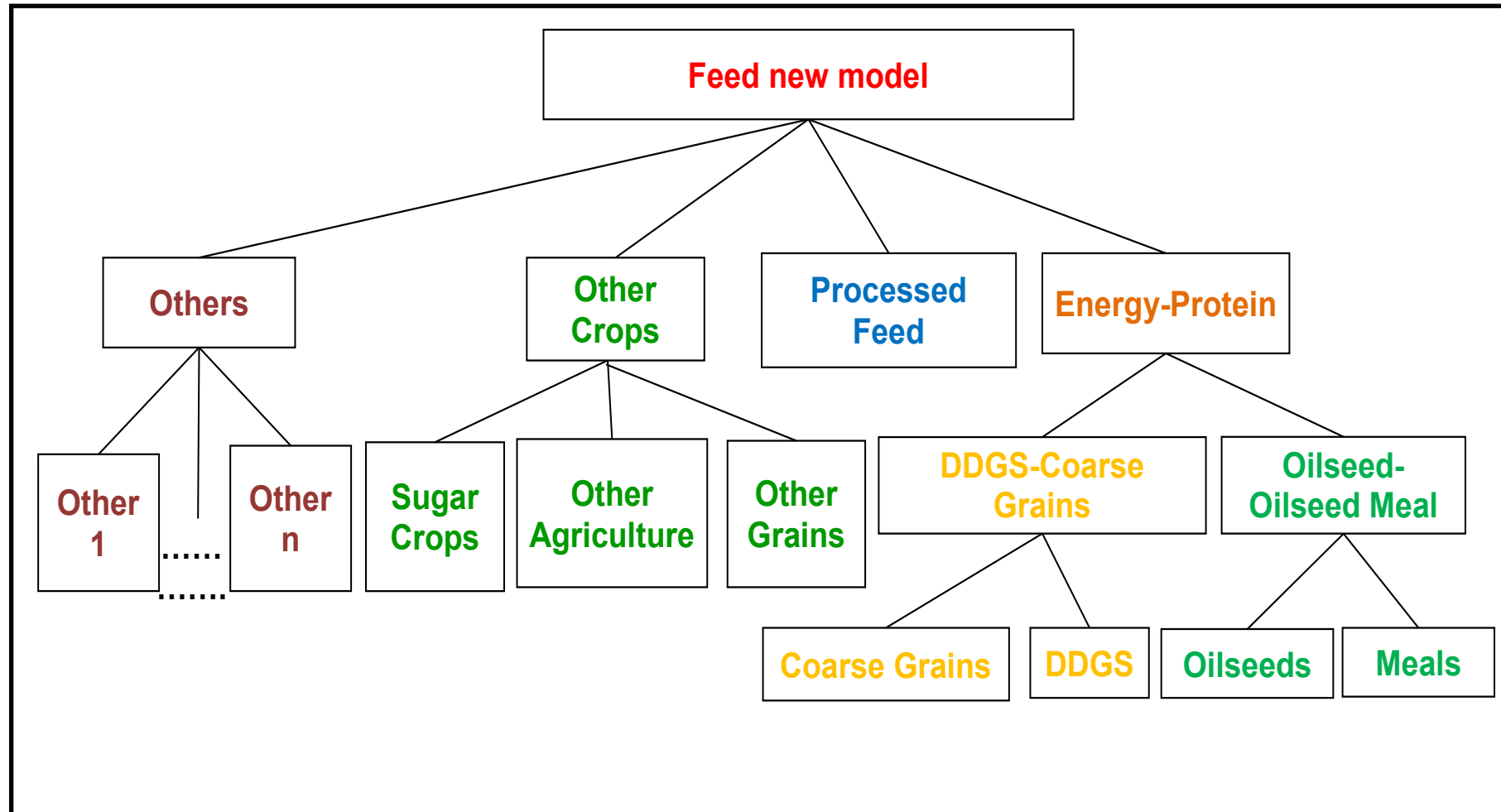
# Links between crops, biofuels, livestock, and other activities



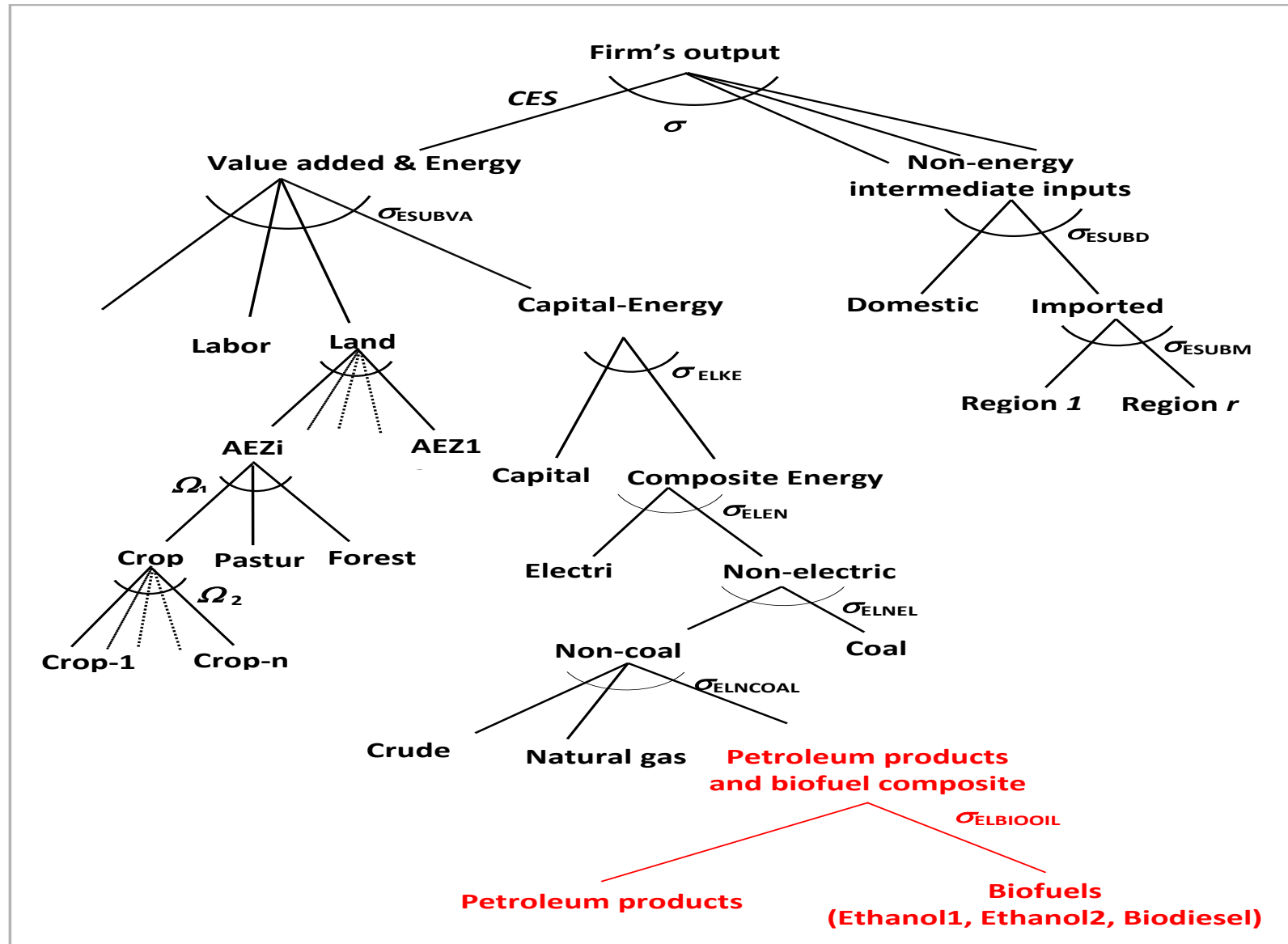
# From GTAP standard model to GTAP-BIO model



# Nesting structure of livestock demand for feed in GTAP-BIO



# Nesting structure of production functions in GTAP-BIO models



***Thank you!***  
**Questions and Comments**