Introduction to AGLINK-COSIMO Model

Medium Term Projections

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1. Introduction
Overview of the Workshop

Monday
• General Introduction to OECD-FAO medium-term outlook methodology
• Highlights of the 2014 Agricultural Outlook
• General Introduction outlook process and model

Tuesday
• Introduction to country module – model, data, parameters
• Introduction of global projection model and process
• Applications and exercises using country and global models
• Discussion and future collaboration
### WHY AGLINK-COSIMO?

<table>
<thead>
<tr>
<th>Outlook tool</th>
<th>Analysis tool</th>
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<tr>
<td>• Medium-term outlook model to produce baseline projections</td>
<td>• Conduct studies on policy reform</td>
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<td>• Provides guidelines for decision making</td>
<td>• Timely assessment of emerging market issues</td>
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<td>• Control in scenario work</td>
<td>• Disaggregating of complex interactions</td>
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2. Overview of AGLINK-COSIMO
Vision and main objectives

• Provide consensus analyses on the future evolution of international commodity markets.
• Develop increasingly integrated systems that link short, medium and long term projections.

• Publication of the annual “OECD-FAO Agricultural Outlook” in collaboration with the OECD.
• Construct scenarios analyzing emerging market and policy issues using the Aglink-Cosimo model.
The Outlook: Forecast or Baseline?

- Expectation for the future
- Based on clearly defined assumptions
- A prediction, as of coming events or conditions = Forecast
- A measurement, calculation, or location used as a basis for comparison = Baseline
History of joint outlook preparation between OECD and FAO

- Medium term outlook work by FAO and OECD
- Joint work started in 2004
- Expansion of OECD Aglink model to developing countries
- Continuous development
OECD-FAO Agricultural Outlook

- Aglink-Cosimo model
- Global Coverage
- Data requirements
- Commodities
OECD-FAO Agricultural Outlook

• Produced annually from December to June.
• Ten-year projection of global supply, demand and trade
• Assessment of driving factors in commodity markets
• Theme Chapter – shared messages for FAO-OECD
• Growing scope – fish, cotton, land, fertilizers....
• Collaborative effort between various organizations
• Teamwork is critical to success
Aglink-Cosimo model

• Partial equilibrium model, driven by elasticities, technical parameters and policy variables,

• provides representations of national and global agricultural markets where all of the major agricultural sectors are assumed to be connected,

• outlook simulation tool that constructs projections over a ten year period so that all of the main characteristics of the crops and livestock sectors influence the final equilibrium.
Key assumptions of the model:

1. World markets for agricultural commodities are competitive.

2. Domestically produced and traded commodities are viewed to be perfect substitutes by buyers and sellers.

3. Aglink-Cosimo is a partial equilibrium model for the main agricultural commodities. Non-agricultural markets are not modelled and are treated exogenously to the model.
Data requirements

Annual time series for:

Historic (endogenous)
- prices
- supply (area, yield, animal numbers...)
- demand (food, feed, crush...)
- trade (exports, imports)

Projection (exogenous)
- macroeconomic data (GDP, ex. rate...)
- policy variables (tariffs, CAP...)
### AGLINK Countries

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### Aglink – Cosimo Commodities

<table>
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<tr>
<th>Wheat</th>
<th>Beef</th>
<th>Skim Milk Powder</th>
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<tbody>
<tr>
<td>Coarse Grains**</td>
<td>Sheepmeat</td>
<td>Whole Milk Powder</td>
</tr>
<tr>
<td>Rice</td>
<td>Pigmeat</td>
<td>Cheese</td>
</tr>
<tr>
<td>Oilseeds**</td>
<td>Poultry</td>
<td>Butter</td>
</tr>
<tr>
<td>Vegetable Oils**</td>
<td>Eggs</td>
<td>Fresh Dairy Products</td>
</tr>
<tr>
<td>Oilseed Meals**</td>
<td>Sugar</td>
<td>Ethanol</td>
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<tr>
<td>Roots and Tubers</td>
<td>Cotton</td>
<td>Bio-diesel</td>
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*Fish (Separate Model)*

** Indicates sectors which may be disaggregated
Uncertainties and Limitations

Related to:

– macroeconomic developments
– technology advances (yields, biofuel)
– energy prices,
– weather-related production shocks,
– disease outbreaks,
– agricultural policy developments
Aglink – Cosimo Outlook Process

- OECD Questionnaire Responses
- OECD Experts
- OECD Commodity Groups
- Calibrated Stand-alone Models
- Adjusted Stand-alone Models
- FAO Databases
- FAO Experts

Solve for domestic prices

Iterations, exchanges of modifications

Solve for world prices

OECD-FAO World Agricultural Outlook
Questions?
3. Highlights of the 2014 Agricultural Outlook
OUTLINE

• Global commodity trends and developments
  – Demand
  – Supply
  – Prices

• Feeding India: Prospects and challenges in the next decade
OECD-FAO Agricultural Outlook

• Joint OECD-FAO report published annually in June

• 10 year horizon

• Model based projection validated through global expert consensus

• Major temperate commodities

• Global coverage

• Country Collaborators Program
Macroeconomic Assumptions

• GDP growth 2.2% per year for OECD countries, higher in developing countries.

• World population expected to grow 1% per annum.

• Crude oil price to reach USD 147 per barrel by 2023.
Consumption growth: individual meats

- **Poultry**: 49% increase, 28.3 Mt
- **Pork**: 29% increase, 3.8 Mt
- **Beef**: 16% increase, 9 Mt
- **Sheep**: 6% increase, 17 Mt

Total additional meat consumed by 2023: 58 million tons
Regional distribution of additional meat consumed

58 million tons additional meat consumed by 2023

Asia, 52%

China, 29%

Viet Nam, 4%

India, 4%

Near East, 6%

Latin America and Caribbean, 16%

Europe, 5%

Africa, 12%

Oceania, 1%

Other Asia, 15%

North America, 8%
Dairy Demand
Total (index) and per capita consumption of milk and dairy products

Index

Per capita (kg)

North America  Europe  Latin America  Asia and Pacific

Oceania Developed  Other Developed  Africa

2003  2008  2013  2018  2023

2003  2008  2013  2018  2023
Trends in per capita consumption of primary food grains: rice and wheat

- **Rice**
  - Africa
  - Asia
  - Developed
  - World

- **Wheat**
  - Africa
  - Asia
  - Developed
  - World
Coarse grains demand food, feed and biofuel

<table>
<thead>
<tr>
<th>Year</th>
<th>Food</th>
<th>Feed</th>
<th>Biofuel</th>
<th>Other</th>
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<tbody>
<tr>
<td>2011-13</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2023</td>
<td></td>
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Developing

Developed

Million tons

Food  Feed  Biofuel  Other
Sugar consumption in the developing countries to underpin the market

<table>
<thead>
<tr>
<th>Region</th>
<th>2011-13</th>
<th>2023</th>
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<tbody>
<tr>
<td>Asia &amp; Pacific</td>
<td>80 Mt</td>
<td>100 Mt</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>20 Mt</td>
<td>40 Mt</td>
</tr>
<tr>
<td>Africa</td>
<td>10 Mt</td>
<td>20 Mt</td>
</tr>
<tr>
<td>Other developing</td>
<td>5 Mt</td>
<td>10 Mt</td>
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Vegetable Oil

Food vs. Non-food Uses

[Bar chart showing the comparison of vegetable oil usage for food and non-food purposes in developed and developing countries, with data for the years 2011/13 and 2023.]
Mention to your friends that...

- Cereals are still at the core of human nutrition, but growing incomes, urbanisation and a certain globalisation of eating habits contribute to the ongoing transition of diets that are higher in protein, fats and sugar.
- Annual increase in global consumption is projected for cereals at 1.2%, meat 1.6% and dairy 1.9%.
- Demand is growing at slower rates compared to the past decade, due to: population, saturation, recuperation.
Net agricultural production index

Index = 1 in 2003

Net agricultural production index is shown with different regions such as W. Europe, N. America, Dev. Oceania, Oth. Dev., Africa, E. Europe&C. Asia, Asia, and Lat. Am.&Car. The index is based on constant 2004-06 dollars.
Production in Asia

High-Value Commodity Production and Consumption Change (2011/13 to 2023)

Cereal Production and Consumption Change (2011/13 to 2023)
Production in Africa

High-Value Commodity Production and Consumption Change (2011/13 to 2023)

Cereal Production and Consumption Change (2011/13 to 2023)
Production in Latin America

High-Value Commodity Production and Consumption Change (2011/13 to 2023)

Cereal Production and Consumption Change (2011/13 to 2023)
The Americas are the surplus region of the world

Americas: dominant export region for most products

Africa: increasingly import dependent for basic food needs

Asia: larger imports despite strong production growth

Other: Eastern Europe and Central Asia emerge

Note: Agriculture and fisheries products included in the Outlook
...will they agree that...

- Growth in livestock production is expected to outpace crop production in the next decade.
- The structure of global agricultural production is expected to respond to the increased need for coarse grains and oilseeds compared to wheat or rice.
- The limited availability of additional arable land will impact the expansion and concentration of additional crop production.
- The Americas will strengthen their position as the dominant export region, both in value and volume terms.
FAO’s Food Price Index: Real prices on downward trend but high level
Special focus: India

• Strong growth in agriculture will continue, but at a slower pace.
• Food consumption will rise, particularly for value added commodities.
• The new National Food Security Act expects to deliver further significant gains in terms of food security.
• India stays among the leading exporters of agricultural products.
Visit our website:

www.agri-outlook.org
4. Introduction to Partial Equilibrium Outlook Modeling
Definition of Partial Equilibrium Model

“A partial equilibrium is one which is based on only a restricted range of data, a standard example is price of a single product, the prices of all other products being held fixed during the analysis.”

Source: Definition by George Stigler in
Assumptions of a Partial Equilibrium Model

• The analysis only considers the effects of a given policy action on the market that is directly affected;

• Price and Quantity of a given commodity are taken as endogenous (determined) and all other goods are constant and exogenous to the analysis;

• Markets are perfectly competitive
Assumptions of PE Model 2.

- Cost minimization or profit maximization on the production side;

- Utility maximization (given budget constraint) on the consumption side.
Advantages of PE Modeling

1. Disaggregated-level analysis

2. Flexible structure

3. Minimal data requirement
Limitations of PE Modeling

...Obviously....the analysis being only

Partial!!!
Questions?
Tuesday
OUTLINE

6. Country Model Structure
Aglink-Cosimo model

FAOSTAT/OECD Database
Time series for production, consumption, stocks, GDP, tariffs, exchange rates, prices, costs...

Population
Income

Consumption (food, feed, other use)
Ending stocks
Exports

Domestic price
(internal market clearing)

Production
Opening stocks
Imports

Area/ livestock
Yield

Net trade
(exports – imports)

World trade balance
\[ \sum EX = \sum IM \]

Equilibrium world price
Supply

• Crop production:
  Area = f(Return/ha, Paymt/ha, Costindex, Area(-1), Rfactor)
  Yield = f(Return/t, Paymt/t, Costindex, trend, Rfactor)
  Production = Area * Yield

• Oilseed products
  OilseedMeal production = mealyield * oilseed crush
  Protein meal production = oilseed meal + others...
  Oilseedoil production = oilyield * oilseed crush
  Veg oil production = oilseed oil + palm oil + others...
Supply

- **Meat production:**
  
  Livestock Inventory = f(Meatprice, Paymt/hd, Feedpriceindex, Costindex, Inventory(-1), trend, Rfactor)
  
  Indigenous meat production = f(Meatprice, Paymt/tn, feedprice index, costindex, Inventory(-1), production(-1), trend, Rfactor)

- **Milk production:**
  
  Cow Inventory = f(Milkprice, Paymt/hd, Feedpriceindex, Costindex, Inventory(-1), trend, Rfactor)
  
  Cow yield = f(Milkprice, Paymt/tn, feedprice index, costindex, trend, Rfactor)
  
  Milk production = Inventory * yield
  
  Milk products = f(fatprice, proteinprice)
Demand

• Food demand

Food demand = f(Ownprice, other prices, pricedeflator, Income/person, trnd, Rfactor)
» Demand constraints apply in log linear relationship

• Crop Feed demand

Feed demand = f(Ownprice, other prices, nonruminant prod, ruminant prod, trnd, Rfactor)
» Fish meal, DDGs are deducted

• Bio-fuel crop feedstock demand

Feedstock demand = f(Pricebiofuel, feedstock price, mandate, subsidy, Rfactor)

• Crop Other use
  – Other use = f(Price, income, trnd, Rfactor)
Stocks

• Crops

\[ \text{Stocks} = f\left(\frac{\text{Ownprice}}{\text{average(ownprice), production, Rfactor}}\right) \]

• Meat and dairy products

\[ \text{Stocks} = f(\text{Ownprice, production, Rfactor}) \]
**Trade**

- **Exports**
  \[ \text{Exports} = f(\text{producerprice/exportprice}, \text{Rfactor}) \]

- **Imports**
  \[ \text{Imports} = f(\text{producerprice/importprice}, \text{Rfactor}) \]
Prices

• Export price

$$\text{Export price} = \text{world price} \times (1 + \text{export wedge}) \times \text{exchange rate}$$

• Import price

$$\text{Import price} = \text{world price} \times (1 + \text{tariff} + \text{import wedge}) \times \text{exchange rate}$$

• Producer price: domestic market clearing

$$\text{Production} + \text{stocks}(-1) + \text{imports} = \text{consumption} + \text{exports} + \text{stocks}$$

• Consumer price

$$\text{Consumer price} = f(\text{producer price}, \text{deflator})$$
OECD-FAO Agricultural Outlook
7. Bioenergy and Food Security
Country model

- Biofuels
  - Ethanol
  - Biodiesel
Biofuels

Objectives:

• Produce an annual medium-term outlook for the biofuel sector.

• Carry out in-depth analyses of the fundamentals shaping the biofuel market and their impact on agricultural markets and food security.

• Assess the impact of stated biofuel policy targets on commodities markets.

• Evaluate the impact of second generation biofuels.
Biofuels

Feedstocks:

**Ethanol:**
- Molasses
- Sugar cane
- Sugar beet
- Wheat
- Coarse grains
- Roots and Tubers (Cassava)
- Non Agricultural

- Energy crops and residues (second generation)

**Biodiesel:**
- Vegetable oils
- Jatropha
- Non Agricultural
Integration of ethanol into the model

Crop Area

Sugar Cane

Ethanol

“Sumol”

Molasses

Raw Sugar

White Sugar

Feed supply

Ethanol Market

Non Ag.

Cassava

Food

Feed

Ethanol

Grains (CG, WT)

Feed

Ethanol

Food

Feed

DDG

Second Generation

Food supply
Integration of biodiesel into the model
Biofuels

Exogenous data:

• Transportation fuel use and retail prices (gasoline, diesel)
• Technical conversion factors
• Taxes, tariffs, payments
• Blending requirements
Biofuels

Endogenous data:

• Ethanol and biodiesel domestic production
• Feedstock use
• Ethanol and biodiesel consumption (fuel and other)
• Biofuel trade
• Ethanol and biodiesel domestic and world market prices
Biofuel Production

Total Production = f(price of ethanol/average feedstock price, policy variables)

Production by feedstock = f(average feedstock price/feedstock price)

Feedstock demand = f(production by feedstock, conversion factor)

Byproducts production = f(production by feedstock, conversion factor)
Biofuel Use

**Ethanol/Biodiesel use in low blends (price driven)**
\[ = f(\text{ethanol price/gasoline price, per-capita income, population}) \]

**Ethanol other use (non fuel)**
\[ = f(\text{ethanol price, income}) \]

**Mandated Ethanol/Biodiesel use**
\[ = f(\text{mandated blending, gasoline/diesel use}) \]

**Total Ethanol/Biodiesel use**
\[ = \max (\text{mandated, price driven uses}) + \text{other use (ethanol)} \]

**Trade and domestic prices equations are same as other commodities**
5. Required Data
Annual time series for:

- supply (area, yield, animal numbers, ...)
- demand (food, feed, crush, ...)
- trade (exports, imports)
- prices
- macroeconomic data (GDP, ex. rate, ...)
- policy variables (tariffs, CAP, ...)

• supply (area, yield, animal numbers, ...)
• demand (food, feed, crush, ...)
• trade (exports, imports)
• prices
• macroeconomic data (GDP, ex. rate, ...)
• policy variables (tariffs, CAP, ...)
Data sources for endogenous data

- national statistics
- international databases
- surveys, questionnaires
- literature
- calculations
Exogenous data

- Population
- GDP deflator
- Consumer price index
- Exchange rate
- GDP
- World prices
- Technical Parameters (time variable)
Data sources for exogenous data

Sources (historic series and projections):
- national statistics
- international databases
- surveys, questionnaires
- literature
- calculations

Exogenous projections may have to be done by you!

Methods:
- trend
- time series methods
- regression
- expert opinion
Questions?
8. PARAMETERS
Model

Data

Parameters

Projection Output

Exo

Endo
Parameters

• are the link between variables

• determine the properties of the model

IDNparms.inp
Parameters

Strategy for parameter choices

1. Use available estimates.
2. Use systems / appropriate constraints
3. Estimate: research estimation agenda

Model validation by country / by commodity

Emphasis on consultation with experts
Parameters

Steps to develop and modify the parameter set
• example of non-estimation method
• based on available estimates

IDNparm2014.xlsx
Exo

Data

Model

Projection Output

Parameters
Questions?
9. GLOBAL AGLINK-COSIMO MODEL
Aglink-Cosimo Model

FAOSTAT/OECD Database
Time series for production, consumption, stocks, GDP, tariffs, exchange rates, prices, costs...

Population

Income

Consumption (food, feed, other use)

Ending stocks

Exports

Production

Opening stocks

Imports

Area/ livestock

Yield

Domestic price (internal market clearing)

Net trade (exports – imports)

World trade balance
\[ \sum EX = \sum IM \]

Equilibrium world price
Introduction to the global “all linked” model concept

- All country modules are merged
  - Models
  - Data files
  - Parameter files

- World price endogenized

- Equilibrium solution for all countries and all commodities
Model Closure

World Prices Market Clearing

- Wheat, Coarse grain, rice, oilseeds, raw sugar, poultry, sheep meat, butter, cheese, skim powder, whole powder, ethanol, biodiesel:
  - Global exports = Global imports

- Bovine and pig meats:
  - Pacific market: exports=imports
  - Atlantic market: exports = imports
  - Rest of world: exports=imports
OUTLINE

11. Introduction to Troll-based Modeling
Introduction of the Troll Simulation Software

- Integrated software for econometric, modeling and statistical analysis
- State-of-the-art model simulation engine designed for large systems
- Complete integration of various tasks (calculation, model editing, estimation, simulation...)
- Hundreds of built-in functions and sophisticated modeling language
- Efficient interface to MS-EXCEL
- Available for any platform, MS-WINDOWS or UNIX
10. Applications
Scenarios

Aglink-Cosimo is capable of simulating scenarios involving:

*Policies*
- production
- consumption
- trade

*Socio economic factors*
- macro economic drivers
- population

*Technology*
- yields
- costs
Counterfactual Scenario Setup 1.

Impact of biodiesel production on domestic prices of the main agricultural commodities from 2007 to 2012

- Ex-post 2007-2012

- Analyses deviation from hypothetical baseline caused by using vegetable oil instead of biodiesel
Scenario 1. biodiesel

*Indonesia Vegetable oil production, exports, food and biofuel use*

![Graph showing vegetable oil production, exports, food, and biofuel use in Indonesia from 1996 to 2012](graph.png)

- Biofuel IDN_VL_BF
- Biofuel IDN_VL_EX
- Biofuel IDN_VL_FO
- Biofuel IDN_VL_QP
- NOBIOFUEL IDN_VL_BF
- NOBIOFUEL IDN_VL_EX
- NOBIOFUEL IDN_VL_FO
- NOBIOFUEL IDN_VL_QP

Legend:
- Thousands of tons
- Years: 1996 to 2012
Scenario 1: Results

Results indicate that there would be no major changes affecting food markets: domestic prices for rice, wheat and coarse grains remained relatively unchanged compared to the baseline.
Forward-looking Scenario Setup 2.

Raising the biodiesel blending ratio* to 25 percent, impact on world markets
Scenario 2: raising blending ratio 25% - impact on domestic biodiesel markets

Indonesia biodiesel: production, consumption and net trade


- BIOFUEL IDN_BD_NT
- BIOFUEL IDN_BD_QC
- BIOFUEL IDN_BD_QP
- NOBIOFUEL IDN_BD_NT
- NOBIOFUEL IDN_BD_QC
- NOBIOFUEL IDN_BD_QP
Scenario 2: raising blending ratio 25% - impact on world vegetable oil and biodiesel markets
Scenario 2. Results

- Domestic vegetable oil production increases by 6%;
- World vegetable prices increase by 12%;
- World biodiesel prices rise by 11%;
- Vegetable oil and biodiesel exports decrease;
- Global food consumption of vegetable oil decreases by 2%
- Global production of vegetable oil increases by 3%
Scenario 2. Results

Global consequences of vegetable oil price increase:

• A decrease in global consumption of vegetable oils (2%)

• Increased production (3 Mt) mainly from Malaysia, Canada, China, the European Union and Brazil.

Compensation effects:
The reduced export of Indonesian CPO would be compensated by:

• Increased exports of Argentinian vegetable oil;

• Reduced imports of vegetable oils into the European Union.
Uncertainties concerning Scenarios

Scenarios are based on assumptions related to:

• Market developments;
• Domestic policies;
• Trade policies;
• Weather conditions
Questions?
12. Future work
Discussion for future co-operation

- Data review
- Country module development
- Scenario work
Thank you

Contact:

EST-projections@fao.org
11. COUNTRY MODULE
Creating the standalone projections
Introduction of the Aglink–Cosimo Standalones

• **Standalone model construction and baseline generation**
  – how modules are put together, solution process

• **Analysis and scenario exercises**
  – demonstration exercises running these scenarios, compare, discuss one example chosen by the group

IDNsys.inp

IDNstep2-2014.inp

Country Viewer
Introduction to the Sys file

1. Functions of the Sys file
   - data-generation
   - calibration
   - simulation

2. Overview over model

3. Overview over viewer

Files:
- IDNsys.inp
- IDNmod_2014.inp
- IDNview2014
Practical exercises using the country module

• Simulation exercises with stand alone model
  – Baseline generation
  – create a projection with model, put output in viewer

• Adjustments of endogenous and exogenous variables
  – read in new r-factors,
  – modify the macro variables

• Parameter modifications
  – modify parameters run model,

• Structural changes
  – exercises to change equation structure (diff average in RH)

• Model improvement discussion
Aglink – Cosimo Outlook Process

OECD Commodity Groups

Solve for world prices

Iterations, exchanges of modifications

OECD-FAO World Agricultural Outlook

Solve for domestic prices

OECD Questionnaire Responses

Calibrated Stand-alone Models

Adjusted Stand-alone Models

Country Model Development

FAO Databases

OECD Experts

FAO Experts

FAQO Databases
How do we carry out the Outlook?

1/ Country expertise is taken into account as a starting point
   A questionnaire is sent to each collaborator country

2/ The AGLINK-COSIMO model is used to get
   a consistent and coherent picture
   Collaboration between FAO and OECD Secretariats

3/ Model Outcomes are adjusted through expert opinions
   Collaboration between FAO and OECD Secretariats

4/ Final review of projections in OECD commodity groups
   Projections (not forecast) are discussed with member/observer countries
Main steps to obtain the baseline

Step 1: Country standalones
Calibrate country models on questionnaire replies

Step 2: Merge of country standalone and of COSIMO
Get the AGLINK – COSIMO model

Step 3: Computation of the baseline
Work on the global model on a commodity base
Introduction to the global “all linked” model

- Merged model construction and baseline generation
  - how modules are merged, solution process.
- Analysis and scenario exercises with complete Aglink-Cosimo
  - demonstration exercises running these scenarios, compare, discuss one example chosen by the group.
Practical exercises using the global model

- Simulation exercises with global model
  - Baseline generation
  - create a projection with model, put output in viewer

- Adjustments of other countries
  - read in new r-factors,
  - modify the macro variables

- Parameter modifications
  - modify parameters run model,

- Structural changes
  - exercises to change equation structure (diff average in RH)

- Model improvement discussion
Questions?
12. Future work
Discussion for future co-operation

- Data review
- Country module development
- Scenario work
Co-operators Program

• **Benefits**
  – Participate in annual world commodity projection
  – Access to data, models, FAO staff
  – Participate in analysis projects
  – Access to capacity building – training
  – Tap global expertise

• **Country involvement**
  – Depends on commitment– 2-6 staff months
  – Provide data on markets and policies
  – Advice as to policy issues etc.
  – Input into projection– country questionnaire
Levels of cooperation

• **A Level (1 month staff time)**
  – Fill out historical data questionnaire
  – Provide judgments on projections

• **B Level (2 months staff time)**
  – Participate in projection process
  – Attend meetings in Rome

• **C Level (6 months qualified staff time)**
  – All of above
  – Create new country specific module
  – Training on modules – Cosimo provided by FAO
  – Use module/model for projection work
Time requirements

- Annual Cycle – from November to April/May
- Questionnaire on historical data and projection judgements
- Participation in baseline process
- Meetings – OECD/FAO
- Model maintenance - research
Steps to formalize co-operation

• Set up Task Force (identify members)
• Sign agreement on what is required/offered by both FAO and collaborator
  – Identify initial funding sources to build capacity
  – Identify process of collaboration
  – Identify technical support requirements
• Prepare work plan for new country model development and maintenance
• Identify policy questions to be addressed
• Undertake country report: Medium term prospects for agriculture and food security
Questions?
Thank you

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