FAO-UNIDO Expert Group Meeting on Agro-Industry Measurement (AIM)

Report

23-24 November 2015, Rome, Italy

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Content:

- Introduction – The FAO-UNIDO Agro-Industry measurement Project
- Scope of the AIM DB and broad description of the methodological approach
- Minutes of the expert group meeting on AIM
- Future developments, next steps and their prioritizations
- Defining the Agro-Industry
- Why? What questions do we want to answer?

A. THE FAO-UNIDO AGRO-INDUSTRY MEASUREMENT PROJECT

As economies grow and develop, the productive landscape undergoes structural transformations and sectors become more interrelated. As a result, determining the overall importance of any specific sector becomes more difficult, while measuring the contribution of the upstream industry alone significantly underestimates the sector's economic contribution. This is certainly the case for agriculture, where the upstream industry of agricultural production understates the sector's contribution to the agro-industry value-chain and the economy through its links to numerous industries such as fertilizer production, food processing and manufacturing, transportation, wholesale, and retail distribution.

To meet the growing need for consistent statistics to measure the agro-food value-chain, FAO's Statistics Division (ESS) began construction of global macroeconomic statistics databases on agro-industry measurement (AIM), agricultural capital stock and other related structural statistics. The agro value chain refers to all economic operations involved in the production and distribution of products that originate from or are used in the production of agriculture output, while the agro-industry refers at least a subset of the "farm to fork" activities in this value-chain that, to this day, lacks a statistical definition.

B.   SCOPE OF THE AIM DB AND BROAD DESCRIPTION OF THE METHODOLOGICAL APPROACH

Combined with economic indicators for the agricultural sector, the AIM database attempts to provide harmonized indicators of some key components of the value chain. In particular, in this early/first stage of the AIM project development, the focus was laid on the agro-food processing industry and on the following indicators: production, value added, employment, and compensation of employees.

The statistics division of UNIDO is a major partner in this project by acting as a data compiler and supplier and as a provider of technical advices on the use of UNIDO data and on the best ways to integrate FAO and UNIDO's databases.

Table 1 provides a description of the content of the "prototype" version of the AIM database in terms of time series, geographical, variable and industry coverages. The approach to date is limited, however, in not covering activity groups further along the value chain and cannot, therefore, be labelled as "from farm to fork". The database does neither, at present, include any other manufacturing activities that process non-food agricultural products, such as the manufacturing of textiles, leather and wooden products for instance.

The current version of the AIM database covers a list of 46 countries (mainly OECD and BRIC countries).

Table 1 – AIM Database Content description (current/prototype based on ISIC REv 3.)

	Total Agriculture	Manufacturing	Manufacture of food products, beverages, and tobacco products	Manufacture of food products, and beverages	Manufacture of tobacco products	Total Economy
Value Added	V	V	V	V	V	V
Gross Output	V	V	V	V	V	V
Compensation of employees	V	V	V	V	V	V
Employment	V	V	V	V	V	V

Additional content features:
- All variables are provided in current Local Currency Units (LCU) and current US Dollars;
- The time coverage is 1990-2013;
- The database includes 46 countries: OECD countries, BRIC countries and Bulgaria, Taiwan, Cyprus, Indonesia, Latvia, Lithuania, Malta, Romania.

Section D on next developments discusses a prioritization scheme and work plan for the next extensions for the AIM database.

The approach for compiling the AIM database uses the System of National Accounts (SNA) structure in order to allow for consistent inter-industry comparisons, particularly

between the agriculture and manufacturing sectors and sub-sectors, cross-country and time trend analysis. As for the data sources, the AIM database relies on existing international databases on national accounts (NA) and industrial statistics available from major international organizations and consortia. In particular, the databases used are presented in Table 2.

Table 2 – Databases harvested

Database and Source	Data type
Structural Analysis Database (STAN), OECD	National Accounts, analytical DB
WIO Database, Socioeconomic accounts , EU funded research consortium	National Accounts, analytical DB
National Accounts Estimates of Main Aggregates, UNSD	National Accounts, analytical DB
National Accounts Official Country Data, UNSD	National Accounts, official country estimates
Industrial Statistics Databases (2 & 4) , UNIDO	Industry Business Survey

These databases have the advantage of covering a large set of countries, are more often than not official country statistics, and their use minimises the effort by FAO and UNIDO and the burden and duplication on countries of obtaining and providing the necessary underlying data, or explaining differences in data.

The methodological strategy:

- Whenever available, use NA series. The main data treatment are data bridging across sources and ISIC revisions, estimation of missing data points and nowcasting of most recent years. The National Accounts (NA) framework helps harmonize the database across agriculture and manufacturing sectors.
- The main sources of information include the OECD (STAN and National Accounts databases), World Input Output Database (WIOD) consortium funded by the European Commission, and United Nations Industrial Development Organization (INDSTAT).

Using this holistic framework captures multiple dimensions of agriculture-related industries and allows integrating different country profiles: in low income countries agriculture remains a large sector in terms of employment and contribution to national product, but is still a largely self-sufficient sector with strong linkages from agriculture to the macro-economy. By contrast, in high-income countries, agriculture accounts for a very small share of employment and national product, but exhibits strong commercial links, inter-sector transfers and competition for inputs and consumers' expenditures.

It should be stressed that these are *provisional analytical* databases that are still under development and peer review. While official country data is the backbone of these indicators, the database requires a significant number of imputations, estimations and assumptions. Data sources and assumptions are well documented, in the hopes that official country statisticians and other experts will help validate or improve the databases and the underlying assumptions, and where possible, provide official country data to replace missing data. Though FAO plans to publish these databases following peer review, they will remain *analytical* databases given the number of imputations, estimations and assumptions used.

To begin the validation exercises, the AIM database, as of Fall 2015, was subject to scrutiny by experts during workshops and meetings held in Vienna in October and in Rome in November 2015. The AIM database was presented and discussed at an October Seminar on Industrial Statistics, hosted by UNIDO in Vienna, and then the subject of a two day expert group meeting in Rome in November, drawing on agro-industry experts and statisticians from member countries, international organizations, and academia. The following section provides a detailed summary of the agenda and discussions during the EGM.

C.   MINUTES OF THE FAO-AIM EXPERT GROUP MEETING, 23-24 NOVEMBER 2015, ROME

On the 23rd and 24th of November 2015 an FAO-UNIDO expert group meeting (EGM) on the AIM project was held at FAO headquarters in Rome, Italy. This meeting is organized to present and discuss FAO-UNIDO work on global Agro-Industry Measurement.

Scope of the EGM:

- Report on the progress of FAO-UNIDO work's on the compilation of the database on Agro-food Industry Measurement. In particular, ESS-FAO will present the new database and its underlying methodology, and will seek for feedback, validation and advice on this work;
- Get insight as on how the agri-business sector has been delineated and measured at a country/regional/global level by national statistical institutes and/or researchers. What are the challenges at country level in agro-industry measurement? What are the lessons learned from these measurement exercises?
- Understand the data needs faced by agro-industry policy makers and researchers;
- To get an in depth discussion on (i) the problematic of defining the Agro-industry and the Agro-value chain from a statistical perspective, and (ii) future developments and their prioritization.

The EGM was structured into 4 thematic sessions of which the main discussions are

summarized hereunder.

Session 1: Context and Motivation for the AIM project

The sessions includes a set of presentations on existing work on value chain measurement applied to some specific industry and/or regions of the world as well as a couple of presentations from development officers. These presentations helped setting the context and highlighted the need for an integrated global database on Agro-Industry measurement.

The questions tackled were: What are agro-industry, agribusiness and agro-food value chains? How do they relate to the broader agriculture and agro-food systems? What are we trying to measure? What are their components, and what are the challenges in measuring them? Why is it important for policy advice? Are we able to track public expenditure in this specific area or it is aggregated with agriculture? Can we measure economic efficiency through pricing policies and analyze price distortions in the agro-processing and agro-export segments of the agro-food system?

Session 2: Country Experiences in Agro-Food Value-Chain statistics

The second session was devoted to presentations by officials from national statistical offices who shared on their country experience on the following issues:

How do countries measure the agro-food and/or the agro-industry value chain? What are some key features of the national agro-industry? How is this industry defined, particularly vis-a-vis the agricultural sector? What are key data sources and measurement issues/challenges? We also had a first example of possible developments for the AIM database that would bind with the economic accounts of agriculture

Throughout the session, a recurrent issue was the importance and the need for a sound statistical definition of the Agro-industry before starting any measurement exercise.

Session 3: The Agro-Industry Measurement Project

During the third session, the FAO-UNIDO work on global Agro-Industry Measurement (AIM) statistics was presented and discussed. Among the questions tackled, we may mention:
What is the FAO-UNIDO database? What is the AIM coverage, in terms of industrial sectors, countries and variables? What is the overall approach used, and the underlying methodology in constructing its statistics? What were some of the challenges in terms of missing data, and sector coverage, and how were they addressed? What are some of the lessons learned in developing the AIM database, particularly for countries collected primary data?

Session 4: Potential Future Developments and Next Steps

This session discussed some of the potential expansions of the AIM database, particularly in terms of its coverage and data quality. Experts described some of the challenges in these expansions, including defining the Agro-Industry from a statistical perspective; expanding the AIM database to include trade variables; improving the quality of labour statistics; and drilling down to food processing product-based sub-sectors.

A substantive part of the second day afternoon was used to discuss the next steps for the AIM database and to agree on their prioritization. The next section provide a more complete summary of these discussions.

D. FUTURE DEVELOPMENTS, NEXT STEPS AND THEIR PRIORITIZATION

The next steps include expansion of variables and country coverage, expansion of manufacturing industry coverage, and drill down into more disaggregated agro-food commodity groups. Given limited resources, these expansions need to be prioritized in terms of feasibility, ease, and importance. In an ideal world with limitless resources, complete response rates, and 100% country coverage, the AIM project should measure all the activities and actors in the agro-industry value chain.

As a result of the AIM expert group meeting held in Rome on 23-24 November, it was agreed that among the next steps, the priorities should be as follows.

Step 1 – Make available the AIM "prototype" database to participants
For selected countries (46), this includes the following variables (local currency and USD) :
- value-added
- employment
- compensation of employees
- gross output

By end of year 2015, the AIM database including these key variables for 46 countries would be shared with the participants under protected access (via dedicated webpage), and could include some of the feasible expansions of Step 2.

Step 2 – Identify and prioritize of the potential next areas for expansion

  i.   Add variables pertaining to the agricultural, forestry and fisheries sector
 ii.   Expand country coverage for the food processing sub-sector
iii.   Provide variables disaggregated by activities within food processing
 iv.   Add variables in constant prices

v.   Provide a statistical definition of "agro-industry"

vi.   Add new variables such as export, import, GFCF, intermediate consumption

vii.   Expand manufacturing industry coverage to include industries using non-food inputs from Agriculture, Forestry and Fishing (textiles, leather products…) → CHALLENGE

viii.   Evaluate and improve the quality of variables (e.g. employment) → CHALLENGE

It was noted that the extent to which next steps are undertaken depend on the availability of existing resources, and ability to mobilize new resources.

It was also noted that the policy questions of interest should be well defined in motivating further developments/expansions.

E.   DEFINING THE AGRO INDUSTRY

In defining the "agro-industry," there are several terms that come up in the literature. These include, but are not limited to, the following:

Agribusiness; agro-industry; agro food system; agro enterprise; food industry; farm gate-to-market; processed agriculture; agro processing; food processing; agro-food value chain; FBT (food, beverages & tobacco); FaF (food & fibers); agro-food complex.

During the AIM EGM of 23-24 November 2015, it was agreed that "agro-industry" captured the broadest sense of activities and actors involved in the agro-food value chain, as it include non-food agriculture-based products, such as leather and cotton textiles, wood furniture, and fertilizer production.

Some progress has been made to clarify the meaning of recurrent terminologies encountered in the related literature (agro-industry, agribusiness, agro-food systems, processed agriculture, etc.). However, a lot more work is still needed to build a broad consensus across countries and to get to one or more conceptual definitions – if we want to allow for various degrees of scope coverage of the value chain – that can be used for statistical measurement exercises. Indeed, from a statistical perspective, the work requires creating classifications to measure the agro-industry. To minimize costs on countries, this should make use of existing international classification systems, such as the International Standard Industrial Classification (ISIC), the Harmonized System (HS) used by customs officials for trade in goods and services, the Central Product Classification (CPC) used for classifying agricultural production, and the Classification of Individual Consumption According to Purpose (COICOP) used in compiling consumer price indexes (CPI). This requires an active lead by statistical experts.

End users need to also play a role in developing this definition and its statistical classification. It is necessary for data users and policy makers to identify the questions that need to be answered, which will help in both determining the scope of the project, the statistical definition of agro-industry, and the priority next steps. End users could also develop or identify approximate commodity groupings of policy interest that cover the main categories of agro-food products (cereals, vegetable oils, sugar, meat, fish, etc.), as well as their derivatives through processing.

As an example, end users could revisit the rule that was applied in calculations on the GTAP figures for 2004, 2007 and 2011 for East Asian countries, which was the following:

> *Thirteen sub-sectors are included in "Agriculture": (i) paddy rice, (ii) wheat, (iii) cereal grains, (iv) vegetables, fruit, nuts, (v) oil seeds, (vi) sugar cane, sugar beet, (vii) plant-based fibers, (viii) crops, (ix) cattle, sheep, goat, horses, (x) raw milk, (xi) silk-worm cocoons, (xii) forestry, and (xiii) fishing. Only the category "Other animal products" has been excluded and added to Processed Agriculture.*
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> *Eight sub-sectors are included in "Processed Agriculture" (Agribusiness) are: (i) meat (cattle, sheep, goats, horse), (ii) meat products, (iii) vegetable oils and fats, (iv) dairy products, (v) processed rice, (vi) sugar, (vii) food products, (viii) beverages and tobacco products. The category "Other animal products" has been added to the above.*
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> *It is worth noting that textiles, wearing apparel, leather products and wood products which are categories that the GTAP database includes in "processed agriculture" have been excluded from the calculations for the purpose of this analysis.*

F.   WHY? – WHAT QUESTIONS DO WE WANT TO ANSWER?

- Where is employment, income, value-added created in the activities involved post-harvest that rely on Agriculture, Forestry and Fishery production?
- How do the components of these activities and their actors performing? How does this influence policies and SMGs?
- How do we support "backward" sub-national (economic) regions?
- What is the link between post-harvest activities & trade? (Value-addition in agro-food trade)?
- What is the role/contribution of post harvest activities/actors to food security and food loss/waste?
- Do our current policies sufficiently drive the correct activities in agro-food value addition (e.g. regulations, fiscal support …)?
- How do these activities from "farm to field" (and pre-farm) evolve over the development cycle, and similarly for the actors (e.g. households, informal sector,

enterprises, SMEs <u>vs</u> large and global businesses)?
- What are the implications on the environmental pressure and what are the impacts?