

# Agriculture, Forestry, and Fisheries

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## What is an Agriculture, Forestry, and Fisheries account?

The System of Environmental-Economic Accounting for Agriculture, Forestry and Fisheries (SEEA AFF) is a framework that describes the relationship between the environment and the economy with an emphasis on agriculture, forestry and fisheries (FAO, 2015).

On the one hand, it allows us to determine the level of stocks that are present in the production, processing and consumption of food, and other environmental services ascribed to agriculture, forestry, and fisheries. It also tracks the flows of natural inputs between the environment and the economy, as well as within the economy of these and other sectors. Finally, it also reflects environmental degradation that can occur from these exchanges.

## And what kind of information does it contain?

The SEEA AFF aims to keep track of the following data domains and base accounts:

- Agricultural products and related environmental assets
  - Physical flow account for crops
  - Physical flow account for livestock products
  - Asset account for livestock
  - Asset account for plantation crops
- Forestry products and related environmental assets
  - Physical flow account for timber and non-wood forest products
  - Asset account for forests
  - Asset account for timber resources
- Fisheries products and related environmental assets
  - Physical flow account for fish and aquatic products
  - Asset account for fish and other aquatic resources
- Water resources
  - Asset account for water resources

- Physical flow account for water abstraction
  - Physical flow account for water distribution and use
- Energy
  - Physical flow account for energy use
- Greenhouse Gas GHG emissions
  - Physical flow account for GHG emissions
- Fertilizers, nutrient flows and pesticides \*Physical flow account for fertilizers
- Nitrogen and phosphorous budgets
  - Physical flow account for pesticides
- Land
  - Asset account for land use
  - Asset account for land cover
- Soil resources
  - Asset account for soil resources
- Other economic data
  - Monetary supply and use table for agricultural, forestry and fisheries products
  - Extended production and income account for agricultural, forestry and fisheries activities

### Has it already been done for Guatemala?

We have conducted a trial run of SEEA AFF in Guatemala with the existing information of the SEEA Central Framework already present for 2010 in order to assess what was possible and identify information gaps that need to be worked on in more detail. Nonetheless, some of the preliminary findings are already revealing.

### What do we know about crops then?

For example, table 1 shows the output and import of various crops in metric tons for Guatemala in 2010. In terms of volume, sugar cane was by far the largest output of this group of products, followed by the production of bananas and maize. But if we were to take out sugar cane and bananas from this comparison because of their highly industrialized nature geared towards exports, we could quickly see that maize took up a third of the remaining products combined supply. Maize was followed closely by the group called "other vegetables" with a share of output of 16% and "other fruits and nuts" with 12% of this more limited group (without sugar cane and bananas).

It is also interesting to see that the production of beans, which are a staple food for Guatemalans, was not as large in terms of volume as that of maize. It represented 5% of total supply, which was comparable to wheat (6%), potatoes (6%), and other seeds and oily fruits (5%).

The external dependency of several products is also noteworthy. For example, most wheat was imported (99.7%). Also, 70% of unprocessed rice came from imports also. As much as maize has been a part of the Guatemalan diet for centuries, about 21% of it was imported.

And even if supply of soy might not be important in terms of volume, a third of it came from imports.

**[Table 1. Physical supply account for crops. ABOUT HERE]**

In terms of use of the same products, we grouped economic activities in a way that would make it more easy to identify the steps of the food production chain. For that reason, we have industries that use crops as seed inputs, others that use it as feed for animals, we have the industrial production of food, hotels and restaurants, the remaining industries of Guatemala, households and exports.

Grouping industries that would naturally use crops as feed had the intention of addressing the concern of large portions of the earth's surface being cleared for the production of animal feed. Table 2 shows that the largest users of agricultural supply were manufactures, households, and the rest of the world (exports); not industries for feed. It would be reasonable to think that grain would be used by manufactures for the production of animal foods, but as we'll see volumes of those products were not relevant in the data.

**[Table 2. Physical use account for crops. ABOUT HERE]**

In the case of "soy" and "other live plants, flowers, and seeds," the data revealed no use as feed, but an important share of their volume was used as seed (40% and 38% of all uses, respectively).

Regarding the products with larger volumes in the economy, it is interesting to recognize the share used by manufacturing industries at the national level. For example, in the case of maize, only 20% of all used volume had a final destination in manufacturing. This is consistent with the 80% (adjusted to extract the negative stock variation) that was consumed by households. It contrasts with the 99% of the supply of unprocessed rice and wheat that were used almost exclusively by the food processing industries. This does not mean that households didn't consume such products. It only means that they got them in their processed versions, such as precooked white rice and dehydrated breakfast gruel. For this reason, the totality of sugar cane was used by the food processing industry.

Aside from these exceptions, households did consume large volumes of cultivated products directly, which is consistent with the traditional market culture still present in most of the country. For example, they used 95% of beans, 88% of potatoes, 97% of other roots and tubers, 99% of fresh culinary herbs, 91% of other vegetables and 67% of all fruits, among others.