SDG 2.3.1 & 2.3.2
Productivity and Income of small-scale food producers to monitor Target 2.3 of the 2030 Agenda

Training Workshop on Agriculture, Nutrition, and Land Holding and Use to Support the Sustainable Development Goals (SDGs) 2030 in the Arab Region

Amman, Jordan July 1-5, 2018

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GOAL: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Target 2.3: “By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment”

Official global indicators:

• 2.3.1: The volume of production per labour unit by classes of farming/pastoral/forestry enterprise size

• 2.3.2: The average income of small-scale food producers, by sex and indigenous status

Both these indicators are in Tier III = an internationally agreed methodology does not exist yet. The main contentious issue is the identification of a harmonized definition of “small-scale food producers”.
1. The FAO proposed methodology to identify “small-scale food producers”
   - Frequently adopted criteria, absolute vs relative
   - The criteria proposed by FAO
   - Data required and main sources
   - Small-scale producers in selected countries

2. Global consultation on the International Definition of Small-Scale Food Producer with Member Countries

3. The computation of the indicators
   - Computing labour productivity to monitor indicator 2.3.1
   - Computing agricultural income to monitor indicator 2.3.2
Numerous ways to identify small-scale food producers are available in the literature. A broad categorization distinguishes among definitions based on a single criterion and those based on the combination of multiple criteria.

Criteria frequently found in the literature:

1. Criteria based on the amount of factors of production (e.g. land, labour);
2. Criteria based on the share of family workers in the holding;
3. Criteria based on concepts referring to the connection between the holding and the market (e.g. own-consumption, subsistence, market orientation);
4. Criteria based on the economic size of the holding (e.g. revenues).

Land size is the most commonly used criterion, as the vast majority of “small-scale food producers” definition are based on the physical size of the farm and the number of livestock heads.
Thresholds to separate large from small holdings can be either **absolute** or **relative**:

**Absolute thresholds:** Assign, for a given criterion, *the same threshold for all countries*, regardless of agro-ecological and socio-economic conditions.

- **Pros:** Enhance comparability across countries. It could be linked to measures of extreme poverty, thus establishing a close relationship between SDG1 and SDG2.
- **Cons:** Disregards differences among national contexts. Furthermore, over time it will generate an adverse selection bias, which would lead to monitor the productivity/income of the worst performers (the best performers will leave the group of small-scale producers).

**Relative thresholds:** Assign a threshold that corresponds to a **specific percentile of the distribution** of the selected criterion variable in each country.

- **Pros:** Identifies in each country producers who are relatively disadvantaged in terms of the selected criteria. Thus, this approach reflects more effectively the country-specific differences among food producers.
- **Cons:** The use of different thresholds reduce the comparability across countries.
Using a **relative approach**, the proposed statistical definition by FAO defines small-scale food producers using two criteria:

1. **Physical size of the farm**, as expressed by:
   a. **Land size**: producers falling in the bottom 40 percent of the distribution of land size, in hectares;
   b. **Livestock**: producers falling in the bottom 40 percent of the distribution of total livestock heads

2. **Economic size of the farm**, as expressed by the bottom 40 percent of the distribution of total revenues measured in **PPP**
‘Small-scale food producers’ are those included in the intersection of these three criterion variables.
Data required to identify small-scale food producers based on the proposed approach:

1. Land

2. Livestock herds

3. Revenues of agricultural production (plus PPPs and national CPIs)

\[ R^t_k = \sum_{i} V^t_{ik} p^t_{ik} \]

\( V^t_{ik} \) includes volumes produced of:
- Crop
- Livestock
- Fisheries and aquaculture
- Forestry

\( p^t_{ik} \) are farm gate prices

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- Crop
- Livestock
- Fisheries and aquaculture
- Forestry

\( p^t_{ik} \) are farm gate prices
Data on these three variables are found in the following data sources:

- **Agricultural Surveys collecting data at farm level** -- (e.g. the AGRIS project of FAO)

- **Household surveys integrated with a module on agricultural activities** (e.g. WB LSMS-ISA and similar surveys) -- Rural Livelihoods Information System (RuLIS) project

- **Administrative data sources, such as farmers’ registries, combined with other data sources.**
The amount of land available to an agricultural producer should be considered in terms of “operated land”, which is defined as the amount of land effectively used.

<table>
<thead>
<tr>
<th>Includes</th>
<th>Excludes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land cultivated with permanent crops (including the land rented in)</td>
<td>Land rented out</td>
</tr>
<tr>
<td>Land cultivated with temporary crops (including the land rented in)</td>
<td>Forest land</td>
</tr>
<tr>
<td>Fallow land (land left uncropped and not dedicated to grazing)</td>
<td>land abandoned prior to the reference period</td>
</tr>
</tbody>
</table>

The number of livestock available to a producer must be considered in terms of Tropical Livestock Units (TLU). This unit of measurement standardizes different livestock types in a single measure through conversion factors valid for specific livestock varieties in each region of the world.
Implementation of the proposed approach (2): Tropical Livestock Units conversion table

<table>
<thead>
<tr>
<th>Region</th>
<th>Cattle</th>
<th>Buffalo</th>
<th>Sheep</th>
<th>Goats</th>
<th>Pigs</th>
<th>Asses</th>
<th>Horses</th>
<th>Mules</th>
<th>Camels</th>
<th>Chickens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Near East North Africa</td>
<td>0.7</td>
<td>0.7</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.5</td>
<td>0.4</td>
<td>0.6</td>
<td>0.75</td>
<td>0.01</td>
</tr>
<tr>
<td>North America</td>
<td>1</td>
<td>0.15</td>
<td>0.1</td>
<td>0.25</td>
<td>0.5</td>
<td>0.8</td>
<td>0.6</td>
<td></td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>Africa South of Sahara</td>
<td>0.5</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.5</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Central America</td>
<td>0.7</td>
<td>0.1</td>
<td>0.1</td>
<td>0.25</td>
<td>0.5</td>
<td>0.5</td>
<td>0.6</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South America</td>
<td>0.7</td>
<td>0.1</td>
<td>0.1</td>
<td>0.25</td>
<td>0.5</td>
<td>0.65</td>
<td>0.6</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Africa</td>
<td>0.7</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.5</td>
<td>0.65</td>
<td>0.6</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OECD</td>
<td>0.9</td>
<td>0.7</td>
<td>0.1</td>
<td>0.25</td>
<td>0.5</td>
<td>0.65</td>
<td>0.6</td>
<td>0.9</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>East and South East Asia</td>
<td>0.65</td>
<td>0.7</td>
<td>0.1</td>
<td>0.25</td>
<td>0.5</td>
<td>0.65</td>
<td>0.6</td>
<td>0.8</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>South Asia</td>
<td>0.5</td>
<td>0.5</td>
<td>0.1</td>
<td>0.2</td>
<td>0.5</td>
<td>0.65</td>
<td>0.6</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transition Markets</td>
<td>0.6</td>
<td>0.7</td>
<td>0.1</td>
<td>0.25</td>
<td>0.5</td>
<td>0.65</td>
<td>0.6</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caribbean</td>
<td>0.6</td>
<td>0.6</td>
<td>0.1</td>
<td>0.2</td>
<td>0.5</td>
<td>0.65</td>
<td>0.6</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Near East</td>
<td>0.55</td>
<td>0.6</td>
<td>0.1</td>
<td>0.25</td>
<td>0.5</td>
<td>0.65</td>
<td>0.6</td>
<td>0.7</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0.6</td>
<td>0.6</td>
<td>0.1</td>
<td>0.25</td>
<td>0.5</td>
<td>0.65</td>
<td>0.6</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Revenues from agricultural activities include those generated by crop, livestock, fisheries and forestry.

### CROP REVENUES (PPP)
- Crop sold
- Crop for own consumption
- Crop used for feed
- Crop stored
- Crop used for byproducts
- Crop given as gift
- Crop saved for seed
- Crop used for paying labour
- Crop used for paying rent and/or inputs
- Crop given out and/or received in sharecropping agreement

### LIVESTOCK REVENUES (PPP)
- Livestock sold (alive)
- Livestock gifts given away
- Livestock by-/products sold
- Livestock products self-consumed
- Livestock by-products self-used
- Livestock by-/products pay away
- Livestock by-/products credit away

Similar criteria apply for the computation of revenues from tree crops and fishery products.
Global consultation on the International Definition of Small-Scale Food Producer with Member Countries
Consultation on the definition of “small-scale food producer”

• The process:
  • FAO and UNSD submitted to UN member countries a technical note through the IAEG-SDG in August 2017
  • The consultation was opened for 4 weeks, and extended for 2 additional weeks
• Results: 58 replies from national and regional institutions by October 1st, 2017. Among these:
  • 3 rejections
  • 12 agreements with the general thrust, suggesting changes
  • 18 agreements
  • 25 neutral comments, mainly on national definitions in place.
Five main concerns (and replies) (1)

1. **Threshold**: the relative 40 percent is arbitrary, too high or too low; better a range around it?
   - all thresholds are somewhat arbitrary; the 40 percent is taken from the Shared Prosperity project
   - the relative criterion is already accommodating national specificities; a range of percentiles would destroy international comparability

2. **Simplistic**: definition should consider additional criterion variables
   - may increase precision in some countries, but also bias the results in other countries

3. **More tests are required**
   - The limiting factor to date was the availability and accessibility of farm-level micro-data: FAO is working to expand the testing in collaboration with member countries
4. Data: definition requires complex data, which is not available
   - the definition requires the same type of information that is needed for monitoring SDG indicators 2.3.1 and 2.3.2. Data gaps have to be addressed anyway.

5. The inclusion error: definition may capture hobby farmers, or farmers whose main income is not derived from agriculture
   - adding criteria to avoid this error this may solve the problem in some countries, but lead to more exclusion (or inclusion) errors elsewhere
   - issue is probably better dealt at the national level, via convenient definitions of the “food producers” population
Still a valid definition

- Relatively large amount of positive feedback, higher than negative
- No consensus on alternative definitions
- No consensus on how to better address the trade-off between international comparability and local specificities
- No consensus on how to amend the definition proposed

Therefore, despite its many limitations, the proposed definition must be considered a viable option for monitoring SDG indicators 2.3.1 and 2.3.2.
Further testing the definition

FAO Statistics is working with a number of national institutions, who did not share micro-data but agree to test the definition and the computation of indicators 2.3.1 and 2.3.2 based on the FAO syntax.

These include:

- USDA,
- Stats Canada,
- Eurostat
- Other European national agencies

Other countries have already applied the FAO proposed methodology to their data: Morocco, New Zealand, Switzerland.

As expected, preliminary results for these countries show thresholds and shares of farmers that generally smaller compared to countries in Africa, Asia and Latin America.
The indicators
Indicator 2.3.1 monitors productivity as “The volume of production per labour unit by classes of farming, pastoral, forestry enterprise size.”

This results in the following formula:

\[
\text{Agricultural Labour Productivity} = \frac{\text{Volume of Production}}{\text{Labour input}}
\]

In order to standardize and aggregate different agricultural activities, FAO proposes to quantify the volume of production by taking the monetary value of the agricultural output (revenues) expressed in constant PPPs.
Computing labour productivity to monitor indicator 2.3.1 (2)

**Computation of the volume of production:** According to the International Standard Industrial Classification (ISIC), revision 4, it comprises

1. crop activities;
2. livestock activities;
3. fisheries;
4. forestry.

Revenues can be computed using the same formula adopted to identify the economic size of agricultural holdings.

\[
R_k^t = \sum_k V_{ik}^t p_{ik}^t
\]

**Important:** Monetary variables need to be deflated and standardized using PPP conversion factors.
Computation of the labour input: different approaches are available to measure this denominator:

- Number of workers,
- Number of days worked,
- Number of hours worked.

Although the most accurate measure of labour volume seems to be the number of hours worked in a year, problems of data availability make the annual number of working days the most viable option.

What type of labour to be considered: all forms of paid and unpaid labour, including family labour, hired labour and exchange labour.
Indicator 2.3.1: Output per labour input
(PPP$ per year/number of days worked per year)
Indicator 2.3.2 refers to “the average income of small-scale food producers, by sex and indigenous status.”

The computation of on-farm income of the agricultural holding adopted by FAO Statistics Division includes:

• Income from cropping activities;
• Income from livestock;
• Income from forestry;
• Income from fishery.
These income components refer to *gross income* that is defined as the *operating surplus* (i.e. revenues minus operating costs) without taking into account the depreciation of assets as such information is usually not available from most data sources. In formula:

\[ Y = R - C + \Delta S \]

*i.e.*

*Gross Income* = *Revenues* – *Costs* + *(Stock Variation, when available)*

All the monetary variables should be expressed in constant PPP and deflated, in order to take into account the inflation occurred during the data collection period.
# Crop income

## Revenues (+)

<table>
<thead>
<tr>
<th></th>
<th>Costs (-)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Crop production</strong></td>
<td></td>
</tr>
<tr>
<td>Crop sold</td>
<td>Inputs paid in cash</td>
</tr>
<tr>
<td>Crop for own consumption</td>
<td>Land Rent</td>
</tr>
<tr>
<td>Crop used as feed</td>
<td>Technical assistance/extension costs</td>
</tr>
<tr>
<td>Crop stored</td>
<td>Crop saved for seed</td>
</tr>
<tr>
<td>Crop used for byproducts</td>
<td>Crop used for paying labour</td>
</tr>
<tr>
<td>Crop given as gift</td>
<td>Crop used for paying rent</td>
</tr>
<tr>
<td>Crop saved for seed</td>
<td>Crop used for paying inputs</td>
</tr>
<tr>
<td>Crop used for paying labour</td>
<td>Crop given out in sharecropping agreement (sharecrop out)</td>
</tr>
<tr>
<td>Crop used for paying rent</td>
<td></td>
</tr>
<tr>
<td>Crop used for paying inputs</td>
<td></td>
</tr>
<tr>
<td>Crop given out in sharecropping agreement (sharecrop out)</td>
<td></td>
</tr>
<tr>
<td>Crop wasted</td>
<td></td>
</tr>
</tbody>
</table>

| **B. By-products production** |                                               |
| By-product sold           | Crop used for by-products                    |
| By-product used for barter or used for payment in kind | Total value of input purchased, comprise those reimbursed in kind |
| By-product used for own consumption |                                               |
| By-product given as gift  |                                               |

| **C. Sharecropping activities** |                                               |
| Crop received in sharecropping agreements |                                               |
### Livestock income

<table>
<thead>
<tr>
<th>Revenues (+)</th>
<th>Costs(-)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Livestock activities: change in the cash value of the stock at the average price</strong></td>
<td></td>
</tr>
<tr>
<td>Livestock sold (alive)</td>
<td>Livestock bought</td>
</tr>
<tr>
<td>Livestock gifts given away</td>
<td>Livestock additional expenditures</td>
</tr>
<tr>
<td></td>
<td>Crop used as feed</td>
</tr>
<tr>
<td></td>
<td>Technical assistance/extension costs</td>
</tr>
<tr>
<td><strong>B. Livestock products and by-products production</strong></td>
<td></td>
</tr>
<tr>
<td>Livestock by-/products sold</td>
<td>Livestock by-/products additional expenditures</td>
</tr>
<tr>
<td>Livestock products self-consumed</td>
<td>Livestock by-/products pay away</td>
</tr>
<tr>
<td>Livestock by-products self-used [also a cost in crop, e.g. dung used as fertilisers]</td>
<td>Livestock by-/products credit away</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Livestock by-products pay away</td>
<td></td>
</tr>
<tr>
<td><strong>C. Livestock stock variation</strong> = Closing/End-of-Year value – Initial/Beginning-of-Year value (if available)**</td>
<td></td>
</tr>
</tbody>
</table>
### Fisheries income

<table>
<thead>
<tr>
<th>Revenues (+)</th>
<th>Costs (-)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Fish-catching and processing activities</strong></td>
<td></td>
</tr>
<tr>
<td>Captured fresh fish sold</td>
<td>Fishing gear expenditures</td>
</tr>
<tr>
<td>Captured processed fish sold</td>
<td>Hired labour expenditures</td>
</tr>
<tr>
<td>Captured fresh fish for own consumption</td>
<td></td>
</tr>
<tr>
<td>Captured processed fish for own consumption</td>
<td></td>
</tr>
<tr>
<td><strong>B. Trading activities</strong></td>
<td></td>
</tr>
<tr>
<td>Traded fresh fish sold</td>
<td>Fresh fish purchases</td>
</tr>
<tr>
<td>Traded processed fish sold</td>
<td>Processed fish purchases</td>
</tr>
<tr>
<td><strong>C. Rental of fishery gears</strong></td>
<td>Other related costs</td>
</tr>
</tbody>
</table>

### Forestry income

<table>
<thead>
<tr>
<th>Revenues (+)</th>
<th>Costs (-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income from forestry production</td>
<td>Input costs (seedlings, fertilisers, hired labour, etc.)</td>
</tr>
<tr>
<td>Income from forestry services</td>
<td>Machine rental costs</td>
</tr>
<tr>
<td></td>
<td>Land rental costs</td>
</tr>
<tr>
<td></td>
<td>Other related costs</td>
</tr>
</tbody>
</table>
Computing income to monitor indicator 2.3.2

Indicator 2.3.2: Average Income of Small-scale Producers (PPP$ per year)

US$ PPP, constant values

All producers  Small-scale producers
Thank you!

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