PROGRESS TOWARDS SUSTAINABLE AGRICULTURE

Virtual Training
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**Method**

Traffic light and dashboard approach (i.e., first by assigning qualitative parameters (i.e., the traffic light colors: red, yellow and green) to each of the sixteen PROSA sub-indicators, and subsequently by aggregating the results using country agricultural area as weights to produce a dashboard by food systems typology.) Gains (i.e., differences in indicator values across successive periods) are yellow, green if maintained for a second time. Decreases across successive periods are red.

**Data Source**

National level statistics Directly sourced from or computed based on FAOSTAT variables. Data were computed at country level, then aggregated at the level of food systems typology, using the HLPE categories.

**Scope**

Data were computed at country level, then aggregated at the level of food systems typology, using the HLPE categories. Crop and livestock production systems are included.

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**BACKGROUND**

*Countries are grouped based on land, labor and capital*

**Coverage**

Include a set of 16 indicators. Six socio-economic dimensions indicators Ten environmental dimension indicators. Time period: 1961 -2017 (Some indictors from 1990s, e.g. POU)

**Land-intensive mixed**

characterized by higher chiefly due to larger land areas available to the agriculturally active population

**Capital-intensive mixed**

characterized by higher land productivity and agriculture value added due to higher levels of capital endowment per worker

**Modern Food Systems**

capital intensive with high land or labour productivities. Due to mechanization and access to modern technologies, agriculture is highly competitive, creating a strong agricultural export market

**Traditional**

capital intensive with high land productivity and low labor productivity and low capital stocks

**Land-intensive mixed**

capital intensive with high land productivity and agriculture value added due to higher levels of capital endowment per worker.
Table 1. Correspondence between SDG 2.4.1 farm-level and PROSA national-level sub-indicators.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Themes</th>
<th>PROSA</th>
<th>2.4.1</th>
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</thead>
<tbody>
<tr>
<td>Economy</td>
<td>Productivity</td>
<td>1. Output value of crops and livestock per ha (constant 2004-2006 $/ha)</td>
<td>Farm output value per hectare</td>
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<td>2. Net production value per worker (constant 2004-2006 $/cap)</td>
<td>Net farm income</td>
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<td></td>
<td>Resilience</td>
<td>3. Credit per rural population (USD/cap)</td>
<td>Risk mitigation mechanisms: Access to or available credit &amp; insurance, farm production value diversification</td>
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<td></td>
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<td>4. Agriculture production value diversification index (%)</td>
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<td>Social</td>
<td>Decent Employment</td>
<td>5. Agriculture value added per worker (constant 2005 USD/cap)</td>
<td>Wage rate in agriculture</td>
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<td></td>
<td>Food Security</td>
<td>6. Prevalence of undernourishment (%)</td>
<td>Food Insecurity Experience Scale (FIES)</td>
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<td></td>
<td>Land Tenure</td>
<td>Not included / No data available</td>
<td>Secure rights to land</td>
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<tr>
<td>Environment</td>
<td>Soil health</td>
<td>7. Soil Nitrogen Balance (kg N/ha)</td>
<td>Prevalence of soil degradation</td>
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<td></td>
<td>8. Water productivity (constant 2004-2006 $/m3)</td>
<td>Variation in water availability</td>
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<td>Fertilizer Risk</td>
<td>9. Synthetic fertilizer use per area of cropland (kg N/ha)</td>
<td>Management of fertilizers: Distribute synthetic or mineral fertilizer application over the growing period</td>
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<td>Pesticide Risk</td>
<td>10. Pesticides use per area of cropland (kg /ha)</td>
<td>Management of pesticides: Use one pesticide no more than two times or in mixture in a season to avoid pesticide resistance</td>
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<td>Biodiversity</td>
<td>11. Crop diversification index (area harvested) (%)</td>
<td>Use of biodiversity supportive practices</td>
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<td>12. Livestock diversification index (%)</td>
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<td>14. Emissions intensity of beef (kg CO2eq/kg meat)</td>
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<td></td>
<td>Land use</td>
<td>15. Agricultural land use change (ha)</td>
<td>Land use change</td>
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<td>16. Forest land use change (ha)</td>
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All data were taken exclusively from FAOSTAT
RESULT

Available national-level statistics across a range of relevant sub-indicators enables a first-order and complete analysis of progress towards sustainability, in both qualitative and quantitative ways.

- Progress has been strong, with gross output specialization trends representing the most limiting factor.
- Agricultural land expands at the detriment of natural ecosystems, in particular forests.
- It is key to climate resilience. However, in moving from traditional to modern food systems, it does not coincide with market resilience.
- Remains significant limiting factors to agriculture sustainability in all food systems typologies, at both low levels and high levels of inputs.

Socio-Economic

Land USE

Crops and livestock species diversity

Soil nutrient balance and chemical pesticides
Five Steps of the Combined Assessment for PROSA

1. Review literature
2. Identify quantitative indicators
3. Select drivers to analyse
4. Use computational selection procedure LASSO (Least Absolute Shrinkage and Selection Operator)
5. Final selection of driver and sub-indicator relationships

Government support is one of the most important and direct mechanisms available to policy makers to encourage sustainable agricultural development.