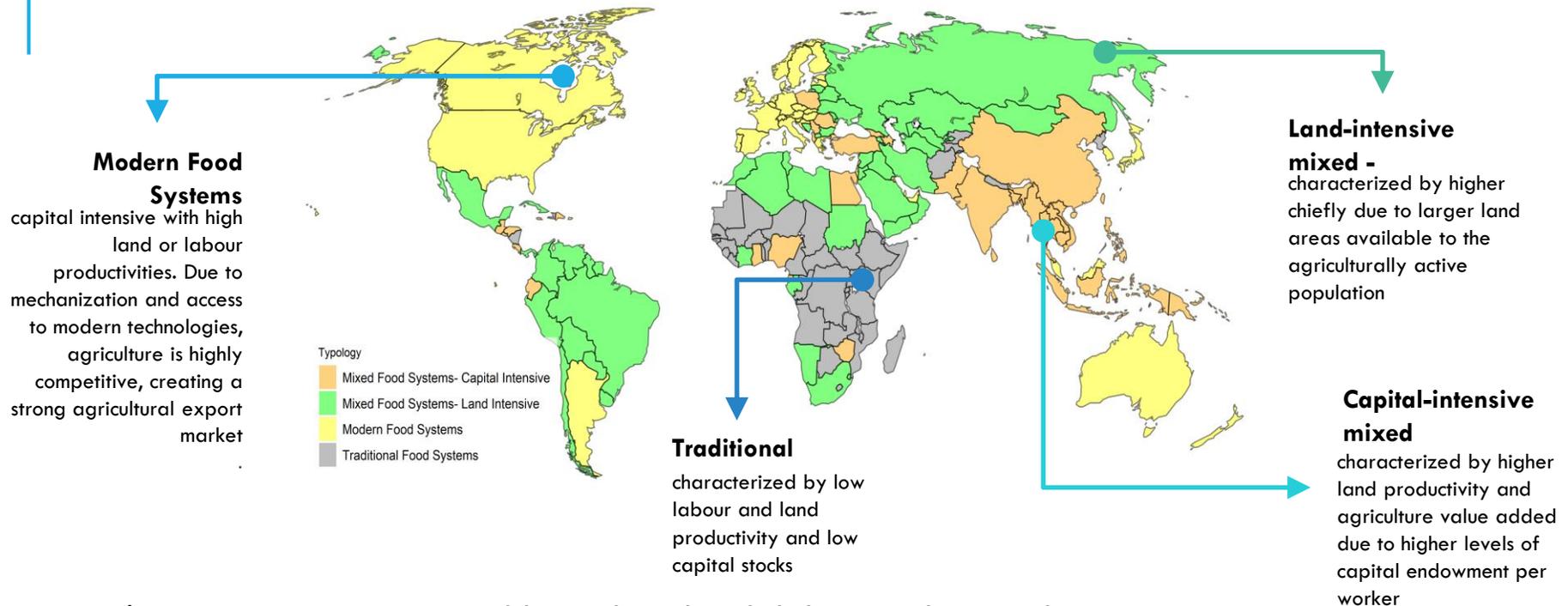**Food and Agriculture Organization
of the United Nations**

PROGRESS TOWARDS SUSTAINABLE AGRICULTURE

*Virtual Training
(September–October 2020)*

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BACKGROUND

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
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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

Traditional
characterized by low labour and land productivity and low capital stocks

Typology
- Mixed Food Systems- Capital Intensive
- Mixed Food Systems- Land Intensive
- Modern Food Systems
- Traditional Food Systems

*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)

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
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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.

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.

Table 1. Correspondence between SDG 2.4.1 farm-level and PROSA national-level sub-indicators.

Dimension	Themes	PROSA	2.4.1
Economy	Productivity	1. Ouput value of crops and livestock per ha (constant 2004-2006 I$/ha)	Farm output value per hectare
	Profitability	2. Net production value per worker (constant 2004-2006 I$/cap)	Net farm income
	Resilience	3. Credit per rural population (USD/cap)	Risk mitigation mechanisms: Access to or available credit & insurance, farm production value diversification
		4. Agriculture production value diversification index (%)	
Social	Decent Employment	5. Agriculture value added per worker (constant 2005 USD/cap)	Wage rate in agriculture
	Food Security	6. Prevalence of undernourishment (%)	Food Insecurity Experience Scale (FIES)
	Land Tenure	Not included / No data available	Secure rights to land
Environment	Soil health	7. Soil Nitrogen Balance (kg N/ha)	Prevalence of soil degradation
	Water use	8. Water productivity (constant 2004-2006 I$/m3)	Variation in water availability
	Fertilizer Risk	9. Synthetic fertilizer use per area of cropland (kg N/ha)	Management of fertilizers: Distribute synthetic or mineral fertilizer application over the growing period
	Pesticide Risk	10. Pesticides use per area of cropland (kg /ha)	Management of pesticides: Use one pesticide no more than two times or in mixture in a season to avoid pesticide resistance
	Biodiversity	11. Crop diversification index (area harvested) (%) 12. Livestock diversification index (%)	Use of biodiversity supportive practices
	Emissions	13. Emissions of agriculture per value (kg CO2eq/constant 2004-2006 I$) 14. Emissions intensity of beef (kg CO2eq/kg meat)	Emissions Intensity of commodities
	Land use	15. Agricultural land use change (ha) 16. Forest land use change (ha)	Land use change

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.

Socio-Economic

Land USE

Crops and livestock species diversity

Soil nutrient balance and chemical pesticides

It is key to climate resilience. however in moving from traditional to modern food systems, it does not coincide with market resilience.
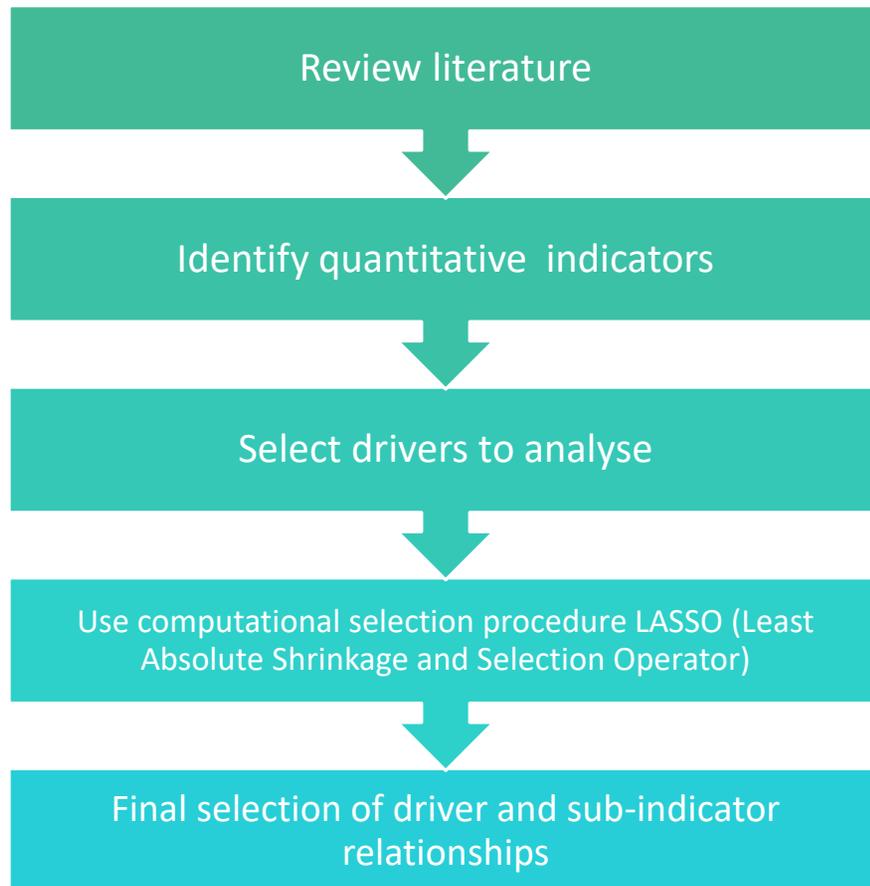
Remain significant limiting factors to agriculture sustainability in all food systems typologies, at both low levels and high levels of inputs.

DRIVERS OF CHANGE ON THE PATH TOWARDS SUSTAINABLE AGRICULTURE

◆ **Five Steps of the Combined Assessment for PROSA**

Review literature

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Identify quantitative indicators

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Select drivers to analyse

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Use computational selection procedure LASSO (Least Absolute Shrinkage and Selection Operator)

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Final selection of driver and sub-indicator relationships

Demographics

Inequality

Farm Structure

Global Integration

Government support to agriculture

Key Global Drivers

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