Food and Agriculture Organization of the United Nations

World Agriculture Watch

Results and tools in view of the UN Decade of Family farming

Introduction

The World Agriculture Watch (WAW) initiative aims to document the situation of global agriculture in all its diversity, from family farms to industrial enterprises.

Identifying and understanding the myriad farm types, including family farms, is key to adapting projects, policies and investments to specific agricultural characteristics and constraints. In this way, investments can be targeted at strengthening the weakest aspects of different types of farm. WAW then uses farm typology to provide tailored means of monitoring the effects of these investments on family farms and tracking their relative performance.

The information produced by these tools is intended to inform stakeholders and fuel the debate on policy choices for the agricultural sector, with a particular focus on those organizations that represent family farms, which are crucial to food and nutrition security.[1] Moreover, WAW facilitates the global accumulation of knowledge on agricultural transformation at the international level.

WAW offers decision-making support for intervention at the local, regional and national levels. It is currently working with a number of countries to develop national farm observatories that will enable them to participate in the global collection of data on and analysis of farm typologies and types of agriculture.

---

[1] WAW is following the recommendations of the 40th Session of the Committee on World Food Security of 7-11 October 2013, as set out in Policy roundtable: Investing in Smallholder Agriculture for Food Security and Nutrition (http://www.fao.org/docrep/meeting/029/MI342e.pdf). For insights on the types of investment, see HLPE (2013).

Approach

WAW's approach is two-pronged: (1) it conducts a consultation process within the framework of existing platforms and (2) takes action to strengthen the capacity of stakeholders, including representatives of family-farmer organizations.

WAW's common conceptual framework is indispensable for comparing situations in different regions and countries. Its comprehensive approach integrates the farming operation, the household and its non-agricultural activities, and the family's living conditions. The process can draw on existing data or involve the collection of new data, but is based on the conceptual framework, which is adapted to each situation.

Taking diversity into account means developing typologies based on the various forms of capital available and the performance of the farms in question. Statistical analysis is combined with the empirical knowledge of family-farmer organizations, as well as the knowledge of experts in the field. Typologies can be defined at national or regional level. The objective is to produce a limited number of farm types with similar characteristics that distinguish them from other types.

Typology is also the basis for choosing a limited number of farms on which to conduct detailed follow-ups on technical and economic performance. The monitoring results inform discussions on technical choices, investment and innovation.

WAW will then propose an approach and the appropriate tools for better identifying and understanding the performance and evolution of agricultural holdings within a given territory. By taking into account the distinct characteristics of the various farm types, the initiative aims to improve development policy, programmes and projects.[1]

---

[1] For greater detail on the typology of agricultural holdings, please see Bélières et al. 2015 (https://www.afd.fr/en/family-farming-around-world-definitions-contributions-and-public-policies)

Figure 1: WAW's methodology

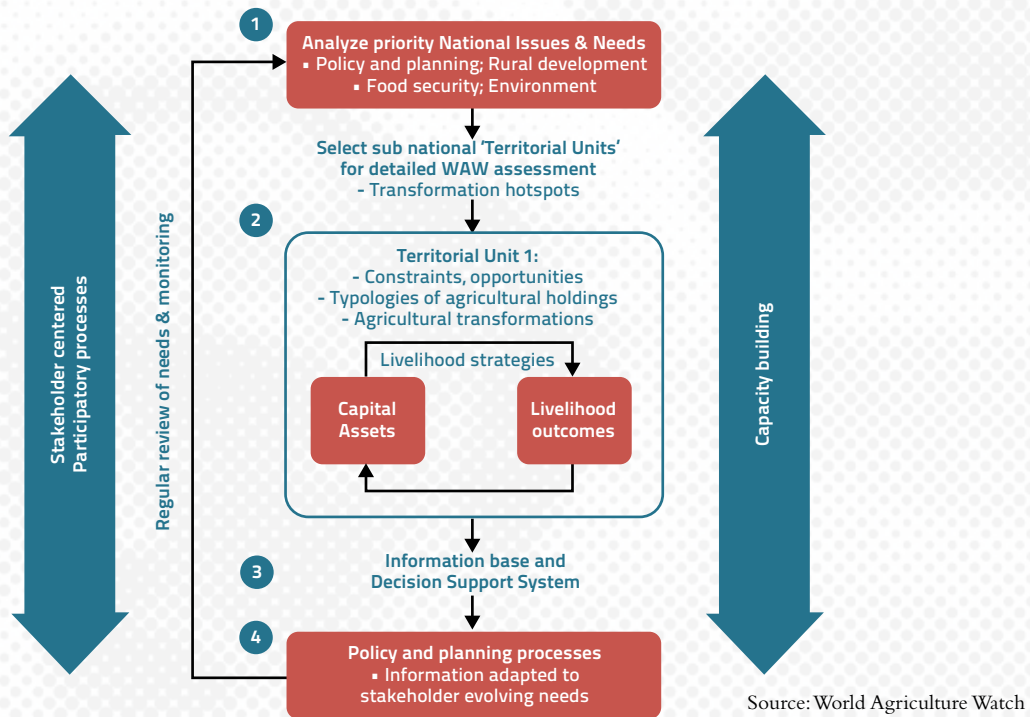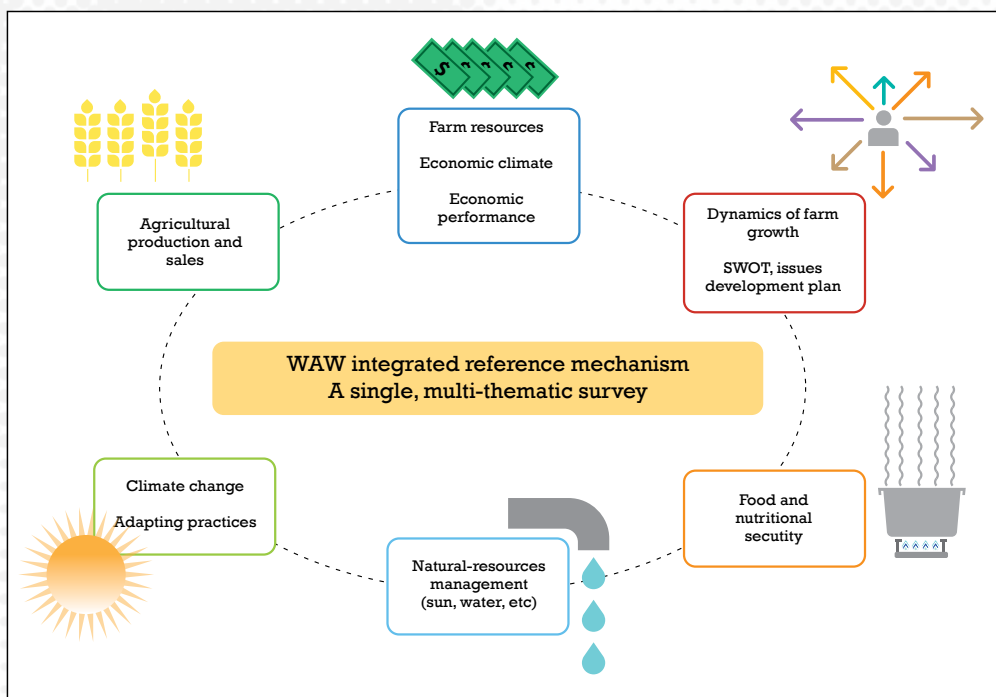**Methodological steps for implementing the WAW approach in a country**

1. **Analyze priority National Issues & Needs**
   - Policy and planning; Rural development
   - Food security; Environment

   Select sub national 'Territorial Units' for detailed WAW assessment
   - Transformation hotspots

2. **Territorial Unit 1:**
   - Constraints, opportunities
   - Typologies of agricultural holdings
   - Agricultural transformations

   Livelihood strategies

   Capital Assets **Livelihood outcomes**

3. **Information base and Decision Support System**

4. **Policy and planning processes**
   - Information adapted to stakeholder evolving needs

Stakeholder centered Participatory processes

Regular review of needs & monitoring

Capacity building

Source: World Agriculture Watch

Figure 2: An integrated survey framework to develop up-to-date data on diverse farm types

Farm resources / Economic climate / Economic performance

Agricultural production and sales

Dynamics of farm growth / SWOT, issues development plan

**WAW integrated reference mechanism
A single, multi-thematic survey**

Climate change / Adapting practices

Natural-resources management (sun, water, etc)

Food and nutritional secutity

Source: IDELE, WAW

What does the WAW conceptual framework actually do?

By defining family farms using analytical data on the nature of their operations and employees (family or salaried labour, for example) allows the farms to be identified and distinguished from other forms of agricultural producer, such as commercial or industrial farm holdings.

▮ Definition

Family farms are a type of agricultural organization where domestic and agricultural activities are interdependent, which mobilize only family workers and do not employ permanent, waged labour. Family wealth and productive capital are intertwined, as are the farm and family budgets.

We consider **family business farms** (family farms which employ at least one permanent worker or a high proportion of casual, seasonal labour) to fall under the umbrella of family farming, as the lands involved and means of production remain under family control.

Corporate farms differ, in that the family tie no longer exists and all of the labour on these farms is salaried.

In this way, a comparison can be made between family farming and other forms of production, such as industrial–enterprise farming, where the totality of work is based on waged labour and where there are no links between those who hold the assets and those who work the land.

WAW can use both existing and new data to establish the typology of agricultural holdings at national and regional level.

- Census data
- Living-standards surveys
- Improving existing and developing new survey tools
- Monitoring based on a limited number of farms

Approach 1: Using census data

Madagascar

WAW's ongoing study in Madagascar is a prime example of how census data can be used to draw a picture of a country's farming environment. The Madagascar approach combines statistical analysis and expert input. A work in progress, the methodology is based on two main criteria: the source of farm labour and the degree of integration into the agricultural market.

Three sources of data have been used in the study: the 2004–2005 agricultural census, the observatory of the Rural Observatories Network (RON) at Lake Alaotra for 2005, 2010 and 2014, and the Menabe regional observatory (RON) for 2012 and 2015. This work has been carried out simultaneously at the national, regional and local levels, with a view to producing comparable typologies that allow for changes of scale. The quality of the census data on labour is low, which is a fairly common issue.

National Level

There are a number of shared farm characteristics at national level. Ninety–nine percent of Madagascar's agricultural holdings are family farms and practically all of them cultivate a mix of crops and livestock. There are very few specialized farms. Crops are diversified in all regions, as rice cultivation is always supplemented by other crops and the rearing of several types of animal, even though rice growing is the most widespread activity.

Figure 3: National Typology of farms in Madagascar
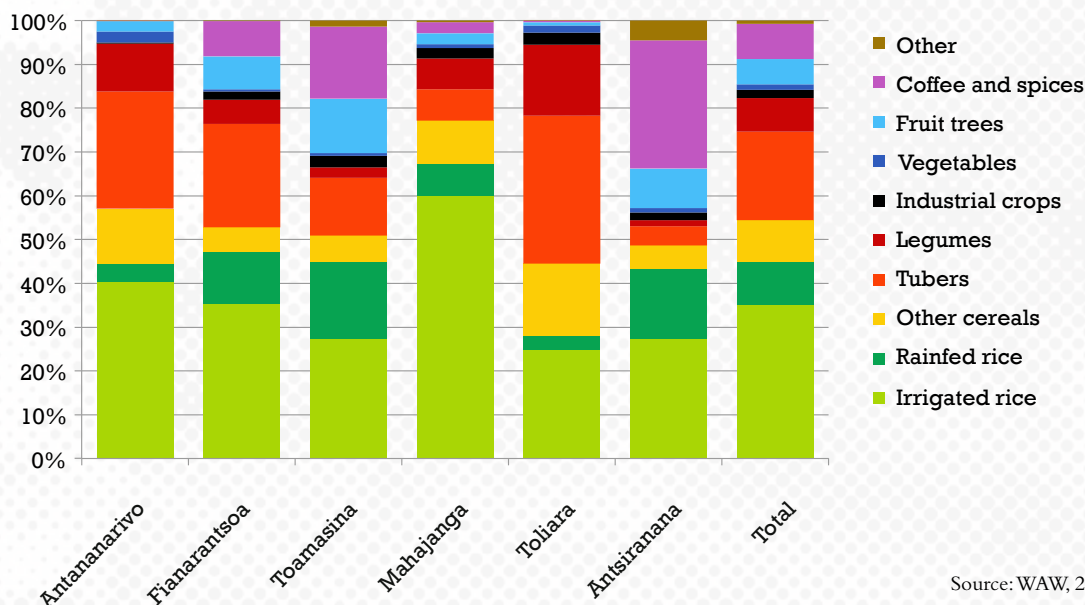
Source: WAW, 2017a

Table 1

Typology of farms in Madagascar

	Type 1 Average Rice producer	Type 2 Holding with large family	Type 3 Small Holding	Type 4 Large & diversifield holding	Type 5 Large Crop and livestock
Natural asset – land (average plot)	Average plot (0.86 ha/pp)	Good plot, but relatively weak (0.12 ha/pp)	Small, rice fields (0.64 ha/pp)	Better plot (2.6 ha/pp)	Better plot (1.2 ha/pp)
Human assets	Average no. of people (5) Head of farm/ household: Better level of primary education	More people (8) Head of farm/ household: Low level of primary education	Average no. of people (4) Head of farm/ household: Low level of primary education	> Average no. of people (6) Head of farm/ household: Better level of primary education	> Average no. of people (6) Head of farm/ household: low level of primary education
Social assets	External workers	Family and mutual help	Family and mutual help	External workers	External workers
Physical assets – bovine and mechanical	Less well equipped, but with draught oxen	Well equipped, including draught oxen	Less well equipped, also in terms of draught oxen	Badly equipped, lacking draught oxen, some mechanization	Very well equipped
Physical assets – irrigated crops	High proportion of irrigated rice	Irrigated rice, around 50% UAA★, tubers	Irrigated rice, around 50% UAA★	Badly irrigated rice, more rain-fed rice & tubers	High proportion of irrigated rice
% share of total	31%	19%	43%	4%	2%

Source: WAW typology based on 2004 Madagascar census data (WAW, 2017a)

★UAA = utilized agricultural area

Large farms (Types 4 and 5, defined as those with an area per active worker of 1.2–2.6 hectares) account for only 6 percent of Madagascar's farms. The other 94 percent have an area per active worker of 0.12–0.86 hectares. Large farms have access to greater areas of irrigated land for rice cultivation and have more draught animals (some are even mechanized) and equipment. They are also able to hire external labour, increasing their production capacity. Typology of this kind can help to target investment and policies at those assets and areas requiring most support.

Regional level

Two regions were selected for the Madagascar study: (1) the Menabe region, because it is a beneficiary of the IFAD AD2M Integrated Development Project, which has financed a RON observatory, and (2) the Lake Alaotra region, because it is one of the largest rice granaries in Madagascar. The RON methodology is based on a comprehensive questionnaire. WAW had the results of the questionnaire analysed by its team of expert field agents. Two focus groups were then formed to produce a typology.

The exercise demonstrated the ease with which producers adopted the typology, merging it into their perceived structure of the agricultural society in which they live, and validating the choice of methodology. A commonly accepted typology is a useful tool for those advising producers and identifying necessary actions, as well as for monitoring and evaluation. At the regional level, typology makes it possible to define in simple terms the development needed for various farm types. Action can then be taken to strengthen the productive capacity of farms based on their specific characteristics and target investment at the weakest areas.

Figure 4: Sources of income in the Menabe region of Madagascar
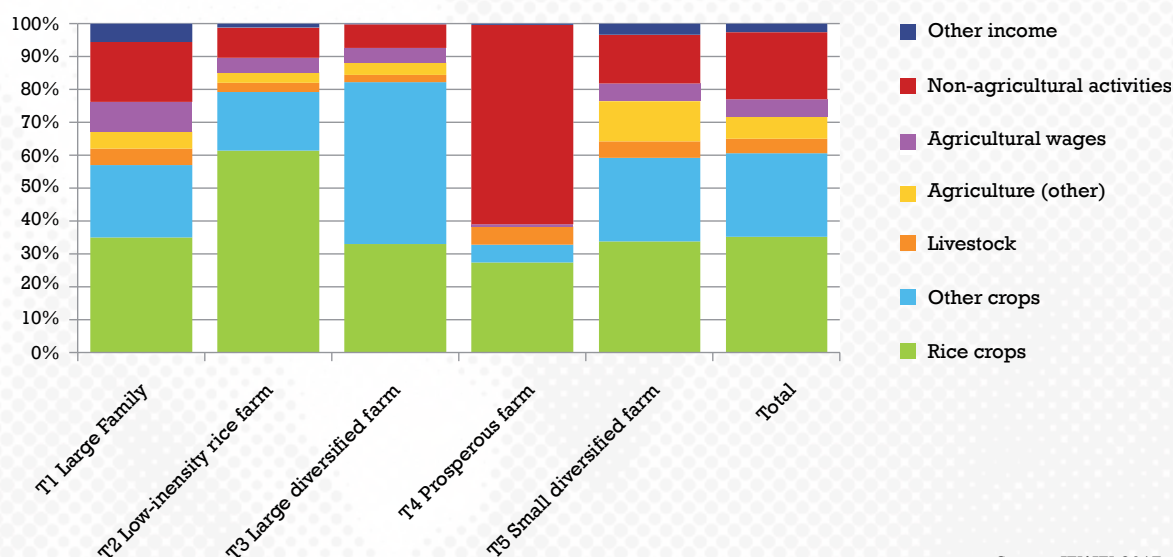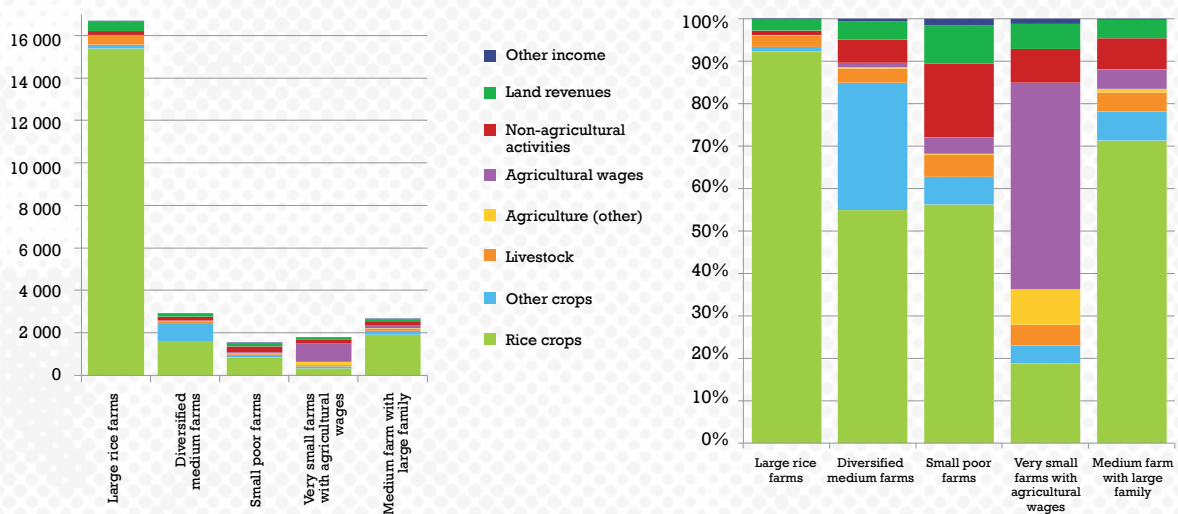

Source: WAW, 2017a

Figure 5 shows the diverse sources of income on the various farm types identified in the Lake Alaotra region. All types of farm have a mix of agricultural and non-agricultural activities.

Figure 5: Average farm income in Lake Alaotra region (2005, 2010 and 2014, MGA* 000s and %)

Source: WAW, 2017b

Malagasy ariary (MGA). The USD-MGA exchange rate was 3 306.10 as of 25 August 2018. The mean is based on data from 2005–2010 and 2014.

Smaller Type 1 and Type 5 farms, which are much more numerous, have a more balanced and diversified income mix. Only large Type 2 farms are a little more specialized, with rice income accounting for more than 60 percent of total average income.

In the Lake Alaotra region, large farms specializing in rice cultivation are quite distinct from other categories. They are in the minority, but because of land concentration, they have a mean area of 11 ha (of which eight are irrigated), thus a large cultivated area compared with other categories. This chasm is due to the physical environment, which is conducive to rice cultivation, and public policy, which has promoted the crop.

The majority of farms in the Lake Alaotra region are characterized by low levels of income, earning MGA 1 000–8 000 less per year than the large, specialized farms. Agricultural and non-agricultural diversification is the dominant farming strategy in the region. A lack of available capital keeps revenue very low for the majority of farms, so diversification tends to be the best option for the poorest families. This typology allows stakeholders to adapt its interventions to farm type and support those diversification strategies.

Nicaragua

In Nicaragua, WAW's analysis of the IV Cenagro 2011 census allowed it to conduct a typology of the country's farms. Family farms account for 84.4 percent of all Nicaraguan farm holdings, while family business farms account for 15.5 percent. Commercial farming makes up just 0.1 percent of the country's agricultural operations.

There are significant variations within these categories, but these can be filtered by taking into account the dominant production systems used. The farm types identified in this manner show significant asset differences, confirming WAW's choice of typological methodology.

In Nicaragua, as is the case with most census results, data on production and income are not available. The classification relies on a proxy based on the dominant product type, as quantified by its contribution to the national accounts or export data. In this way, it is possible to identify 19 types of family farm, 18 types of family business farm and 14 types of commercial farm. The farm types differ statistically in terms of assets (physical, human and natural capital) used.

Table 2
Nicaraguan farm typology

Family farms		Family business farms		Corporate farms	
219 459	83,6%	40 072	15,3%	307	0,1%
19 types		18 types		14 types	

Source: WAW 2014a; the IV National Agricultural Census in Nicaragua, 2011

The allocation of family labour to agriculture is an essential indicator when estimating the role of agriculture in the family economy. Using permanent hired workers is an indicator of capital in circulation and of higher social status. Unlike many other countries, the Nicaraguan census provides good information on the distribution of labour.

Of the farm types identified by WAW, three are predominantly non-market producers that grow for the family. These account for 7.5 percent of all Nicaraguan farms (19 530 farms).

France

In France, WAW's typology is based on the 2000 and 2010 agricultural censuses. During that 10-year period, family farms as a share of total farm holdings declined, dropping

Table 3

Allocation of family labour to agriculture, Nicaragua (2011)

Labour	Household management		Corporate management
	Family labour and temporary workers	Mixed and/or at least one permanent worker	Only salaried labour
Farm type	Family farm	Family business farm	Corporate farm
As a % of all farm holdings	84.4	15.5	0.1
Permanent labour force (avg.)	0.0	3.3	45.3
Temporary labour force (avg.)	2.1	11.6	117.3
Family members (average)	5.4	5.0	0.0
Land (ha, avg.)	14.3	65.8	529.1
Annual crop area (ha, avg.)	2.2	5.3	65.1
Perennial crop area (ha, avg.)	0.7	3.3	203.1
Natural pasture (ha, avg.)	4.9	29.1	111.4
Improved pasture (ha, avg.)	2.0	12.2	51.0
Forestry area (ha, avg.)	2.2	7.4	45.0
No. of commercialized farms	219459	40072	307
Basic grain producers (%)	91.3	8.7	0.0
Cattle producers (%)	73.2	26.6	0.2
Coffee producers (%)	79.9	19.9	0.2
Plantain producers (%)	82.1	17.8	0.1
Market gardeners (animals %)	98.8	1.2	0.0
Fruit producers (%)	87.5	12.3	0.2
Horticultural producers (%)	88.1	11.8	0.1
Cocoa producers (%)	88.9	11.0	0.1
Market gardeners (horticulture, %)	90.1	9.9	0.0
Sesame producers (%)	85.1	14.7	0.2
Market gardeners (horticulture and animal, %)	100.0	0.0	0.0
Sugar-cane producers (%)	76.2	21.5	2.3
Forestry producers (%)	74.9	22.6	2.5
Peanut producers (%)	50.8	46.4	2.8
African palm producers (%)	68.7	29.2	2.1
Tobacco producers (%)	61.3	33.5	5.2
Soybean producers (%)	85.4	14.6	0.0
Fishery producers (%)	88.9	11.1	0.0
Cotton producers (%)	66.7	16.7	16.6

from 81.6 percent to 77.8 percent, while corporate type farms remained stable, at 1.2–1.3 percent.

The typology in France illustrates the importance of family labour to farming. A distinction is made between family, seasonal and permanent hired labour. The FF1 category comprises farms where family labour is not heavily skewed towards agriculture, as farming is only a secondary activity. The FF2 category, in contrast, is much more involved, as the family relies on the farm for a living. Family business farms are family farms that employ permanent, salaried workers, or a high proportion of casual, seasonal labour.

Table 4

Changes in French agricultural labour by category (2000–2010)

	2000 agricultural census		2010 agricultural census		Variation (no. of holdings)
	Number	%	Number	%	2000–2010
Family farms type 1	180691	27.3%	110524	22.5%	–38.9%
Family farms type 2	360242	54.3%	271795	55.3%	–24.5%
Family business farms	113996	17.2%	102469	20.9%	–10.1%
Corporate farms	8112	1.2%	6596	1.3%	–18.7%
Total	663041	100%	491384	100%	–25.9%

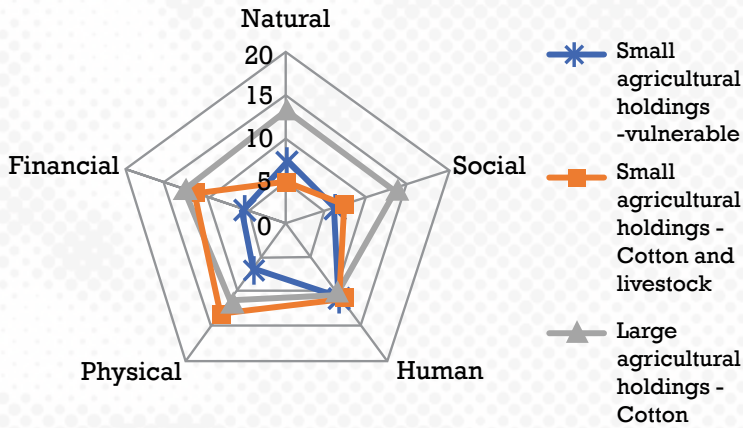Source: WAW; Bignebat *et al.* (2015), based on France's 2000 and 2010 agricultural censuses

We can see that family farms account for the majority of agricultural labour in France. In 2010, Type 2 family farms and family business farms accounted for 87.9 percent of total farm labour, little changed from 2000. Commercial farms accounted for around 8.8 percent of total farm labour, up from 7.6 percent in 2000. An in-depth analysis including agricultural specialization shows that labour-related strategies differentiate French farms more than the size of the cultivated area.

Mali

In Mali, the climatic gradient has a major influence on the distribution of agricultural activities and on production methods. The cotton zone was chosen for analysis, because it has long been emblematic of the success of family farming in West Africa. All data are from the 2004 census.
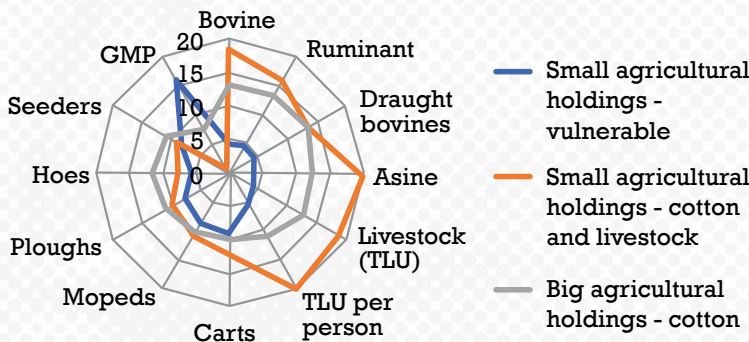
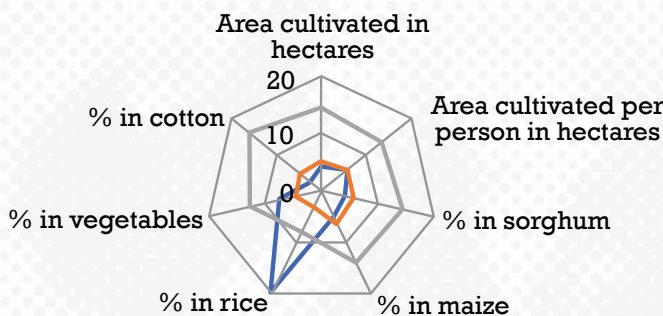## Figure 6: Distribution of farm assets by farm type

Natural / Social / Human / Physical / Financial

Legend:
- Small agricultural holdings -vulnerable
- Small agricultural holdings - Cotton and livestock
- Large agricultural holdings - Cotton

Source: WAW; Bélières (2012), based on Mali 2005 Census

Figure 7: Distribution of assets by farm type

Bovine, Ruminant, Draught bovines, Asine, Livestock (TLU), TLU per person, Carts, Mopeds, Ploughs, Hoes, Seeders, GMP

Legend:
- Small agricultural holdings - vulnerable
- Small agricultural holdings - cotton and livestock
- Big agricultural holdings - cotton

Source: WAW; Bélières (2012), based on Mali 2005 Census; ★TLU = Tropical livestock unit

Figure 8: Distribution and use of natural capital

Area cultivated in hectares, Area cultivated per person in hectares, % in cotton, % in sorghum, % in vegetables, % in maize, % in rice

Source: WAW; Bélières (2012), based on Mali 2005 Census

Agriculture is mainly small-scale family farming, with 68 percent of farms cultivating less than five hectares. Organizational forms of agriculture are limited, with only 14 percent of farms exceeding 10 hectares. The three main types of farm fall in two broad categories: (1) farms where work is essentially family based, possibly with temporary external workers, and (2) family business farms that depend on family and permanent labour.

Farms are, therefore, small and vulnerable, smallholdings that combine cotton and livestock farming, or large farms that grow mainly cotton. The most vulnerable farms exhibit a marked lack of all types of capital, except for the human capital provided by family (depending on level of education). The large cotton farms are best equipped, with a better balance of capital assets.

Farmers' tendency to focus on rice-growing in this rain-fed zone is a good indicator of the lack of tangible capital from which the small, vulnerable farms suffer most. Small-scale rice production with intensive labour aims to compensate for the lack of land, equipment and capital for crops.

Cotton–livestock farms, because of their animal-rearing activities, tend to have their livestock classified as physical capital. They are largely deficient in natural capital and depend on common grazing land for their productive activities.

Livestock ownership sets the 'average' cotton-zone farm apart from the rest of the country. Ownership of cattle, particularly draught cattle, is higher. Elsewhere, other livestock are more important. As the in cotton zone, the bigger the farm, the lower the number of animals per person.
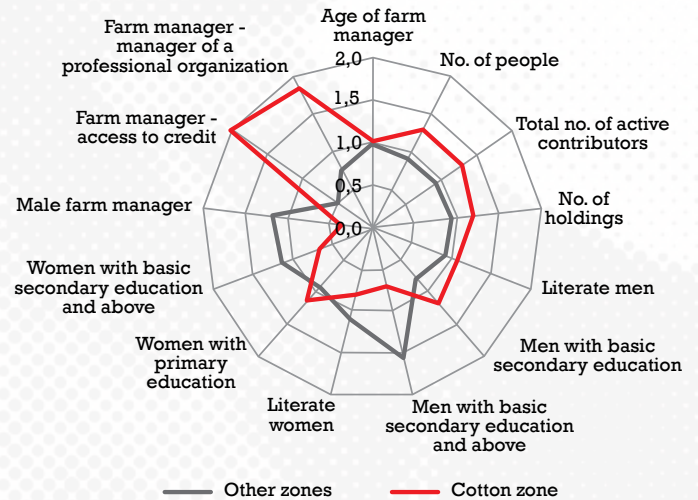
Figure 9 : Comparison of average farm types
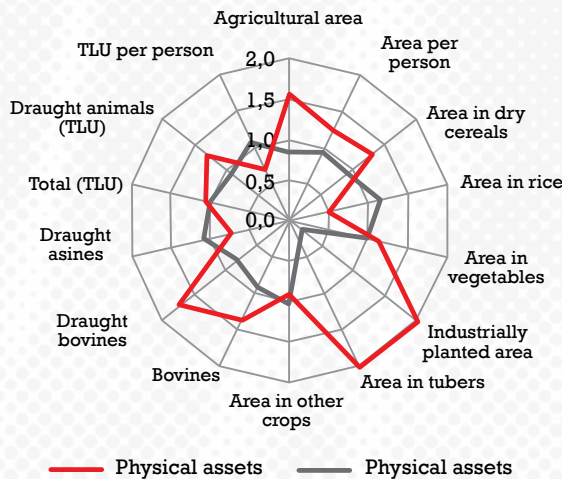
Source: WAW; Bélières (2012), based on the Mali 2005 Census; TLU = Tropical Livestock Unit

Figure 10 : Education is more widespread in Mali's cotton zone

Source: Mali 2005 census, Bélières (2012)

In the cotton zone, farms are composed of a larger number of people, households and assets. Compared with other regions, men in the cotton-growing region are slightly better educated (in terms of literacy and basic education), but have lower access to secondary education. There are, on average, fewer female farm heads in the cotton zone and the women of the area are less educated (though basic education is almost identical for men and women). Identifying the levels of capital available by type of farm makes it possible to target support to where it is most needed.

2. Using living-standards surveys

Malawi

In Malawi, most of the population depends on agriculture and farms are deemed 'smallholdings'. WAW has compiled a preliminary typology of farms using data from the country's third Integrated Household Survey (IHS3) of 2010. This survey canvasses households, so farm estates are excluded. The data, therefore, are not representative of all forms of agricultural production.

Making a distinction between commercial and subsistence farming does not help in trying to characterize farms by level of market participation. Some 'non-commercial' farmers need to sell some of their crops to earn money and buy food when prices are higher.

Large farms, which account for 1 percent of the country's farm holders, are not included in the IHS3 sample. This minority generates about 30 percent of total agricultural production, growing products mainly for export, such as sugar, coffee and tea. When considering food security and poverty reduction, however, it is essential to focus on family farms, and an analysis of farm household data shows some substantial differences between farm types.

Table 5

Typology of family farms in Malawi

	Family Farms	Family Business Farms
Number of Farms	8476	1782
percent	837	17
Wage labor (average)	–	20
Land	1.1 ha	1,6ha
Value of equipment	3275	9136
Farm income	11.2	58.3
Non-Farm income	32	202

Source: WAW, based on Douillet and Toulon (2014), with data from the Integrated Household Survey, Malawi, 2010

The differences are not solely down to the average utilized agricultural area, which ranges from 0.97 to 1.6 hectares. The planted area is certainly larger for family business farms (1.6 hectares vs. 1.1 hectares on average), but there are other reasons for the discrepancies in performance.

The main differences lie in the high level of off-farm income earned by family business farms and the level of capital available to them. All family farms depend to some extent on off-farm income, though the work is mostly low skilled and low paid. Family business farms have nearly three times the available capital of family farms, however, and six times the income. This non-farm income means they can hire workers and divert family labour to more remunerative non-farm activities.

The extra income from non-farm activities explains, at least in part, why family business farms are better equipped – not the use of credit, which does not differ significantly from type to type. In policy terms, therefore, it is crucial to encourage investment in family

farms that takes into account the specificities of each farm type. By boosting the level and quality of investment in these farms, family labour will be reinvested in the homestead and income will increase correspondingly.

Vietnam

The typology of farms in Viet Nam is based on national data collected in 2010 by the Vietnamese household living-standards survey (VHLSS) and in 2011 by the Agricultural and Rural Census.

Family farms in Viet Nam can be divided into five main groups. All are heavily linked to the market economy – more than 90 percent – though to varying degrees. Type 1 farms, for example, sell only 32 percent of their produce to market.

Table 6

Distribution of family farm income in Viet Nam

Types	% of production commercialized	% of family labour dedicated to farming income	Farming income (USD 000s per annum)	Total earned income (USD 000s per annum)	Farming income as a % of total earned income	Diversification index (non-agriculture) x100
Type 1	32	98	1.90	3.70	51	35
Type 2	99	33	119.90	122.85	98	6
Type 3	92	99	39.60	40.60	98	14
Type 4	98	15	197.10	200.00	99	4
Type 5	98	59	83.95	87.65	96	8

Source: WAW (2014b) based on the Vietnamese Household Living-Standards Survey 2010 and the Vietnamese Agricultural and Rural Census 2011

Some family business farms, for example, Types 2, 4 and 5, rely on permanent salaried labour – respectively, 67 percent, 85 percent and 41 percent of the total farm workforce.

On the whole, farms tend not to diversify very much into non-agricultural activities. The most diversified are Type 1, with a diversification index of 35 and, consequently, extra-agricultural income corresponding to 54 percent of total income, on average.

Agricultural incomes vary significantly: farms Types 2 and 4 show the best economic performance and Type 4 earns on average 100 times the income of Type 1.

Figure 11: Percentage of agricultural product sold by farm type in Viet Nam
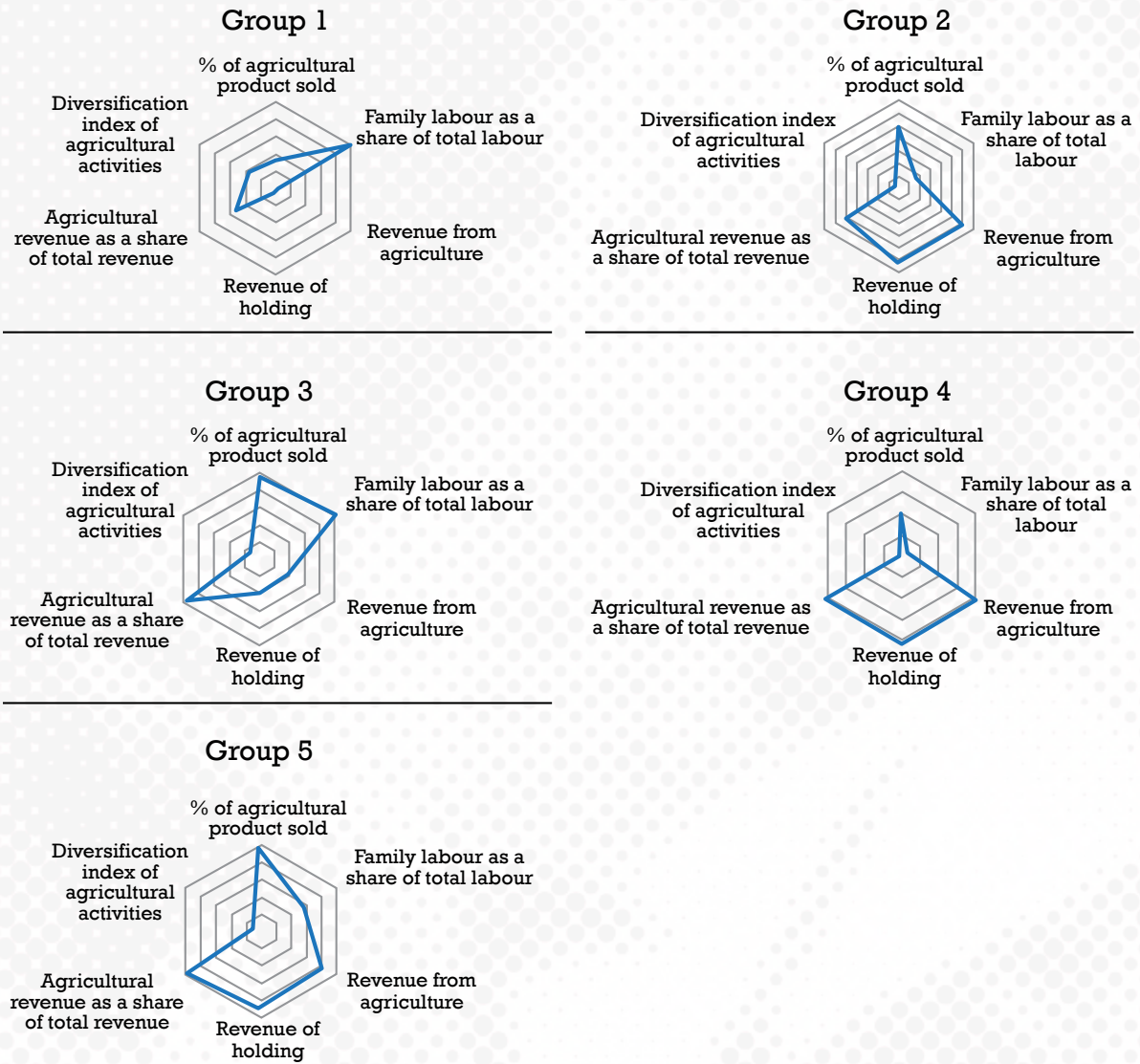
Group 1

Group 2

Group 3

Group 4

Group 5

Source: WAW [(2014b) based on the Vietnamese Household Living-Standards Survey 2010 and the Vietnam Agricultural and Rural Census 2011

3a. Improving existing survey tools

El Salvador

WAW has taken over and conducted a multipurpose agricultural survey in El Salvador. Following a participatory workshop involving agricultural organizations, rural youth and women, NGOs and academics interacting with officials from the Ministry of Agriculture and Livestock, more than 60 modifications were made to the questionnaire. El Salvador deems WAW's survey worthy of inclusion in the country's next agricultural census.

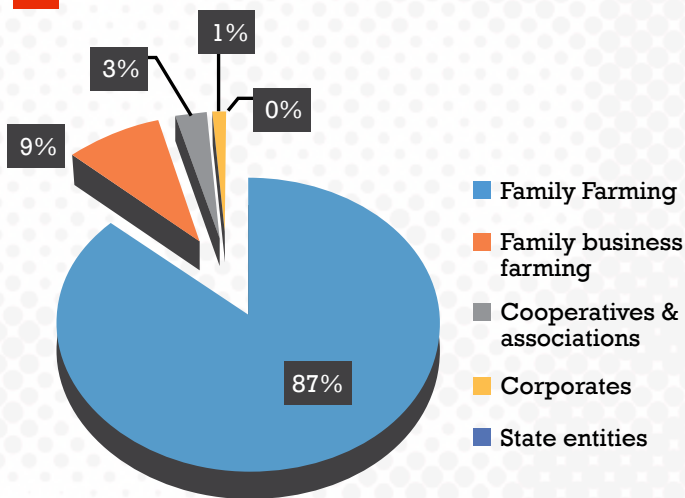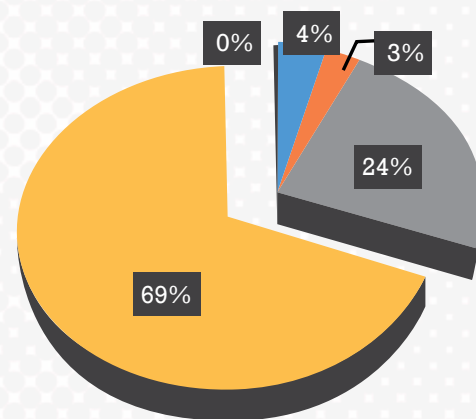**Figure 12: Distribution of producers by farm type (2016)**

Figure 13: Distribution of producers by net agricultural income (2016)

Source: WAW survey 2016, based on Guanziroli, C. E. & Rivera R. (2017) and data from the Salvadoran Ministry of Agriculture and Livestock (2018)

There are marked differences between the average size of family farms and other farms in El Salvador. Family business farms, for example, have an average size of 121.39 manzanas (mz)[1], whereas family farms have an average size of 1.73 mz.

The biggest difference is in the corporate farm segment, where the average farm size is 523.65 mz. This has direct consequences for farm incomes, which range from USD 7 433 for family farms to USD 10 190 for family business farms and USD 2 780 000 for corporate farms.

---

[1] A manzana is a unit of area used in Argentina and Central American countries. In Central America, it is usually equivalent to approximately 1.72 acres, or 6,961 m2, with small variations in each country.

Table 7
Agricultural production by farm type, El Salvador (2016)

Products		Family farm	Employers farm	Cooperatives & associations	Corporates	Public enterprises
Maize		44,2%	6,6%	49,2%	0,1%	0,0%
Bean		75,4%	11,6%	3,5%	0,0%	9,4%
Sorghum		67,1%	12,9%	8,1%	0,0%	11,8%
Rice		46,7%	50,5%	0,6%	0,0%	2,2%
Horticulture		29,7%	19,4%	8,8%	40,4%	1,7%
Fruits		10,0%	7,5%	44,8%	37,4%	0,3%
Sugar Cane		0,4%	1,8%	32,2%	65,5%	0,1%
Coffee		0,8%	0,5%	67,0%	31,6%	0,0%
Crops Agro-industrial		1,8%	0,1%	54,8%	43,4%	0,0%
Forests		42,4%	2,3%	52,5%	1,4%	1,3%
Nursery		0,0%	3,3%	19,1%	77,6%	0,0%
Animals		9,2%	21,0%	20,8%	48,0%	1,0%
Pigs		0,2%	0,1%	0,0%	99,3%	0,3%
Poultry	Eggs	0,1%	0,0%	2,6%	97,2%	0,0%
	Meat	4,8%	1,1%	4,9%	89,1%	0,0%
Other species		25,9%	11,9%	47,2%	15,0%	0,0%
Beekeeping		27,9%	16,4%	38,2%	17,3%	0,2%
Fish farming		5,3%	2,0%	56,4%	36,2%	0,1%
Garden		97%	3%	0%	0%	0%
Total		**4,2%**	**2,9%**	**23,7%**	**68,9%**	**0,3%**

Source: WAW (2014b) based on the Vietnamese Household Living-Standards Survey 2010 and the Vietnamese Agricultural and Rural Census 2011

There is a direct relationship between rural credit and the average income of family farms. The poorest farmers receive just 8 percent of farm lending. Only 32 000 Salvadoran farmers (out of an estimated 400 000) have received agricultural credit. Lack of land and credit explain the variances in rural family income. Family farms are also the most involved in food production – a strategic asset for food security. WAW data will produce tailored recommendations for investment policy.

WAW's typology of farms shows a glaring imbalance in Salvadoran agriculture, to the detriment of family farms, but the data give us an estimate of the effect of collective action. The figures show the disequilibrium between the number of family farms and their contribution to the net value generated by the sector. Ninety percent of all farms are family farms, 3 percent of those are part of a cooperative, 9 percent are family business farms and only 1 percent are corporates.

On those family farms that operate as part of an association or cooperative, agricultural activities are run by the families, but certain upstream and downstream activities, such as input provision and marketing, are shared. In contrast, 69 percent of El Salvador's net agricultural income is generated by corporate farming. The remainder is split between family farms that operate in a cooperative (24 percent), non-cooperative family farms (4 percent) and family business farms (3 percent). The data show how collective action can increase agricultural income for family farms.

Approach 3b. Development of tools at the local level

Senegal: Casamance region

WAW, at the request of the government and the Ministry of Agriculture and Rural Equipment, tested its comprehensive approach on farms in the Ziguinchor area of the Casamance region of Senegal. The region's economic development has been slowed by 30 years of political conflict, which has excluded it from many national programmes. The data come from a WAW questionnaire. To reduce the survey time involved, the questionnaire was developed using a combined quantitative and qualitative approach.

This typology helps us to understand that income does not depend solely on the size of the farm. Senegalese farms are classified by income category, from half the minimum wage to twice the minimum wage. The total farming area is no larger, on average, in the highest-income category. In fact, the area per agricultural worker is lower (0.4–0.5 hectare) than in the low-income categories (0.6 hectare). The most diversified farms, which have both agricultural and non-agricultural activities, are those with the highest income levels.

Table 8

**Typology of farms in the Ziguinchor area
of the Casamance region of Senegal (2016)**

	Income 1	Income II	Income III	Income IV
Family labour	3	4	8	10
# Activities	2	3	4	5
Land (hectares)	0.66 – 1.8	0.62 – 4.1	0.5–4.9	0.4–4.3
Fruit Trees (#)	75	144	184	195
Horticulture (Rows planted/ months pa)	7 (3)	11 (3)	11 (5)	12 (7)
Fishing (people/months pa)	1 (5)	–	1 (7)	4 (9)
Level of income	Income < 0.5x minimum wage	0.5x < Income < 2x minimum wage	1x < Income < 2x minimum wage	Income > 2x minimum wage

Source: WAW 2017c, based on Faye et al. (2017)

Niger: The Dosso region and national typology

WAW, through its inclusive approach, provides an array of partners with a common platform for data collection and analysis, from policymakers to local development organizations. The work carried out in Niger's Dosso region seeks to refine the national typology using qualitative data collected from reference farms.

This methodology makes it possible to engage numerous local people and organizations, particularly those in direct and constant contact with farmers (such as technical service providers, producer organizations, advisory support organizations and even other farmers), as local sources of knowledge. Thus, the various stages of local testing were conducted in an interactive and participative way. Nine types of farm were selected to form Niger's national typology, based on a combination of agricultural revenue per person (ARP) and techno-economic orientation (TEO) of the farm.

Table 9

Breakdown of Niger's agricultural income by farm type (2011)

TEO ARP	*Crop-dominated farming* *Crop production ≥ 80% gross revenue*	Livestock-dominated farming (Pastoral farming) Animal production ≥ 80% gross revenue	Mixed farming Crop production < 80% gross revenue and Animal production < 80%	
ARP < 25 000 CFA franc Agriculture is not helping to get families out of extreme food insecurity	Type A : 21.8%	Type B : 16.5%	Type C : 13.0%	**51.3%**
25 000 ≤ ARP ≤ 100 000 CFA franc Agriculture is not achieving food security	Type D : 4.6%	Type E : 16.2%	Type F : 13.5%	**34.4%**
ARP > 100 000 CFA franc Agriculture is achieving food security	Type G : 1.3%	Type H : 10.4%	Type I : 2.6%	**14.3%**
Total	**27.7%**	**43.1%**	**29.2%**	**100%**

Source: WAW, 2017d; Harouna A. & Djido A. (2017), based on the 2011 LSMS-ISA survey

From national to regional level

Table 10

Breakdown of Niger's nine farm types at regional level (2011)

TEO ARP	*Crop-dominated farming* *Crop production ≥ 80% gross revenue*	Livestock-dominated farming (Pastoral farming) Animal production ≥ 80% gross revenue	Mixed farming Crop production < 80% gross revenue and Animal production < 80% gross revenue	
ARP < 25 000 CFA franc Agriculture is not helping to get families out of extreme food insecurity	Type A : 18.7%	Type B : 10%	Type C : 9.2%	38%
25 000 ≤ ARP ≤ 100 000 CFA franc Agriculture is not achieving food security	Type D : 12.6%	Type E : 12.9%	Type F : 18.3%	43.8%
ARP > 100 000 CFA franc Agriculture is achieving food security	Type G : 3.4%	Type H : 8.8%	Type I : 6.0%	18.3%
Total	**34.7%**	**31.8%**	**33.5%**	**100%**

Source: WAW, 2107d; Harouna A. & Djido A. (2017), based on the 2011 LSMS-ISA survey

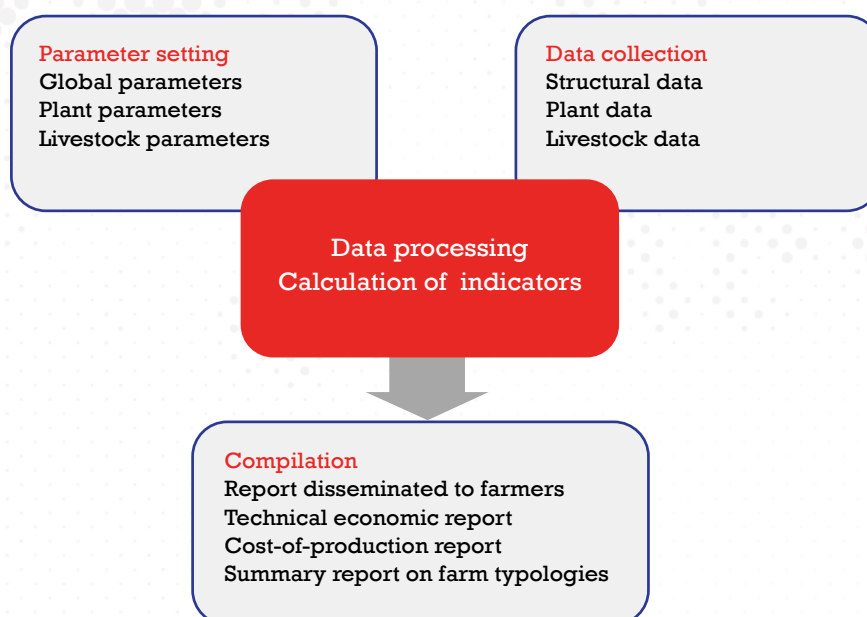# Approach 4. Monitoring systems based on a limited number of farms

Tunisia

In Tunisia, WAW has developed a typological approach based on the data collected by the 2004 agricultural survey (WAW, 2017e). Building on this typology work, the Tunisian team has set up a detailed monitoring system for a limited number of reference farms in the governorates of Zaghouan in the north of the country and Medenine in the south.

These farms – 29 in the north and 16 in the south – represent the diversity of farm types identified. Data collection takes place in two stages: (1) structural data and (2) operational and performance data. The data are used to generate a set of monitoring indicators that reflect the production potential (resources and means of production), operational potential and performance potential of each type of farm.

The mechanism also makes it possible to produce a complete record for each farm, which can be used by development agents as the basis for discussions with the farmer. A dynamic web-based tracking system has been developed based on the platform, which allows the analysis and sharing of data on the reference farms and which could be extended to all reference farms in Tunisia.

Figure 14: Tunisia's reference farm-based monitoring mechanism

Parameter setting
Global parameters
Plant parameters
Livestock parameters

Data collection
Structural data
Plant data
Livestock data

Data processing
Calculation of indicators

Compilation
Report disseminated to farmers
Technical economic report
Cost-of-production report
Summary report on farm typologies

Source: WAW

WAW's approach has convinced the authorities to create an official national observatory of reference farms to provide a legal framework for scaling up the process at national level. Please see the reference list at the end of this note for literature on WAW's experience in Tunisia (World Agriculture Watch & Ministry of Agriculture, Water Resources and Fisheries of the Republic of Tunisia, from 2017a to 2017e).

Upcoming projects

A number of projects are currently being developed worldwide to bolster WAW's geographical reach. We summarize just two of them here, but they illustrate how WAW could expand its network by working with new regions.

Japan is an example of a country dominated by family farmers operating on small acreage in a country with a high level of technological development. Argentina, in contrast, demonstrates how large-scale, commercial production can coexist with diversified family farms.

Japan

Japan's agricultural sector and rural society are undergoing radical change. In the 10 years to 2015, the number of farms decreased 30 percent to 1.4 million. More than 70 percent of landowners are more than 60 years old, while almost 10 percent of agricultural land has been abandoned, as agricultural operations become too difficult for the aging population and the younger generation prove reluctant to take over family farms.

The decline of family farming and the rural economy is deemed one of the most pressing socio-political challenges in Japan today. To formulate the right public policies to propel Japanese agriculture and rural society out of its current crisis, the country needs to be able to embark on a political dialogue that is underpinned by statistics, such as those of the agricultural census.

The 2015 census provides an overall picture of Japan's agricultural sector using data from different types of farm. However, the data are less than comprehensive, lacking figures on labour, acreage, sales, etc. It is important that Japan improve the composition of its agricultural census so that the government can formulate more appropriate agricultural policy. This is where WAW can help, by providing a more comprehensive framework and integrating agricultural activities into the operating system of farming households.

Figure 15: Agricultural Holdings and Agriculture-related Holdings in Japan (2015)
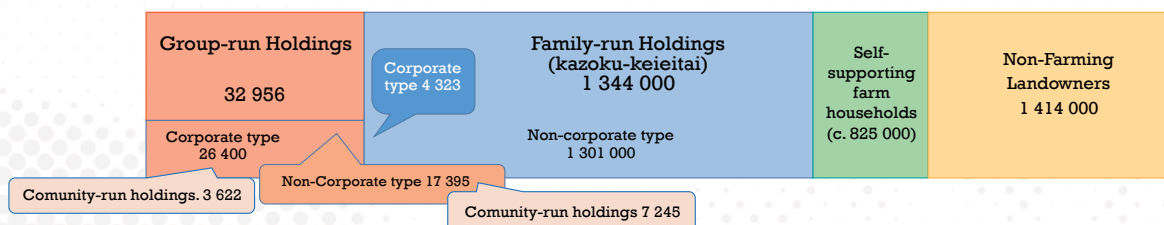
Source: Niiyama and Sekine (2017)

What's more, using labour as a key indicator to explain farm characteristics and behaviour, as well as to compare agricultural structures in different countries, will allow WAW to examine current agricultural structures and propose new typologies to which policies can be tailored, so that challenges can be overcome. Cross-analysis of data on labour, ownership and management will also provide new insights for the collective construction of public policy.

Argentina

The Inter-American Institute for Cooperation on Agriculture (IICA) has prepared and published three studies on Argentine agrarian structures, drawing on agricultural census data for all types of farming unit. The studies, based on a large database, have compiled extensive information on Argentine farms – their number, location, land tenure, land use, crops and livestock – from the technologies used, their organization, marketing, associations, education, etc.

A database of close to two million items of information is available, offering WAW the possibility to conduct numerous analyses of the agrarian structure, its economic and social performance that may form the basis of future studies. The studies revealed 13 different farm types, split into family farms and non-family farms with the following characteristics:

- The owner or producer works the farm directly;
- The producer relies mainly on family labour; or
- Contract labour is hired temporarily on a seasonal basis.

Seventy-five percent of Argentina's farms are family farms. They account for 18 percent of the country's agricultural land and produce 27 percent of total agricultural output.

Family farms were grouped into four types (A to D), based on cultivated acreage, size of herd, quality of equipment, total area planted with fruit trees, total irrigated area, and presence of greenhouses. All of these farms face problems and challenges that are affecting their development and competitiveness, exacerbating their poverty and vulnerability.

The remaining farm units (excluding special cases) are grouped under 'non-family farms' and make up 23 percent of all farms. They account for 79 percent of Argentina's agricultural land and generate 72 percent of the country's agricultural production in value terms. Non-family farms are segmented into nine types. They are categorized based on farm output in value terms (three categories) and land rights (owners, non-owner tenants and mixed).

The data suggest non-family farms are set to play an increasing role in the evolution of Argentina's agricultural production. Due to the importance of Argentina and the Mercosur countries to world agricultural output, the growth of non-family farms will have both positive and negative consequences for global food security and the sustainability of natural resources.

The next agricultural census, conducted in 2018, will be an opportunity to update these studies. It is of maximum interest to expand WAW's presence in Argentina, to monitor the processes of technological development, production concentration, use of natural resources and interaction with the process of climate change.

References

Bélières, J.-F. 2012. *Un observatoire du réseau des agricultures du monde: illustration pour la mise en œuvre de la méthodologie WAW, la zone cotonnière du Mali.* Working paper. Montpellier, French Agricultural Research Centre for International Development (CIRAD). 49pp.

Bélières, J.-F., Bonnal, P., Bosc, P.-M., Losch, B., Marzin, J. & Sourisseau, J.-M. 2015. Family Farming Around the World: Definitions, contributions and public policies. Montpellier, French Agricultural Research Centre for International Development (CIRAD). 190pp. (also available at https://www.afd.fr/en/family-farming-around-world-definitions-contributions-and-public-policies).

Bignebat, C., Bosc. P.–M. & Perrier Cornet, P. 2015. *Exploring structural transformation: a labour-based analysis of the evolution of French agricultural holdings* 2000-2010. Working paper. Montpellier, CIRAD and UMR MOISA joint research unit, and Paris, French National Institute for Agricultural Research (INRA). 27 pp. (also available at https://ageconsearch.umn.edu/bitstream/249790/2/Bignebat%20Bosc%20Perriercornet%20EAAE.pdf).

Committee on World Food Security (CFS). 2013. *Policy Roundtable: Investing in Smallholder Agriculture for Food Security and Nutrition.* Document of the 40th Session of the CFS, 7-11 October 2013. Rome, Food and Agriculture Organization of the United Nations (FAO). (also available at http://www.fao.org/docrep/meeting/029/MI342e.pdf).

Douillet, M. & Toulon, A. 2014. *Developing a typology of agricultural holdings for improved policy design: a preliminary case study of Malawi.* Working paper No. 6. Foundation for World Agriculture and Rurality (FARM) in partnership with WAW. Paris, FARM and Rome, WAW/FAO. 68pp. (also available at http://www.fondation-farm.org/zoe/doc/farm_201409_doctrav6_wawmalawi.pdf).

Guanziroli, C. E. & Rivera, R. 2017. *Fortalecimiento de las capacidades del país para documentar, analizar y monitorear la tipología de las unidades agrícolas y sus transformaciones.* Final report of the technical cooperation programme between the Ministry of Agriculture and Livestock of El Salvador, International Fund for Agricultural Development (IFAD), Food and Agriculture Organization of the United Nations (FAO)/World Agriculture Watch, 2016-2017. San Salvador: Ministry of Agriculture and Livestock of El Salvador. 132 pp.

Harouna, A. & Djido, A. 2017. *Rapport général de l'étude pour la réalisation d'une typologie des exploitations agricoles et d'un système de suivi national: Observatoire National des Agricultures du Niger (ONAN)*. Pilot phase report of the Food and Agriculture Organization of the United Nations (FAO), Institute of Finance for Agricultural Development (IFAD), CIRAD and the French Ministries of Foreign Affairs and Agriculture. Rome: World Agriculture Watch. 94pp.

Harouna, A., 2017. *Etude pour la réalisation d'une typologie et d'un système de suivi national des exploitations agricoles.* Draft report on local testing. Pilot phase report of the Food and Agriculture Organization of the United Nations (FAO), Institute of Finance for Agricultural Development (IFAD), CIRAD and the French Ministries of Foreign Affairs and Agriculture. Rome: World Agriculture Watch, 30pp.

High Level Panel of Experts on Food Security and Nutrition (HLPE). 2013. *Investing in smallholder agriculture for food security.* HLPE report No. 6 to the Committee on World Food Security (CFS). Rome, Food and Agriculture Organization of the United Nations (FAO). 112 pp. (also available at http://www.fao.org/3/a–i2953e.pdf).

Living Standards Measurement Study–Integrated Surveys on Agriculture (LSMS-ISA) program. 2011. *Niger - National Survey on Household Living Conditions and Agriculture 2011*. Niamey, Niger: Survey and Census Division, National Institute of Statistics. (also available at http://microdata.worldbank.org/index.php/catalog/2050)

Ministry of Agriculture and Livestock of El Salvador (Ministerio de Agricultura y Ganadería). 2018. *Informe sobre la caracterización de la agricultura familiar en el marco del WAW.* Report of the Directorate General of Agricultural Economics, Agricultural Statistics Division. San Salvador, Ministry of Agriculture and Livestock of El Salvador. 19pp.

Niiyama, Y. & Sekine, K. 2017. *The Structure of Agricultural Holdings in Contemporary Japan.* Paper based on data compiled by the Japanese Ministry of Agriculture, Forestry and Fisheries, presented at the Third International Workshop on the Study of Family-run Farming at Kyoto University on 16 March 2017.

Scheinkerman de Obschatko, E. 2009. *Las explotaciones agropecuarias familiares en la República Argentina: Un análisis a partir de los datos del Censo Nacional Agropecuario 2002.* Buenos Aires, Inter-American Institute for Cooperation on Agriculture (IICA) and the Ministry of Agroindustry, Argentina. (also available at http://repiica.iica.int/docs/B0676e/B0676e.PDF).

Scheinkerman de Obschatko, E., Foti, M. & Roman, M. 2007. *Los pequeños productores en la Republica Argentina. Importancia en la producción agropecuaria y en el empleo en base al Censo Nacional Agropecuario del 2002.* Revised second edition. Buenos Aires, IICA and the Ministry of Agriculture, Livestock, Fisheries and Food, Argentina (SAGPyA). (also available at http://repiica.iica.int/docs/B0676e/B0676e.PDF).

Scheinkerman de Obschatko, E., Soverna, S. & Tsakoumagkos, P. 2016. *Las explotaciones agropecuarias empresariales en la Argentina.* Buenos Aires, IICA. (also available at http://repositorio.iica.int/bitstream/11324/3022/1/BVE17068939e.pdf).

World Agriculture Watch. 2014a. *Classifying agricultural holdings in Nicaragua: Proposal of a typology based on the IV Agricultural Census.* Rome, Food and Agriculture Organization of the United Nations. 81pp. (also available at http://www.fao.org/3/a-be875e.pdf).

World Agriculture Watch. 2014b. *International typology of agricultural holdings: The case of Vietnam.* Published in partnership with the Institute of Policy and Strategy for Rural Development (IPSARD)/Rural Development Centre (RUDEC). Rome, Food and Agriculture Organization of the United Nations. 41pp. (also available at http://agritrop.cirad.fr/573653/1/document_573653.pdf).

World Agriculture Watch. 2017a. *Proposition d'une typologie nationale des exploitations agricoles à Madagascar à partir des données du recensement agricole* 2004/2005. Working paper. Rome, Food and Agriculture Organization of the United Nations. 35pp.

World Agriculture Watch. 2017b. *Elaboration de typologies d'exploitations agricoles au niveau infra-national à Madagascar: Lac Alaotra et région du Menabe.* Working paper. Rome, Food and Agriculture Organization of the United Nations. 54pp. (also available at http://agritrop.cirad.fr/586885/1/2017_D09_TypoWAW_ROR_Menabe_Alaotra_VF.pdf).

World Agriculture Watch. 2017c. *Typologie des exploitations de la région de Ziguinchor (ZME 11), analyse de la situation de sécurité alimentaire et nutritionnelle et sélection des exploitations de référence*, by Faye, A., Seydi B., & Dia, I. D., Working paper. Rome, Food and Agriculture Organization of the United Nations 54 pp.

World Agriculture Watch. 2017d. *Rapport général de l'étude pour la réalisation d'une typologie des exploitations agricoles et d'un système de suivi national: Observatoire des Agricultures du Niger (OAN).* Working paper. Rome, Food and Agriculture Organization of the United Nations. 100 pp.

World Agriculture Watch. 2017e. *Approche méthodologique de l'élaboration d'une typologie des exploitations agricoles en Tunisie*: *Application sur la base des enquêtes sur les structures des exploitations agricoles 2004-2005.* Working paper. Rome, Food and Agriculture Organization of the United Nations. 127pp.

World Agriculture Watch & Ministry of Agriculture, Water Resources and Fisheries of the Republic of Tunisia. 2017a. *Approche méthodologique et construction d'une typologie des exploitations agricoles en Tunisie.* Rome, Food and Agriculture Organization of the United Nations. 3pp.

World Agriculture Watch & Ministry of Agriculture, Water Resources and Fisheries of the Republic of Tunisia. 2017b. *Conception et test du dispositif de suivi des fermes de référence en Tunisie.* Rome, Food and Agriculture Organization of the United Nations. 4pp.

World Agriculture Watch & Ministry of Agriculture, Water Resources and Fisheries of the Republic of Tunisia. 2017c. *Analyse des transformations structurelles des exploitations agricoles en Tunisie.* Rome, Food and Agriculture Organization of the United Nations. 3pp.

World Agriculture Watch & the Ministry of Agriculture, Water Resources and Fisheries of the Republic of Tunisia. 2017d. *Bilan et perspective.* Rome, Food and Agriculture Organization of the United Nations. 4pp.

World Agriculture Watch & the Ministry of Agriculture, Water Resources and Fisheries of the Republic of Tunisia. 2017e. *Vision observatoire des exploitations agricoles en Tunisie.* Rome, Food and Agriculture Organization of the United Nations. 4pp.