

SMALLHOLDER AGGREGATION OF AGRICULTURAL PRODUCTION: THE CASE OF SMALLHOLDER OLIVE PRODUCERS IN MOROCCO*

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ABSTRACT

Consolidation in the retail, wholesale, foodservice, processing, transportation and inputs sectors of agro- food value chains throughout the world has often left smallholder growers at a competitive disadvantage when it comes to their negotiating the acquisition of services or the sale of their products. Aggregation represents a promising avenue through which smallholders can offset this disadvantage. Recent development history, however, is filled with examples of failed attempts at smallholder aggregation, demonstrating that promising development theories do not always lead to sustainable development practices or outcomes.

This paper examines the smallholder auto-aggregation program initiated by the Fruit Tree Productivity Project (*Projet Arboriculture Fruitière, or PAF*) with funds provided to the Kingdom of Morocco by the United States of America through the Millennium Challenge Corporation. Among its objectives, PAF set out to provide smallholders with the training and facilities which would enable them to process their olives into olive oil. The discussion includes a consideration of the advantages and difficulties of smallholder aggregation efforts, a review of

the history of farmer-based organizations in Morocco, and a description of the two-stage approach adopted by PAF to encourage some 6,500 smallholders to aggregate their production, first into cooperatives, then into economic interest groups, in order to access better markets, receive higher prices, and lay the groundwork for value-addition. The paper concludes with a provisional list of lessons learned during the course of PAF implementation, emphasizing the need for continuing follow-up to monitor the sustainability of the auto-aggregation approach.

Keywords: smallholder aggregation, auto-aggregation, farmer-based organization (FBO), agricultural cooperative, economic interest group, smallholder olive producers, Morocco, Millennium Challenge Corporation (MCC).

I. INTRODUCTION

Agricultural development professionals have long struggled with the challenges of helping smallholder farmers to become more efficient and profitable. Individual smallholders suffer from a broad array of constraints related to the scale of their operations:

1. **Mechanized technologies:** Mechanization, and the increased productivity it generates, is generally out of the smallholder's reach, due to high initial investment costs and to the difficulties of adequately amortizing capital and operating costs over a small production area with relatively low yields;
2. **Farm inputs:** Acquisition of good planting materials, fertilizers and soil amendments, and other yield- improving inputs, is often prohibitively expensive for smallholders, due to their limited purchasing power and negotiating leverage with the larger, better-organized input providers;
3. **Good agricultural practices:** Adoption of improved practices is limited by the difficulties smallholders face in understanding and implementing them;
4. **Credit:** Access to finance is stifled by banks' reluctance to loan to small actors with low individual loan values (resulting in poor ratios between transaction costs and loan margins), limited collateral, uncertain land titles, and perceived high risk; and
5. **Markets:** Access to high-value markets and customers is limited, since individual smallholders typically produce too little of any given product to justify the incremental transportation, communications, market development and financial costs associated with circumventing intermediaries and negotiating directly with end-users and consumers. Moreover, large buyers generally prefer to transact large purchases with a few vendors, rather than a multitude of small purchases with a multitude of small suppliers, not only because of the time and complexity involved but also due to the increased risks of unreliable supply and heterogeneous product quality.

While aggregation of smallholders into larger, more economically effective groups offers one approach to alleviating these smallholder constraints, the high failure rate of such aggregation efforts confirms the challenges involved in pursuing this approach. This paper focuses on a review of the process through which smallholder olive growers in Morocco undertook an auto-aggregation plan which, over the course of 36 months, led to the establishment of 20 second-order grower organizations, involving 188 individual cooperatives with a total membership of more than 6,540 smallholders and a production area of nearly 61,300 hectares.

The paper begins with a brief history of Farmer-Based Organizations (FBOs) in Morocco. It then describes the principal types of FBOs operating today in the country, from associations to cooperatives to Economic Interest Groups (GIEs). The next section explains the practical steps involved in creating an auto-aggregation model for smallholders, as well as how this model was implemented within PAF through the Catalyst Fund¹ and the role played by smallholder-owned olive oil processing plants. The paper concludes with a series of lessons learned by Project implementers and advisors, and their reflections upon the factors or determinants of success of this smallholder aggregation model.

II. HISTORICAL OVERVIEW OF FARMER-BASED ORGANIZATIONS IN MOROCCO

The sector of farmer-based organizations (FBOs), known as “Organisations Professionnelles Agricoles” (OPA) in Morocco, is comprised of a wide variety of institutions such as cooperatives, producer associations, agricultural water user associations and Economic Interest Groups. In the majority of cases, these entities fulfill similar missions, ranging from representation of their members to economic promotion of their areas of activity.

These organizations have been asked to take on greater importance over time, especially given the liberalization of the economy and deregulation of markets. For FBOs, this implies more initiatives and responsibility and a greater capacity to act. At the same time, this means that the authorities need to improve the socio-economic environment in which these organizations operate and to transfer ever-greater responsibilities to these FBOs, including all operational activities which lie outside the mandate of the public sector.

The development of FBOs in Morocco has undergone three important historical phases, each

¹ The Catalyst Fund (CF) was not part of the initial PAF project design. It was introduced in 2011 in order to strengthen the “value addition” component of the project. Its principal objective was to promote downstream investments along the olive oil value chain to provide smallholders with a pathway toward forward integration, while reinforcing the prospects for quality improvement and the integration of environmental, social and gender dimensions into the PAF design. The Catalyst Fund is discussed in greater detail on pages 11-13 of this paper.

corresponding to a change in the government's orientations with respect to agricultural policy:

- (1) **1930s to shortly after independence (1956):** this period saw the creation of commodity-specific professional associations, initially at the direction of French colonists, and subsequently at the initiative of large producers who were concerned about defending their interests post-independence. As for agricultural cooperatives, they began in 1913, although they did not play an important role until after 1935 for the processing sector, and only after 1939 for the traditional agricultural sector.
- (2) **Early 1970s:** during this period, FBOs were actively fostered and supported by the government to help achieve the objectives of its agricultural policy, particularly within the framework of sectoral plans for development (dairy, sugar, cereals). Numerous associations of producers and agricultural cooperatives emerged during this period. This period was also marked by the introduction of agrarian reform programs which aimed to redistribute a portion of the lands recovered from former colonists to smallholders and landless peasants; 80% of such land re-distribution took place between 1971 and 1980. In order to safeguard the productivity of these redistributed lands, beneficiaries were organized into cooperatives for the purposes of working these landholdings efficiently, with particular regard to mechanization, acquisition of inputs, and sale of finished product. Redistribution of agricultural properties took place under the terms of the Dahir (Royal Decree) of 29 December 1972 relative to agrarian reform, concerning the concession of agricultural lands belonging to the private domain of the State. This text stipulated the conditions for acquisition, the composition of the commission charged with land redistribution, and the obligations of beneficiaries to come together in the form of agricultural cooperatives.
- (3) **Early 1980s:** this period marked the disengagement of the Government from certain production-oriented activities, as well as from the provision of various agricultural services. The liberalization of trade in agricultural products led the authorities to foster the formation of autonomous FBOs that would be capable of taking responsibility for the sectors and spheres which had been or would soon be entrusted to them.

However, these attempts have had limited impact, even up to today. Indeed, the agricultural sector emerged from a long period characterized by active intervention on the part of the Government only to encounter an economically liberal environment for which it was ill-prepared. Since the beginning of the 1990s, the relationship between the Government and operators in the agricultural sector has undergone a further transition, characterized by a perceived need to improve governance systems within FBOs, and to improve coordination between different FBOs, particularly where these FBOs operate along the same value chain.

III. PRINCIPAL TYPES OF FBOs OPERATIONG IN MOROCCO TODAY

Associations

An association in Morocco, according to Dahir 1-58-376 of 15 November 1958 (GOM, 1958) which regulates them, is based on an agreement by which two or more persons bring together, in a permanent fashion, their knowledge or their activities with an aim other than to share profits. There are a number of types of associations in Morocco such as agricultural professional associations, local development associations, and agricultural water user associations in the irrigated areas. Although associations have become quite developed over the past two decades, they continue to encounter certain difficulties of a legal and institutional nature as well as financial and management problems.

Agricultural cooperatives

In accordance with Law 24-83 governing the cooperative sector in Morocco (GOM, 1984), a cooperative is defined as a group of persons who agree to join together to create an institution responsible for providing, for their own benefit, the products or the services they need. This type of organization constitutes a very useful framework for promoting the economic success of smallholder groups.

Currently in Morocco there are more than 9,000 agricultural cooperatives, comprised of nearly 340,000 members with a total capital exceeding 1.5 billion Dirhams (\$176 million @ 8.5 Dirhams/dollar). Prior to 2008, with the launching of the Green Morocco Plan (*Plan Maroc Vert or PMV*) by the Ministry of Agriculture and the PAF Project funded by MCC, agricultural cooperatives numbered only about 3,700. The implementation of the PMV and PAF made it possible to demonstrate to small farmers the benefits of farmer organizations, particularly cooperatives. As a result, there has been a considerable increase in the number of agricultural cooperatives, which have more than doubled over the past five years.

Agricultural cooperatives in Morocco cover a multitude of products and services, with activities predominately found in four sectors: (1) milk collection and marketing, (2) livestock, (3) apiculture (bee- keeping), and (4) agricultural input supply. In recent years, a new sector has emerged with the substantial increase in olive-producing cooperatives, whose numbers passed from 80 cooperatives in 2008 to more than 500 cooperatives in 2013.

Despite this increase in the number of agricultural cooperatives over the past six years, farmer membership in these cooperatives is currently only about 15% of the total farming population in Morocco. This membership level is still relatively low, especially given that the agricultural

sector is dominated by small farm size (more than 70% of Moroccan farms have less than 5 hectares). Generally speaking, Moroccan cooperatives are characterized by (1) limited financial resources due to low retained earnings and accumulated reserves, and (2) weaknesses in accounting, financial and commercial management.

Economic Interest Groups

Through the efforts of the MCC-funded PAF project and the Ministry of Agriculture's strategic plan (PMV), as well by producers, investors and those in the agricultural profession, the olive sector has experienced rapid development in recent years, with annual olive production reaching record levels approaching 1.5 million tons (MT). Consequently, the Ministry carried out an in-depth review for the purpose of adopting strategic orientations for this sector and preparing a new roadmap. This roadmap is centered on increased production as well as quality and based on an integrated model involving all the various links in the value chains of the agricultural sector.

Among the strategic directions retained within this framework is the promotion of a specific contractual model for the aggregation and organization of small producers into Economic Interest Groups (*Groupements d'Intérêt Economique, or GIEs*) comprised of cooperatives. As such, producers within a given perimeter² are organized into producer cooperatives to facilitate their supply of production inputs, to increase the productivity of their orchards, and to plan and organize harvest schedules. The process of adding value to this production (*valorisation*), including crop conditioning and marketing, is entrusted to the GIE.

A GIE is composed of two or more legal entities (*personnalités morales*), regardless of their legal status. This means that a GIE can include cooperatives among its members as well as private-sector companies and other types of FBOs. This affords GIEs a certain flexibility that is not found in a union of cooperatives, for example, which can only be made up of cooperatives. Membership of producers in the individual cooperatives, as well as membership of cooperatives in the GIE, is voluntary and based on the conviction that working in and as a group has great value, especially for small farmers.

Once constituted and active, the GIE is expected to become an engine in launching an economic dynamic within the farming region it serves. In fact, while made up of cooperatives, GIEs are equipped with the legal status necessary to conduct their activities of value-addition and marketing. Organization of farmers into GIEs makes it possible to benefit from the added-value

² A "perimeter" is a tract of contiguous land in which the various parcels are individually owned and farmed by a group of smallholder producers. In the case of PAF, this included perimeters situated on hillsides in selected rainfed areas (*bour*) and in selected small-scale irrigated systems (*Petite et Moyenne Hydrauliques, or PMH*).

of bringing large numbers of producers (and hence large volumes of production) together, as well as of increasing product value and facilitating its commercialization. This direct relationship with markets, in turn, serves to reinforce product quality, ensuring compliance with food safety and traceability standards. This enhances the competitiveness of these products in the marketplace and, consequently, ensures increased revenues to farmers and thus the sustainability of the activities initiated under PAF.

Promotion of the GIE Model within PAF

This new vision, conceptualized within the framework of PAF, used an intervention strategy based *inter alia* on the adoption of certain eligibility criteria to select smallholder farmers most likely to benefit from project actions. These criteria included:

- Intervention in those perimeters with a sufficiently large area to justify implementing the logistics and management structures, value-addition of production and its marketing;
- Organization of farmers, who are owners of the land within the same perimeter, into cooperatives that are adequate to ensure effective collective management of their perimeters.

Training and technical support of Project-supported farmers and their cooperatives, followed by assistance in forming GIEs that can manage economically viable enterprises, was based on the following considerations:

- The cooperative, as a first order or level of organization, is an organization whose statutes make it possible to undertake economic activities; and
- The GIE, which is a second-order organization, has the major advantage of being able to acquire a Trade Registry (*Registre de Commerce*) which makes it an actor with full rights in the marketplace, and thus able to complete large commercial deals with local and international buyers.

Technical and economic feasibility studies were carried out with Project support for each selected GIE. These studies, conducted using a participatory approach with farmers, entailed a thorough diagnostic that included the specificities of the farm operations, social affinities and the economic circumstances of participating farmers.

Organizing small producers into GIEs in Morocco is an approach that represents a continuing progression in the development of farmer organizations, allowing the strengthening of the

technical, financial and commercial skills of these producers and placing them in a position to make their investments in processing infrastructure both profitable and sustainable. The Government supports GIEs through the construction of larger-scale value-added processing and packing plants with partial financing provided by projects such as PAF and assistance authorized under the Ministry's Agricultural Development Fund (FDA). These processing and packing units are able to meet not only international quality standards but also the challenges of competition imposed by globalization.

IV. PRACTICAL STEPS TOWARD SMALLHOLDER AUTO-AGGREGATION

Creation of Farmer-based Organizations

The various analyses and diagnoses carried out during implementation of PAF showed that the aspects related to value-addition and marketing were the weakest links in the value chains (olive, almonds, figs and dates) targeted by the Project. Moreover, experience has shown that increased crop productivity in and of itself does not improve the standard of living of smallholder farmers. Achievement of this objective was seen to be largely a function of parallel improvements in value-addition and marketing infrastructure and the forward integration of these producers into the market.

Farmers in the zones targeted by PAF suffered not only from low, highly variable crop yields and inadequate infrastructure but also from poor organization and weak integration into the value chains of the targeted crops (El Moatamid, 2012a). Their absence in the downstream links of these value chains resulted in an inability to capture value-addition margins which they needed in order to improve their incomes. This lack of profitability in turn prevented them from investing in technical improvements to better manage their orchards, and thereby secure higher yields, better quality and increased marketable value of their crops.

The establishment of dynamic and high-performing farmer organizations that are capable of effectively marketing the products of their members constitutes a relatively complex task. This is particularly true because of the dysfunction of existing farmer organization models in Morocco, which to date have been primarily associations and cooperatives. As noted earlier, associations are non-profit institutions that, due to their legal status, are unable to undertake commercial activities. But cooperatives in Morocco also have limitations. Despite the fact that they constitute viable economic models, cooperatives can only market products coming from their members, and they also encounter major difficulties in obtaining the official Trade Registry which would permit the issuance of the invoices required by high-volume customers.

The fact that PAF required participation at a certain minimum scale of operation, namely a

perimeter that consisted of a substantial land area encompassing a number of small-scale farms, made it possible to set preconditions favoring the organization of farmers into sustainable agricultural cooperatives. In fact, this is the reason why the organization of farmers within the same perimeter was established by the Project as one of the criteria for eligibility to participate in PAF.

Moreover, the level of commitment between farmers and their organizations, and the level of commitment between these organizations and the Ministry of Agriculture, contributed to the success of the farmer-organization component of PAF. They constituted important concrete steps to guarantee the participatory approach adopted by PAF. This approach of PAF in terms of farmer organization helped mitigate two principal constraints faced by smallholder farmers in Morocco: the increasing fragmentation of farmers' fields, and the inadequate collaboration among the various actors along the same value chain.

Each FBO's birthing process is unique, based on the expressed needs and known opportunities of its particular context and membership. Nevertheless, there are a number of common steps in the establishment of most FBOs. Taking into account these steps can strengthen the probability of success and the long-term sustainability of an FBO. In general, successful constitution of an FBO follows the stages outlined below:

- Information, awareness-raising and diagnosis
- Constitution of an initiating committee
- Feasibility study of the proposed cooperative
- Preparation of the statutes and internal rules and regulations (*règlement intérieur*)
- Convening of the Founding Meeting (constitutive General Assembly)
- Training of the persons in charge.

The creation of an FBO occurs at the time of the constitutive General Assembly which is also the occasion for the official installation of the teams responsible for ensuring the management and development of the FBO. The FBO's organizational chart should precisely identify the functions and responsibilities of each body as well as its relationship to the other bodies.

In addition to the efforts undertaken to make farmers aware of the advantages of organizing themselves into cooperatives, training was also provided to members of the Boards of Directors of the cooperatives so they would be able to adequately assume their management responsibilities. This training consisted of the following four modules:

- Constitution and operation of FBOs

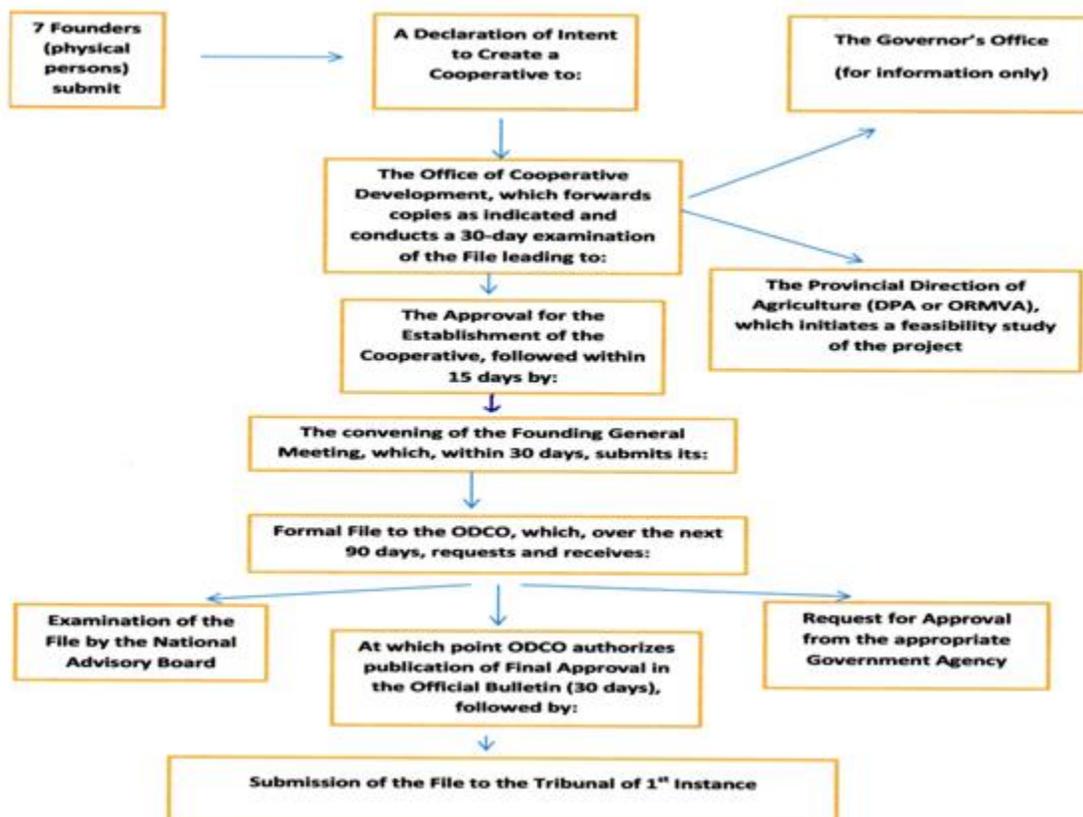
- Management of FBOs
- Initiation to the entrepreneurial spirit
- Types of second-order FBOs.

Although an FBO is a professional organization of mutual aid and solidarity, it also constitutes a “socio- economic enterprise” with all the requirements for effectiveness needed by any organization managing the provision of services (e.g., input and raw product supply, processing, and promotion and marketing of a product). Each FBO must therefore respect the basic principles of good management, particularly transparency, trust, conservation of resources, and separation of tasks.

Creation of Cooperatives

The principal stages involved in constituting a cooperative in Morocco are summarized in Table 1:

Table 1: Steps in the Establishment of a Cooperative in Morocco



Creation of Economic Interest Groups

An Economic Interest Group (*Groupement d'Intérêt Economique, or GIE*) is created between two or more legal entities, based on a contract consistent with the general rules of contracts and the provisions of Law 13-97 governing GIEs in Morocco (GOM, 1999). This contract, which is published in the Government's Official Bulletin, delineates the organization of the GIE and the rights and obligations of its members. The assembly of its members is entitled to make any decision under the conditions specified in the contract. The GIE is administered by one or more administrators chosen from among or outside of its members. Maguri (2007) provides detailed information on the legal and fiscal aspects of GIEs in Morocco.

The GIE is considered to be legally constituted and able to act on behalf of its members from the date of its registration with the Trade Registry. Once a GIE is registered with the Trade Registry, it can undertake all commercial activities and can act as a principal in lease transactions. It can carry out its activities for the account of its members, but it cannot replace its members in the exercise of their activities. The members of the GIE have total freedom to determine the bases for distributing the profits and losses of the GIE.

Table 2: Number of GIEs, cooperatives and farmer-members involved in the Catalyst Fund investments under PAF by September 2013 and their projected capacity to produce olive oil.

Number of GIES	20
Number of Provinces	17
Number of Cooperatives	188 (14 are women-only)
Number of Farmer-Members	6,540
Number of Potential Members	38,400
Area in Olive Orchards	61,300 ha
Number of Plants/Capacity	18 (60 MT/day); 2 (80 MT/day)
Annual Quantity of Olives Processed	86,800 MT(assumes 80% capacity)
Annual Quantity of Olive Oil Produced	12,500 MT
Storage Capacity	6,000 MT
Total Investment	300 million DH (\$35.3 million US)

Source: Zakaria (2014)

By the end of 2013, 20 GIEs had been legally constituted through PAF across 17 olive-growing provinces as shown in Table 2 above. Most of these GIEs had already obtained their Trade Registries and were operational, and thus able to process the olives of their members in the processing plants which were built with support from PAF through the Catalyst Fund which is described in more detail in the following section. These plants were structured to comply with international standards of quality and to compete in the international arena. They were equipped with sufficient human and material resources to maximize their probability of success and sustainability (e.g., laboratory analyses, modern processing lines, waste handling, and environmental protection) (El Moatamid, 2012b).

V. ROLE OF SMALLHOLDER-OWNED OLIVE OIL PROCESSING PLANTS IN AUTO-AGGREGATION

Auto-aggregation projects involving smallholder producers face a number of hurdles. One of the most important is the fundamentally independent, stand-alone mind-set of the producers themselves.

Whether farmers by birth or farmers by choice, those who become farmers generally enjoy working alone, making their own decisions, and succeeding or failing on the basis of their own efforts. Despite their predisposition toward independence of action and decision-making, however, farmers quickly develop an appreciation for the constraints which impede their progress and success. Where cooperative action represents the best, or sometimes the only, path for them to overcome these constraints, most farmers are able to adopt a collaborative approach which allows them to maximize the economic return from their individual production activities.

Most attempts at imposing top-down farmer aggregation schemes-- whether by governments or donors or other agencies-- have proven to be counterproductive and unsustainable. Conversely, auto- aggregation --motivated by enlightened self-interest on the part of growers themselves -- has been seen to lead to the formation of cohesive and enduring commercial entities. The ability to auto-aggregate provides farmers with the benefits of scale and economic clout without sacrificing the notion of individual reward based on individual effort that is so important to large farmers and smallholders alike.

Where important assets are attached to auto-aggregation efforts, such as the case with the olive oil processing plants co-funded in Morocco under PAF, careful effort must be made to ensure that the asset itself does not become the sole justification for the auto-aggregation. Development literature is replete with examples of project-based asset transfers which failed as a result of insufficient cohesion among beneficiaries, or inadequate preparation of beneficiaries to assume responsibility for managing complex facilities or businesses. In the case of PAF, auto-

aggregation efforts began some 30 months prior to the handover of the processing plants with the conceptualization and initiation of what became known as the Catalyst Fund.

The Catalyst Fund

After several years of implementing PAF, it became increasingly clear that a major constraint still existed in the downstream segment of the olive value chain, namely the infrastructure for processing high quality olives into high-quality oil for the benefit of smallholder farmers. During the Project's design phase, it was determined that there were enough privately-owned processing plants with sufficient capacity and sufficient accessibility for small olive farmers so that there would be no need for investing in that part of the value chain. However, based on the first years' experience, long travel distances and lack of ready accessibility to these plants became a significant issue, as did the ability to have olives processed within a relatively short period of time (preferably less than 48 hours after harvest) to avoid quality degradation (acidification) of the oil produced. Because of these issues, Project-supported farmers were not capturing the full benefits of their production-level investments aimed at increasing the yields, quality and market value of their olive crop.

At the same time, new environmental laws governing these kinds of processing plants made the existing plants even more problematic, especially with regard to the disposal of waste products, since most were not in compliance with the expected regulations. As a result, in collaboration with the Ministry of Agriculture, the Agricultural Credit Bank of Morocco (*Credit Agricole du Maroc, or CAM*) and farmer-leaders, PAF designed the Catalyst Fund (CF) with the encouragement and support of MCC. The CF was designed to provide both financial and technical assistance to eligible and qualified GIEs to help them build, own and operate their own modern two-phase olive oil processing plants (*unités de trituration*).

The financial model eventually agreed upon by all parties, and that was used by the 20 GIEs which signed up under PAF to participate in the CF, was as follows:

- 5% cash contribution upfront by the GIE members themselves;
- 15% loan to the GIE from CAM, which would be paid back over a set period of time (first year grace period) at a relatively low interest rate (12 % initially);
- 30% subsidy from the Ministry of Agriculture; and
- 50% grant from MCC.

Thus, under the Catalyst Fund, GIE members were required to participate in the overall investment value of the facilities in an amount equivalent to 20% of their facility's value, with one quarter of this amount being a cash contribution, and the remaining three-quarters coming

through a commercial loan negotiated by the GIE. As noted above, the financing arrangements worked out under PAF included a 50% grant from MCC and a 30% subsidy from the Ministry of Agriculture through the General Budget of Morocco. The critical aspect of this configuration, however, was the 20% direct contribution from the farmers themselves, which was the first time this kind of contribution was required from farmer- beneficiaries for the construction of processing plants supported by the public sector. Since the 20% participation equated to roughly \$200,000 per processing unit, this financial contribution required a significant commitment on the part of the beneficiaries (GIE farmer-members), both to the project and to the producer organizations representing them.

In addition, an independent financial institution (CAM) was responsible for approving the credit-worthiness and business plan for each GIE before construction of the facility could be initiated. PAF staff would then review the entire dossier and make the final decision whether or not to approve the proposed investment for each of the GIEs. The operating procedures for the entire process, along with templates for the documentation required, were laid out by PAF in a Procedures Manual (APP, 2012), which was approved by MCC in September 2012.

PAF staff together with the technical assistance contracted by the Project provided technical and training support to advise and assist the farmers in carrying out the following steps (APP, 2013):

- Processes for constituting cooperatives and the GIEs;
- Preparation of detailed business plans to be submitted to the bank (CAM) concerning the financial feasibility of each investment;
- Preparation of environmental management plans in order to obtain the necessary authorizations for building these kinds of processing plants at the proposed sites;
- Preparation of an action plan by each GIE for aggregating, marketing and selling the olive oil; and
- Recruitment and training of a small management and operations team (each GIE hired technically qualified personnel to operate their plants who were overseen by the GIE board and whose salaries were covered under annual operating costs and thus came from proceeds of the sale of the olive oil produced).

The majority of the 20 plants built were designed with a capacity of 60 MT/day and, based on a 70- day processing season, would be able to handle 4,200 MT of olives each season, producing approximately 700 MT of virgin and extra-virgin olive oil (assumes a 16-17% oil yield). The

plants were also equipped with stainless steel cisterns for storing roughly half of the annual production. Proper facilities were also built outdoors adjacent to the plant for handling the nearly 3,000 MT of solid waste pomace (*grignons humides*) and over 1000 m³ of olive-mill wastewater or water of vegetation (*marginés*) that would be generated as by-products from a plant operating at capacity.

Because of the understandably long process (estimated to take 12-18 months) involved in constituting the GIEs, obtaining investment monies from GIE members, preparing acceptable business plans, gaining approvals from CAM and APP, and navigating the tender process for selecting contractors for construction as well as equipment procurement, environmental approvals from local governments, etc., not all of the 20 plants were ready for processing by the time of the fall 2013 olive harvest and the subsequent 2-3 month processing season (November 2014 – January 2015).

Disintermediation Effect

Intermediaries, or middlemen, are commonly found along most agricultural value chains throughout the world. In many developing market economies, where options for processing, storage, transportation and financing are limited, intermediaries typically provide solutions to these constraints. In addition, where agricultural production units are small and product volumes per unit are limited, intermediaries often serve an aggregator function. By combining the production of many smallholders into larger quantities, intermediaries are able to negotiate sales with large-volume buyers, such as retail grocers, large wholesalers, processors-packers and food-service operators, in ways that lie well beyond the reach of most smallholders. With specific reference to the olive oil value chain in Morocco, intermediaries have historically purchased olives from smallholders, either preharvest or immediately after harvest, and then transported these olives to processing units for crushing. Intermediaries either sell the olives to these processors outright prior to crushing, or contract for processing services, after which they sell the finished olive oil to distributors or consumers. Intermediaries derive their compensation by charging margins for each service — aggregation, transportation, storage, financing, marketing and distribution — which they provide, as well as for the financial risks involved.

Where smallholder growers elect to remain as independent operators, the different services provided by these intermediaries constitute essential links in the value-addition process leading from raw olives to finished olive oil. To the extent that smallholders are able to take on some or all of these value-addition services, these intermediate margins can then be captured by the smallholders themselves. Since most of these services require transactional volumes well in excess of the production capacity of any individual smallholder, capturing these intermediate

margins requires smallholders to aggregate their production such that the resulting volumes are sufficient to justify the expenses involved in providing these intermediate services, and to permit smallholders to ensure the service levels -- in terms of volumes, quality and reliability of supplies -- which end-users require.

By receiving access to, and ultimately ownership over, the modern two-phase olive oil extraction plants built with support from PAF, each of the 20 GIEs was in a position to improve the quality and yield from its members' olive crops, capture margins heretofore accruing to bulk olive buyers, transporters, processors and storage facility owners, and permit direct negotiation of sales contracts with end-users. Where the timing of harvests had been traditionally determined by the day when the in-field buyers showed up with cash in their pockets to pay farmers, harvests could now be coordinated according to daily throughput capacity at the GIE processing plant, and in function of the optimum ripeness across the different beneficiary groves supplying the plant. Where olives had frequently been picked and left in jute sacks for weeks before processing, resulting in the build-up of high acidity levels leading to low-grade olive oil and reduced revenues (which were invariably reflected in the original prices at which the olives were purchased), now processing could be scheduled such that the 72-hour maximum dwell time between harvest and processing could be respected, thereby maximizing the yields of extra-virgin grade oil and the higher prices which these better grades generated.

Where downstream intermediaries were generally satisfied to sell through additional layers of intermediaries before the finished product eventually reached its final distribution point, integrated GIEs were now able to deal directly with retailers, foodservice operators and food processors, with whom they could share the intermediate margins saved through a shorter supply chain. Additionally, the GIEs were able to launch their own direct sell-and-ship programs to individual families, taking advantage of the traditional Moroccan distribution channel through which families typically buy 25-50 liters of olive oil from trusted friends and acquaintances soon after processing to meet the bulk of their annual requirements.

Over and above the direct income and product control advantages which auto-aggregation and forward integration provided to olive oil GIEs and their members, another important advantage of GIE ownership of processing units came in the form of the ability to comply with Morocco's new environmental regulations dealing with the disposal of solid and liquid waste generated in the crushing process. Older forms of oil extraction, including the traditional "mastras" (large mule-powered stone crushing and pressing units), semi-modern extractors and three-phase processors, generate excessive amounts of effluent (*marginine*) as part of their process. Recent environmental protection regulations enacted in Morocco will either force these extractive technologies to discontinue operations, or significantly raise the costs of effluent removal if they

continue. The two-phase technology utilized in the 20 GIE units built with PAF support will allow full compliance with these regulations without any increase in operating costs, thus providing GIE members with yet another motivation to sustain their affiliation with the group.

VI. LESSONS LEARNED

MCC funding for PAF project ended in September 2013, and the 20 GIEs described in this paper have completed only one full harvest cycle since Compact closure. It would be premature to pass final judgment on the effectiveness of the auto-aggregation model described here until several more seasons had passed. While the full story of the smallholder-aggregation model implemented by PAF in Morocco waits to be written, however, a certain number of initial lessons have been learned. Here are eight of the most important.

1. **Benefits of FBO Auto-aggregation:** Top-down models of organizations of smallholder farmers imposed, heavily directed or influenced by governments or donors have a poor rate of success and survival. If the idea of aggregation is viewed as a member-driven initiative to achieve specific commercial objectives, the likelihood of success appears to improve. This is based in large part on grower awareness of their inability to work directly with premium buyers if they insist on operating as individual, independent entities.
2. **Aggregation based on external, non-commercial incentives:** In Morocco and elsewhere, some existing aggregations are carry-overs from past efforts at collectivization or land reform. Often, such organizations have developed operating models which rely more on lobbying the government for support and assistance, or furthering the economic interests of an elite power base within the leadership of the organization, rather than focusing on bringing broad commercial improvement to the entire membership of the organization. Care needs to be taken to exclude such organizations, or to prevent this type of mentality from undermining the commercial orientation of the cooperatives and GIEs.
3. **Direct internal FBO investment as a binding agent:** It is easy for donors to induce the formation of farmer groups for the purposes of distributing free inputs or free infrastructure. Unfortunately, such groups rarely prove to be sustainable, since the level of individual and group affiliation holds only so long as the distribution of free goods continues. Where smallholders and FBOs are required to invest their own capital, however, the decision to adhere to the group becomes more serious, and leads to a more enduring commitment. Having their own money at stake (having "skin in the game" as it's called in the USA) creates a strong sense of ownership. This makes farmer-owners much more interested in investing time and actively seeking solutions as problems arise.

4. **Clear understanding of GIE purpose:** Adequate training in the commercial objectives of the GIE, and the setting of reasonable expectations for its initial years of operation, serves to clarify the GIE's direction, to focus attention on specific goals and metrics for attaining them, and to avoid disappointment over failure to achieve success as a result of a misunderstanding of how success has been defined within the organization. Ensuring a clear understanding of what a GIE is designed to accomplish is key to success.
5. **Rapid identification of actions to improve commercial outcomes:** Once constituted, the GIE should proceed immediately to define its objectives and begin moving in the direction of achieving these objectives. Where GIEs are allowed to drift pending completion of construction, for example, member adhesion dissipates rapidly, and members come to question the reasons for their affiliation. By remaining active, by meeting regularly, and by collaborating on activities (such as customer visits, planning sessions, strategy formulation, refining business plans, organizing harvest delivery schedules among member cooperatives, by-law development), a sense of momentum is created which can be self-sustaining. As a result, valuable experience is gained and confidence and cooperation are progressively built and solidified.
6. **Rapid identification of internal forces of division:** No matter how compelling the commercial logic underlying the decision to form an FBO or a GIE, the forces favoring disintegration are ever-present. These can be combatted in part by the continuous forward progress described above. At the same time, elements within the group may come to conclude that the interests of the group are incompatible with their own personal goals, and work toward re-defining the objectives in their favor. Such tendencies need to be identified and overcome in their early stages, either by persuasion or by exclusion. Professional intervention to neutralize these forces may be necessary.
7. **Infrastructure provides a useful anchor, but a poor raison d'être:** FBOs and GIEs have no problem agreeing to unite to gain control of an attractive facility for receiving or processing their crops. But there is an important difference between taking over a capital asset, and putting in place a business plan which will provide tangible ongoing benefits to organization members and make that asset sustainable. The processing plant is not an end in itself. The emphasis should always be on the plan and the objectives, not on the asset itself.
8. **Safety in numbers:** One way of avoiding internal dissension is to broaden the base of membership, such that the size of the GIE becomes far more important than the size or interests of any of its constituent FBOs. Some farmer-members or constituent cooperatives may think that limiting the size of the GIE to the original groups is the best way to

maximize their profits, but careful and planned growth is the best way to accomplish that objective on a long-term basis. Clear rules for access into the GIE for new FBOs should be established. Conversely, provisions for de-listing member FBOs, and the circumstances under which such de-affiliation can occur, also need to be defined and enforced.

It will be important for the Moroccan government, donors and agricultural development organizations, but most especially farmers and farmer-leaders themselves, to take these lessons and success factors into account as this model is scaled out. The authors hope the Moroccan experience will also be instructive and helpful to other developing countries seeking to support smallholder aggregation of agricultural production as part of a larger strategy to improve smallholder incomes.

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