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# Gendered Dimensions of Key Value Chains in Southwestern Morocco

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Additional information is available at the end of the chapter

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## Abstract

The Morocco Green Plan (MGP) has delivered significant economic benefits to small farm households. A concentration on improving efficiency and profitability within value chains for key local commodities has, through the creation of women's cooperatives, also led to positive outcomes in female empowerment. Through qualitative and participatory research methods, our analysis of gendered aspects of value chains for argan, rose, cactus, and saffron in southwestern Morocco suggests that economic empowerment, fostered through existing women's cooperatives, is fragile and subject to significant threats. In large part, this is the result of a state-driven approach that has not effectively considered the inequities inherent within value chains for key local commodities; and the meshing of existing social and cultural norms with the tenets of a national drive toward 'modernization' of the agricultural sector. We suggest that the MGP is gender blind in this respect. Couching value chain enhancement initiatives within an innovation systems framework, as opposed to a state-centric process, is more likely to achieve well-being within rural communities, together with sustainable (social and economic) returns within pro-poor value chains.

**Keywords:** Morocco Green Plan, agricultural innovation, gender, agricultural cooperatives, argan, cactus, rose, saffron

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## 1. Introduction

Agriculture in Morocco is a significant source of income for 40% of its population and provides stability for many farm households that are vulnerable to the vagaries of weather and desertification [1]. In 2008, the government launched *Plan Maroc Vert* (Morocco Green Plan (MGP)), an ambitious national initiative that seeks to shift agricultural policies away from a historical concentration on protection and toward more market-oriented principles. Pillar I of the plan aims to enhance value-added, productivity and better access to export markets

for high-value commodities through aggressive investments targeted at ‘modernizing’ the commercial agricultural sector. Pillar II prioritizes the need for public support in reaching out to small rural farm households within marginalized areas, an area of significant importance since the ‘Arab Spring’ uprisings of 2011. With socioeconomic underpinnings, this second pillar seeks to foster both quality as well as stability in the supply of local commodities produced by resource poor farm households, through the creation of production cooperatives, within a federated model of cooperative organization.

Significant investments have been made for improving livelihoods of the rural poor. These include: (i) the formation of producer cooperatives (women only, men only, mixed); (ii) state subsidies in the provision of equipment for processing and packaging, funding for infrastructure development—largely in the form of warehouses for the sorting and staging of products for export; (iii) sponsorship of exhibitions and fairs to promote local products internationally; (iv) gratis provision of primary inputs to cooperative members; and (v) identification of geographical indication markers to protect proprietary rights on cultural heritage, with attached economic benefits. Yet, despite all the fanfare within national and international media outlets, a claim that rural farm households do not receive fair value from the sale of highly valued products within both international and local markets continue to persist [2, 3]. Participatory workshops facilitated by the authors initially revealed a widely held notion within southern Morocco that the blame for inequitable returns is to be laid on the marketing agents, who capitalize on (female) illiteracy, inefficient production practices, and a lack of institutionalized credit within rural areas. Our findings paint a different picture, and one that diverges from received conventional wisdom. We argue that a lack of coordination in public services, coupled with prevailing cultural norms, policy, and environmental constraints block the ability for private and public initiatives, that are aimed at enhancing efficiencies within key (pro-poor) value chains, to improve sustainable (long term) rural livelihoods.

This chapter aims to provide a better understanding of production and marketing systems for four local products within southwestern Morocco (argan, cactus, saffron, rose), and with specific attention paid to challenges faced in gender equity within each value chain. Specific to the region, and to certain villages, all four possess characteristics of high demand and value in both domestic and international markets. Produced on the periphery of traditional export crops on irrigated lands (tomatoes, citrus fruits, and berries), these four products are of significant economic importance to rural communities and continue to gain international recognition. Of significant cultural heritage to the Amazigh tribes of Morocco, and long considered to be only of importance to Berbers and their goat herds, argan gained international notoriety in the late 1980s when scientific curiosity confirmed several positive aspects in relation to its use for both health and beauty [4]. The production of saffron within the villages of Taliouine and Taznakht in southern Morocco, places Morocco fourth in global production of this delicate commodity that requires skilled female hands to ensure quality [5]. Roses in Kalaa M’Gouna village yield highly valued rose oil, and provides Morocco with an element of prestige as one of the largest producers of rose oil—historically third after Bulgaria and Turkey [6]. Lastly, prickly pear cactus in the southern province of Sidi Ifni commands a national following, with premium prices in wholesale and retail markets within Morocco, and a potentially lucrative international market for both fresh fruit and cosmetic oil.

While much has been written on botanical and other scientific and technical aspects of these local products [7–12], little attention has been given (at least in the English literature) to an analysis of policy, market and social challenges faced by small producers, and opportunities for addressing these challenges. What does exist [13–15] is restricted to argan and with significant contribution to a contemporary understanding of historical challenges that continue to persist today. Perhaps more surprisingly it is a lack of research and attention to gendered issues for these commodities, where female hands play a significant role in securing economic returns.

Utilizing qualitative and participatory action research methodologies, this study sheds light on the nature of gender-based participation within the four local commodities identified, and particularly with respect to trade-offs in time and income allocation, as well as issues related to household power dynamics. These trade-offs arise in several different areas, such as on those related to health, education, opportunities for farm and off-farm income sources, and sometimes more conspicuously in terms of inequitable gender-based access to resources and economic opportunities for gainful employment. An exploration into issues of empowerment and meaning further highlights significant risk for sustainability in economic empowerment and well-being. Readers interested in more detailed analyses and description of methods, as well as a list of interviewed respondents, are directed to the working paper from which this chapter has been generated [16]. Our key argument is that the Morocco Green Plan is essentially gender blind, and greater attention will be required in terms of addressing issues related to gender equality in access to economic opportunity, if this state-led process is to achieve its desired aims and objectives.

## 2. Morocco Green Plan

*Plan Maroc Vert* (Morocco Green Plan) is built on two pillars with four stated objectives:

- (i) Reduced poverty within rural areas
- (ii) Improved measures for achieving national food security
- (iii) Natural resource sustainability
- (iv) Improved and equitable access to national and international markets.

*Pillar I:* One aim, within the early days of the initiation of the plan was to generate 7 billion Euros of investment, 75% of which was expected to be generated from private investment across 961 projects identified for implementation. A considerable number of these projects were targeted at value-added initiatives within irrigated production areas with high agricultural production potential and underpinned by a desire to ‘modernize’ the agricultural sector.

*Pillar II:* In addition to the activities under pillar I, an additional 545 projects were targeted for remote areas, particularly within marginalized rural areas where poverty continues to persist. These initiatives seek to uncover avenues for intensification, diversification, and specialization in agricultural production and processing activities through directed social and economic organization (production cooperatives and a federated model of cooperative organization).

Taken together, these two pillars are underpinned by a stated desire to address socioeconomic disparities between “modern” and “traditional” agricultural sub-sectors, through improvements in productivity (primary and processed), and with enhanced access to commercial markets.

### 3. Case studies: argan, rose, cactus, and saffron value chains

#### 3.1. Argan: a story of women versus machine

Endemic to Morocco's public forests in southwestern Morocco, argan maintains historical, cultural, and economic importance. For centuries, the argan tree has been associated with the Amazigh (Berber) tribes who have relied on its oil, and associated joint products, for culinary, cosmetic, and health purposes; feed and fodder for small ruminants; and as a source of heating material [17]. But the argan tree is now under threat, with implications for Amazigh tradition and customs. Oral discussions with officials and industry representatives indicate (without the support of publicly available data) that natural argan forests have shrunk from an estimated 1.4 million hectares at the turn of the century to an estimated 800,000 hectares today. While traditional systems of usufruct rights for harvesting argan fruit continue to exist, access to these forests is banned by the Ministry of Forestry for 3 months of the year, so as to mitigate the impact of grazing over the fruit-bearing season. Yet, despite oversight by the Ministry, grazing and illicit felling of argan trees for charcoal production are reported to be on the rise by local communities. Incidence of social tension between local residents and camel herders from the disputed Western Sahara, who graze in the argan forests, was mentioned during a number of discussions with community elders and with indication of a rising trend in violence.

One fundamental issue related to access rights and a cause for tension with nomadic camel and goat herders is the nature of ownership and usage rights for argan trees. Under existing legislation, historical rights to harvest argan trees have been maintained and passed down by inheritance. Within villages, communities and tribes, specific argan trees are held by households on the basis of cultural norms, and common knowledge exists on rights to the fruit from these trees. Yet, the trees themselves belong to the state as national heritage, even if they exist on private property; the incentive to plant argan trees on private property, therefore, is mitigated, as is any desire to maintain trees in public forests through pruning, management or general care *in situ*. Taken together, extended drought, excessive grazing, illegal felling, and issues of ownership have been blamed for the reduction in argan forest areas; yet, many also argue that an increasing price for argan oil has also led to an effective mopping up of argan fruit and seed from the forest floor, thereby leading to reduced natural regeneration.

Annual production of argan (fruit) and oil is neither accurately collected nor officially reported, but estimates in the late 1980s were on the order of 4000 tonnes of argan oil produced annually [18]. Argan oil is sold locally as a traditional source of edible oil and internationally as high-valued inputs into cosmetics, skin care products, and shampoos. The latter has taken on increasing importance since the 1980s, at which time scientific curiosity and evidence-based research revealed several positive cosmetic and health virtues of argan [4]. Exact figures on



argan oil exports have been difficult to obtain and in part due to the lack of a specific tariff code, despite indication of growing exports and demand internationally.

Media and marketing campaigns continue to profess the benefits of high-valued export markets for argan, and largely in terms of enhanced livelihoods for rural Amazigh women. A growing tourist economy in the region has also sprung up, and daily tours to women cooperatives producing argan oil are a favorite outing for visitors interested in viewing women huddled together in a room cracking argan nuts and producing argan oil. Professing health and cosmetic virtues, genuine cooperatives, as well as those masquerading to be a cooperative, vie for the business of tourists, whereas marketing agents from overseas engage with federated cooperatives and unions of cooperatives for a stable supply of argan oil for export. More inclined tourists part with their money at a multitude of spas offering relaxing massage treatments with argan oil, some with the conviction that they are improving livelihoods for poor Berber women and the natural argan forest.

Not everyone is, however, convinced of these win-win claims, both domestically and internationally. Lybbert [19], for instance, argues that the argan 'boom' has led to disproportionate benefits for rural households and no appreciable impact on forest health. Well-off households invest in increased goat herds, as well as more aggressive harvesting techniques (harvesting with sticks to knock down fruit). It is argued that these have had significant impacts on degradation, productivity of argan trees, and therefore on incomes from argan oil production [19].

For most rural households in areas adjacent to the forest, key sources of household income are remittances, as well as male-earned income through daily labor employment and sale of argan oil. With rising prices for argan oil, the contribution of argan to household income continues to rise and, at the time of study, was estimated to be on the order of 50%. Field visits and discussions with farmers indicate that prices for argan oil in local markets have risen from approximately 30 dirhams per liter in 2000 to over 150 dirhams in 2014 and as high as 180 dirhams in 2013. Discussions with several cooperative managers indicate that bulk exports of argan oil were within the range of 250 dirhams per liter. Yet, individual (and cooperative) women producers claim that they receive little of this significant margin between the local market price and the export price. One question, therefore, is whether there is any benefit to cooperative production and marketing of argan oil, in terms of exerting greater negotiation power within the value chain.

**Figure 1** depicts the argan value chain for private and cooperative producers. One key distinguishing feature of the argan production system is that it has historically been within the domain of women and continues to remain so today. Except for helping to transport the harvest from forest to home, and in marketing argan oil in local markets, men have not been involved in the processing of argan for oil and its joint products. From harvesting semi-dried fruit to peeling, cracking the inner nut to obtain the kernel and hand grinding, one woman will expend close to 3 days of labor in order to obtain 1 L of oil and associated joint products (flesh and paste for animal fodder, shells for sale as heating fuel to bakeries and communal baths). On average, and valued at local market prices, this was equivalent to 80 dirhams (US\$10) per day, which was on par with the official minimum agricultural wage rate in rural areas of 75 dirhams per day in 2014.

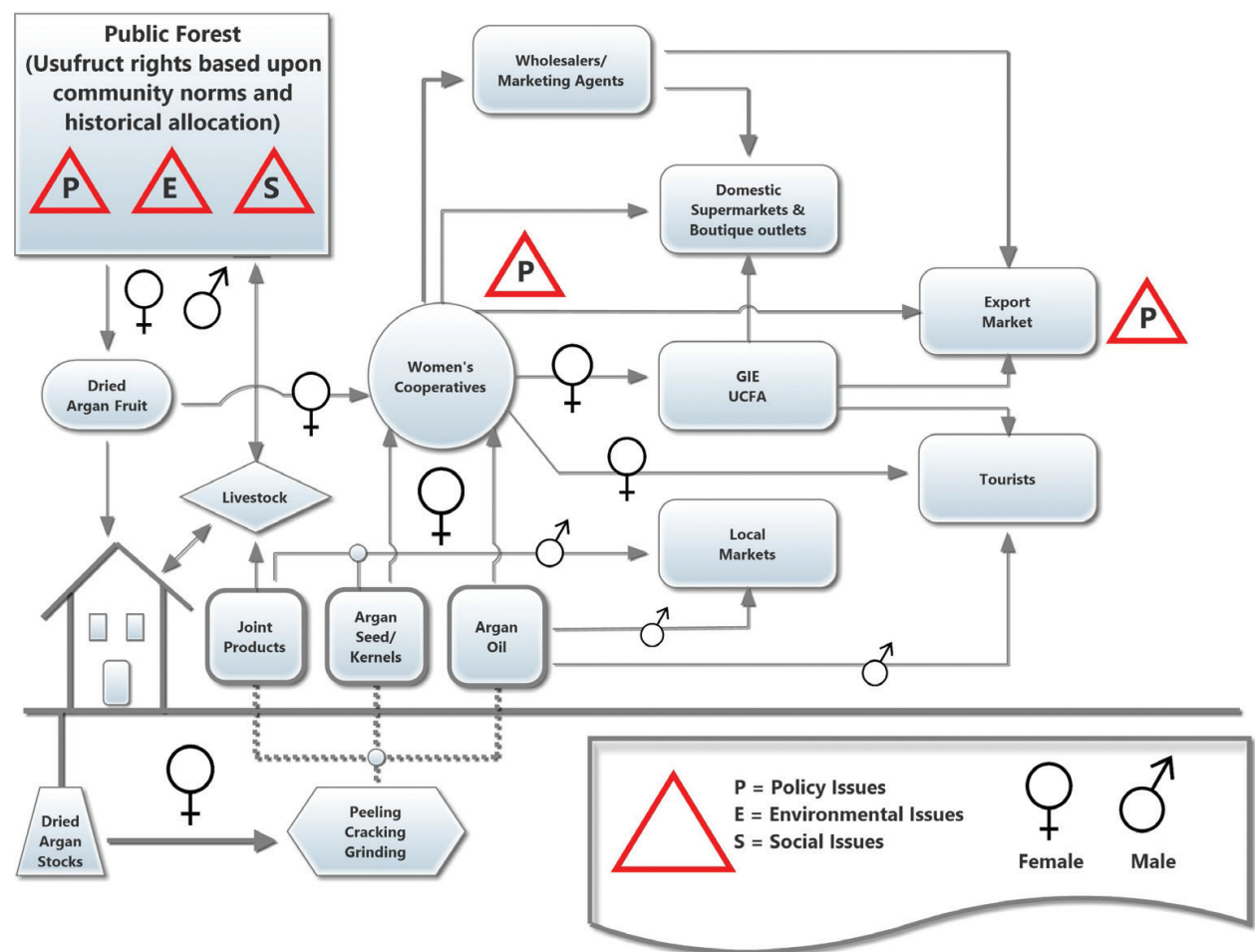


Figure 1. Argan value chain.

While remuneration for labor was at the rate of the official minimum wage, stability in total income generation from argan oil production is a more important issue for the household, not women alone, and this depends on the number of argan trees for which the household possesses rights to harvest. Inherited over generations by male members of the household, usage rights are only acquired by women in the case of no male siblings or on the demise of a spouse. Within the household, therefore, historical norms exist over ownership of income from argan oil sales in local markets, with men taking charge of selling in local markets, retaining the income from sale, and disbursing to household members based on mutual understanding of roles and responsibilities. How many argan trees the household has rights over, and the productivity of those trees in the public forest will, therefore, determine total household income from argan. The lower the number of these rights, the greater the burden is on male members of the household to generate income for household maintenance. A relevant line of enquiry therefore is whether cooperative production and marketing of argan can provide higher incomes, relative to home-based production, and whether this income stream is of a duration which is longer than seasonal home-based production.

At the Taroudent woman's cooperative in Essaouria province, members were paid 45 dirhams for 16 kg of argan fruit brought to the cooperative and placed into the collective pool for peeling,

cleaning, and cracking of the outer nut. Piece rate wages were set at 40 dirhams per kg of kernel extracted from the nuts. Based on a norm that each 16 kg of fruit yields 1 kg of kernel, and that one woman in 1 day is able to extract 1 kg of kernels, the average woman member earns 85 dirhams per day of work within the cooperative. This was not significantly different from home-based production when considering transportation costs.

Home-based production is constrained by the number of trees with harvesting rights and by available female labor. For those households with excess female labor in their household, purchasing argan fruit in the local market, over and above the endowment of fruit harvested at the household level, requires a source of cash. Membership in a cooperative does not necessarily help to relieve the constraint of working capital but does help in reducing transaction costs in securing available supply and through pooling of argan fruit between members. Access to a larger pool of argan fruit can come about through the following:

- a. The sale of argan fruit to the cooperative (either fully or more than what is processed at home) by women cooperative members.
- b. Purchase of argan fruit from non-members, when hours of manual (collective) labor devoted by women members to the cooperative is more than collective argan fruit brought in by individual members.

Given the nature of poverty and cash constraints, women insist on payment for fruit supplied (at time of delivery) and wages for manual labor after a reasonable period. Both require working capital for the cooperative, and given the lack of access to institutionalized credit within rural communities, it is a necessity for the cooperative to either generate profits or to charge initial membership fees in order to acquire this capital. With relatively similar returns between household production of argan oil and returns to labor at the cooperative, why would women choose to pay fees to join (or maintain) the cooperative? One answer is the benefit of access to a variety of social services provided by the cooperative (child minding, adult literacy lessons, small loans, and ability to socialize). Yet, not all cooperatives provide this service. A more plausible explanation lies in the observation that the production cooperative provides an ability to secure steady wage income over an extended period, with generation of total wage income which far exceeds that from the production of argan oil at home. An added incentive is the ability to retain the value of their labor, away from discretionary use by their husbands or male elders, and for utilization within the household on matters of priority to their needs and the needs of their family. Whether this is a form of empowerment remains moot in so far as it involves trade-offs within the household and between household members.

In taking a more conservative view, mechanical technology for cracking the argan nut has not been developed as of yet. The only available method for obtaining the inner kernel, used for extracting argan oil, is still based on a traditional method of hand and sharpened stone. Women have proprietary rights to this critical production function, based on historical cultural norms related to division of labor, and more specifically to an activity without which the entire value chain for argan oil breaks down. Yet, this advantage is also a potential source of weakness. Cash strapped and resource poor, households relying on argan as a significant



source of livelihood need to provide services in order to receive cash, and require immediate cash for services provided. Combined, this results in a situation where women are compelled to work long hours at cooperatives, and at institutions masquerading as cooperatives, for piece rate wages that are on par with the mandated minimum wage. Development of a mechanical cracker will surely put an end to stability in wages from labor currently expended by women in the cracking of nuts, and one of the underlying reasons and benefits for why women currently choose to join a cooperative structure.

With this knowledge, one needs to question a state-sponsored drive for facilitating greater numbers of women's cooperatives under the Morocco Green Plan. It would seem timely for efforts to be concentrated on finding avenues for how rural households can retain control over the argan nut, and to negotiate fair value for either the raw kernel or the oil that accrues from the kernel. Given a need for immediate cash, collective storage units and single selling desks at the community, village, or district level are unlikely to meet with much success unless (i) farmers are paid on delivery and (ii) there is an underlying system for ensuring no leakage, in order to maintain bargaining power with processors and marketing intermediaries. Given the nature of the product, limited options for alternative income sources at the household level, land tenure and property rights issues, the government may need to consider fixing a reasonable minimum price for argan kernel at a rate that (i) fairly remunerates rural households but (ii) still provides an incentive for processors (cooperative or private) to earn a margin on processing and marketing of argan oil.

This potential solution comes at a price. Fixing a minimum price on argan kernel at rates that provide fair remuneration may lead to more aggressive harvesting techniques and potentially negative consequences for forest conservation [19]. Concomitant with any potential consideration of fixing a minimum price on argan nuts, therefore, is the need to consider community-based management of the argan forest. Minimum pricing and forest management must go hand in hand, and without this combined set, options for households to retain income from argan, and for women to continue a cultural tradition of processing argan, are limited in the face of machinery which will ultimately replace hand and stone. The danger here is that without some form of security on the proprietary nature of processing, whether manual or mechanized, the potential for shipping nuts for processing outside of Morocco becomes very real in the face of future innovation.

The story of argan would seem to be one of a race against time and between woman and the machine.

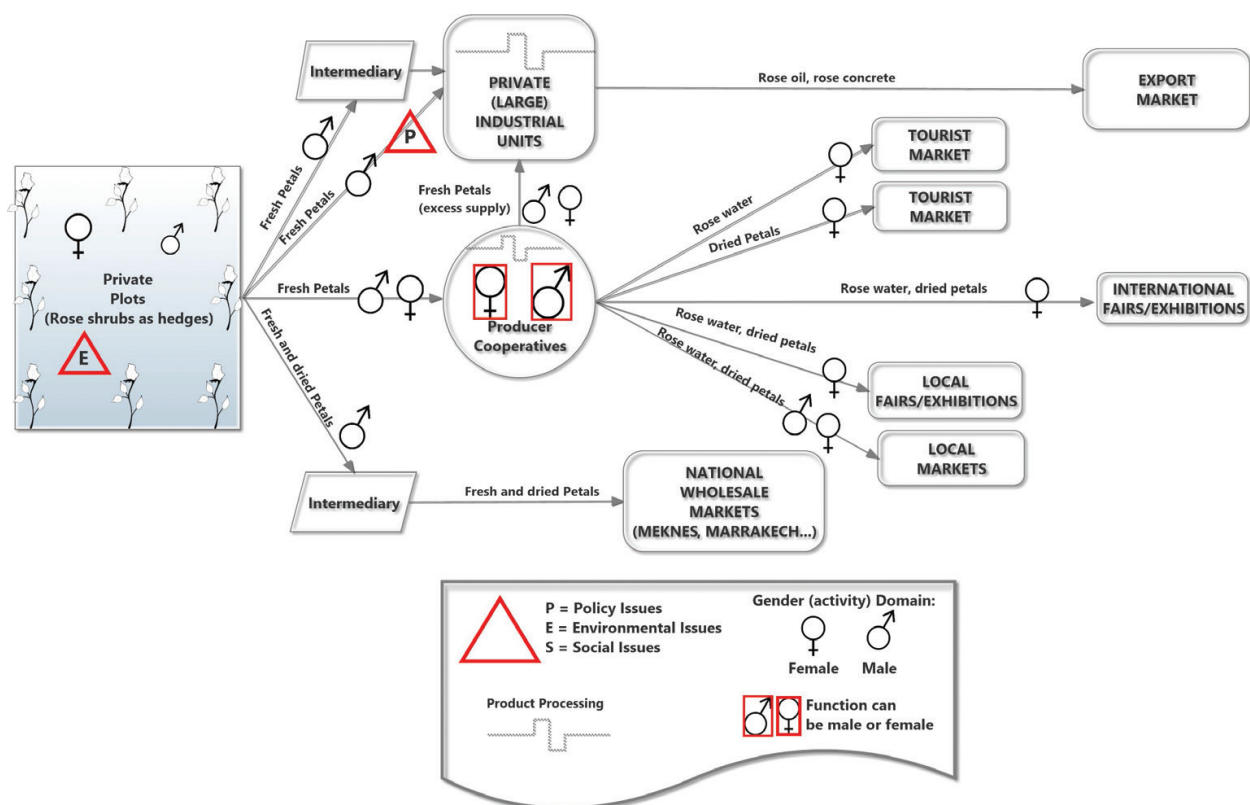
### **3.2. Rose: a scent of hope**

Rose production in Morocco has historical linkages to French occupation and largely confined to the village of Kalaa M'Gouna in Ouarzazate province. Areas under production and quantities produced have been difficult to assess, but estimates are on the order of 3200 linear km (2 m wide) and production between 2500 and 4000 tons annually [12]. Variation in production is largely due to risks of both frost and sustained drought, but also the nature of the production system itself. Grown in hedge rows and as land boundaries, roses are complementary to principle agricultural production produced on the farm, primarily cereals and summer vegetables, and from which they receive cross fertilization and much of their water requirements.

Pruning, maintenance, and picking have traditionally been undertaken by females in the household, but within the ambit of their main duties in supporting agricultural production of other crops, together with male household members. Women invited to a workshop in the village to discuss challenges and constraints in the production of roses indicated that approximately 10% of their time is spent on roses, mostly during the harvest months of April and May, and with a contribution to household income not exceeding 20%.

Farm households producing roses have several options for marketing (see **Figure 2**): (i) sale of fresh petals to intermediaries or directly to industrial units, (ii) sale of dried petals to intermediaries for onward sale into national wholesale markets, or (iii) to the cooperative within which they retain membership. In the case of the latter, 10 producer cooperatives now exist, of which 7 are male only and 3 women only. All cooperatives produce the same products—rose water and dried flower petals—with gendered division in roles conditioned by history, culture, and a reaction to current policy.

Dried rose petals and rose water have long been associated with this village, but commercialization of rose petals was only realized in the 1940s when, under French occupation, perfumeries from France encouraged greater cultivation and technical assistance in the cultivation of roses for utilization in the production of oil. Of the two large private industrial units within proximity to the village center, one remains from the French colonial era whereas the other to an investment arm of the ruling Monarch. As detailed by several farmers, and privately by one public extension officer, collusion between the two industrial units is argued to be one of the reasons for low prices paid to growers. Given technical parameters for optimal timing between



**Figure 2.** Rose value chain.

harvesting and processing of oil (approximately 4 h), farmers are limited in their ability to ship fresh petals to other factories outside of their village or internationally. Perishability, therefore, plays a key role in the ability to collude on prices, as picking occurs at 7 a.m. and delivery to the factory by 10 a.m. in order to be accepted for purchase. Advances in laboratory testing are equally important, therefore, in the ability for firms to collude as approximate time of picking can be verified on delivery.

With collusion claimed to exist since the 1970s, farmers interviewed detailed how an insurrection in 1990 led to the uprooting of a significant number of rose bushes as a symbol defiance against state control. Sustained bouts of drought and reduction in supply forced firms to raise prices for fresh petals over subsequent years, but the nature of political interference in the setting of prices and control over the industry has not been minimized. Unlike workshops held in other villages for saffron, argan, and cactus, the Ministry of Interior appointed a senior security officer to attend our discussions with farmers, most likely to observe the nature of discussions. Convinced that the workshop was not a threat to the state, or a cause for future civil disobedience, the officer left on the basis of a request and receipt of a letter from the national research institute (INRA), co-hosts of the workshop, and which stated objectives of the workshop. Indeed, many farmers invited to the workshop did not attend, and on follow up, indicated that they were fearful of repercussions from discussions related to pricing and setting of prices for fresh rose petals.

The political nature of rose production systems, and currently limited contribution to household income, raises interesting questions of why rose has been included within the Morocco Green Plan. With the highest estimated production of fresh roses at 4000 tons annually, and a price of 13 dirhams per kg for fresh rose petals, small farm households within the village stand on a potential income gain of 52 million dirhams (approximately US\$6.5 million) annually. This estimated income gain is based on potential market supply, given that only 30% of production is currently sold in fresh form to industrial plants engaged in the production of oil, 3% to cooperatives engaged in the processing of rose water, and the remainder (67%) sold in dry form. With a conversion ratio of 4:1 of fresh to dried, and a (high) price of 100 dirhams per kg for dried roses, estimated potential income for farm households from dried rose marketing was 6.7 million dirhams (approximately US\$850,000) and 17.2 million dirhams (approximately US\$2.1 million) from fresh rose sales to industrial units and cooperatives.

In light of these figures, and given Morocco's ranking as third largest producer of rose oil [6], a concentration on roses under the Morocco Green Plan is valid. Yet, the formation of cooperatives under Pillar II of the plan and poverty alleviation through production cooperatives is somewhat difficult to understand for the rose sector. On the basis of focus group discussions, there is a generally held notion that (i) it is easier to obtain grants and subsidies for women cooperatives, (ii) for the purpose of marketing dried roses and rose water, the characteristic of the product, and the target consumer, lends itself to better sales if marketed by women, and (iii) applications for the start-up of cooperatives by the youth (males in particular) are sometimes viewed as threatening to local security services and face long delays. Women appear to be less threatening as an organized group of producers relative to males and specifically young males.

Returning to the calculation on potential income from the sale of fresh and dried roses, a focus on expanding marketing and sale of dried roses is clearly in the interest of farmers given (i) greater choice in markets, (ii) an ability to diminish the constraint of perishability and more importantly, (iii) removing surplus of fresh petals from the local market in order to influence a higher price paid by industrial processors. While rose water production from fresh petals, at the cooperative level, offers an interesting option for diversification, relatively small scales of production, high equipment costs, and competition from synthetic imports (rose essence) limits the ability for take-off and impact for rural livelihoods. Equally important is a move toward organic certification, particularly for products that are within the wider rubric of 'cosmetic' products. But are farmers within Kalaa M'Gouna able to respond to this niche? Planted as hedges around small-scale production areas of cereals and vegetables, cross contamination of fertilizers and pesticides is impossible to avoid within the current production paradigm practiced, and therefore, the ability to fill this niche is limited.

Is there a possibility to expand areas of production under rose, and with new paradigms of production that have sound environmental underpinnings, but still commercial in nature? Farmers responded positively to this possibility, but noted a fundamental constraint in access to productive land that has been in reserve since French colonization and allocated to senior military officials under favorable lease. Inability to access previous tribal lands that were nationalized at independence is also a source of concern and limits potential for rural households to engage in more commercialized rose farming systems. Farmers also mentioned that in an environment where there is excess supply of fresh rose petals in the local market, with no options for exporting fresh petals outside of the village, commercialized production by farmers will only lead to further downward pressure on fresh petal prices. While relevant and correct, the fact that a recent private entrant into the industrialized sector has initiated production of rose oil, with purchase of fresh rose petals from the village, suggests that there is scope for industrial expansion of rose oil, and therefore a larger market for the sale of fresh rose petals.

That the new entrant has not engaged in collusion on prices with existing industrial units is a positive development, but there is one looming risk. Farmers and extension agents state that the new industrial unit has also initiated production of roses on a commercial scale within the village and to supply its own plant. Scale of operation will determine whether this commercial production of roses displaces any current supply from small households to the other two industrial units, and what impact this will have upon producer prices for fresh rose petals. On a positive note, larger scale of production may result in wage opportunities for picking, rates for which will depend upon availability of specialized female labor in season and at critical periods.

So, we return to the question of whether small-scale farmers should be concentrating on expanding cooperative production of rose water or concentrating on dried roses. Market studies are clearly needed to answer this question, but cursory analysis presented herein suggests that the government should revisit the premise for promoting producer cooperatives, particularly for women, without a clear understanding of available markets for the product under transformation, the specific nature of the product itself, and constraints of expanding



production of primary inputs for supply to the cooperative. Moreover, if the government is indeed interfering in the setting of prices, through collusion between Monarch investment units and private industrial units, the premise of Pillar II of the Morocco Green Plan is seriously undermined for the rose sector.

Small rose farmers in the rural village of Kalaa M'Gouna continue to rely on remittance incomes, limited production of cereals, and on a hope that roses will one day pave the path out of poverty.

### 3.3. Cactus: waiting for a ride

Cactus production in southwestern Morocco is predominantly undertaken within the province of Sidi Ifni on: (i) small-scale private land, (ii) marginal public land, and (iii) on hills of marginal quality land. With an average of 126 mm of precipitation, cropping options are limited, and proximity to the ocean provides an ambient environment for cactus to prosper. Yet, untimely precipitation or poor distribution of precipitation is a significant risk to producers. In 2013, farmers and industry representative interviews suggest that poor and uneven rainfall was the cause of loss for 80% of harvestable yields, well above the typically high loss of 40–50% in an average year. Discussions with farmers and public extension agents indicate that the severity of loss is related to an inability for producers to ship to market in a timely manner, and largely due to a lack of transportation and marketing intermediaries at critical points of the season. While markets in Agadir-Inezgane and farther north place a premium on cactus from Sidi Ifni, market intermediaries choose their routes based upon profitability and time of transport. Tomatoes, citrus, and berries produced in areas of proximity to Agadir are naturally more lucrative and, therefore, number of vehicles and middlemen travelling to the southern region of Sidi Ifni during vegetable and citrus harvesting seasons are argued to be in limited supply.

With claims of limited transportation options and cactus rotting in the field at such high rates, one is perplexed by recent initiatives under the Morocco Green Plan to subsidize the planting of cactus shrubs at a cost of 4000 (approximately US\$500) dirhams per hectare. One explanation offered by officers at the Ministry of Agriculture is that the Morocco Green Plan has set a target of reducing the area under rainfed cereal plantation, and given limited options for replacement in an area with limited precipitation, cactus is a natural choice. In addition, the plan also sets targets for limiting desertification and replanting of public forest lands, an equally compelling reason for pushing cactus plantation into areas of marginal land productivity.

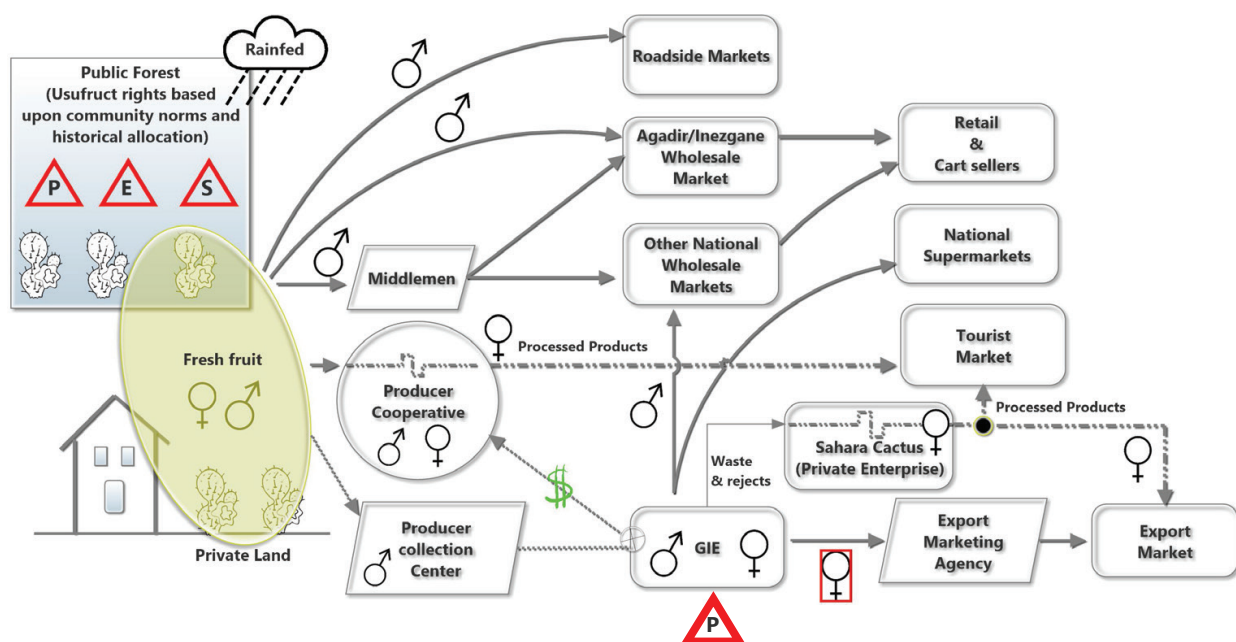
Discussions with farmers indicate that an average household is likely to earn 25,000 dirhams per year from the sale of cactus, which is lower than the minimum agricultural wage rate. Given that there are limited alternative cropping options for most small rural households in the area, men have traditionally engaged in apiculture, whereas women devote their labor to harvesting and basic maintenance of cactus plantations. Considered a lazy man's crop, rainfed production requires little maintenance and no material inputs in the production of cactus fruit. All sales of fresh fruit from the farm gate are therefore combined returns to female labor (including management) and returns to male contribution in their traditional role of marketing.



Given issues of perishability and need to immediately ship to market at harvest, fresh fruit cooperatives, outside of larger urban markets, are unlikely to succeed, unless they add further value to the product. In attempting to mitigate this constraint, the current cooperative structures in cactus are comprised of (i) male cooperatives, which are merely organizational structures for maintaining collection centers/staging areas which organize collective member fruit for shipment to federated cooperative structures (GIE) and onwards for export, (ii) women cooperatives that extract cactus oil and prepare a variety of dried and processed cactus products.

**Figure 3** illustrates the value chain for cactus fruit in the Sidi Ifni province. Exports of fresh fruit through the GIE have been limited and undertaken from a recently built factory provided under the Green Plan. At a cost of 12 million dirhams (approximately US\$1.5 million) a visit to the factory reveals lavish office spaces, packaging equipment, cooling facilities and all necessary warehouse equipment, but no revolving working capital for salaries, purchase of packaging material, and most importantly payment for fresh fruit supplied by farmers within the region. A one-time grant for testing the operation, with a shipment to Eastern Canada earlier this year resulted in complete loss on arrival and due to a lack of appropriate cooling and packing measures on departure from Morocco.

This initial export experience has highlighted fundamental issues of limited coordination between various public and private actors, and a potential weakness of the Green Plan. A lot of effort has seemingly been placed on infrastructure development and outputs rather than outcomes and investments in approaches that are sustainable, replicable and with measurable impact on small farming households—the intended beneficiaries of pillar II of the Green Plan. In the case of limited numbers of women cactus cooperatives, subsidized equipment for extracting cactus oil, renovation of buildings and small equipment for manual processing of cactus (pickled cactus ears, dried fruit, etc.) are being undertaken by the Morocco Green Plan as well as other international partners such as the United Nations Development Programme (UNDP).



**Figure 3.** Cactus value chain.

On the positive side, a stable market for cactus oil has the potential to mop up significant amounts of cactus fruit that lays rotting in the fields, only a portion of which is fed to the limited number of livestock within the immediate area. With 30 kg of fresh fruit required to obtain 1 kg of seed, and between 20 and 60 kg of seed to produce 1 L of oil, each liter of cactus oil has the potential to remove between 600 and 1800 kg of fresh fruit from the field. At current retail prices of close to US\$500 per liter, a stable market for cactus oil has the potential for a win-win solution if there is limited variation in the range of seeds needed to produce oil. At the high end of 1800 kg, the product is unprofitable. The fundamental problem with variation in seed quality for oil production lies in rainfed production of cactus. Effective productivity and product for processing requires commercial production of cactus, with provision of drip irrigation and application of judicious amounts of management and technical inputs. Commercial trials in this regard have been initiated by private entrepreneurs in Sidi Ifni and with plantings to bear fruit this year. Whether or not this production is tied to a specific industrial unit for production of processed cactus products is unclear. What the investment does suggest is that there are perceptions of profit to be made in cactus, but whether or not this results in trickle down benefits to small household producers is less clear. While market development for processed cactus products, particularly oil, will have spill over benefits to the local community in terms of wage labor, it is unlikely to have an impact upon the volume of sales for fresh and ripened cactus at the farm gate for small producers. This is largely due to variation in quality of seed for processing and due to climatic variation and the need for standardized commercial production, which has now been undertaken.

For small producers of fresh cactus fruit, the only significant opportunity lies in sales of fresh fruit to national and international markets. The argument that middlemen do not purchase cactus in high volumes during the tomato and citrus seasons is somewhat weak. Based on discussions with wholesalers and street cart vendors in the urban center of Agadir, a more likely explanation is an economic one, and that related to the protection of marketing margins through not flooding local wholesale markets. A dedicated study is required to study this conjecture, but one underlying question is why cactus farmers do not collectively hire trucks and ship their cactus to market, in the absence of the middle-men. Access to credit is brought up frequently in this regard, but is also a weak argument given that sales of cactus in wholesale markets are paid in cash on delivery. With perseverance, a more plausible explanation of cactus under the domain of women in the household, and men tending to their bees in the hills and valleys was uncovered. Without significant male support, women are reluctant to engage in the marketing of cactus given cultural norms and particularly so if this requires their accompanying the shipment to Agadir in order to secure the sale.

This social (and perhaps) cultural constraint brings back into play the export-oriented factory built under the aegis of the Green Plan, and an opportunity for this facility to play a critical role in providing significant income to the region. Why there has been limited movement in supplying necessary skill and working capital to leverage investments already undertaken is a source of confusion to many within the cactus sector. What is clear is that there is a lack of coordination within the implementation of the Morocco Green Plan, and specifically between a number of governmental agencies with mandates to provide (sometimes competing) support services.

Cactus production in Sidi Ifni is predominantly under the domain of women who harvest, sort and prepare cactus for sale at the farm gate. Unable to take the ride to market, in order to sell their fruit during periods of excess supply, women have been relegated into the passenger seat and are in transit awaiting a ride to ship their cactus products to market.

### 3.4. Saffron: all we need is cash

With a relatively small population of 12,000, the village of Taliouine sits on the road between the commercial center of Agadir and the rose-producing village of Kalaa M'Gouna. With over 2000 families involved in the production of this crop, the importance of saffron to stability in livelihoods, and to the economy of the village is significant. Male and female roles in the production of this highly prized commodity internationally are delineated along lines of comparative advantage. The application of brute strength is provided by men in the preparation of fields for planting and water, while women engage in early morning picking of flowers, and a delicate procedure of plucking stamens from the flower.

Labor shortages, particularly for skilled female labor, are implicit in norms related to payment for picking, with one-fifth of the output payable in a year when labor is abundant, and up to one-half when skilled female labor is in short supply. Focus group discussions with women suggest that a historical culture of self-help (*Tiwizi*), where women collectively harvested and assisted each other in the plucking of stamens has eroded over time. This is largely due to emigration of male household members, leaving behind a greater burden of household duties for women; as well as general societal shift toward individuality. Interestingly, male cooperative members suggested that women cooperatives for saffron were an avenue through which to revive a historical custom of *Tiwizi*, a claim dismissed by female cooperative members in a separate discussion. Women suggested that a primary reason for women cooperatives to form was to obtain free saffron bulbs, provided by the public extension services, and as a programme aimed at fostering expansion of saffron production under the Morocco Green Plan. While interesting, only 2 of the 36 existing cooperatives in the village are women only, and of the remaining 34, only 2 are mixed cooperatives. In the case of the latter, women belonging to this cooperative were widows or women whose husbands were away from the village for income-generating opportunities. A heavy concentration of male only cooperatives is clear indication of the strong role that males play in the marketing of saffron and in decisions related to the planting of saffron.

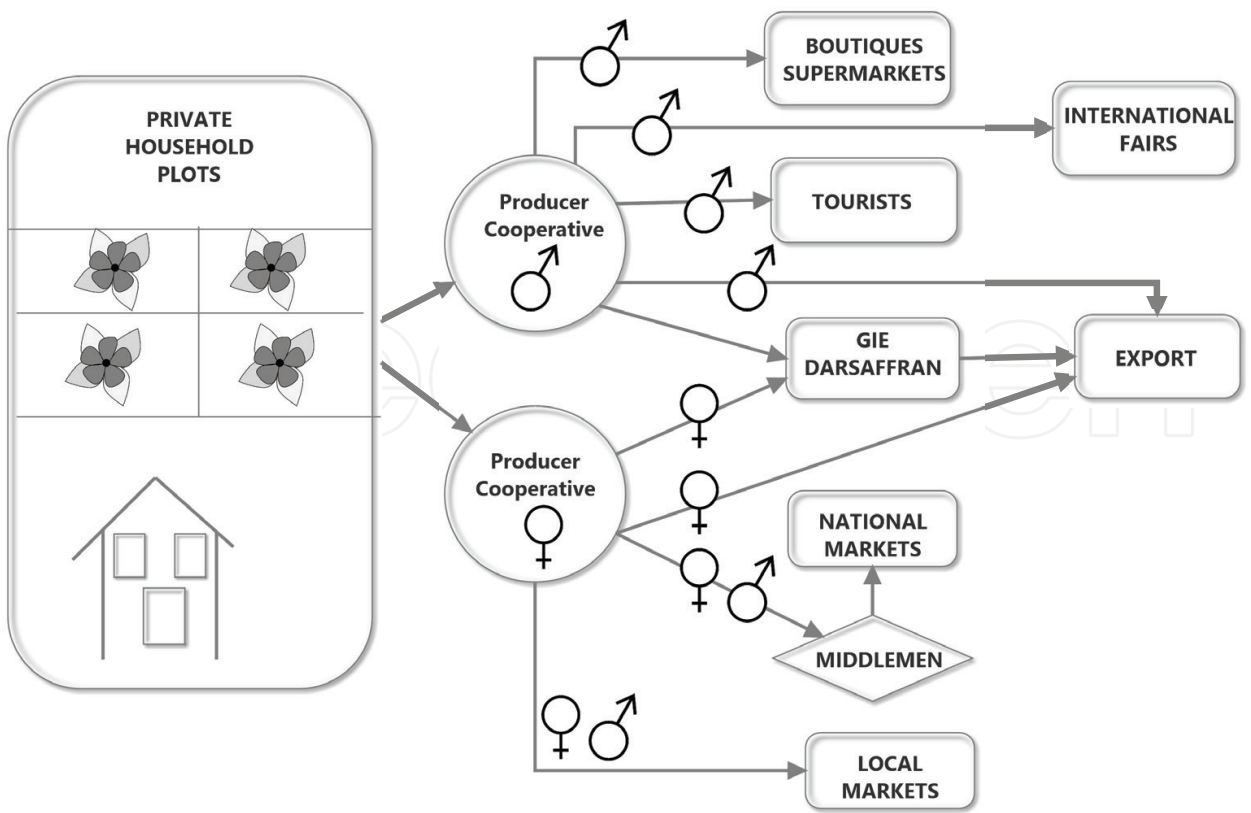
With up to 50% of land planted under saffron for an average household (ranging from  $\frac{1}{2}$  ha to 1 ha), the decision of land allocation is based on labor and water constraints. Given small parcels of land and limited family labor, households interviewed indicated that saffron will always remain a family-based activity for the household and not a commercial activity. In large part, this also reflects the role of saffron in smoothing out income during the months of November to January, when there is limited income from agricultural activities. A claim that saffron has never been immensely profitable to the farm household is plausible, given an understanding of income streams over the year and current challenges of credit within the sector. Traditionally, and even contemporarily, saffron continues to be used as a form of currency within the village, in barter trade, as well as in setting up accounts with shopkeepers

for payment by saffron at the time of harvest. This continued reliance on saffron as currency in hard times raises a larger issue of market power and lack of ability for farmers to negotiate better prices.

The role of cooperative formation and social organization under the Morocco Green Plan was aimed at improving farm margins and access to markets for local products, with saffron identified as one key product. Yet, exports through cooperatives remain limited, with most sales of saffron still destined for local and national markets. In limited cases, and with the support of internationally sponsored NGOs, one male cooperative has been successful in the supply of saffron to Italy on renewable yearly contracts. Others have informal contacts with overseas buyers who place orders sporadically, with prepayment through the post office and shipment through courier. In general, cooperatives rely on tourist flows, sales at exhibitions and fairs, and to middlemen who onward sell into national markets.

**Figure 4** illustrates the value chain for saffron in Taliouine village. One interesting point to note is the sale of saffron to the GIE (groupement d'intérêt économique). As a second level cooperative promoted by the Morocco Green Plan, its objective is to act as a single selling desk for cooperatives, in order to negotiate better prices and to promote exports. While interesting in theory, a significant challenge in access to working capital renders the GIE as an organization of little value in practice.

Due to cash constraints, the GIE is unable to pay saffron farmers on delivery. As in the case of argan, poverty and a need for cash mitigates the ability for poor households to sell saffron



**Figure 4.** Saffron value chain.



to the GIE on consignment. With 300 kg of storage capacity and an average market price of 13 dirhams per gram, the GIE would require 4 million dirhams of revolving credit (approximately \$US500, 000). Management of the GIE suggest that while high, it is possible to obtain credit from formal banking institutions, but a requirement for personal guarantees from the directors of the GIE, as well as collateral for securing the loan mitigate this potential. A lack of coordination and missing links within the implementation of the Morocco Green Plan comes up again very strongly. One (male) farmer within a focus group discussion asked the question of why the government engages in the supply of free saffron bulbs to farmers, but does not buy the saffron from farmers at reasonable prices. The GIE is asking a question of why the Morocco Green Plan has implemented a model that it does not want to fund in order to get it off the ground.

Amid all of this confusion, traders and market intermediaries buy saffron from the local market at prices close to the cost of production and sell onwards to national markets or international buyers at a margin of more than 10 dirhams per gram. With estimated production of over 3000 kg per year in Taliouine, possession of cash translates into market power, and at present, power does not lie in the hands of the cooperative or the farm household due to a lack of cash.

#### 4. Reflections

Given our focus on the gendered implications of pillar II of the Morocco Green Plan, our unit of analysis has been the agricultural cooperative. Cooperative production, processing, and marketing are being promoted, given conventional wisdom that small farmers are disorganized in production and marketing and, therefore, subject to opportunistic behavior of marketing agents—both Moroccan and international. Focus group discussions and key informant interviews indicate a farmer-centric view that disorganization at the landscape level reflects a lack of coordination between government agencies, where roles and responsibilities of public bodies are either not clearly defined or overlapping. Traditional transfer of technology models within the system of public extension continue to persist, with little (ostensible) movement toward more participatory approaches for innovation that embody joint learning and action-oriented research. Subsidies on primary inputs (seed, fertilizer, fuel) and public investment in infrastructure (equipment and buildings) for agricultural cooperatives are provided without matching investments in the provision of technical training, for knowledge on effective practices related to storage and transportation of perishable commodities to national and international markets, as well as in the provision of knowledge on effective management practices. In those limited instances where technical assistance is provided and gratefully acknowledged by producers, there are claims of interference by the Ministry of Interior in price fixing (such as for rose petals). This, in collaboration with parastatal processing plants, such that the focus for many small farmers is on quantity and not necessarily quality. We are unable to validate the claims of price fixing, though anecdotal evidence does point to the same. If found to be true, the Green Plan objective of enhancing access to national and international markets is severely undermined.

Our findings also reveal that constraints on land, labor, and equitable access to working capital, exacerbated by the impact of sustained drought on productivity potential, are crosscutting for



all four value chains studied. While these issues can be addressed over-time through appropriate sectoral and cross-sectoral interventions, it is the risk of elite takeover within cooperative structures that presents a danger for further entrenchment of rural poverty. More effective organization of production for the commodities studied, each with its own unique specificity of production and demand, may ironically lend itself to invited commercialization and thereby capture of cooperative production units—away from cooperative decision making by its members and toward private vested interests. How commercialization can be managed, without exclusion of the marginalized (particularly women) will depend on how the government eventually comes to terms with many difficult issues:

1. One premise of the Green Plan is a desire to move away from a history of paternalism through the subsidization of agricultural production and state-led directives for cooperative production. Relaxing the boundaries around which civil society organizations are permitted to operate would be in keeping with the tenets of the plan; yet recent geopolitical events within the region (“Arab Spring”) may be of significant worry for national security systems. How civil society organizations in rural areas (cooperatives, community-based organizations, non-governmental organizations, self-help groups, etc.) achieve greater independence in terms of organizational structures and economic independence over time remains an open question. Within the current environment of regional insurrection and instability, it is quite possible for paternalism to be strengthened as a counter measure to potential insurrection.
2. In arguing for greater independence of civil society organizations to operate, for the enhancement of well-being within rural communities, there is a clear need for the state to tie the Green Plan with a wider process for area development—not simply agricultural development. While value chain initiatives, undertaken on a commodity basis, are necessary and important in terms of improving livelihoods, trade-offs between economic empowerment and well-being are likely to lead to potential disempowerment of marginalized members of society. Our analysis reveals that many of the women within the cooperatives visited work significantly long hours (often 12 or more hours in a day), with limited opportunities for institutionalized child care. While reports exist of increasing enrolment of girls into high school [19], given improved economic circumstances, our analysis indicates that rural families may have no choice but to keep their daughters at home. Despite subsidies on school fees and options for boarding, our discussions revealed that in many cases, school enrolment in peri-urban areas is not sustained given high transportation costs for children to return home for the weekend or for national holidays. Family dynamics and livelihood structures have ostensibly changed with the proliferation of production cooperatives. Young mothers are more than likely to have their adolescent children accompany them to the cooperative. Some cooperatives provide child minding and educational services, but most are basic in terms of infrastructure and their ability to provide social services. With larger families, the burden of child care often, therefore, befalls on older siblings—sisters. One trade-off from an economically empowered mother, through more

profitable and equitable interventions within value chains, is a potentially disempowered daughter, who may be deprived from sustained educational activity, and equally important, the ability to learn through play.

3. Within our focus group discussions (male, female, mixed groups), there was consensus that the household, as a unit, was much better off economically since the proliferation of production cooperatives. Males clearly acknowledged changes to social and cultural norms related to the participation of women in nontraditional economic activities. Females felt more independence and a sense of empowerment given greater respect accorded by males within their household, and within their communities more generally. When asked if this is a fundamental change in societal norms, and based on self-realization, there was much concern related to long-term embedded change. Males appeared to be content with the realization that increased earnings through economic engagement of female members within the household is an increase in their own (gendered) disposable income. Increased female earnings translate into reduced burden for males to cover household expenses, inclusive of child rearing, educational and medical expenses. With the risk of potential unraveling of economic opportunities, for example within the argan sector, will restructured social and cultural norms for female economic engagement persist, or will they revert to historical constraints?
4. The current system of implementing the Green Plan, through paternalistic and subsidized initiatives, invites market intermediaries to utilize inequities and marginalization as entry points for exertion of market power. Within the prevailing literature on agricultural innovation, we find an overwhelming focus on value chain development approaches. While improvements in marketing margins, through more effective linkages between producers and other actors within the value chain is valid, there is limited attention paid to the trade-offs that occur at the household and community level through innovation. These trade-offs arise in several different areas, such as on those related to health and nutrition, education, opportunities for farm and off-farm income sources and sometimes more conspicuously in terms of inequitable gender-based access to resources and economic opportunities for gainful employment. A focus on innovation systems adds value to initiatives focused on improving efficiencies within value chains by adding an element related to a better understanding of how change occurs, and how to facilitate more mutually beneficial and sustainable social and economic interactions between stakeholders. Innovation systems are inherently social systems, as they comprise a set of actors who are bound by a common goal for seeking avenues to mitigate existing challenges and constraints which are of mutual concern. These systems naturally exist, but require facilitation and coordination if they are to achieve effectiveness in terms of enhancing efficiency, equity, and equality in opportunity to access resources (inclusive of knowledge resources). Project-based initiatives undertaken through donor-funded initiatives are unlikely to succeed in terms of institutionalizing effective process for innovation, within and between value chains, and through linkages with wider area development approaches. This is largely due to current geopolitical concerns which are likely to limit the number and breadth of organizations licensed to undertake

such activities as well as time-bound project timelines which are of short duration. International and national research agencies are likely to be better placed to facilitate innovation systems that embody the notion of inclusiveness and equity. Whether they are ready to take on this responsibility remains moot, particularly in terms of raising potentially sensitive issues related to (social) policy reform and empowerment of rural communities.

## 5. Future directions for research

Findings from this study point to several areas that require further investigation:

1. What are the drivers for institutional change within the rural areas of Morocco, and more generally within the wider Middle East-North Africa region? This requires a better understanding of institutional capacities within rural areas, particularly in terms of gender-sensitive development, and toward the uncovering of avenues for how public-private partnerships can best be fostered within a contemporary environment of regional instability (economic, political) and conflict.
2. How competitive are the producer cooperatives set up under the Morocco Green Plan and are they able to stand on their feet without significant state support (subsidies)? In addition to economic analyses, there is a need for better understanding of the long-term risks to empowerment and intra-household dynamics which may affect long-term cooperative survival.
3. How have female cooperative members invested their increased income sources? How much of this has been directed to consumption within the household, to investment in productive capital assets (eg., livestock), and how much is being directed to innovation (technologies, techniques, vocational education, and training)? An answer to this question may assist in shedding light on those impacts from cooperative formation and participation that may not have been contemplated within the original conceptualization of the Morocco Green Plan and into areas that deserve greater attention in terms of enhancing equity in access to private and public goods and services (including rural advisory services)

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