

The Social and Environmental Context of Argan Oil Production

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Abstract

In recent decades, argan oil has become one of the most expensive cosmetic oils on world markets. This review outlines the social and environmental context of the argan boom, highlighting its consequences on local livelihoods and conservation. It examines the claims that the argan oil boom has benefited the local population and that it encourages the conservation of argan woodlands.

Keywords: Argan oil, Development, Forest degradation, Globalization.

Argan oil is extracted from the seeds of the argan tree (*Argania spinosa*), an endemic species from Southwest Morocco. In the last two decades, argan oil has become a globally prized cosmetic and *haute cuisine* ingredient. Aware of its economic potential, pharmacologists and chemists have been investigating the traditional health claims related to argan oil [1,2]. They are also looking for hitherto unknown desirable properties of the oil or other argan products [3]. Argan oil is actually one of a series of “miracle” commodities of natural origin that have emerged recently on world markets, retailing at skyrocketing prices due to their pharmacological properties and to the other claims associated with them (e.g. sustainability, fairness, quality) [4]. Often, these commodities are traditional products that have a history of local use and trade before they become a global niche commodity. The boom in such products takes place in a pre-existing social and environmental context and has consequences on the livelihoods of producers and on the environment where the product originates. In the case of the argan oil boom, in addition to the economic benefits to enterprises, it is usually assumed that the boom improves local livelihoods by providing additional cash to producer households, and that it creates incentives to protect the argan trees. In this review article the context and consequences of the argan oil boom in Morocco is outlined and evaluated, based on the literature.

Extraction of argan oil is a labor-intensive activity traditionally carried out by women. Traditionally, it involves harvesting the fruit, removing the pulp, cracking the hard shell of argan nuts to extract kernels, roasting the kernels, grinding them to produce a thick paste, and kneading this paste to extract oil [5]. The residue (cake) is usually fed to animals but retains valuable properties that are currently being investigated [6]. Figure 1 shows the different products obtained at each stage of production. When done manually, this transformation process takes two to three days' work per liter of oil, not counting the time needed for harvest. Partial mechanization at the final oil extraction level now allows bringing this down to about one day and a half together with increasing oil global quality.

Although there is evidence that argan oil was already being produced a millennium ago and that it was traded regionally during the Middle Ages [7], it only acquired its extremely high market value during the late 20th century, when it started being traded internationally.

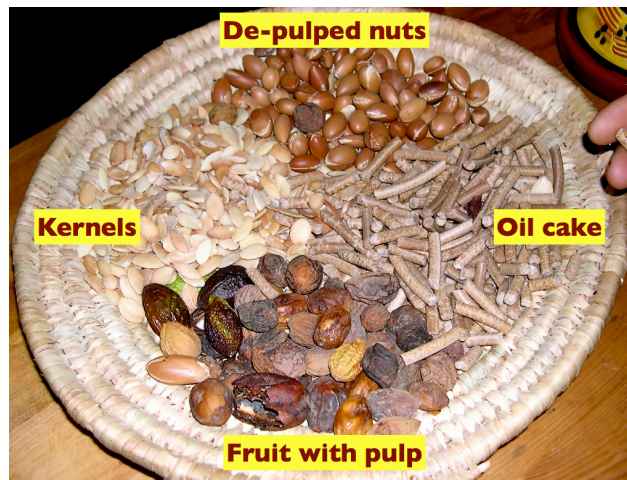


Figure 1: The products obtained at intermediate stages of argan oil production: from fruit to nuts to kernels, from which the oil is extracted. Oil cake is a by-product.

In the 1990s, cosmetic firms and the German development agency GTZ took interest in this resource for its pharmaceutical properties and for its potential as a «triple win» solution for conservation, rural development and economic growth [8]. Women-led cooperatives were created with the support of, among others, the European Union and the Moroccan *Agence de Développement Social*. Private firms entered the market, buying raw material for processing in dedicated plants. Demand for argan oil exploded in Europe and the US, and prices rose accordingly: export prices now reach over US\$400/liter.

With the boom in argan oil trade, some extent of product differentiation occurred, most notably the differentiation between *edible* (i.e. from roasted kernels) and *cosmetic* oil (i.e. from unroasted kernels). A range of cosmetic products emerged that had argan oil as one of their ingredients: soaps, creams, moisturizers and others. The market for kernels exploded as production shifted away from rural households and towards processing plants, thanks to the partial mechanization of oil extraction. Currently, the process of cracking the nuts to extract kernels is still manual, but it can be expected that full mechanization will happen within a few years. This, while it would improve productivity, would also have strong implications both for local households who might be excluded from the high-return activity of oil production and become providers of low-value raw material, and for the regional economy, because it would allow more de-localization of production. In this perspective, attempts are being made to bind argan oil production to its region of origin through the use of certification schemes, such as the *argane* geographical indication [9]. Figure 3. represents the current state of the argan commodity network.

The argan woodlands have probably been declining for centuries already, as attested by a recent study [10] that found a decrease in argan pollen concentration in marine sediments close to the Atlantic coast since the late 18th century. Several observers reported forest clearing in the first part of the 20th century, mostly attributed to fuelwood demand from the rapidly growing coastal cities and from Europe during the two world wars [11-13]. Forest officials reported a 1.16% (11100 ha) decrease in the extent of the argan forest between 1990 and 2005, or 740 ha/year [14]. A study in the Souss plain showed that middle- and low-density forests were opened to cultivation on 45% of a 22000 ha study area between 1969 and 1986 [15]. A recent report argued that about 9% of a wider study area of 55000 ha, including the former 22000 ha, were cleared for cultivation between 1969 and 2006, with an additional 5% cleared for urbanization and 32% with some forest density decrease [16]. A study in the Eastern part of the argan forest found a 44% decrease in forest density between 1970 and 2007 [17].

Forest decline in the argan woodlands results from a combination of lack of regrowth and loss of trees, which are in turn controlled by biophysical and social factors. These factors include: overgrazing, increasing aridity, fuelwood extraction, seed harvesting, expansion of irrigated agriculture and urbanization. Some of these factors may also operate indirectly by degrading soils, lowering the water table or removing understory vegetation. The relative importance of these various drivers is not known. A recent study showed that fuelwood extraction and increasing aridity played an important role in the density decrease [17].



Figure 2: Old argan tree

It has been commonly expected that the rising value of argan oil would create incentives for the conservation of argan trees. Recent studies, however, have cast some doubts on this assumption [4, 18, 19]. Firstly, the value derived by local producers from argan oil trade does not seem to be sufficient to provide an incentive to plant or protect the trees [4, 19]. Secondly, the near-complete harvesting of seeds may impede natural regrowth. Thirdly, part of the benefits from argan oil trade may be reinvested in goats [20], which prevent natural regrowth as well. Attempts have been made by the Forest Department (HCEFLCD) to afforest large areas, but success has been very partial until now. On the whole, thus, no effective solution has yet been found to stop the degradation of argan woodlands.

The argan region has been characterized by important social and economic changes during the last decades. The development of commercial irrigated agriculture in the Souss plain since the 1980's has made the region a prime exporter of fresh fruit and vegetables, and boosted the growth of regional towns and cities. Traditionally a source of international and internal migrants, the region became even more so in the last decades, and an important part of the population, especially in the southern part of the region, relies at least partly on migrant remittances today. Remittance flows, agricultural growth and urbanization have spurred a growth in non-farm activities that has provided livelihood alternatives for smallholders engaged in low-return traditional agriculture. The average household in the argan region today relies on a portfolio of livelihood activities, including traditional agriculture and livestock herding, migration, argan oil sales, and local non-farm employment.

One of the objectives pursued by national and transnational organizations supporting the commercialization of argan oil, especially through the creation of argan oil cooperatives, is the alleviation of rural poverty. Some fifteen years after the beginning of the argan boom, while there are signs of improvements for some households, the overall impact of argan trade on poverty alleviation has been limited. One study in the Northern part of the woodlands showed that households harvesting greater quantities of argan nuts at the beginning of the boom had increased their herds more than others [20]. The study did not however compare argan income to other income sources. Another study in the Eastern part, using a wealth index, found that argan income accounted for less than 5% of household income on average, and that the quantity of nuts harvested and of oil sold had not influenced wealth, whereas the amount of involvement in migration and non-farm activities had. The fact that benefits to local households have been limited relative to other income sources is attributable to several factors, including the volatility of production and prices, and barriers to entry to high-quality export markets [4].

The argan trade has also had various other social impacts. The creation of cooperatives has altered gendered relationships, bolstering the social recognition and self-confidence of women, but sometimes also spurring conflicts within households [21-22]. The cooperatives' agenda of promoting education may have increased school enrollment among girls [18].

Summing up, argan oil is a traditional product that has gained international recognition recently. Its production has always been embedded in a particular social and natural context. Its important role in the local household economy has made it a target for development and conservation policies, while its high added value has prompted a burgeoning of argan processing and retail firms in Morocco and elsewhere. The argan boom is commonly assumed to be an example of sustainable development, in that it is thought to provide incentives to protect argan woodlands while increasing the income of smallholders, not to mention the benefits to processing and export firms. The literature shows these claims have to be taken with caution. As of now there is no reason to believe that the boom encourages conservation. While there is some evidence of economic benefits to the local population in some parts of the

woodlands, in other parts argan trade has had a marginal economic impact. Social effects, on the other hand, have been both positive and negative. In order for argan oil and other argan products to provide sustained benefits both to the local population and to society at large, more attention will have to be given to the long-term sustainability of the argan commodity chain, and in particular to the issues of benefit sharing and woodland conservation. If this is done, the argan boom might indeed become an example of sustainable development. If not, it may soon slip out of memory as just another fashion that passed.

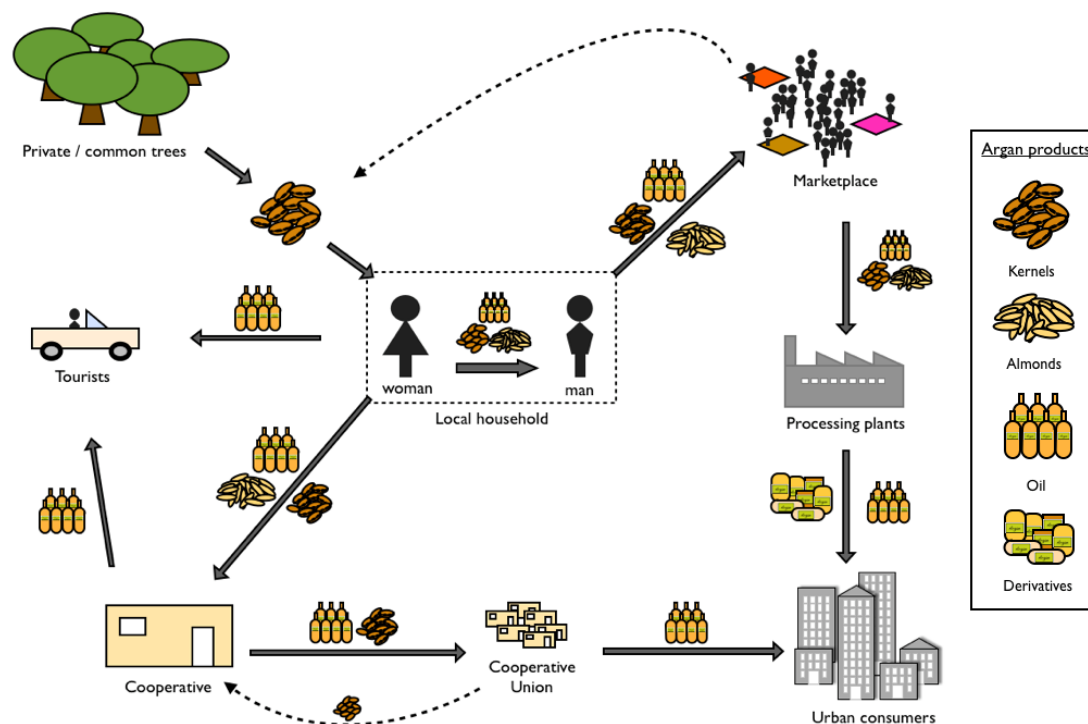


Figure 3: Schematic view of the argan commodity network.

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