

How the Baobab industry developed

From emerging to maturing sector



ABioSA CASE STUDY

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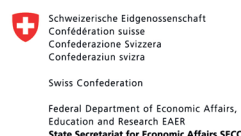
A glossary of biotrade terms can be found at www.abs-biotrade.info/resources

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Introduction

This case study summarises the commercial development of Baobab (*Adansonia digitata*) as an international biotrade product, and its journey from emerging sector, through intermediate phases, to becoming a mature industry over the last 20 years. *Adansonia digitata* is the only Baobab found in mainland Africa. It is different to the six different Baobab species growing in Madagascar.

Although the Baobab industry has not yet reached full maturity, its path to date is a useful guide for those wishing to develop other indigenous plant species for export. Of particular significance has been the central and catalytic role played by PhytoTrade Africa, as a non-profit trade association acting on behalf of Baobab producers.

PhytoTrade's persistent efforts were instrumental in securing product registrations required for access to key export markets, and in developing consumer and retailer awareness to drive demand for a previously unknown plant ingredient.

This case study focuses on Baobab powder as a Novel Food in the European market, as this was the main driver of the sector's development. It also refers to Baobab oil for the cosmetics sector.

Glossary for Baobab case study

Adansonia digitata - the one species of Baobab found in Africa

African Baobab Alliance - Pan-African industry association whose members represent an estimated 70% of Baobab powder and oil exports from Africa.

FDA - the Food and Drug Administration, a US federal agency responsible for protecting and promoting public health through the control and supervision of food safety, cosmetics, dietary supplements etc.

GMP - Good Manufacturing Practices (GMP), the practices required to conform to guidelines recommended by agencies that control the authorisation and licensing of the manufacture and sale of food and beverages, cosmetics, pharmaceutical products, dietary supplements, and medical devices.

GRAS - Generally Recognised as Safe, a US FDA designation that a chemical or substance added to food is considered safe by experts

HACCP - Hazard Analysis and Critical Control Points, a systematic preventive approach to food safety from biological, chemical, physical and radiological hazards in production processes that can cause the finished product to be unsafe, with measures to reduce these risks to a safe level.

Novel Food - European Union legislative category for ingredients which cannot be sold in the EU without pre-market authorisation from the European Food Safety Authority.

PhytoTrade Africa - non-profit association promoting trade in indigenous plant products for the benefit of small-scale producers in southern Africa

A short history of Baobab market development

Baobab is found in more than 30 African countries, and the fruits and seeds have a long history of traditional use on the continent. However, Baobab products were not exported from Africa until 2008, with the exception of small volumes from West Africa which were not compliant with export market regulations.

Most Baobab-producing African countries have an informal local market for Baobab, with the powdered pulp used to make a traditional beverage and food ingredient, and for medicinal purposes. A common snack across Africa is made from the powder-coated seeds, often mixed with sugar and food colouring and sold as sweets.

In South Africa the traditional market for Baobab was very small and the fruit had almost no monetary value. Across the continent there was, until the development of export markets, minimal evidence of cross-border trade of Baobab.

In 2001, PhytoTrade Africa, an association promoting trade in a variety of indigenous plant products for the

benefit of small-scale producers in southern Africa, adopted Baobab as one of its four initial focal species. This helped to give Baobab legitimacy on international markets. It quickly became apparent that the main obstacle to developing international trade in Baobab was the lack of regulatory approval in key markets.

PhytoTrade's key role as an intermediary, and success in securing regulatory approvals (see compliance section below) opened the door for international trade in Baobab products, which began in earnest in 2010. At that time, both Baobab oil and powder were virtually unknown in export markets and there was almost no initial demand.

Having unlocked regulatory barriers, Phytotrade was then instrumental in opening the market through activities including presenting Baobab at international trade fairs, introducing Baobab products to potential buyers, undertaking consumer awareness-raising campaigns and stimulating scientific research to validate Baobab's health benefits.



Emerging industry
Low demand



Mature industry
High demand

Market demand is one of the drivers of a sectors development



Distribution of *Adansonia digitata* (Baobab) in southern Africa

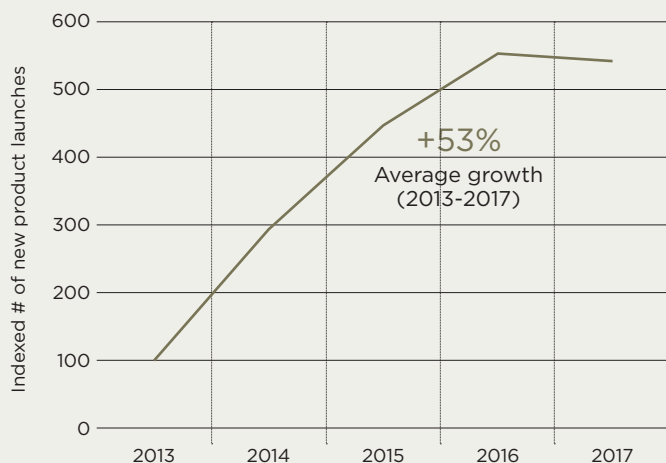


Baobab fruit pod and seeds

In the decade since its launch, the Baobab industry has experienced significant growth. However, markets outside Africa remain underdeveloped and international consumers still need to be educated on the benefits of Baobab, and become familiar with its taste. A 2018 survey of UK consumers showed that only 23% had heard of Baobab, of whom just 26% had actually tasted it.

The primary drivers of growth in demand have been brands built almost entirely around Baobab, among them Aduna in the UK, Baobab Foods in the US, Matahi in France, Baola in Germany. This reflects the need to invest in substantial awareness-raising, which is often beyond the scope of a company for which Baobab is just one of many ingredients.

As the Baobab market has grown, so the number of brands incorporating Baobab into their products has increased. From 2013 to 2017 there was 53% annual growth in new food and beverage products containing Baobab, with Europe accounting for 52% of launches and the US for a further 35%.



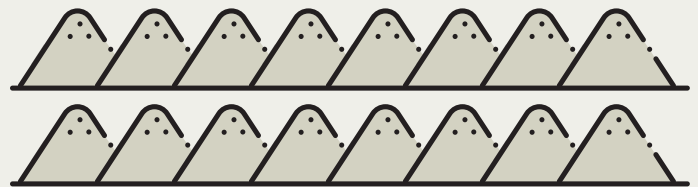
Indexed number of new F&B launches tracked with Baobab
(Source: Innova Market Insights, 2018)

The domestic market for Baobab products in African countries has also changed. In 2000 there was little interest in Baobab products in Africa. Today, spurred on by its success in international markets, local consumers are increasingly interested in Baobab's health benefits. This, combined with a desire to support local industry and products, has seen a steady rise in demand for Baobab within formal markets in Africa.

By 2020, exports of Baobab powder from southern Africa had grown to 438 tonnes per annum, with estimated local market sales of 288 tonnes. International oil sales are at seven tonnes and oil sales in southern Africa amount to 11 tonnes. The value of the Baobab industry to Africa has risen enormously, with tens of thousands of small-scale harvesters involved in the supply chain and a multitude of SMEs engaged in processing and value-addition. Baobab is still a niche product, but there is a lot of growth potential.



438 tonnes



Per annum Baobab powder exports from southern Africa

288 tonnes



Per annum Baobab powder local market sales in southern Africa

Compliance with international market requirements

Before 2001, when PhytoTrade began working with Baobab, no Baobab products complied with the regulatory requirements of any major export market. It took PhytoTrade seven years to register Baobab powder as a Novel Food in the European Union (see box below) at a cost of some US\$0.5 million (equivalent to US\$0.65 million today).

This was closely followed by registration in the US as an FDA GRAS (Generally Recognised As Safe) ingredient. These two registrations opened the door for regulatory approval in other territories around the world, as many other countries (with the notable exception of China) used the EU and/or FDA dossiers as a basis for approval (including Canada, Australia, Japan, South Korea, India, Malaysia, Singapore and Thailand). Products and ingredients from the six species of Baobab from Madagascar are not EU or GRAS registered and cannot be substituted for the African Baobab (*Adansonia digitata*) powder or oil.

PhytoTrade also facilitated donor-funded safety testing for acceptance of Baobab oil, preparing the dossiers that allowed it to be sold as an international cosmetic ingredient. This process incurred similarly high costs, mostly for technical and legal specialists, and it took about four years.

Suppliers of Baobab powder needed to comply with food safety standards, including the requirement for HACCP and Good Manufacturing Practice in processing plants. Most buyers also expect Baobab to be certified organic.

International buyers must meet regulatory requirements and have specific requirements for Baobab composition and nutritional profile, particularly when the powder is used in food supplements. Buyers will usually request a Certificate of Analysis to verify that Baobab meets their quality requirements. Harvesting, processing and packaging all influence the nutritional profile of Baobab powder. Current quality of Baobab is often measured against the standards in the Novel Food application submitted by PhytoTrade in 2008. A South African standard for Baobab oil is being finalised and will be applicable across the continent.

Compliance is also required in terms of product quality, and most buyers have clearly stipulated maximum tolerance levels for microbes, heavy metals and pesticide residues. In many cases these tolerance levels reflect national legislation.



Not compliant in all key markets

~10 years



Fully compliant

Novel Food registration

Ingredients like Baobab, that were not present in the European market before 1997, are categorised under EU legislation as 'Novel Foods', which cannot be sold in the EU without first obtaining pre-market authorisation from the European Food Safety Authority. Applicants need to provide detailed data on toxicological, microbiological and allergenic properties. This has to be reviewed by a scientific committee and is only approved once the committee is satisfied the Novel Food is safe for human consumption.

A **revised Novel Food Regulation** entered into force on 1 January 2018. It established a central authorisation process that made decision making faster and more consistent. The new regulation also increases transparency, through an **EU list of Novel Food ingredients** permitted on the market.

The revision also introduced an expedited approval process for food products classified as **traditional food (TF) from a third country**, with a documented history of 25 years safe use outside the EU. With sufficient proof, this classification makes registration in Europe somewhat simpler.



Definitions

Full Novel Foods Approval (FNF) as defined in Article 10 of the Regulation (EU) 2015/2283 of the European Parliament and of the Council on novel foods (Regulation (EU) 2015/2283, 2015).

Traditional Foods (TF) Notification (Article 14) of the NF Regulation (EU) 2015/2283 covers approval pathway of novel foods with a significant History of Use (HoU) in a third country (i.e. countries outside the EU) for the past 25 years of continuous use. Should the submission of this simplified TF Notification procedure not be considered valid, a *Traditional Foods (TF) Application (Article 16)* of the NF Regulation (EU) 2015/2283 could then be submitted based on further safety evidence as requested by the European Food Safety Agency. This usually requires more stringent safety criteria that was not required under the *Article 14 TF Notification*, such as acute toxicity studies, more rigorous HoU or improved quality control data.

Industry collaboration and structure

The Baobab industry today exists as a result of collaboration on many levels between producers, researchers, support organisations and brands. Before the mid-1990s, trade was almost entirely informal, with little in the way of coordination and collaboration. The first steps towards commercialisation were in the latter half of the 1990s, with small-scale production in Senegal, Kenya and Zimbabwe. From 1995, the Southern Alliance for Indigenous Resources (SAFIRE), an NGO based in Zimbabwe, started looking to forge collaborative partnerships with other potential producers in Botswana, Namibia, South Africa, Mozambique and Malawi. These efforts led directly to the formation of PhytoTrade Africa in 2001.

PhytoTrade's role in developing the Baobab industry was key. However, by 2012 the organisation had switched

focus to other undeveloped plant species and the industry went through a period without much collaboration.

In 2016 discussions began amongst different industry players on the need for a new representative grouping, and in 2018 the African Baobab Alliance was established as a Pan-African industry association. It is estimated that its members today represent more than 70% of Baobab powder and oil exports from Africa.

Its vision is to build the capacity of its members to produce Baobab of a uniformly high quality across the continent, support the growth of resilient and sustainable Baobab supply chains, finance and drive a research agenda to validate the health benefits of Baobab, and grow demand for Baobab through increased market awareness.



Unstructured

Intermediary organisation enabling dialogue, relationships and collaboration



Structured



Access and Benefit-Sharing (ABS) regulations

The domestic and largely informal trade of Baobab in Africa was not impacted by national or international law. Perhaps the first international agreement to have potential impact was the **Convention on Biological Diversity** (CBD), which came into force in 1993. This brought about legislation to ensure the conservation of biological diversity, the sustainable use of the components of biodiversity, and equitable sharing of the benefits arising from the utilisation of indigenous resources.

South Africa, Zimbabwe, Malawi and Mozambique, the main exporters of Baobab oil and powder in southern Africa, ratified the CBD between 1993 and 1995, as did Senegal, Kenya and some North African countries. By the time the Baobab export trade started around 2010, the majority of African exporter nations had ratified the CBD.

The key component of the CBD impacting Baobab trade is the requirement for signatory nations to develop

and administer laws and regulations relating to Access and Benefit-Sharing (ABS). This requirement has been reinforced by the more recent **Nagoya Protocol** on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, to which most African Baobab producer countries are signatories. At present, the monitoring and enforcement of ABS regulations varies considerably between African countries and there is significant variance in compliance.

Sustainability

The harvesting of Baobab fruit, from which the powder and oil is derived, is sustainable because the tree is not removed or damaged, and Baobab is not on the **CITES list** of endangered species. The increased value of Baobab fruit following the growth of the export industry has provided an incentive for local communities to value and protect the trees.



Unregulated



Regulated

Supply and demand

During its growth period, the Baobab industry has been characterised by frequent mismatches between supply and demand. Until Baobab powder was registered in export markets and the product began to be known, there was little demand and thus little supply. Since its registration as a Novel Food, and the success of marketing and awareness campaigns, growing demand was met with an increase in both the number of suppliers and the volume of production.

Although there are significant barriers to entry for new suppliers, the excitement about increasing market prospects and a perception that Baobab is relatively easy to produce resulted by 2016 in a glut of low-quality Baobab powder. This negatively affected the market, pushing some serious and established players out of

business, creating a downward pressure on the pricing, and reducing confidence amongst buyers in the quality of the product and reliability of supply.

Since then there has been a stabilisation in the supply situation. Many of the 'fly-by-night' producers are no longer operating, and buyers, now recognise the value of established and trusted suppliers who deliver a consistent, high-quality product.

Baobab is wild harvested, and is not practical to cultivate due to the long time the trees take to produce fruit. While many countries in Africa have a considerable surplus of available Baobab fruit and production capacity, in the medium to longer term the demand for Baobab powder could exceed the available supply.



Low



High

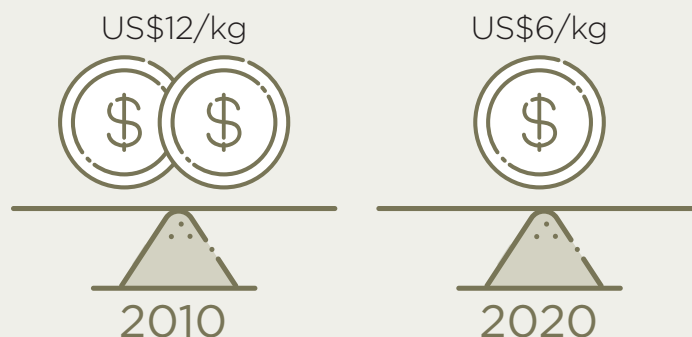


Constrained


Sales prices and margins

Prices and margins were high when Baobab powder first entered the market, as it was a niche novelty product with few competitors on the supply side. As the market expanded, the number of suppliers grew, resulting in competition and a dramatic drop in sales prices. The cost of production remained largely unchanged, resulting in much lower margins.

Wholesale prices for processed Baobab powder on the EU market dropped from around US\$12/kg in 2010 to around US\$6/kg in 2020. Given the tight margins, significant economies of scale are required to ensure commercial viability and to spread the benefits across the value chain to include a fair return for harvester communities. It is conceivable that prices and margins will increase in the medium to long term if demand starts to exceed supply. In the meantime, there is pressure for suppliers to improve the efficiency of their operations and increase volumes.



One unusual feature of the Baobab industry is the fact that Baobab fruit cannot be cultivated in plantations and must always be sourced from rural harvesters. This gives these harvesters ultimate control over the supply chain and the raw material pricing. Consequently, although the price for Baobab powder has gone down over time, the price paid to harvesters by and large has not.

 High margins

 Low margins



Technical knowledge and R&D

There are substantial bodies of traditional knowledge in Africa around the use and application of Baobab powder and oil. This ranges from medicinal uses (as an antipyretic, anti-diarrhoeal, anti-asthmatic, anti-inflammatory), formulation into an immune-boosting tonic, traditional food and beverages, skincare products, a coffee substitute and a plethora of spiritual and ritual uses.

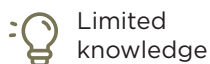
Prior to the establishment of the export industry in 2010, there was little documented scientific research around Baobab use, although this was needed to enter export markets and comply with regulations.

Much of the initial research into the health benefits of Baobab powder and techniques to process raw powder for use in food and beverage manufacturing was commissioned by PhytoTrade. However, as demand for Baobab products grew, so too did the interest in Baobab research and new product development. A number of independent research studies were commissioned and

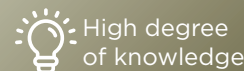
the volumes of published literature quickly increased.

Today many international food and beverage manufacturers are investing in the development of new products with Baobab as an ingredient. Baobab powder is used in many different formulations, from juices and fruit bars through to breakfast cereals, dairy products, desserts and confectionaries. Examples of prominent international brands using Baobab include Innocent Smoothies, Coca-Cola and Pepsi. Further product development is important to expand the range of applications and potential customers.

One important driver of growing consumer interest is the presence of compelling scientific research to validate the health claims and benefits of Baobab. This has been a focal area for the African Baobab Alliance. Ideally, research should be publicly-funded by governments and NGOs to benefit the entire industry, rather than commercial research resulting in privately-owned intellectual property.



Limited knowledge



High degree of knowledge



Health claims on the European market

The health food sector, the main market segment for Baobab, is driven by claims of nutritional benefits, which are necessary for manufacturers to distinguish themselves in the market. In many markets, claims cannot be made with substantiation, and companies require scientific data before they will make a specific claim of efficacy for a particular product.

Making claims without data is not allowed by EU and national legislation, and can lead to penalties such as recall of products and fines.

Claims made for ingredients such as vitamins and minerals are harmonised under the **European Food Safety Authority** in *Annex II of Directive 2002/46/EC*. Claims on **botanical ingredients** like Baobab are not yet harmonised. Manufacturers often base product claims on vitamin and mineral content to avoid objections from national regulators.

Product claims used in the European market for Baobab focus on three main goals: increasing energy and supporting healthy lifestyles, supporting immunity and improving general health, and supporting digestive health.

Some examples of claims include:

*'The Baobab tree is often referred to as **'The Tree of Life'**... Baobab pulp, which when dried produces the powder, contains more Vitamin C than an orange, more Potassium than a banana, more Calcium than milk and even more Magnesium than spinach.'*

'Baobab fruit is rich in Vitamin C and prebiotic fibre. [It] boosts [the] immune system, increases energy release, improves skin health, and supports gut health.'

Raw material value addition

In Africa's traditional and informal markets, the processing of Baobab powder seldom went beyond the manual extraction of powder from the pods. When the export market was developed, local processors began developing mechanised processing technologies. In the absence of any off-the-shelf technology, considerable ingenuity and invention was required, and the result was a wide range of different approaches across the continent. Even today the technologies vary enormously, and equipment in use ranges from rotary sifters and mechanical shakers through to trammels and pressurised dust separators.

The extent of local value addition in Africa is still limited, and the bulk of the product is exported as raw powder and oil. Breaking into international markets with consumer-ready products is not easy, so international companies with a strong brand presence and market knowledge are better placed to succeed. However, there are more and more value-added Baobab products appearing in domestic markets within Africa, and it is evident that the growing local interest in the health benefits of natural products creates significant opportunity to develop, manufacture and promote consumer-ready products for the domestic market.

 Low

 High





Conclusion

Baobab is today an international biotrade sector with ingredients and products being produced in and exported from at least ten African countries.

From humble beginnings in the early 2000s, the Baobab industry has grown to be an important economic sector, benefiting tens of thousands of mostly women harvesters who generate an annual income from harvesting and selling the fruit.

In addition to primary producers, the industry creates employment and value-addition opportunities at several stages in the value chain. As the sector is still in the relatively early phases of its industry life cycle, many more products, jobs and other opportunities are expected to emerge.

Perhaps the key lesson from the industry's growth and commercial development has been the catalytic role played by sector support organisations as intermediaries, notably PhytoTrade in the early days and more recently the African Baobab Alliance. Without this foundational work, the Baobab industry would not exist. It is highly unlikely that individual companies would, on their own, have been able to finance and undertake the critical work to unlock opportunities for Baobab, such as securing EU regulatory approval.

There are many benefits to be derived from developing new natural ingredient value chains in Africa, but they are much more likely to be achieved with systematic support and coordination from a sector organisation that drives collaboration, and builds mutually-beneficial relationships and networks.