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Development Barriers and a Potential Way Forward**

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# **The Bangladeshi Agarwood Industry: Development Barriers and a Potential Way Forward**

**Md. Joynal Abdin\***

## **Abstract**

Agarwood (which has various names around the Asia and Pacific region) is one of the most expensive non-timber wood products of the world. Bangladesh is producing three major products namely agar-wood, agar-oil and agar dust. It has many uses in the cosmetics (especially perfume) and medicine sectors. Agarwood has traditional, religious moreover cultural uses in different parts of the world. In addition to various Asian countries, agarwood has a long history in Bangladesh, especially in Moulvibazar and nearby districts. However, a few constraints are creating hurdles for a flourishing agarwood sector in Bangladesh. This paper provides first some background on the agarwood sector in Bangladesh and concentrates then on identifying development barriers of the agarwood sector in Bangladesh. Based on the identified development barriers, it then suggests a few recommendations. Proper regulatory support from the government could play a vital role to make it one of the major foreign currency earning sectors for Bangladesh.

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## I. Introduction

Agarwood, also known as the Wood of the Gods, is commonly known as gaharu in Malaysia, jinko (or jinkoh) in Japan, Adlerholz in Germany, bois d'aigle in France, pau d'aguila in Portugal, ood (or oodh of oudh) in the United Arab Emirates (UAE), eaglewood, aloeswood and gaharu in Indonesia, chen xiang in China, and aloeswood in most of the Sub-Indian continent (Touchwood Asia Co. Ltd., 2013). Agarwood is a fragrant and highly valuable wood found in the *Aquilaria* species of the *Thymelaeaceae* family (which are large evergreens native to southeast Asia). According to Pornpunyapat (2011), there are 15 species of agarwood around the world. However, it is only the infected wood that becomes agarwood. Agarwood is the result of the plant defense mechanism that associated with wounding, fungal invasion and possibly assisted by insects.<sup>1</sup> Various bacteria and fungi are associated with Agarwood formation, although it is still not absolutely clear which are important or even necessary.<sup>2</sup> Agarwood is listed as an endangered species in the index of CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) species,<sup>3</sup> which has however been challenged by Trygve Harris (undated).

Agarwood is mainly traded in three forms: wood chips, oil, and wood dust/powder. Agarwood chips are used as scented chips (mostly as house fragrance, like to receive honored guests).<sup>4</sup> Agar-oil is used in oil-based Arabian spray perfumes as well as in French-style body and clothes fragrance. Agar powder is mostly used as incense.

Major agarwood producing countries are Australia, China, India, Indonesia, Laos, Malaysia, Myanmar, Singapore, Thailand and Vietnam. Globally, there are two major market regions for agarwood consumption: a) north-east Asia and the markets of Taiwan, Japan, and South Korea, and b) the Middle East, especially the countries of the Arabian Peninsula. The international market price of agarwood chips varies currently between US\$20 to US\$6,000 per kilogram (kg), based on its quality (Akter et al., 2013). Distilled agar oil is valued as high as US\$30,000 per kg and the wood itself is worth up to US\$10,000 per kilogram (Touchwood Asia Co. Ltd, 2013).

There are no official records about trade volume of agarwood from Bangladesh to justify its importance in the Bangladesh economy. As a result, we analyzed this sector based on available global and regional documents. We depend upon secondary materials to discuss the uses of agarwood, agar-oil, and market trend of this industry. In Bangladesh, the production of agarwood started about 400 years ago in the Suzanagar union under Barolekha Upazila of Moulvibazar District, in Sylhet (the most North-East Division of Bangladesh). Initially, agarwood was produced solely from forest-based agarwood, but due to the limited access to forest-based agarwood, people started to cultivate agarwood in household lands, which was however of lower quality than the much older forest-based agarwood. As a result, finding best quality agarwood became a time consuming process. Despite the long history, the agarwood sector of Bangladesh does not flourish. This is due to a few policy anomalies and some other constraints.

To know that current status of agarwood industry of Bangladesh we have conducted a stakeholder consultation meeting at the Suzanagar Union Porishad Complex on May 21, 2013

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<sup>1</sup> Chetpattananondh (2012).

<sup>2</sup> Akter, Islam, Zulkefeli and Khan (2013).

<sup>3</sup> See United Nations Environment Programme (UNEP) World Conservation Monitoring Centre (WCMC) (2013).

<sup>4</sup> Antonopoulou et al. (2010).

with about 30 of the existing 50 entrepreneurs of the said sector present. Primary data was collected from a) discussions at the consultation meeting and b) written feedback of the entrepreneurs via a questionnaire.

The first objective of this paper is to provide some background on the types of agarwood products, uses of the products, major consumer markets, and global market trend of this sector, based on available local and international resources. The second objective is to analyze the current Bangladeshi agarwood industry. The third and fourth objectives are to identify development barriers of Bangladesh's agarwood industry and to recommend a potential way forward. The subsequent structure of this paper follows these four objectives.

## II. Historical Background, Uses, and Price Developments

### II.1. Historical Background

Agarwood has at least a 3,000 year history in the Middle East, Japan and China.<sup>5</sup> Agarwood is an integral part of cultural and religious landscape of Hindus, Buddhists, Muslim, Christians, Taos, Sufis, etc. In addition, it is widely used in medicinal practices of Ayurveda, Unani, Arabic, Tibetan, Sufi and Chinese. The followers of Buddha believe that the burning of agarwood and the taking in its aroma helps one reach the ultimate stage of meditation.

There are references of agarwood in many ancient literature and religious scriptures. Agarwood and its essential oil gained great cultural and religious significance in ancient civilizations around the world, being mentioned throughout one of the world's oldest written texts (the Sanskrit Vedas from India). The word 'aloes' has been mentioned several times in the Old Testament, which is the Christian term for the Hebrew Bible (a collection of religious writings by ancient Israelites).

As early as the 3rd century, the chronicle *Nan zhou yi wu zhi* (Strange things from the South), written by Wa Zhen of the Eastern Wu Dynasty, mentioned agarwood produced in the Rinan commandery (now Central Vietnam), and how people collected it in the mountains. Agarwood has also a long tradition in the Indian subcontinent. The Indian poet Kalidasa (who lived in the 4<sup>th</sup>-5<sup>th</sup> century AD) is wrote: "*Beautiful ladies, preparing themselves for the feast of pleasures, cleanse themselves with the yellow powder of sandal, clear and pure, freshen their breast with pleasant aromas, and suspended their dark hair in the smoke of burning Aloeswood.*"<sup>6</sup>

The earliest record of agarwood in Japanese texts dates back to the year 595 AD, in the *Nihon-shoki* (Chronicles of Japan), which according to Moriel (2010) records the following entry:

*"...aloeswood drifted ashore on the island of Awaji (near Kobe). It was six feet in circumference. The people of the island, being unacquainted with aloeswood, used it with other firewood to burn for cooking; the smoky vapour spread its perfume far and wide. In wonderment, they presented it to the Empress."*

When the agarwood arrived at the Japanese royal court, Prince Shotoku recognized it as jin-koh, the use of which had been introduced to Japan along with Buddhism in the middle of the 6th century, via the Korean peninsula. Agarwood fragrance was central to incense offerings of

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<sup>5</sup> Chamber of Commerce of Malaysia (2013).

<sup>6</sup> Scents of Earth, undated website resource, section on: Quotes on *Aquilaria*; available at: <http://www.scents-of-earth.com/alag.html>.

Buddhist rituals, which became incorporated into State ceremonies and imperial court functions during the Nara period (710-794 AD), a tradition that continued until the Meiji Restoration (1868), after which the tradition of offering incense during imperial functions was abandoned (Morita, 1992). It has found a mention in the 8th century tomes of Shahin Muslims.

Starting in 1580, after Nguyễn Hoàng took control over the central provinces of modern Vietnam, he encouraged trade with other countries, specifically China and Japan. Agarwood was exported in three varieties: a) calambac (kỳ nam in Vietnamese), b) tram huong (slightly harder and slightly more abundant), and c) agarwood proper. A pound of calambac, which could be bought for 15 taels in Hoi An (Vietnam), was sold for 600 taels in Nagasaki, Japan. Hence, there was a huge profit margin, and hence, the Nguyễn Lords soon established a Royal Monopoly over the sale of calambac. This monopoly helped fund the Nguyễn state finances during the early years of the Nguyễn rule (Li, 1998, p. 79).

## **II.2. Uses of Agarwood**

Though agarwood is mostly used (in one way or another) as fragrance, in the form of agarwood chips, agarwood dust (mostly for incense) or agarwood oil, there are an additional five uses: decorative sculptures, beads, medicine, liquor, and tea.

1. Decorative sculptures: Agarwood pieces in natural shapes and sculptures are the highest value items in the consumer market.
2. Agarwood beads: Agarwood pieces are also made into beads for religious purpose. Traditionally the Buddhist masters used rosary beads made from agarwood.
3. Agarwood medicines: Agarwood is used to manufacture several types of crude and prepared medicine.
4. Agarwood liquor: There are several types of liquor products produced with agarwood. For example, two kinds of liquor products (produced by the Taiwan Tobacco and Liquor Corporation) contain agarwood as an ingredient (Song, 2002).
5. Tea: In rare cases, and in very small portions, agarwood is used to make tea.

## **II.3. Prices of Agarwood**

The price of agarwood can vary significantly based on quality. The quality of agar mostly depends on the plant species and the fungal species involved, as well as, certain other unknown factors.<sup>7</sup> Furthermore, like other commodities, the international market of agarwood has experienced a number of booms and crashes over the years. In 1880, top grade agarwood was sold for up to US\$1 per kg. By 1905, the price doubled to US\$2.20 per kg before it crashed to US\$0.30 in 1925 due to overproduction by Indonesia. In the 1970s, a kg of best quality agarwood reached a price of US\$42.50. The price continued to increase to US\$1,250 in 2000 and US\$2,500 in 2005 (Wyn and Anak, 2010). The current market price of distilled agar oil is up to US\$30,000 per kilogram and wood itself reaches a price of up to US\$10,000 per kilogram respectively.<sup>8</sup>

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<sup>7</sup> Akter, Islam, Zulkefeli and Khan (2013).

<sup>8</sup> According to Touchwood Asia Com. Ltd. (2013).

### III. Literature Review

The most extensive coverage of various aspects of agarwood has been provided by Burfield and Kirkham (2005). Their contribution is especially worthwhile for researchers as they provide a comprehensive, partly annotated bibliography, specifically on agarwood.<sup>9</sup> Chetpattananondh (2012) provides a short but useful overview of the global agarwood industry. Moreover, given that agarwood is officially an endangered species, the CITES Secretariat had recently commissioned a number of country-specific reports on the trade and use of agarwood. However, given the small size of the Bangladeshi agarwood industry, Bangladesh is neither mentioned in Chetpattananondh (2012) nor is there a country report for Bangladesh. Literature on the agarwood industry of Bangladesh is relatively scarce. In addition to a few newspaper reports, there are only a few scientific studies on Bangladeshi agarwood.

- Akter and Neelim (2008) analyzed the agarwood plantation at a BRAC tea estate. They first point out that given the typically high value of agarwood, excessive harvesting has made this species threatened. Hence, BRAC has started agarwood plantation at Kaiyachar tea estate in July 2007, with a plantation of about 17 acres, where 83,400 agar seedlings have been planted between August and October 2007. In addition, 700,000 agar seedlings have been planted in two nurseries of the tea estate. The survival rate of young seedlings was an impressive 95 percent, and hence, the BRAC tea estate now plans to plant 50 acres of land with agar plant. Agarwood harvesting would take place after 12 years. Assuming a 90 percent survival rate and 2 kg premium quality agarwood production per plant, Akter and Neelim (2008) estimated that the investment costs related to plantation would be taka 146 million, while the total return would be taka 61 billion, which represents a rate of return of about 42 percent.<sup>10</sup> Akter and Neelim (2008) point out that this high rate of return is however an underestimate, given the environmental benefits this plantation would generate.
- Akter, Islam, Zulkefeli and Khan (2013) suggest that the most important issues for the Bangladeshi agarwood industry are to explore new sources of agarwood to protect the endangered plant species, to ensure agar formation in 100 percent of the planted trees, to upgrade in quality and most possibly quantity of agar yield per tree, while simultaneously minimizing the maturation time. Akter et al. (2013) then stress that the agarwood production could be a multifaceted field of prospects in Bangladesh, whereby the cultivation of new *Aquilaria* and *Gyrinops* plants and the selection of appropriate inocula and inducers should be the priority objective. They finally suggest that a multidisciplinary approach should be initiated with the experts of forestry, mycology, biochemistry and microbiology to achieve the goal.
- Using Bangladeshi agarwood, Bhuiyan, Begum and Bhuiyan (2009) analyzed if there are differences in the composition of oils obtained from naturally infected and artificially screws wounds agarwood. Based on a gas chromatography mass spectrometry analysis,

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<sup>9</sup> In March 2010, Cropwatch has updated the Agarwood Bibliography; which is available at: <http://www.cropwatch.org/Agarwood%20biblio%20v1.02.pdf>.

<sup>10</sup> Using current exchange rates, the estimated investment related to plantation of taka 146 million are about US\$1.9 million, and the total return of taka 61 billion are about US\$786 million.

they showed that there is a marked difference in the oil compositions among the treatments with regards to their quality.

- Saikia and Khan (2012) surveyed 135 randomly selected homegardens in the Golaghat and Jorhat districts of Upper Assam, India, which is about 100 miles away from the Bangladeshi agarwood industry. They assessed the economic prospects of agarwood cultivation and the socioeconomic background of the growers. Almost half of the households surveyed had agriculture as the main vocation and all households practiced homegardening, despite variability in garden size based on socioeconomic factors. They concluded that low input needs and flexibility in site requirements as well as suitability for intercropping make agarwood a preferred cash crop in the homegardens of Upper Assam.
- Last, but not least, Uddin et al. (2008) is a case study carried out in Maulvibazar district, exploring the production, marketing and industry problems of agar-based enterprises and their potential contribution to socio-economic development. They undertook an exploratory survey over 30 randomly selected agar-based factories during December 2005 and April 2006, with entrepreneurs of the factories personally interviewed using a semi-structured questionnaire. They found that the majority of these factories were found to depend on local sources of raw materials to produce agar-based products. About 514 full and part-time workers are employed in the factories. They estimated that the average annual expenditure, revenue and net annual income per factory for three consecutive years (2003-2005) were, respectively, taka 63,980, taka 111,414 and taka 47,435.<sup>11</sup> Uddin et al. (2008) concluded that there appears to be a sustainable source of raw materials, and that with the availability of technical and financial assistance and an opportunity for expansion of market facilities the maximum benefit from this highly promising industry could be secured.

#### **IV. The Agarwood Industry of Bangladesh**

Local entrepreneurs claim that the use of agarwood is a four hundred years old industry at Suzanagar, Baralekha, Moulvibazar. But there is no official document or literature to probe their claim. There are about 100 enterprises producing agarwood and agar-oil in Bangladesh. These are mainly based at Baralekha upazila of Moulvibazar district of Bangladesh. Previously, their primary source of raw materials (agarwood tree) was government and social forests. But currently they are using trees from their own cultivated gardens. An agarwood tree requires a minimum of 12-15 years to be used as raw material. About 8-10 years old trees are used for ironing (that is, an iron rod is put inside the tree). About 100 to 150 kg of iron rod is required for ironing a medium sized agarwood tree. After ironing a tree, it takes about 3-4 years that a tree can be used for extracting agar-oil.

Local entrepreneurs are claiming that agar-oil is a 100 percent export oriented sector, based on local raw materials and using indigenous technology. Per year, they are exporting agarwood products in the value between taka 5 million (SME Foundation, 2013) to taka 100 million (the stakeholders consultation meeting). Until recently, there was no Harmonized System (HS) Code in the Bangladesh tariff line for agarwood or agar-oil for any international trade. Some 2-3 years

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<sup>11</sup> Using current exchange rates, these values are, respectively, US\$ 824, US\$1,435, and US\$611.

ago, Bangladesh's Export Promotion Bureau took the initiative to allocate an HS Code (by the relevant government agency) for these products and to facilitate formal trade of the sector. Anyway, most of this sector remains as an informal sector in Bangladesh. Entrepreneurs used to carry agarwood and agar-oil in their handbags to Dubai or Mumbai (which are major regional markets), where they sold it in cash.

## **V. Barriers towards Developing the Bangladesh Agarwood Industry**

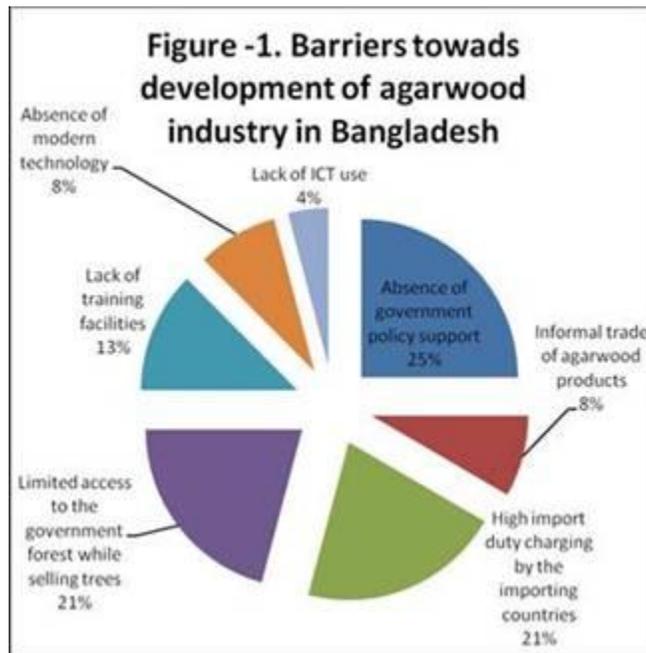
To find out more about the constraints of the Bangladeshi agarwood industry, we targeted the perfume and incense cluster located at Suzanagar union of Baralekha upazila of Moulvibazar district. We invited 50 entrepreneurs of that cluster through the Baralekha Agar Ator Bohomokhi Samabay Samity (the association of the factory owners). Thirty entrepreneurs (which is a very good representation) attended the meeting including the President, Former President, Founder President, Members of the Board of Directors of that Association. Based on their replies, major barriers towards development of Bangladesh agarwood industry are as follows:

1. Absent policy support from the government: Till now, agarwood is not recognized as an industrial sector in any government policies like Industrial Policy, Import Policy, Export Policy, Investment Policy, or SME Loan Policy. As a result, entrepreneurs are not getting any policy support including bank loan at concessional rates, cash incentives for export of an agro-processed product, payment of electricity, gas and other utilities bill as an industrial line.
2. Lack of government initiative to formalize the sector: During the last 400 years, agarwood items are exported by entrepreneurs from Suzanagar to Dubai or Mumbai. But all of these transactions are occurring in informal channels due to the lack of official arrangements for the formal export of agarwood products. As a result, the government is not getting any revenues, nor are the entrepreneurs getting any government support for exporting agarwood products.
3. High import duty by the importing countries: Generally, the Bangladeshi government used to negotiate with the consumer countries to allow duty free and quota free (DFQF) market access of Bangladeshi products. Till now, importing countries are charging high duties on agarwood products but the Bangladesh government has never negotiated the lowering of duties on agarwood product with any importing country. The high duty on formal import of agarwood product by the consumer countries may be another cause for the informal trade of agarwood products.
4. Limited access to government forests: There are hectares of agarwood forest owned by the government of Bangladesh in the Sylhet and Chittagong divisions. The Department of Forestry used to sell these trees after a certain age. If local agarwood entrepreneurs (having processing plants) would get these trees in tender or through a mechanism (so that foreign brokers or local agents of foreign brokers cannot purchase them), the country may get more revenue from agarwood products than selling the raw material.
5. Lack of training facilities: As was shown above, there are many final products produced from agarwood in countries like Malaysia, India, and Indonesia, but due to a lack of training and knowledge on diversification, the Bangladeshi agarwood sector is producing only three items namely; agarwood chips, agarwood oil and agarwood powder / dust.

As shown in Figure 1, during the open floor discussion session of the stakeholder consultation meeting at the Suzanagar Union Porishad Complex on May 21, 2013, the entrepreneurs responded that the most severe barriers toward the development of the agarwood industry in Bangladesh are:

- Lack of government policy support (25 percent).
- High import duty charging by the importing countries (21 percent).
- Limited access to the government forest while selling trees (21 percent).
- Lack of training facility and product diversification knowledge (13 percent).
- Lack of modern technology and technical knowhow (8 percent).
- Informal trade of agarwood items (8 percent).
- Absence of information and communication technology (4 percent).

**Figure 1: Barriers towards the Development of the Agarwood Industry in Bangladesh**



Source: Created by the author based on primary data collected at the stakeholder consultation meeting at Suzanagar Union Porishad Complex on May 21, 2013.

## VI. Conclusions and Recommendations

The remittance and the readymade garment are the main foreign currency earning sectors of Bangladesh. In human resource exporting sector we are exporting non-skilled workers as a result they are getting comparatively lower wages. In the readymade garment sector Bangladesh is producing mainly low yelled products. But agarwood sector is producing most expensive

premium items of the world. So if Bangladesh can flourish this sector then it could be one of the major sources for earning foreign currency and boost up export figure of Bangladesh.

The Government of Bangladesh and other relevant agencies and stakeholders may consider implementing the following recommendations for the development of the Bangladeshi agarwood sector:

1. Declare agarwood as a priority sector: The Government may consider declaring agarwood as a) a thrust sector in the National Industrial Policy and b) a booster small and medium enterprise (SME) sector in the SME Policy Strategies.
2. Initiative to formalize the sector: The Government may take necessary initiative to facilitate formal export of agarwood items by training up the entrepreneurs and making necessary institutional arrangements.
3. Negotiating with the importing countries for duty-free and quota-free (DFQF) market access: The Bangladeshi World Trade Organization (WTO) Cell under the Ministry of Commerce and the Ministry of Foreign Affairs may request the importing countries, mainly the United Arab Emirates (UAE), the Kingdom of Saudi Arabia (KSA), and Japan, to allow DFQF market access for Bangladeshi agarwood product under the umbrella of WTO or bilateral trade negotiations.
4. Ensuring industrial facilities and support to this sector: Concerned agencies may consider providing all sorts of industrial benefits, including long-term loan facilities, industrial rates of power, gas and other utilities services, and export incentives to the agarwood sector.
5. Selling trees from the government forest to domestic entrepreneurs: The Ministry of Environment and Forest may take necessary policy initiatives to ensure that all participants of the tender (during selling agarwood trees) are domestic agarwood entrepreneurs for ensuring a higher benefit to the country.
6. Comprehensive support for developing a world class perfume industry: To ensure a higher value-added, the Government may provide comprehensive support under a package program to develop a world class perfume industry in Bangladesh.

Finally, in order to utilize the full potentials of this sector, further research shall be conducted on the following two issues: First, given that there are 15 species of agarwood in the world, primary research is required to identify how many species of agarwood are available in Bangladesh. Second, a comparative study is required to address the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) by looking into possibilities of increasing agarwood production through social forestry.

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