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**A CRITICAL ANALYSIS OF SANDALWOOD REGULATIONS IN INDIA  
VIS-À-VIS ITS INTERNATIONAL DEMAND**

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## DECLARATION

I, MILLENNIAN S (Reg. No. LM0223020), pursuing Masters in International Trade Law, do hereby declare that the Dissertation titled “A CRITICAL ANALYSIS OF SANDALWOOD REGULATIONS IN INDIA VIS-À-VIS ITS INTERNATIONAL DEMAND”, submitted for the award of LL.M. Degree in the National University of Advanced Legal Studies, Kochi, during the academic year 2023-2024 is my original, bona fide and legitimate research work, carried out under the guidance and supervision of Dr. Abhayachandran K. This work has not formed the basis for the award of any degree, diploma, or fellowship either in this university or other similar institutions of higher learning.

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## **LIST OF ABBREVIATIONS**

1. AU\$ - Australian Dollar
2. CITES - Convention on International Trade in Endangered Species of Wild Fauna and Flora
3. FPC - Forest Products Commission
4. FSC - Forest Stewardship Council
5. GIS - Geographic Information System
6. INR - Indian Rupee
7. ISO - International Organization for Standardization
8. IUCN - International Union for Conservation of Nature
9. IWST - Institute of Wood Science and Technology
10. JFM - Joint Forest Management
11. KSDL - Karnataka Soaps and Detergents Limited
12. KSHDC - Karnataka State Handicrafts Development Corporation
13. MoEF - Ministry of Environment and Forests
14. RSB - Roundtable on Sustainable Biomaterials
15. SFM - Sustainable Forest Management
16. USD - United States Dollar
17. WA - Western Australia

# CHAPTER 1

## INTRODUCTION

### 1.1 SANDALWOOD TRADE AND INDIA

Sandalwood, a name synonymous with luxury and a captivating aroma, is a class of wood highly prized for its heartwood, a dense, yellow section known for its fine grain and distinctive fragrance.<sup>1</sup> Unlike many aromatic woods, sandalwood retains its scent for decades, making it a highly sought-after material. The essence of sandalwood lies in its oil, extracted through steam distillation. This oil finds extensive use in perfumes, soaps, cosmetics, and traditional medicine. Interestingly, sandalwood trees are hemi parasitic, meaning they partially rely on the roots of other plants for nutrients. This unique characteristic adds to the complexity of cultivating them. Indigenous to the tropical regions of India, southeast Asia, and Australia, sandalwood has been a part of trade routes for centuries. The Indian subcontinent, particularly, has a long history with this fragrant wood.<sup>2</sup>

The high value of sandalwood has led to a surge in demand, putting pressure on natural populations. To ensure sustainability, regulations play a crucial role. Over-harvesting has pushed some sandalwood species towards endangerment. This has led to stricter government control and restrictions on trade. Cultivating sandalwood is a slow process, as the trees take years to mature and develop the prized heartwood. Additionally, their hemi parasitic nature adds another layer of complexity. India, a major producer of sandalwood, has strict regulations in place. Cultivation, harvest, possession, transportation and sale of sandalwood is highly regulated in India by stringent laws.

The sandalwood trade is a complex web, balancing economic benefits with ecological concerns. The high value of sandalwood has unfortunately fueled illegal logging and smuggling activities. Governments are constantly working to curb these practices. Initiatives are underway to promote sustainable sandalwood cultivation. This involves research on improved cultivation techniques and ensuring fair trade practices for producers. As the global appetite for sustainable and natural products intensifies,

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<sup>1</sup> Prasath CNH, Balasubramanian A, Radhakrishnan S. Sandalwood - Expensive and medicinal tree. 6 Van Sangyan 4-9 (2019).

<sup>2</sup> C. Sandeep & T.N. Manohara, Sandalwood in India: Historical and Cultural Significance of Santalum album L. as a Basis for Its Conservation, 10 NeBIO, 235-42 (2019).

sandalwood is emerging as a valuable commodity in various industries, from perfumery and cosmetics to wellness and aromatherapy. This growing demand offers promising opportunities for the sandalwood market, particularly if it can adapt to and leverage sustainable practices.<sup>3</sup> In this background, it's time for India to rethink on its outdated legislations and regulations regarding sandalwood. Also, the cultivation and conservation of Indian sandalwood are crucial for preserving biodiversity, supporting local communities, and maintaining India's cultural heritage and economic interests.

## **1.2 RESEARCH PROBLEM**

### **1. The laws and policies in India for regulation of sandalwood is creating unfair restrictions on cultivation, harvest and trade of sandalwood in India.**

The laws and policies in India regulating sandalwood have imposed stringent restrictions that many argue are unfairly limiting the cultivation, harvest, and trade of this valuable resource. Historically, sandalwood has been classified as a reserved tree species, which has placed it under the strict control of state governments. This classification means that individuals or private entities face significant bureaucratic hurdles and legal complexities when attempting to grow, harvest, or trade sandalwood. For instance, in several states, sandalwood trees cannot be cut down or transported without special permits, which are often difficult to obtain. These regulations are ostensibly designed to prevent illegal logging and to protect this precious species from over-exploitation. However, critics argue that the heavy-handed approach has stifled the potential for sustainable sandalwood cultivation and has discouraged private investment in sandalwood farming.<sup>4</sup> The cumbersome process for obtaining permits, combined with the risk of severe penalties for non-compliance, deters farmers from cultivating sandalwood, leading to a reduced supply in the market. Additionally, these restrictions can lead to black market activities, where sandalwood is traded illicitly, further undermining legal avenues and potentially harming conservation efforts. Therefore, while the intention behind these regulations is to conserve sandalwood resources, the current policies may inadvertently be counterproductive by

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<sup>3</sup> L.A.J. Thomson, Looking Ahead – Global Sandalwood Production and Markets in 2040, and Implications for Pacific Island Producers, 83 *Austl. Forestry* 245-54 (2020).

<sup>4</sup> Syam Viswanath, Dhanya Bhaskar & Tejvir Rathore, Domestication of Sandal (*Santalum album* L.) in India: Constraints and Prospects, 34 *APA News* 9-12 (2009).

discouraging legitimate cultivation and trade, ultimately affecting the overall supply and market dynamics of sandalwood in India.

## **2. The regulatory laws are ineffective in protection of sandalwood from endangerment.**

The regulatory framework surrounding sandalwood protection in India faces challenges in effectively safeguarding the species from endangerment. While regulations are intended to preserve sandalwood populations, they have inadvertently contributed to a decline in cultivation practices. One key issue is the strictness of these regulations, which may have discouraged farmers and landowners from cultivating sandalwood due to the perceived complexities and restrictions involved.<sup>5</sup> This may lead to a reduction in the overall cultivation of sandalwood, further adding to the existing threat of endangerment. In addition to the challenges posed by strict regulations and declining cultivation, the issue of continued illegal trade further complicates the protection of sandalwood. Despite regulatory efforts, illegal harvesting and trade of sandalwood persist, driven by the high value of the wood in international markets. This illegal activity not only contributes to the depletion of sandalwood populations but also undermines the effectiveness of existing regulatory measures.

## **3. The sandalwood regulations are limiting the scope of India in international sandalwood market.**

The regulations on harvest and trade of sandalwood in India are significantly constraining the country's potential within the international sandalwood market. India had a rich history of sandalwood production and trade, but stringent regulations, particularly those aimed at conservation and preventing illegal trade, have restricted the industry's growth and competitiveness on the global stage. The regulatory framework, which includes laws national legislations and various state-level regulations, imposes strict controls on the harvesting, transportation, and sale of sandalwood. These regulations, while intended for preserving the species and combating illegal activities, have created barriers for legitimate trade and hindered India's ability to fully capitalize on its natural resources. As a result,

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<sup>5</sup> Hema Vijay, Time to Lift Restrictions on Planting Sandalwood?, The Hindu (June 5, 2015), <https://www.thehindu.com/features/homes-and-gardens/gardens/time-to-lift-restrictions-on-planting-sandalwood/article7285956.ece>.

India's presence in the international sandalwood market is limited, impacting its potential economic benefits and global influence in this sector.

### **1.3 RESEARCH QUESTIONS**

1. Whether the sandalwood regulatory laws hamper the growth of sandalwood industry in India?
2. Whether the restrictions on harvesting and selling of sandalwood protect it from endangerment?
3. How Australia achieved dominance over India in the international sandalwood market?
4. Whether India is missing a huge opportunity in international sandalwood market with its sandalwood policy?

### **1.4 SIGNIFICANCE OF THE RESEARCH**

India was once the undisputed world leader in the supply of sandalwood. The Indian sandalwood – *Santalum album L.* is considered as the best quality sandalwood among different species of sandalwood. The sandalwood oil extracted from the wood is having top end demand all over the world because of its rich properties and vast applications. The high domestic and international demand of sandalwood due to its rich qualities put immense pressure on sandalwood resources in India. The ‘royal tree’ status given by Tipu Sultan of Mysore in the 18<sup>th</sup> century is still held by this precious tree.<sup>6</sup> The British colonial legislations established exclusive state control over sandalwood trees. The post independent governments also followed the same path. Even the cultivation of sandalwood in private land were prohibited. These regulations led to population decline of the species and also caused substantial economic loss to the country, which is still not resolved.

The examination of sandalwood regulations in India holds great importance due to its significant economic, environmental, and social implications, particularly in light of its high international demand. From an economic point of view, regulations are put in place

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<sup>6</sup> Shobha N. Rai, Status and Cultivation of Sandalwood in India, in Proceedings of the Symposium on Sandalwood in the Pacific 5 (Lawrence Hamilton & C. Eugene Conrad eds., 1990).

to safeguard sandalwood resources, but they can also impede smooth trade and disproportionately impact potential sandalwood cultivators, thereby consolidating market power in the hands of the state and a few major players. Despite stringent measures, conservation efforts often encounter challenges in enforcement, as illegal logging and black markets persist.<sup>7</sup> Additionally, the implementation of rigorous regulatory measures can be considered as a violation of the rights of cultivators. Therefore, while the study of these regulations is crucial for striking a balance between conservation and economic interests, there is an urgent need for more flexible, inclusive, and effectively enforced policies to ensure the protection of sandalwood and the economic viability of all stakeholders.

Overall, the examination of sandalwood regulations in India highlights the complex web of economic, environmental, and social factors that must be considered in order to effectively manage this valuable resource. Balancing the need for conservation with the demands of a global market requires a delicate approach that takes into account the diverse interests of various stakeholders.

## **1.5 RESEARCH OBJECTIVES**

### **1. To analyze the legal framework in India for the regulation of sandalwood.**

The research aims to conduct a thorough analysis of the legal structure that governs the regulation of sandalwood harvesting and trading in India. This will involve a comprehensive examination of both national and state legislations. The analysis will specifically focus on the regulations implemented by different states, namely Karnataka, Tamil Nadu, Kerala, Andhra Pradesh, and Telangana, as these states possess substantial reserves of sandalwood and have a long-standing history of involvement in its trade. By providing a nuanced understanding of the regulatory environment, this research aims to offer insights into the legal challenges within the sandalwood industry in India.

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<sup>7</sup> Kum Kum Dasgupta, Lopsided Forest Protection Laws Force Poor People into Illegal Logging, Hindustan Times (Aug. 1, 2015), <https://www.hindustantimes.com/india/lopsided-forest-protection-laws-force-poor-people-into-illegal-logging/story-QbNNMTx08kjToz8qfSy42N.html>.

**2. To examine the impact of sandalwood laws in India in its protection from endangerment.**

The research seeks to examine the impact of sandalwood laws in India on the protection of this valuable species from endangerment. The study will assess how these laws contribute to the conservation of sandalwood trees. It will also explore the effectiveness of these laws in curbing the activities of poachers and illegal traders. Additionally, the research will consider the role of governmental and non-governmental organizations in implementing these laws and the challenges they face. By evaluating the current legal protections and their practical implications, the study aims to provide insights into the strengths and weaknesses of existing regulations and offer recommendations for enhancing the legal framework to better protect sandalwood from the threat of extinction.

**3. To find out how Australia became a leader in international sandalwood market.**

An objective of this research is to inquire into the historical, economic, and policy-driven factors that have driven Australia to a leading position in the international sandalwood market. This study will explore Australia's strategic cultivation practices, particularly the domestication of *Santalum album*, and the development of sustainable harvesting techniques. It will also analyse the regulatory frameworks and government policies that have supported the industry, which enabled Australia to maintain high standards of quality and sustainability. The growth and development of sandalwood trade by Australia over the years will also be examined.

**4. To examine the global demand for sandalwood and the scope of India in international sandalwood market.**

The research will examine the global demand for sandalwood, focusing on the factors driving its popularity and the dynamics of its international market. This includes analysing the historical and cultural significance of sandalwood including the evolution of global sandalwood trade. Also the price trends of sandalwood in international market over the years will be examined. The study will also analyse the scope of India in the international sandalwood market, focusing on its role as a major producer and exporter from the past. Additionally, the study will explore India's contribution in the global sandalwood market and the challenges it faces.

## **5. To offer suggestions for the enhancement of sandalwood industry in India.**

The final objective of this research is to offer comprehensive suggestions for the enhancement of the sandalwood industry in India. By examining current practices, regulatory frameworks, market dynamics, and international demand, this study aims to identify strategic measures that can boost the growth and sustainability of the sector. Through in-depth analysis, the research seeks to provide actionable recommendations that will contribute to the revitalization and expansion of India's sandalwood industry, ensuring its long-term viability and global competitiveness.

## **1.6 LITERATURE REVIEW**

**Arunkumar et al. (2016)** in the article **The population decline of Indian sandalwood and people's role in conservation – an analysis**<sup>8</sup> examines the decline of Indian sandalwood (*Santalum album L.*) populations and explores the potential role of local communities in its conservation. The authors discuss the historical and cultural importance of sandalwood in India. They analyze the factors leading to the population decline, including government policies restricting cultivation, overexploitation due to its high value and sandal spike disease. The article also emphasizes the need for community involvement in conservation efforts.

**Rashkow E. D. (2014)** in the article **Perfumed the axe that laid it low: The endangerment of sandalwood in southern India**<sup>9</sup> examines the historical factors contributing to the decline of Indian sandalwood (*Santalum album L.*). The study diverges from common narratives placing blame solely on colonial exploitation. Rashkow argues that numerous historical events played a role, including the British East India Company's exploitative practices and independent India's post-colonial management failures. The article challenges the notion that the colonial period was the sole culprit. It highlights a more nuanced perspective, suggesting that the true turning point for the species came after independence.

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<sup>8</sup> Arunkumar A.N. et al., The Population Decline of Indian Sandalwood and People's Role in Conservation – An Analysis, in *Climate Change Challenge (3C) and Social-Economic, Ecological Interface-Building 377-87* (S. Nautiyal et al. eds., 2016).

<sup>9</sup> E.D. Rashkow, Perfumed the Axe That Laid It Low: The Endangerment of Sandalwood in Southern India, *51 Indian Econ. & Soc. Hist. Rev.* 41-70 (2014).



**Arun Kumar et al. (2012)** in the article **Sandalwood: History, uses, present status and the future**<sup>10</sup> explores the multifaceted significance of sandalwood (*Santalum album L.*). The authors delve into the history and cultural importance of sandalwood in India, particularly highlighting its economic value. The article establishes sandalwood's deep connection to Indian culture. The authors discuss its use in traditional practices and craftsmanship. The authors address the negative consequences of government monopolies on sandalwood trade in Karnataka, Tamil Nadu, and Kerala. They argue that these monopolies have led to overexploitation, pushing *Santalum album* into the vulnerable category of the IUCN Red List. The authors advocate for establishing community-managed or corporate sandalwood plantations across India. They emphasize the need for proper incentives and protection measures to ensure the sustainability of these plantations.

**Pronk G. (2022)** in the article **The Current Status of Indian Sandalwood Plantations in Australia**<sup>11</sup> examines the current state of Indian sandalwood plantations within Australia. It explores the historical development and present situation of these plantations. The author highlights the pioneering research conducted by the Western Australian Forest Department in the early 1980s. This government initiative is credited with laying the foundation for the country's robust sandalwood plantation industry. The article explores the subsequent rise of private companies in Western Australia, which have become the world's leading suppliers of plantation sandalwood. The author also discusses the corresponding decrease in government involvement and research efforts in this sector.

**Ananthapadmanabha H. S. (2022)** in the article **Indian Sandalwood Market Trend**<sup>12</sup> examines the Indian sandalwood production and trade over the years and gives data on historical and current production levels, factors affecting supply, and traditional trade routes for Indian sandalwood. It also focuses on the research on the global market for sandalwood oil, including pricing trends, demand from various sectors (e.g., cosmetics, fragrances, traditional medicine), and competition from other sandalwood-producing regions like Australia. The article addresses challenges like illegal logging and slow

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<sup>10</sup> A.N. Arunkumar, Geeta Joshi & H.Y. Mohan Ram, Sandalwood: History, Uses, Present Status and the Future, 103 Current Sci. 1408-16 (2012).

<sup>11</sup> G. Pronk, The Current Status of Indian Sandalwood Plantations in Australia, in Indian Sandalwood 199 (A.N. Arunkumar et al. eds., 2022).

<sup>12</sup> H.S. Ananthapadmanabha, Indian Sandalwood Market Trend, in Indian Sandalwood 211 (A.N. Arunkumar et al. eds., 2022).

growth rates of sandalwood trees, alongside efforts towards sustainable plantation management and alternative sources of sandalwood oil.

## **1.7 HYPOTHESIS**

The regulatory laws governing sandalwood in India are imposing unfair restrictions on its cultivation, harvest, and trade. These laws, aimed at protecting the endangered species of sandalwood, actually hinder the growth of the sandalwood industry and limit the opportunities for potential farmers and traders. Also these laws are not effectively protecting the species from endangerment.

## **1.8 RESEARCH METHODOLOGY**

This research work employs a mixed-methods research design to conduct a comprehensive analysis of sandalwood regulations in India in relation to its international demand. The study utilizes a doctrinal research methodology, which involves a thorough examination of primary legal sources, including statutes and regulations, to establish the regulatory framework governing the production, sale, and trade of sandalwood in India. This analysis will be complemented by the review of secondary sources, such as legal commentaries, scholarly articles, and reports published by government agencies and international organizations, to provide context and theoretical insights into the regulatory regime.

In addition to the doctrinal approach, the study incorporates the analysis of published reports to gather empirical data on the production, trade, and demand for sandalwood in the domestic and the international market. These reports, including those from the Indian government, state governments, and other relevant organizations, will be used to assess the economic impact of sandalwood regulations and to identify trends and challenges in the global sandalwood trade.

## **1.9 LIMITATIONS OF THE RESEARCH**

1. The research focuses on the sandalwood regulations in India. The detailed provisions regarding sandalwood are contained in the state legislations. Many Indian states have

incorporated provisions for regulation of sandalwood in their domestic legislations. The researcher had taken only the state specific legislations of Karnataka, Tamil Nadu, Kerala, Andhra Pradesh and Telangana for analysis. Only these states have a considerable share in the population and production of sandalwood in India.

2. The legal framework for sandalwood regulation in India is fragmented. Regulations are governed by both central and state laws, leading to a complex and fragmented legal landscape. Each state may have different rules and enforcement mechanisms, complicating comprehensive research.

3. This research follows a doctrinal research methodology whereby primary legal sources including statutes and other regulations are analysed for understanding the legal framework. There may be discrepancies between the written laws and their enforcement on the ground. Understanding the practical implementation of regulations can be difficult without on-the-ground research and interviews with stakeholders.

4. Data scarcity is a major limitation to this research. Reliable and up-to-date data on sandalwood trade, price trends, legal cases, enforcement actions, and compliance rates are scarce, making it hard to assess the real-world impact of regulations and the market dynamics. A significant portion of the sandalwood trade occurs illicitly, which is challenging to quantify and analyze due to its hidden nature. Official statistics might not capture the full scope of legal and illegal trade. Additionally limited research exists on the environmental impacts of sandalwood harvesting, including deforestation and biodiversity loss.

## **1.10 OVERVIEW OF CHAPTERS**

### **CHAPTER 2 – LAWS FOR REGULATING SANDALWOOD TRADE IN INDIA**

This chapter provides a detailed analysis of the legislative and regulatory framework governing the cultivation, harvest, possession, transportation and sale of sandalwood in India. The history and evolution of sandalwood laws in India is also discussed. The central legislations including The Indian Forest Act and The Wildlife (Protection) Act gives only an outline for sandalwood regulations in India. Detailed provisions regarding sandalwood is contained in state legislations. State specific regulations of major sandalwood producing

states like Karnataka, Tamil Nadu, Kerala, Andhra Pradesh & Telangana are detailed, highlighting the state forest Acts and sandalwood specific Rules of that states.

### CHAPTER 3 – THE IMPACT OF REGULATIONS ON SANDALWOOD CONSERVATION

This chapter discusses the effectiveness and impact of sandalwood regulatory laws in India. Analysis is made to find out how far these laws go in hand with the legislative intention of sandalwood conservation, highlighting various conservation efforts and the current conservation status of sandalwood. It addresses the severe problems associated with population decline due to factors such as harsh restrictions, illegal logging and smuggling, which have significantly threatened sandalwood stocks. The Indian Supreme Court ruling on sandalwood conservation is also mentioned. Through this comprehensive analysis, the chapter underscores the challenges in protecting sandalwood, reflecting on the ongoing need for robust and adaptive legal measures to ensure its survival.

### CHAPTER 4 – THE AUSTRALIAN MODEL OF SANDALWOOD MANAGEMENT

This chapter provides a comprehensive overview of the historical and contemporary practices governing sandalwood in Australia, particularly in Western Australia. The development of a regulatory framework by the Western Australian government by enforcing strict regulations to ensure sustainable forest management, including harvesting quotas and replanting requirements is looked upon. The establishment and management of ‘Indian sandalwood’ plantations in Australia is also discussed. Additionally, the chapter discusses the trade scenario, highlighting how regulatory measures and sustainable practices have positioned Australia as a key player in the global sandalwood market, balancing economic interests with environmental sustainability.

### CHAPTER 5 – INTERNATIONAL SANDALWOOD MARKET AND THE ROLE OF INDIA

This chapter traces the origin and evolution of sandalwood trade, highlighting how it has developed from ancient times to the present. It explores the structure of the global sandalwood market, examining key influencing factors, trade routes, and the dynamics of supply and demand. The chapter look into the global demand for sandalwood, driven by

its use in perfumery, traditional medicine, and religious practices, and how this demand influences price trends. India's role is emphasized, detailing its historical dominance on sandalwood production, the impacts of regulatory changes, conservation efforts, and its position in the current market. The analysis underlines India's performance in the international sandalwood trade over the years.

## CHAPTER 6 – CONCLUSION AND SUGGESTIONS

This chapter provides a summary of key observations and findings. It highlights the stringent regulations in India and its ineffectiveness in sandalwood conservation. The chapter notes the challenges faced by local growers due to these regulations, juxtaposed against the high international demand and lucrative market for Indian sandalwood. Legal suggestions include reforming existing laws to balance conservation with economic benefits for cultivators and traders and promoting international cooperation for sustainable trade practices. The conclusions emphasize the need for a uniform national policy that aligns national interests with global market dynamics while ensuring the protection and sustainable use of sandalwood. Additionally, it recommends increased support for sustainable cultivation practices and investment in research and development to manage sandalwood resources effectively.

## CHAPTER 2

# LAWS FOR REGULATING SANDALWOOD TRADE IN INDIA

### 2.1 INTRODUCTION

Indian sandalwood, known for its aromatic heartwood, has been revered for centuries for its use in cosmetics, perfumes, incense, and traditional medicines. India is a significant producer of sandalwood, particularly the states of Karnataka, Tamil Nadu, Telangana, Andhra Pradesh and Kerala. However, due to its intense demand and limited obtainability, the sustainability of sandalwood resources is facing threat due to various factors such as illegal harvesting, smuggling, and unsustainable practices.<sup>13</sup> In India, which is home to some of the finest sandalwood species in the world, the need for operative regulations to control and effectively regulate these resources is of great importance.

One of the primary challenges facing sandalwood in India is illegal harvesting and smuggling. Sandalwood trees are often targeted by poachers and smugglers due to their high value in the international market. These illegal activities not only lead to the loss of valuable trees but also contribute to deforestation and environmental degradation. Moreover, the revenue generated from illegal sandalwood trade does not benefit the local communities or the economy, further exacerbating the problem.<sup>14</sup> To address these challenges, the central government and the state governments in India has implemented various regulatory measures aimed at protecting and conserving sandalwood resources. One such measure is the requirement of permits, which ensures that only authorized individuals or organizations are allowed to harvest sandalwood. This helps in controlling the supply chain and prevents illegal harvesting and smuggling.

Another important aspect of sandalwood regulation in India is the monitoring of trade. The government has put in place mechanisms to track the movement of sandalwood from the forest to the market, ensuring transparency and accountability in the trade. This helps in identifying and penalizing those involved in illegal activities. In addition to these

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<sup>13</sup> *Supra* note 8.

<sup>14</sup> *Supra* note 9.

measures, the Indian government is also focusing on promoting sustainable practices in sandalwood cultivation and harvesting. Sustainable practices such as selective harvesting and replanting help in preserving the sandalwood forests and ensuring their long-term viability. Moreover, sustainable cultivation practices can also lead to increased yields and improved quality of sandalwood, benefiting both the environment and the economy.<sup>15</sup>

The conservation of sandalwood resources is not only important from an environmental perspective but also from a cultural and religious point of view. Sandalwood has been an integral part of Indian culture and tradition for centuries, with its use in religious ceremonies, aromatherapy, and traditional medicine.<sup>16</sup> Therefore, preserving sandalwood forests is not just about protecting a valuable resource but also about safeguarding a cultural heritage.

In addition to domestic regulations, India is also bound by international agreements such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which regulate the trade of endangered species including sandalwood.<sup>17</sup> Compliance with these agreements is crucial for India to ensure that its sandalwood trade is legal and sustainable.

## **2.2 HISTORICAL CONTEXT**

The history of sandalwood laws in India is a complex and intricate story that spans centuries, reflecting the cultural, economic, and ecological significance of this precious resource. Sandalwood, prized for its aromatic fragrance and versatile applications in religious ceremonies, perfumery, and traditional medicine, has been deeply ingrained in Indian culture and history for millennia. Its use can be traced back to ancient times, where it was highly valued for its medicinal properties and was prominently featured in various ancient Indian texts.<sup>18</sup>

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<sup>15</sup> R. Sundararaj et al., Conserve Entomophily Paradise of Indian Sandalwood (*Santalum album* L.), 2 Wood is Good, 45-49 (2021).

<sup>16</sup> A. Bommareddy et al., Medicinal Properties of Alpha-Santalol, a Naturally Occurring Constituent of Sandalwood Oil: Review, 1 Nat. Prod. Res., 1-17 (2017).

<sup>17</sup> Convention on International Trade in Endangered Species of Wild Fauna and Flora, Mar. 3, 1973, 993 U.N.T.S. 243.

<sup>18</sup> James McHugh, Sandalwood and Carrion: Smell in Indian Religion and Culture, 52 Indian Econ. & Soc. Hist. Rev. 393, 393-95 (2015).

During the medieval period, sandalwood emerged as a valuable commodity in trade, with demand skyrocketing both domestically and internationally. This surge in demand placed significant pressure on sandalwood forests and necessitated the implementation of regulations to manage its extraction and trade. The colonial era marked a significant turning point in the regulation of sandalwood in India. The British East India Company recognized the economic potential of sandalwood and sought to control its trade. To prevent overexploitation, they imposed strict restrictions on the cutting and transportation of sandalwood.<sup>19</sup>

The Indian Forest Act of 1878<sup>20</sup> was a landmark legislation during this period, introducing comprehensive regulations for the conservation and management of forests, including those containing sandalwood trees. These regulations laid the groundwork for the sustainable management of sandalwood resources, setting the stage for future conservation efforts. Post-independence, India continued to regulate the sandalwood trade to protect the species from illegal logging and smuggling. The Wildlife Protection Act of 1972<sup>21</sup> provided further protection to sandalwood trees by listing them under Schedule II, which prohibits their trade without a license. Later, there has been a growing concern about the illegal trade of sandalwood, leading to stricter enforcement measures. Various state governments have implemented regulations to protect sandalwood trees, including the Karnataka Forest Act, 1963, which imposes severe penalties for unauthorized cutting, possession, or transportation of sandalwood.<sup>22</sup> These regulations are aimed at curbing the illegal trade of sandalwood and ensuring the sustainable management of this valuable resource for future generations.

The history of sandalwood laws in India is not just a story of regulation and conservation; it is also a story of cultural heritage and identity. Sandalwood has played a significant role in Indian culture and spirituality, being used in religious ceremonies, rituals, and festivals for centuries.<sup>23</sup> Its fragrance is considered sacred and is believed to have spiritual and medicinal properties. Sandalwood is also an integral part of the Indian perfume industry, with its unique fragrance being highly sought after in the global market.

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<sup>19</sup> Ramachandra Guha, *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya* (1989).

<sup>20</sup> The Indian Forest Act, 1927, No. 16, Acts of Parliament, 1927 (India).

<sup>21</sup> The Wildlife Protection Act, 1972, No. 53, Acts of Parliament, 1972 (India).

<sup>22</sup> The Karnataka Forest Act, 1963, No. 5, Acts of Parliament, 1963 (India).

<sup>23</sup> A.D. Pusalkar, *Studies in the Epic and Puranas*, Bharatiya Vidya Bhavan (1955).



The economic importance of sandalwood cannot be overstated. It has been a valuable export commodity for India for centuries, contributing significantly to the country's economy. The sustainable management of sandalwood resources is crucial not only for environmental conservation but also for ensuring the continued prosperity of the communities that depend on it for their livelihoods. The history of sandalwood laws in India is a testament to the enduring importance of this precious resource. From ancient times to the present day, sandalwood has been a symbol of cultural, economic, and ecological significance in India. Efforts to protect sandalwood and ensure its sustainable use continue to be a priority for the government and conservationists alike.<sup>24</sup>

## **2.3 EVOLUTION OF LAWS**

The evolution of sandalwood laws in India reflects the country's historical relationship with this precious resource and its efforts to protect it. Sandalwood, known for its fragrant heartwood used in perfumes, incense, and traditional medicine, has been highly valued for centuries. However, overexploitation and smuggling have threatened its existence, leading to the development of laws to regulate its harvest, trade, and conservation. One of the earliest references to sandalwood in Indian history can be found in ancient texts like the Vedas and the Ramayana, where it is praised for its aromatic and medicinal properties. It was used in religious ceremonies, as a cosmetic, and in traditional medicine.<sup>25</sup>

During British colonial rule, sandalwood became a major export commodity, leading to widespread deforestation and depletion of natural reserves. To address this, the British enacted the Indian Forest Act of 1927, which regulated the felling and transit of sandalwood. However, illegal harvesting and smuggling continued to pose significant challenges. After independence, India continued to prioritize the conservation of its natural resources, including sandalwood. The Wildlife Protection Act of 1972 categorized sandalwood as a protected species, making its felling and trade illegal without permission. This law aimed to prevent illegal logging and trade, protect endangered species, and promote sustainable forest management.

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<sup>24</sup> Anon, Tropical Forestry Services Ltd, Product Disclosure Statement. Indian Sandalwood. Nedlands (Australia): Tropical Forest Services, 2014.

<sup>25</sup> C.A. Barber, The Natural History of the Sandal Tree, 28 Indian Forester, 340-41 (1902).

In 1998, the National Forest Policy emphasized the conservation and sustainable management of forests, including sandalwood. It called for the involvement of local communities in forest conservation and the promotion of alternative livelihoods to reduce dependence on forest resources.<sup>26</sup> The Karnataka Forest Department has also been active in implementing measures to protect sandalwood. It introduced the Sandalwood Transit Rules in 2000, which regulate the transportation and sale of sandalwood within the state. The department also established the Sandalwood Development Corporation to promote the cultivation of sandalwood on private lands. In recent years, there has been a renewed focus on the conservation and sustainable management of sandalwood forests. The government has promoted the cultivation of sandalwood on private lands through incentives and subsidies. Efforts have also been made to crack down on illegal harvesting and smuggling through increased surveillance and enforcement.<sup>27</sup>

Overall, the evolution of sandalwood laws in India reflects a growing awareness of the need to protect this valuable resource. While challenges remain, including illegal trade and habitat loss, the government's efforts to promote sustainable management and conservation are crucial steps towards ensuring the future of sandalwood in India. The future of sandalwood in India depends on the continued efforts to conserve and sustainably manage its forests. By adopting a multi-faceted approach that includes legal reforms, technology adoption, community participation, and international cooperation, India can ensure the long-term survival of this valuable resource. Sandalwood is not only a part of India's natural heritage but also plays a crucial role in the country's economy and cultural heritage.<sup>28</sup> Protecting it is essential for the well-being of future generations.

## **2.4 THE INDIAN FOREST ACT, 1927**

The Indian Forest Act, 1927<sup>29</sup> was primarily influenced by previous Indian Forest Acts that were implemented during the British colonial period. One of the most well-known acts was the Indian Forest Act of 1878. Both these Acts aimed to consolidate and protect forested areas, as well as regulate the movement and transportation of forest products. Additionally, these acts imposed duties on timber and other forest produce. The main

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<sup>26</sup> Nabonita Pal, Abhijit Mitra & Sufia Zaman, National Forest Policy, 1998, 10.13140/RG.2.1.4839.5288 (2016).

<sup>27</sup> Sarmah D, Forests of Karnataka: A Panoramic View. Notion Press, Chennai, India (2019).

<sup>28</sup> H. Ram, Iconic Flora of Heritage Significance in India, 51 Indian J. Hist. Sci., 312-42 (2016).

<sup>29</sup> *Supra* note 20.

objective of the Indian Forest Act of 1927 was to establish exclusive state control over forests in order to meet the demand for timber. Many of these lands, which were not officially titled, had traditionally belonged to forest-dwelling communities. The Act defined state ownership, regulated its usage, and granted the power to replace or extinguish customary rights. The Act categorized forests into three types: reserved forests, village forests, and protected forests. Among these categories, reserved forests are the most heavily protected. No rights can be acquired within reserved forests, except through inheritance or under a government grant or contract. Activities such as tree felling, cattle grazing, removal of forest products, quarrying, fishing, and hunting are punishable by fines or imprisonment. Although the Indian Forest Act is a federal law, many states have enacted similar forest acts with certain modifications. The Forest Act of 1927 allows for state-specific amendments, enabling states to include provisions related to the cultivation, harvesting, and trading of various forest species, including sandalwood.

## **2.5 THE WILD LIFE (PROTECTION) ACT, 1972**

The Wildlife Protection Act of 1972<sup>30</sup> is a comprehensive statute enacted by the Indian Parliament aimed at ensuring the protection and conservation of the country's wildlife. The Act establishes a legal framework for the protection of wildlife habitats, the regulation of hunting, and the establishment of protected areas such as national parks and wildlife sanctuaries. It also provides for the creation of various authorities and bodies to oversee the implementation of the law and the enforcement of its provisions. The Act categorizes species into schedules based on their conservation status, with strict penalties for the poaching and illegal trade of protected species.

In 2022, the Wildlife Protection Act underwent significant amendments aimed to align the Act with the provisions of United Nations Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)<sup>31</sup>, reflecting India's commitment to global biodiversity goals. The changes also sought to address contemporary challenges such as human-wildlife conflict and the illegal wildlife trade, thereby reinforcing the legal

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<sup>30</sup> *Supra* note 21.

<sup>31</sup> *Supra* note 17.

framework for wildlife conservation in the country. With the amendment to the Wildlife (Protection) Act 1972 in December 2022<sup>32</sup>, red sandalwood is now listed in Schedule IV.

The newly inserted chapter, Chapter VB of the Act outlines the framework for regulating international trade in endangered species of wild fauna and flora in India, in accordance with the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The designation of the "Management Authority" and the "Scientific Authority" under Sections 49E and 49F ensures the implementation and oversight of CITES regulations, with responsibilities including permit issuance, monitoring, and advisory functions. Section 49G empowers the Central Government to issue directions to the Management and Scientific Authorities, ensuring centralized control and compliance with national policies and CITES requirements. The regulation of international trade is further detailed in Sections 49H to 49L, which specify conditions for the trade of scheduled specimens, including the need for permits and certificates. These sections emphasize that trade must comply with conservation laws and ensure the well-being of living specimens. For instance, Section 49I requires an export permit for species listed in Schedule IV and outlines conditions such as non-contravention of existing laws and minimal risk to the health of the specimens during transportation.

Section 49Q declares that any species or specimen involved in offenses against the Act becomes government property, allowing the authorities to take necessary conservation actions, including returning living specimens to their country of origin or housing them in recognized facilities. The application of the Act's provisions in relation to species listed in Schedule IV is clarified in Section 49R, ensuring that the more stringent regulations apply to certain species including sandalwood, thereby providing robust protection. Overall, Chapter VB integrates international and national conservation efforts to regulate and monitor the trade of endangered species including sandalwood, reinforcing India's commitment to biodiversity conservation and compliance with CITES.

## **2.6 STATE LAWS**

As 'Forests' is included in the Concurrent List (List III) of the 7<sup>th</sup> Schedule<sup>33</sup> of the Indian Constitution, both state and central governments could make laws relating to forests

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<sup>32</sup> The Wildlife (Protection) Amendment Act, 2022. Act 18 of 2022.

<sup>33</sup> The Constitution of India, 1950, Schedule 7.

including the provisions related to sandalwood. Central legislations including The Indian Forest Act, 1927 and The Wildlife (Protection) Act, 1972 only give a general outline to the protection and conservation of sandalwood in India. States having rich sandalwood populations within their boundaries including states of Karnataka, Tamil Nadu, Kerala and Andhra Pradesh have their own state legislations regarding sandalwood. These state specific legislations provide detailed rules and regulations for the cultivation, ownership, cutting, harvesting and trade of sandalwood.

## **2.7 KARNATAKA**

Sandalwood, a fragrant and valuable wood, has been intertwined with the history and culture of Karnataka, India, for centuries. Its story begins in ancient times, where it was revered for its aromatic properties and used in religious ceremonies, medicinal preparations, and as a luxurious commodity. The region, especially Mysore, emerged as a significant centre for sandalwood trade, with the wood being exported to various parts of the world, including China, Egypt, and the Middle East.<sup>34</sup> This trade not only enriched the region but also contributed to its cultural and economic development. During the colonial era, sandalwood trade faced significant changes. The British recognized the value of sandalwood and imposed strict regulations to protect the trees and control the trade.<sup>35</sup> These regulations, while aimed at conservation, also limited access to sandalwood resources and disrupted traditional practices of local communities. Despite these challenges, sandalwood continued to be an important commodity, and its trade remained a vital part of Karnataka's economy.

After India gained independence in 1947, the management of sandalwood forests in Karnataka was taken over by the Karnataka Forest Department. The government implemented various measures to protect the trees and regulate the trade, including the establishment of sandalwood reserves and plantations. However, illegal harvesting and smuggling of sandalwood persisted, leading to a decline in the population of sandalwood trees. Despite the efforts the Governments, sandalwood smuggling continued to be a problem, with smugglers often targeting trees in remote forests. This illegal activity not only threatened the survival of sandalwood trees but also had a detrimental impact on the

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<sup>34</sup> M N Ramaswamy, A short history of Mysore forest department, 1 My Forest, 1-13 (1964).

<sup>35</sup> Sarmah D, Forestry in India during British era– Karnataka a case study, Notion Press, Chennai, India, (2020).

environment and local communities dependent on sandalwood resources. Growing sandalwood by individuals was banned until 2002.<sup>36</sup> Now, anyone can grow the trees but it is illegal to cut and harvest the wood by themselves and sell in open market. The forests department / Karnataka Soaps and Detergents Limited (KSDL) / Karnataka State Handicrafts Development Corporation (KSHDC) will harvest the sandal wood after maturity. The land owner will be paid the amount after the auction sale as per the rules. The government has implemented measures to promote sustainable cultivation of sandalwood and prevent illegal harvesting. This includes the establishment of sandalwood plantations, where sandalwood trees are grown under controlled conditions to meet the demand for sandalwood products.

Sandalwood continues to be a valuable commodity in Karnataka, with its oil used in perfumes, cosmetics, and pharmaceuticals. The state government has also promoted sandalwood tourism, attracting visitors to its sandalwood reserves and plantations. This not only generates revenue but also raises awareness about the importance of conserving sandalwood resources. Sandalwood has played a significant role in the history and economy of Karnataka, India. Despite facing challenges such as illegal harvesting and smuggling, efforts are ongoing to protect and sustainably manage sandalwood resources for future generations. Sandalwood remains a symbol of Karnataka's rich cultural heritage and continues to be a source of pride for its people.

### **The Karnataka Forest Act, 1963**

Chapter X of The Karnataka Forest Act, 1963<sup>37</sup> provides a comprehensive framework for the regulation, management, and conservation of sandalwood resources. Section 83<sup>38</sup> of the Act delineates the rights of individuals entitled to sandal trees, encompassing those defined by their sannads, grants, judicial rulings, or other means prior to the Act's commencement. It prohibits the unauthorized felling, selling, conversion, dressing, possession, storage, transportation, or sale of sandalwood obtained from these trees, extending these rights to occupants or holders of land, subject to specified conditions. Section 84<sup>39</sup> establishes a crucial presumption regarding sandalwood ownership, stating that in any legal proceedings or consequences thereof, sandalwood shall be presumed to

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<sup>36</sup> Sarmah D, *Forestry in Karnataka: A Journey of 150 Years*, Unity Printers, Bengaluru, India, (2018).

<sup>37</sup> Karnataka Forest Act, 1963. Karnataka Act No. 5 of 1964.

<sup>38</sup> *Id.*, § 83.

<sup>39</sup> *Id.*, § 84.

be the property of the State Government until proven otherwise. This places the onus of proof on the accused in cases of ownership disputes, ensuring clarity and legal adherence. Section 85<sup>40</sup> mandates the responsibility of occupants, landholders, and others specified in Section 83 to preserve all sandal trees on their land. It emphasizes the immediate reporting of any theft of sandalwood to the nearest Forest Officer or Police Officer, thereby aiding in the prevention and detection of illegal activities.

In Section 86<sup>41</sup>, stringent penalties are stipulated for offences concerning sandalwood, encompassing cutting, uprooting, removal, or damage to sandal trees or their parts. Offenders, upon conviction, may face imprisonment for a term extending up to ten years and fines up to one lakh rupees. Notably, for first offenses, the term of imprisonment shall not be less than five years, with a fine not less than fifty thousand rupees, while for second or subsequent offenses, the term of imprisonment shall not be less than seven years, with a fine not less than seventy-five thousand rupees. These penalties are essential deterrents against illegal activities and aim to protect sandalwood resources from exploitation.

Section 87<sup>42</sup> regulates the sale and manufacture of sandalwood and sandalwood oil, requiring individuals to obtain a license from the Forest Officer for such activities, subject to prescribed fees, restrictions, and conditions. Certain exemptions are provided for domestic use and pre-existing businesses, ensuring that legitimate activities are not unduly hindered. Violations of these provisions may lead to imprisonment for up to ten years and fines up to one lakh rupees. The section also outlines specific conditions under which licenses shall not be refused, particularly for individuals engaged in the business of distillation prior to the Act's commencement. This provision ensures continuity for existing businesses while maintaining regulatory oversight to prevent misuse of sandalwood resources.

### **The Karnataka Forest Rules, 1969**

The Karnataka Forest Rules, 1969<sup>43</sup> play a significant role in regulating sandalwood in the state of Karnataka. These rules provide the legal framework for the management and conservation of forests in Karnataka, including the regulation of sandalwood. The rules

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<sup>40</sup> *Id.*, § 85.

<sup>41</sup> *Id.*, § 86.

<sup>42</sup> *Id.*, § 87.

<sup>43</sup> The Karnataka Forest Rules, 1969, issued under the Karnataka Forest Act, 1963 (Karnataka Act 5 of 1964).

govern the felling, transportation, and possession of sandalwood trees. They specify the conditions under which sandalwood trees can be felled, the procedures for obtaining permission, and the documentation required for transportation and possession. The rules provide measures for the protection of sandalwood trees from theft, illegal felling, and damage. They prescribe penalties for offenses related to the unauthorized cutting, removal, or possession of sandalwood. The rules regulate the trade in sandalwood, including the licensing of dealers and traders. They specify the procedures and conditions for the sale, purchase, and transportation of sandalwood. The rules include provisions for the conservation and sustainable management of sandalwood resources.

The provisions outlined in Sections 98 and 99 of The Karnataka Forest Rules, 1969 regarding the supply and retail sale of sandalwood demonstrate a detailed and comprehensive regulatory framework aimed at ensuring the sustainable management and equitable distribution of this valuable natural resource. Section 98<sup>44</sup> specifically addresses the supply of sandalwood to temples and Muzrai Institutions, emphasizing several key aspects. Firstly, it stipulates that all supply must be made at sanctioned retail-sale rates, which are subject to revision by the government. This ensures that the pricing remains fair and consistent. Secondly, it requires that the value of the sandalwood be paid for before removal, ensuring that transactions are financially secure. Thirdly, it mandates that the bona fide requirement of the temple or institution be certified by the Commissioner for Charitable Endowments, preventing misuse or hoarding of sandalwood. Lastly, it specifies that temples and institutions obtaining sandalwood in excess of a certain amount must obtain licenses for possession and storage, further regulating the distribution and use of sandalwood.

Section 99<sup>45</sup>, on the other hand, focuses on the rules for the retail sale of sandalwood from government sandalwood depots. It specifies that all sales to permit holders must be at sanctioned retail sale rates, which are revised annually by the government. It also exempts purchases of sandalwood not exceeding a certain amount from the requirement of a permit, simplifying the process for small-scale domestic users. The section further outlines the application process for permits, requiring applicants to furnish detailed information about the kind and quantity of sandalwood required, the purpose for which it is needed, and their

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<sup>44</sup> *Id.*, § 98.

<sup>45</sup> *Id.*, § 99.



previous purchases and licenses, if any. This information helps ensure that sandalwood is being used for legitimate purposes and that purchasers are complying with the regulations.

### **The Karnataka Forest (Amendment) Rules, 2022**

With the adoption of the new sandalwood policy<sup>46</sup> in 2022, The Karnataka State Government introduced amendments to the Karnataka Forest Rules, 1969, through the Karnataka Forest (Amendment) Rules, 2022<sup>47</sup>. These amendments primarily focus on the extraction and disposal of Sandal trees from lands where owners possess rights to them.

The amended rules require owners intending to extract Sandalwood trees to apply to the respective Range Forest Officer. This application must include detailed information such as the village, Survey Number, and other particulars of the land, along with a list of trees to be extracted. Additionally, owners must specify whether the extracted Sandalwood will be sold to the State Government, a State Government undertaking, or any other entity. Relevant documents from the authorities concerned must be enclosed with the application. Following the application, the Range Forest Officer conducts a site visit and verifies the documents. They must then obtain a revenue opinion regarding the land tenure and tree ownership from the concerned jurisdictional Assistant Commissioner or Tahsildar, depending on the value of the trees. However, a revenue opinion is not necessary if the land in question is Hiduvali land and meets certain criteria.

Once the Range Forest Officer is satisfied with the ownership or interest of the applicant to the trees, they report the matter to the Deputy Conservator of Forests through the Assistant Conservator of Forests. The Deputy Conservator of Forests may permit the extraction of the tree within fifteen days if they are satisfied about the ownership and title. Permission for extraction is generally not refused if the tree has fallen due to wind, poses a danger to life or property, or needs to be removed for the extension of cultivation or other reasons, irrespective of the age of the tree. Before extraction, the applicant must sign a declaration agreeing to specified conditions and indemnifying the State Government or

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<sup>46</sup> Times of India, Karnataka Approves New Sandalwood Policy, No Curbs to Grow and Sell, Nov. 18, 2022. <https://timesofindia.indiatimes.com/city/bengaluru/karnataka-approves-new-sandalwood-policy-no-curbs-to-grow-and-sell/articleshow/95590280.cms>.

<sup>47</sup> The Karnataka Forest (Amendment) Rules, 2022, issued in exercise of the powers conferred by § 102 of The Karnataka Forest Act, 1963 (Karnataka Act 5 of 1964).

other person due to any misrepresentation on their part about their title to the tree or about the ownership of the land.

The extracted trees are then numbered and measured, with girth measurements taken at a height of 1.37 meters above ground level. The place where the girth measurement was taken is marked with a red band in paint. A Forest Guard supervises these operations, and the details are recorded in a register maintained by the Range Forest Officer. The extracted material can be transported to the Government depot, other State Government Undertakings, or other entities. Transportation costs are borne by the owner. The value of the sandalwood is determined by the Principal Chief Conservator of Forests based on average prices obtained from auction sales. After deducting various charges, the value of the sandalwood must be paid to the owner within three months of its receipt at the depot.

## **2.8 TAMIL NADU**

Sandalwood has deep roots in Tamil Nadu, tracing back to ancient times as evidenced by its mention in Sangam literature from the 3rd century BCE to the 3rd century CE<sup>48</sup>. The region's conducive geographical and climatic conditions have made it a primary hub for sandalwood cultivation in India.<sup>49</sup> Beyond its practical applications, sandalwood holds immense cultural and religious significance, often being used in ceremonies, rituals, and as a sign of respect in temples and homes. Traditional Tamil medicine, known as Siddha medicine, has long utilized sandalwood for its cooling properties and medicinal benefits.<sup>50</sup> Historically, Tamil Nadu was a major trading center for sandalwood, particularly during the Chola and Pandya dynasties, with the wood being highly valued and traded both within India and beyond. The colonial era further emphasized its value, leading to the establishment of plantations by the British in Tamil Nadu and other regions.<sup>51</sup> Today, sandalwood cultivation in Tamil Nadu is carefully regulated by the Forest Department to prevent illegal harvesting and ensure sustainable management, highlighting the enduring importance of sandalwood in the region's cultural and economic fabric.

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<sup>48</sup> Kamil V. Zvelebil, *Tamil Literature*, Brill (1975).

<sup>49</sup> V. Saravanan, *Environmental History of Tamil Nadu State, Law and Decline of Forest and Tribals, 1950–2000*, 41 *Mod. Asian Stud.*, 723-67 (2007).

<sup>50</sup> Shailja Choudhary & Gitika Chaudhary, *Sandalwood (Santalum album): Ancient Tree with Significant Medicinal Benefits*, 90 *Int'l J. Ayurveda & Pharma Res.* 90, 90-99 (2021).

<sup>51</sup> K.N. Chaudhuri, *Trade and Civilisation in the Indian Ocean: An Economic History from the Rise of Islam to 1750* (1985).

## **The Tamil Nadu Forest Act, 1882**

The Tamil Nadu Forest Act of 1882, Chapter V-A, delves into the regulation of sandalwood possession and sale with a series of comprehensive provisions.<sup>52</sup> Section 36-A sets the limit for personal possession of sandalwood at five kilograms, requiring a license from the District Forest Officer for quantities exceeding this limit, or alternatively, for unlicensed possession, the sandalwood must bear a prescribed mark affixed by a Forest officer. The provision also empowers the District Forest Officer to refuse licenses or renewals based on various criteria, including past convictions under the Act, prior license suspensions or cancellations, or other reasons deemed appropriate.<sup>53</sup> Section 36-B grants the government the authority to establish rules regarding license applications, the terms and conditions of licenses, and the associated fees, including provisions for duplicate licenses and their renewal.<sup>54</sup>

Section 36-C authorizes the District Forest Officer to revoke or suspend licenses if the licensee violates any provisions of the Act, rules, or license conditions, following a fair opportunity for the licensee to present their case.<sup>55</sup> In case of dissatisfaction with the District Forest Officer's decision, Section 36-D allows the affected individual to appeal to the Collector, who has the authority to make a final determination on the matter.<sup>56</sup> Section 36-E outlines the penalties for contravening the Act or its rules, with imprisonment of up to five years and fines of up to twenty thousand rupees. For a first offense, the minimum imprisonment term is two years and the minimum fine is seven thousand and five hundred rupees. For subsequent offenses, the minimum imprisonment term increases to three years and the minimum fine to fifteen thousand rupees.<sup>57</sup>

Section 36-F addresses ownership of sandalwood trees grown on patta land, stipulating that individuals growing such trees on their land are the rightful owners. However, these trees cannot be sold or otherwise transferred to anyone other than the government, except through government auctions. The government is further empowered to establish rules

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<sup>52</sup> Tamil Nadu Forest Act, 1882, Chapter VA.

<sup>53</sup> *Id.*, § 36-A.

<sup>54</sup> *Id.*, § 36-B.

<sup>55</sup> *Id.*, § 36-C.

<sup>56</sup> *Id.*, § 36-D.

<sup>57</sup> *Id.*, § 36-E.

governing the sale of sandalwood trees to the government, verification of ownership of such trees on patta land, and the pricing and payment mechanisms for these transactions.<sup>58</sup>

### **The Tamil Nadu Sandalwood Transit Rules, 1967**

The Tamil Nadu Sandalwood Transit Rules, 1967<sup>59</sup> serve as a comprehensive regulatory framework governing the import, export, and movement of sandalwood within Tamil Nadu. These rules, enacted under the authority of sections 35 and 36 of the Tamil Nadu Forest Act, 1882, supersede previous notifications on the subject and establish strict conditions for the transit of sandalwood. They require that all sandalwood be accompanied by a permit or way permit, bearing the mark of the Government of origin, and be produced for examination at designated checking stations.<sup>60</sup> The rules provide various forms of permits depending on the source and type of sandalwood, which must be obtained from the District Forest Officer.<sup>61</sup> Permits must be filled out correctly and presented for inspection at checking stations, and they must be produced on demand by Forest Officers, Revenue Officers, or Police Officers.<sup>62</sup>

Sandalwood in transit must be examined at checking stations, and permits must be exchanged for way permits if the conditions are met.<sup>63</sup> Additionally, sandalwood imported from other states must bear the mark of the Government of origin and be registered at the District Forest Office.<sup>64</sup> The registration of property marks is valid until the first day of April following the registration, unless otherwise stated.<sup>65</sup> Small quantities of sandalwood carried for personal use or by ryots from their patta lands are exempt from these rules.<sup>66</sup> The rules also establish a list of approved companies or persons engaged in sandalwood distillation or manufacturing of its by-products.<sup>67</sup>

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<sup>58</sup> *Id.*, § 36-F.

<sup>59</sup> The Tamil Nadu Sandalwood Transit Rules, 1967, issued in exercise of the powers conferred by §§ 35 and 36 of the Tamil Nadu Forest Act, 1882 (Tamil Nadu Act V of 1882).

<sup>60</sup> *Id.*, Rule 3, Rule 6(1).

<sup>61</sup> *Id.*, Rule 4.

<sup>62</sup> *Id.*, Rule 5(2), Rule 6(7).

<sup>63</sup> *Id.*, Rule 6(2).

<sup>64</sup> *Id.*, Rule 7(1).

<sup>65</sup> *Id.*, Rule 8.

<sup>66</sup> *Id.*, Rule 9.

<sup>67</sup> *Id.*, Rule 10.

## **The Tamil Nadu Sandalwood Possession Rules, 1970**

The Tamil Nadu Sandalwood Possession Rules, 1970<sup>68</sup>, were enacted to effectively regulate the possession and trade of sandalwood within the state. The rules specify that no person can possess or stockpile sandalwood in quantities exceeding five kilograms without obtaining a license.<sup>69</sup> To obtain a license, an applicant must submit an application to the District Forest Officer, along with authenticated documents proving the legal procurement of the sandalwood. Upon receipt of the application, the District Forest Officer may issue a license if satisfied with the applicant's credibility.<sup>70</sup>

For ongoing compliance, dealers and stockists are required to notify the District Forest Officer of the actual source of subsequent sandalwood consignments.<sup>71</sup> Additionally, stockists must provide detailed information about their storage facilities and maintain a comprehensive stock register, with an annual extract of this register submitted to the District Forest Officer. The rules stipulate different license fees for different types of dealers, with non-wholesalers and non-distillers paying a lower fee compared to wholesale dealers and distillers.<sup>72</sup> In terms of enforcement, the rules outline procedures for granting duplicate licenses and renewing existing licenses, with a specified fee for obtaining a duplicate license.<sup>73</sup>

## **The Tamil Nadu Sandalwood Trees Patta Land Rules, 2008**

The Tamil Nadu Sandalwood Trees Patta Land Rules, 2008, issued under the authority of the Tamil Nadu Forest Act, 1882, are designed to govern the sale of sandalwood trees grown on patta land in the state.<sup>74</sup> These rules are crucial for managing the extraction and sale of sandalwood, a valuable natural resource, in a sustainable and regulated manner. The process for selling sandalwood trees to the government is outlined in detail. It begins with the owner of the sandalwood tree submitting an application to the District Forest Officer, accompanied by several documents, including proof of land ownership and a list

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<sup>68</sup> Tamil Nadu Sandalwood Possession Rules, 1970, issued in exercise of the powers conferred by §§ 35,36, 36-A, 36-B and 36-D of the Tamil Nadu Forest Act, 1882 (Tamil Nadu Act V of 1882).

<sup>69</sup> *Id.*, Rule 3(1).

<sup>70</sup> *Id.*, Rule 3(2).

<sup>71</sup> *Id.*, Rule 3(3).

<sup>72</sup> *Id.*, Rule 4.

<sup>73</sup> *Id.*, Rule 5.

<sup>74</sup> Tamil Nadu Sandal Wood Trees Patta Land Rules, 2008, issued in exercise of the powers conferred by sub § 3 of § 36 -F of the Tamil Nadu Forest Act, 1882 (Tamil Nadu Act V of 1882).

of trees for sale.<sup>75</sup> The District Forest Officer then verifies the ownership of the trees before granting permission for extraction and sale.<sup>76</sup> The rules also specify the procedure for the extraction and processing of sandalwood trees. Forest Rangers are required to inspect the trees proposed for sale and mark those for extraction. The extracted wood is then sent to a Final Cleaning Depot for processing.<sup>77</sup>

One of the critical aspects of the rules is the determination of the sale price for the sandalwood. The price is calculated based on the average sale price at the Final Cleaning Depot, with deductions for extraction, transport, and administrative charges. The owner of the sandalwood tree is entitled to receive 20% of the net sale price within 30 days of extraction, with the balance to be paid within 90 days.<sup>78</sup>

## 2.9 KERALA

Sandalwood (*Santalum album*) has been an integral part of Kerala's history and culture, deeply connected with its traditions, economy, and ecology. Historically, sandalwood has been revered for its fragrance, medicinal properties, and religious significance.<sup>79</sup> It was used in various rituals, ceremonies, and Ayurvedic treatments, symbolizing purity and auspiciousness. The demand for sandalwood led to its trade and cultivation in Kerala, with the wood being highly prized in local and international markets. In ancient and medieval times, Kerala's natural sandalwood forests were abundant, and the wood was harvested sustainably by local communities. However, with the advent of colonial powers, particularly the British, the exploitation of sandalwood escalated. The British established plantations and exploited natural forests to meet the growing demand for sandalwood in Europe and other parts of the world. This period marked a significant decline in Kerala's natural sandalwood reserves.<sup>80</sup>

Post-independence, there was a shift towards conservation and sustainable management of sandalwood forests. The Kerala Forest Department took measures to protect natural

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<sup>75</sup> *Id.*, Rule 3.

<sup>76</sup> *Id.*, Rule 4.

<sup>77</sup> *Id.*, Rule 5(2).

<sup>78</sup> *Id.*, Rule 5(6).

<sup>79</sup> *Supra* note 10.

<sup>80</sup> Krishnamurthy Y. L., Srinivas V., & Rao N. S., Status of sandalwood in the southern states of India. Sandalwood in the Pacific: Production, trade, consumption and the future sustainability of the resource, Australian Centre for International Agricultural Research, 11 – 24 (2001).

sandalwood stands, regulate trade, and promote cultivation. In recent years, there has been a renewed interest in sandalwood cultivation in Kerala. Various initiatives have been undertaken to promote the cultivation of sandalwood on private lands, with support from government agencies and organizations. These efforts are aimed at meeting the demand for sandalwood products while conserving natural forests and biodiversity.<sup>81</sup>

### **The Kerala Forest (Amendment) Act, 2010**

The Kerala Forest (Amendment) Act, 2010, is a significant legislative update to the Kerala Forest Act, 1961, aimed at enhancing the protection and management of sandalwood resources. The Act introduces Chapter VI A, which includes several detailed provisions to regulate the cutting, possession, sale, and transport of sandalwood and sandalwood oil. One of the central provisions of the Act is the restriction on cutting and sale of sandal trees. It prohibits any person from cutting, uprooting, removing, or selling any sandal tree without the prior written permission of the authorised officer.<sup>82</sup> Exceptions are provided for cases where the tree is dead, wind-fallen, or poses a danger to life or property, or if cutting is necessary for land use, subject to certain conditions.<sup>83</sup>

The Act also imposes strict regulations on the possession and transport of sandalwood and sandalwood oil. It prohibits individuals from possessing or transporting quantities of sandalwood exceeding one kilogram or sandalwood oil exceeding one hundred milliliters, except under a license issued by the authorised officer.<sup>84</sup> Licenses may be granted to religious institutions, artisans, licensed manufacturers, and registered practitioners of indigenous medicines, among others, for specific purposes and subject to prescribed fees and conditions.

In addition to these provisions, the Act requires individuals holding quantities of sandalwood or sandalwood oil above specified limits to declare and surrender them to the authorised officer within a specified period.<sup>85</sup> Failure to comply with this requirement may result in penalties. There is also restrictions for purchase and sale of sandal products

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<sup>81</sup> Kerala Forest Research Institute, Sandalwood cultivation in Kerala, 164 Forest Research News, 4-5 (2017).

<sup>82</sup> The Kerala Forest (Amendment) Act, 2010, § 47B (1).

<sup>83</sup> *Id.*, § 47B (2).

<sup>84</sup> *Id.*, § 47C (1).

<sup>85</sup> *Id.*, § 47D.

without government authorisation.<sup>86</sup> To enforce these regulations, the Act prescribes penalties for various offences related to sandalwood, including imprisonment and fines.<sup>87</sup> Repeat offenders face more severe penalties, emphasizing the Act's aim to deter illegal activities involving sandalwood.

### **The Kerala Forest (Restriction on Cutting and Selling of Sandal Trees and Grant of License for Possession and Transport of Sandalwood and Sandalwood Oil) Rules, 2012**

The Kerala Forest (Restriction on Cutting and Selling of Sandal Trees and Grant of License for Possession and Transport of Sandalwood and Sandalwood Oil) Rules, 2012, provides a comprehensive regulatory framework aimed at effectively managing the cutting, selling, possession, and transportation of sandalwood within the state. Under the authority of the Kerala Forest Act, 1961, these rules provide a structured approach to the sustainable utilization of sandalwood resources while also ensuring the conservation of this valuable species. The Rules outlines a detailed procedure for obtaining permission to cut or uproot sandalwood trees, emphasizing the need for applications to be submitted to the Authorized Officer in a specified format and for the Officer to verify the application within a specified timeframe. The rules also specify criteria for granting permission, including the prohibition of cutting trees below a certain girth and consideration of silvicultural requirements for plantations.<sup>88</sup>

Furthermore, the rules grant power to the Authorised Officer to oversee the inspection of areas where sandalwood trees are to be cut or uprooted. The Committee authorised by the Government under 47B(2) of The Kerala Forest Act, 1961 is responsible for verifying the genuineness of applications and ensuring compliance with regulations. It also plays a crucial role in reporting incidents of intentional harm to sandalwood trees.<sup>89</sup> Additionally, the rules detail the process for the disposal of sandalwood trees upon the request of the owner, including procedures for cutting, uprooting, and transporting the trees to approved depots for auction. The rules specify that the government will recover expenses incurred

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<sup>86</sup> *Id.*, § 47F.

<sup>87</sup> *Id.*, § 47G.

<sup>88</sup> Kerala Forest (Restriction on Cutting and Selling of Sandal Trees and Grant of License for Possession and Transport of Sandalwood and Sandalwood Oil) Rules, 2012, Rule 3(4).

<sup>89</sup> *Id.*, Rule 4(1).



for these activities from the sale proceeds of the sandalwood, ensuring that owners receive fair compensation.<sup>90</sup>

The rules also establish stringent conditions for the issuance of licences for the possession and transport of sandalwood, including requirements for maintaining up-to-date stock registers, submitting quarterly reports, and obtaining prior permission for shifting premises where sandalwood is stored. These provisions are designed to prevent illegal trade and ensure accountability among licensees.<sup>91</sup> In the event of a violation of the rules, provisions are made for the suspension and cancellation of licences, with the opportunity for appeal provided to aggrieved parties.<sup>92</sup>

Apart from these legislations on sandalwood, Section 6 of The Kerala Promotion Of Tree Growth In Non-Forest Areas Act, 2005<sup>93</sup> specifically mention that every owner of non-forest land shall have the right to cut and transport any tree, other than sandalwood tree, standing on his land.

## **2.10 ANDHRA PRADESH AND TELANGANA**

Sandalwood has been an integral part of Andhra Pradesh's history, deeply rooted in its cultural, religious, and economic fabric. Historically, sandalwood was used in religious rituals, temple construction, and in the production of perfumes and cosmetics. The Seshachalam Hills and parts of Rayalaseema were known for their sandalwood forests, which were considered among the finest in the country.<sup>94</sup> During the colonial period, the British recognized the commercial value of sandalwood and began exploiting these forests, leading to a significant decline in their numbers. After India gained independence, the state government took measures to conserve and protect sandalwood forests.

The Andhra Pradesh and Telangana Forest Departments plays a crucial role in managing these forests, implementing strict regulations to prevent illegal logging and smuggling. Sandalwood cultivation has also been promoted as a sustainable alternative to harvesting

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<sup>90</sup> *Id*, Rule 5(1).

<sup>91</sup> *Id*, Rules 6 - 7.

<sup>92</sup> *Id*, Rules 10 - 11.

<sup>93</sup> Kerala Promotion of Tree Growth in Non-Forest Areas Act, 2005 (Act No. 46 of 2005).

<sup>94</sup> R. Vasundhara, Economic Botany of the Sandalwood Tree, 12 J. Econ. Bot. 456, 456-65 (2008).

from natural forests, with efforts to establish plantations and encourage farmers to grow sandalwood trees. The sandalwood industry in Andhra Pradesh faces challenges such as illegal logging, smuggling, and habitat destruction. However, efforts are being made to address these issues through stricter enforcement of laws, community involvement in conservation, and sustainable management practices. Sandalwood from Andhra Pradesh continues to be highly prized for its quality and fragrance, contributing to the state's economy and cultural heritage.<sup>95</sup>

### **Andhra Pradesh Forest Act, 1967**

Chapter V of the Andhra Pradesh Forest Act, 1967, addresses the possession of sandalwood or red sanders wood, both of which are valuable and protected resources.<sup>96</sup> The Act imposes strict regulations to prevent illegal possession and trafficking of these woods. Section 32 prohibits possession of sandalwood exceeding ten kilograms without a license from the Divisional Forest Officer, who has the authority to refuse a license based on the applicant's history of offenses or other grounds. Similarly, possession of red sanders wood exceeding 20 kg requires a license, and the Officer can refuse it for similar reasons.<sup>97</sup> Section 32B introduces a significant provision regarding vehicles involved in smuggling these woods. It establishes a presumption that the vehicle owner committed the offense unless proven otherwise, placing a high burden of proof on the owner. This provision aims to deter the use of vehicles in illegal activities related to forest resources.<sup>98</sup>

Section 32C shifts the burden of proof onto the accused in cases of forest offenses involving these woods, except for trivial offenses. This provision is crucial as it can make it more challenging for offenders to escape liability by shifting the burden of proof onto the prosecution.<sup>99</sup> Section 32D focuses on private persons possessing red sanders wood above 20 kg, requiring them to inform the Divisional Forest Officer within a specified timeframe. Failure to do so results in the stock being presumed illegal and property of the

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<sup>95</sup> Kodamala Prathyusha, A Study on Red Sandal Wood Plantation of Nallamala Forest, Andhra Pradesh, India, 7 Int'l J. Eng'g, Sci. & Math. 3, 3-12 (2018).

<sup>96</sup> Inserted by Act 15 of 2016, § 7.

<sup>97</sup> Sections inserted by Act 15 of 2016, § 8.

<sup>98</sup> *Id*

<sup>99</sup> *Id*

government. This provision aims to enhance transparency and accountability in the possession and trade of these valuable resources.<sup>100</sup>

Section 36 outlines stringent penalties for contravening the Act or rules, including imprisonment up to ten years and fines up to ten lakh rupees. The Act provides for escalating penalties for subsequent offenses, with a minimum term of imprisonment and fine specified for first and subsequent offenses.<sup>101</sup>

### **The Andhra Pradesh Sandalwood Possession Rules, 1969**

The Andhra Pradesh Sandalwood Possession Rules, 1969, which have been adopted by the Government of Telangana, are a comprehensive framework for regulating the possession of sandalwood within the state. These rules are rooted in the Andhra Pradesh Forest Act, 1967, and provide detailed guidelines for individuals and entities involved in the trade and possession of sandalwood. One of the key aspects of these rules is the limitation on the possession of sandalwood. No person is allowed to possess sandalwood in excess of the limit specified in Section 32 of the Act without obtaining a valid licence from the Divisional Forest Officer.<sup>102</sup> This ensures that the possession of sandalwood is closely monitored and controlled to prevent illegal activities.

The licensing process is another important component of these rules. Individuals or entities seeking to possess sandalwood must apply for a licence and submit relevant documents along with the prescribed fee. The rules also specify that licences, other than permanent licences for specific purposes, are valid until the end of the financial year and can be renewed.<sup>103</sup> This ensures that those involved in the trade of sandalwood adhere to the regulations and maintain transparency in their operations. The rules also outline procedures for reporting and inspection of sandalwood. Dealers or stockists are required to inform the Divisional Forest Officer about the source of sandalwood they intend to possess and provide necessary information for verification. They must also inform the Divisional Forest Officer within 24 hours of possessing sandalwood, which will be

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<sup>100</sup> *Id*

<sup>101</sup> Substituted by Act 15 of 2016, § 9.

<sup>102</sup> Andhra Pradesh Sandalwood Possession Rules, 1969, Rule 3(1).

<sup>103</sup> *Id*

inspected by a Forester.<sup>104</sup> This ensures that the origin of sandalwood is verified and that it is obtained through legal means.

The Andhra Pradesh Sandalwood Possession Rules, 1969, also adopted by the Government of Telangana, are a comprehensive set of regulations aimed at ensuring the sustainable use of sandalwood resources and preventing illegal activities related to its possession and trade. These rules provide a framework for licensing, reporting, and inspection, which are crucial for maintaining transparency and accountability in the sandalwood trade.

### **The Andhra Pradesh Sandal Wood and Red Sanders Wood Transit Rules, 1969**

The Andhra Pradesh Sandal Wood and Red Sanders Wood Transit Rules of 1969, enacted under the Andhra Pradesh Forest Act, 1967, are a comprehensive regulatory framework governing the transit of sandalwood and red sanders wood within the state. These rules, issued by the Governor of Andhra Pradesh, supersede all previous regulations on the subject.<sup>105</sup> They establish strict conditions for the import, export, and movement of these valuable forest products, aiming to prevent illegal trafficking and ensure sustainable use. One of the key provisions of these rules is the requirement for permits for the transit of sandalwood and red sanders wood. Different forms of permits are specified depending on the source of the wood, such as purchase from the government or from other states. These permits detail the quantity, quality, and destination of the wood, and must be filled out and issued by authorized forestry officers. The rules also mandate that all wood in transit must bear an authorized marking or seal to prevent unauthorized transport.<sup>106</sup>

The rules further require all sandalwood and red sanders wood to be produced for examination at every checking station en route. Officers at these stations are tasked with verifying the origin and quantity of the wood against the permit, endorsing the permit if satisfied, and making necessary entries in a register. Any discrepancies or refusals to endorse require the wood to be retained and reported to higher authorities for further action.<sup>107</sup> Additionally, the rules establish procedures for the use and registration of

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<sup>104</sup> *Id.*, Rule 6.

<sup>105</sup> Andhra Pradesh Sandal Wood and Red Sanders Wood Transit Rules, 1969, Rule 1.

<sup>106</sup> *Id.*, Rule 3.

<sup>107</sup> *Id.*, Rule 6.

property marks on sandalwood and red sanders wood. These marks, indicating ownership or origin, are required for all wood imported from other states or disposed of locally. The registration of property marks involves a fee and compliance with specific application procedures, including inspections and approvals by forestry officials.<sup>108</sup> Furthermore, the rules provide exemptions for small quantities of sandalwood and red sanders wood carried for personal use by travelers or farmers. However, these exemptions are subject to conditions, such as obtaining certificates of title and limits on the quantity that can be transported.<sup>109</sup>

## 2.11 CONCLUSION

The regulation of sandalwood in India involves a complex web of laws and regulations at both the national and state levels. The primary legislation governing sandalwood is the Wildlife Protection Act, 1972, which classifies sandalwood as a protected species and prohibits its trade without proper authorization. The strict regulations and restrictions on sandalwood in India reflect the critical importance of preserving this valuable natural resource. These regulations aim to curb illegal activities such as smuggling and unauthorized harvesting, ensuring the sustainable management of sandalwood forests. The 2022 amendment to The Wildlife Protection Act, 1972, provides a robust framework for the protection and conservation of endangered species of wildlife, including sandalwood trees. Additionally, various state laws complement these efforts by imposing stringent measures to regulate the possession, transport, and sale of sandalwood within their jurisdictions. By enforcing these regulations, India aims to safeguard its biodiversity, protect its natural heritage, and promote the sustainable use of sandalwood resources. These measures also contribute to the country's commitment to combating illegal wildlife trade and promoting environmental conservation.

Critically evaluating the restrictions imposed on sandalwood in India reveals a complex picture that raises questions about the effectiveness and unintended consequences of these regulations. While the regulations are aimed at conserving sandalwood and preventing its illegal trade, they also present challenges and limitations that warrant scrutiny. One of the key criticisms of the restrictions is their impact on the livelihoods of communities

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<sup>108</sup> *Id.*, Rule 7.

<sup>109</sup> *Id.*, Rule 9.

dependent on sandalwood. Many local communities rely on sandalwood for income and sustenance, and the stringent regulations can restrict their access to this resource. This can lead to economic hardships and resentment towards conservation efforts, potentially undermining their effectiveness in the long run. Furthermore, the restrictions can also fuel illegal trade and smuggling. The high value of sandalwood makes it a lucrative commodity on the black market, and the stringent regulations can create incentives for individuals to engage in illegal activities to circumvent these restrictions. This not only undermines conservation efforts but also poses challenges for law enforcement agencies tasked with combating illegal trade.<sup>110</sup>

Another criticism is the lack of clarity and consistency in the implementation of these regulations. Enforcement practices can vary widely across different regions and jurisdictions, leading to confusion and inconsistency in how the regulations are applied. This can create opportunities for corruption and exploitation, further undermining the effectiveness of the regulations. Moreover, the restrictions may not address the root causes of sandalwood depletion, such as habitat loss and unsustainable harvesting practices. While the regulations focus on controlling the trade of sandalwood, they may not be sufficient to address broader issues related to habitat conservation and sustainable forest management.<sup>111</sup>

In conclusion, while the restrictions imposed on sandalwood in India are well-intentioned, they are not without their limitations and challenges. Criticisms related to their impact on local communities, effectiveness in curbing illegal trade, implementation consistency, and addressing root causes of depletion highlight the need for a more nuanced and holistic approach to sandalwood conservation. Efforts to conserve sandalwood should consider the social, economic, and environmental dimensions of the issue to ensure sustainable outcomes for both the species and the communities dependent on it.

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<sup>110</sup> Jha, S. (2020, August 27). About 20,000 tonnes of Red Sanders were smuggled from India between 2016 and 2020: Report. Down To Earth.

<sup>111</sup> S. Rai, Status and Cultivation of Sandalwood in India, USDA Forest Service Gen. Tech. Rep. PSW-122, 66-71 (1990).

## CHAPTER 3

# THE IMPACT OF REGULATIONS ON SANDALWOOD CONSERVATION

### 3.1 INTRODUCTION

The Indian Sandalwood, or *Santalum album*, is a semi-parasitic woody plant that yields incredibly scented oil, the price of which is surging in the global perfumery market. Sandalwood oil typically has a unique solidity and provides aroma with its most effective fixing ability. The fragrant timber of sandalwood, known as the heartwood, has long been used traditionally in important religious ceremonies, not just in India, but all throughout the world. Smaller quantities of sandalwood are also used to enhance smaller furniture items and carvings. The qualities of sandalwood oil include antipyretic, cleansing, antiscabietic, and diuretic.<sup>112</sup> It is also effective in treating urinary tract diseases, cystitis, bronchitis, and dysuria. The traditional medical system gives the oil a significant role.<sup>113</sup> It is thought to be a migraine remedy. There is currently a severe shortage of this on global markets. High-quality Indian sandalwood (*S. album*) is becoming more and more expensive; this is partly due to the species' unsustainable long-term collection in its natural habitats in India.

From past centuries itself, sandalwood was treated as a royal tree having some kind of a divine nature. It was also an integral part of the ancient Indian culture. Now also, it is the highest prized wood in the Indian forestry. The fragrance of the sandalwood oil is considered as sacred by Hinduism, Buddhism and Islam which are three major religions in the world. Egyptians had been importing sandalwood for medicinal purposes centuries back. Sandalwood is one important tree species which is used in conducting spiritual and ritualistic practices.<sup>114</sup>

The Sandalwood tree, with its unique properties and significance, has been deeply ingrained in the cultural and spiritual fabric of India. Its presence in Subhashitas, wise

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<sup>112</sup> S. Bhat & R.C. Prajapati, Sandal in Ancient India—Medicinal and Cosmetic Use, in Proceedings of National Seminar in IWST (2007).

<sup>113</sup> Dastur JF, Medicinal plants of India and Pakistan. D.B. Taraporevala Sons, Bombay, (1962).

<sup>114</sup> T.M. Chandrashekaraiah, Sandal Tree, 8 My Forest, 21-25 (1971).

sayings that guide individuals towards righteous behavior, showcases its importance in imparting valuable life lessons. The example of the tribal woman using Sandalwood as fuel in the Sandalwood-filled Malaya Mountain highlights the irony of its value. While it may be readily available in certain regions, its scarcity in the outside world makes it highly prized. This serves as a reminder that not everything of value is easily accessible and should be cherished when found. Furthermore, the comparison of Sandalwood to precious stones, pearls, and saintly individuals emphasizes its rarity and the significance of finding such treasures. Just as not every mountain holds precious stones and not every elephant possesses pearls, Sandalwood is not found in every forest. Similarly, saintly individuals, who possess virtuous qualities, are not found everywhere. This analogy encourages individuals to recognize and appreciate the uniqueness and value of both Sandalwood and virtuous individuals. The selfless nature of the Sandalwood tree is also highlighted, as it provides shelter to snakes, resting places for birds, and a playground for monkeys. It even offers flowers for bees. This portrayal of the Sandalwood tree as a provider and nurturer underscores the importance of selflessness and serving others.<sup>115</sup>

Due to its rich properties and economic value, people began to exploit sandalwood in unsustainable ways. Large number of sandalwood trees were cut down for economical benefits. Sandalwood rich forests were hugely exploited. These activities even had the potential for causing endangerment to this precious tree.<sup>116</sup> These factors led to implementation of strict regulations in sandalwood cultivation, cutting and trading.

### **3.2 CONSERVATION EFFORTS**

The development of sandalwood regulations in India is a complicated story that showcases both the achievements and limitations of conservation efforts in the face of economic, cultural, and legal obstacles. Throughout history, sandalwood, particularly *Santalum album*, has held great cultural, medicinal, and religious importance in India. However, its high value has resulted in extensive exploitation and the depletion of natural sandalwood forests. The initial attempts at regulation can be traced back to the British colonial era, when the Sandalwood and Timber Regulation Act of 1827 was implemented by the

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<sup>115</sup> *Supra* note 10.

<sup>116</sup> M.N. Rao et al., Mapping Genetic Diversity of Sandal (*Santalum album* L.) in South India: Lessons for In-Situ Conservation of Sandal Genetic Resources, in *Forest Genetic Resources: Status, Threats and Conservation Strategies* (2001).



Madras Presidency to control logging and trade. After gaining independence, the Indian government continued these efforts but encountered significant challenges in terms of enforcement and effectiveness.

The Indian Forest Act of 1927, a legacy of colonial rule, granted state governments the authority to regulate forest products, including sandalwood. States like Karnataka and Tamil Nadu, which possess abundant sandalwood resources, enacted strict laws. Karnataka's classification of sandalwood as a 'royal tree' under the Karnataka Forest Act centralized control and asserted state ownership over all sandalwood trees, regardless of land ownership. While this measure aimed to combat illegal logging, it also resulted in bureaucratic complexities and reduced incentives for private landowners to conserve and cultivate sandalwood. Tamil Nadu pursued a similar approach through the Tamil Nadu Forest Act, which included specific provisions for sandalwood management. However, it encountered similar challenges in terms of enforcement. Despite their good intentions, these state regulations often fell short in practice due to corruption, lack of resources, and the profitability of the illegal sandalwood trade. National policies, such as the Wildlife Protection Act of 1972 and the Forest Conservation Act of 1980<sup>117</sup>, provided a broader framework for conservation but did not specifically address the unique challenges of protecting sandalwood.

Despite the existence of regulatory frameworks, the persistence of illegal logging and smuggling continues due to high international demand and the profitable black market. The penalties for illegal activities are often inadequate to deter offenders, and enforcement agencies are frequently understaffed and overwhelmed. The establishment of the National Biodiversity Authority under the Biological Diversity Act of 2002<sup>118</sup> was a significant step towards regulating access to biological resources and promoting sustainable utilization. However, the implementation of benefit-sharing agreements and prior informed consent often faces bureaucratic delays and compliance challenges.

International influences, particularly the Convention on International Trade in Endangered Species of Wild Fauna and Flora<sup>119</sup> (CITES), have influenced India's sandalwood policies. India's incorporation of CITES provisions into domestic law aims to regulate international trade and ensure sustainability. However, the effectiveness of these measures is often

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<sup>117</sup> The Forest (Conservation) Act, 1980, No. 69, Acts of Parliament, 1980 (India).

<sup>118</sup> The Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003 (India).

<sup>119</sup> *Supra* note 17.

undermined by the difficulties in monitoring and enforcing them at both national and international levels.

In recent years, there has been a shift towards promoting the sustainable cultivation of sandalwood. The government has encouraged agroforestry practices and provided incentives for farmers to cultivate sandalwood on private lands. While this approach shows promise, it faces challenges in scaling up and ensuring that small-scale farmers benefit from it. Biotechnological advancements, such as tissue culture techniques, have facilitated the propagation of sandalwood, but their integration into widespread cultivation practices is still pending.

The regulatory framework is constantly changing, as seen in the recent modifications to the Karnataka Forest Act which aim to liberalize the sandalwood trade by allowing private ownership and trade under specific conditions. This move could potentially increase legal supply and decrease illegal activities, but it also brings up concerns regarding sustainable harvesting and preventing over-exploitation. Community-based forest management initiatives, which empower local communities in conservation efforts, show promise but necessitate significant capacity building and support to be successful.

The integration of technology, such as Geographic Information Systems (GIS) and remote sensing, has enhanced monitoring and enforcement efforts. Nevertheless, these technologies must be accompanied by strong on-ground enforcement and community engagement. The changing regulations demonstrate an ongoing struggle to find a balance between conservation and economic interests, while also addressing the needs of different stakeholders and safeguarding sandalwood for future generations.

The development of sandalwood regulations in India showcases both advancements and persistent challenges. Despite the establishment and periodic revision of legal frameworks, their effectiveness is often hindered by enforcement challenges, bureaucratic obstacles, and the widespread impact of illegal trade. Sustainable cultivation and community participation offer hopeful avenues, but necessitate significant investment and support to truly make a difference. The critical evaluation of these regulations emphasizes the importance of adaptive governance, increased transparency, and stronger enforcement mechanisms to protect this valuable resource.

### 3.3 CONSERVATION STATUS

There have been numerous mentions of more than 56 species and varieties of 'Santalum' in literature, based on their morphological characteristics. However, only sixteen prominent species of the Santalum family and their geographical locations have been identified worldwide. These species can be broadly categorized as East Indian sandalwood, Australian sandalwood, Hawaiian sandalwood, and sandalwood of the Pacific Islands. Unfortunately, many of these species are currently facing the threat of extinction due to excessive exploitation. Among these species, East Indian sandalwood (*S. album* L.) stands out as the most valuable, producing essential oil of supreme quality that is highly sought after by both domestic and international perfume and related industries.<sup>120</sup>

Sandalwood plants are widely distributed in the southern regions of peninsular India, particularly in states such as Karnataka, Tamil Nadu, Andhra Pradesh, and Kerala. The value of sandalwood was recognized as early as 1792 when Tipu Sultan, the ruler of Mysore at that time, declared it as a "Royal Tree." Since then, sandalwood has remained under government control due to its historical significance. Although sandalwood is considered a "forest produce," it does not have any specific provisions under the "Indian Forest Act." Currently, sandalwood resources in India, especially the wild population, are under threat primarily due to illegal logging, forest fires, grazing, and to some extent, spike disease. These threats are exacerbated by the high demand for sandalwood both domestically and internationally, coupled with inadequate and inconsistent regulations in the southern states, particularly Tamil Nadu, Karnataka, and Kerala.<sup>121</sup> The smuggling of sandalwood has also led to socio-economic and law enforcement issues in all states where sandalwood is produced.

India recognized the importance of the sandalwood trade and implemented measures to protect the natural population of sandalwood. Significant steps were taken to sustain this valuable bioresource and address policy flaws that posed a threat to the species.<sup>122</sup> In 2001,

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<sup>120</sup> Ananthapadmanabha, H. S., Sustainable supply of sandalwood for industry. In Proceedings of the Art and Joy of Wood conference, Bangalore, India, October 19–22, (2011).

<sup>121</sup> Arun Kumar Bansal, Report of the Committee Constituted to Study the Regulatory Regime Regarding Felling and Transit Regulations for Tree Species Grown on Private Land, Ministry of Environment, Forest and Climate Change, Government of India (2012).

<sup>122</sup> V.S. Venkatesha Gowda, Global Emerging Trends on Sustainable Production of Natural Sandalwood, in Proceedings of the Art and Joy of Wood Conference 3-25 (2011).

the Government of Karnataka introduced an amendment to the Karnataka Forest Act, encouraging private domestication of sandalwood as a means of conserving and enhancing its status. This amendment granted landowners full legal rights to the trees on their land, allowed them to receive full value upon extraction, and made changes to the sale of sandalwood through forest and government departments. Following suit, Tamil Nadu enacted the Tamil Nadu Forest (Amendment) Act in 2002, granting landowners rights to the trees. Subsequently, the Kerala Forest (Amendment) Act in 2010 regulated the cutting and possession of sandalwood.

### **The Role of KSDL**

Recognizing the need to involve the public in sandalwood conservation beyond forests and farmers, Karnataka Soaps and Detergents Limited (KSDL), a state-owned company in Bangalore with a century-long legacy in producing natural sandalwood oil and products, is actively promoting sustainable development of sandalwood to meet present and future societal needs. The company has integrated the practice of sandalwood tree-based farming through joint cultivation on a shared and prosperous basis, aiming to reap individual and community benefits by converting unproductive wastelands into productive ones. In this endeavor, the company strives to align the needs of nature with human requirements. Through this initiative, Karnataka Soaps and Detergents Limited has not only contributed to the conservation of sandalwood but also provided economic opportunities to local communities. By promoting joint cultivation, the company has encouraged farmers to participate in sandalwood farming, thereby increasing their income and improving their livelihoods. This approach has also helped in the restoration of unproductive wastelands, making them productive and contributing to the overall ecological health of the region.

Furthermore, the company has implemented sustainable practices in sandalwood cultivation, ensuring that the trees are grown in a manner that does not harm the environment or deplete natural resources. This includes using organic fertilizers, practicing water conservation techniques, and adopting responsible harvesting methods. By doing so, Karnataka Soaps and Detergents Limited has set an example for other stakeholders in the sandalwood industry, encouraging them to adopt similar sustainable practices. In addition to its efforts in sandalwood cultivation, the company has also invested in research and development to improve the quality and yield of sandalwood oil.

This has not only enhanced the value of sandalwood products but has also contributed to the overall growth of the sandalwood industry in India. By continuously innovating and improving its processes, Karnataka Soaps and Detergents Limited has positioned itself as a leader in the sandalwood sector, both domestically and internationally. Overall, the measures taken by the Indian government and the initiatives undertaken by Karnataka Soaps and Detergents Limited have played a crucial role in protecting and promoting the natural population of sandalwood in India. These efforts have not only conserved a valuable bioresource but have also provided economic opportunities, improved livelihoods, and contributed to sustainable development.

In India, the National Medicinal Plant Board and National Horticultural Mission are supporting the cultivation of sandalwood and inter-planting with other medicinal plants through their State Agencies. Private landowners have shown interest in commercial cultivation and harvesting of sandalwood, especially in Karnataka. Additionally, farmers and entrepreneurs are establishing Indian Sandalwood plantations on a large scale in states like Gujarat, Andhra Pradesh, Madhya Pradesh, Maharashtra, Rajasthan, and Assam covering around 5000 hectares. The challenges in the sandalwood trade arise due to the absence of a comprehensive regulation applicable nationwide. This has led to illicit trade thriving and the sandalwood population dwindling to the point of extinction. Sandalwood is classified as vulnerable on the Red List of IUCN, and states growing sandalwood in India have expressed concerns about its extinction.

### **Supreme Court Intervention**

The Supreme Court of India, in the case of *T.N. Godavarman Thirumulpad v. Union of India*<sup>123</sup>, made a landmark ruling that had far-reaching implications for the conservation of sandalwood in the country. The court mandated the Central Government to establish a comprehensive policy for the conservation of sandalwood, with a focus on ensuring the sustainable use of its biological diversity. One of the key provisions of the ruling was the requirement for the Central Government to allocate financial resources for conservation efforts and scientific research related to sandalwood. This was a significant step towards ensuring that adequate funding is available to support initiatives aimed at protecting and preserving this valuable natural resource.

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<sup>123</sup> T.N. Godavarman Thirumulpad v. Union of India & Ors, AIR 2012 SC 1254.

In addition, the court instructed the Central Government to create rules and regulations under Sections 3 and 5 of the Environmental Protection Act. These rules were aimed at effectively monitoring, controlling, and regulating sandalwood industries and factories to prevent the sale of imported sandalwood under the guise of Indian Sandalwood. This was an important measure to safeguard the indigenous sandalwood industry and prevent the exploitation of its resources. Furthermore, the ruling emphasized the need for clear labeling of products made from or containing imported sandalwood. This was intended to ensure transparency and enable consumers to make informed choices about the products they purchase. By clearly labeling such products, consumers would be able to distinguish between genuine Indian Sandalwood and imported alternatives.

The Supreme Court's ruling also had implications for state governments, as they were directed to take action against unlicensed sandalwood oil factories. This was a crucial step towards curbing illegal activities and ensuring that only licensed and regulated factories are allowed to operate in the industry. By closing down unlicensed factories, the court aimed to eliminate the production and sale of sandalwood oil through unauthorized channels. In many ways, this ruling proposed legislation that was similar to the Endangered Species Act in the United States.<sup>124</sup> The Endangered Species Act is a comprehensive law that provides protection to both endangered and threatened species. Similarly, the Supreme Court's ruling aimed to safeguard the sandalwood species by implementing measures to prevent its extinction and ensure its long-term survival.

Overall, the Supreme Court's ruling in the case *T.N. Godavarman Thirumulpad v. Union of India* was a significant step towards the conservation of sandalwood in India. By mandating the establishment of a policy for its conservation, allocating financial resources, regulating the industry, and closing down unlicensed factories, the court aimed to protect this valuable natural resource and ensure its sustainable use.

### **Cultivation Support**

In India, the National Medicinal Plant Board and National Horticultural Mission are supporting the cultivation of sandalwood and inter-planting with other medicinal plants through their State Agencies. Private landowners have shown interest in commercial

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<sup>124</sup> The Endangered Species Act, 16 U.S.C., 1973 (USA)

cultivation and harvesting of sandalwood, especially in Karnataka.<sup>125</sup> Additionally, farmers and entrepreneurs are establishing Indian Sandalwood plantations on a large scale in states like Gujarat, Andhra Pradesh, Madhya Pradesh, Maharashtra, Rajasthan, and Assam covering around 5000 hectares. The challenges in the sandalwood trade arise due to the absence of a comprehensive regulation applicable nationwide. This has led to illicit trade thriving and the sandalwood population dwindling to the point of extinction. Sandalwood is classified as vulnerable on the Red List of the International Union for Conservation of Nature (IUCN), and states growing sandalwood in India have expressed concerns about its extinction.

India's efforts to revive its sandalwood industry through inter plantation methods involve planting sandalwood trees alongside other tree species to maximize land use and increase productivity. This approach not only helps in restoring degraded land but also promotes biodiversity and ecosystem services. By adopting sustainable practices such as agroforestry and organic farming, India aims to ensure the long-term viability of its sandalwood industry while also protecting the environment. Furthermore, India's focus on quality control and certification processes for its sandalwood products has helped in building trust among consumers, both domestically and internationally. By adhering to strict standards and regulations, India is able to position itself as a reliable supplier of high-quality sandalwood products in the global market.

Overall, India's efforts to revive its sandalwood industry demonstrate its commitment to sustainable development and conservation. By promoting responsible practices and investing in research and development, India is not only safeguarding its natural resources but also creating opportunities for economic growth and social development. With the right policies and investments, India's sandalwood industry has the potential to thrive and contribute significantly to the country's economy and environmental sustainability. The importance of conserving biodiversity and promoting sustainable development is widely acknowledged, as reflected in the Millennium Development Goals<sup>126</sup> and the conclusions of the World Summit on Sustainable Development. Sustainable trade in natural resources, including sandalwood, not only contributes to local and national economies but also provides incentives for species and habitat conservation. In developing countries, such trade can have a substantial impact on rural incomes and local economies. The country

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<sup>125</sup> Karnataka Forest Department, Sandalwood Cultivation Scheme, <https://aranya.gov.in/aranyacms>.

<sup>126</sup> United Nations, Millennium Development Goals, <https://www.un.org/millenniumgoals>.

recognizes the economic value of sandalwood, which is considered one of the most commercially important tree species worldwide. However, due to excessive exploitation, human interference, and insufficient plantation establishment, the global sandalwood resource has significantly declined.

### **3.4 POPULATION DECLINE**

The decline in the population of Indian sandalwood (*Santalum album*) can be better understood by analysing the complex relationship between legal frameworks, ecological sustainability, and socio-economic factors. Throughout history, Indian sandalwood has been highly prized for its fragrant heartwood and essential oil, resulting in extensive exploitation. This exploitation began during the British colonial era and continued even after India gained independence, leading to unsustainable harvesting practices. The overharvesting of sandalwood, along with illegal logging and smuggling, has further contributed to the decline of natural sandalwood populations.<sup>127</sup>

To address this issue, the Indian government and state authorities, particularly Karnataka and Tamil Nadu, have implemented strict regulations to control the depletion of sandalwood. The Indian Forest Act of 1927, along with state amendments and specific acts like the Karnataka Forest Act of 1963, have established a legal framework for the conservation and management of sandalwood. These laws have classified sandalwood as a "reserved tree," granting the government control over its felling and trade.

However, despite these measures, the implementation of these regulations has faced significant challenges. Corruption, inadequate enforcement, and the existence of a lucrative black market for sandalwood have undermined regulatory efforts. Additionally, farmers and local communities, who could potentially contribute to sandalwood cultivation, often find the regulatory environment to be restrictive. Strict permit requirements and the fear of legal consequences discourage them from growing sandalwood, despite its potential as a profitable cash crop. Moreover, the slow growth rate of sandalwood trees, which take several decades to mature, discourages smallholders from

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<sup>127</sup> Venkatesan KR, Srimathi RA, Kulkarni HD, Survey of sandal populations. In: Srimathi RA, Kulkarni HD, Venkatesan KR (eds) Recent advances in research and management of sandal (*Santalum album* L.) in India. Associated Publishing Company, New Delhi, 3–52 (1995).



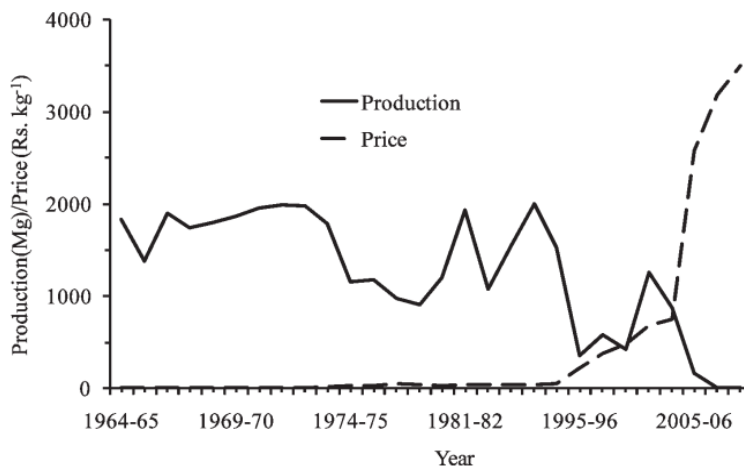
making long-term investments. The decline in natural sandalwood populations is also influenced by habitat loss caused by agricultural expansion, urbanization, and climate change. These factors are beyond the scope of forestry regulations and further contribute to the population decline of Indian sandalwood.

Furthermore, the existing regulations have not adequately adapted to the changing socio-economic contexts and ecological insights. For example, there has been insufficient focus on conducting research and development to establish sustainable harvesting techniques and enhance the genetic makeup of sandalwood for improved growth and resistance against pests. The demand for sandalwood on the international market, particularly from countries like China and Japan, continues to fuel illegal trade, which further complicates conservation efforts. The Indian sandalwood is listed under Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), indicating that it is not currently threatened with extinction but could potentially face such a threat if trade is not closely regulated. While this international framework assists in monitoring and controlling trade, its effectiveness relies heavily on robust domestic implementation.

In recent years, attempts have been made to actively involve local communities in conservation efforts through initiatives such as Joint Forest Management (JFM) and agroforestry programs. These initiatives aim to provide economic incentives for local stakeholders to engage in sustainable sandalwood cultivation. However, their success has been varied and often hindered by bureaucratic inertia and a lack of technical support. Additionally, the potential role of biotechnology in developing faster-growing and disease-resistant sandalwood varieties offers a promising avenue for mitigating the decline.<sup>128</sup> However, this area remains largely unexplored due to regulatory and ethical considerations.

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<sup>128</sup> *Supra* note 122.



**Figure:** Average sandalwood production and price trends in the southern Indian states of Karnataka and Tamil Nadu. (Reporting period: 1964 - '65 to 1975 - '76, 1978 - '79 to 1985 - '86, 1995 - '96 to 1997 - '98, 1999 - '00 to 2000 - '01, and 2005 - '06 to 2008 - '09)

**Source:** Sandal (*Santalum album L.*) conservation in southern India: A review of policies and their impacts.<sup>129</sup>

The above figure clearly depicts the fact that there was immense decline in the production of sandalwood in the States of Karnataka and Tamil Nadu from 1980s to 2000s. These two states amounts for more than 90% of sandalwood production in India. Also there was a huge hike in the prices of sandalwood due to its shortage of supply. The impact of Sandalwood regulations in India can be read along with this. The sandalwood cultivation was banned by strict regulations from the mid 20th century. The exploitation of existed sandalwood populations without having new cultivations made the sandalwood industry more unsustainable. The effects of this is reflected in the production rates from 1980s which is correlated with the 20 – 30 years maturation period of sandalwood trees.

Also, during this time, the government and forest authorities of India never took any proactive steps in incentivizing more sustainable sandalwood cultivation. The post independent governments also took a indolent position regarding sandalwood cultivation and management which further retarded the feasible development of sandalwood industry in India.

<sup>129</sup> Dhanya B., Viswanath S., Purushothman S., Sandal (*Santalum album L.*) conservation in southern India: A review of policies and their impacts, 48 Journal of Tropical Agriculture, 1-10 (2010).

### 3.5 ILLEGAL LOGGING

The trade of Sandalwood originated during the Vijayanagar Dynasty in the sixteenth century and later expanded to Tipu Sultan's kingdom of Mysore in 1792. Subsequently, the Maharajas of Mysore and all the governments after independence have been involved in this trade. However, the only significant change that has occurred is the management and regulation of sandalwood extraction and disposal under the jurisdiction of the Forest Department, which has been in effect since 1864 until the present day.

According to official estimates from the forest department, there has been a significant increase in sandalwood offenses in the Karnataka forest areas, rising from 302 cases in 1982-83 to 2338 cases in 1990-91.<sup>130</sup> Similarly, in Tamil Nadu, the number of offenses has increased from 677 in 1988-89 to 2107 in 1991-92. Officials acknowledge that most of these cases come to light due to information provided by disgruntled gang members. Otherwise, detecting such crimes is extremely challenging, although officials manage to confiscate sandalwood worth millions of Rupees every year. Karnataka and Tamil Nadu together account for approximately 90% of India's sandalwood stock. The sandalwood forests span approximately 50,000 hectares in Karnataka and 30,400 hectares in Tamil Nadu, primarily located along the Western Ghats. The average annual sandalwood production is 700 tons in Karnataka and 807.50 tons in Tamil Nadu, with a total accumulated stock of 6000 tons in the two states. Prior to the ban on the export of sandalwood billets and chips, the entire sandalwood business was centered around exports.

The majority of sandalwood used by distillers and involved in illegal exports is primarily sourced from smugglers. There are two main routes through which smuggled sandalwood is traded illegally. One route leads to sandal oil distillery units in Kerala, while the other route goes to Uttar Pradesh, which also has sandal oil units, and then to Delhi, from where it is smuggled to other parts of India. Smuggled wood is sometimes transported to Mumbai and Chennai for export to other countries through international smugglers. Sandalwood is even smuggled in log form to Southeast Asian and Middle Eastern nations, as well as to perfumeries in Europe.<sup>131</sup> Sandalwood is often disguised and transported in various ways, such as hidden in trucks carrying other goods or concealed in false compartments.

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<sup>130</sup> Meera C, Rao M N, Ganeshiah K N, Uma Shankar R, Swaminath M H, Conservation of sandal genetic resources in India: Extraction patterns and threats to sandal resources in Karnataka. 36 My Forest, 125–132 (2000).

<sup>131</sup> *Supra* note 10.

Smugglers use various tactics to avoid detection, including bribing officials and using fake documents.

The demand for sandalwood is driven by its high value in the international market, particularly in countries like China, Japan, and the Middle East, where it is used in the production of perfumes, cosmetics, and traditional medicines. Sandalwood oil is known for its unique fragrance and therapeutic properties, making it a sought-after commodity. The illegal trade of sandalwood poses a significant threat to the environment and biodiversity. Sandalwood trees are slow-growing and take several decades to reach maturity, making them vulnerable to overexploitation. Illegal logging and smuggling not only deplete the natural resources but also disrupt the delicate ecosystems in which sandalwood trees thrive.

Efforts have been made by the government and various organizations to combat the illegal trade of sandalwood. The Forest Department has increased surveillance and patrolling in sandalwood-rich areas, and stricter penalties have been imposed on offenders. Additionally, awareness campaigns have been conducted to educate the public about the importance of preserving sandalwood forests and the consequences of illegal trade. In recent years, there have been initiatives to promote sustainable cultivation and harvesting of sandalwood. Farmers are encouraged to grow sandalwood trees on their land, providing them with a legal and sustainable source of income. This not only helps in meeting the demand for sandalwood but also contributes to the conservation of the species.

Despite these efforts, the illegal trade of sandalwood continues to be a challenge.<sup>132</sup> The high demand and lucrative profits associated with the trade make it an attractive venture for criminals. It requires a coordinated and multi-dimensional approach involving law enforcement agencies, government bodies, and local communities to effectively combat this illicit trade and ensure the long-term survival of sandalwood trees. The prohibition of Sandalwood trade has created a detrimental situation where a significant volume of Sandalwood is being illicitly transported out of the country. The high demand for Sandalwood, known for its aromatic fragrance and various uses in industries such as perfumes, cosmetics, and traditional medicine, has fueled illicit activities and smuggling in forest products, particularly in villages surrounding Sandalwood forests. The

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<sup>132</sup> Economic Times, Mangalore: smuggling attempt foiled - container with 17 tons of red sandalwood seized (2014). <http://www.daijiworld.com/news/newsDisplay.aspx?newsID%4257260>.

prohibition has inadvertently created a black market for Sandalwood, with individuals and organized criminal networks taking advantage of the lucrative trade.

These illegal activities not only pose a threat to the sustainability of Sandalwood forests but also contribute to the loss of revenue for the government, as the illicit trade operates outside the legal framework and tax regulations. The illicit transportation of Sandalwood has disrupted the traditional bond between forest communities and their natural surroundings. In many cases, these communities have relied on Sandalwood as a source of income and livelihood for generations. However, with the prohibition in place, their traditional practices have been criminalized, forcing them to either abandon their cultural heritage or engage in illegal activities to sustain their livelihoods. Furthermore, the illicit Sandalwood trade has led to increased conflicts and tensions within these forest communities. As the demand for Sandalwood rises, competition among villagers to access and extract the valuable resource intensifies. This has resulted in disputes over land rights, illegal logging, and even violence among community members.

The prohibition of Sandalwood trade has also had environmental consequences. With the increased illegal logging and smuggling, Sandalwood forests are being depleted at an alarming rate. This not only threatens the survival of the Sandalwood species but also disrupts the delicate ecosystem that these forests support. The loss of biodiversity and habitat destruction have far-reaching implications for the overall health of the environment. The prohibition of Sandalwood trade has inadvertently created a situation where the illicit transportation of Sandalwood out of the country has become rampant.<sup>133</sup> This has fostered criminal behavior, disrupted the traditional bond between forest communities and their natural surroundings, and caused environmental degradation. It is crucial for authorities to address this issue by implementing effective measures to regulate the Sandalwood trade, promote sustainable practices, and provide alternative livelihood options for forest communities.

### **3.6 SANDALWOOD SMUGGLING**

The illicit transportation of Sandalwood necessitates a well-organized network comprising of traders, various agents, and labor contractors who possess the ability to oversee the

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<sup>133</sup> Subbiah Karuppusamy, Sandalwood Smuggling and Illegal Trading in India, Sandalwood: Silviculture, Conservation and Applications, 199-207 (2021).

unauthorized harvesting of wood from protected forest areas. Following the cutting of the wood, the logs are concealed in secure locations before being loaded onto trucks with falsified registrations. In order to reach the ports, these trucks must pass through police checkpoints and evade customs inspections. Moreover, the transportation via sea involves the illegal procurement and management of ships. Notably, the successful execution of all these activities relies heavily on the active involvement of both police and customs officers. The smuggling of banned natural resources demands political backing and regulation, as well as the cooperation of bureaucrats dedicated to facilitating the operations of the 'Sandalwood mafia'.<sup>134</sup>

The Sandalwood mafia operates with a level of sophistication that rivals that of organized crime syndicates. They have established connections with corrupt officials who turn a blind eye to their activities in exchange for bribes and kickbacks. These officials provide protection and cover for the illegal transportation of sandalwood, allowing the mafia to operate with impunity. In addition to the logistical challenges of transporting sandalwood, the mafia also faces the risk of interception by law enforcement agencies. To counter this threat, they have developed elaborate strategies to evade detection, such as using decoy shipments, altering shipping routes, and employing counter-surveillance measures. The illicit trade in sandalwood not only poses a threat to the environment but also fuels conflict and instability in the regions where it is harvested. The profits from the illegal trade are often used to fund criminal activities, including human trafficking, drug smuggling, and terrorism.

The initiation of smuggling activities typically commences with the woodcutters. The operation heavily depends on male migrant workers hailing from tribal and unemployed scheduled castes, predominantly from the nearby states of Karnataka, namely Tamil Nadu and Andhra Pradesh. These laborers are renowned for possessing the specialized skills essential for timber-related tasks and are adept at functioning in challenging forest environments. Nevertheless, there are additional factors contributing to the preference for laborers from Tamil Nadu and Andhra Pradesh over local ones. Principally, indigenous laborers abstain from engaging in wood-cutting operations due to their awareness of the risks associated with collaborating with the Sandalwood mafia. Local workers are

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<sup>134</sup> Picherit D, 'Red Sanders Mafia' in South India: violence, electoral democracy and labour. In: Harris-White B, Michelutti L (eds) *The wild east: criminal political economies in Asia*. UCL Press, London, 194–214 (2019).

cognizant of the potential repercussions, risks, and tensions linked to Sandalwood smuggling, transforming it into a perilous and politically charged matter. Consequently, numerous local inhabitants opt out of participating in forest-related activities.<sup>135</sup>

The migrant workers from Tamil Nadu and Andhra Pradesh are often lured into the smuggling trade by promises of high wages and steady employment. Many of these individuals come from impoverished backgrounds and see smuggling as a means to support their families back home. The Sandalwood mafia takes advantage of their vulnerable situation, exploiting them for their labor and expertise in the trade. Once the woodcutters have harvested the Sandalwood, it is then transported to various locations for processing and distribution. This involves a network of middlemen, transporters, and dealers who work together to smuggle the valuable wood out of the forest and into the black market. The operation is highly organized and often involves bribery and corruption to evade law enforcement.

The Sandalwood smuggling trade is not only a lucrative business for those involved, but it also has serious environmental consequences. The illegal harvesting of Sandalwood trees contributes to deforestation and threatens the biodiversity of the forest ecosystem. Additionally, the profits from the trade often fund other criminal activities, further perpetuating the cycle of illegal behaviour. Labor contractors operating within the Sandalwood mafia organization play a crucial role in the logistics of illegal sandalwood harvesting operations. They are in charge of organizing accommodations, meals, and water supply for the workers living in remote settlements within the protected forest areas. Additionally, they oversee the labourers' work schedules, ensuring that the illegal activities are carried out efficiently and discreetly. The labourers themselves are responsible for the dangerous task of cutting down sandalwood trees, moving the logs, and hiding them in strategic locations to avoid detection. Payment for their work is typically based on the weight of the logs they have managed to harvest. Once a designated area has been cleared, the labourers are swiftly relocated to a new location to continue their illicit activities, before eventually being allowed to return to their homes.

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<sup>135</sup> *Id.*, 48.

## **The Forest Brigand - Veerappan**

Veerappan was an infamous Indian outlaw and bandit who operated for an extended period within the forested regions spanning approximately 6000 km<sup>2</sup> across the states of Tamil Nadu, Karnataka, and Kerala. Establishing a modest army, he orchestrated various illicit activities such as poaching, hunting, and smuggling of contraband materials sourced from the forests where he took refuge. Veerappan was a wanted criminal responsible for the deaths of around 184 individuals, with nearly half of them being law enforcement officers, including high-ranking police and forest officials who vehemently opposed his unlawful undertakings in the wilderness. Initially, his acts of banditry were driven by financial necessity, but as time progressed, he escalated his actions to include hostage-taking and demanding the release of militants from incarceration. Notably, he is reputed to have engaged in his first act of elephant poaching at the tender age of 14, followed by his inaugural murder at 17. Subsequently, he joined forces with a gang of poachers, expanding their criminal operations to encompass the smuggling of Sandalwood and ivory, as well as perpetrating further acts of murder and abduction.<sup>136</sup>

Veerappan gained notoriety after committing a series of violent crimes, including the murder of forest officers and tribal people who opposed his illegal trade activities. His criminal activities involved poaching elephants, smuggling ivory, and trafficking sandalwood, resulting in significant financial gains. Despite efforts by a special task force established by the Tamil Nadu and Karnataka governments to capture him, Veerappan managed to evade arrest due to his extensive information network and ability to move between states easily. The jurisdictional issues between states further complicated the efforts to apprehend him, allowing Veerappan to continue his criminal activities for an extended period.

Veerappan's actions have led to increased law enforcement measures over time. In addition to strict policing, authorities have implemented economic sanctions, including a complete prohibition on Sandalwood exports. However, the ban enforced in 2003 by the Ministry of Environment and Forests (MoEF) had minimal impact, except for causing a significant drop in Sandalwood prices and resulting in substantial revenue losses for

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<sup>136</sup> Manoharan M (2004) Profiling a poacher: the rise and fall of Veerappan. Institute of Peace and Conflict Studies (IPCS); [http://www.ipcs.org/comm\\_select.php?articleNo¼1547](http://www.ipcs.org/comm_select.php?articleNo¼1547).



Karnataka and Tamil Nadu, the primary Sandalwood-producing states in the country.<sup>137</sup> Some forestry officials argue that Veerappan was diverting public attention from more organized and serious Sandalwood smuggling activities. Furthermore, the shift from a single dominant anti-hero to a collective effort involving entire villages went largely unnoticed. In the Sandalwood-rich Western Ghats of the two states, villages like Vachati now instill more fear in authorities than Veerappan. Smuggling not only undermines the legitimate profits of the Sandalwood industry and state revenue but also poses a threat to a valuable natural resource and endangers the communities residing near the forests.<sup>138</sup>

Presently, residents of Karnataka and Tamil Nadu find themselves disconnected from Sandalwood trees, either engaging in their unlawful exploitation or avoiding them altogether due to concerns about illegal activities or government regulations. Surprisingly, in the Sandalwood-abundant Kollegal forest division, where Veerappan once held sway, only a mere 80 individuals have acknowledged ownership of Sandalwood trees. Despite its traditional significance, the tree now elicits mixed reactions, as exemplified by a Soliga tribal member near Rampura in Kollegal who perceives Sandalwood as a state-owned resource. Interestingly, the methods and extent of smuggling operations differ across Sandalwood-rich regions such as Mysore, Shimoga, and Chikmagalur in Karnataka, as well as Salem and Dharmapuri in Tamil Nadu. The spectrum ranges from notorious figures like Veerappan to collective smuggling efforts by villagers in Vachati, Salem, involving numerous local traders connected to a broader market through intermediaries.<sup>139</sup>

Veerappan's hierarchical system was effective in coordinating sandalwood smuggling activities. The vigilance record revealed that the smugglers had key agents strategically placed in Bangalore, Mysore, Chennai, and other towns across two states. The major kingpins had agents operating at various levels within the network. In Karnataka, specifically, the vigilance record identified two prominent gangs, the Khuddus gang and Shameer gang, based in Bangalore. These gangs communicated with their agents in different locations via telephone to facilitate the transportation of sandalwood. Sandalwood smuggling had become deeply entrenched in certain villages near the forest areas where Veerappan conducted his operations. For example, in Dharmapuri district of

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<sup>137</sup> Down To Earth (Nov. 15, 2004), Veerappan is dead. <https://www.downtoearth.org.in/blog/veerappan-is-dead-12024>.

<sup>138</sup> Seal G, 'The Robin Hood principle': history, myth and the social bandit. 46 J Folklore Res, 67–69 (2009).

<sup>139</sup> Times of India, Veerapan– crime file. November-17, 2001. <https://timesofindia.indiatimes.com/india/Veerappan-The-crime-file/articleshow/567414846.cms>.

Tamil Nadu, authorities seized approximately 73 tons of sandalwood and prosecuted over 400 villagers between 1985 and 1987. The severity of the issue became more apparent when, within a span of three days, 63 tons of sandalwood valued at INR 1.25 crore were confiscated, and over 100 individuals were arrested from just two tribal villages in Vachati and Salur divisions of Tamil Nadu. Typically, sandalwood smugglers were heavily armed, and upon encountering forest officials or informants, they would intimidate them into leaving the area.

Political involvement in the illegal trade of Sandalwood is a prevalent issue, with various gangs, including Veerappan's group, being reportedly well-connected to politicians. An incident where a minister intervened to release a vehicle caught transporting Sandalwood by the forest department highlights the extent of this connection. Many believe that there are numerous other smugglers and poachers operating with political support. Unlike Veerappan, who resorted to violence against forest officers and law enforcement, there are likely other discreet operators depleting the Sandalwood resources. Some observers suggest that Veerappan may have served as a distraction for vested interests, allowing other illegal activities to continue unchecked. The local support Veerappan enjoyed contributed to his prolonged evasion of capture. In certain villages, such as Marthahalli, residents view Veerappan as a hero who achieved great success. However, Veerappan's criminal activities came to an end in 2004 when he and two associates were killed by the Tamil Nadu Special Task Force.<sup>140</sup>

### **3.7 CHANGE IN POLICIES**

India was once a prominent global producer of sandalwood, with a production of nearly 4,000 tonnes in the 1960s. This was particularly noteworthy considering the international demand for sandalwood, which stood at around 6,000-7,000 tonnes annually. However, the valuable nature of sandalwood and its high demand in the market led to a surge in smuggling activities. As a result, the sandalwood forests suffered significant losses due to thefts. While India has always been renowned for its sandalwood, specifically the *Santalum album* species, it was only in the past decade that farmers began showing interest in cultivating the plant in their own backyard. Even with this development, India still had

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<sup>140</sup> Rediff News, End of three decades of Veerappan's terror, Oct 2004. <https://www.rediff.com/news/2004/oct/19veer3.html>

to rely on imported sandalwood from Australia to meet its domestic needs.<sup>141</sup> Until the year 2000, sandalwood cultivation was primarily limited to the forests of Karnataka, Tamil Nadu, and Kerala, as well as the plantations owned by these state governments. Private agricultural land in the rest of the country did not witness any sandalwood cultivation. However, a change in policy in Karnataka in 2001 and in Tamil Nadu in 2002 allowed individuals to grow sandalwood. This policy shift served as an inspiration for other states to follow the same.

During the years 2001 and 2002, the governments of Karnataka and Tamil Nadu made adjustments to the existing regulations concerning Sandalwood in order to promote production by encouraging private cultivation of the tree. Despite the changes in policy that support private Sandalwood cultivation and the benefits of growing Sandalwood as an agroforestry species, there is still significant doubt regarding the economic viability of Sandalwood cultivation due to the delay in returns from the tree and the substantial investments needed for its protection. In light of these concerns, there is a need to evaluate the feasibility of Sandalwood cultivation practices in southern India through a benefit-cost analysis (BCA) utilizing financial metrics such as net present value (NPV), benefit-cost ratio (B/C ratio), internal rate of return (IRR), equivalent annual income (EAI), and land expectation value (LEV).<sup>142</sup> Some areas in Bellary district of Karnataka and Dharmapuri district in Tamil Nadu have started commercial cultivation of Sandalwood using genetically improved varieties provided by tree breeding institutes in India.

In 2009, Karnataka state revised its regulations to allow growers to directly sell their wood to semi-government corporations like Karnataka State Handicrafts Development Corporation (KSHDC) and Karnataka Soaps and Detergents Limited (KSDL) instead of going through the forest department's monopoly procurement system. Recently, the government introduced a 75% subsidy for sandalwood cultivation. Since 2001, IWST has been diligently working on developing cultivation protocols for sandalwood. The institute has formulated protocols for consistent germination, disease management, and tissue culture propagation. Additionally, it has identified suitable companion crops or hosts for sandalwood, as it is a hemiparasite that relies on macronutrients from the roots of other plants. IWST now provides comprehensive guidelines for farmers interested in cultivating

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<sup>141</sup> Awasthi K, Oz beats India. Down to Earth, July 15, 2007. Centre for Science and Environment, New Delhi, p 32.

<sup>142</sup> Divakara B. N., Viswanath S., Nikhitha C. U., & Kumar S, Economics of Santalum album L. cultivation under semiarid tropics of Karnataka, 8 India. For Res, 223 (2018).

sandalwood, recommending the planting of approximately 350 sandalwood seedlings per acre along with 150 host plants. *Mimosa pudica*, also known as touch-me-not, has been recognized as the ideal host for the initial growth of the seedling, while pigeon-pea and fruits such as sapodilla, papaya, and pomegranate are considered good hosts at a later stage.

### **3.8 CONCLUSION**

India's legislative framework for sandalwood conservation is designed with the objective of safeguarding the tree. However, despite these well-intentioned laws, the protection measures often result in a convoluted bureaucratic system. The stringent regulations imposed by these laws discourage legal cultivation, thereby pushing farmers towards the illegal market where they can achieve quicker turnaround and potentially higher profits. Consequently, this rigid framework inadvertently creates a gap in the supply chain, which smugglers exploit, thereby fuelling the illegal trade. The thriving sandalwood smuggling industry can be attributed to its high market value and the lack of effective enforcement mechanisms. The international demand for sandalwood's essential oil, handicrafts, and medicinal properties further contributes to this illicit trade. The combination of substantial profits, weak border controls, and the intricate tracking of processed wood makes smuggling a lucrative yet low-risk venture.

Merely implementing stricter laws is insufficient to resolve the issue. A comprehensive strategy is essential to tackle both the demand and supply aspects. Simplifying regulations can enhance the appeal of legal cultivation. Enhancing enforcement through improved patrolling and technology can discourage smuggling activities. Involving local communities in collaborative projects and benefit-sharing schemes promotes a feeling of ownership and diminishes reliance on illicit practices. Transparency and accountability within law enforcement agencies play a pivotal role. Research aimed at enhancing sandalwood yields and disease resistance can render legal cultivation more financially feasible. Global cooperation bolsters enforcement endeavors on an international scale.

By confronting these hurdles, India has the opportunity to safeguard the existence of sandalwood for the upcoming generations. A joint endeavor that merges stringent enforcement with sustainable techniques is essential in surmounting this difficulty and securing a future where both the environment and the economy prosper.

## CHAPTER 4

# AUSTRALIAN MODEL OF SANDALWOOD MANAGEMENT

### 4.1 INTRODUCTION

Sandalwood, a highly fragrant wood, has been highly esteemed for many centuries, especially by the Chinese and Indians. The powdered form of sandalwood is commonly burned in joss sticks for use as incense and plays a significant role in various religious ceremonies. Additionally, specific types of sandalwood can be intricately carved into various delicate items such as fans, inlaid boxes, ornaments, and incense holders. Particularly, large carved sandalwood boxes have been cherished as bride or trousseau boxes due to the belief that the wood has insect-repellent properties. Sandalwood cones, made from powdered wood, are utilized today as mosquito repellents. Sandalwood oil, obtained through distillation of the heartwood, is highly prized for its use as a fixative in the production of soaps and perfumes, as well as for medicinal purposes. Presently, it is predominantly utilized in the perfume industry, although prior to the Second World War, and before the discovery of penicillin, it was even employed in the treatment of venereal diseases.<sup>143</sup>

The religious significance of sandalwood, coupled with its various practical applications, has made it an exceedingly valuable resource in numerous regions worldwide. However, the scarcity of sandalwood and its slow growth rate further contribute to its high value. While sandalwood can be found in several countries, the majority of its production is consumed domestically. Interestingly, even in nations where the sandalwood tree does not naturally grow, such as Singapore and China, the demand for this precious wood remains substantial. As a result, there is a significant international market for sandalwood, and Australia, despite being a nonuser itself, has emerged as one of the primary suppliers of this fragrant timber.<sup>144</sup> After India, Australia is the country having a significant

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<sup>143</sup> Misra B, Satyahari D. Evaluation of in-vivo anti-hyperglycemic and antioxidant potentials of a-santalol and sandalwood oil. *Phytomedicine*. 2013;20(5):409–416.

<sup>144</sup> Md. Minhajul Alam, Australian Sandalwood – Properties, Distillation, and History. *Natural Perfumery Blog*. August 23, 2021.

sandalwood population. India and Australia were the key players in the sandalwood industry for centuries.<sup>145</sup> Australia boasts significant populations of *Santalum spicatum* especially in the state of Western Australia.<sup>146</sup>

## 4.2 HISTORICAL CONTEXT

Australia's fascination with the sandalwood industry commenced at an early stage. Just a decade and a half following its establishment in 1788, merchants in Sydney were seeking commodities that could be bartered for tea from China, a product that even the convicts had developed a liking for. During this era, trading was challenging not only due to the limited range of goods accepted by the Chinese such as fur and sandalwood in exchange, but also because the British East India Company held a monopoly over all British trade in the region. To circumvent this monopoly, the Sydney traders quickly established trade connections with American whalers in the vicinity, transferring to them the whale oil, seal furs and skins, and the sandalwood they had acquired independently, in return for supplies and tea. Sandalwood does not occur naturally on the East Coast of Australia. However, it can be found in northwestern Queensland, although not in regions easily accessible to the eastern coast during the era of bullock transportation.<sup>147</sup> Consequently, the Sydney traders had to rely on timber sourced from Pacific Islands, primarily Fiji, for their early years' collection.

During the early 1800s, the British East India Trading Company had obtained exclusive rights from the government to control all trade activities in the Pacific region. By 1811, the East Indian Company had established a monopoly on the trade between China and England, with the total value of goods exported from China to England through this company amounting to approximately 226.2 tonnes of silver annually. The primary commodity driving this trade was tea. However, following the conclusion of the Opium War, the British East India Trading Company faced a decline and eventually collapsed. This marked the beginning of unrestricted trade between Australia and China, leading to increased competition for Sydney-based Sandalwood merchants. New British and

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<sup>145</sup> Pullaiah T., Das S.C, History of Sandalwood. In: Pullaiah T., Das S.C., Bapat V.A., Swamy M.K. Reddy V.D., Murthy K.S.R. (eds) Sandalwood: Silviculture, Conservation and Applications. Springer, Singapore (2021).

<sup>146</sup> McLellan Richard, Dixon K. & Watson D, Prolific or precarious: a review of the status of Australian sandalwood (*Santalum spicatum* [R.Br.] A.DC., Santalaceae). 43 The Rangeland Journal, (2021).

<sup>147</sup> Boland, D.J. and others, Forest Trees of Australia. 4th ed., Melbourne: Nelson; 622 (1984).

American traders entered the market, posing additional challenges for the existing merchants. By 1844, news had reached the Western Australian Colony that the Sydney merchants were able to fetch profitable prices for their Sandalwood sales.

In the mid-1840s, the colonial administration of Western Australia began to perceive Sandalwood as a potential source of revenue for exports. This was seen as a solution to their pressing trade deficit, while also serving as an incentive for a continuous influx of immigrants who could assist in the harvesting and preparation of Sandalwood for exportation. Ensign Dale's records from 1832 indicate that the native sandalwood stands in the Swan River Colony region were plentiful.<sup>148</sup> To gain a better understanding of the market potential for Australian Sandalwood, the government of Western Australia dispatched a trial shipment to Bombay in 1844. This shipment consisted of 4 tonnes of Sandalwood logs and was transported on the colonial schooner *Champion*.

Initially, the buyers in Bombay were skeptical about the Australian Sandalwood. They acknowledged that while the wood was considered to be of lower quality compared to Indian Sandalwood, its aromatic properties were exceptionally high. Eventually, this shipment was sold for £10 per tonne, which was a significant achievement. To provide some context, other trading commodities such as heavy timber and whale oil were yielding an average of £4 per tonne. The Sandalwood originating from Western Australia was commonly known as "Sydney Sandalwood" due to the lack of awareness in the market about Perth or Fremantle. Subsequently, it was renamed as "New Mountain Sandalwood" to compete with the Indian Sandalwood, also recognized as "Mysore Sandalwood" or "Old Mountain Sandalwood". In the mid-1890s, the colony of Queensland made its entry into the Sandalwood industry and commenced exporting limited quantities of *Santalum lanceolatum* from the Cape York Peninsula by the 1890s.<sup>149</sup>

At the beginning of the Twentieth Century, numerous Sandalwood ventures were established in Western Australia. One notable example was Braddock, who set up a Sandalwood oil distillation plant in Belmont, Western Australia. This marked the initiation of local production of Australian Sandalwood essential oil. Further advancements in the industry included the discovery by The British Medical Association that Sandalwood Oil,

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<sup>148</sup> Statham, P, The Sandalwood Industry in Australia: A History. In: 'Proceedings of the Symposium on Sandalwood in the Pacific'. 9–11 April 1990, Honolulu, Hawai'i. USDA Forest Service Gen. Tech. Report PSW-122. (1990).

<sup>149</sup> Battye, J. 1924. History of Western Australia. Oxford: Statistical Appendix. Bloodwood, Bob. 1979. North Queensland Register 22.9.1979.

when consumed in capsule form, could aid in the treatment of venereal disease. This medical finding created a new export market, resulting in the exportation of 3000 lbs of oil to England.<sup>150</sup>

Recognizing the need to stabilize the Sandalwood industry and ensure its long-term sustainability, the Western Australia government believed that government intervention was necessary. The Government's Conservator of Forests, Lane Poole, attempted to regulate the industry by issuing annual licenses to those seeking to harvest Sandalwood. However, these regulations faced strong opposition from both the Goldfield populations and the Returned Servicemen's Organisation, and failed to pass the Western Australian Parliament. As an alternative to regulation, the Cabinet approved an increase in the royalty payable to £2 per ton. Unfortunately, this increase in royalty did little to prevent the excessive accumulation of harvested Sandalwood.

Mr G. Drake-Brockman spearheaded a government inquiry aimed at identifying effective measures to curb overproduction and potential collapse within the industry. The investigation ultimately determined that government intervention was necessary, leading to the implementation of the 1923 regulations. These regulations encompassed several key provisions, including the imposition of a £25 per ton royalty on all sandalwood acquired under the license, with the proceeds directed to the Western Australian Government. Additionally, a rebate of £16 per ton of cleaned sandalwood was introduced, along with the requirement for export licenses to be held by those involved in the trade. These license holders were also obligated to adhere to an annual production quota.

However, the Western Australia Government Regulations contained a loophole that permitted the cutting of Sandalwood from private property. Exploiting this loophole, workers engaged in illegal trade by harvesting wood from "Crown (government) Land" while falsely presenting it as wood sourced from private property. This loophole consequently facilitated a significant surge in illicit trade activities. Subsequent regulations were implemented during this period. A sandalwood "Puller" would be required to secure a company order from a state-licensed private entity in order to harvest their personal sandalwood. There was a surge of discontent regarding the fairness of the distribution system, leading to the decision to transfer the authority to issue licenses to the

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<sup>150</sup> Underwood, John, A history of the sandalwood industry of W.A. File 741 2(02). Unpublished thesis. Department of Conservation and Land Management Library, Western Australia (1954).



State Forests Department. It was around 1925 that indigenous Sandalwood reserves were found in South Australia. Despite the limited availability, the South Australian colony reaped substantial benefits from the royalties they earned. On average, they garnered around £33,000 annually from about 2,500 tons of sandalwood during the late 1920s and early 1930s.<sup>151</sup>

With the entry of South Australia and Queensland into the Sandalwood market, the price of Australian Sandalwood experienced a significant reduction. This reduction was further exacerbated by the entry of other states into the market, leading to a substantial increase in supply and placing a considerable strain on the Sandalwood Industry. Concurrently, the demand for Australian Sandalwood plummeted due to the outbreak of civil war in China and the subsequent halt in shipments to that country. To address this situation, in January 1927, officials from each state government reached an agreement to implement joint control measures on sandalwood pulling. As part of this agreement, a quota system was introduced to restrict the total amount of sandalwood that could be extracted from each state. South Australia and Western Australia were assigned quotas of 2600 and 5400 tons, respectively.<sup>152</sup>

### **4.3 REGULATORY FRAMEWORK**

Regulatory frameworks in the sandalwood industry are established through a combination of different tools that work together to create the legal, institutional, and economic framework of the industry. These tools include international treaties that represent global aspirations and national policy positions; national and sub-national laws and policies that establish regulatory bodies and oversee the industry; as well as industry-specific laws, policies, codes, strategies, and guidelines that outline operational details. The regulatory framework for *S. spicatum* is a reflection of this typical regulatory hierarchy.

In 1992, the members of the United Nations supported various agreements that affirmed the independent authority of each nation to utilize their forest. It was collectively decided that this authority should be exercised in accordance with Sustainable Forest Management

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<sup>151</sup> Jeffrey, J. 2010, 'Geese and Golden Eggs: South Australia's Sandalwood Industry, 1924-1940' 54 Australian Forest History Society Inc., 8-10 (2010).

<sup>152</sup> Statham, P, 'The Australian Sandalwood Trade - Small but Significant', Australian National University and University of Western Australia, Australia (1987).

(SFM) principles.<sup>153</sup> Presently, the primary global agreement in place is the Non-legally binding instrument on all types of forests, which was issued in 2007. This document integrates the SFM principles that were initially outlined in the 1992 agreements.<sup>154</sup> Furthermore, the Montréal Process Criteria and Indicators offer supplementary direction.<sup>155</sup>

Australia operates as a constitutional federation, consisting of one federal government, two territory governments, and six state governments. While the federal government possesses the constitutional authority to oversee Australian forest policy, as established in the case of *Commonwealth v Tasmania*<sup>156</sup>, it has thus far opted for a cooperative approach. This approach allows each jurisdiction to enact laws pertaining to forests within their respective territories. The exercise of these powers is guided by a comprehensive set of mutually agreed laws, policies, and strategies. Notable instruments include the National Forest Policy Statement, *Plantations for Australia: the 2020 Vision*<sup>157</sup>, National Indigenous Forestry Strategy, Australia's Sustainable Forest Management Framework of Criteria and Indicators (Department of Agriculture Fisheries and Forestry), and the Illegal Logging Prohibition Act 2012 (Cwlth). The principles of SFM are collectively supported by these instruments, as stated by the Council of Australian Governments in 1992.<sup>158</sup> These instruments also emphasize the importance of respecting the cultural and economic interests of Aboriginal people, as highlighted by the Council of Australian Governments in 1992 and the Australian Government in 2005.

#### **4.4 WESTERN AUSTRALIA**

Western Australia has a rich history of legislation and regulations specifically related to sandalwood. Early laws focused on export duties such as the 1860 Ordinance to Impose

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<sup>153</sup> United Nations. 1992b. Report of the United Nations Conference on Environment and Development: Annex III Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests. Geneva: United Nations.

<sup>154</sup> United Nations. 2007. Non-legally binding instrument on all types of forests. New York: United Nations Forum on Forests.

<sup>155</sup> Montréal Process. 2015. Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests. Geneva: Montréal Process Working Group.

<sup>156</sup> *Commonwealth v Tasmania* (1983) 158 CLR 1.

<sup>157</sup> Council of Australian Governments, *Plantations Australia: 2020 vision*. Canberra: Commonwealth of Australia (1997).

<sup>158</sup> Council of Australian Governments, *National Forest Policy Statement*. Canberra: Commonwealth of Australia (1992).

an Export Duty on Sandalwood<sup>159</sup>, the prevention of the destruction and export of immature wood as seen in the 1881 Act<sup>160</sup> to Prevent the Destruction and Export of Immature Sandalwood, and the establishment of harvest quotas as outlined in the Sandalwood Act of 1929. Over time, there has been a gradual decrease in the harvest quotas for wild sandalwood, with the amount dropping from 14,355 tonnes in 1920 to 2,500 tonnes in 2017. This quota is implemented by the Sandalwood (Limitation of Removal of Sandalwood) Order 2015. This latter figure is divided into 1,250 tonnes of green living wood and 1,250 tonnes of dead wood.

The legislation in Western Australia pertaining to biodiversity mandates that individuals seeking to harvest wild *S. spicatum* products from privately owned land must secure a harvest licence from the Department of Parks and Wildlife.<sup>161</sup> Additionally, the applicant must seek permission from the landowner to access the land. Private landowners encompass the Aboriginal Lands Trust (for land held by the government on trust for an Aboriginal group) and Aboriginal corporations that possess a government lease for the exclusive utilization of the land. Private harvest licences are obtainable for approximately 300 tonnes out of the 2500 tonne quota.

The Forest Products Commission (FPC) was established under the Forest Products Act 2000<sup>162</sup> to carry out various functions, one of which is the management of *S. spicatum* stock on public lands. This involves the administration of harvesting and supply contracts for the remaining 2200 tonnes of *S. spicatum*, as stated in the Forest Products Act 2000 and the Biodiversity Conservation Act 2016. Public lands encompass pastoral leases and native title lands that are not under exclusive possession. Individuals who intend to harvest *S. spicatum* on public lands are required to obtain a harvest license from the Department of Parks and Wildlife, as well as a harvest contract with the Forest Products Commission. It is mandatory for the licensee to deliver all harvested logs to Wescorp Holdings Pty Ltd, a private company that acts as the sole agent responsible for the processing and distribution of *S. spicatum* logs collected from public lands in Western Australia.

Before 2016, Wescorp was only obligated by the Forest Products Commission (FPC) to provide logs to a single local oil producer, specifically 550 tonnes to Mount Romance

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<sup>159</sup> Duty on Sandalwood Ordinance 1860. Act No: 1860 (24 Vict. No. 6)

<sup>160</sup> Sandalwood Act 1881. Act No: 1881 (46 Vict. No. 3)

<sup>161</sup> Biodiversity Conservation Act 2016, Act No. 024 of 2016.

<sup>162</sup> Forest Products Act, 2000, Act No. 034 of 2000. Western Australia.

annually. The majority of the remaining wood was exported.<sup>163</sup> However, these arrangements underwent a significant change in 2016 in response to the final report of the Western Australian Government inquiry conducted in 2014 by the FPC.<sup>164</sup> The revised structure now permits up to four domestic supply contracts concurrently.<sup>165</sup> Presently, the FPC has supply contracts for 400 tonnes per year with Mount Romance and 100 tonnes per year with Dutjahn Botanical Products, a joint venture between Dutjahn Custodians (native titleholders for the Central Desert) and Australian Botanical Products.

#### 4.5 SUSTAINABLE FOREST MANAGEMENT

The Forest Products Act, 2000<sup>166</sup> makes specific mention of Sustainable Forest Management (SFM) principles. Section 12 of the Act mandates that the Forest Products Commission (FPC) must strive to maximize forest profits while also ensuring the long-term sustainability of forest industries and SFM principles. In cases where there is a conflict between SFM principles, such as profit and conservation, Section 11 dictates that FPC should prioritize the principle that aligns best with their corporate vision, mission, and goals. The FPC Statement of Corporate Intent 2017 articulates a vision for an environmentally sustainable and commercially viable forest products industry.<sup>167</sup> The mission of FPC, as outlined in the statement, focuses on economic and regional development through sustainable harvesting and regeneration, innovation in forest management and local value-adding, and generating positive returns from state-owned plantations and forests.

*Santalum spicatum* is identified as one of the three key business sectors within the FPC. The primary goal of the FPC in relation to *S. spicatum* is to establish a sustainable and ethical industry that fosters employment opportunities in regional Western Australia. Additionally, the objective is to uphold brand credibility and awareness in order to facilitate a seamless shift towards a combined wild and plantation-based industry.<sup>168</sup>

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<sup>163</sup> URS Forestry report of 2008 (p. 28).

<sup>164</sup> FPC. 2015. Sandalwood industry consultation: public summary report. Perth: Stantons International.

<sup>165</sup> FPC. 2016a. New Western Australian sandalwood industry structure and contract folios available under the Request for Proposal. Perth: Government of Western Australia.

<sup>166</sup> Forest Products Act, 2000, Act No. 034 of 2000. Western Australia.

<sup>167</sup> FPC. 2017d. Statement of Corporate Intent 2016–17. Perth: Government of Western Australia.

<sup>168</sup> *Id.*

The Australian Government provides support for forest certification schemes that require forest managers to demonstrate sustainable forest management (SFM) practices.<sup>169</sup> One such scheme is the Australian Forestry Standard, which is recognized by the global Programme for the Endorsement of Forest Certification (PEFC). Another scheme is the Forest Stewardship Council (FSC) scheme. Both of these schemes promote voluntary adherence to SFM principles, including the inclusion and participation of Aboriginal people in decision-making processes.<sup>170</sup> Members who comply with these schemes enjoy various benefits, such as the use of a logo on documents and products, improved market access, and the advancement of corporate social responsibility goals.

All FPC operations are certified according to the International Standard for Environmental Management Systems (ISO 14001). This particular standard places emphasis on the environmental aspects of forest management.<sup>171</sup> However, it remains unclear how FPC fulfills the certification requirements for establishing and attaining environmental objectives for *S. spicatum*, especially in the absence of an accepted sustainable harvest level (ISO 14001, Clause 6.2). The establishment of such a limit would not only promote sustainable forest management (SFM) but also provide support for FPC's claim that their sandalwood products originate from responsibly managed forests.

One alternative certification option that has received positive feedback is the Songman Circle of Wisdom.<sup>172</sup> This unique program has the potential to strengthen relationships between Aboriginal communities and other stakeholders in the *S. spicatum* industry.<sup>173</sup> The Songman Circle of Wisdom, established by Kado Muir, is a non-profit organization that offers formal certification for business partnerships involving Indigenous communities and natural resources.<sup>174</sup> The organization oversees the implementation of the Songman Circle of Wisdom Indigenous Plant Certification Protocol.<sup>175</sup>

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<sup>169</sup> Australian Forestry Standard Ltd. 2013. Australian Standard: Sustainable Forest Management. Canberra: Council of Standards Australia.

<sup>170</sup> Lindenmayer D, Burgman M. 2005. Practical conservation biology. Canberra: CSIRO.

<sup>171</sup> Montréal Process Implementation Group for Australia & National Forest Inventory Steering Committee, Australia's State of the Forests Report 2013. Canberra: Australian Bureau of Agricultural and Resource Economics and Sciences. p. 363–364.

<sup>172</sup> Marinova D, Raven M. 2006. Indigenous knowledge and intellectual property: a sustainability agenda. *Journal of Economic Surveys*. 20:587–605.

<sup>173</sup> *Id.*

<sup>174</sup> ATNS. 2004a. Songman Circle of Wisdom. <http://www.atns.net.au/agreement.asp?EntityID=2873>.

<sup>175</sup> ATNS. 2004b. Songman Circle of Wisdom Indigenous Plant Certification Protocol. <http://www.atns.net.au/agreement.asp?EntityID=2882>.

## 4.6 PREVENTION OF ILLEGAL LOGGING

Illegal harvesting poses a significant threat to the conservation of *S. spicatum*, as highlighted by the Standing Committee on Environment and Public Affairs.<sup>176</sup> Moreover, it negatively impacts market prices and demand for legally sourced wood, as reported by the Department of Agriculture in 2014. For example, illegal wood is sold at approximately AU\$7500 per tonne, which is half the price of legally harvested. In a specific case, FPC confirmed in 2012 that a certain country reduced its *S. spicatum* order by 46% due to the influx of illegal sandalwood from Western Australia, resulting in a loss of over AU\$12 million for the state.<sup>177</sup> The exact quantity of annual illegal harvest remains undisclosed, however, it is believed to be significant. Some sources suggest that it could reach as high as 800 tonnes per year.<sup>178</sup> In a report from 2012, Wescorp stated that illegal sandalwood extraction exceeded legal harvest levels in the State. The illicitly obtained wood is openly promoted on local sandalwood company websites and then auctioned off to the highest bidder through illegal means. The annual harvest quota does not include any provisions for illegal wood, raising concerns if the current quota is indeed six times higher than what is considered sustainable.

Western Australia does not receive substantial federal assistance in combating illegal harvesting activities. The federal Illegal Logging Prohibition Act of 2012 mandates that individuals receiving raw logs must exercise due diligence by obtaining relevant information, such as proof of harvesting licenses. However, the federal government has indefinitely postponed the enforcement of this requirement pending a review of the Act. In the interim, non-compliant producers will receive educational guidance instead of penalties. It is questionable whether this guidance is adequate to deter illegal trade in *S. spicatum*. The Forest Products Commission (FPC) intends to establish a legality verification system to enable the tracking of sandalwood back to its origin, which could complement the due diligence requirement under federal laws once it is enforced.

Prior to 2016, the low penalties and prosecution rates for illegal logging created a significant legal obstacle to Sustainable Forest Management (SFM) in the *S. spicatum*

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<sup>176</sup> Standing Committee on Environment and Public Affairs. 2014. Inquiry into the sandalwood industry in Western Australia (final report). Perth: Government of Western Australia.

<sup>177</sup>Wescorp. 2012. Submission to the Standing Committee on Environment and Public Affairs Regarding Petition Number 152. Perth: Standing Committee on Environment and Public Affairs.

<sup>178</sup> Department of Parks and Wildlife. 2015a. Review of the Sandalwood (Limitation of Removal of Sandalwood) Order 1996. Perth: Government of Western Australia.

industry.<sup>179</sup> The maximum penalties varied from AU\$200 for unauthorized harvesting under the Sandalwood Act 1929 to AU\$10,000 or one year of imprisonment under the Conservation and Land Management Act 1984 (WA). Although it was possible to charge individuals with theft under the criminal code, which could result in several years of imprisonment, law enforcement authorities often opted for issuing cautions or imposing minor fines.<sup>180</sup> This lenient approach failed to deter poachers, as they could still turn a profit by paying the fine and selling the wood on the black market. Following recommendations from the industry inquiry, the maximum penalties were raised to AU\$200,000 for individuals and AU\$1 million for corporations under the Biodiversity Conservation Act 2016.

## 4.7 QUEENSLAND

The regulation of sandalwood harvesting in Queensland was initiated in 1877 through the proclamation of a regulation for the licensing of sandalwood cutting and removal under the Crown Lands Alienation Act 1876.<sup>181</sup> Unfortunately, this regulation did not prioritize sustainable harvesting practices; instead, it primarily served as a source of revenue for the Queensland government through licence fees. Land Agents from the Department of Public Lands in various Queensland districts were tasked with issuing timber sales licences, which also covered sandalwood harvesting, and monitoring the royalties paid by licensees annually. During the sandalwood-getting period, the Land Agent districts of Cooktown, Normanton, and Torres oversaw different parts of Cape York Peninsula. These district boundaries remained consistent from 1903 until at least the late 1930s.<sup>182</sup>

The Torres Land Agent's District encompassed the area from Torres Strait to Aurukun on the western coast of the Peninsula, extending south to Coen on the eastern side, which included the Lloyd Bay/Lockhart River region.<sup>183</sup> The Cooktown District covered the area

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<sup>179</sup> Standing Committee on Environment and Public Affairs. 2014. Inquiry into the sandalwood industry in Western Australia (final report). Perth: Government of Western Australia.

<sup>180</sup> Department of Parks and Wildlife. 2015a. Review of the Sandalwood (Limitation of Removal of Sandalwood) Order 1996. Perth: Government of Western Australia.

<sup>181</sup> Timber Regulations (Licence to cut and remove sandal wood, and amendment of clause 8 of the Timber Regulations proclaimed on the 1st March, 1877), Queensland Votes and Proceedings of the Legislative Assembly (QVPLA), 2, 1882, p. 61.

<sup>182</sup> The original boundaries of the Cooktown, Normanton and Torres Districts were amended In 1903. Queensland Government Gazette (QGG), 61, 122, 14 November 1903, pp. 929-30.

<sup>183</sup> Map B, Survey Office, Queensland, 'Annual Report for 1903', In Annual report of the Department of Public Lands for the year ended 1903, Brisbane, Government Printer, 1904.

from Coen southwards to Cape Tribulation, while the Normanton District included lands westward of Ebagoolah and Musgrave, from the Archer River in the north to Morning Inlet in the south.

Now, sandalwood harvesting requires a specific licence under the Nature Conservation Act 1992. When holding a harvesting licence, individuals must adhere to the conditions outlined in the licence. Some of these conditions are associated with Schedule 12 of the former Code of Practice for native forest timber production on state lands. Although this schedule is not part of the current Code of Practice, it remains relevant for certain licence conditions related to sandalwood harvesting. To ensure compliance with these conditions, the details have been reproduced here and should be reviewed alongside the current code of practice. Sandalwood harvesting licence condition requirements dictate that the selective harvesting of Sandalwood (*Santalum lanceolatum*) shrubs must be conducted under specific conditions. Operational access must involve the use of existing tracks whenever possible, with tracks being stabilized and drained in accordance with the Code. For off-road access, walk-over practices should be employed, vegetation should be trampled rather than pushed, and the soil surface should not be disturbed. Additionally, watercourse crossings must adhere to any conditions regarding watercourse protection outlined in the current Code.

Furthermore, the harvesting of sandalwood must be done in a manner that minimizes impacts on the surrounding environment, including the protection of other flora and fauna in the area. Harvesting activities should be carried out in a way that maintains the integrity of the ecosystem and ensures the sustainability of the sandalwood population. It is also important for individuals holding a sandalwood harvesting licence to keep accurate records of their activities, including the location and quantity of sandalwood harvested, as well as any other relevant information. This information may be required for reporting purposes and to demonstrate compliance with the conditions of the licence.

Failure to comply with the conditions of a sandalwood harvesting licence can result in penalties, including fines and the suspension or revocation of the licence. It is therefore essential for individuals engaged in sandalwood harvesting to familiarize themselves with the requirements outlined in their licence and to ensure that they are adhering to these conditions at all times.



## 4.8 'INDIAN SANDALWOOD' PLANTATIONS IN AUSTRALIA

The Western Australian Government's dedication to the development and understanding of Indian sandalwood plantations in Australia spanned nearly four decades. The outcomes of numerous research endeavors established a solid foundation of knowledge on various aspects such as seed germination, seedling health, plantation layout, irrigation, pest control, selection of host species, tree nutrition, and silvicultural practices. The insights gained from harvested research trees played a crucial role in the formulation of models for tree growth, heartwood development, and oil yield. This knowledge empowered the emerging commercial plantation industry to confidently invest in Indian sandalwood plantations in Australia. Ongoing modifications to the original government plans and silvicultural practices are continuously evolving as foresters strive to enhance the efficiency of cultivation systems and achieve higher final yield results.

The establishment of the first privately owned commercial Indian sandalwood (*Santalum album*) plantations in Australia took place in 1999. More than two decades later, the cultivation of Indian sandalwood persists in the tropical regions of Northern Australia, including Western Australia, the Northern Territory, and Queensland. However, suitable land for Indian sandalwood cultivation in Australia is limited due to factors such as specific climate requirements, water availability, topographical features, soil composition, necessary support services, and competition from other agricultural land uses. These constraints hinder the widespread expansion of Indian sandalwood plantations throughout Australia.<sup>184</sup>

In Australia, it is estimated that there are approximately 15,000 hectares of established Indian sandalwood plantations under irrigation in the year 2020. These plantations consist of approximately 6.5 million sandalwood trees. The majority of the commercial investment in the industry's plantation resource is concentrated in the Ord Valley, located in northern Western Australia. Typically, mature trees in Australian plantations are harvested when they reach around 15 years of age. At this stage, the quantity of oil-yielding heartwood reaches a level that makes the operation economically feasible. Several studies have indicated that as Indian sandalwood trees mature, the proportion of

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<sup>184</sup> Jonpaul Howarth, Australian Sandalwood Plantations, 'Natural Product Supply Bulletin', Perfumer & Flavorist Magazine, July 2015.

heartwood within the stem increases. Therefore, it is possible that harvesting plantations at 20 years of age or older may become a more viable option in the future.<sup>185</sup>

Each year, new plantations are continuously being established while older, fully grown plantations are harvested and transformed into a wide range of products. The technologies and systems employed in the design, establishment, maintenance, harvesting, and processing of these plantations are highly advanced and adhere to the highest standards. Prior to the establishment of each plantation, a thorough assessment is conducted to ensure that the maximum yield is achieved during the harvest. Meticulous planning plays a crucial role in the success of the plantation, with particular emphasis placed on the quality of the soil. Soil testing involves the meticulous analysis of soil samples to determine various characteristics such as texture, stability, plant nutrients, soil biology, fertility, acidity or alkalinity levels, as well as the presence of any toxicities or contaminants.

The Australian sandalwood industry is dominated by major commercial companies that not only own but also manage their own nurseries. These nurseries play a crucial role in producing both sandalwood and host seedlings. To ensure the health and vitality of the plants, a very high standard of nursery hygiene is maintained. This is essential in order to prevent the introduction and spread of soil diseases and pests. During the initial stages of growth, the seedlings are primarily cultivated under shade and receive daily overhead mist spray. This controlled environment helps them thrive and develop. As the seedlings mature, they are gradually exposed to a full sunlight environment. This gradual transition prepares them for eventual planting in the field.<sup>186</sup>

Harvesting Indian sandalwood plantations in Australia is a relatively new endeavor, and various systems and mechanisms are being developed and refined. The primary objective is to maximize the yield of high-quality commercial-grade wood while minimizing costs. In most cases, the trees are extracted from the ground to retrieve the heartwood, which is known to yield the highest quality wood. This heartwood is predominantly found in the base and root section of the tree. As the trees reach the age of 15 years, only small amounts of heartwood can be recovered from the upper portion of the tree. However, even the lower-yielding heartwood sections are considered commercially viable and are gradually sold in the market.

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<sup>185</sup> *Supra* note 11.

<sup>186</sup> *Id.*

The demand for Indian sandalwood products on a global scale is steadily increasing due to the depletion of wild resources. Plantation resources have emerged as a sustainable and environmentally friendly alternative to the traditional supply. This shift is expected to persist in Australia, where growing interest and investment are driving growth in the forest and plantation sectors. Australia's stable government, advanced infrastructure, and technology make it an attractive destination for foreign investment. Sandalwood plantation companies in Australia are renowned for their ethical, sustainable, and reliable production of Indian sandalwood oil and products, positioning them as global leaders. This reputation is further solidified by the attainment and upkeep of various ISO certifications. Australia has rapidly transitioned from a newcomer in the Indian sandalwood industry to the largest producer globally. The longstanding involvement of Western Australia in the global sandalwood market, leveraging local sandalwood species, has laid the foundation for the flourishing Indian sandalwood plantation industry. The Australian industry is well-equipped to continue expanding and adapting to market dynamics and technological advancements.<sup>187</sup>

## 4.9 TRADE SCENARIO

The sandalwood industry in Australia has a long history, dating back to the late 1800s. Since the 1920s, the State Government of Western Australia (WA) has been responsible for regulating and overseeing the trade.<sup>188</sup> During this time, measures such as harvest permits, limits, and fixed prices were implemented. The economic significance of sandalwood to WA has experienced fluctuations over the years when compared to other agricultural products. Additionally, the expansion of agricultural activities has led to a decline in the geographic range of wild *Santalum spicatum*.<sup>189</sup> The decline in sandalwood supply from other countries has sparked renewed interest in developing Australia's sandalwood trade.<sup>190</sup> In the past, Australia primarily exported sandalwood as timber.

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<sup>187</sup> *Id.*

<sup>188</sup> *Supra* note 9.

<sup>189</sup> McLellan, R., Dixon, K., & Watson, D, Prolific or precarious: A review of the status of Australian sandalwood (*Santalum spicatum* [R. Br.] A. DC., Santalaceae). 43 *The Rangeland Journal*, 211–222 (2021).

<sup>190</sup> Clarke, M, Australia's sandalwood industry: An overview and analysis of research needs. Rural Industries Research and Development Corporation, Australian Government. 06/131, (2006)

However, in recent decades, Australian companies have started producing sandalwood oil and other value-added products for both domestic use and export purposes.<sup>191</sup>

Australia plays a significant role in the global Sandalwood industry, with a notable production of approximately 2000 tonnes of *S. spicatum* sourced from Crown Land in Western Australia. Additionally, around 200 tonnes are harvested from private landholders within the same state.<sup>192</sup> Queensland plantations of *S. lanceolatum* contribute an additional 250 tonnes to the overall production. The primary destination for Western Australian Sandalwood is South-East Asia, where it is utilized in the manufacturing of incense or joss sticks. India also imports a substantial amount for oil production. Taiwan and Hong Kong serve as the largest importers of Western Australian Sandalwood, accounting for over 60% of Australia's annual production. These markets are particularly crucial for the future growth of Australian Sandalwood, as they lack native resources to meet their own demand.<sup>193</sup> China has historically been a key market for Australian Sandalwood, serving as the primary customer until importation was prohibited by the Communist Government in 1966. However, since the reopening of the market in 1999, China has significantly increased its imports of Western Australian Sandalwood in recent years. This resurgence is viewed as a substantial advantage for the Australian industry and is expected to bring benefits to Sandalwood growers in the future.

In contrast to previous practices where value addition to Sandalwood occurred primarily overseas, there is now a growing trend of domestic buyers who are utilizing Sandalwood for the production of Sandalwood oil and incense sticks, as well as exporting directly to international markets.<sup>194</sup> The most notable domestic customer and the largest Sandalwood product factory globally is the Western Australian company, Mt Romance, which procures approximately 600-700 tonnes or 27%-32% of Western Australian Sandalwood production annually. Australia is expected to experience a significant rise in the supply of Sandalwood in the near future. This can be attributed to the establishment of plantations for both *S. spicatum* and *S. album*, which will soon be ready for harvesting. However, this increase in supply poses a potential risk of driving down the prices of Sandalwood. Therefore, it is crucial for the industry, especially the leading companies involved, to

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<sup>191</sup> Tonts M., & Selwood J, Niche markets, regional diversification and the reinvention of Western Australia's sandalwood industry, 94 Tijdschrift voor Economische en Sociale Geografie, 564–575 (2003).

<sup>192</sup> Brand, John, (2006), Senior Forester – Forests Product Commission of Western Australia (FPC), (Pers. Comm.).

<sup>193</sup> Padmanabha A, 'Independent Sandalwood Market Report' (2004).

<sup>194</sup> Avon Sandalwood Network, 'Sandalwood Markets', 1 The Avon Sandalwooder, August 2004.

collaborate in order to ensure a controlled and gradual release of the product. Such cooperation will not only foster market growth opportunities but also lead to favourable price returns and sustainable supply.

With *S. spicatum* and *S. album* plantations are in the stages of development, it seems that Australia will be having a dominant upper hand in the international sandalwood market in the near future. The variability in yields is influenced by various factors such as management practices, geographical location, and environmental conditions. Some experts in the industry suggest that a *S. spicatum* plantation could potentially yield around 8 tonnes per hectare, based on an assumption of 20 kg per tree, over a period of 30 years with a planting density of 400 trees per hectare. Conversely, there are differing opinions that estimate yields for *S. spicatum* to be closer to 2-3 tonnes per hectare, considering a stocking rate of 200-300 stems per hectare over a 20-year period.<sup>195</sup> As for *S. album* plantations in the Ord River Irrigation Area, there is currently a lack of concrete data on yields. According to Vernes et al (2002)<sup>196</sup>, some prospectus companies have used estimates of up to 15 tonnes per hectare, assuming a density of 460 stems per hectare and a rotation length of 15 years.

#### **4.10 CONCLUSION**

Australia's sandalwood industry serves as a notable illustration of how effectively crafted regulations can promote both environmental sustainability and economic prosperity. In contrast to numerous other regions where sandalwood has been exploited to the brink of extinction, Australia has overseen its valuable resource with a forward-looking perspective. The history of Australia's sandalwood dates back centuries. The aromatic heartwood of *Santalum spicatum*, the indigenous sandalwood species, has fascinated individuals for many generations. Historical records indicate sandalwood exports as early as 1844. Nevertheless, this initial surge was driven by unsustainable methods, resulting in a significant depletion of natural stocks by the early 20th century. Australia's past errors served as a catalyst for transformation. The enactment of the Western Australian Sandalwood Act in 1929 represented a pivotal moment. This legislation established a

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<sup>195</sup> Brand, Jonathon & Jones, Peter, (1999), 'Growing Sandalwood (*Santalum spicatum*) in farmland in Western Australia,' Sandalwood Information Sheet No. 1, Department of Conservation and Land Management, Western Australia.

<sup>196</sup> Vernes, Tanya & Robson, Ken, 'Indian Sandalwood Industry in Australia,' Sandalwood Research Newsletter, Issue 16, 1-4 (2002).

framework of stringent government oversight over the sandalwood sector. Quota systems were put in place to prevent excessive harvesting, while a licensing system ensured transparency and responsibility across the supply chain. These regulations, in conjunction with subsequent revisions, laid the groundwork for a sustainable future.

Australia has taken the lead in the development of sandalwood plantations, although wild-harvested sandalwood still plays a significant role. Recognizing the limitations of relying solely on wild stocks, the government has actively supported research and development in this area. As a result, vast areas of land are now dedicated to growing *Santalum spicatum* and even the highly sought-after Indian sandalwood (*Santalum album*) under controlled conditions. The cultivation of sandalwood in plantations offers several advantages. Firstly, it reduces the pressure on wild populations, ensuring their conservation. Secondly, it guarantees a more consistent supply of sandalwood, meeting the demands of various industries. Lastly, it allows for improved quality control, ensuring that the harvested sandalwood meets the desired standards.<sup>197</sup> Australian sandalwood has gained a prominent position in the global market due to its distinctive aroma and high oil content, making it highly desirable for distillers and luxury goods manufacturers. The stringent regulations in place ensure that buyers receive a product that has been harvested and processed with the utmost care and environmental responsibility. This focus on quality and sustainability has resulted in Australian sandalwood commanding a premium price, benefiting both the government and industry participants.<sup>198</sup>

Australia's sandalwood management approach sets an exemplary standard for other nations facing similar challenges. The nation's ability to strike a delicate balance between economic gains and environmental stewardship is a significant lesson to be learned. Through the assimilation of past errors, the implementation of stringent regulations, and the embracement of innovative practices, Australia has effectively secured the long-term viability of its sandalwood industry, cementing its status as a prominent supplier of this invaluable resource. The sandalwood narrative in Australia epitomizes resilience, adaptability, and responsible governance. It serves as a testament to the efficacy of well-crafted regulations and the visionary individuals who envisioned a sustainable future for

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<sup>197</sup> Radomiljac, Andrew; McComb, Jen; Shea, Syd & McKinnell, F, ' Potential for irrigated tropical forestry in northern Western Australia', 61 Australian Forestry, 70-75 (1998).

<sup>198</sup> Australian Agribusiness Group, Market Overview- The Australian Sandalwood Industry, Melbourne, Australia, 1- 4 (2006).

this precious commodity. As the industry continues to progress, Australia's unwavering commitment to excellence, sustainability, and innovation paves the way for a future as aromatic and prized as its esteemed sandalwood.

## CHAPTER 5

# INTERNATIONAL SANDALWOOD MARKET AND THE ROLE OF INDIA

### 5.1 INTRODUCTION

The global sandalwood market is a multifaceted and ever-changing industry influenced by a variety of factors, such as economic, environmental, legal, and cultural considerations. Sandalwood, prized for its fragrant qualities and utilized in a range of sectors including perfumery, cosmetics, and pharmaceuticals, is predominantly obtained from two primary species: *Santalum album* (Indian sandalwood) and *Santalum spicatum* (Australian sandalwood). The market for sandalwood is worldwide, with substantial demand stemming from regions like Asia, notably India and China, where it holds significant cultural and religious importance. The Middle East also represents a key consumer due to its utilization in the fragrance sector. Nevertheless, the market encounters obstacles related to sustainability and legality. Sandalwood trees grow slowly, and excessive exploitation has resulted in the depletion of natural resources. To address this issue, several countries have implemented stringent regulations on sandalwood trade, including export bans or rigorous licensing requirements. International agreements, such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), oversee the trade of specific sandalwood species to ensure sustainability. Furthermore, the illicit trade in sandalwood, often involving smuggling and illegal logging, presents a significant challenge to the market's integrity and sustainability.<sup>199</sup>

India's role in the international sandalwood market is significant due to its rich reserves of sandalwood and historical association with the fragrance and pharmaceutical industries. However, this role is not without criticism. Concerns exist regarding illegal logging and smuggling of sandalwood, leading to depletion of natural resources and revenue loss for the government. The regulatory framework for sandalwood trade, while aimed at preventing illegal activities, has been criticized for its effectiveness and enforcement

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<sup>199</sup> Soundararajan, V., Ravi Kumar, G., & Murugesan, K., Trade scenario of sandalwood and its valued oil. 2 International Journal of Novel Research in Marketing Management and Economics, 52–59 (2015).



challenges. Additionally, bureaucratic hurdles and delays in the management and trade of sandalwood in India can hinder legitimate trade and investment in the sector, impacting the competitiveness of Indian sandalwood in the international market.<sup>200</sup>

## **5.2 EVOLUTION OF GLOBAL SANDALWOOD TRADE**

Sandalwood, recognized for its aromatic core wood and precious oil, has been a key player in the world market for centuries. Its application in religious practices, traditional healing methods, and as a symbol of luxury has cemented its position as a highly esteemed commodity. The global commerce of sandalwood can be traced back to ancient times, as there are early indications of its utilization and trade in diverse ancient societies. Within India, sandalwood held significant value as a resource employed in religious practices, temple rituals, and Ayurvedic medicine. Furthermore, it served as a prominent commodity for export, reaching distant lands such as Egypt, where it found application in mummification, fragrance production, and the crafting of aromatic substances.

China's interest in sandalwood was a key factor in the development of international trade routes. Sandalwood, imported from India and Southeast Asia during the Han Dynasty, was highly valued for its various uses in traditional medicine, religious ceremonies, and intricate carvings. The Silk Road played a crucial role in facilitating the transportation of sandalwood from South Asia to East Asia, thereby contributing to its widespread availability on a global scale.<sup>201</sup> As the influence of Buddhism expanded from India to Southeast Asia, the demand for sandalwood grew, solidifying its position within the trade networks of the region.<sup>202</sup> Given its importance in religious and cultural customs, sandalwood became a sought-after commodity that drove its exchange across different territories.

The European colonial powers' arrival in Asia brought about a notable transformation in the scale and extent of the global sandalwood trade. Initially, the Portuguese were pioneers in exploiting sandalwood reserves in India, acknowledging its lucrative value in the international market. They forged trade connections with local kingdoms and shipped

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<sup>200</sup> R. Ramachandran, "How India's Sandalwood Oil Trade Got Hijacked," *Forbes India*, August 31, 2011.

<sup>201</sup> Friederike Assandri. Review of *The Silk Road: A New History*, by Valerie Hansen. 50 *Journal of Asian History*, 329–334 (2016).

<sup>202</sup> Nattier, J, [Review of *Buddhism in Central Asia*, by B. N. Puri], 110 *Journal of the American Oriental Society*, 542–544 (1990).

substantial amounts of sandalwood to Europe and China.<sup>203</sup> Subsequently, the Dutch and British colonizers entered the scene, gaining control over sandalwood-abundant territories in Indonesia, India, and the Pacific Islands. The unearthing of plentiful sandalwood reservoirs in Timor, Fiji, and Hawaii during the 18th and 19th centuries further heightened global trade activities. The Hawaiian sandalwood trade, led by King Kamehameha I, illustrated the economic significance of this resource, with notable exports to China in return for commodities and riches.

During the early 19th century, the sandalwood trade on an international scale had reached its pinnacle, primarily due to the immense demand from China. The value of sandalwood was greatly appreciated for its various applications in incense, carvings, and traditional medicine. As a result, the trade routes expanded, forming an intricate network that interconnected the Pacific Islands, Southeast Asia, India, and China. During this time, there were notable changes in the international sandalwood trade. The excessive exploitation of sandalwood forests in Hawaii resulted in their near exhaustion by the mid-1800s.<sup>204</sup> Consequently, the trade shifted to other Pacific islands such as Fiji and New Caledonia, which became new suppliers of sandalwood for the global market. However, as the 20th century progressed, the natural sandalwood forests faced a decline due to excessive harvesting and the loss of their habitats. This led to a transition towards the cultivation of sandalwood in plantations. In the 21<sup>st</sup> century, Australia emerged as a significant participant in the global sandalwood market by establishing large-scale plantations in Western Australia and the Northern Territory. These plantations primarily focused on growing Indian sandalwood (*Santalum album*) and Australian sandalwood (*Santalum spicatum*).

The global need for sandalwood stayed robust, especially in Asia, where it persisted in being utilized in ancient healing practices, religious ceremonies, and fragrance production. Nevertheless, the limited availability of natural sandalwood reserves resulted in elevated costs and intensified initiatives to manage and preserve current populations.

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<sup>203</sup> Balkrishna Govind Gokhale, [Review of *The New Cambridge History of India: The Portuguese in India.*, by M. N. Pearson]. 64 *Pacific Affairs*, 587–589 (1991).

<sup>204</sup> Sumner J. La Croix, "The Economic History of Hawaii: A Short Introduction," Working Papers 200203, University of Hawaii at Manoa, Department of Economics, (2002).

### 5.3 INTERNATIONAL SANDALWOOD MARKET

The international sandalwood market, while lucrative, is complex and influenced by several factors such as supply constraints, regulatory policies, and market demand. The perfumery and cosmetics industries are the largest consumers of sandalwood. High-end perfumes and personal care products incorporate sandalwood oil for its unique, long-lasting scent. The global shift towards natural and organic products has further propelled the demand for sandalwood oil, as consumers increasingly seek products with natural ingredients. Australia's emergence as a major supplier of sandalwood is a significant trend. With the decline of natural sandalwood forests in India due to overexploitation, Australia has invested in large-scale plantations. Companies like Quintis and Santanol have established extensive plantations of both *Santalum spicatum* (Australian sandalwood) and *Santalum album* (Indian sandalwood) in Western Australia, ensuring a steady supply to meet global demand.<sup>205</sup>

Stricter regulations and certification requirements are shaping the market. In response to illegal logging and the depletion of wild sandalwood, countries have implemented stringent controls. Certification schemes such as the Forest Stewardship Council (FSC)<sup>206</sup> and the Roundtable on Sustainable Biomaterials (RSB)<sup>207</sup> provide assurance to buyers about the sustainable and ethical sourcing of sandalwood. Advances in cultivation and extraction techniques are improving the efficiency and yield of sandalwood production. Research into faster-growing sandalwood species and improved distillation methods is helping to meet demand while promoting sustainability.

Traditionally the largest producer of *Santalum album*, India's market share has declined due to overharvesting and regulatory constraints. However, India remains a significant player, especially in the domestic market where sandalwood is deeply embedded in cultural and religious practices. Australia has become a leading exporter of sandalwood, leveraging its plantation model to supply both *Santalum spicatum* and *Santalum album*. Companies like Quintis and Santanol dominate the market, with large-scale operations

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<sup>205</sup> The Market Reports. "Global Sandalwood Market Research Report." <https://www.themarketreports.com/report/global-sandalwood-market-research-report>. Accessed on 14 June 2024.

<sup>206</sup> Austin, James E., and Ezequiel Reficco. "Forest Stewardship Council." Harvard Business School Case 303-047, November 2002.

<sup>207</sup> Fortin, E., Repoliticising multi-stakeholder standards processes: the roundtable on sustainable biomaterials' standards and certification scheme, 45 J. Peasant Stud., 805–824 (2017).

and a focus on sustainability. Indonesia is another notable producer, focusing on *Santalum album*. The country has been expanding its cultivation efforts, although it faces similar challenges of illegal logging and sustainability concerns as India.

The limited availability of natural sandalwood due to overharvesting and stringent regulations has led to a supply shortfall. This scarcity drives up prices, making sandalwood one of the most expensive woods in the world. The quality and origin of sandalwood significantly impact its price. *Santalum album*, known for its superior oil content and fragrance, commands higher prices compared to other species like *Santalum spicatum*. Indian sandalwood is particularly prized, although Australian and Indonesian varieties are also highly valued. Products that are certified as sustainably sourced often fetch higher prices. Certifications ensure that the sandalwood is harvested legally and ethically, appealing to environmentally conscious consumers willing to pay a premium for sustainably sourced products.

The global sandalwood market was valued at US\$ 265.8 million in 2023 and is anticipated to reach US\$ 502.2 million by 2030, witnessing a Compound Annual Growth Rate of 9.4% during the forecast period 2024-2030. Australia is the largest Sandalwood market with about 69% market share. India is follower, accounting for about 20% market share. The key players are Quintis, FPC, Western Australian Sandalwood Plantations, Australian Sandalwood, Santanol Group, Karnataka Soaps & Detergents Limited, Sandalwood Forest etc. Top 3 companies occupied about 72% market share.<sup>208</sup>

## **5.4 GLOBAL DEMAND FOR SANDALWOOD**

The use of sandalwood can be traced back to 4,000 years ago in ancient India, marking its earliest evidence. The religious significance of sandalwood played a crucial role in driving its demand during that time. The fragrant smoke produced by sandalwood was believed to possess auspicious and purifying qualities, making it a common feature in religious ceremonies and offerings. European explorers encountered sandalwood during their travels to Asia in the 16th century, and its captivating fragrance quickly captivated the European elites. This led to sandalwood becoming a highly sought-after commodity, particularly for luxury goods such as jewelry boxes, furniture, and personal care products.

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<sup>208</sup> Riddhesh Dani, Dataintelo, Sandalwood Market Report. Global Forecast To 2032. <https://dataintelo.com/report/global-sandalwood-market>.

The demand for sandalwood oil, extracted from the heartwood of the tree, experienced a significant increase in the perfume industry. This era also witnessed a surge in global trade, with India maintaining its position as the primary supplier, followed by islands like Hawaii and the Pacific.

Sandalwood has experienced a significant surge in market demand, with an annual price increase ranging between 20 and 25%. This surge is primarily due to a combination of rising demand and a shortage in supply. As a result, the retail price of a litre of sandalwood oil is now five times higher than an equivalent amount of silver. The global consumption of sandalwood products is widespread, but the largest growth market is in Asia, particularly in China. China is expected to account for half of the global demand growth, which is projected to increase five times to 20,000 tonnes per year by 2025.<sup>209</sup> The importance of sandalwood in various industries such as traditional medicine, woodworking, Hindu and Buddhist rituals, pharmaceuticals, and perfumes has created ample demand for the product. Consequently, the limited number of companies operating in this sector are able to generate substantial profits.

Mature sandalwood trees typically have a weight of around 100 kg, with 20 kg being the aromatic heartwood. This heartwood can produce between 600-700ml of oil per tree. Although this may seem like a small amount, its value is significant, as one litre of oil can be sold for approximately \$3,000. Even the waste chippings from the sandalwood trees can be sold for \$1,000 per ton.<sup>210</sup> Moreover, the challenges in sourcing sandalwood allow companies to charge premiums of nearly 100% above international market prices to provide customers with legitimate and sustainable products.

### **Price Trends from World War II to Present**

The sandalwood prices showed a steady growth after the World War II. In the pre-war period, sandalwood oil was prized 3 to 4 US Dollars per kilogram. Post-World War II reconstruction efforts led to economic growth, increasing disposable incomes, and a resurgence in demand for luxury goods, including sandalwood and its derivatives. From

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<sup>209</sup> Sandalwood Market Size, Share, Global Analysis and Industry Forecast, 2032. Market Pinnacle Analytics. May, 2024.

<sup>210</sup> Jeremy Luedi, Under the Radar: How sandalwood is transforming crime and commerce in Asia, Global Risk Insights, 2017.

1944 to 1965, sandalwood oil prices hiked to 15.5 \$ per kg.<sup>211</sup> India remained the dominant supplier, with significant contributions from regions like Karnataka and Tamil Nadu. Australia also began to establish its sandalwood industry during this period. The use of sandalwood oil in the fragrance and pharmaceutical industries grew. Sandalwood oil became a key ingredient in many high-end perfumes and cosmetics. Increased interest in Eastern religions and philosophies in Western countries during the 1960s and 1970s boosted the demand for sandalwood products used in rituals and meditation practices. The sandalwood oil prices were around 33\$ in the 1960s and went upto 84\$ in the 1970s. The wood was priced at 2 to 4 Dollars per Kg at that time.<sup>212</sup>

Smuggling of sandalwood from natural forests had increased which led to regulatory changes and conservation efforts. Overharvesting led to the depletion of wild sandalwood stocks, particularly in India. This prompted stricter regulations and conservation efforts by the Indian government. Governments and private entities began to invest in sustainable sandalwood cultivation. In the late 1980s, sandalwood oil rates reached 290\$ and the wood rates were around 9\$ per Kg. Australia emerged as a significant player with large-scale sandalwood plantations. The late 1990s witnessed another phase of skyrocketing of sandalwood prices due to its increased demand in perfumes and pharmaceutical industry. The adoption of globalization policies by world countries also contributed to the development of international sandalwood trade. One kilogram of sandalwood oil costed around 580 USD and the wood costed 21 USD.

The new millennia also welcomed sandalwood in a feverished manner. The focus on sustainable sourcing became paramount, with certifications and eco-friendly practices gaining prominence in the market. India, Australia, and Pacific Island nations like Vanuatu invested in sustainable sandalwood production.<sup>213</sup> The sandalwood oil prices went above 1000 US Dollars and the wood prices were around 60 USD per Kg. Enhanced regulatory frameworks were established globally to prevent illegal trade. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) included sandalwood in its appendices, regulating its international trade. This further enhanced the demand for legitimate sandalwood all over the world. At the end of the first decade of the

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<sup>211</sup> H. S. Anantha Padmanabha, Production and Market Trend of Sandalwood, Sandalwood Market Report – Thailand, 2014.

<sup>212</sup> Id.

<sup>213</sup> Page, Tony & Tate, Hanington & C, Bunt & A, Potrawiak & A, Berry, Opportunities for the smallholder sandalwood industry in Vanuatu. (2012).

21<sup>st</sup> century, sandalwood oil prices reached 2000 US Dollars per Kg and the wood costed around 100 USD.<sup>214</sup> The rise of value-added products, such as sandalwood-based cosmetics, aromatherapy products, and high-quality incense, expanded the market. There was also a significant demand from the pharmaceutical industry for sandalwood oil due to its therapeutic properties.<sup>215</sup>

The Covid 19 pandemic caused supply disruptions in the global sandalwood market which again led to increase in sandalwood prices. Lockdowns and movement restrictions in major producers like India significantly hampered harvesting, processing, and export of sandalwood. This scarcity of raw materials led to a decline in the overall supply of sandalwood products. Despite the supply shortage, demand for sandalwood actually rose.<sup>216</sup> This was likely driven by factors like increased interest in natural and organic products for health and wellness, and perceived health benefits of sandalwood oil, including anti-inflammatory and antiseptic properties, which might have been seen as helpful during the pandemic. The combination of decreased supply and increased demand caused a surge in sandalwood prices.<sup>217</sup> Now the price of 1 Kg sandalwood in the international market almost reached 3000 US Dollars.

The increasing demand for sandalwood on a global scale is anticipated to maintain its upward trend. The growth is largely attributed to the expanding middle class in Asia, with a particular focus on China. However, the significance of sandalwood extends beyond economic factors and market dynamics. Its cultural importance plays a crucial role in driving its demand worldwide. For instance, in India, sandalwood holds a significant place in religious ceremonies and traditional healing practices. Similarly, in Japan, the art of Kodo, which involves the appreciation of incense, heavily relies on the distinct aroma of sandalwood. These cultural ties ensure that the demand for sandalwood is likely to endure for generations to come. The historical fluctuations in the global demand for this aromatic wood reflect humanity's changing relationship with the environment. Numerous future

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<sup>214</sup> *Id.*

<sup>215</sup> Anmol, Gaurav Aggarwal, Mehak Sharma, Raman Singh, Shivani, Upendra Sharma, Ethnopharmacologically important highly subsidized Indian medicinal plants: Systematic review on their traditional uses, phytochemistry, pharmacology, quality control, conservation status and future prospective, *Journal of Ethnopharmacology*, Volume 320, 2024, 117385, ISSN 0378-8741.

<sup>216</sup> Nimbus Agro Farms, Sandalwood Farming, Nimbus Agro Farms Blog (Apr. 11, 2023). <https://www.nimbusagrofarms.in/post/sandalwood-farming>.

<sup>217</sup> Business Research Insights, Sandalwood Market - Growth, Trends, COVID-19 Impact, and Forecasts (2022 - 2027)

market analyses also predict a surge in the demand for sandalwood in international markets in the upcoming years.

## **5.5 ROLE OF INDIA IN GLOBAL SANDALWOOD MARKET**

During the seventeenth century, the sandalwood trade in India commenced and gradually gained recognition for its value. In 1792, Tipu Sultan, the King of Mysore, acknowledged the significance of sandalwood by declaring it a Royal Tree. Indian sandalwood holds immense value as a commodity for export, contributing significantly to foreign exchange earnings.<sup>218</sup> Additionally, it is imported in limited quantities as a value-added product. Initially, the majority of sandalwood exports were directed towards China in the first half of the eighteenth century. However, smaller quantities were also sent to countries such as France, England, Germany, and the Middle East. Over time, the trade with China ceased, leading to new arrangements with the United States and European countries for the extraction of sandalwood oil. The export of well-prepared sandalwood logs, roots, and billets for oil distillation continued with Germany and the USA until the outbreak of the First World War. At that time, India lacked the necessary technology, prompting the establishment of its own distillation unit. The disruption caused by the war and the involvement of various countries led to disturbances in sea route transport systems. Consequently, India had no choice but to establish its own distillation unit to ensure a steady supply of sandalwood oil.<sup>219</sup>

During the period of 1866-1867, the sandalwood trade commenced, marking the earliest available records. The Mysore Government possessed a substantial stock of sandalwood valued at INR 156,321, and upon its sale, it yielded a revenue of INR 74,598. Moving forward to the years 1885-1886, the Government of India exported sandalwood stock worth INR 444,241, while simultaneously importing value-added products worth INR 16,404. As the years progressed to 1889-1890, the export of sandalwood escalated significantly, reaching a value of INR 1,009,152. Out of this amount, INR 770,791 worth of stock was transported through Madras, with the remainder originating from Bombay. In Bombay, the selling price for wood ranged from INR 120 to 180 per 21 Mounds

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<sup>218</sup> *Supra* note 12.

<sup>219</sup> Jayappa V, In: Proceedings of the international seminar on essential oils, 29th October–1st November 1979, Bangalore. (1979).



(equivalent to 10 Pounds). Additionally, the price for sandalwood oil was INR 8.5 per pound.<sup>220</sup>

Shifting the focus to the early 1900s, specifically 1907-1908, a substantial quantity of 85,000 pounds of wood was exported to various countries, amounting to a value of INR 1,000,000. However, following the conclusion of World War II, the export of wood faced restrictions, limiting it to 2500 tonnes. Among this restricted amount, 52% was allocated to Germany, 18% to the United States, and the remaining portion was distributed to England and other nations.<sup>221</sup>

Sandalwood was never imported to India until 1995, as merchants were unwilling to consider any alternatives to Indian sandalwood. This was due to the fact that Indian sandalwood was easily accessible to merchants, both legally and illegally. Additionally, its price remained stable and moderate in the domestic market. However, in 1999, Australian sandalwood (*Santalum spicatum*) was introduced to Indian merchants. Initially, there were reservations about this exotic sandalwood, but it was eventually embraced due to its lower cost. Simultaneously, merchants began exploring the possibility of obtaining other scented woods as substitutes, primarily due to the inconsistent supply from Western Australia. Large quantities of African sandalwood (Tanzanian wood), belonging to the genus *Osyris*, were imported for various value-added products. This wood was comparatively cheaper and gained a significant share of the domestic market. Since 2001, Indian merchants have been importing approximately 2000 tonnes of this wood annually. However, despite the substantial importation of African sandalwood, the demand for Indian sandalwood has not diminished. In 2010, the Government of India implemented restrictions on log imports.<sup>222</sup>

India has been a significant exporter of sandalwood oil to over 40 countries worldwide. Prior to 1960, India was able to meet approximately 70-80% of the global demand for sandalwood oil. The total production in India during that time ranged from 125 to 200 tonnes. However, by 1981, the production had decreased to about 40 tonnes, with 64% of it still being exported to various countries. The export of sandalwood oil experienced a period of high growth between 1960 and 1973, but it subsequently declined sharply due

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<sup>220</sup> Report on sandalwood marketing in India 1984, Pub; Directorate of marketing and inspection, Ministry of Rural Development. Govt. of India.

<sup>221</sup> *Supra* note 12.

<sup>222</sup> Reports of Karnataka soaps and detergents Ltd. (KSDL).

to a government-imposed ban on exports. To regulate the export market, a quota system was later introduced. Under this system, the quantity of sandalwood oil that private and government institutions could export was determined based on the amount of wood they had purchased during auctions.<sup>223</sup>

The market trend for sandalwood oil is quite dynamic, with prices fluctuating based on demand. For instance, the price of one kilogram of oil, which was a mere 5 USD in 1941, skyrocketed to 3000 USD in 2023. However, there is currently a severe shortage of raw materials from natural forests, as the efforts to regenerate sandalwood trees have not been sufficient. As a result, the value of both sandalwood wood and oil continues to increase each year. This has led to the emergence of numerous corporate entities and farmers worldwide who are now actively involved in cultivating sandalwood on agricultural land. With this growing interest, the sandalwood industry has the potential to thrive for several centuries. But a steady dominance by India in international sandalwood market is only an old story because of the impeding policies and despotic regulations by the government.

## 5.6 CONCLUSION

Sandalwood, renowned for its aromatic properties, has gained significant recognition in the international market. This valuable wood holds great cultural and religious importance, prominently featured in carvings, sculptures, and traditional medicine. As a result, there has been a flourishing global trade, with India exporting substantial quantities of sandalwood to various regions including Asia, Europe, and beyond. The demand for sandalwood, particularly its oil, remains strong and is projected to grow due to its utilization in perfumes, cosmetics, and traditional medicines. However, the supply struggles to keep up with this demand, resulting in premium pricing. In the past, India held an undisputed position as the world's leading contributor, accounting for a staggering 80% of the global sandalwood production. Unfortunately, the natural resources have been severely depleted due to deforestation and smuggling. Consequently, Australia and other countries have emerged as significant producers. It is important to note that not all sandalwood is of equal quality. Indian sandalwood, scientifically known as *Santalum*

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<sup>223</sup> Venkatesha Gowda VS, Patil KB, Ashwath DS, Manufacturing of sandalwood oil, market potential demand and use. 7 J Essent Oil Bear Plants, 293–297 (2004).

*album*, is highly regarded for its distinctive fragrance and oil content, elevating its value in the market.

India has a rich history intertwined with sandalwood. For centuries, it dominated the production and export of this precious wood, establishing a reputation for its premium quality.<sup>224</sup> However, during the colonial era and post-independence period, mismanagement and exploitation led to rampant deforestation. Sandalwood, once abundant, became a scarce and precious resource. The issue was further exacerbated by smuggling, creating a destructive cycle of overexploitation and diminishing natural resources. Recognizing the depletion of Indian sandalwood, countries like Australia seized the opportunity and established large-scale plantations of Indian sandalwood (*Santalum album*) while adhering to sustainable practices. As a result, Australia has become a major player in the global market, and its sandalwood oil commands a premium price due to its high quality. Ironically, India, once a prominent exporter, now relies on imports, primarily from Australia, to meet the domestic demand for oil production and handicraft industries. The Indian government has introduced initiatives aimed at promoting the cultivation of sandalwood among farmers, with a focus on long-term solutions. Nevertheless, the success of these programs hinges on variables such as the time required for maturation and the stability of the market.

India's previous dominance in the sandalwood market is unquestionable. However, its present position is more uncertain as it heavily relies on imports and faces obstacles in revitalizing domestic production. While Indian sandalwood continues to be highly regarded, the pressure to meet market demands may result in prioritizing quantity over quality in future production endeavors. India's ongoing efforts to revive domestic production through plantation programs are praiseworthy. Nevertheless, ensuring the long-term sustainability of these initiatives is of utmost importance. Factors such as effective land management, fair market prices for farmers, and combating illegal logging are all critical considerations. India has the opportunity to utilize its expertise and rich history to establish a unique position in the market by offering value-added sandalwood products. This could involve the development of distinctive essential oil blends, promotion

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<sup>224</sup> Suresh Ramanan S., Alex K. George, S.B. Chavan, Sudhir Kumar, S. Jayasubha, Progress and future research trends on *Santalum album*: A bibliometric and science mapping approach, 158 *Industrial Crops and Products*, (2020).

of traditional handicraft techniques, and a focus on environmentally friendly and ethically sourced products.

To regain its past glory or forge a new path in this lucrative yet challenging market, India must prioritize sustainable production practices, diversify into value-added products, and emphasize quality. India's success will hinge upon its ability to learn from past mistakes and embrace sustainable practices for a fragrant future.

# CHAPTER 6

## CONCLUSION AND SUGGESTIONS

### 6.1 SUMMARY OF CHAPTERS

The legal and regulatory framework of sandalwood trade in India is analysed in the 2<sup>nd</sup> chapter. It highlights the significance of Indian sandalwood in various industries and the challenges it faces, such as illegal harvesting and smuggling. The chapter discusses regulatory measures implemented by the Indian government, including permits and monitoring mechanisms, to control and manage sandalwood resources. It also addresses the cultural and religious importance of sandalwood in India and the country's commitment to international agreements like CITES for sustainable trade. The historical context of sandalwood laws in India, from the British colonial era to post-independence, is explored to understand the evolution of regulations. State laws in Karnataka, Tamil Nadu, Kerala, Andhra Pradesh, and Telangana are also analysed in detail for their role in regulating the cultivation, harvesting, and trade of sandalwood. The chapter concludes by emphasizing the need for effective regulations to ensure the sustainable management and conservation of sandalwood resources in India.

Chapter 3 discusses the impact of regulations on sandalwood conservation in India. Sandalwood has faced challenges due to unsustainable exploitation. The chapter explores the complexities of sandalwood regulations in India, the challenges faced in enforcement, and the impact of those regulations in the reduced cultivation and production of sandalwood in India. The conservation status of sandalwood is highlighted, pointing out the decline in natural populations due to illegal logging, smuggling and cultivation restrictions. The chapter also discusses the role of the Supreme Court in mandating policies for the conservation of sandalwood and the cultivation support provided by government agencies. The chapter further look into the issue of illegal logging and sandalwood smuggling, with a focus on the activities of the forest brigand Veerappan. The involvement of labour contractors, political figures, and organized crime syndicates in sandalwood smuggling is discussed, emphasizing the environmental and social consequences of these illegal activities. Changes in policies regarding sandalwood cultivation in India are also examined, including shifts towards private cultivation,

revisions in regulations, and financial incentives for farmers. The conclusion emphasizes the need for a comprehensive strategy to address the challenges facing sandalwood conservation in India and secure a sustainable future for this valuable resource.

The 4th chapter discusses the Australian model of sandalwood management, highlighting the historical significance and practical applications of sandalwood. Australia emerged as a primary supplier despite not being a user itself. The chapter delves into the historical context of Australia's sandalwood industry, tracing its origins back to early trade connections for commodities like tea. The colonial administration of Western Australia recognized sandalwood as a potential export for revenue generation. Regulations and government interventions were implemented in response to challenges like overproduction and illicit harvesting. The regulatory framework for sandalwood management in Australia includes national and sub-national laws, as well as industry-specific regulations. Sustainable forest management principles are integral to the governance of sandalwood resources, with a focus on environmental sustainability and economic viability. The chapter also discusses the establishment of Indian sandalwood plantations in Australia, highlighting the advanced technologies and systems used in plantation design, establishment, and maintenance. The cultivation of Indian sandalwood offers a sustainable and environmentally friendly alternative to traditional sources, with Australia positioned as a global leader in sandalwood production. The nation's commitment to quality, sustainability, and innovation has secured its position as a leading supplier of sandalwood globally. Australia's sandalwood industry showcases resilience, adaptability, and responsible governance for the future.

Chapter 5 explores the international sandalwood market and the role of India in this industry. Sandalwood, prized for its fragrance, is predominantly obtained from Indian and Australian species. The market faces sustainability and legality challenges due to slow tree growth and illegal trade. India plays a significant role in the market but faces criticism for illegal activities and regulatory challenges. The historical evolution of the global sandalwood trade, influenced by colonial powers, highlights the importance of sandalwood in various industries. The international market is complex, driven by supply constraints, regulations, and consumer demand. Australia has emerged as a major supplier, focusing on sustainability and certification. The global demand for sandalwood has increased, particularly in Asia, driving prices up. The market is valued at millions and is expected to grow. India's historical role in the global sandalwood trade is highlighted,

showcasing its value as an exporter. However, India's dominance has decreased due to overharvesting and regulations. Future trends predict a surge in demand for sandalwood, with a focus on sustainability and ethical sourcing. India's current position in the market is uncertain, relying on imports and facing challenges in revitalizing domestic production. The chapter emphasizes the need for India to prioritize sustainable practices, diversify products, and change in regulations to regain a strong position in the global sandalwood market.

## **6.2 KEY FINDINGS**

In India, laws for the regulation of cultivation, harvest and trade of sandalwood were implemented by different governments at different times in both centre and states. The researcher analysed the sandalwood related provisions of such legislations in this research work. The central legislations regarding this are The Indian Forest Act of 1927 and The Wildlife (Protection) Act of 1972 with its 2022 amendment. The Indian Forest Act simply follows the British colonial agendas which give absolute authority to the state governments over forests including the sandalwood trees. The Wildlife (Protection) Amendment Act of 2022 added a new chapter, Chapter VB to the Act. This newly added chapter impose strict restrictions for the international trade of endangered species of wild flora and fauna. Red sandalwood is included in Schedule IV as an endangered species requiring strict conservation measures. According to the new provisions, permits and licenses from the authorities are required for the international trade of such scheduled items including red sandalwood. Also such items to be traded must be legitimately obtained. This leads to the study of state specific legislations.

The legislations enacted by the states of Karnataka, Tamil Nadu, Kerala, Andhra Pradesh, and Telangana have been thoroughly examined in this research. These are the states that have a considerable share in the sandalwood population and production in India. The researcher carefully reviewed the specific legislations of these states in order to gain a comprehensive understanding of the regulatory framework related to sandalwood in India. The primary reason cited by the legislators for implementing these legislations is the conservation of sandalwood trees, as the species is considered to be endangered. Prior to 2001, even the cultivation of sandalwood was exclusively controlled by the state, and private landowners were prohibited from cultivating it. However, the ban on cultivation

lacked any logical justification. It is also very clear that restrictions on cultivation can in no way support the conservation efforts.

Despite the relaxation of cultivation restrictions after 2001, the state still maintains a monopoly over the harvest and trade of sandalwood. Additionally, individuals must acquire licenses for private sandalwood plantations. The regulatory laws impose limitations and conditions on the possession and transportation of sandalwood, allowing individuals to possess only a few kilograms of the precious wood. Harvesting sandalwood is also a complex process, requiring permission from the relevant forest department even for trees located on private land. Specific conditions must be met in order to obtain such permissions, and the felling of the tree must be carried out in the presence of a forest officer. Furthermore, the owner of the tree can only sell the timber to the forest department.

Upon examining the legal framework, it becomes evident that the laws governing sandalwood regulation in India are highly unreasonable and lack logical justification. Moreover, the arduous and time-consuming process of obtaining permits for cultivation and harvest acts as a significant barrier for new farmers and impedes the growth of the industry.

The researcher conducted a detailed study to examine the effectiveness of sandalwood regulatory laws in protecting it from endangerment. After the research, it is found that the governments and other such authorities in India were trying for years to conserve the precious sandalwood tree from the threat of endangerment. Stating the reason of conservation, many Acts and Rules were implemented by the central and state governments in India over years. These regulatory laws impose strict restrictions on cultivation, harvest, possession, transit and sale of sandalwood in India. In the research work, the researcher analysed the effectiveness of these regulations in protecting the sandalwood tree from endangerment. The study on sandalwood laws revealed that even the cultivation of this precious tree species was banned for several years. This prima facie gives the view that such regulatory laws are not supporting the conservation efforts, but also it was counterproductive by discouraging legitimate cultivation.

A major finding from the research was that there is immense decline in the population of sandalwood trees in the southern India over the years in the past four decades. This decline in population also caused shortage of supply and reduction in sandalwood production by



the southern states, especially Karnataka and Tamil Nadu. The impact of sandalwood regulations in India can be read along with this. The sandalwood cultivation was banned by strict regulations from the mid 20<sup>th</sup> century. The exploitation of existed sandalwood populations without having new cultivations made the sandalwood industry more unsustainable. Also, before the 2010s, the governments and forest authorities of India never took any proactive steps in incentivizing more sustainable sandalwood cultivation. These further contributed to the decline of sandalwood populations in India and retarded the conservation efforts.

The research showcases the activities of illegal logging and smuggling of sandalwood over years. It is found that the strict regulations on sandalwood limited its supply and this caused surge in prices. The regulations limited the ability of innocent farmers to obtain commercial benefits from sandalwood cultivation. This situation even forced such innocent farmers to do illegal trading of sandalwood. It is also found that the sandalwood mafia operated extensively in the forest areas of southern India. Tonnes of sandalwood were smuggled by bandits including the infamous Veerappan with and without the knowledge and help of the concerned forest authorities. Corruption, mismanagement and weak enforcement of laws led to high amount of illegal sandalwood trade. The regulatory laws itself opened the way for black markets by restricting legitimate trade.

The decline in population of sandalwood trees over years and the findings on activities of illegal harvesting and trade of sandalwood is giving a clear idea that the sandalwood laws in India are ineffective in sandalwood conservation. Moreover these laws are exacerbating the problem of endangerment by disincentivizing cultivation and setting the scene for illegal harvesting and trade activities.

The researcher conducted studies for understanding the factors that led to the growth and development of Australian sandalwood industry. Australia's interest in sandalwood have long roots from the early 19<sup>th</sup> century. From that times itself, Australia started trading their natural sandalwood variety – *Santalum spicatum* to different countries. Regulatory frameworks in the sandalwood industry are established through a combination of different tools that work together to create the legal, institutional, and economic framework of the industry. The state of Western Australia is the dominant producer of sandalwood in Australia. The Forest Products Commission (FPC) was established to carry out various

functions related to forests including the management of sandalwood on public lands. 1. The main aim of the FPC concerning sandalwood is to create a sustainable and ethical sector that promotes job prospects in rural Western Australia. Furthermore, the goal is to maintain brand reputation and recognition to enable a smooth transition towards an integrated wild and plantation-oriented industry. A majority of sandalwood was exported by Australia because there was only limited domestic demand. The adoption of Sustainable Forest Management principles contributed heavily to the sustainable growth of sandalwood sector in Australia. Those principles are specifically mentioned in the Forest Products Act of 2000.

Sandalwood plantations is another important contributing factor to the sustainability of sandalwood production in Australia. The development of 'Indian sandalwood' plantations in Australia spanned nearly four decades. In Australia, it is estimated that there are approximately 15,000 hectares of established Indian sandalwood plantations under irrigation in the year 2020. These plantations consist of approximately 6.5 million sandalwood trees. This data clearly gives the insight that the glossy future of sandalwood industry in Australia is guaranteed. The research suggests that this will give a dominant upper hand for Australia in the international sandalwood market in the upcoming years. Australia has effectively secured the future viability of its sandalwood industry, establishing itself as a leading supplier of this invaluable resource. The sandalwood narrative in Australia embodies resilience, adaptability, and responsible governance. It stands as a testament to the effectiveness of well-crafted regulations and the visionary individuals who envisioned a sustainable future for this precious commodity. Australia gives a sound model of effective sandalwood management which can be adopted by countries like India.

The researcher made a study on the global market for sandalwood in order to understand the international demand of this scented wood. The global sandalwood market has experienced significant growth in demand over the years, largely driven by its multifaceted applications in fragrance, cosmetics, pharmaceuticals, and religious ceremonies. One of the critical factors influencing market demand is the scarcity of natural sandalwood. This has led to a reduction in supply and an increase in prices. The demand for sandalwood has remained robust despite these supply constraints, driven by its enduring popularity in perfumery and aromatherapy. Sandalwood oil, in particular, is highly valued for its distinctive woody fragrance and therapeutic properties. The

cosmetics industry also utilizes sandalwood for its purported skin benefits, such as anti-inflammatory and antimicrobial effects. Furthermore, sandalwood continues to play a vital role in various cultural and religious practices, further sustaining its demand.

Historically, India has been the primary source of high-quality sandalwood, particularly *Santalum album*, but overharvesting and stringent government regulations have drastically reduced its availability. The study on the sandalwood market performance by India gives a gloomy picture with substantial decline in the exports over the years. The undisputed global leader in the past is even facing a situation of importing sandalwood from Australia for the domestic needs. The strict regulations discouraged legitimate sandalwood cultivations and paved way for illegal logging. This led to the limited availability of sandalwood in India. The production rate of sandalwood by the south Indian states had decreased over years, further retarding the export rates.

It is evident from the research that the outdated laws retarded the sustainable sandalwood trade by India. Also the indolent policies and attitude of government and forest authorities in India towards the sandalwood industry had weakened the position of India in international sandalwood market.

## **6.3 SUGGESTIONS**

The research provides the conclusion that, India's sandalwood industry, renowned globally for its superior quality, faces stringent regulations that hinder its full potential. To foster growth and sustainability, a comprehensive approach to liberalizing this sector is crucial. In this background, the researcher outlines several suggestions to address the challenges pertaining in the sandalwood regulatory framework in India. These suggestions are focusing on unlocking the full potential of sandalwood industry in India in order to attain both economic and environmental prosperity in this sector.

### **1. Adoption of a Uniform National Policy**

One of the foremost challenges in the sandalwood sector is the lack of uniformity in regulations across different states. Each state has its own set of rules and regulations regarding the cultivation, harvesting, and trade of sandalwood, leading to inconsistencies

and confusion among stakeholders. This regulatory patchwork creates significant barriers for farmers and traders who operate across state lines or wish to engage in larger-scale production and trade. To address this issue, it is suggested to develop and implement a centralized national policy through the Ministry of Environment, Forest and Climate Change (MoEFCC) in collaboration with state governments. This centralized policy should harmonize state laws, ensuring consistent regulations nationwide. By defining clear, comprehensive guidelines covering aspects such as cultivation, harvesting, transportation, and trade, the policy can facilitate easier compliance and reduce the regulatory burden on stakeholders. The formation of consultative committees comprising representatives from central and state governments, industry experts, and stakeholders can help in drafting this policy. Furthermore, the legislative framework should be amended to incorporate the uniform policy, and a regular review mechanism should be established to update the policy based on feedback and evolving circumstances. This approach will create a more predictable and stable regulatory environment, encouraging investment and participation in the sandalwood sector.

## **2. Revising Regulatory Frameworks**

The existing regulatory frameworks governing sandalwood are often seen as overly complex and restrictive, posing significant challenges, especially for small-scale farmers and traders. These complexities can deter new entrants and stifle innovation within the industry. Avoiding of licensing requirements is highly recommended by the researcher. At least simplifying the licensing process is crucial to encourage broader participation in the sandalwood sector. This can be achieved by streamlining the procedures for obtaining licenses and permits, reducing the time and paperwork involved. Developing digital platforms for applications, renewals, and tracking of permits can enhance transparency and efficiency, making it easier for stakeholders to navigate the regulatory landscape. Additionally, decentralizing certain regulatory functions to local bodies can reduce bottlenecks at the central level and allow for more responsive and context-specific regulation. Conducting a comprehensive review of existing regulations to identify and remove redundant or overly restrictive provisions, engaging with stakeholders to incorporate their feedback, and training local authorities to handle decentralized regulatory tasks effectively are critical steps in this direction. These measures will not only

simplify compliance but also build trust and cooperation between regulators and the sandalwood industry.

### **3. Encouraging Private Sector Participation**

The private sector holds significant potential in driving the sustainable development of the sandalwood industry. However, restrictive policies have limited private sector involvement. To encourage greater participation, it is essential to lift restrictions on harvest and trade of sandalwood. Also it is recommended to introduce financial incentives such as subsidies, tax breaks, and grants for private enterprises engaged in sandalwood cultivation and processing. Facilitating public-private partnerships can leverage private sector efficiency and innovation in managing sandalwood resources. Additionally, supporting research and development initiatives led by private entities can lead to innovations in cultivation techniques, pest management, and product development. Developing a policy framework that provides clear guidelines and benefits for private sector participation, establishing funding mechanisms such as venture capital funds and low-interest loans for sandalwood-related enterprises, and creating innovation hubs and incubators focused on sandalwood can foster a vibrant and dynamic industry. These steps will attract investment, stimulate economic growth, and enhance the global competitiveness of the Indian sandalwood industry.

### **4. Enhancing Monitoring and Enforcement**

Effective monitoring and enforcement are critical to prevent illegal activities and ensure compliance with regulations in the sandalwood sector. Utilizing advanced technologies such as satellite imagery, GPS tracking, and blockchain can enhance the monitoring of sandalwood plantations, harvesting, and trade. Strengthening the capacity of enforcement agencies through better training, resources, and technology is essential to combat illegal harvesting and trade effectively. It is recommended to establish a central database to track sandalwood from cultivation to final sale to ensure traceability and accountability, reducing the scope for illegal activities. Partnering with technology companies to develop and implement monitoring solutions, conducting regular training programs for enforcement agencies, and developing and maintaining a centralized, accessible database with real-time updates are necessary steps to enhance monitoring and enforcement. These

measures will improve compliance, deter illegal activities, and ensure that the benefits of sandalwood trade are enjoyed by legitimate stakeholders.

## **5. Promoting Sustainable Practices**

Sustainability should be at the core of any policy related to sandalwood. Unsustainable cultivation and harvesting practices can lead to resource depletion, threatening the long-term viability of the sandalwood industry. Promoting agroforestry practices that integrate sandalwood cultivation with other crops can enhance biodiversity and soil health, contributing to environmental sustainability. Research institutions, in collaboration with the government, can develop and distribute high-yielding sandalwood varieties resistant to common diseases like root rot and spike disease. This ensures increased production while minimizing losses. Providing training and resources to farmers on sustainable cultivation, pest management, and harvesting techniques can help in adopting best practices. Introducing and promoting certification schemes for sustainably sourced sandalwood can encourage adherence to sustainable practices. Conducting outreach programs to educate farmers about sustainable practices, allocating resources for the development and distribution of sustainable farming tools and techniques, and developing certification programs in collaboration with environmental NGOs and industry bodies are key steps to support sustainable practices. These initiatives will ensure that the sandalwood industry grows in harmony with environmental conservation goals, securing its future for generations to come.

## **6. Encouraging Sandalwood Plantations**

Encouraging both government-backed and private sandalwood plantations in India is highly recommended. It is crucial for the growth of the sector due to several reasons. Firstly, it addresses the high domestic demand for sandalwood, which is extensively used in religious ceremonies, perfumery, and traditional medicine. By reducing the reliance on imports, promoting domestic plantations can enhance India's self-sufficiency in meeting its sandalwood needs. Secondly, the establishment of plantations plays a pivotal role in conservation efforts. Sandalwood is a threatened species due to overexploitation and habitat loss. By cultivating sandalwood in plantations, pressure on wild populations is alleviated, contributing significantly to the conservation of this precious species. Thirdly, sandalwood plantations offer substantial economic benefits. Although it is a long-term

investment, the mature trees fetch high prices in the market, ensuring a sustainable source of income for farmers and investors. Moreover, the establishment of plantations creates employment opportunities, particularly in rural areas where livelihood options may be limited. Additionally, the promotion of sandalwood plantations stimulates research and development in cultivation techniques, pest management, and value-added products, leading to sectoral advancements and increased efficiency. Encouraging sandalwood plantations can boost India's export potential. With the country's rich reserves and conducive climate, India has the potential to become a significant exporter of sandalwood products, thereby increasing exports and foreign exchange earnings.

## **7. Facilitating International Trade**

To maximize the economic potential of sandalwood, facilitating international trade is crucial. Aligning domestic standards with international standards can ensure that Indian sandalwood meets global market requirements, enhancing its competitiveness. Limiting legal constraints for permitting international trade by private stakeholders is recommended. Negotiating favourable trade agreements with key markets can reduce trade barriers and provide better access to international markets for Indian sandalwood. Providing support to Indian exporters to comply with international trade regulations, including quality standards and documentation requirements, can facilitate smoother trade processes. Working with international standard-setting bodies to ensure Indian standards are recognized globally, engaging in bilateral and multilateral trade negotiations to secure favourable terms for sandalwood exports, and developing programs to assist exporters with training, resources, and support are critical measures to facilitate international trade. Identifying and targeting emerging markets with a growing demand for natural fragrances and therapeutic products like China and Southeast Asia can diversify the customer base and reduce dependence on traditional markets. By enhancing market access and ensuring compliance with global standards, India can strengthen its position as a leading exporter of high-quality sandalwood.

## **8. Investing in Research and Development**

Research on accelerating the natural maturation period of sandalwood trees through improved growing techniques or genetic modification can significantly enhance production and profitability. R&D can lead to the development of biotechnological tools

for enhancing sandalwood cultivation, such as tissue culture techniques for mass propagation. Research on optimizing oil extraction methods and exploring alternative, sustainable techniques like supercritical fluid extraction can improve oil yield and reduce waste. Exploring new applications for sandalwood derivatives like santalol (a key component of the oil) in pharmaceuticals or food flavorings can create new revenue streams and diversify the industry's offerings. Establishing dedicated processing units within India for oil extraction, distillation, and crafting finished products like incense sticks, essential oil blends, and luxury goods can capture a larger share of the profit margin and create jobs. Investing in research and development of innovative, value-added products like therapeutic essential oil blends for aromatherapy or natural skincare products with proven sandalwood benefits can cater to the growing demand for sustainable and wellness-oriented products. R&D can promote sustainable cultivation practices, reducing the industry's environmental impact and preserving natural resources. It can help in conserving biodiversity by promoting the cultivation of sandalwood in a manner that supports local ecosystems.

## **9. Awareness and Training Programs**

Raising awareness about the benefits and importance of sustainable sandalwood management is vital for gaining public and stakeholder support. Launching educational campaigns to inform farmers, traders, and the public about the economic and environmental benefits of sustainable sandalwood management can foster a culture of sustainability. Highlighting success stories and best practices from within India and other countries like Australia can inspire and motivate stakeholders to adopt sustainable practices. Providing training programs for local communities on topics like sustainable plantation practices, disease identification, and harvesting techniques can empower them to actively participate in the industry. Training programs on crafting high-value sandalwood products like incense sticks or essential oil blends can create income generation opportunities within these communities. Utilizing media platforms to disseminate information and raise awareness about the significance of sandalwood can broaden the reach of these messages. Developing multimedia campaigns using television, radio, social media, and print media, collaborating with educational institutions, NGOs, and industry bodies to spread awareness, and creating interactive platforms such as workshops, seminars, and online forums for stakeholders to share experiences and learn



from each other are essential steps to implement effective awareness programs. These efforts will build a supportive and informed community, driving collective action towards the sustainable management of sandalwood resources.

## **6.4 WAY FORWARD**

India has long been synonymous with the fragrant and valuable sandalwood. Historically revered for its aromatic properties, medicinal uses, and cultural significance, Indian sandalwood (*Santalum album*) has a storied legacy. However, stringent regulations, overexploitation, and illegal trade have threatened its sustainability. To rejuvenate the sandalwood industry, it is imperative to consider a multi-faceted approach that includes the liberalization of regulations, tapping into international demand, maximizing economic benefits, and ensuring environmental sustainability. The Indian sandalwood industry has been heavily regulated to prevent overexploitation and illegal trade. While these measures were well-intentioned, they have often stymied legitimate growth and discouraged private cultivation. Easing these regulations can incentivize farmers and private entities to invest in sandalwood plantations. This can be achieved by simplifying licensing procedures for cultivation and trade, reducing bureaucratic hurdles for sandalwood growers, providing financial incentives and subsidies for plantation, and establishing clear and fair policies for the harvesting and sale of sandalwood. These steps would not only boost legal cultivation but also reduce the incidence of illegal logging, as legitimate channels become more accessible and profitable.

Sandalwood has a robust international market, particularly in countries such as China, United States and the Middle-East. The demand spans various industries including perfumery, cosmetics, pharmaceuticals, and traditional medicine. To capitalize on this demand, India must strengthen trade relations and explore new markets, promote Indian sandalwood at international trade fairs and expos, ensure that Indian sandalwood products meet international quality standards, and collaborate with international research institutions to develop new applications and products. By positioning itself as a reliable and high-quality supplier, India can significantly boost its sandalwood exports, thus tapping into the lucrative global market. Revitalizing the sandalwood industry has the potential to bring substantial economic benefits. Large-scale cultivation and processing of sandalwood can create numerous jobs in rural areas, reducing unemployment and

fostering economic development. Increased production and export of sandalwood can lead to significant revenue for both the private sector and the government through taxes and export duties. Developing value-added products such as essential oils, cosmetics, and health supplements can further enhance profitability and market appeal. Encouraging small and medium enterprises (SMEs) to enter the sandalwood industry can also foster entrepreneurship and innovation, driving economic growth at the grassroots level.

Sustainable cultivation practices are critical to ensuring the long-term viability of the sandalwood industry. This includes integrating sandalwood cultivation with other crops to improve biodiversity, soil health, and water conservation. Investing in research and development to develop disease-resistant and fast-growing sandalwood varieties can enhance yield and reduce environmental impact. Implementing and enforcing sustainability standards and certification can ensure that sandalwood is cultivated in an environmentally friendly manner. Engaging local communities in sandalwood cultivation and conservation efforts can foster a sense of ownership and responsibility, leading to better forest management and protection. By promoting environmentally sustainable practices, India can ensure that the sandalwood industry thrives without compromising the health of its ecosystems. The way forward for the Indian sandalwood industry lies in a balanced approach that considers regulatory liberalization, international demand, economic potential, and environmental sustainability. By easing regulations, tapping into global markets, maximizing economic benefits, and adopting sustainable practices, India can restore its position as a leading producer of high-quality sandalwood. This multi-pronged strategy not only promises economic prosperity but also safeguards the environmental and cultural legacy of Indian sandalwood for future generations.

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# CHAPTER 1 INTRODUCTION

by Millennial S

## General metrics

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Critical

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**10**

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# CHAPTER 2 LAWS FOR REGULATING SANDALWOOD TRADE IN INDIA

by Millennial S

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# CHAPTER 3 THE IMPACT OF REGULATIONS ON SANDALWOOD CONSERVATION

by Millennial S

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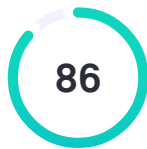
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# CHAPTER 4 AUSTRALIAN MODEL OF SANDALWOOD MANAGEMENT

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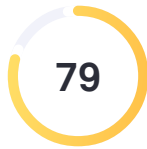
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# CHAPTER 5 INTERNATIONAL SANDALWOOD MARKET AND THE ROLE OF INDIA

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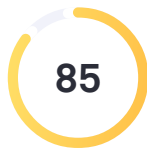
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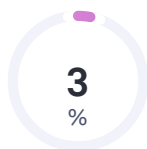
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# CHAPTER 6 CONCLUSION AND SUGGESTIONS

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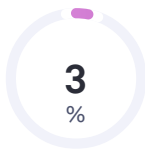
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