TÍTULO

NON-DETRIMENT FINDINGS FOR CEDRELA ODORATA FROM SURINAME

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THESIS FOR THE MASTER DEGREE TITLE IN MANAGEMENT AND CONSERVATION OF SPECIES IN TRADE

Non-detriment findings for *Cedrela odorata* from Suriname

by
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ABSTRACT

One of the requirements established in the text of the convention for the regulation of trade in specimen of species included in Appendix II, is that a Scientific Authority from the exporting member country declares that an export, import and/or re-export will not harm the survival in the wild of a CITES-regulated species. These analysis and evaluation mechanism is known as 'non-detriment finding' (NDF).

The proposal for the inclusion of *Cedrela odorata*, as well as the other inclusion of all other species of the genus *Cedrela* (for reasons of similarity) in CITES Appendix II was adopted with annotation #6 (Neotropical populations) at the eighteenth meeting of the Conference of Parties to the CITES (CoP18) held in 2019 in Geneva, Switzerland and entered into force on August 28, 2020. Suriname as a range state for the *Cedrela odorata* and exporting country of this species needs to make an Non-detriment Findings in order to export this species. The nine-step process to support CITES Scientific Authorities making science-based non-detriment findings (NDFs) for timber/tree species listed in CITES Appendix II, Version 3.0. For the purpose of this thesis the 9 Steps NDF Guidance on Timber were applied on a generic basis to *Cedrela odorata* exports using available data for a desk analysis. This approach was thought to be beneficial as it would help identify both strengths and weaknesses in the system. For the actual application of the NDF to a CITES permit application it would need an appropriate inventory data and detailed information on the source of the material and management of the actual concession any export is source of. Some of these data can be collected from a harvest plan. The result of this thesis will serve as a framework for making an NDF, which identifies area where key data is required. Due to the lack of data on population and distribution a general analysis with the available data from SBB was done with a precautionary result positive NDF with conditions. It is hoped that this analysis will help set the framework for future NDF's.

Keywords: Cedrela odorata, non-detriment findings (NDF), trees, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), population, distribution, occurrence, sustainable, harvest, trade, impact, management measures, export, inventory

ACRONYMS

CBD	Convention on Biological Diversity
CELOS	Stichting Centrum voor landbouwkundig onderzoek in Suriname
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
cm	centimeter
COP	Conference of Party
dbh	Diameter breast hight
EU	European Union
GBB	Ministry of Land Policy and Forest Management
GB	Gouvernements Blad (Official gazet)
ha	hectares
HFLD	High Forest and Low Deforestation
HKV	Houtkap vergunning (felling pemit)
IATA	Internartional Air Transport Association
ITTO	International Tropical Timber Organization
IUCN	International Union for Conservation of Nature
IUD	Invoer, Uitvoer, Deviezen Controle
JSOOC	Jan Starke Ontspanning en Opleiding Centrum
Km	kilometers
LBB	Dienst 's Lands Bosbeheer (Suriname Forest Service)
m3	cubic meters
MUMA's	Multiple Management Areas
NB	Natuurbeheer (Nature Conservation Division)
NDF	Non-detriment findings
RAMSAR	Convention on Wetlands of International Importance
SB	Staatsblad
SBB	Stichtng Bosbeheer en Bostoezicht Suriname (Foundation for Fores Management and Production Control)
SESW	Suriname electronic Sngle window
SFISS	Sustainable Forestry System Suriname
STINASU	Stichting Natuurbehoud Suriname
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	The United Nations Framework Convention on Climate Change

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CHAPTER 1. INTRODUCTION

Suriname is located in the northeast of South America between latitudes 1◦ and 6◦ N and longitudes 54◦ and 58◦ W., bordering the Atlantic Ocean in the North, the Republic of Guyana in the West, French-Guiana in the East and Brazil in the South. The Republic of Suriname is independent from The Netherlands since November 25, 1975 and populated by approximately 567,291 inhabitants (mid-year population estimation in 2015), Suriname encompasses 93% of forest and an Exclusive Economic Zone of 345 sea miles (Maritime Zones Act S.B. 2017 no. 41). Suriname exhibits a low deforestation rate and is characterized as a country with high forest cover and low deforestation (HFDL).

Suriname has approximately 3.5 inhabitants per km2, making Suriname a low populated country. According to a mid-year population estimation in 2015, the largest ethnic groups are Hindustani (30%), followed by Creoles (20.6%), Javanese (19.6%), mixed race (14.4%),
Maroons (10.5%) and others (including Chinese, Indigenous people, Lebanese and European) (4.9%). The sex distribution of the population remained stable, with females accounting for 50.1% of the population and males 49.9%.

There are 10 administrative districts: Brokopondo, Commewijne, Coronie, Marowijne, Nickerie, Para, Paramaribo, Saramacca, Sipaliwini and Wanica. The districts Paramaribo and Wanica have the highest population densities (Figure 1).

With a land surface of 163,800 km2, Suriname is divided into two main geographic regions: the Northern coastal area, with the majority of the population residing here; and the Southern area, mainly consisting of tropical rainforest and a sparsely populated savannah along the Brazilian border. Seven types of ecosystems have been distinguished, namely (i) marine ecosystems, (ii) coastal ecosystems, (iii) brackish water ecosystems, (iv) freshwater ecosystems, (v) savannah ecosystems, (vi) marsh ecosystems and (vii) tropical rainforest and inselbergs.

As part of the Guiana Shield, Suriname's tropical rainforest has a rich biodiversity. In 2012,192 mammal species have been reported, along with 102 amphibian species, 175 reptile species, 730 bird species, 450 fresh water fish species, and in 2016, 6044 vascular (higher) plants.

The long history of protecting Suriname's biodiversity dates back to 1954. Eighteen protected areas have been established since then, consisting of 11 Nature Reserves, 4 Multiple Use Management Areas, 1 Nature Park and two special reserve forest. Together they make up 2,293,200 hectares or 14% of the country's land surface. Of the 11 Nature Reserves, the Central Suriname Nature Reserve in the district of Sipaliwini is the largest and is put on the World Heritage list of the UNESCO[1].

[1] The sixth national report to the United Nations Convention on Biological Diversity (2019, April), Paramaribo, Suriname.

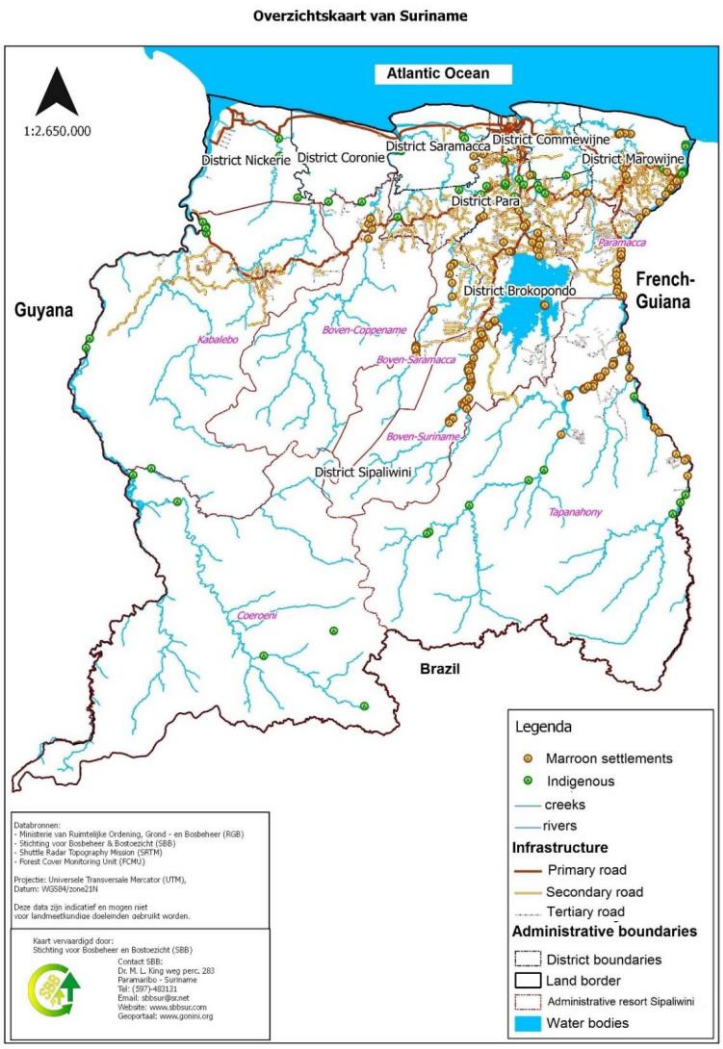

Figure 1. Map of Suriname. Source: SBB

Suriname acceded to the Convention on International Trade in endangered Species of Wild Fauna and Flora (CITES) in February 1981. The Ministry of Land Policy and Forest Management (GBB) is responsible for the nature conservation in Suriname and is therefore currently responsible for implementation of CITES at the national level. The Head of Suriname Forest Service (LBB), which is resorted under the Ministry of GBB is according to the Game Law of 1954 and the State Order on Game 2002, the Wildlife Management Authority in Suriname.

The Suriname Forest Service (LBB) was established in 1947 (G.B. 1947 No. 108) and because of its tasks and powers it now resorts under the Ministry of Land Policy and Forest Management. The LBB has two major tasks, namely:

- 1. Management of protected areas and
- 2. Wildlife management

The duties and mandates of the Head of the LBB are specifically outline in the Nature Conservation Act 1954, the Forest Management Act 1992, and the Game Law. The Game Law of 1954 regulates the Wildlife Management in Suriname, including the CITES species.

The service divisions of LBB are currently Nature Conservation Division and Forest Research. In a letter from the Head of LBB dated January 24, 2000, the mandate regarding the Forestry section of LBB was transfer to the Foundation for Forest Management and Production Control (SBB), which is a government foundation that directly resorted under the Minister of Land Policy and Forest Management. SBB is responsible to promote Sustainable Forest Management among others by enforcing the Forest Management Act 1992, which include monitoring the logging activities and the exports of timber.

By Ministerial Decree of April 15th, 2016, no. 0567B-16/Min RGB, S.B. 2016 No. 102, the Head of Suriname Forest Service is also designated as the CITES Management Authority in Suriname.

One of the requirements established in the text of the convention for the regulation of trade in specimen of species included in Appendix II, is that a Scientific Authority from the exporting member country declares that an export, import and/or re-export will not harm the survival in the wild of a CITES-regulated species. These analysis and evaluation mechanism is known as 'non-detriment finding' (NDF).

The proposal for the inclusion of *Cedrela odorata*, as well as the other inclusion of all other species of the genus Cedrela (for reasons of similarity) in CITES Appendix II was adopted with annotation #6 (Neotropical populations) at the eighteenth meeting of the Conference of Parties to the CITES (CoP18) held in 2019 in Geneva, Switzerland and entered into force on August 28, 2020.

To ensure overall traceability, sustainability and legality of its timber production, Suriname, through its Forest Authority, the Foundation for Forest Management and Production Control (SBB) is currently implementing a new forest information system: Sustainable Forestry Information System Suriname (SFISS). This system allows for traceability of each log starting from planning to export or the sawmill. The system already provides the basic traceability of round wood.

In view of the above and being a range state for the population of this species that exports *Cedrela odorata* wood, this thesis will focus on making a Non detriment findings (NDF) of *Cedrela odorata* from Suriname with the nine-step guidance on making a NDF on CITES Appendix II listed timber/tree, which can help develop a framework for making an appropriate NDF for Cedrela and other CITES listed tree species in Suriname.

CHAPTER 2. PROBLEM DESCRIPTION

One of the most important elements for trade of CITES Appendix II species is mandatory non-detriment findings for the species that is exported. Non-detriment findings represent methodologies and procedures that allow evaluation of species population status, with the objective of determining extraction levels or optimal exploitation rates that will ensure the survival of those populations.

Adaptive management based on adequate monitoring and appropriate feedback is vital to ensure the sustainability of wildlife harvest. Current problems with making non-detriment findings result mainly from lack of capacity and of resources to implement monitoring across the wide range of species in international commercial trade (CITES, 2011).

Monitoring of harvest and trade patterns, as well as of population data, will help in developing and implementing the necessary adaptive management of species.

A concern for the *status* of the population of the *Cedrela odorata* in the wild has led to the proposal by some range States of a CITES Appendix II listing of this species led by Ecuador during CoP18, that was held in 2019 in Geneva, Switzerland. This proposal was adopted by the Conference of Parties (COP), with annotation #6. It entered into force on 28th of August 2020. Which means that from that date on an NDF is needed for the trade of this species.

CHAPTER 3. METHODOLOGY

- Preparation: Together with the CITES Management and Scientific Authorities, the Research Section of the Nature Conservation Division and SBB identify areas of interest that is needed for the study.

a) Prepare a methodology for the study taking into consideration the IUCN guidance and the nine-step process to support CITES Scientific Authorities making science-based non-detriment finding (NDFs) for timber/tree species listed in CITES Appendix II and IUCN checklist

b) Collecting data: - desktop study in collaboration with the CITES Management Authority, Nature Conservation division, the Foundation for Forest Management and Forest Production (SBB), CELOS and Herbarium. The following elements of NDF will be gather:

• Species biology and distribution: Information about the occurrence of *Cedrela odorata* will be obtained through review of vegetation inventory reports, timber production forest areas, analysis of the result of the existing forest inventory data on Gonini geoportal and Sustainable Forestry Information System Suriname (SFISS) of the Foundation for Forest Management and Forest Production (SBB). Collaborate closely with SBB, CELOS, Herbarium, and the data manager of the Sub-directorate Forest Management.

• Conservation status of the populations: review national and international legislation and bench marking with regional initiatives and reports regarding this species.

• Population management: collaborate with the CITES Management Authority and SBB and the other relevant stakeholders as appropriate such as, the CITES Scientific Authority and the timber concessioners/exporters and local communities.

• Population use/harvest: collaborate with the CITES Management Authority and SBB.

• Conservation benefits: collaborate with the CITES Management Authority and SBB.

• Monitoring programs: collaborate with the CITES Management Authority and SBB and the other relevant stakeholders as appropriate such as, the CITES Scientific Authority and the timber concessioners/exporters and local communities.

• Evolution of trade and its impact: collaboration with CITES Management Authority, Permit

Section of the Nature Conservation Division of LBB and SBB. Review annual trade reports for Suriname from 2015-2021

• References: review national reports and reports from regional initiatives.

- Field research: due to uncertainty of the COVID pandemic and recent impact of the severe weather condition and the possible reoccurrence of it, it is very difficult to include field research in the timeframe of this thesis. Therefore, this NDF will be done by desktop study with the available data from the Forestry and CITES Management Authority of Suriname and in liaison with national and regional experts (‘neo tropical tree species working group’). Future option for fieldwork will be review as part of this study.

- Data entry and analysis: all data collected will be process and analyses by the data manager from the Sub-directorate Forest management and the Research and Development division of SBB.

- Reporting and presentation: All obtained data from the literature and field research is process in the form of this Master thesis report and presented to the public by means of a graduation presentation.

CHAPTER 4. BIOLOGY AND ECOLOGY OF *Cedrela odorata*

4.1. Biological and Ecological Characteristics of the Genus Cedrela in South America/Suriname

Cedrela is a small genus of 17 species of trees in the Meliaceae with a distribution extending from Mexico to Argentina. The Cedrela genus of trees are native to South America, including Suriname. The genus includes several species, including *Cedrela odorata*, which is commonly known as Spanish cedar.

Biologically, Cedrela is characterized by its large, deciduous trees with pinnate leaves and panicles of flowers that can reach heights of up to 40 meters (130 feet). The leaves are usually alternate and the flowers are typically bisexual and regular. It has a straight trunk and a broad, rounded crown with pinnate leaves that are about 20-30 cm (8-12 inches) long. It has a cylindrical trunk, with root lists and a strongly grooved bark. The heartwood is reddish yellow-brown. The sapwood, which is only narrow, is yellowish or rosy white or grey. Thread: usually straight, sometimes slightly crisscrossed. Grain: moderately fine to coarse. The wood has an aromatic smell, which is due to the volatile oil, which it contains in varying degrees. It has a bitter and spicy taste. Along the growth ring boundaries on the head surface, one often finds a row of somewhat larger vessels (so-called circular-pored wood). [2] The tree produces small, white or pink flowers in large panicles that are attractive to bees and other pollinators. The fruit is a woody capsule that contains many small seeds. The wood of *Cedrela odorata* is highly valued for its durability, light weight, and resistance to rot and insect attack. The tree also produces a resin that is used in traditional medicine for a variety of ailments.

Ecologically, Cedrela species are found in a variety of habitats in South America, including tropical and subtropical forests, savannas, and semi-arid regions. They are often found growing in well-drained soils, but can also tolerate poorly-drained soils. *Cedrela odorata*, in particular, is

[2] C. H. Japing en Ir. H.W. Japing, Pag. 96, Handleiding voor hout, Surinaamse houtsoorten, Dienst 's Lands Bosbeheer Suriname, Paramaribo, 1961

known for its ability to grow in disturbed areas, such as along roadsides and in abandoned agricultural fields.

Cedrela species also have ecological importance as they provide habitat and food for a variety of animals, including birds and insects. The seeds of Cedrela species are eaten by birds and small mammals, and the flowers are important nectar sources for bees and other pollinators.

In Suriname, Cedrela species are an important resource for the forestry industry, as the wood is used for a variety of purposes, including furniture, cabinetry, and veneer.

Cedrela odorata has been assessed for *The IUCN Red List of Threatened Species* in 2017 and is classified by the World Alliance for Nature (IUCN) as a Vulnerable species, which led to its listing in the Appendix II of the Convention on International Trade in Endangered Species of Fauna and Flora (CITES) with annotation #6 during the CoP18 in 2019. This decision had a significant impact on the revenues produced from this non timber forest product in the range countries. This decision entered into force on 28th of August 2020, which means that from that date on an NDF is needed for the trade of this species. Since 2022, the Scientific Authority of some EU countries has asked the CITES Management Authority of Suriname for details of the NDF for the imports of *Cedrela odorata* coming from Suriname. This measure impacts both the economic operators and the local people for whom the harvest of the *Cedrela odorata* represents their livelihood and economic revenue for the country.

4.2. Taxonomy

Kingdom	**Phylum**	**Class**	**Order**	**Family**
Plantae	Tracheophyta	Magnoliopsida	Sapindales	Meliaceae

Taxon Name: *Cedrela odorata* L.

Common Name(s):

English: Spanish Cedar, Cigar-box Wood, Red Cedar

French: Acajou-bois, Acajou Rouge, Cedrat

Spanish: Cedro Rojo

Dutch: Ceder

Local name: Cedre

4.3. Distribution

4.3.1. Geographic Range

Cedrela odorata is a Neotropical species found from Mexico southwards throughout central America to northern Argentina, as well as in the Caribbean (Pennington *et al.* 1981). It found up to 800 (possibly up to 1,500 m) altitude. It is now also being widely cultivated as a timber crop within the Neotropics and outside.

4.3.2. Country Occurrence:

Native: Argentina Northeast, Belize, Bolivia, Brazil North, Brazil Northeast, Brazil South, Brazil Southeast, Brazil West-Central, Cayman Island, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, French Guiana, Guatemala, Guyana, Haiti, Honduras, Jamaica, Leeward Island, Mexico Central, Mexico Gulf, Mexico Northeast, Mexico Northwest, Mexico Southeast, Mexico Southwest, Nicaragua, Panamá, Paraguay, Peru, Puerto Rico, Southwest Caribbean, Suriname, Trinidad-Tobago, Venezuela, Windward Island[3].(Figure 2)

Introduced into: Bangladesh, Cameroon, China Southeast, Comoros, Galápagos, Gambia, Guinea, Gulf of Guinea Island, Kenya, KwaZulu-Natal, Madagascar, New Caledonia, Northern Provinces, Solomon Island, Swaziland, Tanzania, Uganda. (Figure 2)

[3] Royal Botanic Gardens KEW UK, Cedrela odorata L. | Plants of the World Online | Kew Science

World distribution Map *Cedrela odorata*[4]

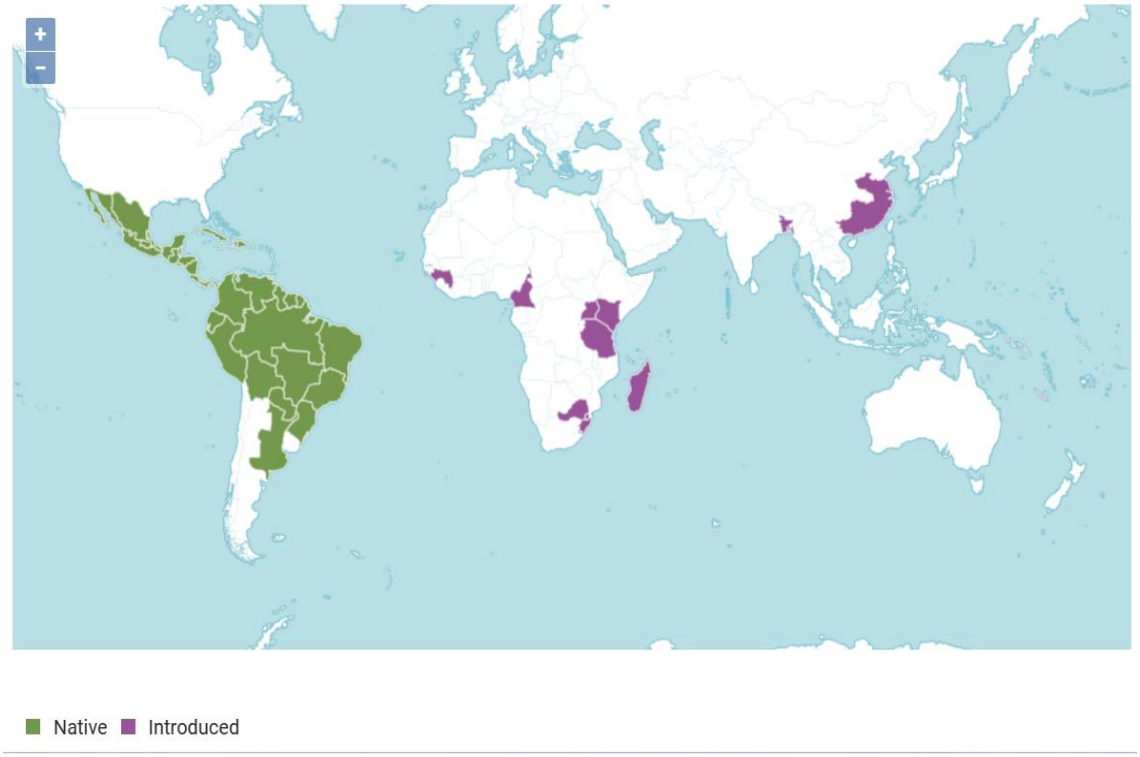

Figure 2. World distribution map. Source: Royal Botanic Gardens KEW UK

4.4. Life history

Cedrela odorata life history can be divided into the following stages:

1. Seedling: The life of *Cedrela odorata* begins as a seedling. The seeds are dispersed by wind and germinate in the soil. The seedlings require a moist and shaded environment to grow properly.
2. Sapling: As the seedling grows, it develops into a sapling. The sapling stage lasts for about 2-3 years. During this stage, the tree grows rapidly, and its stem becomes thicker and taller.

3. Mature tree: After the sapling stage, *Cedrela odorata* becomes a mature tree. The tree can reach up to 30-40 meters in height, with a trunk diameter of 1-1.5 meters. The tree has a straight, cylindrical trunk, with a conical crown.

[4] Royal Botanic Gardens KEW UK, Cedrela odorata L. | Plants of the World Online | Kew Science

Flowering and fruiting: *Cedrela odorata* produces small, white flowers that grow in clusters at the end of the branches. The flowering period occurs during the rainy season, which varies depending on the region. After the flowers are pollinated, the tree produces fruits that are capsule-shaped and contain numerous small seeds. First flowering can be expected after 10-15 years. Flowering is annual, but good seed crops occur every 1-2 years.

Suriname has four seasons, two rainy seasons and two dry seasons. Short rainy season (Korte Regen tijd), December to the end of January, temperatures during the day and night are between 25 to 26 degrees Celsius. In the short rainy season it can rain for days in a row. Short dry season (Korte Droge tijd), end of January to end of April. It's getting warmer and the rain is getting less. Long rainy season (Grote Regen tijd), end of April to mid-August. During this period it rains almost every day. Long dry season (Grote droge tijd), Second half of August to first half of December, during this period there is virtually no rain and the temperature rises to 40 plus.

Due to the changing climate, it is also difficult to predict the correct weather in Suriname. Seasons can start earlier or later and a small dry season can also become a small rainy season. But even when it rains, the temperature remains around 26 degrees Celsius. These condition may have impact on the flowering and fruiting of this species. Further study is recommended on this matter.

4. Reproduction: *Cedrela odorata* can reproduce both sexually and asexually. Sexual reproduction occurs when the seeds are dispersed by wind and germinate in the soil. Asexual reproduction occurs when the tree produces root sprouts or suckers, which grow into new trees.

5. Senescence and death: *Cedrela odorata* can live for up to 100 years, depending on environmental conditions. As the tree ages, its growth rate slows down, and it becomes more susceptible to diseases and pests. Eventually, the tree dies and decomposes, providing nutrients for new plant growth.

4.5. Habitat type

There are three vegetation types (Figure 3) in Suriname are:

- In the coastal plain various types of hydrophytes vegetation like mangroves along the coasts, swamp forest, ridge forest and marsh forest.

- The high and low savanna forests from the cover landscape in the savannah belt, together with open, grass and shrub savannas.
- The high dryland forest in the interior, which differs in the species, height, density and diversity.

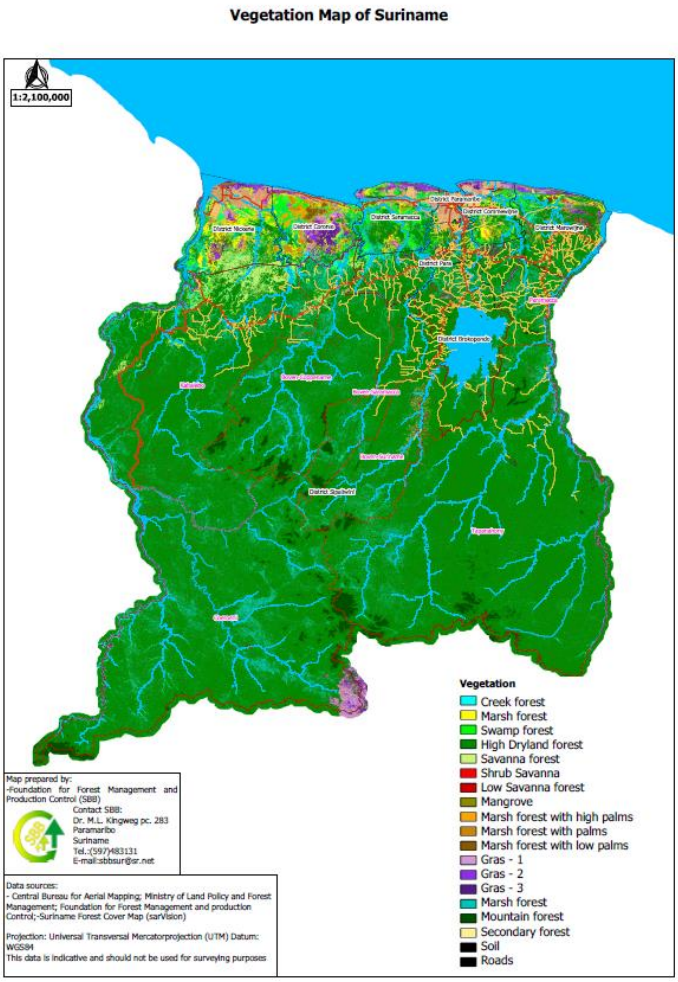

Figure 3. Vegetation map of Suriname. Source: SBB

Cedrela odorata is always found naturally on well-drained soils, often but not exclusively on limestone; it tolerates a long dry season but does not flourish in areas of rainfall greater than about

3000 mm (120 in) or on sites with heavy or waterlogged soils. Individual trees are generally scattered in mixed semi-evergreen or semi-deciduous forests dominated by other species.

In Suriname the tree is expected to be found in the high dryland forest of the interior and in the forests of the ridge landscape in the coastal zone[5].

4.6. Role of the species in its ecosystem

Cedrela odorata, plays an important role in the ecosystem in Suriname and other parts of its native range in the Americas. Here are some of the roles it plays:

1. Habitat: Spanish cedar provides habitat for a wide range of animals, including birds, insects, and mammals. These animals use the tree for shelter, nesting, and food.
2. Soil stabilization: The extensive root system of Spanish cedar helps to stabilize soil, preventing erosion and landslides.
3. Carbon storage: Like all trees, *Cedrela odorata* absorbs carbon dioxide from the atmosphere and stores it in its wood and leaves, helping to mitigate climate change.
4. Seed dispersal: Spanish cedar produces large, winged seeds that are dispersed by the wind, helping to establish new trees and promote genetic diversity.
5. Medicinal uses: Various parts of the tree are used in traditional medicine for treating a range of ailments, including fever, coughs, and infections.
6. Economic value: Spanish cedar is an important timber species, providing livelihoods for many people where it is found.

Overall, *Cedrela odorata* an important species in the tropical ecosystems of the Americas and plays a critical role in maintaining biodiversity and ecosystem services.

4.7. Population

Estimates of current total *Cedrela odorata* population are not available. Although data are not available on the size of the populations of all the species in the genus Cedrela across its natural

[5] A cites Action Plan for Cedrela odorata, An assessment of the status of Cedrela odorata in Suriname, Centre for Agricultural Research in Suriname, 19 February 2010

range, they are available for some countries. According to a study by the International Tropical Timber Organization (ITTO) (Pérez 2011), in Peru, the population of the genus Cedrela is 1.1 million trees, whilst the CITES Plants Committee (2018) reported 1,007,894 +/-8%. *Cedrela odorata*, the predominant species, has densities of up to 1.15 individuals/ha (Pérez 2011), with a commercial tree population of between 261,159 and 300,743 individuals. The Loreto, Ucayali and Madre de Dios regions that border Brazil and Bolivia contain ¾ of the Spanish cedar population (Pérez 2011).[6]

4.7.1. Current global population trends

Many reports outlined the decline in *Cedrela odorata* populations due to overharvesting. The tree has been the subject of great commercial interest and its distribution has been very much diminished by excessive exploitation over its entire range and large individuals have become scarce (Pennington *et al.*1981). Reports of range states of the *Cedrela odorata* confirmed the fact that the natural population has suffered major damage from overexploitation.

.4.7.2. Cedrela odorata population in Suriname

There is no data are available on the estimate size of the populations of the *Cedrela odorata* in Suriname. There are a few studies done on the occurrence of *Cedrela odorata* in Suriname, which can give some information about the species in Suriname. Information about the occurrence of *Cedrela odorata* is obtained through a review of a report on the first systematic surveys of the vegetation in the coastal plain of Suriname (edited by Lindeman, J.), a field inventory executed in plots in the ridge landscape by CELOS and recent harvest inventory data from the SBB.

According to the study on *Cedrela odorata* (Figure 4) that was done by CELOS (Playfair, M. 2010) this tree species appears especially along the slopes of the hills and become scarce on the ridges of the coastal plan. Ceder reported not to grow well on waterlogged or heavy soils. The area of interest for the assessment that was done by CELOS, is the forest on the dryland areas, which

[6] CoP18 Prop.57.

are the forest on the ridges of the coastal landscape and the high dryland forest of the interior. The area of the savannah landscape is because of the excessive drainage of the soils excluded[7].

Figure 3 Overview of the location of the sampled areas

Red = young ridge

Blue = old ridge

Figure 4: Overview map of research area of study done by CELOS. Source: CELOS (Playfair, M. 2010)

The study that has been done by CELOS is the only available study on the population of *Cedrela odorata* in Suriname and no additional studies have been done on this target species after this.

The result of this study shows that the density of the species C*edrela odorata* is compared to other major commercial species in Suriname very low. *Cedrela odorata* with a density of less than 0.1 per hectare (dbh> 25cm) occur in the lowlands and on the bauxite plateaus with a density which varies from 0.13 to 0.25 (dbh > 10 cm). This species found sporadically in the high dryland forest. In the ridge forest *Cedrela odorata* occurs in relatively higher numbers of trees per hectare (on

[7] Playfair, M. (2010, February 19). A CITES Action Plan for *Cedrela odorata*, An assessment of the status of *Cedrela odorata* in Suriname, Agricultural Research in Suriname.

average 2.2 trees per ha for trees with dbh > 10 cm), although it is not encountered at all of the sampled ridges. In none of the landscapes investigated Cedrela occurred as a dominant species and neither special mention is made of its presence.

The number of *Cedrela odorata* trees found in the inventory of the ridge forest is too small to produce a valid diameter frequency distribution table for *Cedrela odorata* in this study. The tree appears in all the diameter classes up to 94 cm dbh with the highest number found in the lower diameter classes (up to 45 cm). Young trees of Cedrela (10 - 25 cm dbh) are found in 10 of the 24 inventory lines. From the data available on diameter frequency distribution of *Cedrela odorata* in the high dryland forest it appears that *Cedrela odorata* has an irregular distribution. Regeneration in the form of seedlings is found at one location in the neighborhood of a mature tree.[8]

Information from SBB shows that *Cedrela odorata* population is found fragmented throughout the whole range of the forestry belt, where most of the harvest of mature *Cedrela odorata* is done in the concession areas in the district Sipaliwini as shown in Figure 5.

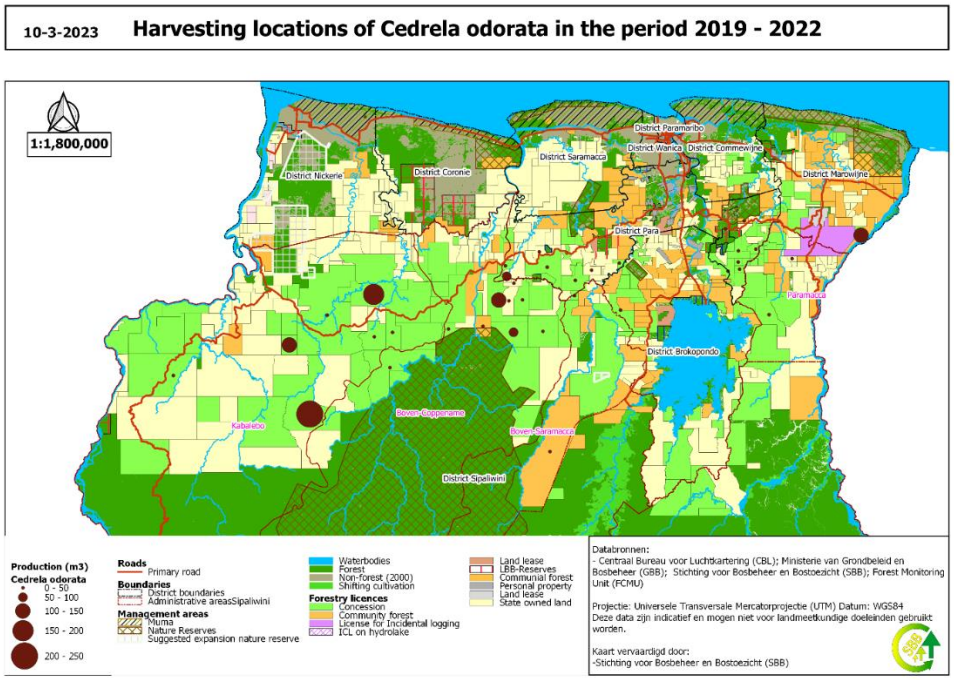

Figure 5: Harvesting location of *Cedrela odorata* in the period 2019-2022. Source: SBB

[8] Playfair, M. (2010, February 19). A CITES Action Plan for *Cedrela odorata*, An assessment of the status of *Cedrela odorata* in Suriname, Agricultural Research in Suriname.

4.8. Global conservation status.

Cedrela odorata has been assessed for *The IUCN Red List of Threatened Species* in 2017 and is classified by the World Alliance for Nature (IUCN) as a vulnerable species[9], which led to its listing in the Appendix II of the Convention on International Trade in Endangered Species of Fauna and Flora (CITES) with annotation #6 during the CoP18 in 2019. This decision had a significant impact on the revenues produced from this non-timber forest product in the range countries. This decision entered into force on 28th of August 2020, which means that from that date on an NDF is needed for the trade of this species. Since 2022, the Scientific Authority of some EU countries has asked the CITES Management Authority of Suriname for the NDF for the import of *Cedrela odorata* coming from Suriname.

According to an analysis of the CITES Trade Database (https://trade.cites.org/, consultation date: 10 March 2023), during the period 2010-2017 a total of 87,242.91 m3 of timber was exported (logs, plywood, sawn wood, and veneer sheets), 99.67% corresponded to the species *Cedrela odorata*. The objective of this export was trade and its source: specimens taken from the wild; this value accounts for 53.53% of the Cedrela timber commercialized worldwide. 47.47 % of the trade in timber from the genus Cedrela includes: 62,462.10 m3 from plants propagated artificially. Additionally, 12,975.03 m3 of timber from pre-Convention specimens and 290.92 m3 from an unknown source were commercialized.[10]

4.8.1. Cedrela odorata conservation status in Suriname

The main direct drivers of deforestation in order of importance in Suriname from 2000 to 2015 were mining (73%), road infrastructure (15%), and urban development (4%). All drivers of deforestation have increased over that time period. In terms of forest degradation, shifting cultivation and forestry are two proximate drivers quantified. A number of other activities may have a negative impact on forest health and composition, e.g. forest fragmentation due to mining

[9] IUCN Redlist.Cedrela odorata (Spanish Cedar) (iucnredlist.org)

[10] CoP18 Prop. 57

or non-anthropogenic natural causes such as forest fires or storms. It is recommended to assess these activities in the near future.[11]

Although available data do not allow to establish the decline in extent area of occurrence, it is clear that *Cedrela odorata* population decreases over the time in Suriname due to actual level of exploitation.[12]

There are more than 400 types of wood in Suriname. A distinction is made between the categories A, B and C class.

Category A are marketable wood;

Category B are possibly marketable wood species;

Category C are types of wood for which felling is prohibited.[13]

According to 'Decree on marketable and other types of wood', S.B. 2000 No. 42, *Cedrela odorata* fall under the category A wood (marketable wood), which means that this species can be harvest and exported under certain conditions (see annex I). Although this species is not a protected species by the national law, certain level of protection has been set in place through the Forest Management Act 1992 to ensure that the harvest of this species is done in a sustainable way and non-detriment to the population of this species in the wild.

There is currently no quota establish for the export of *Cedrela odorata* in Suriname. However there is a quota for harvest per harvest section. Not more than 25 m^3/ha can be harvest for all tree species in total.

[11] Background study for redd+ in suriname: multi-perspective analysis of drivers of deforestation, forest degradation and barriers to redd+ activities, NIMOS, REDD+ Suriname, SBB, UNIQUE forestry and land use, May 2017.

[12] https://trade.cites.org/

[13] Decree on marketable and other types of wood, SB 2000 no. 42.

CHAPTER 5. FOREST MANAGEMENT IN SURINAME

5.1. Forest management

The total area of Suriname is 16.4 million ha, of which about 92.66 % (15.2 million ha.) is covered with forest. The total forest cover that is intended for production purposes is about 4.5 million ha., known as the “forest belt” (a 40- to 100-kilometer wide strip that stretches from east to west). A land area of 2.3 million ha is protected, of which 1.9 million ha is covered with forest and the remainder is covered by a different type of land cover. Suriname has a wide variety of forest types, including extensive swamp and mangrove forests in the coastal plain and high dryland forest in the other parts of the country. Suriname is located on the Guyana Shield and is part of the Amazon rainforest with an invaluable wealth of biodiversity, natural resources, freshwater reserves and cultural heritage. About 9 million ha forest, more in the southern part of the country, can be regarded as forest to be preserved for the time being. (Figure 6).

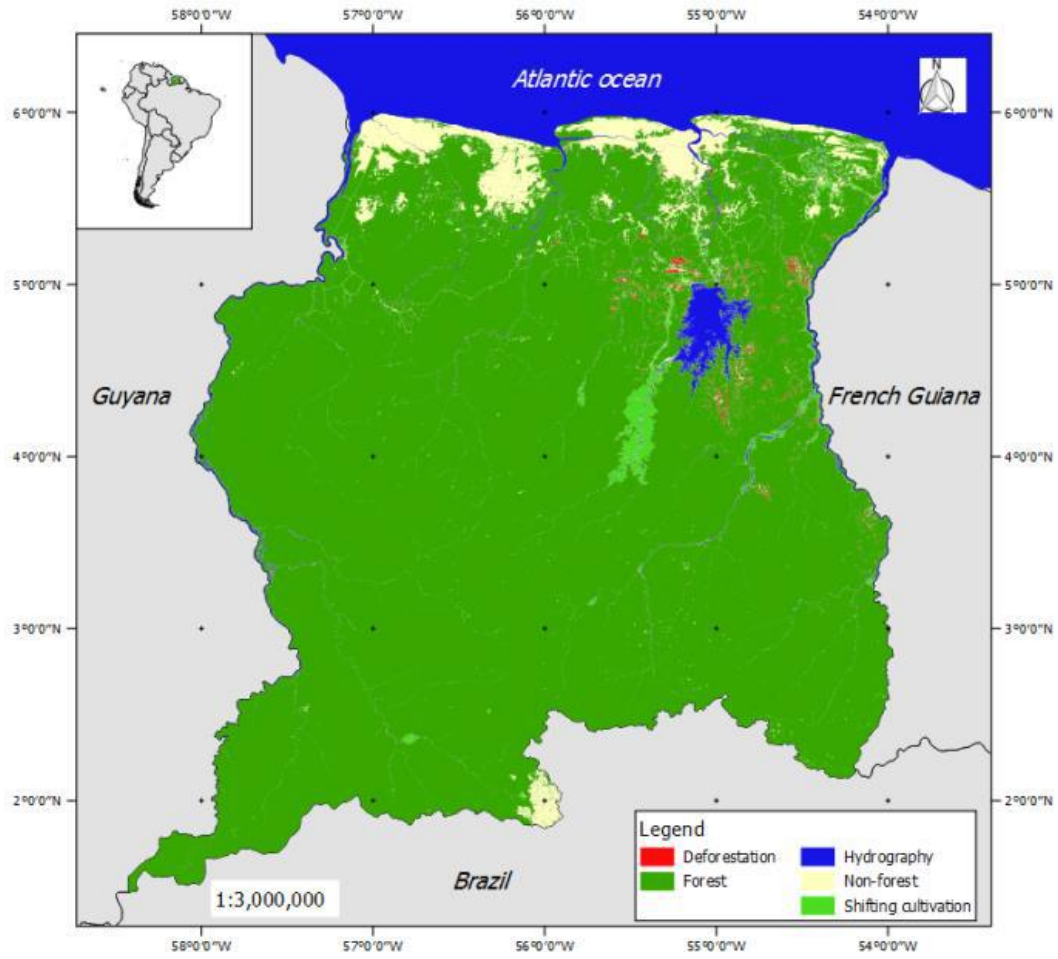

Figure 6: Location map of the Suriname Forest. Source: Forest reference emission level for Suriname's redd+ programme, January 2018

5.2. The Ministry of Land Policy and Forest Management

The Ministry of Land Policy and Forest Management, is in accordance with the Decree Task Description Departments 1991 (S.B. 1991 no. 58), as it reads after the amendments made therein by S.B. 2002 no. 16, S.B. 2005 no. 94, S.B. 2010 no. 124 and S.B. 2020 No. 141) in charged with the following.

The Ministry of Land Policy and Forest Management is charged with the care of:

- topography, cartography, geodesy, soil investigation and soil mapping;
- the land use, where necessary in an interdepartmental context;

- a targeted allocation of land, all this in collaboration with the relevant ministries, where necessary in a departmental context;
- the land registry and public registers at the mortgage office;
- monitoring the lawful and efficient use of allocated land, where necessary in an interdepartmental context;
- checking compliance with rules and regulations relating to geodesy;
- the inventory, exploration, optimal exploitation and management of the forest resource, its flora and fauna;
- responsible nature management and conservation, and control of compliance with rules and regulations with regard to the production of wood and wood products, flora and fauna;
- the inventory, exploration, optimal exploitation and management of the forest resource, its flora and fauna;
- This ministry is also charged with the care of all subjects directly or indirectly related to the matters referred to above, insofar as not specifically entrusted to another ministry.

The Ministry of GBB is responsible for the care of our Forest and Nature Management. This is done on the basis of the Nature Conservation Act 1954, the Hunting Act 1954, the Forest Management Act 1992, the Criminal Code, the Environmental Framework Act 2020 and the various relevant Conventions. Efforts to sustainably manage the forest and nature are carried out in collaboration with various stakeholders such as other government institutions, local communities, national and international NGOs and organizations.

5.3. The Sub-Directorate Land Policy

The Ministry of Land Policy and Forest Management is responsible for, among other things, the care of:

- a targeted allocation of land, all this in collaboration with the relevant ministries, where necessary in an interdepartmental context;
- monitoring the lawful and efficient use of allocated land, where necessary in an interdepartmental context;

- The Sub-directorate Land Policy is responsible for outlining land policy and its correct implementation and management. Land is a natural resource which, if used efficiently and effectively, can make an important contribution to the socio-economic development of society.
- The Management Institute GLIS (MI-GLIS) is a sui-generis that is also available as a supporting framework for the ministry.

5.4. The Sub-Directorate Forest Management

The Ministry of Land Policy and Forest Management is responsible for, among other things, care for nature and forest management.

- The Sub-directorate Forest Management of the Ministry of Land Policy and Forest Management is responsible for the Ministry's forest and nature policy.
- This task is performed by the Suriname Forest Service and its Nature Conservation Division, as well as the green foundations of the Ministry. (STINASU, JSOOC and SBB)

The Sub-directorate Forest Management carries out its tasks on the basis of, among other things:

- the Nature Conservation Act 1954, G.B. 1954 no. 26, as it reads after the amendment made therein by G.B. 1954 no. 105, S.B. 1980 no. 116 and S.B. 1992 no. 80).
- the 1954 Game Act , G.B. 1954 no. 25, as it reads after the amendment made therein by S.B. 1997 no. 33 G.B. 1954 no. 25 and S.B. 1997 no. 33.
- Game State Decree, S.B. 2002 no.116, as it reads after the amendment made therein by S.B. 2009 no. 16
- Forest Management Act 1992, S.B. 1992 no. 80
- the Environmental Framework Act 2020, S.B. 2020 97
- criminal law
- and the various relevant conventions such as the CITES, RAMSAR, UNESCO World Heritage Convention, CBD, ITTO and UNFCCC.

5.5. The Suriname Forest Service

The Suriname Forest Service (LBB) was established in 1947 (G.B. 1947 No. 108) and because of its tasks and powers it now falls under the Ministry of Land Policy and Forest Management.

The LBB has two major task, namely:
1. Management of protected areas (nature reserves and MUMAs) and
2. Wildlife management

The duties and powers of the Head of the LBB are also specifically mentioned in the Nature Conservation Act 1954 and the Game Law 1954.
The service divisions of LBB are currently Nature Conservation Division and Forest Research. The Forestry section has been mandated to SBB in a letter from the Head of LBB dated January 24, 2000.

5.6. The Nature Conservation Division (Dutch acronym NB)

NB is the working arm regarding all the daily management of the nature conservation (wildlife and their habitat) including CITES matters. NB is divided into sections:
1. The Conservation Management Section that is responsible for the daily management of .the wildlife populations and their habitat, including Enforcement of the relevant Laws;
2. The Permit Section that is responsible for the administration of the wildlife import and export licenses including CITES certificates/permits;
3. The Research Section is responsible for Research activities for NB and the administration of research licenses issued by the Head of LBB;
4. The Nature Education Section that is responsible for awareness on the importance of wildlife and their habitat.

5.6.1. The Conservation Management Section

The management of wildlife populations and habitat, including CITES traded species, is based on the Game Act of 1954, the Game Resolution 2002 and the policy of the ministry of Spatial Management, Land Management and Forest Management.

The daily control, monitoring and management of the wildlife populations and their habitat is done by the Game wardens. The Game wardens have knowledge of the wildlife species and their habitat. They also have police authority to control and enforce the law, regulations and instructions of the ministry of GBB.

They can seize and apprehend persons, suspects of committing crimes regarding wildlife. They are operational in the whole of Suriname. For this task, several checkpoints and field stations have been established on strategic locations in order to manage these tasks effectively.

The Game warden also have another role in the process of trade of CITES species, during the packaging of shipments for export. They inspect the packaging and the species for export and together with the Custom Officer give the final approval for the shipment. in short they have roles in the whole process of export, during the collection of the species for export in the field until the last phase of the export during the packaging according to the IATA regulations.

They are responsible for the physical protection, conservation and sustainable use of the wildlife populations in Suriname. The execution of task takes mainly place in the field by the game wardens.

5.6.2. The Permit Section

The permit section process the application and issue of permits for export and import of CITES species and non-CITES Species for the Head of Suriname Forest Service/CITES Management Authority.

The procedure for acquiring a CITES permit in Suriname is as follow. The animal exporter submit an export application to the Head of Forest Service (CITES Management Authority). The Permit Section process the application. This Section checked the necessary requirements for the export and do the management of the available quota. The Chief of that Section verified if indeed the necessary requirements has been meet such as the legal acquisition findings and send the CITES Permit to the Head of Forest Service/CITES Management Authority for confirmation and authorization.

If the CITES permit has been confirmed by the CITES Management Authority, the Permit Section send a copy of that CITES permit along with a HO3 form (Custom export form from the Ministry of Ministry of Economic Affairs, Entrepreneurship and Technological Innovation to the animal exporter who with those two documents will apply for the export permit from the Ministry of Economic Affairs, Entrepreneurship and Technological Innovation. If the export permit is granted by the Ministry of Economic Affairs, Entrepreneurship and Technological Innovation, the exporter prepares the shipment of the animal(s).

The exporter notifies the Permit Section when the shipment will take place. The Permit Section will then give the exporter the original CITES permit and send two (2) game wardens, who are expert in species identification, to the holding facility to do the inspection during the packing. The Game wardens verify and confirm the amount of species that is packed for shipment and also inspect if the necessary requirement is met.

The shipment is then handed over to the Custom Service for the export. There are fifteen (15) registered animal exporters and seventeen (17) holding facility in Suriname. There are two (2) shipment days per week and depending on the shipment (1-2 per month on average), two (2) game wardens are assigned to do the inspection at each holding facility. During open season there is an increase of shipment (1-2 animal shipment per week).

5.6.3. The Research Section

The Research Section is responsible for research and data collection and management for the LBB. Conducting research is important for two components.

1. Ecosystem inventory (in the coastal area and the interior).

The Biodiversity Convention obliges member countries to conserve ecosystems and according to the Achi targets, these countries will have to establish 17% of the land area in terrestrial protected areas and 10% in Marine Protected areas by 2020 at the latest. Suriname currently has 13.8% of Protected Areas in Suriname; these include 11 Nature Reserves, 4 Management Areas, 1 Nature Park and 2 Particularly Protected Forests.

2. Population of wildlife in Suriname.

For the purpose of effective management of the wildlife population in Suriname, the export quota list and the hunting calendar must be updated and advice and permits must be issued with regard to nature management activities. The collection of the necessary data should be done in collaboration with the local communities, as prescribed by the conventions that Suriname has ratified. Training these local people to become so-called park rangers is therefore of paramount importance, so that they can assist in the research activities for data collection.

5.6.4. The Nature Education Section

The Nature Education Section is important for the education and awareness of the users of wildlife. Awareness about protecting / management and the need to protect biodiversity and nature. This section is also responsible for education in schools and among all civilians about nature, protected areas, relevant conventions and the relevant Laws. The section has coastal bird awareness program, marine turtle protecting and awareness program, jaguar protecting and awareness program, programs to educate wild life traders, wetlands awareness program and biodiversity protecting awareness in general.

5.7. The Foundation for Forest Management and Production Control (SBB)[14]

Basics for a rational use of the natural resource forest are stated as follow in article 2 of the Forest Management Act of 1992:

The Minister (in this case the Minister of Land Policy and Forest management) is responsible for forest management, which is aimed at rational use of the forest as a self-regenerating natural resource in such a way that:

[14] https://sbbsur.com/

a. the stabilizing influence of the forest on the natural environment, in particular the soil, water, flora and fauna, is not affected and thus the basic natural requirements for maintaining the viability of Suriname be secured.

b. the benefits to be obtained from forest exploitation from a national economic point of view will be optimal, in particular in view of the desired differentiation of the industry, the increase in employment and the spread of the economic activity across the country; the recreational and other social functions of the forest are preserved and beyond be developed.

The government Foundation for Forest Management and Production Control is the technical work arm of the Ministry of Land Policy and Forest Management and is responsible to promote Sustainable Forest Management among others by enforcing the Forest Management Act 1992, which include monitoring the logging activities and the exports of timber. This foundation falls directly under the Minister of Land Policy and Forest Management.

SBB task includes the monitoring of forest resources, the development of forest management plans, the promotion of reforestation and afforestation activities, and the regulation of timber harvesting.

The aim of the SBB is to promote sustainable, optimal use of the forests of Suriname in general and of the forests intended for wood production in particular by applying the guidelines set out in the Forest Management Act 1992 and other relevant laws and regulations.

The SBB also plays a key role in the protection of Suriname's forests from illegal logging and other forms of forest degradation. It works closely with other government agencies, non-governmental organizations, and local communities to promote sustainable forest management practices and to conserve the country's biodiversity.

In 2003 the SBB formulated the National Forest Policy of Suriname in a participative consultation with all Stakeholders in the forest sector. The National Forestry Policy has been developed in a participatory manner – with input and participation from many stakeholders in our country. This policy has been formulated in the interests of the development of the forestry sector. Furthermore, in 2009 the National Forest Policy was also elaborated in a participative process with all stakeholders in an Interim Strategic Action Plan 2009 – 2013.

To ensure overall traceability, sustainability and legality of its timber production, Suriname, through its forest authority the Foundation for Forest Management and Production Control (SBB) is currently implementing a new forest information system: Sustainable Forestry Information System Suriname (SFISS). This system allows for traceability of each log starting from planning to export or the sawn mill.

The chart below shows the interconnection between the institutions involved in CITES matters.

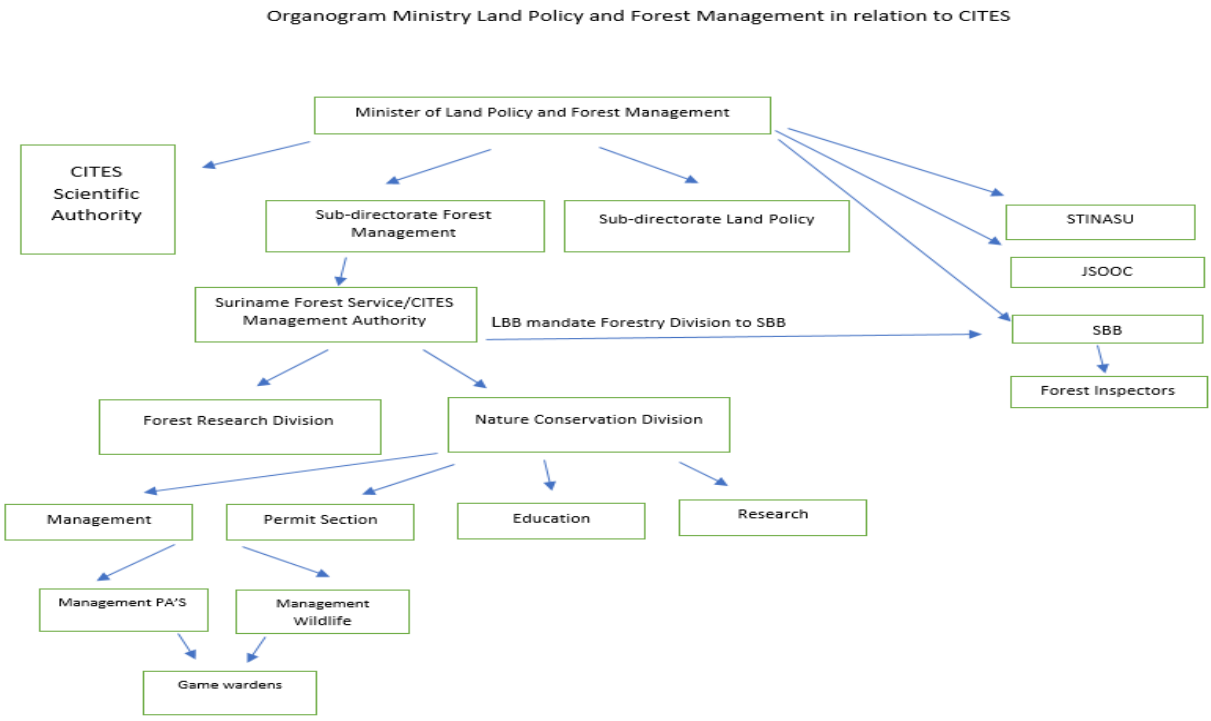

Fig. 7. Organizational chart Ministry of GBB in relation to CITES related institutions.

CHAPTER 6. *Cedrela odorata* MANAGEMENT IN SURINAME

6.1. Legal framework

The Surinamese forest is characterized by relative high species richness. In accordance with the Constitution of the Republic of Suriname (1987) all forests, except for those on privately owned land, belong to the state. The logging activities take place mostly in the forest belt (ca. 4.5 million ha with a productive area of 2.5 million ha. This belt is delineated as the northern and easily accessible part of the country.

According to one of the implementing Decree of the Forest Management Act 1992, 'Decree on marketable and other types of wood', S.B. 2000 No. 42, *Cedrela odorata* fall under the category A wood (marketable wood), which means that this species can be harvest and exported.

According to the Timber Export Act, GB 1950 no.1, all timber intended for export must be measured or weighed in advance and inspected.

In Suriname, regulations and guidelines for forest management and timber harvesting have been established on the basis of the Forestry Management Act 1992 and implementing decrees, which are intended to ensure that timber exploitation meets the requirements of sustainable forest management. A list of important legislation regarding forest management is included in Annex II.

To realize the timber production, the government grants timber concessions, permits for Community Forest and in certain cases short- term incidental timber extraction licenses. In accordance with the Forest Management Act (1992), the concessions are granted varying in size and duration as follows:

- Short term: < 5,000 ha (1 - 5 years)
- Medium term: 5,001- 50,000 ha (5 - 10 years)

• Long term: 50,001- 150,000 ha (10 - 20 years): Each of these types of concessions can be extended once for the same duration as the concessions have been granted.

6.1.1. Community Forest

Special permits are also granted according to Article 41, paragraph 2 of the Forestry Management Act which indicates the designation of certain forest areas as community forests, at least for forest residents living in villages and settlements and also living in tribes, by the minister responsible for forest management, now the minister of GBB, in consultation with the Minister of Regional Development and Sport. These are forest areas that are located around community land and that are designated to meet their own needs, such as food and forest production, possible commercial use of wood, collection of forest by-products and reclamation for agricultural purposes.
The traditional authority of managed the Community Forest.

6.1.2. Incidental timber extraction permit

Another special permit can be issued according to Article 38 paragraph 1 of the Forest Management Act, which authorized the Minister of GBB to grant permits for incidental timber extraction. According to the "Incidental Timber Extraction Decree"[15], this permit can only be granted in areas designated as one-time empty felling forest. A permit for incidental timber extraction is only issued in forest areas that have been designated as forest to be cleared once (conversion forest) and granted for a maximum period of one year and for a maximum volume to be felled of no more than 5000 m³.

The Minister of Land Policy and Forest Management (GBB) can request advice from the District Commissioner within whose area of authority the requested sites lie and from other relevant authorities. The granting or refusal of a permit for incidental timber extraction is done by the Minister of GBB.

[15] Beschikking incidentele houtwinning S.B. 2000 no.45

Unplanned exploitation leads to poor coordination of forestry operations and unnecessary damage to the remaining forest, while planned exploitation according to an exploitation plan and annual harvest plan leads to increased efficiency and reduced costs, mainly of felling, towing, road transport and road construction. Timber exploitation based on an exploitation plan and annual harvest plan is referred to as intensive management.

If logging activities, on community forests or logging permits (abbreviated HKV) for residents living in villages and also living in tribes, are small-scale and for a short period, it is possible to carry out logging activities according to the procedures of extensive management. Extensive management is management in which the logging activities are carried out according to a simplified exploitation plan harvest plan.

Also on short-term concessions (< 5000 ha), the logging activities can be developed in the initial phase according to the procedures of extensive management in order to take the necessary preparatory measures to carry out the logging activities in a later phase according to the procedures of intensive management.[16]

6.2. Procedure for the exploitation of timber according to the forest management act 1992 and its implementing decrees.

Any person or Company interested in the exploitation of Timber (wood) has to be holder of a permit or concession. They have to submit, and file an application to the Ministry in charge of Forest, in this case to the Minister of Land Policy and Forest Management through the SBB.

Before the applicant starts the application procedure for a timber concession or exploration permit, the applicant must first be able to designate a site on the forestry plot (Figure 9).

[16] https://sbbsur.com/bosbeheer/richtlijnen-houtkap/

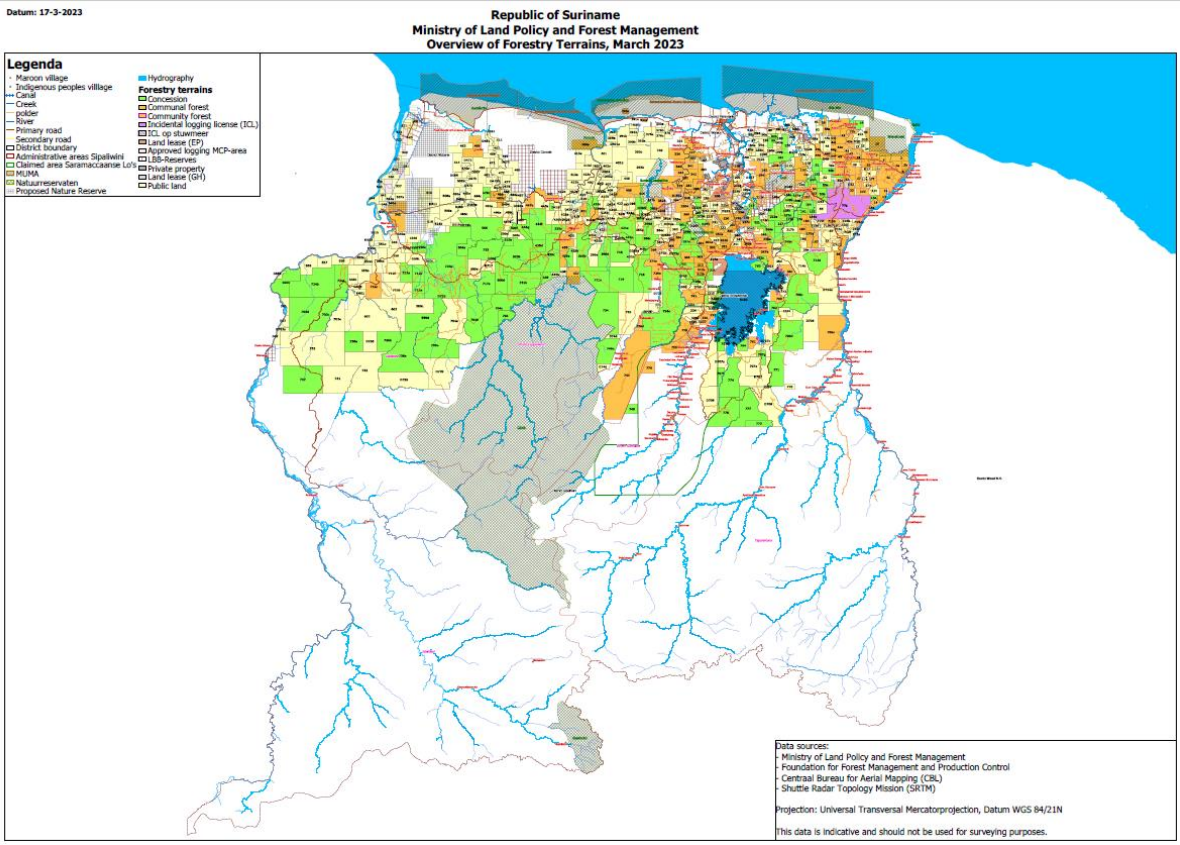

Figure 8: Map of an overview of Forestry Terrains (2023, March). Source: SBB.

6.3. The application procedure for an exploration permit or concession[17].

Application procedure (Figure 8) for obtaining an exploration permit or concession is stated in the "Order on the application for an exploration permit and concession" of 17 February 2000 (SB 2000 no. 47)[18].

An application for a timber concession or exploration permit must be submitted in writing by means of a fully completed and signed application form to the Concessions and Permits Department of the SBB.

The application form (in 3 copies) is available at the cash desk of the SBB head office and costs SRD. 500,-. Before the applicant starts the application procedure, the applicant must first be able to designate a site on the forestry plot.

Subsequently, the applicant will have to submit the following documents:

1. A figurative map (in 3-fold), scale 1:100,000, produced by a land surveyor in Suriname, indicating the size and location of the requested site (you can submit a sketch map with the application);

2. A declaration from the Collector of Direct Taxes stating that the applicant is not in arrears with regard to the payment of taxes;

3. A statement of the available personnel, stating their qualifications;

4. An inventory list of available equipment and resources suitable for felling, dragging, transport and primary wood processing (also state year of construction and condition);

5. An overview of the concession and exploration sites that have already been allocated to the applicant;

6. a) If the applicant is a natural person:

– An extract from the population register;

– A nationality statement

[17] https://sbbsur.com/juridische-zaken/concessies-en-vergunningen/

[18] Beschikking aanvraag exploratievergunning en concessie, van 7 februari 2000 S.B. no. 47.

b) If the applicant is a legal entity established in Suriname:

– Proof of registration in the Trade Register of the Chamber of Commerce and Industry in Suriname

– A certified copy of the statutes of the Association

7. In case the requested site is larger than 5000 ha. (application for medium- or long-term concession or exploration permit), the applicant will also submit:

– A business plan drawn up according to the guidelines of the SBB (not for exploration permits);

– An accountant's statement and an overview of the financial resources, showing that the applicant is financially able to finance the intended investments. These investments not only include the investments required for the forest exploitation company, but also the investments required for the further processing of the wood, as referred to in Article 27 paragraphs 2, 3 and 4 of the Forest Management Act.

With regard to a legal entity established in Suriname:

• Origin of equity and debt;

• A copy of the most recently published approved annual accounts and report from the accountant and the supervisory board.

All applications for timber concessions larger than 5000 ha (application for medium- or long-term concession) must be preceded by an exploration permit in accordance with Article 27 paragraph 2 of the Forestry Management Act. In order to qualify for a concession for the relevant site, the exploration permit holder must have submitted the request for this at least 3 (three) months before the expiry of the exploration permit.

In the event of an incomplete application (a form that is not fully completed or one or more documents are missing), the applicant has 1 (one) month to complete the missing information and/or to submit the missing documents. If the application is submitted within the deadline is not fully met, the application will not be processed.

Under the Forest Management Act, the process for processing the application may take at least 6 months.[19]

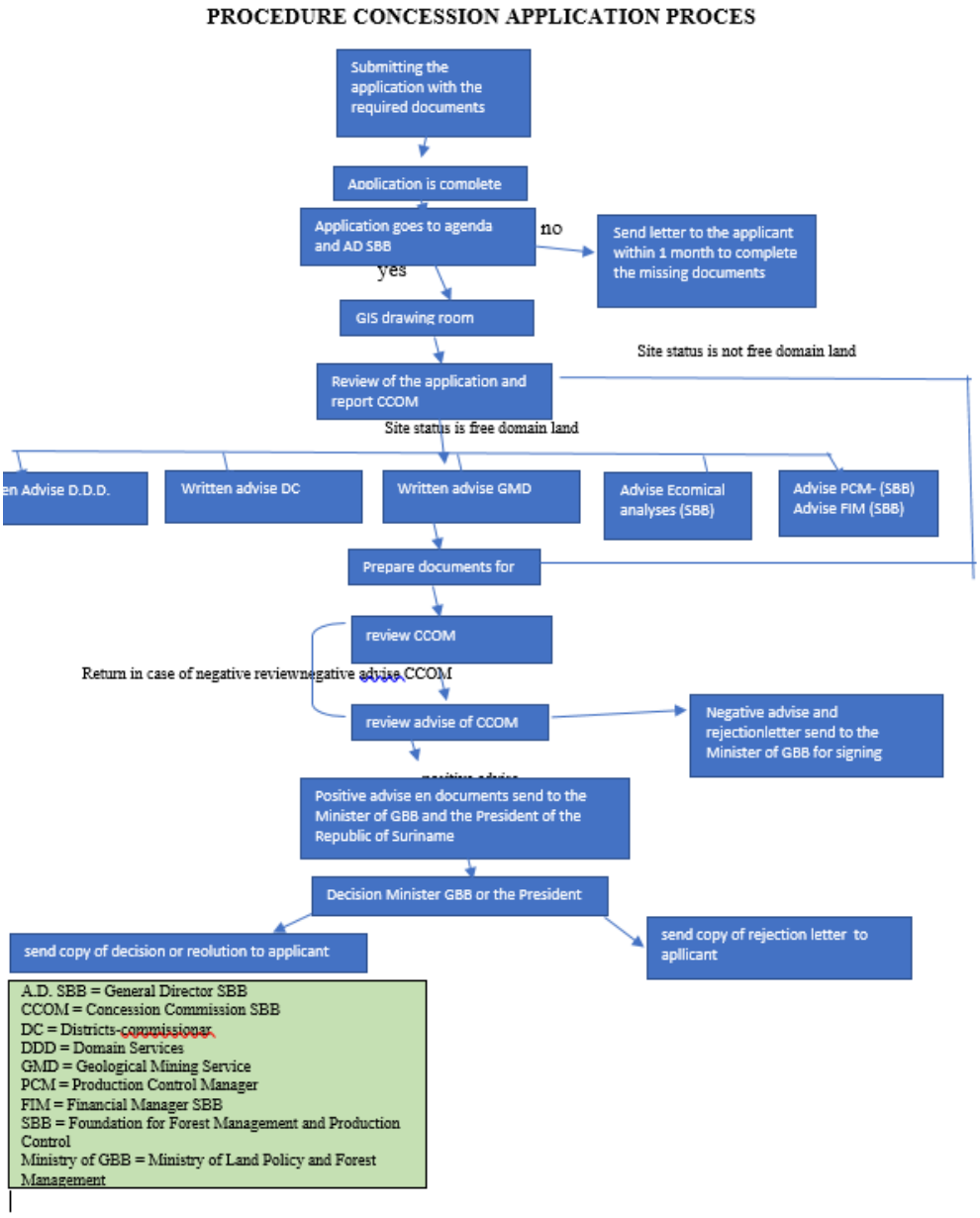

Fig. 9. Overview procedure concession application process. Source: SBB.

[19] http:// www.sbbsur.org/

6.4. SHORT-TERM CONCESSION TERMS

6.4.1. ***General provisions***

1. The Minister of Land Policy and Forestry reserves the right to change the following provisions at any time in order to promote the effective and sustainable use of the forests.

2. The Concessionaire carries out the timber exploitation at its own expense and risk. He is responsible for all activities specified in the concession conditions and to be carried out in the exploitation plan and the Annual harvest plan.

3. The Concessionaire is obliged to carry out the logging in accordance with an annual harvest plan drawn up in accordance with the regulations of the SBB.

6.4.2. ***Border marking, inventory and forest planning***

4. Within three months after the granting of the concession, a surveyor in Suriname must start plotting and marking the concession boundaries in accordance with the guidelines of the State Surveyor. This work must be completed within 3 years. The boundary lines of the part of the concession site that will be exploited in the first three years must be cut within 6 months after the granting of the concession. Concession boundaries must be clearly marked in the field and maintained as directed by the State Surveyor.

5. Within six months after the concession has been granted, the concessionaire will submit an exploitation plan with an associated base map of the concession site with a scale of at least 1:100,000 for the approval of the General Director of the SBB. The operating plan will include the following:

a. A global overview of the occurring forest types indicated on a base map produced from information from existing CBL maps, vegetation maps, satellite imagery, aerial photo interpretation, aerial and ground surveys and exploration reports.

b. The estimated wood stands, obtained from the exploration data of the concession site or by means of extrapolation or interpolation of exploration data from other areas with more or less similar forest and terrain characteristics.

c. The division of the concession sites on a base map into annual logging areas with more or less equal surfaces and/or forest stands.

d. A global overview indicated on the aforementioned base map of the occurring production and non-production forests, the existing and planned access roads, the base camps, etc.

e. An overview of the planned annual productions for the entire duration of the concession.

f. An overview of the equipment and personnel to be deployed.

g. An overview of the logging activities indicated in a felling schedule of the annual harvest plains.

6. When dividing the concession sites into annual logging areas, natural boundaries are primarily used. If these do not occur, the classification will be carried out in accordance with the regulations of the SBB.

6.4.3. ***Infrastructure***

7. Within 1 (one) year after the granting of the concession after the date of the decision, the concessionaire must have opened up the concession sites by means of a drainage road.

8. The drainage roads in the concession areas indicated in the exploitation plan and projected on the base map are constructed at the expense of the concessionaire and in accordance with the technical requirements to be set by the General Manager of the SBB.

9. When constructing drainage roads, the Concessionaire will take into account the drainage pattern of the concession site and other general guidelines for road construction to be set by or on behalf of the General Director of the SBB.

10. The Concessionaire must construct the creek crossings in such a way that the free flow of water is not impeded.

11. The Concessionaire is obliged to ensure that no damage is caused to the forest, the soil and water management during the construction and use of the infrastructure.

12. The Concessionaire is permitted to fell trees of all wood types and sizes on parts of the site that will be deforested for the construction of roads, the construction of a 'landing', the construction of

structures and the construction of agricultural plots, after obtaining permission in advance from or on behalf of the General Director of the SBB about the location and size. The Concessionaire is also obliged to cut down trees of marketable wood species with a diameter of 35 cm and more and to remove them from these parts of the site, for which it owes a fee. During the construction of the roads, the stumps may not be further from the axis of the road to be constructed than 12.5 meters for primary drainage roads and 2 meters for primary drag roads.

6.4.4. ***Fell and extract***

13. The Concessionaire will adhere to the harvest standards and regulations to be specified by the General Director of the SBB.

14. It is prohibited to use excavators during wood exploitation activities.

15. Felling and towing can only take place in accordance with an annual harvest plan, as referred to in point 3, which has been produced in accordance with the regulations of the SBB.

16. The annual harvest plan is drawn up for a period of one year as an integral part of the exploitation plan and based on a 100% inventory of commercial trees, carried out in accordance with SBB regulations.

17. The felling and dragging out will take place in such a way that damage to the rejuvenation, future trees, seed trees and other plant growth is limited to a minimum.

18. The annual harvest plan is submitted for approval to the General Director of the SBB and indicates, among other things, the following:

a. The division of the annual harvest area to be exploited into harvest sections on a base map with a scale of at least 1:40,000.

b. The results of the 100% inventory of a part of the annual harvest area that includes a wood production of at least 3 months.

c. A projection of the planned discharge routes, main towing routes, loading and unloading areas.

d. An overview of the personnel and equipment to be deployed per harvest section.

19. The sustainable production that must be realized at least per year is 1,300 m^3 of round wood.

20. The harvest can only take place in the order stated in the annual harvest plan and in the harvest section as indicated in the letter of permission to enter a harvest section issued by the General Director of the SBB.

21. Only selected trees that are indicated on an inventory card approved by the General Director of the SBB may be felled. During felling, the concessionaire will ensure that no economically viable wood is left behind.

22. The Concessionaire is obliged to keep all felled tree trunks and trunk parts for which a fee is due in the harvest register in accordance with the regulations of the SBB.

23. All salable logs (pieces) of marketable wood species, which are broken or damaged during harvest or other operations, must be cut or shortened and removed. The concessionaire owes a fee for this wood.

24. When felling the trees, the saw cut of:

Trees that have grown straight and horizontal with a cylindrical stump and that are not raised more than 50 cm above ground level without root lists. In cases where there is a clear danger of applying this maximum height, a saw cut of up to 1.00 m (chest height) above ground level can be used.

25. As far as possible, trees should be felled in such a way that the felled trunk is at such an angle to the towing path that the least damage is caused during towing.

26. The felled logs must be towed out along tow roads that have been constructed in advance in accordance with the Annual Clearing Plan approved by the General Director of the SBB.

6.4.5. **Timber transport**

Without prejudice to the applicable general legal regulations regarding traffic on land and water, the following will apply with regard to the removal of wood.

28. Transport of wood, both by water and by land, outside the concession areas only takes place under cover of a valid transport ticket.

29. Timber transport on the discharge roads takes place by means of trucks with or without trailers, at least not with skidders and other dragging equipment.

30. Wood transport may only take place with a means of transport registered with the SBB (wood truck or vessel). At the request of the forest ranger, the timber transporter must demonstrate a valid means of transport pass.

31. Log transport on primary roads must be stopped during the rainy season to prevent these roads from being in a very bad condition due to flooding.

32. It is not permitted to transport wood on public roads between 7:00 PM and 6:30 AM.

33. In the case of timber transport across border rivers, the Concessionaire must notify the nearest forest ranger of its intention to such transport at least 48 hours before such transport takes place. The timber transport must also be covered by a valid transport ticket.

27. As soon as a harvest section has been completed, the concessionaire will inform the General Director of the SBB within two weeks. After inspection by the SBB, the Concessionaire may be required to re-enter the harvest section where necessary in order to correct a few things. When the harvest compartment is declared cut out and closed, a "cutting out statement" is issued to the Concessionaire. After this, the Concessionaire may no longer carry out timber exploitation activities in the harvest sector in question, without the express written permission of the General Director of the SBB.

6.4.6. Forest protection and forest improvement

34. The General Director of the SBB can designate parts within the concession sites for which further regulations are given to limit or exclude the extraction of wood or other human activity.

6.5. MID-LONG CONCESSION TERMS

6.5.1. General provisions

1. The Minister of Land Policy and Forestry reserves the right to change the following provisions at any time in order to promote the effective and sustainable use of the forests.

2. The Concessionaire carries out the timber exploitation at its own expense and risk. He is responsible for all activities specified in the concession conditions and to be carried out in the exploitation plan and the Annual harvest plan.

3. The Concessionaire is obliged to carry out the logging in accordance with an annual harvest plan drawn up in accordance with the regulations of the Foundation for Forest Management and Production Control (SBB).

6.5.2. Border marking, inventory and forest planning

4. Within three months after the granting of the concession, a surveyor in Suriname must start plotting and marking the concession boundaries in accordance with the guidelines of the State Surveyor. This work must be completed within 3 years. The boundary lines of the part of the concession site that will be exploited in the first three years must be cut within 6 months after the granting of the concession. Concession boundaries must be clearly marked in the field and maintained as directed by the State Surveyor.

5. Within six months after the concession has been granted, the concessionaire will submit an exploitation plan with an associated base map of the concession site with a scale of at least 1:100,000 for the approval of the General Manager of the SBB. The operating plan will include the following:

a. A global overview of the occurring forest types indicated on a base map produced from information from existing CBL maps, vegetation maps, satellite imagery, aerial photo interpretation, aerial and ground surveys and exploration reports.

b. The estimated wood stands, obtained from the exploration data of the concession site or by means of extrapolation or interpolation of exploration data from other areas with more or less similar forest and terrain characteristics.

c. The division of the concession area on a base map into annual logging areas with more or less equal surfaces and/or forest stands.

d. A global overview indicated on the aforementioned base map of the occurring production and non-production forests, the existing and planned access roads, the base camps, etc.

e. An overview of the planned annual productions for the entire duration of the concession.

f. An overview of the equipment and personnel to be deployed.

g. An overview of the logging activities indicated in a harvest schedule of the annual harvest plan.

6. When dividing the concession site into annual logging areas, natural boundaries are primarily used. If these do not occur, the classification will be carried out in accordance with the regulations of the SBB.

6.5.3. Infrastructure

7. The concessionaire must have opened up the concession site by means of a drainage road within 1 (one) year after the granting of the concession after the date of the decision.

8. The drainage roads in the concession area indicated in the exploitation plan and projected on the base map are constructed at the expense of the concessionaire and in accordance with the technical requirements to be set by the General Manager of the SBB.

9. When constructing drainage roads, the Concessionaire will take into account the drainage pattern of the concession site and other general guidelines for road construction to be set by or on behalf of the General Director of the SBB.

10. The Concessionaire must construct the creek crossings in such a way that the free flow of water is not impeded.

11. The Concessionaire is obliged to ensure that no damage is caused to the forest, the soil and water management during the construction and use of the infrastructure.

12. The Concessionaire is permitted to fell trees of all wood types and sizes on parts of the site that will be deforested for the construction of roads, the construction of a 'landing', the construction of structures and the construction of agricultural plots, after obtaining permission in advance from or on behalf of the General Director of the SBB about the location and size. The Concessionaire is also obliged to cut down trees of marketable wood species with a diameter of 35 cm and more and to remove them from these parts of the site, for which it owes a fee. During the construction of the

roads, the stumps may not be further from the axis of the road to be constructed than 12.5 meters for primary drainage roads and 2 meters for primary drag roads

6.5.4.. Fell and extract

13. The Concessionaire will adhere to the harvest standards and regulations to be specified by the General Director of the SBB.

14. It is prohibited to use excavators during wood exploitation activities.

15. Felling and towing can only take place in accordance with an annual harvest plan, as referred to in point 3, which has been produced in accordance with the regulations of the SBB.

16. The annual harvest plan is drawn up for a period of one year as an integral part of the exploitation plan and based on a 100% inventory of commercial trees, carried out in accordance with SBB regulations.

17. The harvest and dragging out will take place in such a way that damage to the rejuvenation, future trees, seed trees and other plant growth is limited to a minimum.

18. The annual harvest plan is submitted for approval to the General Director of the SBB and indicates, among other things, the following:

a. The division of the annual harvest area to be exploited into harvest sections on a base map with a scale of at least 1:40,000.

b. The results of the 100% inventory of a part of the annual harvest area that includes a wood production of at least 3 months.

c. A projection of the planned discharge routes, main towing routes, loading and unloading areas.

d. An overview of the personnel and equipment to be deployed per harvest section.

19. The sustainable production that must be realized at least per year is as follows:

a. in the second year after the date of the decision 8,000 m^3 round wood;

b. in the third year after the date of the decision 25,000 m^3 of round wood and

c. from the fourth year after the date of the decision 33,000 m³ round wood.

20. The harvest can only take place in the order stated in the annual harvest plan and in the harvest section as indicated in the letter of permission to enter a harvest section issued by the General Director of the SBB.

21. Only selected trees that are indicated on an inventory card approved by the General Director of the SBB may be felled. During harvest, the concessionaire will ensure that no economically viable wood is left behind.

22. The Concessionaire is obliged to keep all felled tree trunks and trunk parts for which a fee is due in the harvest register in accordance with the regulations of the SBB.

23. All salable logs (pieces) of marketable wood species, which are broken or damaged during harvest or other operations, must be cut or shortened and removed. The concessionaire owes a fee for this wood.

24. When felling the trees, the saw cut of:

Trees that have grown straight and horizontal with a cylindrical stump and that are not raised more than 50 cm above ground level without root lists. In cases where there is a clear danger of applying this maximum height, a saw cut of up to 1.00 m (chest height) above ground level can be used.

25. As far as possible, trees should be felled in such a way that the felled trunk is at such an angle from the towing path that the least damage is caused during towing.

26. The felled logs must be towed out along towing roads that have been constructed in advance in accordance with the annual clearing plan approved by the General Director of the SBB.

27. As soon as a harvest section has been completed, the concessionaire will inform the General Director of the SBB within two weeks. After inspection by the SBB, the Concessionaire may be required to re-enter the harvest section where necessary in order to correct a few things. When the harvest compartment is declared cut out and closed, a “cutting out statement” is issued to the Concessionaire. After this, the Concessionaire may no longer carry out any timber exploitation activities in the harvest sector concerned, without the explicit written permission of the General Director of the SBB.

6.5.5. Timber transportation

Without prejudice to the applicable general legal regulations regarding traffic on land and water, the following will apply with regard to the removal of wood.

28. Transport of wood, both by water and by land, outside the concession area only takes place under cover of a valid transport ticket.

29. Timber transport on the discharge roads takes place by means of trucks with or without trailers, at least not with skidders and other dragging equipment.

30. Wood transport may only take place with a means of transport registered with the SBB (wood truck or vessel). At the request of the forest ranger, the timber transporter must demonstrate a valid means of transport pass.

31. Log transport on primary roads must be stopped during the rainy season to prevent these roads from being in a very bad condition due to flooding.

32. It is not permitted to transport wood on public roads between 7:00 PM and 6:30 AM.

33. In the case of timber transport across border rivers, the Concessionaire must notify the nearest forest ranger of its intention to such transport at least 48 hours before such transport takes place. The timber transport must also be covered by a valid transport ticket.

6.5.6. Forest protection and forest improvement

34. The General Director of the SBB can designate parts within the concession area for which further regulations are given to limit or exclude the extraction of wood or other human activity.

6.6. Procedure for the exploitation of timber including *Cedrela odorata* to the forest management act 1992. Exploration Permit Conditions[20]

An exploration permit is required before commencing logging activities. In the 'Ministerial Decision on application for exploration permits and concessions', S.B. 2000 No. 47 the following conditions are stated:

1. The Minister of Land Policy and Forest Management (GBB) reserves the right to change the following provisions at any time to promote the effective, rational and sustainable use of the forests.

2. During the period of the exploration permit, the Minister of GBB is authorized to grant permits to third parties to collect forest by-products within the granted exploration area.

3. The permit holder carries out the exploration inventory in accordance with the guidelines of the Foundation for Forest Management and Production control (SBB) and at his own expense and risk. He is responsible for all activities to be carried out as specified in the permit conditions.

4. Within 2 (two) months of the date of this decision, the permit holder must collect solid base material about the relevant site, such as aerial photographs, topographical maps, soil maps, vegetation maps and/or satellite images, after which this must be reported in writing to the SBB.

5. The SBB will determine the exploration method to be used depending on the size and location of the site.

6. Within 3 (three) months after the date of this decision, the permit holder must start the exploration inventory in the field and the permit holder must inform the SBB of this at least 2 (two) weeks before the start.

7. The permit holder must submit a written report on the progress of the exploration inventory to the General Director of the SBB at least once every 4 (four) months.

8. The inventory or orientations in the field may not be completed later than 1 (one) month before the expiry date of the exploration permit.

[20] Beschikking aanvraag exploratievergunningen en concessies , S.B. 2000 no. 47

9. Information from the site will be obtained from, among other things:

- Forest inventories carried out by the permit holder
- Forest inventories that have already been carried out, especially in nearby areas and similar areas
- Production figures from nearby sites and sites with similar terrain characteristics
- Available digital and analog maps, satellite images
- Field orientations

10. At least forest inventories or field orientations must be carried out for the various forest types that occur on the site. The locations of forest inventory or field orientations must be recorded by means of a GPS:

- For each field orientation, a report must be made with visual material;
- If plots have been inventoried in the field, the data must be entered and processed in a database. The geographical data must also be entered and processed in a GIS database.

11. Before the expiry date of the exploration permit, an exploration report (hard copy and soft copy) must be submitted to the SBB Headquarters for approval by the General Manager.

12. The exploration report should include the following results:

- a clear description of how the exploration was carried out and the extensive analysis of how the exploration results were obtained with a clear source and references, including the field orientations and field recordings.
- a global classification of the terrain according to forest types and other terrain characteristics such as slope, height and forest type.
- a division of the terrain into productive and non-productive forests.
- the total standing stock of wood on the site and per forest type.
- Quantitative forestry characteristics of the occurring commercial (and potentially commercial) tree species, such as at least stem number distribution, number, volume, basal area, quality of the trees.
- The results should be illustrated with associated maps such as overview map, forest type map, vegetation map, topographic map, map with locations of the inventoried plots and field orientations performed, with a scale of at least 1: 100 000.

13. The data from the exploration inventory must be made available to the SBB free of charge in both hard and soft copy (digital) in accordance with a format prescribed by the SBB.

14. The SBB is at all times authorized to monitor the performance of the work during the exploration. The permit holder is obliged to provide adequate accommodation and transport to the SBB employees when performing the inspection activities.

15. The permit holder has the right to cancel the permit at any time. However, the intention must be made known in writing to the Minister of GBB.

16. The Minister of GBB reserves the right, on the recommendation of the SBB, to withdraw the permit if the permit holder has not fulfilled the exploration activities in accordance with the Forestry Management Act and the above conditions, without any form of compensation to the permit holder to pay.

6.7. Exploitation concession

After the exploration the permit holder needs to request an exploitation permit or concession as referred to in Articles 21 paragraph 1 and 25 of the Forest Management Act 1992. The Minister of GBB is considering allocating the exploitation in view of the available wood stocks and other conditions for wood production under the conditions that:

- No concession is granted for areas that are designated as forest shelter belt (Forest Management Act Article 41), or as forest to be preserved provisionally (Forest Management Act Art. 8) or for areas that are excluded from the "forest" in accordance with Article 1 sub g of the Forest Management Act.
- The terms and conditions laid down by or pursuant to this decision apply irrespective of previously concluded declarations of intent and/or agreements, except for those entered into by or pursuant to the international treaties, laws, state decrees and decisions in force pursuant to these legislative products applicable to the Republic of Suriname.
- To draw the particular attention of the person concerned to the fact that the concession does not apply or cannot be exercised in areas where concessions and other valid rights regarding timber exploitation have already been granted to third parties, or have been reserved for third parties, as

well as in the areas yet to be designated by the Government where the communities of tribal citizens can conduct economic activities, in particular agriculture, forestry, small-scale mining, fishing and hunting.

- The Concessionaire will strictly comply with the provisions of the Forestry Management Act as well as rules or regulations to be set by or on behalf of the Minister of GBB for efficient and sustainable management. The granting of the concession right takes effect through its transfer to the public register at the Management Institute GLIS. To this end, the person concerned shall submit a copy of the decision to the GLIS custodian 1 (one) month after its date, after payment of the stamp duty and transfer costs due. The concession will be revoked if the concession is not registered in the public registers at the Management Institute GLIS within the period of 3 (three) months after granting the concession right.
- The concession term is included as an annex to the exploitation concession (see mid-long term concession)

6.8. **Exploitation plan**[21]

The purpose of the exploitation plan is to provide a systematic insight into the planned exploitation activities during at least the term of validity of the concession, the planned production, the equipment and personnel to be deployed, the exploitation costs and the economic feasibility of the exploitation activities. These plans contribute to the realization of sustainable forest management, because it is clearly and systematically shown how the forest exploitation will be planned, taking into account the economic, social and environmental aspects.

According to the concession conditions, the concessionaire must submit an exploitation plan before commencing logging activities on a concession site, with a corresponding base map of the concession site with a scale of at least 1: 100,000 for approval to the General Director of the SBB within 6 (six) months after the concession has been granted.

[21] SBB: Handleiding opstellen exploitatieplan, https://sbbsur.com/wp-content/uploads/2015/05/Handleiding-voor-de-exploratie-inventarisatie.pdf

The purpose of the exploitation plan is to provide a systematic insight into the planned exploitation activities during the term of validity of the concession (and any extension of the concession), the planned production, the equipment and personnel to be deployed, the operating costs and the economic feasibility of operating activities.

Furthermore, this plan contributes to sustainable forest management because it clearly and systematically indicates how the forest exploitation will take place according to plan, taking into account the economic, social and environmental aspects. An operating plan must be clear and easy to read. The text should not be too long. Any technical reports from experts such as an exploration report can be appended to the plan. If the concession concerns various concession sites, which are both contiguous and disjointed, one exploitation plan will be drawn up for all concession sites and not for each separate site.

6.9. Planned annual round wood production[22]

The planned annual round wood production can be derived, among other things, from:

• The estimated commercial timber stand of the site

• The harvest cycle used based on the sustainable wood potential of the areas (25 years)

• The harvest intensity used (maximum 25 m3)

• the forest management system (e.g. CELOS Management System and Reduced Impact Logging) /ha)

• The company's production potential

The area must be divided into 25 annual logging areas in such a way that an annual logging area is exploited within 1 (one) year with the equipment present or to be purchased.

[22] SBB: Handleiding voor het maken van een kapplan. https://sbbsur.com/wp-content/uploads/2019/06/kapplan_manual_v2.pdf

6.9.1. Description of the execution

It is indicated what the organization of the round wood production will look like and how the various components will be carried out (including forest design, making an annual harvest plan, felling, towing and transport). It also indicates what the timetable and the planned effective working days per year look like.

6.9.2. Equipment to be used

In this section, all machines are listed per production component (e.g. forestry equipment, drawing up an annual harvest plan, felling, towing and transport).

6.9.3. Staff to be deployed

Here follows a description of the number of persons employed in the forestry operation (total and per production component with their specializations).

6.9.4. Infrastructure

The roads to be constructed expressed in kilometers (primary and secondary drainage roads) and structures in the form of bridges and culverts are listed in this section. In addition, an access plan must be stated with the equipment to be deployed and the personnel required for the construction and maintenance of the infrastructure. Drainage routes must take into account the drainage pattern of the area. Culverts or bridges should be constructed at the intersection of roads with watercourses.

6.9.5. Other infrastructure

This section describes the residential facilities, office buildings, round wood transshipment and storage areas and any port and mooring facilities to be constructed.

6.9.6. Environmental aspects

This section should list the negative environmental impacts of the exploitation and wood processing and describe how these are mitigated and/or minimized. The following aspects should be discussed:

• Reduction of operating damage

• Minimization of damage to Fauna and Flora

• Minimizing or preventing disturbances in Hydrology and drainage in the area

• Protected areas, Buffer zones, Forest reserves (areas where no logging will take place)

• Waste processing and clearance

• Chemical and lubricant management (use, storage, waste)

6.9.7. Socio-economic aspects

In this section the positive and negative influences of the exploitation and wood processing on a socio-economic level are mentioned. It will also be stated here how the negative influences will be captured and minimized.

6.9.8. Interior residents

The following information should be stated here:

• Location and description of the villages located within or in the immediate vicinity of the site in question

• Possible positive influences of the timber exploitation on the village, such as: employment and infrastructure

• Possible negative influences of the timber exploitation on the village, such as: 1.safety 2. Hunting and fishing 3. Drinking water 4. Agriculture 5. Collection of forest by-products 6. Traditional areas (sacred sites, cemeteries)

• Conflict resolution strategy

6.9.9. Staff

The following information should be included here:

• Training

• Health and welfare (office, camp and sawmill) food and drinking water, health, hygiene, communication and recreation
• Conflict resolution strategy

6.10. Inventory[23]

Sustainable and rational use of the forest area can only be achieved if it is done in a planned manner and in accordance with a sound exploitation plan. Within the framework of the Forest Management Act, the concessionaire or holder of an exploration permit must carry out an exploration inventory of the concession site or of the forest area that has been allocated as an exploration permit under its own management and at its own expense. The exploration inventory is an exploratory inventory based on a sample that aims to collect reliable information about the forest area. This mainly concerns the occurring forest types, wood stands and terrain features such as the location of slopes, swamps of creeks and other visible terrain features. On the basis of the exploration results, the concessionaire will draw up an exploitation plan in accordance with the guidelines of the SBB, for the concession as a whole, before it can proceed to exploitation, while the holder of an exploration license will, based on the exploration results, already at an early stage can determine whether the inventoried area is interesting to be applied for as a concession.. The implementation of the exploration inventory will be monitored by the SBB. SBB has developed a manual for the exploration inventory, which is a guidance for the concession holders to do their exploration inventory. The following describe how an inventory should be done according to the SBB guidelines.

6.10.1. Objectives of the inventory

The purpose of the inventory is to obtain a reliable description of forest areas intended for the production of wood, so that a solid exploitation plan can be made for the forest areas for sustainable forest management.

The specific objectives of the exploration inventory are:

[23] Manual for the exploration inventory, SBB.

1. Classifying forest areas according to forest type and terrain characteristics
2. Estimating the following parameters of the forest types and terrain conditions:
• Volume of commercial wood species.
• Timber cultivation parameters; e.g. base area and base number
• Average terrain conditions (elevation, slope, soil type)
• Forest by-products
• Biodiversity characteristics.
3. Collecting information for dividing the stand into annual management units of equal surface areas and/or harvestable wood volume.
4. Studying environmental influences.
5. Drawing up a (GIS) database for the inventoried area with the location of the forest area, area and parameters derived from it. The location of the sampled plots and the information of processed and unprocessed data obtained during the inventory are also added to this database.

6.10.2. Sampling

Designing a method consists of making decisions regarding the following three elements. The purpose of the inventory is of great importance here. Other considerations that come into play are of a statistical nature, such as obtaining reliable estimates, and of a practical nature, such as minimizing the amount of work and associated costs without compromising the desired reliability. The sampling method is determined by the following elements:
1. Type, shape and size of sampling units.
2. The spread of the sampling units.
3. The number of sampling units.

6.10.3. Stratification

To design an efficient sampling method, intensive stratification, a process of distinguishing and demarcating areas with homogeneous forest and land types, should be applied to minimize internal variability.

The stratification can be applied on two levels:

Level I: Dividing the inventory area into forest types on the CBL maps. The map scale to be used for stratification depends on the size of the area to be inventoried (Table 1).

Table 1: Map scales to be used for different inventory areas. Source: SBB

Inventory Area (ha)	Map scale
< 5.000 ha	1 : 10.000
5.000 – 10.000	1 : 20.000
10.000 – 50.000	1 : 40.000
100.000 – 150.0000	1 : 60.0000
> 100.0000	1: 100.000

Level II: At the second level, the following options are used for a more detailed classification:

• Using environmental factors in a GIS program, a stratification can be performed by classifying the forest area based on factors such as altitude, slope, soil type. This alternative is used if there are no other alternatives to be used and if the forest has not yet been disturbed.

• Using aerial photo interpretation. Modern techniques such as scanning aerial photos can be used to accurately indicate the boundaries of the strata on a map. The existing aerial photos are old but can still be used for areas that have not been exploited before, but new photos are needed to perform a reliable stratification.

• Classify using multi-spectrum, high resolution satellite images. Segmentation methods can possibly be tested for their usability. The latter method may be suitable for hydrophytic and xerophytic forest, but is less suitable for mesophytic forest (Catalan, 1998).

In stratification, a clear distinction must be made between virgin and already exploited forests if both occur in the area. It is important to note that only through intensive stratification, an adequate division of inventoried forest areas into management units with the same volume is possible.

6.10.4. Type of sampling units.

Systematic clusters of rectangular concentric plots are used as sampling units. Each plot in the cluster consists of an area of 20 x 100 (Figure 9) in which only commercial species are measured with a dbh from 60 cm. The remaining species, both potential and commercial, are only measured in a subplot of 8 x 100m. The result of this method is that the chance of selecting commercial wood species is four times higher.

The number of plots that make up the cluster is determined by:
• The variability between the clusters and within a cluster,
• The costs of transport (accessibility of the area) and the measurements to be carried out.

The factors mentioned above are not known in advance, and the differences per case are also very large, making it impossible to indicate a sampling unit that can be used under all circumstances. Large clusters have the advantage that the fieldwork is cheaper. The disadvantage, however, is an unbalanced distribution of the sampling units. Due to the great heterogeneity of the Surinamese forests, the use of large clusters is not adequate.

6.10.5. Sample size.

If the sampling units are already selected, the sample size depends on three factors:
• The variability within each inventory unit or stratum, represented by the coefficient of variation (c %).
• The tolerable error at a certain degree of confidence (E %) The variation between the sampling units reflects the important inventory parameters such as net usable volume of commercial species. In tropical forests and the Surinamese conditions in particular, this parameter is very different.
A rough estimate indicates that a coefficient of variation of between 110 and 150 % can be expected. For a cluster consisting of 12 plots with a less intensive stratification, a coefficient of variation of 40% may be allowed.

Sampling of large areas.

The cluster models indicated in Figures 10 and 11 are applied for large areas. Each sampling unit consists of an L-shaped cluster consisting of two lines where each line consists of 6 or 12 plots. Each plot has a size of 20 X 100m (0.2 ha). This shape of the clusters is suitable for inventorying forest stands with a great variability.

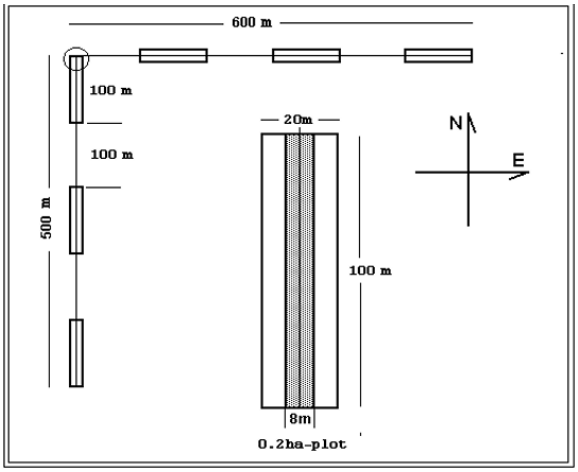

Figure 10: One-day cluster consisting of two recording lines, each consisting of 3 rectangular plots of 20x100 m. (which can normally be sampled in 1 day e.g. in freely accessible areas where walking distances are reasonable. Source: SBB: Handleiding exploratie inventarisatie. https://sbbsur.com/wp-content/uploads/2015/05/Handleiding-voor-de-exploratie-inventarisatie.pdf.

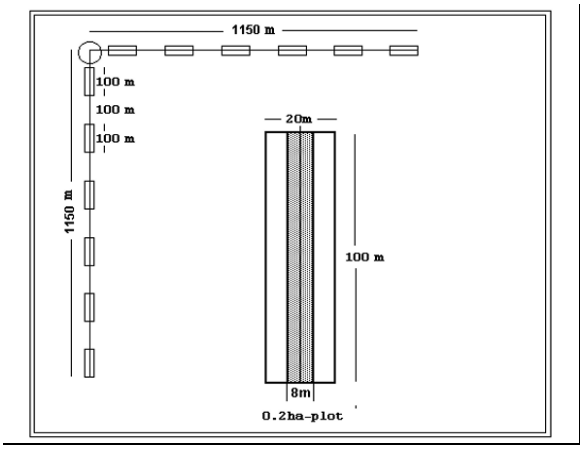

Figure 11: .Two-day cluster consisting of two sampling lines with 6 rectangular plots of 20x100 m each. (Applied in inaccessible areas where walking distances are significant). Source: SBB: Handleiding exploratie inventarisatie. https://sbbsur.com/wp-content/uploads/2015/05/Handleiding-voor-de-exploratie-inventarisatie.pdf.

The circled area in the vertex of the two lines is called the chamfer location. The felling location is intended to fell trees for the calculation of form factors, volume tables and conversion figures in case insufficient data for the calculation of the above factors has been obtained from previous inventories. GPS measurements will be made at this location to determine the geographical coordinates. Sampling the entire cluster takes two days, depending on the digestion, the size of the plot can be adjusted. Once the area has been opened up, the cluster can be modified by changing the number of plots in the cluster. In this way, the cluster can be completed in one day. However, it is recommended to keep the same type of plots and the shape of the cluster.

6.10.6. Sampling small areas

Cluster sampling may give unsatisfactory results for small inventories. It is therefore not suitable for an intensive exploration inventory of a relatively small area. A rough estimate indicates that for areas smaller than 10,000 ha, a systematic distribution of sampling units is more efficient than using clusters. The sampling methods to be used are indicated in Figure 12.

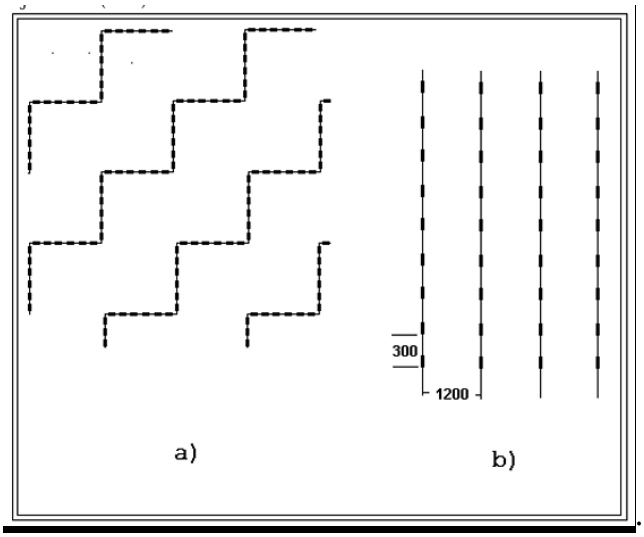

Figure 12: Systematic distribution of sampling units with a more intensive inventory for relatively small areas of < 15000 ha. This figure shows two different cluster distributions when systematically sampled. The first method (a) gives an L-shaped cluster distribution while the other one forms a network of parallel lines (b). Source: SBB: Handleiding exploratie inventarisatie. https://sbbsur.com/wp-content/uploads/2015/05/Handleiding-voor-de-exploratie-inventarisatie.pdf.

6.10.7. Cluster distribution

To obtain a good representation of each inventory unit, a balanced distribution of sampling units must take place. Hence, a systematic distribution of clusters is proposed. After the division of the clusters, the geographical location of each vertex of the cluster and start/end points of the lines is determined in the GIS by means of a GPS. After this, a table with coordinates of the clusters is created.

6.10.8. Location of sampling units

The sampling units are indicated on a map and are located with a GPS. The corner point or the start/end point of the lines can be used as a starting point. In case a cluster falls completely or partially outside the forest area, the following procedures will be followed:

- If the vertex of a cluster is outside the area, it is moved inward so that the distance to the boundary is the same as before the move.
- If the vertex falls within the forest area, the clusters should be shortened by measuring only the plots that fall within the forest area.

If there is an obstacle or an opening in the forest of more than 100m, a course change of 90 degrees will have to be made to reach the ideal end of the line, if necessary twice if the obstacle is too erratic in shape.

6.10.9. Permanent marking of clusters

To perform checks and to locate the clusters, the clusters must be clearly marked in the field. Marking should be done in such a way that they can be easily traced. The geographical coordinates of the corner and end/start points must be registered with e.g. a GPS. Dominant trees at the vertices of the clusters are marked with a distinctive paint at a height of two meters. If the coordinates are

not recorded, the distance and azimuth (angle of direction) of an easy-to-find point on map or aerial photo must be determined.

Data collection and measurements. The Table 2 specifies a list of input variables required to obtain the specified output parameters.

Table 2: Input – variables. (Information to be recorded during the inventory). Source: SBB: Handleiding exploratie inventarisatie. https://sbbsur.com/wp-content/uploads/2015/05/Handleiding-voor-de-exploratie-inventarisatie.pdf.

Niveau	Naam variabel
Boom	Soort naam, Specie code
	Dbh (diameter op borsthoogte)
	Hoogte wortellijst
	Commerciële hoogte
	Stam kwaliteit
Plot	Plot nummer
	Lijn nummer
	Nummer bemonsteringseenheid
	Plot oppervlak
	Datum
	Veldploeg
	Hoogte
	Topografie
	Helling
	Aspect
	Management type
	Bodemtype
	Bodem beperkingen
	Bostype
	Sub-Bostype
	Opperhoogte
	GPS metingen
Inventarisatie Eenheid	Nummer inventarisatie eenheid
	Management eenheid
	Minimum commerciële diameter
	Minimum opname diameter
	Minimum top diameter

6.10.10. Results

The results of the exploration inventory are indicated in output parameters. The output parameters of a forest exploration can be divided into three categories, namely: tree description, plot description and location description (Table 3)

Table 3: Parameters data collecting during inventory. Source: SBB: Handleiding exploratie inventarisatie. https://sbbsur.com/wp-content/uploads/2015/05/Handleiding-voor-de-exploratie-inventarisatie.pdf.

Parameter		
Categorie.	**Naam**	**Beschrijving**
Boom	Grondvlak	Dbh > 10 cm, m^2/ha.
	Bruto volume	Dbh > 30 cm, m^3/ha, u.b.
	Netto(bruikbaar)volume	Dbh > 60 cm, m^3/ha, u.b.
	Stamtal	Dbh > 10 cm,
Plot	Grondvlak van alle bomen	Alle bomen per dbh klasse, m^2/ha
	Bruto volume van alle bomen.	Alle bomen per dbh klasse, m^3/ha
	Aantal bomen per ha.	Alle bomen met een dbh > 10per dbh Classes
	Netto bruikbaar volume van de commerciële soorten.	Alle commerciële soorten, m^3/ha
	Netto bruikbare volume van commerciële en potentiële houtsoorten.	Alle commerciële + Potentiële soorten.m^3/ha
	Bostype	Zie bijlage II
	Sub-bostype	Inventarisatie strata.
	Topografie	Zie bijlage II
	Beheers type	Zie bijlage II
	Terrein hoogte	Meters boven zee niveau.
	Aspect	Zie bijlage II
	Helling	Plot center
	Bodem voorkomens(type)	Zie bijlage II
	Bodem restricties.	Zie bijlage II
Cluster	Coördinaten	GPS coördinaten
	Schets kaart	Zie bijlage II
Inventarisatie Eenheid.	Informatie van het areaal	Tabellen
	Algemene Parameters.	Tabellen.
	Kaarten	
	Woongebieden	
	Bereikbaarheid.	
	Bodem verkenning.	
	Biodiversiteit en Bosbijproducten.	

The information obtained during forest exploration can be processed in various tables, which provide a better overview of various data.

6.10.11. Inventory process

The inventory consists of three main phases. Phase 1 involves inventory planning, map production and stratification. It ends with preparing detailed field instructions. Phase 2 contains all field activities and phase 3 involves entering and processing all collected field data and presenting the exploration results.

Phase 1. Inventory planning

a. Determining the sampling method.

Depending on the site size, the sampling method must be determined (systematic or clusters at random, the number of clusters). If the method has already been established, the size of the clusters is determined on the basis of the accessibility of the terrain and the forest structure.

b. Stratification and map production:

The total area is divided into strata. The result is a map showing the production forest divided into stratum. Non-production forests, such as screen and special protection forests, should not be counted. When planning and executing an exploration inventory, it is always important that reliable map material, aerial photos and satellite images are purchased.

c. Field reconnaissance

The field reconnaissance is performed to:

• check whether the results of aerial photo interpretation and forest type determination are correct.

• check whether the design of the sampling units is satisfactory

• Check accessibility and terrain conditions.

• make an evaluation of the resources available to carry out the inventory (personnel, equipment.)

d. Aerial reconnaissance Aerial reconnaissance can be performed to assess the following:

• The accessibility of the site.

• The locations of the camps, landing sites and trails to be constructed

• Whether the performed aerial photo interpretation and forest classification of the area are correct

• Whether there have been changes in the country destination after the recording of the existing aerial photographs and/or satellite images.

A flight of four hours is sufficient to cover a total area of 100,000 ha. To make the best possible use of aerial reconnaissance, the following is suggested:

• Indicate the boundaries of the area on a map or aerial photo.

• Divide the area into strips of 10 to 20 km width (5 to 10 km on either side of the aircraft) and accurately determine the coordinates of the route to be flown.

When flying over, the visually observed relevant data is recorded on the map or photo and their respective coordinates are recorded with a GPS.

Sampling design and distribution.

Depending on the characteristics of the inventory area, a final sampling design is made. The sampling units are distributed in the form of strata over the inventory area. Finally, a sampling

map is produced showing the location of the clusters, forest strata, roads and hydrological characteristics.

Phase 2: Fieldwork

a. Training.

Training must be organized prior to fieldwork. The personnel to be deployed must be thoroughly trained in the identification of tree species and terrain characteristics, the handling and maintenance of measuring instruments and making field recordings.

b. Location of sampling units and recording.

Sampling units are indicated in the field using a sampling map and a GPS instrument. Measurements are made in the plots, after which a sketch map is produced for each cluster (line plot) on which are indicated; forest type transition, creeks, gullies, and swamps. Geographical coordinates for at least two points of the cluster are noted using a GPS device. Geographical coordinates of the control points are also determined for orientation.

c. Tree felling.

For the possible composition of taper series, volume tables and conversion factors, trees are felled and measured according to the regulations indicated by the SBB.

d. Control of fieldwork.

After the inventory has been made, sampling units must be specified in which control measurements will be taken to assess the accuracy of the recordings. These sampling units must be geographically defined by means of GPS equipment. This information must be assessed on the basis of the accuracy requirements set by the Foundation for Forest Management and Production Control (SBB).

Phase 3. Data processing

Data entry, error checking, data processing, presentation results. Information on the field forms is processed automatically, after which it is checked for errors. After the field check has been performed on the stratification, previously defined strata can optionally be included in another strata. Sampling units (clusters) are then introduced into the strata. Clusters that cross the border of a stratum are distributed accordingly. After this, a final forest type map is produced.

6.11. HARVEST PLAN[24]

A large number of activities are involved in the implementation of a forestry operation, which are not only different in nature but also take place over a considerable distance. In the case of Suriname, the tropical rainforest also offers a wide variety of conditions and stands. Unplanned exploitation of this heterogeneous tropical rainforest can cause serious problems in coordinating the various activities. Furthermore, the great diversity and the spread over large areas make it difficult to monitor forest activities, both by the Foundation for Forest Management and Production Control (SBB) and by the management itself. Planned forest exploitation, on the other hand, reduces sheet damage and thus increases the possibility of managing the forest sustainably.

Within the framework of the Forest Management Act (1992), regulations are in force in Suriname in the field of forest management and timber harvesting, which must lead to timber exploitation meeting criteria of sustainable forest management. Among other things, the forest operator must draw up a harvest plan before it can proceed to exploitation. The harvest plan indicates in detail how the exploitation will take place and how much wood will be harvested where and when.

The purpose of the inventory of the harvest area is to collect detailed information for drawing up the harvest plan. This mainly concerns the location and data of the trees to be felled, as well as data concerning the terrain, such as the location of slopes, creeks, swamps and other visible terrain feature.

The forest operator (concessionaire or other holder of a logging permit) will have to draw up the harvest plan under his own management and at his own expense before the extraction and removal of wood can begin. After this, an inspection by the SBB will take place.

What is a harvest plan?

A harvest plan is preceded by a forest inventory. The purpose of this inventory is to collect information for planning an efficient timber harvesting operation and to gain a better insight into the potential yield of the harvest sections. Tree locations, tree data and terrain characteristics are collected during the inventory. This forms the basis for making the selection of the trees to be

[24] Handleiding het maken van een kapplan, SBB, mei 2019.https://sbbsur.com/wp-content/uploads/2019/06/kapplan_manual_v2.pdf

felled and the towing route planning. SBB has developed a manual for making a harvest plan that is made available for the concession/permit holders.

Steps in creating a harvest plan

1.Preparation	2. Inventory	3. Making a harvest plan
- The demarcation of harvest sections within a permit. - identify what commercial trees are (species and minimum diameter) for the company.	- Collecting information (incl. location) from harvestable trees. - mapping slopes, creeks, swamps and existing roads	- Selecting trees to be felled. - Towway ramp

The harvest plan is submitted to the SBB by means of a digital excel CSV file (this excel file is made available by the SBB) via the Sustainable Forestry Information System Suriname (SFISS).

The yearly harvest plan is an integrated part of the exploitation plan.

6.12. EXPLOITATION OF *Cedrela odorata* IN SURINAME

According to its concession conditions, the concessionaire is obliged to have the felling and hauling out take place in accordance with a felling plan drawn up in accordance with the regulations of the SBB. The felling plan makes a major contribution to the sustainable exploitation of forests, as efficient forest exploitation is inherently linked to less harvest damage.

The harvest plan is drawn up for a period of one year (the so-called annual harvest plan) based on a 100% inventory of the commercial tree species, including the *Cedrela odorata***,** as an integral part of the exploitation plan. The annual harvest plan includes the following:

• Location of the inventoried and exploitable harvest sections
• Location of the already exploited harvest sections

• The commercial tree species selected for harvest
• Projection of existing and planned loading and unloading areas, access and drainage roads, primary and secondary recovery roads and residential camps
• Terrain features

The aim is for the concessionaire to make an inventory of part of the concession area with a planned annual production (annual harvesting area) and to draw up an annual harvesting plan based on the data obtained. For some concessionaires and operators, however, this is still a learning process and this group is offered the option of stating only part of the annual harvesting area with a minimum planned production of 3 months in a harvesting plan.

6.12.1. Procedure approval of annual harvest plan[25]

1. Submit annual harvest plan including:
• An overview map of the inventoried and already exploited harvest sections
• Overview maps of the harvest compartments (2-fold)
• Plot maps and lists (2-fold)
• completed digital SBB template

After checking and approval of the annual harvest plan, written permission is given to start the logging activities.

6.12.2. Logging regulations

1. The maximum volume of the standing wood stock that may be felled is 25 m3/ha.
2. The mutual distances between the trees to be felled may not be less than 10 m.
3. When dragging out the felled trees, the following points must be taken into account:
– The maximum width of the tow roads is 4 m.
– The total area of deforested area for the construction of (primary and secondary) towing roads in the logging section may not exceed 8%.

[25] https://sbbsur.com/bosbeheer/

– The maximum gradient on the tow roads must not exceed 30%.

– The drag roads that are sensitive to erosion must be provided with drainage trenches.

– The winch of the towing machine must be used as much as possible to pre-sort the felled trees during towing.

4. The following buffer zones must be observed:

a) Rivers: At 30 m from both sides of rivers, vegetation must be preserved (felling is not allowed).

b) Creeks: At 20 m from both sides of creeks, the vegetation must be preserved (felling is not allowed).

c) "Gullies": Commercial timbers can be felled but heavy equipment is not allowed within 10m of either side.

d) Lakes, swamps and other "wetlands": Felling is prohibited at a distance of 20 m from the highest water level or the edge of a typical swamp vegetation.

e) Slopes: The maximum slope on which trees may be felled is 30%.With regard to the above-mentioned buffer zones, the following points must also be taken into account:

– Access with heavy equipment is prohibited in the above-mentioned buffer zones, except at the designated crossing points.

– Creek crossings must be constructed in such a way that the free flow of water is not impeded.

– Trees must be felled "away" from the buffer zones, as stated in 4a, 4b, 4c and 4d.

– Residual wood waste may not be pushed into the above-mentioned buffer zones.

– If trees are nevertheless felled in a watercourse or its buffer zone due to force majeure, both the crown and the remaining wood waste must be removed, making maximum use of the winch of the dragging machine, unless there is unacceptable damage to the bank or buffer zone would take place.

5. The felled timber will be registered in accordance with the provisions of the Forest Management Act and the guidelines of the SBB, whereby the following conditions must be observed:

– All tree trunks or trunk parts, for which a fee is due, must be kept in a felling register and provided with an SBB label. After the felling register has been checked and approved by the SBB, the wood may be removed.

– The stump of each felled tree must be clearly marked with the same tree number that was given to that tree during the 100% inventory.

– The trunk or trunk part obtained from the felled tree must be provided with a harvest section, plot and tree number on one of the head ends, whereby the tree number is the same as that given during the 100% inventory.
– The removed wood must be covered by a transport ticket.
6. When felling trees, the saw cut may not be made higher than 30 cm above ground level, while for trees with root ridges it must be made directly above the base of the root ridges, or lower than this point if usable wood with a length of more than 50 cm.
Wood measuring manual

After the annual felling area in question has been completely finished, it will be declared cleared and closed. After this, no more timber exploitation activities may be carried out in the relevant annual harvest area, without the express written permission of the General Director of the SBB.

6.12.3. Transport ticket[26]

In implementation of Article 45 paragraph 2 of the Forestry Management Act and the order of the Ministry of Natural Resources dated February 17, 2000 no. 207/0061[27], the transport ticket applies to the transport of forest products from forestry.

The transport ticket is a document that serves as a declaration for the operator for the transport of extracted forest products (4-fold) and is drawn up by the timber transporter or operator and aims to:

- recording the origin of products
- protecting the property of the state
- protecting and safeguarding the property of the forest operators
- recording the discharged products

[26] https://sbbsur.com/bosbeheer/vervoerbiljet/
[27] 'decree on the transport of forest products', SB 2000 No. 7

The types of transport tickets are:

- Origin of the transported forest products (The site number is stated here.)
- date of transported forest products
- Place of destination of the transported forest products (e.g. sawmill, timber market, harbor, etc.)
- Name and address of the purchaser (This may include a wood processing company, exporter or sole proprietorship.)
- License plate number of the means of transport issued by the traffic police (For transport by boat or pontoon, the number registered with the Maritime Authority of Suriname is passed on.)
- The SBB registration number (This is issued by the SBB during the registration of the means of transport pursuant to Article 46 of the Forest Management Act.)
- name of the carrier

For round and pole timber, the following must also be included:

- transport ticket for the transport of round and pole timber (square and roughly trimmed poles)
- transport ticket for the transport of sawn wood (wood that has been sawn into planks with a chainsaw on the concession site, for example)
- transport ticket for the transport of other forest products (charcoal, wire posts, webbing, palm fronds, etc.)

The following items must be included in the transport ticket when transporting sawn timber:

- wood type code
- dimensions of the wood to be transported: width (cm) X thickness (cm)
- total length in dm

For other forest products, the transport ticket must include:

- the range under which the products fall
- the species name
- the unit to be handled
- the number being transported

The ticket is not required for:

- transport within the own concession area:
- transport to a storage location outside the concession area, provided that approval has been granted by the SBB
- the transport of small quantities of forest products (< 0.5m3)

Who is the ticket intended for?

- the SBB
- the carrier
- the first ranger station
- the concessionaire/permit holder/owner

6.13. PERMIT PROCEDURE FOR CITES TIMBER SPECIES

6.13.1. Sustainable Forestry Information System Suriname (SFISS)[28]

Before any logging activities can take place the concessionaire has to submit a harvesting plan based on a forest inventory. After approval of the harvesting plan by the Forest Authority the logging activities can start. After felling all the felled trees must be administered in a felling register. After controlling and approval of the cutting register the logs can be harvest, transported and traded.

The control of the harvesting plan and to ensure that only the trees that are selected for harvest are harvested. The log tracking/monitoring system that have been developed and used is the Sustainable Forest Information System Suriname (SFISS)

The LogPro system was implemented in Suriname in 2006 to improve transparency and efficiency in the forestry sector. However, in 2018, the government of Suriname launched the SFISS system

[28] https://sbbsur.com/algemene-informatie/

(Suriname Forest Information and Sustainable Supply) as a replacement for LogPro for the management of forestry concessions and timber permits in Suriname. The new system aims to provide greater transparency and accountability in the allocation of forest concessions and timber permits, as well as to promote sustainable forest management practices. In 2019 the SFISS is operational.

Under the SFISS system, forest concessionaires and permit holders are required to submit annual reports on their activities, which are subject to independent verification. The system also includes a public portal that allows citizens to access information on forest concessions and permits.

The transition from LogPro to SFISS reflects the government's commitment to improving the management and sustainability of Suriname's forests.

The Sustainable Forestry Information System Suriname (SFISS) is a tool that provides information on sustainable forest management in Suriname. The system was developed by the SBB in collaboration with international partners to support the implementation of sustainable forest management practices.

SFISS is designed to collect, store, and manage information related to forest management, including data on forest inventory, harvesting, monitoring, and certification. The system provides real-time information on the status of Suriname's forests, including forest cover, forest type, and biodiversity. This information is used to support decision-making by forest managers, policymakers, and other stakeholders.

One of the key features of SFISS is its ability to track the origin of timber products, ensuring that only sustainably harvested wood is exported. This helps to prevent illegal logging and protect the country's valuable forest resources. The system also provides information on the economic benefits of sustainable forest management, such as income generation and job creation.

Overall, SFISS is an important tool for promoting sustainable forest management in Suriname and ensuring the long-term conservation of the country's forests.

In the first phase, SFISS is mainly intended for: 1) Active companies, timber concessionaires, community forest holders and natural persons in the forestry sector. 2) Personnel of the Foundation for Forest Management and Forest Supervision (SBB). This will be further expanded in phases.

Components of the SFISS:

1. Submit harvest plan: A harvest plan must be made on the basis of a forest inventory. It is ideal if an inventory is made of all commercial trees, see: https://sbbsur.com/bosbeheer/gidsen-houtkap/. Lighter inventory possible: the permit holder determines which tree species and diameters to inventory. This makes it possible to make a lighter (simpler and cheaper) inventory for areas where there is less wood and/or the terrain conditions are more difficult. The inventory can be done with a GPS. For the harvest plan manual and the field forms, see: https://sbbsur.com/bosbeheer/gidsen-houtkap.The harvest plan can be submitted digitally in SFISS by a representative of the permit holder, stating the harvest section location, tree location and tree data. Tree locations must be indicated as GPS points or with coordinates. This can be done by entering all trees in a CSV file and uploading them to SFISS or by entering the data per tree in the system.
2. Buy Labels: A new format of labels is being used in SFISS. Two types of labels are sold: Mother labels (ML-xxxxxxx) and Child labels (KL-xxxxxxx). The ML labels are exclusively intended for the harvest register and may only be purchased by holders of a harvest right. The KL labels are used in Check-Post-Process (CNB) formatting. There are two ways to buy labels and this is only possible if you are registered in SFISS:

   a. Online through SFISS. Log in via SFISS and order labels → Receipt of invoice → Payment of invoice via bank → passing on payment information to the financial department of SBB → Labels can be collected two working days after payment at the cash register of the SBB.

   b. at the cash register of the SBB: Order labels at the cash register → the invoice is generated and payment is made → If there are less than 500 labels, they will be printed immediately. If the desired number is greater than 500 labels, you can pick them up at the cash register of the SBB after two days.
3. Logging register submission: Logging register is submitted in the field control system: The cutting register is submitted digitally by the Concessionaire in SFISS or in hard copy to the Data Entry Department of the SBB, which offers it as a service. This allows the system to check for discrepancies with the harvest plan before the check takes place, allowing the rangers to make a

more targeted check in the field. After the harvest register has been approved, an invoice can be generated and paid immediately. The cap register number is the number generated by the system. ML labels: ML (mother labels) are used for harvest register trees and may only be purchased by permit holders. Log Order: If a tree is split into multiple logs, the logs are fed from the base to the top of the tree. The top diameters of the base must be identical to the base diameters of the top. Stimulate companies with a good track record: Intensity of field control depends on the quality of the previous harvest registers submitted.

4. Submit CNB: CNB (Check-After-Processing) may be submitted digitally via SFISS or hardcopy to the Data Input Department of the SBB. Parent block: Only the label of the parent block needs to be entered, because the dimensions already exist in the system. Child block entry order: The child blocks are entered from the foot to the top. All diameters must match each other exactly. The total length cannot exceed the length of the parent block. Rejected parts: If an intermediate piece within a block will not be used, these dimensions must be present on the CNB as a child block. However, the block does not need a label and is given the status “rejected”. Shortening logs: No CNB is needed if a log is shortened. The dimensions cannot be longer than the master block, but shorter. However, if the blocks are offered for export, it is important that the correct dimensions are added to the system, which can be done through CNB. Placing labels: KL (child labels) are placed on CNB blocks.
5. Log tracking: More efficient checks will take place in the entire process via a new module 'Log tracking'. By means of a scanner or by entering the label number, the dimensions of the log and tree species can be retrieved directly from the SFISS during checks at the round wood depots, at the sawmills and at the road checkpoints. In this way an overview can be made immediately of the status of the logs. Actors in the timber sector registered in SFISS can also use this module to check the details of logs they have or will purchase.
6. Export: Export list: There will be only one kind of list for export. This list will then not be entered into the system, but logs will be selected for which the fee has already been paid. The list is handled so quickly that all blocks that appear on one list are handled as one batch and exported in the same ship. Proper planning by the exporter when compiling the list is necessary. The log tracking module allows the exporter to check the completeness and correctness of the information of the selected logs. It is important to do this, otherwise stuffing problems can arise. Inspections: Inspecting the logs for which everything is in order becomes a quick easy step. Indeed, the quality

of the wood will be evaluated during the checks on round wood storage sites. The inspection fee invoice will then be generated based on the export volume and types. Legality: Only legal blocks whose forestry fees have been paid can be processed by the system.

6.13.2. Timber export[29]

A valid export permit is required for the export of round timber, rough processed and sawn timber. The exporter must submit an application for inspection and control of timber to the Production Control Department of the SBB, at least one week before the day of shipment.

The exporter must submit:
1) Proof of payment of a fee for the wood to be exported or
2) Proof of purchase of the wood, if it was not produced by the exporter itself (e.g. sawn wood).
The costs for inspection within Paramaribo amounts to SRD 0.23 per m3 and outside Paramaribo SRD 0.33 per m3. The inspection fee is paid when the official report of the loading is collected.

Wood inspection
The purpose of the inspection of export wood is to monitor the quality of Surinamese wood, to assess the quality to determine the minimum FOB value and to determine the correct wood type, range, quality and volume.

The wood inspector
The SBB appoints a wood inspector to carry out the inspection in accordance with the established rules. He draws up an inspection list of the wood offered that he has observed, checks whether it corresponds with the exporter's list and assesses the quality of the wood

Cost
The costs for inspection within Paramaribo are SRD 0.23 per m3 and outside Paramaribo SRD 0.33 per m3. The inspection fee is paid when the official report of the loading is collected.

[29] Timber Export Act, GB 1950 no. 1.

Wood inspection

The purpose of the inspection of export wood is to monitor the quality of Surinamese wood, to assess the quality to determine the minimum FOB value and to determine the correct wood type, range, quality and volume. The wood inspector The SBB appoints a wood inspector to carry out the inspection in accordance with the established rules. He draws up an inspection list of the wood offered that he has observed, checks whether it corresponds with the exporter's list and assesses the quality of the wood.

Inspection list and result

After the inspection, the SBB provides the exporter with a copy of the inspection list and the result for the further processing of the export permit. The inspection result this is a report (in duplicate) containing:

• The volume of the wood

• The quality of the wood.

Export license approval

With a copy of the test result, the exporter can then draw up the IT form, H-03 and the “single document” and submit it to the SBB for approval. After approval, the exporter pays his levies to the I.U.D. (Foreign exchange import and export service of the Ministry of Economic Affairs, Entrepreneurship and Technological Innovation). Subsequently, the exporter must pay the costs for statistics and consent to customs in order to obtain approval for embarkation. One copy of the fiat is intended for customs (delivery at the gate) and another copy is intended for the shipper. The exporter must turn to the Central Bank of Suriname or a commercial bank for the payment of foreign exchange using the IT form.

CITES species

If the export concerns a CITES species, the exporter must submit an application for a CITES permit, accompanied by all approved above-mentioned documents from SBB and IUD, to the Head of the National Forest Service, which is the CITES Management Authority of Suriname. The permit department verifies the request and the accompanying documents (legal acquisition

findings) and if everything is approved, a CITES permit is prepared for the CITES Management Authority, which is the competent authority to sign CITES permits. It is not allowed to export without a CITES permit. The application and processing of the request is processed in the e-permitting system of the National Forest Service. The exporter can then ship with all approved documents including the CITES permit (annex 3)

Checklist

The exporter/shipper must inform the SBB of the date of loading. The wood inspector is then present during loading, who then makes a checklist of the wood products that are loaded. For container cargo, the wood inspector draws up a checklist that includes the contents of the cargo, the container number and the seal number. Transport of wood in closed or open containers to the port must be accompanied by a customs officer. When loading a CITES species, a game warden, a customs officer and the customs officer who prepares the export documents for the exporter are also present for inspection. The gamekeepers verifies whether the amount of volume and the correct species are being exported and fill in the application form of the Suriname Forest Service and CITES permit (see annex 4). The customs officer also verifies whether what has been requested in the export license is correct and is responsible for sealing the container under his supervision.

Official report of inspection and shipment

The shipper issues a “proof of cargo” to the SBB, after which the wood inspector draws up the official report of the inspection and shipment (in 4 copies). Of these, 2 copies are intended for the exporter (of which 1 copy for customs) and 2 copies for the SBB. The wildlife application form of the Suriname Forest Service and CITES permits, which has been completed by the gamekeeper for the debit, is sent to the permit department.

Export of round wood

The transport of round wood to the port must also be covered by an authorization from Customs intended for the driver for the customs officer and the SBB employee at the port.

When a species is included in CITES Appendix I, II and III, the whole animal or plant, whether alive or dead, and all parts and derivatives thereof are also included. Regarding plant species listed in Appendix II or III, all parts and derivatives of the species are also included unless the species is annotated ("#") to indicate that only specific parts and derivatives are included. The Genus Cedrela is included in the CITES Appendix II with annotation #6 (It applies only for logs, sawn wood, veneer sheets and plywood). In the context of CITES, annotation refers to additional information or restrictions placed on a species listed under the treaty. Annotations can include:

- Information on the specific population or geographic region of a species that is listed, which may help to differentiate between threatened and non-threatened populations or identify areas where trade in a species is particularly problematic.
- Restrictions on trade, such as limits on the amount of a species that can be exported or requirements for permits or certificates to verify that trade is legal and sustainable.
- Exceptions or exemptions to the trade restrictions, such as allowing for trade in certain products made from a CITES-listed species if they were harvested or produced sustainably.

Annotations can be added or modified at CITES conference of Party meetings, which are held periodically to review the status of listed species and update the treaty's regulations as needed. Annotations are intended to provide additional guidance for implementing the treaty's trade regulations and to ensure that trade in CITES-listed species is sustainable and does not threaten the survival of these species in the wild.

Gift Shipments

For gift shipments of wood and wood products (souvenirs) with a value of less than US$ 500, the passenger/consignor must present the gift to the Inspection and Export Department at the SBB headquarters in Paramaribo. After checking, an approval form will be provided. Since this GENUS with annotation #6 is included in the CITES Appendix II list (CoP18 #6) it does not require a CITES permit to export it.

6.14. FOREST AND TIMBER MONITORING[30]

To safeguard our forests and to maintain the balance between the different ecosystems, it is important to set up a National Forest Monitoring System. To make this system effective and efficient, modern technologies are used and there is close cooperation with local communities, government offices and the private sector.

The National Forest Monitoring System (NFMS) consists of six components:

1. **Satellite Land Monitoring System (SLMS):** With recent satellite images, deforestation maps are produced annually to provide an overview of where most deforestations take place. Post-deforestation Land Use and Land Coverage Maps are produced every two years to reflect the different causes of deforestation. Data on land cover and land use offers the government the opportunity to implement better spatial planning, forest management plans and other policy making.
2. **Near Real Time monitoring (NRTM);** this is an alarm or alert system, with the aim of detecting unplanned deforestation activities and sending alerts to institutions responsible for enforcing the policy. NRTM allows for timely detection and response to changes in forest cover and condition, which is important for the early detection of forest disturbances such as fires, deforestation, or illegal logging. This can help to prevent or mitigate damage to forest ecosystems and reduce the loss of biodiversity. The NRTM also can provide valuable information for forest management decision-making, such as identifying areas that may require increased protection or management interventions. This can help to optimize forest management strategies and ensure sustainable use of forest resources. An example is the recent case of illegal timber harvest in the Copie Nature Reserve. Recently a successful mission was carried out by a combined enforcement team consisting of Police Enforcement, the game wardens of the Suriname Forest Service and SBB in the Copie Nature Reserve where illegal timber activities has been discovered. Through investigation and the NRTM, the technical team of SBB has discovered and intrusion in this Nature Reserve. A special mission was set up and the team encounter the illegal activities on the field. The culprits were arrested and all the equipment used in these illegal activities and the harvest round logs has been confiscated by the Public Prosecutor Office. No *Cedrela odorata* logs were

[30] S.B.B. https://sbbsur.com/bosbeheer/

found between the confiscated logs. The case is still ongoing and it will be handled further by the Public Prosecutor before the Court of Justice.

3. **Sustainable Forestry Information System (SFISS):** In order to provide even more efficient services and transparency for the timber sector, the Foundation for Forest Management and Forest Supervision (SBB) has switched to the Sustainable Forestry Information System Suriname (SFISS). The work for both the SBB and the private sector can take place more smoothly and in a more structured way. Within this system the sustainability rules are included from the felling of the tree to the processing and export of round timber[31].
4. **Involving communities in forest monitoring (CBM):** To promote transparency and cooperation with the communities, they are closely involved in the measurement system within the timber sector. To do this, information sessions are organized by means of Krutu's and training community representatives to map out planned logging activities.
5. **National Forest Inventory (NFI):** Making an inventory of our forests is important to know, among other things, where the various ecosystems are located and the coherence of biodiversity. In order to measure the changes in the carbon stock in the biomass and to monitor the emission emissions as a result of deforestation, forest inventories are being carried out at various locations in the country. An inventory was recently carried out in the mangrove forests and data is currently available on the occurrence of mangrove in the coastal plain of Suriname. This card can also be viewed on the Gonini website. (Map of places where Mangrove occurs)
6. **Reporting:** Suriname has national and international reporting obligations. For this reason it is therefore important that information is up to date and available. Reports are also important to support development plans.[32]

Since December 2016, SBB has launched a geoportal called Gonini (Figure 13). This is an online database with geographic forest related information about Suriname.[33]

[31] Sustainable Forestry Information System Suriname. https://sbbsur.com/sfiss/

[32] https://www.surinameredd.org/en/reddplus-suriname/national-forest-monitoring-system/

[33] https://gonini.org/

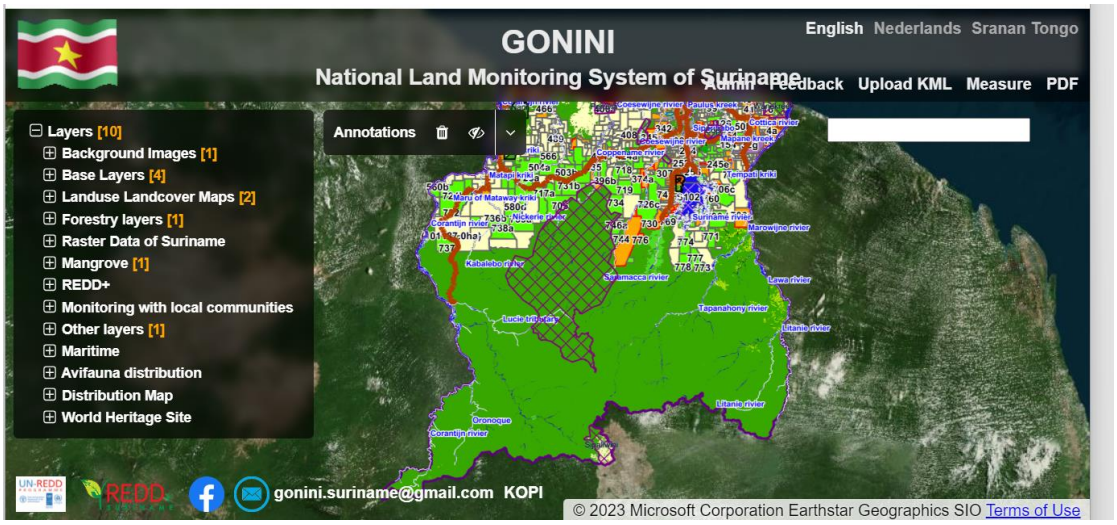

Figure 13: photo of the home page of Gonini portal

In 2022 SBB has set up a surveillance system on the monitoring of timber transport in Suriname. The objective of this is to monitor the timber transport and to make this part of the procedure of SBB. All five strategic checkpoints has been equipped with online CCTV cameras and a centralized 24 hours surveillance room operates within the headquarters of SBB (Figure 14).

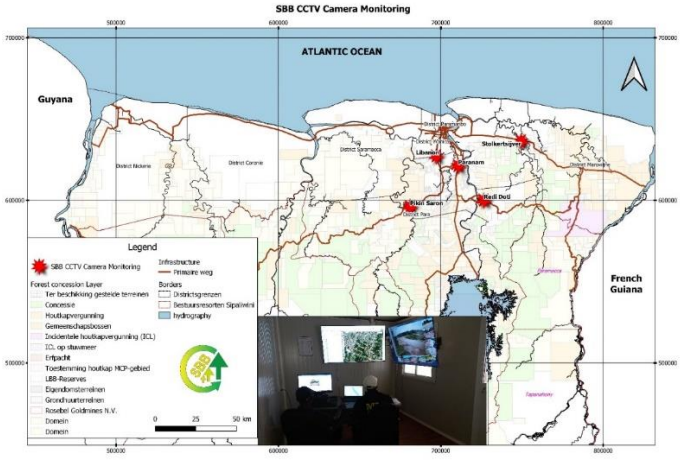

Figure 14: Overview map of the SBB CCTV monitoring

6.15. Management plan

6.15.1. Harvest of Cedrela odorata

Cedrela odorata is harvest for local and international markets in Suriname. A management plan is necessary to ensure the sustainable use and conservation of this valuable tree species. There are legal and technical requirements to be able to do timber harvesting as outline in the previous chapter.

Commercial timber including the *Cedrela odorata* is mainly harvest from the Forestry Belt (see Figure 13). The Suriname Forestry Belt covers approximately 14 million hectares, or roughly 80% of the country's total land area. The forests are made up of a mix of tropical rainforest, seasonal forest, and mangrove forests, and are home to a diverse array of flora and fauna, including many rare and endangered species.

The Suriname Forestry Belt is also an important source of economic activity for the country, with forestry and related industries accounting for a significant portion of Suriname's GDP. The forests are home to valuable timber species such as Greenheart, Purpleheart, and *Cedrela odorata*, which are harvested and exported to country around the world. The harvest of *Cedrela odorata* is spread all over the forestry belt.(see fig. 8).

6.15.2. Impact of harvest on the Cedrela odorata population

In Suriname there is no *Cedrela* plantation. All harvest of *Cedrela odorata* comes from the wild and are harvest sustainably according to the Forest Management Act in order protect the forest from overharvesting. Harvest condition has been set such as a quota for harvest of all tree species of not more the 25 m^3/ha.

This means that in a felling section of 100 ha, a maximum of 2500 m^3 may be felled. The harvest cycle of 25 years is used based on the sustainable wood potential of the areas. The area of concession must be divided into 25 annual logging section in such a way that an annual logging

area is exploited within 1 (one) year with the equipment present or to be purchased. After 'cutting out' has been submitted to SBB, no more harvest activities is allowed on the annual harvest section until the next cycle after 25 years (Forest Management Act 1992).

This will allow the seedlings and immature trees to grow and regenerate and re-grow into higher diameter classes. It is not allowed to fell two trees closer than 10 meters to each other: to avoid large gaps in the forest canopy. Within the harvest plan, 10% of the trees of 1 (one) species larger than the minimum dbh must remain (with a corresponding representation => both trees with good and less good quality).

Felling is not allowed within 20 m of either side of creeks, within 30 m of rivers and within 20 m of a permanent swamp or on slopes steeper than 30%. Study done in Mexico shows the growth average is from 3.24 to 7.27 m year and the diameter increase from 3.58 to 13.13 cm year.

From this data it is concluded that *Cedrela odorata* is adequate for reforestation (A. Alderete-Chavez et.al, 2010). Study in Suriname shows the following: out of 20 dated series with 2751 measurements in total were utilized for constructing the tree-ring chronology. The tree-ring series of individual trees started between 1836 and 1931, extending over a period of 84 to 180 years, with an average time length of 137.55 years.[34]

The mean annual radial increment between the trees varied from 0.12 cm to 0.27 cm with an overall average of 0.2 cm. The series had a mean series inter-correlation of 0.353 and a mean first-order autocorrelation of 0.066 (SD = 0.135), which shows that the annual ring growth is subject to pronounced fluctuations. The degree of synchronicity between all pairwise combinations of trees ranged between 0.49 and 0.86 with an overall mean of 0.65, indicating a moderate agreement of the direction of slopes between adjacent years among the tested tree-ring series. This study

[34] Alderete-Chavez, A., Zapata-Cocon, D., Ojeda- Trejo, E., Guevara, E, De la Cruz- Landero, N., Guerra- Santos, J., Brito R. & Amador del Angel, L. Evaluation of growth Cedrela odorata L. in a secondary vegetation area. *Research Journal of Forestry*

suggests that the annual nature of growth rings for the *Cedrela odorata* trees growing in the Neotropics is influenced by the climate (Köhl, M. et. Al, 2022).[35]

Population data of this species in Suriname is limited to a study done by CELOS (Playfair,M. (2010), A CITES action plan for *Cedrela odorata* in Suriname, An assessment of the status of *Cedrela odorata* in Suriname). Data on the recruitment and regeneration to substitute for potentially harvested trees is not available on a national scale.

Data from SBB shows that between 2016-2020, the production of *Cedrela odorata* is 3,277 m^3 and the total volume of exported from Suriname is 1,089 m^3, earning an export income of US $98,381.00.The average *Cedrela odorata* export volume was 158.77 m^3 per year. The average timber production is estimated at 8.80 m^3 ha^{-1} at logging rotations of 25 years. However this concern all the marketable timber species in on one harvest section and not only for *Cedrela odorata*. The logging damage factor (LFD) for the harvest of *Cedrela odorata* is unknown due to the insufficient of data the population of this species, however base on a number of rules apply to all forestry operations regardless of the harvesting license and studies it can cautiously be concluded that the impact of harvest of logging with 'intensive management' or with proper planning can cause on average 40% less damage than logging without proper planning (Zalman et al., 2019, pag.21).[36] Although there were studies done by experts in Suriname regarding tree harvest management and impact in general (Marinus J., et al, 2011) and in other tree species *(*Landburg G. et al, 2020), no study on this manner was conducted for the *Cedrela odorata.* More study needs to be done on the growth and life cycle of the species. Monitoring data of *Cedrela odorata* is limited to harvest and export data of mature trees acquired from the harvest plan that was submitted to SBB and managed in the SFISS. The harvest plan is however not a public domain and not accessible through SFISS as this system is only accessible for registered user of the SFISS. Information to use data from the harvest inventory require a consent from the concessionaire. Analyzing these available data it can be concluded that the harvest and export of this species is

[35] Köhl, M, Lotfiomran, N. & Gauli, A. (2022), Influence of Local Climate and ENSO on the Growth of *Cedrela odorata* in Suriname.

[36] Zalman, J., Ellis, P., Crabbe, S. & Roopsind, A. (2019, May 01)., Opportunities for carbon emissions reduction from selective logging in Suriname, *Elsevier.* Forest Ecology and Management, *volume 439,* pages 9-17.

relatively low for this reason the rating is given while noting that for deciding on an actual export additional data on the impact of harvest on harvest population would be required.

6.15.3. Impact of Cedrela odorata harvesting on the ecosystem

Trees provide a range of ecosystem services, such as carbon sequestration, soil conservation, and water regulation. Harvesting can lead to a loss of these services, which can have negative impacts on the surrounding ecosystem and human communities. The impact of *Cedrela odorata* harvesting on the ecosystem in Suriname depends on the management practices and regulations in place to ensure sustainable harvesting practices and minimize negative impacts. Most of the forestry activities concentrated in the "Forest Belt" and is done according to the Reduced Impact Logging on selected species harvest, which have less impact on the ecosystem (Zalman et al., 2019, pag.21).

Forestry in protected areas are strictly forbidden and violation of this is punishable according to the Nature Conservation Act 1954, the Forest Management Act 1992, the environmental Framework Act 2020 and the Economic Crime Law 1986. All the protected areas in Suriname make up 2,293,200 hectares or 14% of the country's land surface and consist of untouched standing forest. However, illegal goldmining and logging can pose a threat for the protected areas in Suriname if not monitored well. The NFMS is a helpful tool to also manage the protected areas in Suriname.

6.16. International trade of *Cedrela odorata*

In terms of international trade, Suriname is a significant exporter of *Cedrela odorata* wood. Suriname's forestry sector is a major contributor to its economy, and wood products, including Spanish cedar, account for a significant portion of its exports. (Tables 4, 5 and 6, Figure 15)

In 2016 a total 25.24 m^3 sawn wood of *Cedrela odorata* were exported to the Netherlands Antilles, 50.33 m^3 of logs to China, 3.57 m^3 of logs to Taiwan and 31.56 m^3 of logs to Germany and 61.69 m^3 of sawn wood to Aruba, all for commercial trade purposes.

In 2017 a total of 86.36 m³ of *Cedrela odorata* round logs were exported to China, 28.98 m³ sawn wood to Aruba, 12.21 m³ logs to Germany, 3.57 m³ sawn wood to Dominican Republic and 24.96 m³ logs and 24.51 m³ sawn wood to Vietnam all for commercial trade purposes.

In 2018 a total of 132.75 m³ *Cedrela odorata* round logs were exported to China, 68.19 m³ logs and 29.12 m³ sawn wood to Vietnam and 9.8 m³ sawn wood to Curaçao for Trade purposes.

In 2019 a total of 46.22 m³ of *Cedrela odorata* round logs were exported to China, 111.99 m³ sawn wood to Aruba, 3.49 m³ sawn wood to Curaçao and 5.23 m³ sawn wood to Belgium all for commercial trade purposes.

In 2020 a total of 17.31 m³ of *Cedrela odorata* round logs and exported to Germany and 25.28 m³ sawn wood were to Aruba.[37] All exports of *Cedrela odorata* from Suriname are wild-sourced and primarily for commercial trade purposes.

Table 4: CITES trade data on *Cedrela odorata* export from Suriname

CITES trade data on export *Cedrela odorata from Suriname*			
Year	export round wood in m3	export sawn wood in m3	Total export round wood and sawn wood
2016	85.46	86.94	172.4
2017	123.53	57.21	180.74
2018	200.34	38.93	239
2019	46.22	112.87	159.09
2020	17.32	25.28	42.6
Total	472.87	321.23	794

[37] CITES trade database, https://trade.cites.org/

Table 5:.SBB data on *Cedrela odorata* exports from Suriname[38]

SBB trade data on Production and export *Cedrela odorata*						
Year	Production in m3	export round wood in m3	FOB value in US$	export sawn wood in m3	FOB value in US$	Total export round wood and sawn wood
2016	451	78	9,375	87	26,306	165
2017	728	181	21,778	33	9,810	214
2018	866	440	52,858	40	12,000	480
2019	801	55	8,290	112	39,200	167
2020	431	38	6,080	25	2,785	63
Total	3,277	792	98,381	297	90,101	1,089

When analyzing the CITES trade data and SBB trade data there seems to be discrepancy in the figures. The SBB trade data is collected from SBB's Forestry Statistics report for Production, export and import of timber and timber products 2016-2020, which is derived from the SFISS. The CITES trade database is collected through the Suriname's CITES annual reports 2016-2020 that has been submitted by the CITES Management Authority to the CITES Secretariat. The CITES annual reports are still prepared manually by the permit section of the Nature Conservation Division. With the launching 15 February 2023 of the e-permitting system for the permit section of the Nature Conservation Division the management of wildlife trade will be enhanced and automated. There seems to be some administrative errors in the CITES annual reports, such as the wrong insertion of the trade term codes and the use of 1000 separator which is comma (,) for English and point (.) for Dutch. This is most likely reason of the discrepancy in the figures. It is advisable to re-evaluate the CITES annual reports of 2016-2020 in order to find out where the discrepancy lies.

[38] https://sbbsur.com/bosbouw-economische-diensten/statistieken/

Table 6: Trade data on export *Cedrela odorata* from Surinam per country 2016-2020

Trade data on export *Cedrela odorata from Suriname per country 2016-2020*										
	2016		2017		2018		2019		2020	
	roundlog m³	sawnwood in m³	roundlog m³	sawnwood in m³	roundlog m³	sawnwood in m³	roundlog m³	sawnwood in m³	roundlog m³	sawnwood in m³
China	*50.33*		*86.36*		*132.75*		*46.22*			
Vietnam			*24.96*	*24.51*	*68.19*	*29.12*				
Taiwan	*3.57*									
Netherland Antilles		25.24								
Aruba		61.69		28.98				111.99		25.28
Curacao						9.8		3.49		
Dominican Republic			3.57							
Germany	31.56		12.21						17.31	
Belgium								5.23		

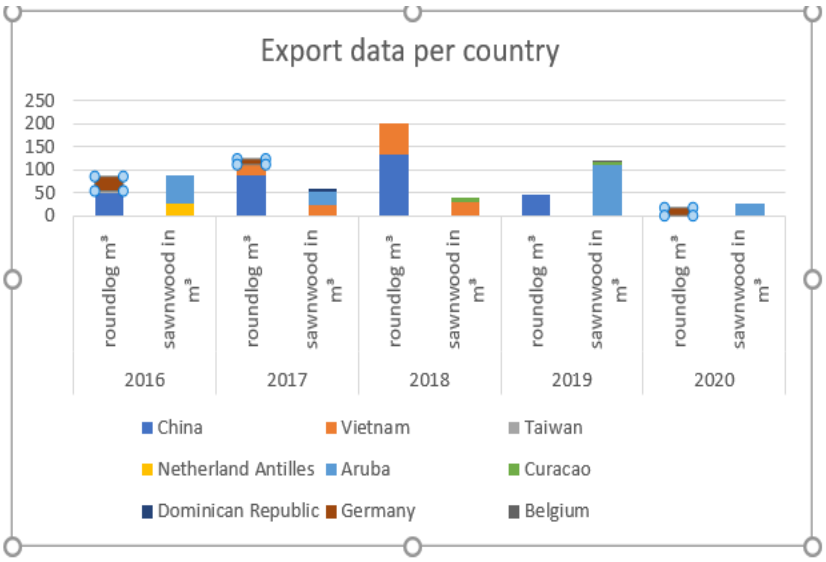

Figure 15: Export Data from Surinam per country

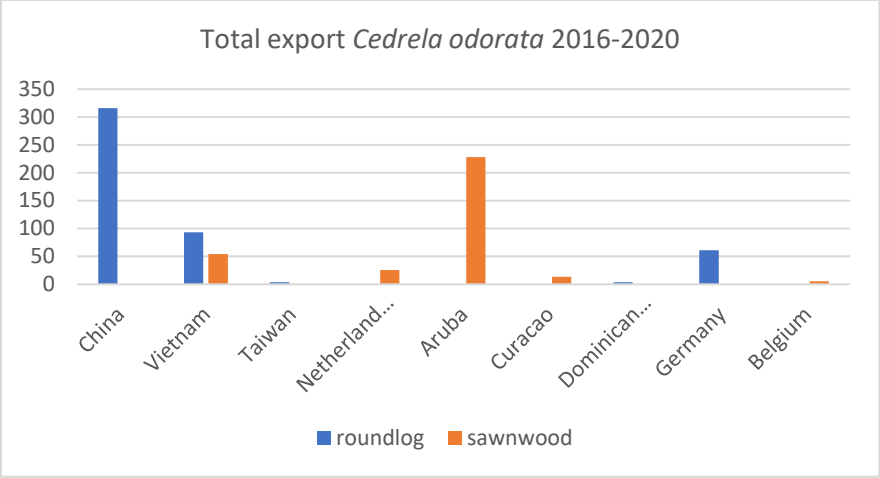

Figure 16: Total export *Cedrela odorata* 2016-2020

If we look at the exports per region and per country, it appears that between 2016-2020, *Cedrela odorata* was exported to 9 countries divided over three regions (Figures 15 and 16).

Asia: This region is the most important market for *Cedrela odorata* from Suriname between 2016 -2020. China, Vietnam and Taiwan were the largest buyers of this region. China imported the most *Cedrela odorata* from Suriname. The Asian market is the largest buyer of *Cedrela odorata* from Suriname.

The Caribbean: The Caribbean is the second most important market for *Cedrela odorata* from Suriname. Aruba and the Netherlands Antilles are the most important buyers in this region.

Europe: Germany is the largest buyer of *Cedrela odorata* from Suriname, followed by Belgium.

6.16.1. Export trend and forecast

In view of the realized *Cedrela odorata* exports, the years 2016 to 2020 can be concluded as follows:

The production of *Cedrela odorata* was fairly stable in the period 2016 to 2019, with a peak in 2018. In 2020 there is a huge decrease, probably due to the COVID pandemic. It is expected that after 2020 there will be another increase in the production and export of *Cedrela odorata*.

Between 2016-2020, the production of *Cedrela odorata* is 3,277 m³ and the total volume of exported from Suriname is 1,089 m³, earning an export income of US $98,381.00. The average *Cedrela odorata* export volume was 158.77 m³ per year[39].

6.*16.2. Suriname Electronic Single Window (sesw.sr)*

The Ministry of Economic Affairs, Entrepreneurship and Technological Innovation has signed a cooperation agreement with various ministries and agencies including the Ministry of Land Policy and Forest Management (GBB), which must give permission for the granting of permits / certificates / declarations for import, export and transit of goods via the Suriname Electronic Single Window (SESW). It is a digital platform that ensures a simplified, standardized and facilitated process from the submission to the settlement of documents for the purpose of obtaining the necessary certificates, declarations and permits for the import, export and transit of goods. There is also the possibility to settle the financial obligations online / digitally to the relevant authorities. After payment of the costs, the Ministry of Economic Affairs, Entrepreneurship and Technological Innovation can complete the process of such an application.

The Department of Import, Export and Foreign Exchange Control (I.U.D.) is a department of the Ministry of Economic Affairs, Entrepreneurship and Technological Innovation that is responsible for matters of a trade policy nature, in particular the granting of licenses for import, export and transit. With the implementation of trade liberalization on September 1, 1999, anyone can import or export freely, after he or she has registered with the Chamber of Commerce & Industry, pursuant to the Goods Traffic Act (SB 2003 no. 58) the Negative List Decree (S.B. 2003 no. 74).

The Ministry of Economic Affairs, Entrepreneurship and Technological Innovation, in particular the Department of Import, Export and Foreign Exchange Control (I.U.D.), in collaboration with

[39] https://sbbsur.com/bosbouw-economische-diensten/statistieken/

the Consultancy Bureau CrimsonLogic, are working hard on the design and implementation of the *Suriname Electronic Single Window (SESW)*.

The Suriname Electronic Single Window has gone live and has made good progress in terms of transaction volumes and integration with many government agencies. About 271 traders (exporters, importers), agents and their representatives have registered. They actively use the SESW platform to digitally process the documentation and compliance required for the export, import and transit of key commodities such as gold, timber, pesticides, etc. About 128 officials from various ministries and agencies have been trained to use the platform to review, examine and approve the applications online including staff from GBB (Permit Section and game wardens of the Nature Conservation Division). There is still some work underway regarding the integration with some other agencies, including Surinamese Customs. Significant progress has been made in the implementation and adoption of the system. All export licenses for gold and timber are processed online in the Suriname ESW. The Nature Conservation Division has noticed some gaps within this system regarding the wildlife exports that were brought to the attention of the consultant and needs to be addressed.

- In the meantime the ministry of GBB has developed an e-permitting system for wildlife trade. With funding from the Bioamazon project this e-permitting system and wildlife website is developed by the consultant IT-Wizards. IT-Wizards is also contracted through the Bioamazon project to establish the link between the LBB e-permitting system and the SESW. The consultant together with the experts from the ministry of GBB had held meetings with the experts from the Ministry of Economic Affairs, Entrepreneurship and Technological Innovation, IUD and CrimsonLogic in regard to this matter. Unfortunately, little progress has been made from the side of the Ministry of Economic Affairs, Entrepreneurship and Technological Innovation, IUD and CrimsonLogic to enable the link between the LBB e-permitting system and the SESW. From the side of the ministry of GBB and IT Wizard constant reminder was given to the latter, until IT Wizards was informed by the expert of IUD that the Ministry of Economic Affairs, Entrepreneurship and Technological Innovation is in a process of how to move forward with the SESW and that they are awaiting further instruction on this matter.

- In the interest of closing the consultancy with IT Wizard who has already worked on the establishment of the link and because of the closing of the Bioamazon project the Ministry of GBB is therefore forced to close this consultancy with reservation that IT Wizard will make the link for both systems as soon as the Ministry of Economic Affairs, Entrepreneurship and Technological Innovation, IUD and CrimsonLogic are ready to grant the ministry of GBB to the SESW.

6.16.3. E-permitting system Suriname Forest Service

With funding from the Bioamazon project this e-permitting system and wildlife website is developed by the consultant IT-Wizards.

Permits The Suriname Wildlife Management system is a web-based software system and its main functionality is the creation of electronic permits for both cites and non-cites species. Quotas In addition to the module that records information about the species, the system also has a module to manage quotas for the whole country and per trader. In this system the numbers per animal species are monitored according to the CITES rules. This ensures that the population of the animals cannot be endangered. The maximum numbers to be exported per species are monitored in the Quota Management Module. Because in this module you can enter a National Quota per animal species which is then distributed among the Traders. This is the case every year. After analysis of the population, this number can be adjusted the following year. Based on these numbers, a check is made when the permits are created. If the maximum number per animal is exceeded on a permit, the system will indicate this.

Import and export of CITES plant species are also managed within this system. There is no quota for CITES plant species at the moment. Non-CITES plant species is not included in this system.

The system has a reporting module which generates reports as specified by CITES. Furthermore, reports are generated regarding quotas, species and permits.

On February 15, 2023, the e-Permitting system was launched. As part of this launching a valid permit has been created. However some points of concern that were observed during the launch that still being addressed by the makers of this system in order to work properly.

6.17. Management measures

There is no Cedrela plantation in Suriname. Like other marketable timber species the harvest of *Cedrela odorata* comes from the wild and are harvest sustainably according to the Forest Management Act in order protect the forest from overharvesting. Harvest condition has been set such as a quota for harvest of all tree species of not more the 25 m^3/ha. This means that in a felling section of 100 ha, a maximum of 2500 m^3 may be felled. The harvest cycle of 25 years is used based on the sustainable wood potential of the areas.

The area of concession must be divided into 25 annual logging section in such a way that an annual logging area is exploited within 1 (one) year with the equipment present or to be purchased. After 'cutting out' has been submitted to SBB, no more harvest activities is allowed on the annual harvest section until the next cycle after 25 years (Forest Management Act 1992).

This will allow the seedlings and immature trees to grow and regenerate and re-grow into higher diameter classes. It is not allowed to fell two trees closer than 10 meters to each other: to avoid large gaps in the forest canopy. Within the harvest plan, 10% of the trees of 1 (one) species larger than the minimum dbh must remain (with a corresponding representation => both trees with good and less good quality). Felling is not allowed within 20 m of either side of creeks, within 30 m of rivers and within 20 m of a permanent swamp or on slopes steeper than 30%.

Prior to commencing logging activities on an agreed contract, the concessionaire must submit an exploitation plan within (6) six months after the issuance of an exploitation plan for confirmation to the General Director of the SBB. Reduced impact logging (RIL) is applied in Forest concession.

The purpose of the operating plan is to provide a systematic insight into the disrupted operating activities during at least the expiry period of the agreement, the ruptured production, the equipment and personnel to be deployed, the operating costs and the economic feasibility of the operating activities. These plans contribute to the conclusion of sustainable forest management, because it clearly and systematically shows how the forest exploitation will be planned, taking into account the economic, social and environmental aspects.

According to its concession terms, the concessionaire is obliged to have the felling and hauling out take place in accordance with a harvest plan drawn up in accordance with the regulations of

the SBB. The felling plan makes a major contribution to the sustainable exploitation of forests, as efficient forest exploitation is inherently linked to less harvest damage.

The harvest plan is drawn up for a period of one year (the so-called annual harvest plan) based on a 100% inventory of the commercial tree species as an integral part of the exploitation plan.

In Suriname, regulations and guidelines for forest management and timber harvest have been established on the basis of the Forest Management Act and implementing decrees. SBB has developed a National Forest Monitoring System (NFMS) to monitor the forest. SBB also developed the SFISS for the traceability of harvest trees.

The NFMS provides near real time data of the forest. This system provides early warning of unplanned and illegal logging so action can be taken quickly by the enforcement team. With the development of the SFISS the trade chain of harvest to export is made transparent and robust. With the development of the e-permitting system within the CITES Management Authority the issuance of CITES permit, which is required for this species will also make transparent.

Both system would eventually be linked to the SESW system of the IUD/Customs and through the Integrated Biodiversity Observatory System in Suriname (IBOSS) of the Ministry of Spatial Planning and Environment, to the Amazon Regional Observatory (ARO).That process is still ongoing.

The harvest of timber including *Cedrela odorata* is sustainably according to the Forest Management Act and its implementing decrees and is done in a concession area, domain land, domain with the permission of the Minister of GBB, property right, long ground lease, community forest, land rent, logging permit, occasional logging permit, reserve.

The harvest area is managed by the concession or permit holder such as small-scale permit holder, national or local logging company and communal forest management (Indigenous and other tribal communities). They must ensure that the conditions included in the concession license are implemented. Although there is a quota for harvest (25 m^3/ha) advisable to set a voluntary export quota for this species as a precautionary action.

Each concession or permit holder should submit an exploitation plan to SBB before commencing harvest activities. This exploitation plan including a yearly harvest plan with detailed mature tree inventory and information how the harvest will be done.

The SBB must approved the harvest plan before commencing harvest activities. SBB may conduct random check and if necessary advise to make necessary changes in the interest of sustainable timber harvesting. SBB has developed guidance manual for making an exploitation plan, harvest plan inventory. All of these documents are available for the public and easy accessible through the SBB website https://sbbsur.com/bosbeheer/.

Some imports of *Cedrela odorata* from Suriname are requested to come from certified timber concessions. As of 2021, concessions of 6 companies were certified. It concerns 7 sites with a total area of 273,900 ha. This is approximately 14% of all valid concessions in 2021. The round wood production from the certified concessions amounted to 31,969 m^3, which is 5% of the total national production[40].

FSC forest management certification confirms that the forest is being managed in a way that preserves biological diversity and benefits the lives of local people and workers, while ensuring it sustains economic viability. FSC-certified forests are managed to strict environmental, social and economic standards.

Each concessionaire is obliged to comply with the rules derived from the Forest Management Act 1992. Failure to comply with the rules is punishable under the Economic Offenses Act. The forest wardens and the game wardens are doing the enforcement regarding the Forest Management Act 1992 and its implementing decrees. They are special police officers with special powers in relation to the Nature Conservation Act and the Forest Management Act. SBB randomly checks the harvest and landing sites to see if they comply with the rules of logging and to check whether the management as included in the exploitation plan has been carried out. In case of violation of the

[40] Surinaamse Bosbouwsector 2021, SBB, pag. 35.

Law, the case will be hand over to the Police and the Public Prosecutor Office for further processing.

In paragraph 3 of Resolution Conf. 11.17 (Rev. CoP19) each Party is required to submit an annual illegal trade report on all seizures for violations involving CITES-listed species, irrespective of whether the seizure was made at an international border, or at domestic level for example during the search of a private or business property or during inspections at domestic markets. The annual illegal trade report is mandatory, but not subject to compliance procedures[41].

At the moment there is no illegal trade data of *Cedrela odorata or* any other tree species available to date in Suriname. It is necessary to keep record of all the seizures in reference to illegal harvest and trade of this species and other CITES listed tree species in other to produce the annual illegal trade report. SBB should enhance the collaboration with the CITES Management Authority and the Office of the Public Prosecutor on this matter.

Transport of timber is also regulated according to the Forest Management law (Article 45 paragraph 2) and it implementing decree[42]. All timber transport must be done according to this regulation and accompanied by a special timber transport ticket. In order to enhance the monitoring of timber transport a special 24 hours online CCTV surveillance system is installed to monitor the timber transport through the SBB checkpoints.

The existing management measures as part of the concession or permit terms are imbedded in the Forest Management Act 1992 and its implementing decrees, therefore it have the appropriate level of rigor and are effectively implemented to mitigate the identified concerns, risk and impacts. In the event of non-compliance with the regulations arising from the Forest Management Act, a fine may be imposed and, in extreme cases, the concession or permit may be withdrawn.

[41] https://cites.org/eng/resources/reports/Annual_Illegal_trade_report
[42] Decree of the Ministry of Natural Resources dated 17 February 2000 nr. 207/0061

CHAPTER 7. NON-DETRIMENT FINDINGS FOR *Cedrela odorata*

7.1. A nine-step process to support cites scientific authorities making science-based Non-Detriment Findings (NDFs) for timber/tree species listed in cites Appendix II, version 3.0[43]

In 2008 an international workshop on NDFS was convened in Cancun, where the application of the IUCN Guidance was discussed and changes for the practical implementation were proposed. One has to bear in mind that the results of the workshop relate to NDFs for exports, but the basic concept can also be applied to NDFs for the import.

During the workshop additional indicators were discussed which are to be considered either generally or only in specific cases. The new indicators are organized according to the structure to the IUCN Guidance, but there are also some new categories. For new indicators there is no five-step scale of evaluation any longer, the relevant assessment in the discretion of the person in charge.[44]

Following on from the Cancun Workshop Germany went on to fund the development of a nine-step process to support CITES Scientific Authorities making science based non-detriment findings (NDFs) for species listed in CITES Appendix II (Figure 17) . These are currently available for Perennials (Wolf *et al.* 2016), Timber (Wolf *et al.*, 2018) and are now supported by an E-learning NDF Resources website https://www.9steps-cites-ndf.org hosted by TRAFFIC. The answers of the 9-step guidance are entered in a specially designed Excel based worksheet that indicates the result in a graph at the end.

[43] Wolf, D., Oldfield T. and McGough, N., .,(2018, May), CITES non-detriment findings for timber, a nine-step process to support CITES scientific authorities making science- based non-detriment findings (NDFs) for timber/tree species listed in CITES appendix II, *version 3.0*.BfN-Skripten 504, 2018.
[44] CITES guidance on making an NDF, https://cites.org/eng/prog/ndf/index.php

For the purpose of this thesis the 9 Steps NDF Guidance on Timber were applied on a generic basis to *Cedrela odorata* exports using available data for a desk analysis. This approach was thought to be beneficial as it would help identify both strengths and weaknesses in the system.

For the actual application of the NDF to a CITES permit application it would need an appropriate inventory data and detailed information on the source of the material and management of the actual concession any export is source of. It is a framework for an NDF, which identifies area where key data is required.

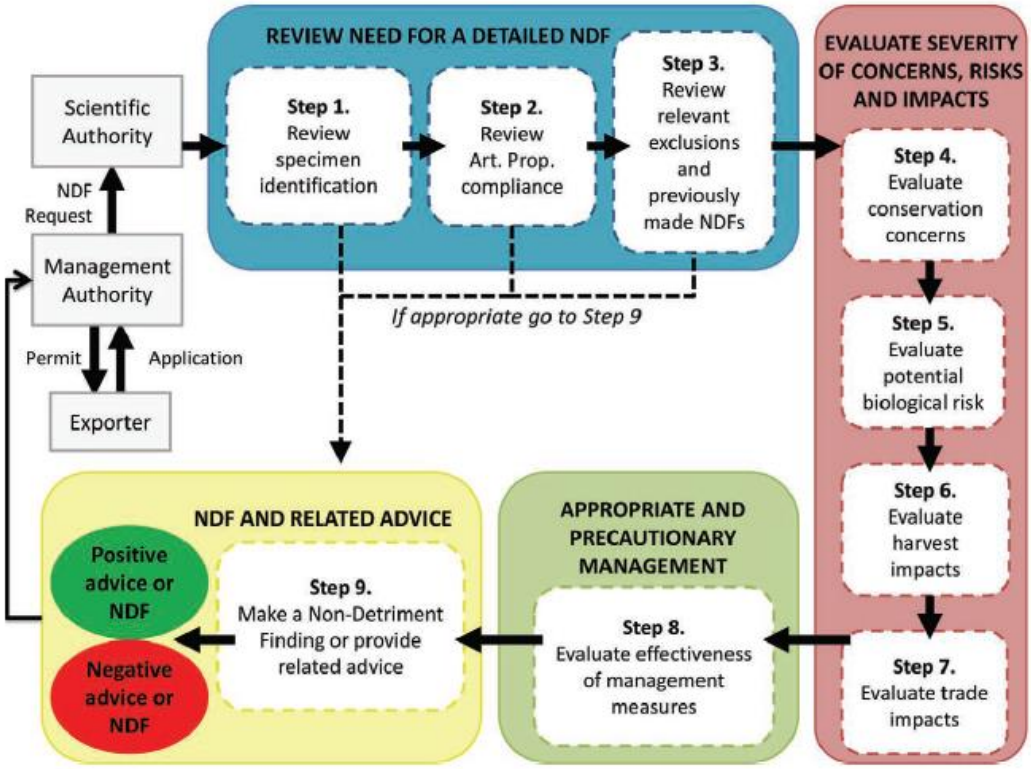

Figure 17:.Nine-step Pathway for Making Non-Detriment Findings for Timber/Tree species. Source: (Source: Bundesamt für Naturschutz (BfN), Federal Agency for Nature Conservation URL: http://www.bfn.de)

7.2. Result of the 9-steps NDF for *Cedrela odorata* exercise

Step 1. review specimen identification

Key Question

1. Is the Scientific Authority confident, that the timber or timber product concerned has been correctly identified, and that the correct scientific name has been used for the timber?
2. In the second part of the question, the Scientific Authority is asked if the correct scientific name has been used. The 9-step Guidance encourages that NDFs be made at the species level.

Result:

The Scientific Authority is confident about the species identification. Species+ was used to identify the correct name and its status. *Cedrela odorata* is the correct name of the species and it is on CITES Appendix II list with annotation #6 (Logs, sawn wood, veneer sheets and plywood).

Base on this result **Step 2 follows.**

Step 2. review compliance with requirements for artificial propagation

Key Question

1. Is the permit application for artificially propagated specimens?
2. Is export of the artificially propagated specimens of this species permitted by national or relevant sub-national legislation?
3. If specified as artificially propagated, do timber specimens meet all requirements for artificial propagation?

Result: No – wild

The permit application is not for artificially propagated specimens, because the source for all the CITES permit for *Cedrela odorata* round wood and sawn wood that was issued between 2016 - 2020 is W (wild), therefore, it does not meet the requirements for artificial propagated specimen. Harvest of *Cedrela odorata* comes from the wild.

According to Timber Export Act 1950 no. 1, a permit is require for ALL timber export. There is no exclusion of artificial propagated specimens of this species in Timber Export Act 1950 and the Forest Management Act 1992, Decree on marketable and other types of wood (S.B. 2000 No. 42).

Base on this result **Step 3 follows.**

Step 3. review of relevant exclusions and previously made NDFs

Key Question

1. Are the timber specimens applied for covered by CITES Appendix II?
2. Is the harvest or the export of wild-harvested specimens of this species permitted by national or relevant sub-national legislation or regulation?
3. Has the Scientific Authority previously made a science-based NDF for this species that is still valid and is sufficient to evaluate the specimens for the current export permit application?

Result: 1 Yes, 2 No 3 No

Although *Cedrela odorata* is listed in Appendix II of the CITES list, it is not a protected species at national level. According to the Forest Management Act 1992 (SB 1992 No. 80), Timber Export Act 1950 No. 1 and Implementing Decree article 14 of the Forest Management Act, Decree Market Values and others wood species, S.B. 2000 No. 42, *Cedrela odorata* falls under category A wood species (marketable wood species) and may be harvested and exported. The Scientific Authority had never made a science-based NDF for this species before.

Base on this result Step 4 follows.

Step 4. evaluate conservation concern

Key Question

1. Considering assessments of the conservation status of the species, what is the indicated severity of conservation concern (i.e. “Low”, “Medium”, “High”, or “Unknown”, see Table 1, “**Factors to Consider: Conservation Concern**”)?

Result: Medium Conservation Concern

Conservation status: VU-A3bcd+4bcd-IUCN Red list (vulnerable).

This species is on CITES Appendix II list with annotation #6 (Logs, sawn wood, veneer sheets and plywood). A CITES permit is required to export of logs, sawn wood, veneer sheets and plywood for this species. Only logs, sawn wood, veneer sheets and plywood are regulated by CITES.

Threats: Commercial harvesting, (legal and illegal) goldmining, forest clearance and Slash and burn cultivation in the interior). Severity of conservation concern relevant to harvest area is medium and the confident level of this result is high.

Base on this result Step 5 follows.

Step 5. evaluate potential biological risks

The core sources of information to evaluate potential biological risks for target tree species are scientific descriptions of the species, herbarium records (herbarium specimens note collection sites) and resource assessments (basic national, sub-national or regional. Step 5 is not an assessment of the impact of the harvest. This is done in Step 6.

Result: Given in **Bold**

- Geographic distribution: *Cedrela odorata* is a Neotropical species found from Mexico southwards throughout Central America to northern Argentina, as well as in the Caribbean. It found up to 800 (possibly up to 1,500 m) altitude. It is now also being widely cultivated as a timber crop within the Neotropics and outside. *Cedrela odorata* is always found naturally on well-drained soils, often but not exclusively on limestone; it tolerates a long dry season but does not flourish in areas of rainfall greater than about 3000 mm (120 in) or on sites with heavy or waterlogged soils. Individual trees are generally scattered in mixed semi-evergreen or semi-deciduous forests dominated by other species. *Cedrela odorata* is present in many reserved/protected areas throughout its range in South-America (Pennington et al. 2010).

  Risk factor is low and confidence level is high.

- National / sub-national population size and distribution: In Suriname the tree is expected to be found in the high dryland forest of the interior and in the forests of the ridge landscape in the coastal zone (CELOS, 2010). This species is generally disseminated throughout the forestry belt. (Harvest locations of *Cedrela odorata* 2019-2023 map, SBB, 10 March 2023).

Risk factor is low and confidence level is high.

- Size structure of national/sub-national populations: In Suriname only the mature trees > 35 diameter is being counted during the inventory of the year harvest plan. Data on the recruitment and regeneration to substitute for potentially harvested trees is not available on a national scale.

Risk factor is unknown and the confidence level medium.

- Habitat specificity and vulnerability: *Cedrela odorata* is always found naturally on well-drained soils, often but not exclusively on limestone; it tolerates a long dry season but does not flourish in areas of rainfall greater than about 3000 mm (120 in) or on sites with heavy or waterlogged soils. Individual trees are generally scattered in mixed semi-evergreen or semi-deciduous forests dominated by other species. (Pennington et al. 2010). This species is highly adaptable to various habitat types across its range and / or ecological zones.

Risk factor is low and confidence level is medium.

- Resilience of tree species: the *Cedrela odorata* is fast growing and well able to compete with secondary vegetation once it has established. In primary forest it regenerates well, producing hundreds of seedlings below parent tree and these can be transplanted easily as required. *Cedrela odorata* as a plantation tree has been a failure, due to the depredations of the shoot borer *Hypsipyla grandella*, a Lepidopteran which destroys the apical shoot of the young plant. *Cedrela odorata* has a monopodial growth, and a loss of the apical shoot causes the plant to branch, this reducing its competitive ability and by producing a multi-stemmed tree greatly reducing its value as a future timber tree. For the past 40 years a huge amount of research effort has gone into overcoming the *Hypsipyla* problem with little apparent success. The damage caused by *Hypsipyla* is of importance only during the first .3-5 year of the seedling's lifespan. Once the tree has achieved 10-15 m height (only 3-5 year growth) with a single leading shoot, thereafter *Hypsipyla* has very little effect on the habit or growth of the tree. In Suriname there is no Cedrela plantation. All harvest of *Cedrela odorata* comes from the wild and are harvest sustainably according to the Forest Management Act in order protect the forest from overharvesting. Harvest condition has been set such as a quota for harvest of all tree species of not more the 25 m^3/ha. The harvest cycle of 25 years is used based on the sustainable wood potential of the areas. The area of concession must be divided into 25 annual logging section in such a way that an annual logging area is exploited within 1 (one) year with the equipment present or to be purchased. After 'cutting out' has been submitted to SBB, no more

harvest activities is allowed on the annual harvest section until the next cycle after 25 years. This will allow the seedlings and immature trees to grow and regenerate.

Risk factor is low and confidence level medium.

Base on this result step 6 follows.

Step 6. evaluate impacts of harvest

Result: Given in **Bold**

- **Impact of harvest on harvest population**: In Suriname there is no *Cedrela odorata* plantation. All harvest of *Cedrela odorata* comes from the wild and are harvest sustainably according to the Forest Management Act in order protect the forest from overharvesting. Harvest condition has been set such as a quota for harvest of all tree species of not more the 25 m^3/ha. This means that in a felling section of 100 ha, a maximum of 2500 m^3 may be felled. The harvest cycle of 25 years is used based on the sustainable wood potential of the areas. The area of concession must be divided into 25 annual logging section in such a way that an annual logging area is exploited within 1 (one) year with the equipment present or to be purchased. After 'cutting out' has been submitted to SBB, no more harvest activities is allowed on the annual harvest section until the next cycle after 25 years (Forest Management Act 1992). This will allow the seedlings and immature trees to grow and regenerate and re-grow into higher diameter classes. It is not allowed to fell two trees closer than 10 meters to each other: to avoid large gaps in the forest canopy. Within the harvest plan, 10% of the trees of 1 (one) species larger than the minimum dbh must remain (with a corresponding representation => both trees with good and less good quality). Felling is not allowed within 20m of either side of creeks, within 30m of rivers and within 20 m of a permanent swamp or on slopes steeper than 30%. Study in Suriname shows that annual radial increment between the trees varied from 0.12 cm to 0.27 cm with an overall average of 0.2 cm and that annual ring growth is subject to pronounced fluctuations. This study suggests that the annual nature of growth rings for the *Cedrela odorata* trees growing in the Neotropics is influenced by the climate (Köhl, M. et. al, 2022). More study needs to be done on the growth and life cycle of the species. Monitoring data of *Cedrela odorata* is limited to harvest and export data of mature trees acquired from the harvest plan that was submitted to SBB and managed in the SFISS. The harvest plan is however

not a public domain and not accessible through SFISS as this system is only accessible for registered user of the SFISS. Information to use data from the harvest inventory require a consent from the concessionaire. The production of *Cedrela odorata* from 2016-2020 is 3,277 m³ and the total volume of exported from Suriname is 1,089 m³. The average *Cedrela odorata* export volume was 158.77 m³ per year. Analyzing these available data it can be concluded that the harvest and export of this species is relatively low for this reason the rating is given while noting that for deciding on an actual export additional data on the impact of harvest on harvest population would be required.

- **The risk factor is medium and confidence level medium.**

- **Impact of harvest on national and sub-national populations of target species:**

  Population data of this species is limited to the A CITES action plan for *Cedrela odorata* in Suriname, An assessment of the status of *Cedrela odorata* in Suriname (Playfair M. 2010). Data on the recruitment and regeneration to substitute for potentially harvested trees is not available on a national scale. Data from SBB shows that between 2016 -2020, the production of *Cedrela odorata* is 3,277 m³ and the total volume of exported from Suriname is 1,089 m³, earning an export income of US $98,381.00.The average *Cedrela odorata* export volume was 158.77 m³ per year. The average timber production is estimated at 8.80 $m^3\ ha^{-1}$ at logging rotations of 25 years (SBB 2017; Werger, 2011). However this concern all the marketable timber species in on one harvest section and not only for *Cedrela odorata.* The logging damage factor (LFD) for the harvest of *Cedrela odorata* is unknown due to the insufficient of data the population of this species, however base on a number of rules apply to all forestry operations regardless of the harvesting license[45] and studies it can cautiously be concluded that the impact of harvest of logging with 'intensive management' or with proper planning can cause on average 40% less damage than logging without proper planning. (Zalman et al., 2019, pag.21).[46] More study needs to be done in order to get a sufficient rating for the harvest impact of this species. **The risk factor is Unknown and confidence level of the source is medium.**

[45] NIMOS, SBB and UNIQUE 2017, Background study for redd+ in suriname: multi-perspective analysis of drivers of deforestation, forest degradation and barriers to redd+ activities, pag. 37.
[46] Surinaamse Bosbouwsector 2021, SBB, pag. 21)

- **Harvest impact on the ecosystem**: Trees provide a range of ecosystem services, such as carbon sequestration, soil conservation, and water regulation. Harvesting can lead to a loss of these services, which can have negative impacts on the surrounding ecosystem and human communities. The impact of *Cedrela odorata* harvesting on the ecosystem in Suriname depends on the management practices and regulations in place to ensure sustainable harvesting practices and minimize negative impacts. Most of the forestry activities concentrated in the "Forest Belt" and is done according to the Reduced Impact Logging on selected species harvest, which have less impact on the ecosystem. Forestry in protected areas are strictly forbidden and violation of this is punishable according to the Nature Conservation Act 1954, the Forest Management Act 1992, the environmental Framework Act 2020 and the Economic Crime Law 1986. All the protected areas in Suriname make up 2,293,200 hectares or 14% of the country's land surface and consist of untouched standing forest. SBB has developed a National Forest Monitoring System to monitor the forest and the SFISS for the traceability of harvest trees.

  The risk factor is low and the confidence level high.

Base on this result Step 7 follows.

Step 7. evaluate impacts of trade

Result: Given in **Bold**

- Trade level in relation to harvest area production: Data from SBB shows that in the period 2016-2020, the production of *Cedrela odorata* is 3,277 m^3 and the total volume of exported from Suriname is 1,089 m^3, earning an export income of US $98,381.00.The average *Cedrela odorata* export volume was 158.77 m^3 per year. A cautious conclusion can be made that the export of *Cedrela odorata* low is in comparison with the allowed yearly average production quantity (33.23 %). In this period China is one of the major importer of *Cedrela odorata* round wood from Suriname with an average of 28.99 % and Aruba for sawn wood with an average of 20.97 %. It is likely that an average of 66.77 % of the produced wood is destined for the local market. It is cautious to say that the demand of *Cedrala odorata* from Suriname in the international market is relatively low in comparison of the local market. Because of limited data an accurate evaluation cannot be done. In order to make proper NDF some parameters that is needed for the evaluation

of the impact of trade can be included as a parameter in the inventory of the harvest plan such as: population abundance and distribution of the species, habitat quality and fragmentation.

The risk factor is medium and confidence level medium

- Impact of harvest on national and sub-national populations of target species: In view of the realized *Cedrela odorata* exports, the years 2016 to 2020 can be concluded as follows: with an average *Cedrela odorata* export volume of 158.77 m³ per year it can be concluded that the production of *Cedrela odorata* was fairly stable in the period 2016 to 2019, with a peak in 2018. In 2020 there is a huge decrease, probably due to the COVID pandemic. During this period, the total volume of *Cedrela odorata* round wood exported from Suriname is 792 m³ and the total production of this species is 3,277 m³. In view of this, a conservative estimate of the impact of the harvest on the national population can amount to 24 % during this period.

  The risk factor is medium and confidence level medium

- Magnitude of illegal trade: There is no data on illegal trade of *Cedrela odorata* to date in Suriname.

  The level of risk is unknown and therefor high and the confidence level of source is high.

Base on the result Step 8 follows.

Step 8. evaluate appropriate rigour of existing management measures

Key Question

1. What management measures are in place for the target species?
2. Do existing management systems adequately mitigate harvest and trade impacts identified for the populations and sub-populations of the species concerned?

In addition, answers to the following questions may help:

• What is the ownership/tenure right of the harvest area (state; communal; private; logging concessions, etc.)?

• Who manages the harvest area (e.g. International Corporation; industrial concession, small-scale holder, national or local logging company; communal forest management; state agency, private person, etc.)?

• What management measures are in place and are they documented (e.g. in a management plan), are they comprehensive and adequate to the requirements of the forestry operation?

• Are there State checks and controls of forest operations, transport, sawmills, exports, etc.?

• Is a credible certification system in place?

• Is monitoring conducted to systematically assess the impact of harvesting procedures and also assess whether management objectives have been met?

Result 8.1.: Management measures in place

Result: given in **bold**

- To ensure that harvest is done a sustainable manner the existing management measures is incorporated in the concession or permit terms and are imbedded in the Forest Management Act 1992 and its implementing decrees, In the event of non-compliance with the regulations arising from the Forest Management Act, a fine may be imposed and, in extreme cases, the concession or permit may be withdrawn. According to the concession terms, the concessionaire is obliged to have the felling and hauling out take place in accordance with a harvest plan drawn up in accordance with the regulations of the SBB. The felling plan makes a major contribution to the sustainable exploitation of forests, as efficient forest exploitation is inherently linked to less harvest damage. The felling plan is drawn up for a period of one year (the so-called annual harvest plan) based on a 100% inventory of the commercial tree species as an integral part of the exploitation plan. Prior to commencing logging activities on an agreed contract, the concessionaire must submit an exploitation plan within (6) six months after the issuance of an exploitation plan for confirmation to the General Director of the SBB. Reduced impact logging (RIL) is applied in Forest concession (Zalman J. et al. 2019). These plans contribute to the conclusion of sustainable forest management, because it clearly and systematically shows how the forest exploitation will be planned, taking into account the economic, social and environmental aspects. **Confidence level high**.

- Although, population data is limited and the data on recruitment and regeneration of this species in Suriname is unknown certain management measures regarding harvesting tree species has put in place by SBB. Reduced impact logging (RIL) is applied in Forest concession and is also part of the permit condition. The mandatory harvest plan for the exploitation of timber harvest contribute to the conclusion of sustainable forest management, because it clearly and systematically shows how the forest exploitation will be planned, taking into account the economic, social and environmental aspects. **Confidence level high**.
- SBB has developed a National Forest Monitoring System to monitor the forest through satellite. The NFMS provides near real time data of the forest. This system provides early warning of unplanned and illegal logging so action can be taken quickly by the enforcement team. **Confidence level high**.

Trade management measures:

- SBB also developed the SFISS for the management and traceability of harvest trees from the harvest to expo. With the development of the SFISS the trade chain of harvest to export is made transparent and robust. With the development of the e-permitting system within the CITES Management Authority the issuance of CITES permit, which is required for this species will also make transparent. Both system is operational and would eventually be linked to the SESW system of the IUD/Customs and through the Integrated Biodiversity Observatory System in Suriname (IBOSS) of the Ministry of Spatial Planning and Environment, to the Amazon Regional Observatory (ARO). **Confidence level on the source of information is high.**
- Beside the SFISS, that was developed by SBB to managed and monitor the forest trade and harvest, an e-permitting system has been developed for the CITES Management Authority for the management of the trade in wildlife in Suriname. With the development of the e-permitting system within the Permit Section of the Nature Conservation Division, the issuance of CITES permit, which is required for this species will also make transparent. Both the SFISS and e-permitting system would eventually be linked to the SESW system of the IUD/Customs and through the Integrated Biodiversity Observatory System in Suriname (IBOSS) to the Amazon Regional Observatory. That process to link these systems together is still ongoing. **Confidence level on the source of information is high.**

- Each concessionaire is obliged to comply with the rules derived from the Forest Management Act 1992. Failure to comply with the rules is punishable under the Criminal law and Economic Offenses Act. The forest wardens and the game wardens are doing the enforcement regarding the Forest Management Act 1992 and its implementing decrees. They are special police officers with special powers in relation to the Nature Conservation Act and the Forest Management Act. They have the mandate to do random checks on harvest and landing site. A special 24 hours online CCTV surveillance system is installed to monitor the timber transport through the SBB checkpoints. At the moment there is no available public data on illegal trade of *Cedrela odorata* or any other tree species to date in Suriname. It is necessary to keep record of all the seizures in reference to illegal harvest and trade of this species and other CITES listed tree species in other to produce the annual illegal trade report. The collaboration between SBB, the CITES Management Authority and the Public Prosecutors Office will be further strengthened on this matter. **Confidence level on the source of information is high.**

Result 8.2.: Evaluate Effectiveness of Management Measures

The results of conservation concern (Step 4) and biological risk (Step 5), the harvest impacts (Step 6) and trade impacts (Step 7) are transfer into the Worksheet for Step 8.2.

Key Question is:

Do existing management systems adequately mitigate harvest and trade impacts identified for the populations and sub-populations of the species concerned?

The answer is yes based on the result of 8.1.in this exercise the existing management systems adequately mitigate harvest and trade impacts identified for the population of *Cedrela odorata*.

Base on this result Step 9 follows.

Step 9. non-detriment finding and related advice

The final task for the Scientific Authority is to make a positive or negative NDF or related decision, and to advise the Management Authority whether to allow the proposed export of specimens based on the outcome of the previous steps of this Guidance.

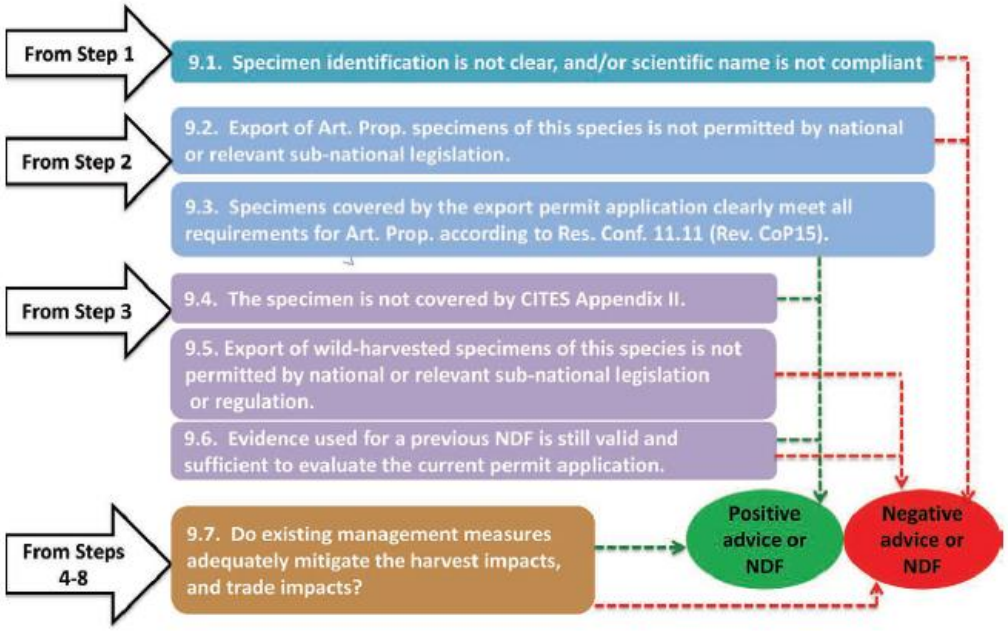

Figure 17:.Summary of decisions which can be made in Step 9.

Following the pathway of the questions (Fig. 17) and the answers to it, the results shows:

Outcome of NDF Process	NDF Results and Related Advice
9.1. The outcome of Step 1 is: The Scientific Authority is not confident that the specimen concerned has been correctly identified, and that the scientific name used is compliant with the appropriate CITES Standard Reference	No negative advise. This species is on CITES Appendix II list with annotation #6 (Logs, sawn wood, veneer sheets and plywood)

9.2. The outcome of Step 2, Key Question 2.2 is: Export of artificially propagated specimens of this species is not permitted by national or relevant sub-national legislation	No negative advice. According to Timber Export Act 1950 no. 1, a permit is require for ALL timber export. There is no exclusion of artificial propagated specimens of this species in Timber Export Act 1950 and the Forest Management Act 1992, Decree on marketable and other types of wood S.B. 2000 No. 42
9.3. The outcome of Step 2, Key Question 2.3 is: Specimens covered by the export permit application clearly meet all CITES-requirements for artificial propagation	No positive advice. Other advice: The source for the all the CITES permit for this species that was issued between 2016 -2020 is W (wild), therefore, it does not meet the requirements for artificially propagated specimen. Harvest of *Cedrela odorata* comes from the wild.
9.4. The outcome of Step 3, Key Question 3.1 is: The specimens are not covered by CITES Appendix II	This species is on CITES Appendix II list with annotation #6 (Logs, sawn wood, veneer sheets and plywood). A CITES permit is required to export of logs, sawn wood, veneer sheets and plywood for this species. Only logs, sawn wood, veneer sheets and plywood are regulated by CITES.
9.5. The outcome of Step 3, Key Question 3.2 is: Harvest or export of wild-harvested specimens of this species is not permitted by national or relevant sub-national legislation or regulation	No negative advice. Forest Management Act 1992 (SB 1992 No. 80), Timber Export Act 1950 No. 1, Implementing Decree article 14 of the Forest Management Act, Decree Market Values and others wood species, S.B. 2000 No. 42. *Cedrela odorata* falls under category A wood species (marketable wood species) and may be harvested and exported.

9.6. The outcome of Step 3, Key Question 3.3 is: Evidence used for a previous NDF is still valid and sufficient to evaluate the current export permit application	No negative or positive advice. No NDF on this species have never been conducted in Suriname.
9.7. Step 8, Key Question 8.2 is: Do existing management measures adequately mitigate harvest and trade impacts identified for the populations and sub-populations of the target species affected by the proposed trade?	Non-detriment findings are the tool to ensure that removal from the wild will not jeopardize the survival of the species under assessment. In this sense, this supposes to be an eminently scientific analysis and the base to establish the conclusions and the recommendations at ensuring the sustainability of the management. In order to apply the sustainability analysis, timely data availability must be available, the most relevant, from the forestry approach, being information on the distribution of trees by diameter classes, which makes it possible to assess whether the basal area or the volume to be harvested annually will be recovered during the 25 years that will be established for the felling cycle in accordance with the minimum diameter of felling defined in the forest management plan. This analysis is the heart of sustainability. Although, the impact of harvest and trade on national and sub-national level is unknown due to the fact that population data is limited, illegal trade data is not available and the data on recruitment and regeneration of this species in Suriname is unknown and the risk severity is high, certain management measures regarding harvesting tree species

	has put in place by SBB. The mandatory harvest plan for the exploitation of timber harvest contribute to the conclusion of sustainable forest management, because it clearly and systematically shows how the forest exploitation will be planned, taking into account the economic, social and environmental aspects. Study shows that logging with 'intensive management' or with proper planning can cause on average 40% less damage than logging without proper planning. (Zalman et al., 2019). The research shows the importance of good planning of logging and the application of Reduced Impact Logging (NIMOS, SBB and UNIQUE (2017)). Management measures that are being implemented are incorporated in the concession or permit terms and are imbedded in the Forest Management Act 1992 and its implementing decrees, making it a strong fundament for enforcement and monitoring. With the development of the SFISS of SBB and e-permitting system of the CITES Management Authority made the management, traceability and monitoring of this species is made transparent. Taking all the above into consideration, it can be concluded that the management measures address the issue and are s at appropriate level of rigor and are expected to be

	effectively implemented to mitigate the identified concerns, risk and impacts. Therefor the conclusion of the precautionary NDF for this species is positive with condition. Conditions are that a precautionary export quota be put in place and exports only allowed from concessions with up to date inventory's and adequate management plans approved by the CITES SA in liaison with national forestry experts. Suriname should develop an Action Plan for the formulation of adequate NDFS for *Cedrela odorata* and setting of annual export quotas. The CITES Secretariat should be consulted to advise and assist on this process. In would be appropriate if a workshop were held, bringing together all stakeholders, regional experts and the CITES Secretariat to review the draft Action Plan and to apply the 9 Steps to potential future exports based on the experience of this NDF exercise.
Specific management procedures, precautions, other actions that need to be undertaken to ensure the survival of the species:	1. More study should be done on population size and distribution, fruiting and growth to know more about the natural regeneration of the species (recruitment). Preferably every 5 year a report on the regeneration should be presented to the Scientific Authorities for review. 2. Adequate NDF's for CITES timber producing trees cannot be carried out without adequate inventory and monitoring data of harvest site. Data can be collected by

	including new parameters accordingly in the harvest plan. Therefor it is recommended to include species occurrence of CITES listed species during the inventory of species in the harvest plan (mature and young plants) to have an estimate on the occurrence and population of the CITES listed species. This may require cooperation from the concession or permit holder to share this information with SBB and make use of this information for further study. 3. Training the Management and Scientific Authority in making an NDF for CITES listed .species and correct reporting of the CITES annual report to avoid any discrepancy between the CITES trade data and SBB trade data. 4. Training of enforcement personnel in the correct identification of the CITES listed species and CITES related matters. 5. Conducting stakeholders engagement session in order to promote awareness regarding CITES related matters on plant species. 6. Keep record of all illegal harvest and trade of this species and other CITES listed species in order to be able to produce an illegal trade report for CITES listed species in Suriname. 7. Establishing a voluntary export quota for this species as a precautionary action.

	8. Keep record of all illegal harvest and trade of this species and other CITES listed species in order to be able to produce an illegal trade report for CITES listed species in Suriname. 9. Establishing a voluntary export quota for this species as a precautionary action.

CHAPTER 8. CONCLUSIONS AND RECOMMENDATIONS TO THE SURINAMESE CITES MANAGEMENT AUTHORITY

This study aimed to assess the impact of the exploitation on the fate of *Cedrela odorata* and if trade in this species is non detrimental for the survival of this species. Results indicated the following **CONCLUSIONS:**

1. The 9 Steps Guidance provides a framework to make adequate NDFs. Here the Steps were applied to make a general "NDF" for *Cedrela odorata* as opposed to an NDF for a specific export. This is an exercise for the purpose of this thesis. The 9 Steps process identified areas where data is weak or lacking, which can be addressed prior to making a "active" NDF for a real export. Is it hoped that this analysis can help frame future adequate NDFs.
2. Although *Cedrela odorata* is listed in Appendix II of the CITES-list, it is not a protected species at national level. According to the Forest Management Act 1992 (SB 1992 No. 80), Timber Export Act 1950 No. 1 and Implementing Decree article 14 of the Forest Management Act, Decree Market Values and others wood species, S.B. 2000 No. 42, *Cedrela odorata* falls under category A wood species (marketable wood species) and may be harvested and exported. The Scientific Authority had never made a science-based NDF for this species before.
3. There is no *Cedrela odorata* plantation in Suriname. All harvest of *Cedrela odorata* comes from the wild.
4. In Suriname, regulations and guidelines for forest management and timber harvesting have been established on the basis of the Forestry Management Act 1992 and implementing decrees, which are intended to ensure that timber exploitation meets the requirements of sustainable forest management.
5. Each concession or permit holder should submit an exploitation plan to SBB before commencing harvest activities. This exploitation plan including a yearly harvest plan with detailed mature tree inventory and information how the harvest will be done. The SBB must approved the harvest plan before commencing harvest activities. SBB inspectors may conduct random check and if necessary advise to make necessary changes in the interest of sustainable timber harvesting.
6. When analyzing the CITES trade data and SBB trade data there seems to be discrepancy in the figures. The SBB trade data is collected from SBB's Forestry Statistics report for Production,

export and import of timber and timber products 2016-2020, which is derived from the SFISS. The CITES trade database is collected through the Suriname's CITES annual reports 2016-2020 that has been submitted by the CITES Management Authority to the CITES Secretariat. The CITES annual reports are still prepared manually by the permit section of the Nature Conservation Division. The discrepancy is probably the result of an administrative error. A re-evaluation of the data is necessary to eliminate the discrepancy.

7. The production of *Cedrela odorata* was fairly stable in the period 2016 to 2019, with a peak in 2018. In 2020 there is a huge decrease, probably due to the COVID pandemic. It is expected that after 2020 there will be another increase in the production and export of *Cedrela odorata*. Between 2016-2020, the production of *Cedrela odorata* is 3,277 m^3 and the total volume of exported from Suriname is 1,089 m^3, earning an export income of US $98,381.00.The average *Cedrela odorata* export volume was 158.77 m^3 per year

8. Magnitude of illegal trade is unknown in Suriname. There is no data on illegal trade of *Cedrela odorata* to date in Suriname. It is necessary to keep record of all the seizures in reference to illegal harvest and trade of this species and other CITES listed tree species in other to produce the annual illegal trade report. SBB should collaborate closely with the CITES Management Authority and the Office of the Public Prosecutor on this matter.
9. The management and traceability of harvest and trade of tree species has made transparent through the SFISS. The e-permitting system will enhance the management of the trade in wildlife for CITES and non-CITES species. Both the SFISS and e-permitting system would eventually be linked to the SESW system of the IUD/Customs and through the Integrated Biodiversity Observatory System in Suriname (IBOSS) to the Amazon Regional Observatory (ARO).
10. Some of the existing management measures are incorporated in the concession or permit terms and are imbedded in the Forest Management Act 1992 and its implementing decrees, therefore it have the appropriate level of rigour and are effectively implemented to mitigate the identified concerns, risk and impacts. In the event of non-compliance with the regulations arising from the Forest Management Act, a fine may be imposed and, in extreme cases, the concession or permit may be withdrawn.
11. Taking all the above in consideration, with the confines of this exercise the conclusion of the NDF for this species is a precautionary positive. Application of the 9 Steps to an actual CITES

permit application for an export of wood would need appropriate inventory data and detailed information on the source of the material and management of the actual concessions any export is sourced from.

RECOMMENDATIONS

Some specific management precautions and other actions that is recommended to ensure the survival of the species are:

1. More study should be done on fruiting and growth to know more about the natural regeneration of the species (recruitment). A report on the regeneration should be provided at least every 5 years.
2. Adequate NDF's for CITES timber producing trees cannot be carried out without adequate inventory and monitoring data of harvest site. Data can be collected by including new parameters accordingly in the harvest plan. Therefor it is recommended to include species occurrence of CITES listed species during the inventory of species in the harvest plan (mature and young plants) to have an estimate on the occurrence and population of the CITES listed species. This may require cooperation from the concession or permit holder to share this information with SBB and make use of this information for further study
3. Training the Management and Scientific Authority in making an NDF for CITES listed species and correct reporting of the CITES annual report to avoid any discrepancy between the CITES trade data and SBB trade data.
4. Training enforcement personnel in the correct identification of the CITES listed species and CITES related matters.
5. Conducting a stakeholders engagement session in order to promote awareness regarding CITES related matters on plant species.
6. Keep record of all illegal harvest and trade of this species and other CITES listed species in order to be able to produce an illegal trade report for CITES listed species in Suriname.
7. Establishing a voluntary export quota for this species as a precautionary action.
8. In view of the above, I advise the MA and SA to develop an action plan to address the impact of harvest and export on this species taking into consideration that the above study is essential for making a proper NDF, but it is also costly. Suriname has the experts in house, but lack financial

resources to conduct these kind of study. Through international and regional initiatives financial and technical support can be sought for the development of the action plan and other initiatives that will be needed to allow adequate NDF's to be made for export of this species. Potential funding sources could be the EU, FAO, ACTO and Amazon Sustainable Landscape programme.

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ANNEXES

Annex I

Categorie A: Marktwaardige Houtsoorten

Lokale Naam	Wetenschappelijke Naam	Familienaam
Agrobigi (sr)	*Parkia nitida*	Mimosaceae
Ayawatingimoni (sr)	*Trattinickia burserifolia*	Burseraceae
Aprakwari (sr), appelkwari (sn)	*Vochysia densiflora*	Vochysiaceae
Basraloksi (sr), basralokus (sn)	*Dicorynia guianensis*	Caesalpiniaceae
Bergigronfolo (sr), berg gronfolo (sn)	*Qualea rosea*	Vochysiaceae
Bergimanbarklak (sr), bergmanbarklak (sn)	*Eschweilera pedicellata* (was: *E. longipes*)	Lecythidaceae
Bergi-manletr'udu (sr), berg manletter (sn)	Diverse geslachten en soorten	Moraceae
Broin-ati (sr), bruinhart (sn)	*Vouacapoua americana*	Caesalpiniaceae
Sedre (sr), ceder (sn)	*Cedrela odorata*	Meliaceae
Dyadidya (sr)	*Sclerolobium melinonii*	Caesalpiniaceae
Gindya-udu (sr)	*Buchenavia tetraphyllla* (was: *B. capitata*)	Combretaceae
Donsedre (sr)	*Cedrelinga cateniformis*	Mimosaceae
Gerikabisi (sr), gele kabbes (sn)	*Vatairea guianensis*	Fabaceae
Gevlamde bostamarinde (sn)	*Zygia racemosa* (was: *Marmaroxylon racemosum*, *Pithecellobium racemosum*)	Mimosaceae
Gubaya (sr)	*Jacaranda copaia*	Bignoniaceae
Guyabakwari (sr)	*Qualea dinizii*	Vochysiaceae
Grin-ati (sr), groenhart (sn)	*Tabebuia serratifolia*	Bignoniaceae
Grootbladige rode kabbes (sn)	*Andira* spp.	Fabaceae
Grootbladige zwarte pisi (sn)	*Rhodostemonodaphne grandis* (was: *Nectandra grandis*), *Ocotea glomerata*	Lauraceae
Harde bast pisi (sn)	*Ocotea schomburgkiana*	Lauraceae
Hoogbos tingimonisali (sn)	*Tetragastris* spp.	Burseraceae
(h)eigron-babun (sr), hoogland baboen (sn)	*Virola melinonii, Virola sebifera*	Myristicaceae
(h)eigron-gronfolo (sr), hoogland gronfolo (sn)	*Ruizterania albiflora* (was: *Qualea albiflora*)	Vochysiaceae
(h)eigron-manbarklak(I) (sr), hoogland manbarklak (sn)	*Eschweilera coriacea* (was: *E. odora*)	Lecythidaceae
Hoogland manbarklak gele bast (sn)	*Lecythis idatimon* (was: *Eschweilera amara*)	Lecythidaceae
Hoogland manbarklak witte bast (sn)	*Eschweilera* sp.	Lecythidaceae
(h)eigron-pakuli (sr), hoogland pakoeli (sn)	*Rheedia* spp.	Clusiaceae
Ingipipa (sr)	*Couratari* spp.	Lecythidaceae
Isri-ati (sr), ijzerhart (sn)	*Bōō* spp	Caesalpiniaceae
Jongo kabbes (sn),dyongokabisi (sr)	*Vataireopsis speciosa*	Fabaceae
Kanerpisi (sr), kaneel pisi (sn)	*Licaria* spp.	Lauraceae
Kaner'ati (sr), kaneelhart (sn)	*Licaria* spp.	Lauraceae
Kankantri (sr)	*Ceiba pentandra*	Bombacaceae
Katun-udu (sr)	*Luehеopsis rugosa, L. flavescens*	Tiliaceae
Kleinbladige kromantikopi (sn)	*Agonandra silvatica*	Opiliaceae
Kleinbladige rode kabbes (sn)	*Andira* spp.	Fabaceae

Lokale Naam	Wetenschappelijke Naam	Familienaam
Kleinbladige walaba (sn)	*Eperua grandiflora*	Caesalpiniaceae
Kleinbladige zwarte pisi (sn)	*Nectandra* sp., *Ocotea floribunda* (was: *O. wachenheimii*)	Lauraceae
Kunatepi (sr)	*Platymiscium trinitatis, P. ulei*	Fabaceae
Kopi (sr)	*Goupia glabra*	Celastraceae
Kromantikopi (sr)	*Aspidosperma* spp.	Apocynaceae
Kwatakama (sr)	*Parkia ulei, Parkia pendula*	Mimosaceae
Kwatapatu (sr)	*Lecythis zabucajo* (was: *L. davisii*)	Lecythidaceae
Laagland baboen (sn)	*Virola surinamensis*	Myristicaceae
Laagland gronfolo (sn)	*Qualea* spp.	Vochysiaceae
Letr'udu (sr), letterhout (sn)	*Brosimum* spp. (was: *Piratinera* spp.)	Moraceae
Makagrin (sr)	*Tabebuia capitata*	Bignoniaceae
Makakabisi (sr)	*Hymenolobium flavum*	Fabaceae
Man-grin-ati (sr), man groenhart (sn)	*Tabebuia* spp.	Bignoniaceae
Manbarklak (sr)	*Eschweilera* spp.	Lecythidaceae
Manletr'udu (sr), man letter (sn)	*Perebea* spp., *Helicostylis* spp.	Moraceae
Man-popo-ati (sr), man purperhart (sn)	*Peltogyne* spp.	Caesalpiniaceae
Mawsikwari (sr)	*Erisma uncinatum*	Vochysiaceae
Melisali (sr)	*Trichilia* spp.	Meliaceae
Mora (sr)	*Mora excelsa*	Caesalpiniaceae
Morabukeya (sr)	*Mora gonggrijpii*	Caesalpiniaceae
Morototo (sr)	*Schefflera decaphylla* (was: *S. paraënsis*)	Araliaceae
Okro-udu (sr), okerhout (sn)	*Sterculia pruriëns*	Sterculiaceae
Pakuli (sr)	*Platonia insignis*, *Rheedia* spp.	Clusiaceae
Pata(ku)wana (sr)	*Chaunochiton kappleri*	Olacaceae
Pegrekupisi (sr)	*Xylopia* spp.	Annonaceae
Posentri (sr), possum (sn)	*Hura crepitans*	Euphorbiaceae
Prityari-udu (sr)	*Zanthoxylum pentandrum* (was: *Fagara pentandra*)	Rutaceae
Popo-ati(sr), purperhart (sn)	*Peltogyne pubescens, P. venosa*	Caesalpiniaceae
Rode bast tingimoni (sn)	*Protium polybotryum*	Burseraceae
Redikabisis (sr), rode kabbes (sn)	*Andira coriacea, A. inermis, A. surinamensis, A. villosa*	Fabaceae
Redikrapa (sr), rode krapa (sn)	*Carapa guianensis*	Meliaceae
Rediloksi (sr), rode lokus (sn)	*Hymenaea courbaril*	Caesalpiniaceae
Rode prokoni (sn)	*Inga alba*	Mimosaceae
Redisali (sr), rode sali (sn)	*Tetragastris altissima*	Burseraceae
Sali (sr)	*Tetragastris* spp., *Protium* spp.	Burseraceae
Satèn-udu (sr), satijnhout (sn)	*Brosimum rubescens* (was: *B. paraënse*)	Moraceae
Snek'udu (sr), slangenhout	*Loxopterygium sagotii*	Anacardiaceae
Sumaruba (sr)	*Simarouba amara*	Simaroubaceae
Tamarenprokoni (sr)	*Balizia pedicellaris* (was: *Pithecellobium pedicellare*), *Enterolobium schomburgkii*	Mimosaceae
Tingimoni (sr)	*Protium* spp., *Trattinickia* spp.	Burseraceae
Tingimonisali (sr)	*Tetragastris hostmannii, T. panamensis*	Burseraceae
Waikarapisi (sr)	*Aniba hostmanniana*	Lauraceae
Walaba (sr)	*Eperua* spp.	Caesalpiniaceae
Wana (sr)	*Ocotea rubra*	Lauraceae

Lokale Naam	Wetenschappelijke Naam	Familienaam
Wanakwari (sr)	*Vochysia tomentosa*	Vochysiaceae
Wanapisi (sr)	*Ocotea splendens* (was: *O. globifera*)	Lauraceae
Wiswiskwari (sr)	*Vochysia guianensis*	Vochysiaceae
Weti-lo-udu (sr), wit riemhout (sn)	*Micropholis guyanensis*	Sapotaceae
Wetikrapa (sr), witte krapa (sn)	*Carapa procera*	Meliaceae
Weti-pintoloksi (sr), witte pintolokus (sn), (bosmahoni)	(*Martiodendron parviflorum* (was: *Martiusia parviflora*)	Caesalpiniaceae
Zwarte kabbes (sn), blakakabisi(sr)	*Diplotropis purpurea*	Fabaceae
Zwarte pintolokus (sn), bosknipa (sn), blakapintoloksi (sr), busiknepa (sr)	*Talisia pedicellaris*	Sapindaceae
Zwarte pisi (sn), blakapisi (sr)	*Ocotea glomerata, Nectandra grandis*	Lauraceae
Zwart riemhout (sn), blaka-lo-usu (sr)	*Micropholis guyianensis, Pouteria engleri*	Sapotaceae

Catagorie C: Houtsoorten waarvan de velling verboden is

Lokale Naam	Wetenschappelijke Naam	Familienaam
Bortri (sr), bolletrie (sn)	*Manilkara bidentata*	Sapotaceae
Upru-udu (sr), hoepelhout (sn)	*Copaifera guianensis*	Caesalpiniaceae
Inginoto (sr)	*Bertholletia exclesa*	Lecythidaceae
Manrowsudu (sr), man rozenhout (sn)	*Aniba mas*	Lauraceae
Rowsudu (sr), rozenhout (sn)	*Aniba rosaeodora*	Lauraceae
Sawari(noto) (sr)	*Caryocar nuciferum*	Caryocaraceae
Tonka (sr)	*Dipteryx odorata, D. punctata*	Fabaceae

sr - sranan tongo /
sn - surinaams nederlands

Annex II

Bosbouwwetten (Forestry regulations)

Bosbouw	
Titel	**Vindplaats**
Decreet van 31 december 1980, houdende wijziging van de „„Wet op de Houtuitvoerbelasting 1946" (G.B. 1946 no. 118) en van de "Houtuitvoerwet" (G.B. 1950 no. 1) S.B. 1980 no.145	G.B. 1946 no. 118 zoals gewijzigd bij S.B. 1980 no. 145
WET van 24 september 2017, houdende regels inzake preventie en bestrijding van corruptie en instelling van een Anti-corruptie Commissie, alsmede wijziging van het Wetboek van Strafrecht en het Decreet Uitgifte Domeingrond (Anti-corruptiewet) S.B. 2017 no. 85	S.B. 2017 no. 85
Decreet L2 uitgifte Domeingrond S.B. 1982 no. 11	S.B. 1982 no. 11, z.l.g. bij S.B. 2003 no. 7 gew bij S.B. 2017 no. 85 Anti-corruptiewet
Houtuitvoerwet G.B. 1950 no. 1	G.B. 1950 no. 1
Houtuitvoerwet G.B. 1950 no. 1, z.l.g. bij S.B. 1980 no. 145	G.B. 1950 no. 1, z.l.g. bij S.B. 1980 no. 145
Natuurbeschermingswet 1954 G.B. 1954 no. 26, z.l.g. bij S.B. 1992 no. 80	G.B. 1954 no. 26 z.l.g. bij S.B. 1992 no.80
Wet Bosbeheer S.B. 1992 no. 80	S.B. 1992 no. 80

Beschikking inzake vaststelling methode en wijze van meting en weging en de keuringseisen, alsook het keuringstarief van voor uitvoer bestemd hout S.B. 1996 no. 70	S.B. 1996 no. 70
Ministeriële Beschikking inzake vaststelling tarief exploratievergoeding S.B. 1996 no. 71	S.B. 1996 no. 71
Beschikking inzake vaststelling van het tarief van de retributie op hout, houtwaren en overige bosbijproducten verkregen op domeinland S.B. 1998 no.76	S.B. 1998 no.76
Ministeriële Beschikking inzake vaststelling van het tarief van het jaarlijks te vorderen concessierecht per hectare op in houtconcessie uitgegeven domeingrond S.B. 1998 no. 77	S.B. 1998 no. 77
Ministeriële Beschikking inzake vaststelling het tarief van tolgelden voor gebruikmaking van de "Saronbrug" S.B. 1998 no. 78	S.B. 1998 no. 78
Beschikking vervoer bosproducten S.B. 2000 no.7	Beschikking van de Minister van Natuurlijke Hulpbronnen van 17 februari 2000 no. 207/1961 ter uitvoering van artikel 45 lid 2 van de Wet Bosbeheer (S.B. 1992 no. 80) S.B. 2000 no.7
Beschikking marktwaardige e.a. houtsoorten S.B. 2000 no. 42	Beschikking van de Minister van Natuurlijke Hulpbronnen van 17 februari 2000 no. 208 ter

	uitvoering van artikel 14 van de Wet Bosbeheer (S.B. 1992 no. 80) S.B. 2000 no. 42
Beschikking statistische productiegegevens S.B. 2000 no.43	Beschikking van de Minister van Natuurlijke Hulpbronnen van 17 februari no. 209 ter uitvoering van artikel 48 van de Wet Bosbeheer (S.B. 1992 no. 80) S.B. 2000 no. 43
Beschikking opmeten, merken en registreren van hout S.B. 2000 no.44	Beschikking van de Minister van Natuurlijke Hulpbronnen van 10 april no. 210 ter uitvoering van artikel 44 lid 1 van de Wet Bosbeheer (S.B. 1992 no. 80), houdende het opmeten, merken en registreren van gewonnen en afgevoerd hout. S.B. 2000 no. 44
Beschikking incidentele houtwinning S.B. 2000 no.45	Beschikking van de Minister van Natuurlijke Hulpbronnen van 17 februari no. 211 ter uitvoering van artikel 38 lid 4 van de Wet Bosbeheer (S.B. 1992 no. 80), inhoudende voorwaarden voor de verlening van een vergunning tot incidentele houtwinning S.B. 2000 no. 45
Beschikking kapregister S.B. 2000 no. 46	Beschikking van de Minister van Natuurlijke Hulpbronnen van 10 april 2000 no. 212 ter uitvoering van artikel 32 lid 4 van de Wet Bosbeheer (S.B. 1992 no. 80), houdende vaststelling van de vorm van het kapregister S.B. 2000 no. 46
Beschikking aanvraag exploratievergunningen en concessies S.B. 2000 no.47	Beschikking van de Minister van Natuurlijke Hulpbronnen van 17 februari 2000 no. 213 ter uitvoering van artikel 21 lid 1 van de Wet Bosbeheer S.B. 2000 no. 47

Beschikking overdracht exploratievergunningen en concessies S.B. 2000 no.48	Beschikking van de Minister van Natuurlijke Hulpbronnen van 17 februari 2000 no. 214 ter uitvoering van artikel 17 lid 3 van de Wet Bosbeheer S.B. 2000 no. 48
Beschikking van de Ministers van Natuurlijke Hulpbronnen en van Financiën van 17 februari no. 215 ter uitvoering van artikel 17 lid 3 van de Wet Bosbeheer (S.B. 1992 no.80) S.B. 2000 no. 49	S.B. 2000 no. 49
Beschikking bosbouwregister S.B. 2000 no.50	Beschikking van de Minister van Natuurlijke Hulpbronnen van 10 april 2000 no. 228 ter uitvoering van artikel 46 van de Wet Bosbeheer S.B. 2000 no. 50
Besluit Negatieve Lijst 2003, S.B 2003 no. 74 z.l.g.b. S.B 2006 no. 20	S.B 2003 no. 74 z.l.g.b. S.B 2006 no. 20
Beschikking Aanpassing Tarieven Formulieren voor de Bosbouw S.B. 2004 no. 147	Beschikking van de Minister van Natuurlijke Hulpbronnen van 26 oktober 2004 no. 1176/0253, inzake aanpassing van de tarieven van de formulieren voor de bosbouw S.B. 2004 no. 147
Beschikking van de Ministers van Natuurlijke Hulpbronnen, Financiën en Handel en Industrie van 27 oktober 2004 no. 1175/04-0262, inzake vaststelling van de waarde en het uitvoerrecht van voor export bestemd hout, houtproducten en bosbijproducten S.B 2004 no. 162	S.B 2004 no. 162

Wet uitvoerrecht op hout S.B. 2005 no.29	Wet van 31 maart 2005, houdende regels met betrekking tot de heffing van een uitvoerrecht op hout S.B. 2005 no. 29
Beschikking Wet op Houtuitvoerrecht S.B. 2005 no.29 S.B. 2005 no.83	S.B. 2005 no. 83
Staatsbesluit van 17 juli 2012, houdende aanwijzing van een terrein in het Mapane bosgebied als speciaal beschermd bos ter uitvoering van artikel 5 van de Wet Bosbeheer Besluit Mapane speciaal beschermd bos S.B. 2012 no. 123	S.B. 2012 no. 123
Besluit Kabo speciaal beschermd bos S.B. 2012 no.124	Staatsbesluit van 17 juli 2012, houdende aanwijzing van een terrein in het Kabo bosgebied als speciaal beschermd bos ter uitvoering van artikel 5 van de Wet Bosbeheer S.B. 2012 no. 124
Beschikking Keuringtarief Rondhout, Houtproducten en Bosbijproducten S.B. 2013 no. 213	S.B. 2013 no. 213
Beschikking Retributie Hout, Houtproducten en Bosbijproducten S.B. 2013 no.211	S.B. 2013 no. 211
Beschikking Concessierechten 2013 S.B.2013 no. 183	S.B.2013 no. 183
Beschikking retributie rondhout concessiegebieden, gemeenschapbos- en houtkapvergunning terreinen 2015, S.B. 2015 no.24	Beschikking van de Ministers van Ruimtelijke Ordening, Grond- en Bosbeheer en Financiën d.d. 23 februari 2015 no. 03571-15/Min RGB, inzake wijziging van het tarief van retributie op

	rondhout, met uitzondering van de houtsoort letterhout, gewonnen in concessiegebieden, gemeenschapsbos – en houtkapvergunning terreinen houtproducten en bosbijproducten verkregen op domeingrond S.B. 2015 no.24
Beschikking concessierechten 2015 S.B. 2015 no. 25	S.B. 2015 no. 25
Beschikking heffing exploratievergunning S.B. 2013 no.214	S.B. 2013 no.214
Beschikking opmeten, merken en registreren van hout 2019 S.B. 2020 no.6	S.B. 2020 no.6
Beschikking Retributie Hout, Houtproducten en Bosbijproducten 2019 S.B. 2020 no. 62 (zie punt II methode van houtmeting en volume bepaling)	S.B. 2020 no 62

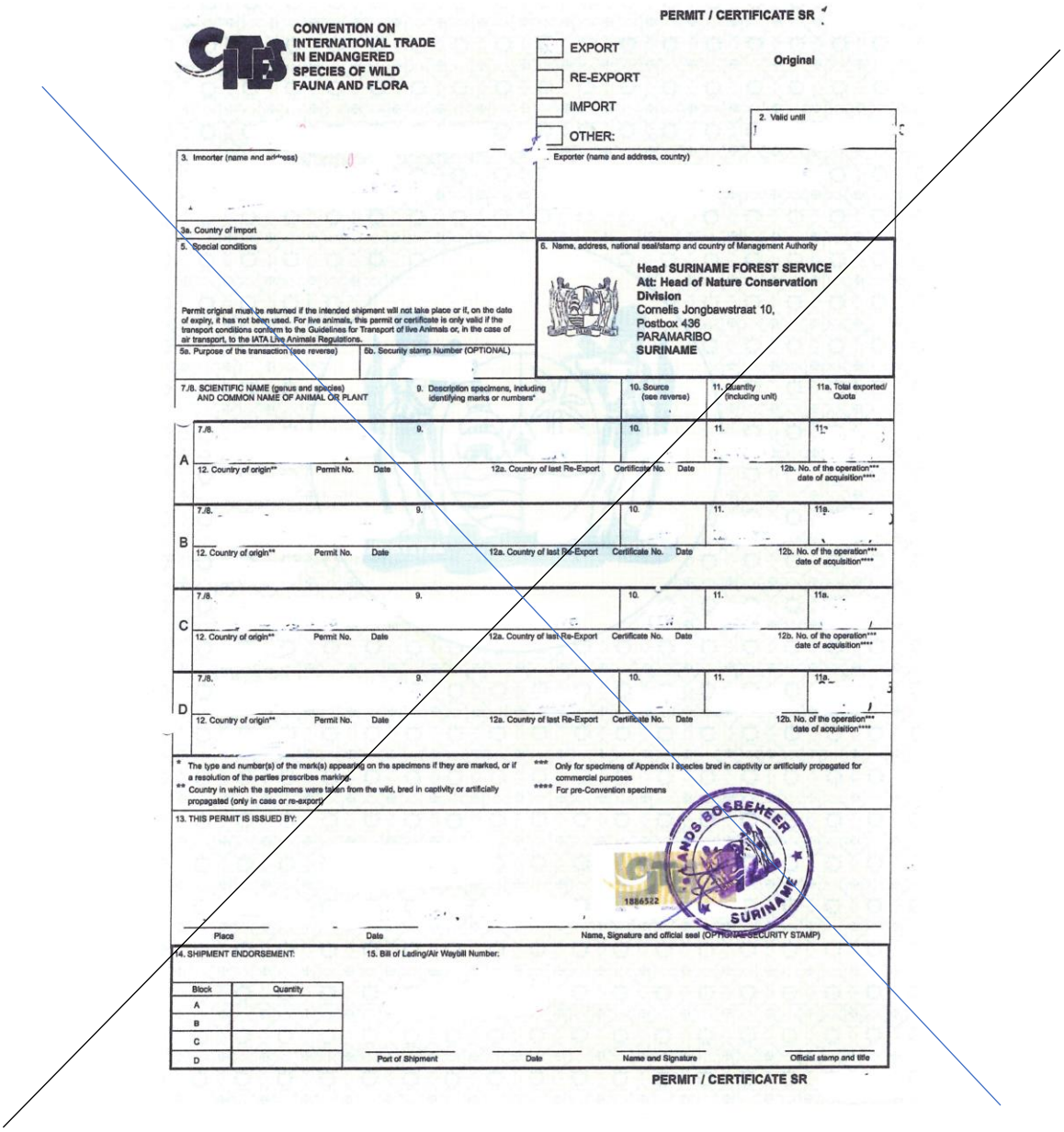
Natuurbescherming	
Titel	**Vindplaats**
ST AA TSBESL UIT van 2 februari 2006, houdende wijziging van het Besluit Negatieve Lijst 2003 (S.B. 2003 no. 74) z.l.g.b. S.B. 2006 no.20 Besluit negatieve lijst 2003 S.B 2003 no. 74 z.l.g.b. S.B 2006 no. 20	S.B 2003 no. 74 z.l.g.b. S.B 2006 no. 20 inwtr op dag dat de Wet Goederenverkeer intreedt

ST AA TSBESLUIT van 25 oktober 2006, houdende wijziging van het Besluit Negatieve Lijst 2003 (S.B. 2003 no. 74, zoals gewijzigd bij S.B. 2006 no. 20) z.l.g.b. S.B.2006 no.100	
ST AA TSBESLUIT van 7 juli 2008, houdende nadere wijziging van het Besluit Negatieve Lijst 2003 (S.B. 2003 no. 74, zoals laatstelijk gewijzigd bij S.B. 2008 no. 53) z.l.g.b. S.B.2008 no.92	
BESCHIKKING van de Minister van Handel, Industrie en Toerisme van 25 april 2019 no. 910, houdende nadere wijziging van het Besluit Negatieve Lijst S.B. 2019 no. 44	
Algemene Geldboete wet S.B. 2002 no.73	WET van 14 mei 2002, houdende wijziging van de hoogte der geldboete, zoals vastgesteld in thans van kracht zijnde wettelijke regelingen (Algemene Geldboetewet) (S.B. 2002 no. 73).
Wet economische delicten (S.B. 1986 no. 2) z.l.g. bij S.B. 2002 no.67	WET van 9 januari 1986, houdende vaststelling van regelen voor de opsporing, de vervolging en berechting van economische delicten (Wet economische delicten) (S.B. 1986 no. 2), gelijk zij luidt na de daarin aangebrachte wijziging bij S.B. 1989 no. 42, S.B. 1992 no. 80, S.B. 2002 no. 67. S.B. 2002 no. 67
Anti-corruptie wet S.B. 2017 no.85	Wetboek van Strafrecht G.B. 1911 no 1, z.l.g.b. SB 2017 no 85

(Wetboek van Strafrecht G.B. 1911 no 1, z.l.g.b. SB 2017 no 85)	
Politiestrafwet, G.B. 1915 no. 77, z.l.g.b. S.B. 1990 no. 24	WET van 29 november 1915, tot vaststelling van een Politiestrafwet (G.B. 1915 no. 77), gelijk zij luidt na de daarin aangebrachte wijzigingen bij G.B. 1917 no. 78, G.B. 1917 no.79, G.B. 1917 no.80, G.B. 1917 no. 83, G.B. 1918 no. 39, G.B. 1922 no. 14, G.B. 1924 no. 64, G.B. 1926 no. 55, G.B. 1926 no.125, G.B. 1929 no. 54, G.B. 1929 no. 59, G.B. 1930 no. 73, G.B. 1933 no. 94, G.B. 1933 no. 95, G.B. 1934 no. 31, G.B. 1939 no. 100, G.B. 1939 no.101, G.B. 1939 no. 102, G.B. 1942 no. 1521, G.B. 1943 no. 120, G.B. 1944 no. 39, G.B. 1944 no. 153, G.B. 1946 no. 128, G.B. 1947 no. 133, G.B. 1947 no.140, G.B. 1949 no. 62, G.B. 1950 no. 63, G.B. 1961 no. 77, G.B. 1964 no. 107, S.B. 1980 no. 68, S.B. 1980 no. 121, S.B. 1982 no. 19, S.B. 1990 no. 24.
Zeevisserijwet 1980 (S.B. 1980 no.144) z.l.g. bij S.B. 2001 no. 120	WET van 31 december 1980, houdende regelen op het gebied van de zeevisserij (S.B. 1980 no. 144), gelijk zij luidt na de daarin aangebrachte wijzigingen bij S.B. 2001 no. 120 inwtr 31 januari 2002
Wijziging Zeevisserij Decreet S.B. 2001 no.120	S.B. 2001 no.120
Jachtwet 1954 G.B. 1954 no. 25, z.l.g. bij S. B. 1997 no. 33	WET van 3 april 1954 houdende voorzieningen tot bescherming van de fauna en tot regeling van de jacht in Suriname

	(G.B. 1954 no. 25), gelijk zij luidt na de daarin aangebrachte wijzigingen bij G.B. 1954 no. 106, G.B. 1971 no. 61, S.B. 1980 no. 99, S.B. 1980 no. 116, S.B. 1982 no. 159 en S.B. 1994 no. 54, S.B. 1997 no. 33.
Jachtbesluit S.B. 2002 no.116, gewijzigd bij S.B. 2009 no. 16	S.B. 2002 no.116, gewijzigd bij S.B. 2009 no. 16
Plantenbeschermingswet G.B. 1965 no. 102 z.l.g. bij S.B. 1980 no. 116	G.B. 1965 no. 102 z.l.g. bij S.B. 1980 no. 116
Plantenbeschermingsverordening 1965 (G.B. 1965, no. 102) G.B.1965 no.142	G.B. 1965 no. 142

Annex III



PERMIT / CERTIFICATE SR

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA

EXPORT
RE-EXPORT
IMPORT
OTHER:

Original

2. Valid until

3. Importer (name and address)

4. Exporter (name and address, country)

3a. Country of import

5. Special conditions

Permit original must be returned if the intended shipment will not take place or if, on the date of expiry, it has not been used. For live animals, this permit or certificate is only valid if the transport conditions conform to the Guidelines for Transport of live Animals or, in the case of air transport, to the IATA Live Animals Regulations.

5a. Purpose of the transaction (see reverse)

5b. Security stamp Number (OPTIONAL)

6. Name, address, national seal/stamp and country of Management Authority

Head SURINAME FOREST SERVICE
Att: Head of Nature Conservation Division
Cornelis Jongbawstraat 10,
Postbox 436
PARAMARIBO
SURINAME

	7./8. SCIENTIFIC NAME (genus and species) AND COMMON NAME OF ANIMAL OR PLANT	9. Description specimens, including identifying marks or numbers*	10. Source (see reverse)	11. Quantity (including unit)	11a. Total exported/ Quota
A	7./8.	9.	10.	11.	11a.
	12. Country of origin** Permit No. Date	12a. Country of last Re-Export Certificate No. Date			12b. No. of the operation*** date of acquisition****
B	7./8.	9.	10.	11.	11a.
	12. Country of origin** Permit No. Date	12a. Country of last Re-Export Certificate No. Date			12b. No. of the operation*** date of acquisition****
C	7./8.	9.	10.	11.	11a.
	12. Country of origin** Permit No. Date	12a. Country of last Re-Export Certificate No. Date			12b. No. of the operation*** date of acquisition****
D	7./8.	9.	10.	11.	11a.
	12. Country of origin** Permit No. Date	12a. Country of last Re-Export Certificate No. Date			12b. No. of the operation*** date of acquisition****

* The type and number(s) of the mark(s) appearing on the specimens if they are marked, or if a resolution of the parties prescribes marking.
** Country in which the specimens were taken from the wild, bred in captivity or artificially propagated (only in case or re-export)
*** Only for specimens of Appendix I species bred in captivity or artificially propagated for commercial purposes
**** For pre-Convention specimens

13. THIS PERMIT IS ISSUED BY:

1886522

BOSBEHEER SURINAME

Place Date Name, Signature and official seal (OPTIONAL SECURITY STAMP)

14. SHIPMENT ENDORSEMENT:

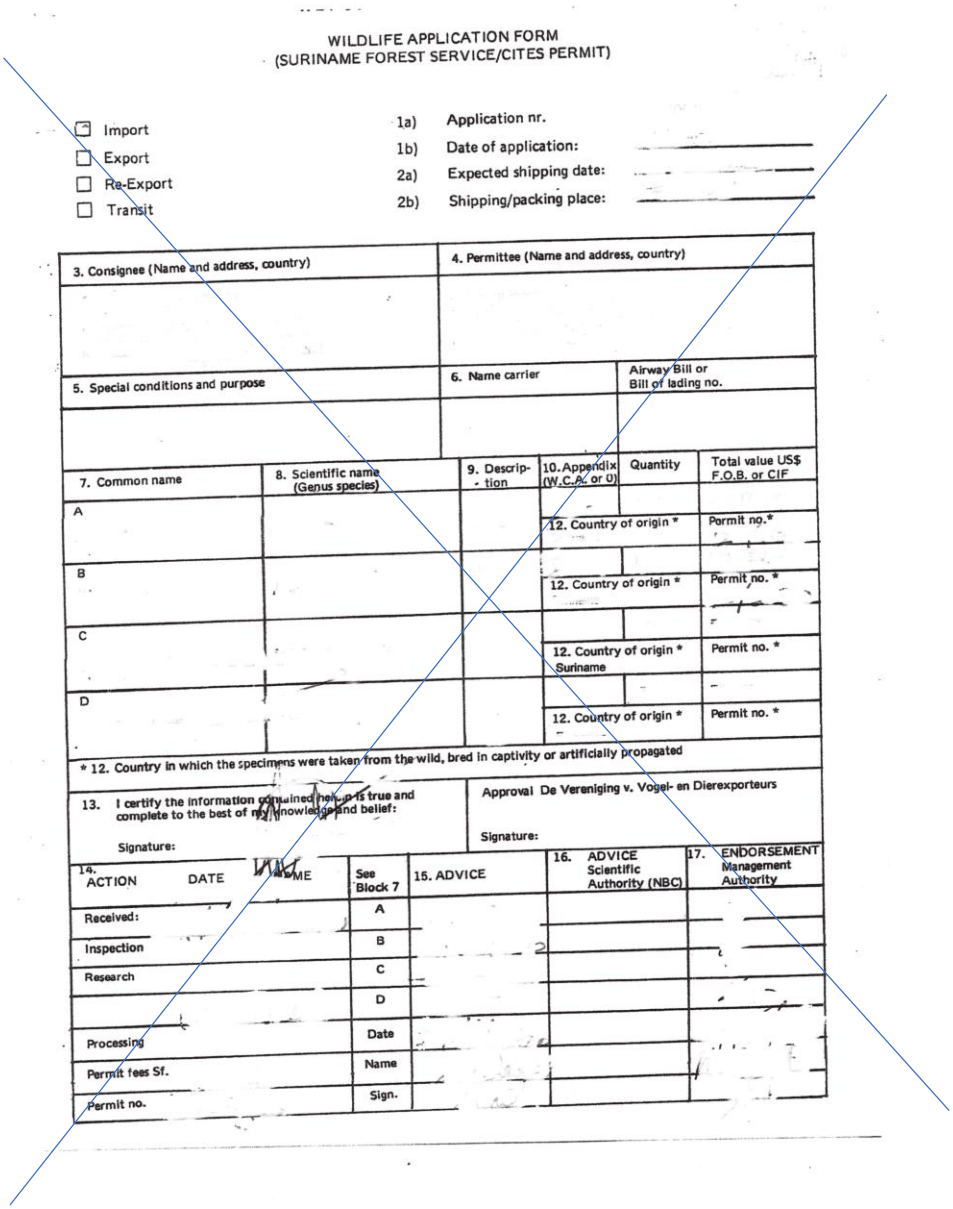
Block	Quantity
A	
B	
C	
D	

15. Bill of Lading/Air Waybill Number:

Port of Shipment Date Name and Signature Official stamp and title

PERMIT / CERTIFICATE SR

Annex IV



WILDLIFE APPLICATION FORM
(SURINAME FOREST SERVICE/CITES PERMIT)

☐ Import
☐ Export
☐ Re-Export
☐ Transit

1a) Application nr.
1b) Date of application:
2a) Expected shipping date:
2b) Shipping/packing place:

3. Consignee (Name and address, country)	4. Permittee (Name and address, country)

5. Special conditions and purpose	6. Name carrier	Airway Bill or Bill of lading no.

7. Common name	8. Scientific name (Genus species)	9. Descrip- tion	10. Appendix (W.C.A. or 0)	Quantity	Total value US$ F.O.B. or CIF
A			12. Country of origin *		Permit no.*
B			12. Country of origin *		Permit no. *
C			12. Country of origin * Suriname		Permit no. *
D			12. Country of origin *		Permit no. *

* 12. Country in which the specimens were taken from the wild, bred in captivity or artificially propagated

13. I certify the information contained herein is true and complete to the best of my knowledge and belief: Signature:	Approval De Vereniging v. Vogel- en Dierexporteurs Signature:

14. ACTION	DATE	NAME	See Block 7	15. ADVICE	16. ADVICE Scientific Authority (NBC)	17. ENDORSEMENT Management Authority
Received:			A			
Inspection			B			
Research			C			
			D			
Processing			Date			
Permit fees Sf.			Name			
Permit no.			Sign.			