MINISTERIE VAN
RUIMTELIJKE ORDENING
GROND- EN BOSBEHEER

# Surinamese Forest Sector 2011

*Foundation for Forest Management and Production Control*

DEPARTMENT: FORESTRY ECONOMIC SERVICES
September 2012
Drs. R. Matai

SBB

## THE FOREST SECTOR, A GROWING SUSTAINABLE PRODUCTION SECTOR

## National Indicators for Suriname

| | |
|---|---|
| Land surface | 16.4 million ha. |
| Forest estate | 14.8 million ha. (90%) |
| Population in 2011 | 539,000 inhabitants |
| Forest per capita | 27 ha. |
| Gross domestic product in 2011 | US$ 4.2 billion |
| Contribution of forest sector to GDP in 2011 | 1.3% |
| Gross national income in 2011 | US$ 3.9 billion |
| National income per capita in 2011 | US$ 7,300 |
| Timber consumption per capita in 2011 | 0.32 $m^3$ |
| Growth national economy in 2011 | 4.7% |
| Growth production forest sector in 2011 | 48% |
| Timber export earnings in 2011 | US$ 14.2 million |
| Logging companies in 2011 | 166 |
| Sawmills in 2011 | 79 |
| Plywood factory in 2011 | 1 |
| Timber markets in 2011 | 113 |
| Furniture factories and joinery works in 2011 | 91 |

# Contents

# 1. TIMBER PRODUCTION

## 1.1 Valid logging and exploration licenses

In 2011 there were 149 valid logging and exploration licenses with a total surface area of approx. 2.4 million ha. Of these 149 licenses, 68 were concessions, with a surface area of approx. 1.4 million ha. There were 74 Communal Timber Cutting Licenses (HKV's) and community forests with a total surface area of approx. 584,000 ha. and 3 Incidental Cutting Licenses (ICL's) with a total surface area of approx. 170,000 ha. The ICL's included licenses issued in the hydro power lake and the conversion area in District Marowijne for the palmoil project of China ZhongHeng Tai Investment N.V. There were also 4 exploration licenses covering a total surface area of approx. 255,000 ha., enabling the license holders to explore the feasibility of economically harvestable timber in these areas.

In 2011, 171 areas were in production, 68 of which have the status of concessions, 57 the status of HKV's and community forests and 8 have the status of ICL's. In addition, 38 areas with other types of licenses were in production. It is important to mention that production operations toke place in 518 cutting compartments with a total surface area of 59,173 ha. Of these 518 cutting compartments, 269 were in concessions and covered a surface area of 29,591 ha.; 201 covering a surface area of 23,311 ha. were in the HKV's and community forests, and 48 cutting compartments comprising a surface area of 6,271 ha. had other types of licenses.

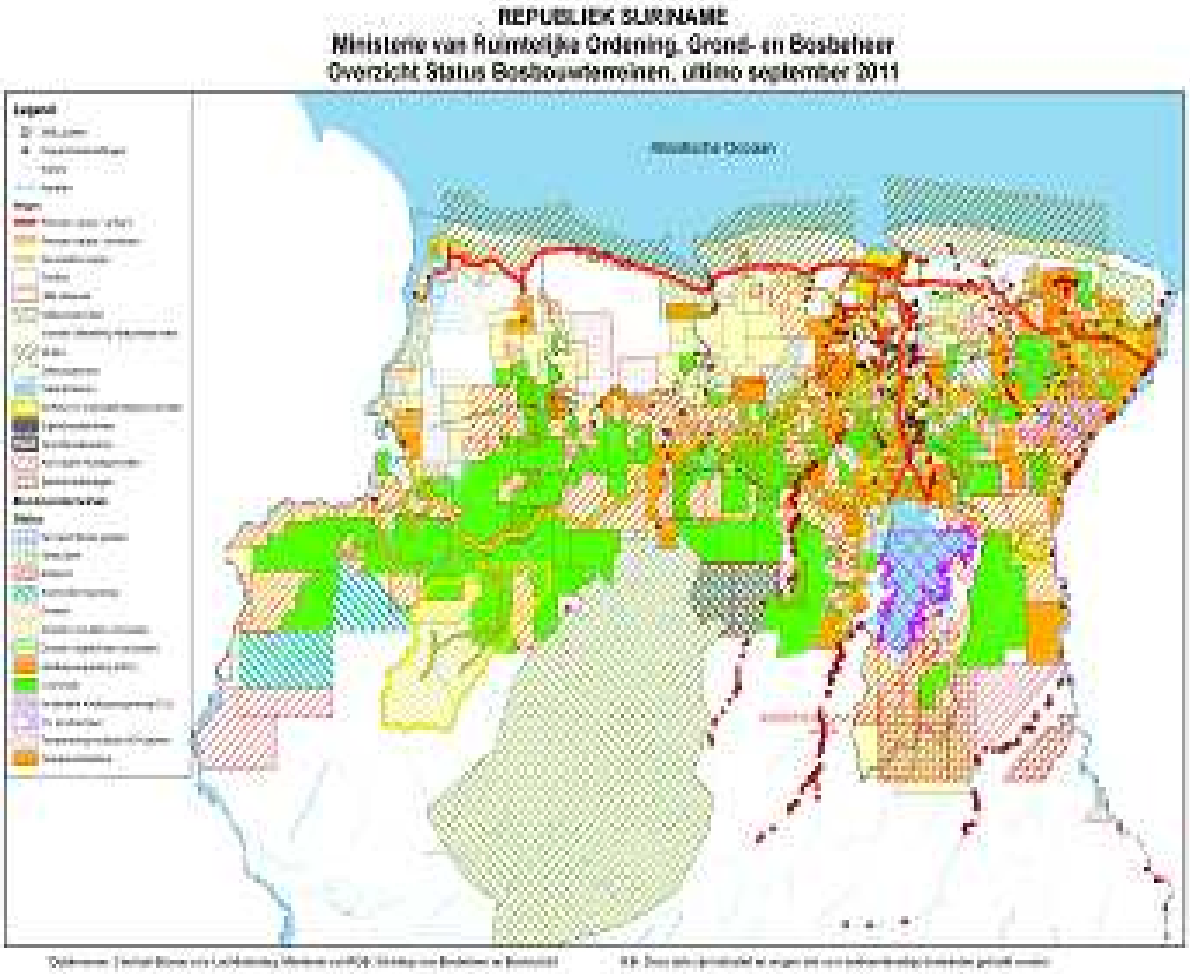
In 346 cutting compartments with a total surface area of 41,636 ha. activities were carried out in accordance with the extensive forest management method, while the intensive forest management method was applied in 172 cutting compartments as with a total surface area of 17,537 ha.

**Table 1. Number of valid licenses with their surface areas in 2011**

| **Status** | **Number** | **Surface area in ha.** |
|---|---|---|
| Concession | 68 | 1,411,831 |
| HKV's and community forest | 74 | 584,384 |
| Incidental cutting license (ICL's) | 3 | 170,063 |
| Exploration licenses | 4 | 255,168 |
| **Total** | **149** | **2,421,446** |

**Map 1. View of timber cutting areas in 2011**

**Map Republic of Suriname**
**Ministry of Physical Planning, Land and Forest Management**



## 1.2 Total roundwood production per assortment

In 2011 the total roundwood production (industrial as well as non-industrial roundwood) was 366,395m$^3$. The most important timber assortment produced in this period was roundwood (sawn log and veneer log) with a volume of 347,566 m$^3$.
In addition, 1,281 m$^3$ of hewn square poles, 3,801 m$^3$ of fencing poles, 18 m$^3$of shingles, 13,049 m$^3$ of sawn wood (sawn in the production area with mobile saw mills or chainsaws), 527 m$^3$ of fuel wood and 153 m$^3$ of charcoal was produced.

**Table 2. Total roundwood production per assortment in 2011**

| Assortment | Volume in m$^3$ |
|---|---|
| Roundwood | 347.566 |
| Hewn square poles | 1.281 |
| Fencing poles | 3.801 |
| Shingles | 18 |
| Sawn wood | 13.049 |
| Fuelwood | 527 |
| Charcoal | 153 |
| **Total** | **366.395** |

***Note: Sawn timber *, The in table 2 mentioned sawn wood is timber processed with chain saw machine or mobile saw machine within the forest.***

**Photo 1.Sawn woodr**

**Photo 2.Transport of roundwood**

**Photo 3.Walaba fencing poles**

**Photo 4: Canopy**

## 1.3 Total roundwood production per type of license

Looking at the total roundwood production per type of license, it is apparent that the concessions had the highest production (41%) in 2011. The communal timber cutting licenses (HKV's) and community forests have also made a significant contribution to the production (30%). Thirteen per cent (13%) of the timber was cut from LBB forest reserves and earmarked areas *(*so-called "*ter beschikking gestelde terreinen")*.
For the rest, 4% of the total roundwood production came from private forest, long leasehold and short leasehold land.

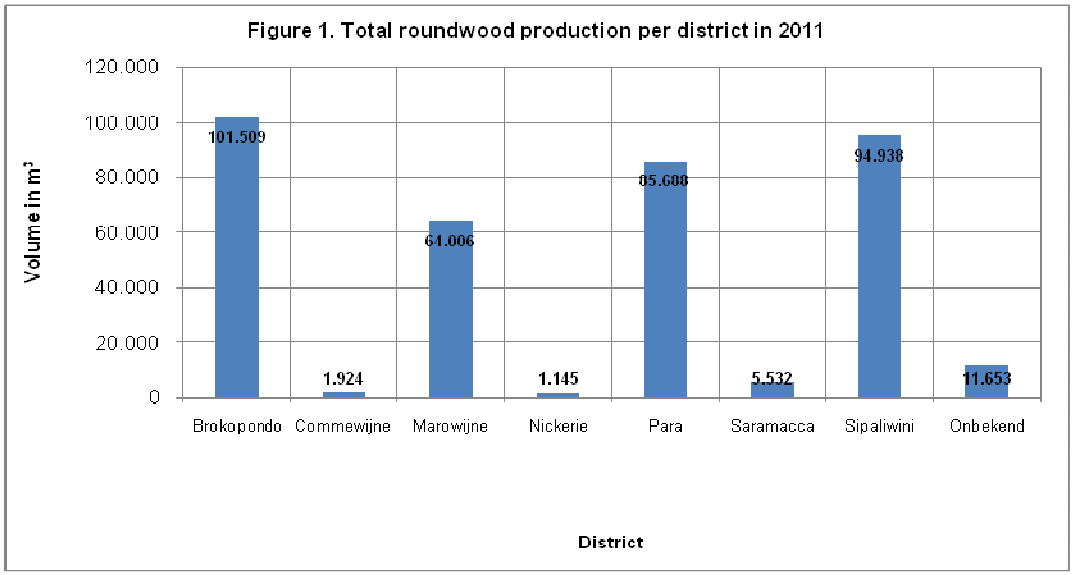
Photo 5.Primary road

Photo 6.Canopy

Photo 7.Boundary of cutting compartment

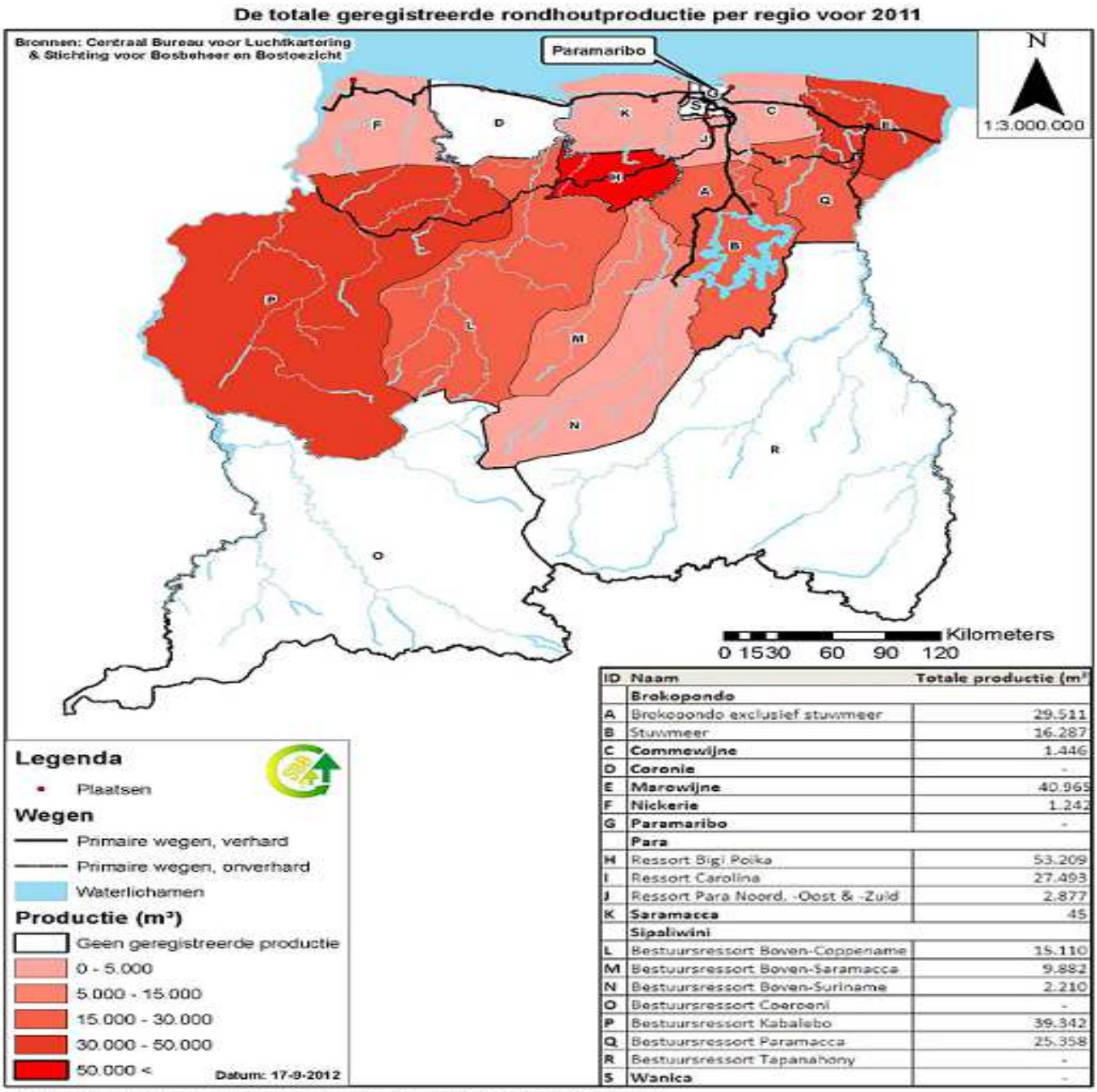
## 1.4 Most important production districts

There are four districts that are important for timber production; these are districts with a relatively high forest cover with available forest infrastructure. Brokopondo is the most important timber production district, accounting for 28% of the total roundwood production in 2011.
The contribution to the roundwood production by District Sipaliwini, District Para and District Marowijne was 26%, 23% and 17% respectively.



## 1.5 Production per region

### Map 2. Total registered roundwood production per region for 2011




| ID | Naam | Totale productie (m³) |
|---|---|---|
| | **Brokopondo** | |
| A | Brokopondo exclusief stuwmeer | 29.511 |
| B | Stuwmeer | 16.287 |
| C | **Commewijne** | 1.446 |
| D | **Coronie** | - |
| E | **Marowijne** | 40.965 |
| F | **Nickerie** | 1.242 |
| G | **Paramaribo** | - |
| | **Para** | |
| H | Ressort Bigi Poika | 53.209 |
| I | Ressort Carolina | 27.493 |
| J | Ressort Para Noord, -Oost & -Zuid | 2.877 |
| K | **Saramacca** | 45 |
| | **Sipaliwini** | |
| L | Bestuursressort Boven-Coppename | 15.110 |
| M | Bestuursressort Boven-Saramacca | 9.882 |
| N | Bestuursressort Boven-Suriname | 2.210 |
| O | Bestuursressort Coeroeni | - |
| P | Bestuursressort Kabalebo | 39.342 |
| Q | Bestuursressort Paramacca | 25.358 |
| R | Bestuursressort Tapanahony | - |
| S | **Wanica** | - |

Deze data zijn indicatief en mogen niet voor landmeetkundige doeleinden gebruikt worden.

To analyse the important timber production areas in 2011, Suriname was divided into 19 regions (see Map 2: Total registered roundwood production per region for 2011). Apparently the Bigi Poika region with a total roundwood production of 53,209 $m^3$ had the highest production. Marowijne was the second largest timber production region with a production of 40,965 $m^3$ of roundwood. With a production of 39,342 $m^3$ of roundwood, Kabalebo is also a very important production area. The regions Brokopondo, not including the hydro power lake and Paramacca produced 29,511 and 25,358 $m^3$ of roundwood respectively.
This analysis does not only make it possible to take more arrangements regarding forest management, but also enables us to anticipate the infrastructural provisions. It provides insight of the burden on the different roads due to timber transport.

## 1.6 Production per license holder/logger

In this period more than 166 loggers and logging companies carried out timber exploitation activities in Suriname. As for the realized timber volume the following license holders/loggers are the most important producers:

- Pansa Gwinda (31,428 $m^3$)
- Epro NV / Greenheart Group (31,070 $m^3$)
- Ronny Brunswijk (23,874 $m^3$)
- KentieJokoRudie (16,553 $m^3$)
- Brokopondo Watra Wood International N.V. (16,359 $m^3$)
- Brown Tes Doendoen (9,423 $m^3$)
- Lumprex Suriname NV (8,790 $m^3$)

The contribution of these 7 producers to the total roundwood production in the year 2011 was approximately 38%.

## 1.7 Special method of logging in Suriname

An incidental cutting license (ICL) was issued to Brokopondo Watra Wood International N.V. (BWWI N.V.) in the *Professor dr. ir.* W.J. van Blommenstein hydro power lake with a surface area of 115,633 ha. According to this company it is economically profitable to utilize the submerged trees in the hydro power lake. To enable this, specially adapted technology was developed to carry out underwater logging. Investments were made in adapted motor chainsaws and vessels to fell the trees under water, lift out the logs, and transport them to landings in the hydro power lake. The exploitation unit of this company is formed by one inventory team comprised of one vessel and two crew members. The inventory operations include identifying and topping the trees to be felled. Next, there are 2 felling teams, each comprising 1 vessel with the necessary equipment and manned by a crew of 3. According to the company such an exploitation unit can realize a daily production of 20 – 30 logs.
In 2011 BWWI N.V. utilized 16,359 $m^3$ of roundwood from the submerged trees in the hydro power lake.

Photo 8.Submerged trees

Photo 9. Marking tree to be felled

Photo 10.Vessel with equipment

Photo 11.Roundwood on landing

Photo 12. Landing

## 1.8 Production per timber species

The timber produced in 2011 included more than 150 timber species. With a volume of 67,664 $m^3$ (19% of the production), Gronfolo was the most cut timber species this year, followed by Basralocus in the same period with a volume of 58,994 $m^3$ and a contribution of 16% to the total production.
Other timber species that have also made a significant contribution to the production are: Purperhart (6%), Kopi (5%), Wana (4%), Bolletrie(4%), Walaba (3%), Gele Kabbes(2%), Kimboto (2%) and Wana Kwari (2%).
The above mentioned 10 timber species accounted for 65% of the industrial roundwood production in 2011.

**Table 3. Industrial roundwoodproduction per timber species in 2011**

| **Local trade name** | **International trade name** | **Botanical name** | **Industrial roundwood production in $m^3$** | **Percent** |
|---|---|---|---|---|
| Gronfolo | *Mandio, Quaruba* | *Qualearosea* | 67,664 | 19% |
| Basralocus | *Angelique* | *Dicoryniaguianensis* | 58,994 | 16% |
| Purperhart | *Amarante* | *Peltogynepaniculata* | 23,196 | 6% |
| Kopi | *Cupiuba, Kabukalli* | *Goupiaglabra* | 17,040 | 5% |
| Wana | *Lourovermelho* | *Ocotearubra* | 15,920 | 4% |
| Bolletrie | *Macaranduba* | *Manilkarabidentata* | 12,817 | 4% |
| Walaba | *Wallaba* | *Eperua spp.* | 12,158 | 3% |
| Gelekabbes | *Arisauro* | *Vataireaguianensis* | 9,043 | 2% |
| Kimboto | *Abiu, Chupon* | *Pradosiaptychandra* | 8,431 | 2% |
| Wanakwari | *Quaruba, Iteballi* | *Vochysiatomentosa* | 8,314 | 2% |
| ***Sub-total*** | | | ***233,577*** | ***65%*** |
| Other species | | | 128,316 | 35% |
| **Total** | | | **361,893** | **100%** |

## 1.9 Utilization of the available potential

With a production of 366,000 $m^3$ of roundwood on an area of 59,100 ha. of active cutting compartments, the utilization rate of the timber cutting areas was 6 $m^3$ per ha. in 2011. Taking into consideration of an annual allowable cut of 25 $m^3$ per ha. from Surinamese forests still being sustainable, one can say that only 24% of the available timber potential of Suriname was utilized in this period. Had the full potential of 25 $m^3$ per ha. been utilized in the above cutting compartments (59,100 ha.), an annual production of approximately 1,400,000 $m^3$ would have been realized in 2011.

## 1.10 Production trend and prognosis

The total roundwood production in the first half of 2011 was 159,115 $m^3$, while in the second half of the same year it was 207,280 $m^3$. This shows that the total roundwood production in the second half of 2011 increased by 30% compared to the first half of the year. In 2011 the total roundwood production increased by 48% compared to 2010. It is important to mention that the total roundwood production in 2011 was the highest of all times. A closer look at the production figures since 1960 shows that there was also a peak production of 348,000 $m^3$ in 1979, second only after that of 2011. In 2011 approximately 5% more timber was produced than in 1979.

Looking at the realized roundwood production, the years 2000 up to and including 2011 can be subdivided into 4 periods.

***2000 up to and including 2002***

The total roundwood production in 2000 was 176,516 $m^3$. In the two years after that (2001 and 2002) production decreased with 8% and 5% respectively.

***2003 up to and including 2006***

From 2003 on, there is a steady increase in the roundwood production of Suriname during the four subsequent years, certainly up to 2006. In this period the average production increase is 6% per year.

***2007***

Compared with 2006 there was a 14% decrease of the production in 2007, however.

***2008 up to and including 2011***

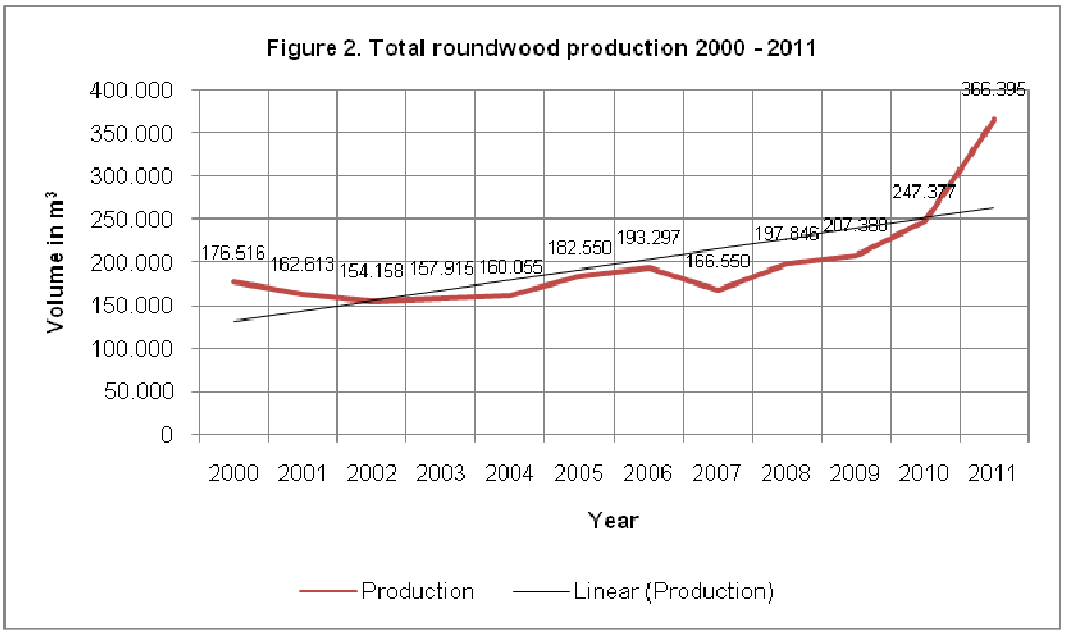
From 2008 up to and including 2011 there is a steady increase in the total roundwood production again. On average an increase of 23% per year is realized in this period.

On average there is a production increase of 7% per year over the entire period from 2000 up to and including 2011.

It is expected that the production in 2012 will increase by 10% in comparison with 2011. This could mean a production of 400,000 $m^3$ of roundwood in 2012.

**Table 4. Roundwood production per $m^3$ from 2000 – 2011**

| Year | Total roundwood production in $m^3$ |
|---|---|
| 2000 | 176.516 |
| 2001 | 162.613 |
| 2002 | 154.158 |
| 2003 | 157.915 |
| 2004 | 160.055 |
| 2005 | 182.550 |
| 2006 | 193.297 |
| 2007 | 166.550 |
| 2008 | 197.846 |
| 2009 | 207.388 |
| 2010 | 247.377 |
| 2011 | 366.395 |



## 1.11 Production of minor timber products

There is production registration of the following minor timber products:
- Crows legs
- Bean sticks
- Piles for dike construction
- Struts
- Stirring sticks
- Light construction timber
- Tomato sticks
- Lianas
- Palm leaves (*Troeli*)
- Palm leaves (*Pina*)

Just as in 2010, the production of bean sticks was the highest of the total assortment of minor timber products in 2011, namely 481,280 pieces. For the rest, the production of crows legs was 75,319 pieces; of tomato sticks 60,176 pieces; of light construction timber 19,821 pieces, and of piles for dike construction 20. The production of minor timber products in 2011 increased compared to 2010.

## 1.12 Uses of minor timber products

Bean sticks and tomato sticks are mostly used in the agricultural sector.
Crows legs are used as supporting material for poured concrete constructions in the building sector. Light construction timber is used to build camps and piles for dike construction are used to make fences and to screen off plots of land and protect river banks.


Photo 13. Crows legs


Photo 14. Bean poles


Photo 15. Small roundwood

## 2. ROUNDWOOD PROCESSING

In 2011 the timber processing industry of Suriname comprised of 79 sawmills and 1 plywood factory. The sawmills have invested in the following types of saw machines:

- Gang saws
- Band saws
- Mobile saws

Approximately 80% of the roundwood produced by the timber sector in Suriname is locally processed.
Two methods of timber processing are applied in the sector, namely the processing of roundwood into sawn wood and the processing of roundwood into plywood.
Most of these companies are located in the coastal area of the country.
The installed capacity of the sawmill industry of Suriname is estimated at 850,000 $m^3$ of roundwood input per year. With a recovery rate of 40% the estimated sawn wood production capacity is 340,000 $m^3$ per year. In 2011 this industry realized a production of 100,000 $m^3$ of sawn wood. This means that approximately 30% of the available capacity was utilized. The only plywood factory in Suriname produced 2,500 $m^3$ of plywood in 2011.

**Photo 16. Gang saw**

**Photo 17. Peeling machine**

**Table 5. Production of processed timber from 2000 - 2011**

| Year | Sawn wood in $m^3$ | Plywood in $m^3$ |
|---|---|---|
| 2000 | 54,000 | 4,000 |
| 2001 | 56,000 | 2,600 |
| 2002 | 47,000 | 1,760 |
| 2003 | 56,000 | 1,500 |
| 2004 | 58,000 | 700 |
| 2005 | 65,000 | |
| 2006 | 69,000 | |
| 2007 | 57,000 | 450 |
| 2008 | 60,000 | 740 |
| 2009 | 63,000 | 770 |
| 2010 | 73,000 | 2,400 |
| 2011 | 100,000 | 2,500 |

**Photo 18.Sawn wood**

**Photo 19. Plywood**

# 3. TIMBER EXPORT

## 3.1 Timber export per assortment

A total volume of 98,359 $m^3$ of timber and timber products with an export value of US$ 14,260,359 was exported in 2011. Looking at export per assortment, roundwood turns out to be the most important timber assortment in 2011. A volume of 89,953 $m^3$ of roundwood with an export value of US$ 10,814,377 was exported. For the rest, 6,240 $m^3$ of sawn wood with an export value of US$ 2,101,714 was exported. The export of hewn square poles and snakewood *(Piratineraguianensis)* was 1,590 $m^3$ (export value US$ 330,525) and 268 $m^3$ (export value US$ 817,444) respectively.
An assortment of finished products comprising doors, window frames, staircase parts, furniture and shingles was exported as well, amounting to a volume of 308 $m^3$ with a value of US$ 196,299.

**Table 6.Timber export per assortment in 2011**

| Assortment | Volume in $m^3$ | Value in US$ |
|---|---|---|
| Roundwood | 89,953 | 10,814,377 |
| Hewn square poles | 1,590 | 330,525 |
| Snakewood | 268 | 817,444 |
| Sawn wood | 6,240 | 2,101,714 |
| Finished product | 308 | 196,299 |
| **Total** | **98,359** | **14,260,359** |

**Photo 20. Sawn wood (1)**

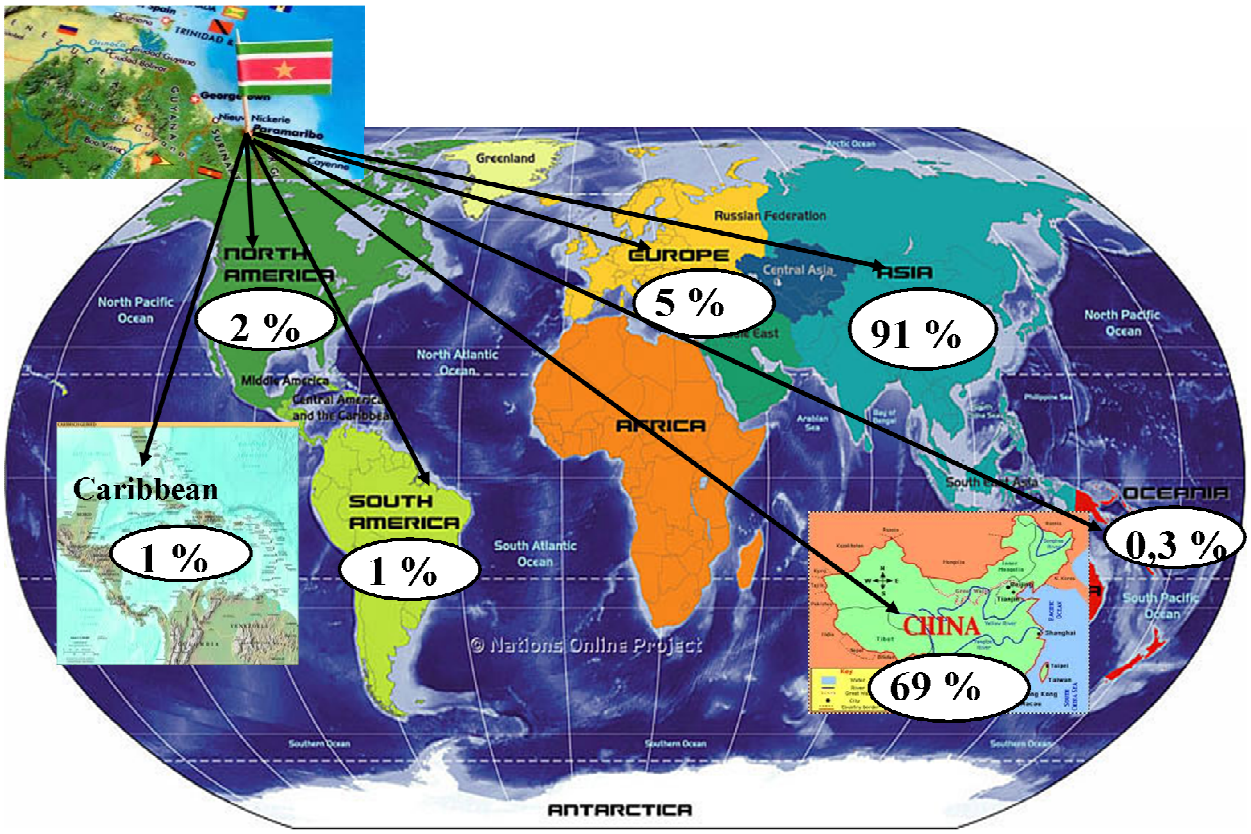
**Photo 21.Sawn wood (2)**

## 3.2 Timber export per region

The most important market of Surinamese timber in 2011 was Asia.This region bought 91% of the total volume of exported timber. In this region, China, India and Taiwan with exports of 69%, 6% and 6% respectively are the biggest buyers of Surinamese timber.

The most important timber assortment (a volume of 87,641 $m^3$ and a value of US$ 10,520,884) exported to Asia is roundwood. The exports to this region comprised processed timber, more specifically sawn wood with a volume of 1.691 $m^3$ and a value of US$ 512,962.
The second most important export region for Surinamese timber is Europe, accounting for 5% of the total timber export. The Netherlands and Belgium are the most important buyers of Surinamese timber in this region. For the rest, 2% of the total timber export was exported to North and Central America, while 1% was exported to the Caribbean and 1% to South America. In 2011, timber was also exported to a non-traditional market of Surinamese timber, namely New Zealand.
The exports to member states of the European Union amounted to US$ 1,415,781. Unlike the exports to the Asian region, the timber exports to the European Union mainly consisted of (approximately 67%) sawn wood and finished products. Within the European Union the Netherlands is the biggest buyer of hewn square poles.
More than 77% of the exported timber (US$ 10,926,276) was destined for the ITTO consuming member states. Exports to the ITTO producing member states amounted to US$ 980,413.

**Map 3. Markets for Surinamese timber**

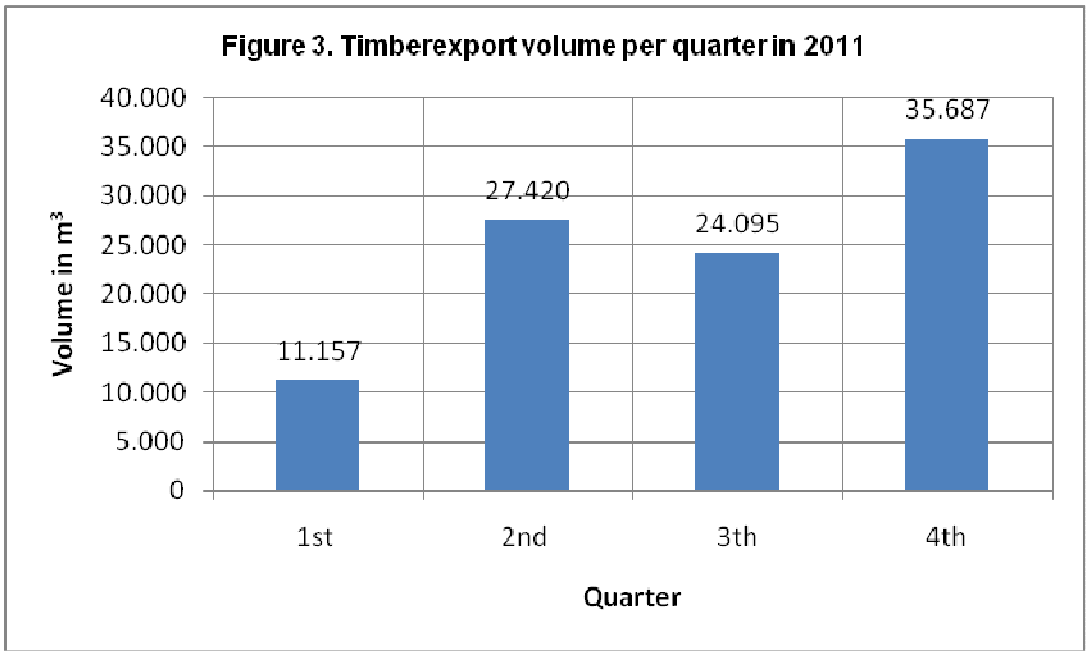


### 3.3 Export per exporter

Seventy exporters exported timber from Suriname. Octagon International N.V. was the biggest exporter (15%) in this period. Other important exporters are Brokopondo Watra Wood International N.V., Suriname Rich Resources Forestry Development N.V., Suriname Jishen Forestry & Timber Industry N.V., Tacoba Forestry Consultant N.V., and Chan Yi Wood Export. The above mentioned six companies together contributed 60% of the timber exports. It is worth mentioning that these companies aim at exports of roundwood, mainly to China.

### 3.4 Export per timber species

Seventy-two timber species of the assortment roundwood were exported in 2011. Of this assortment the timber species Basralocus was at the top of the list with a volume of 19,090 $m^3$, accounting for 21% of the exports. Other important timber species of this assortment are Purperhart (13%), Gele Kabbes(8%) and Bolletrie (7%). It turned out that 10 timber species accounted for 75% of the total exports of the timber assortment of roundwood.
1.590 $m^3$ of hewn square poles of the timber species Basralocus were exported, while 268 $m^3$ of snakewood were exported. Of this timber species snakewood, only the heartwood is exported and this earned us US$ 817,444 in revenues from export.
The exported sawn wood assortment comprised 30 timber species. Here as well the timber species Basralocus (2,091 $m^3$) was the main exported timber species, contributing 34% of the exports. Other important timber species of this assortment are Walaba (15%), GeleKabbes (7%) and Gronfolo (7%). Ten timber species accounted for 87% of the total exports.



## 3.5 Export trend and prognosis

Total timber exports in the first half of 2011 amounted to 38,577 $m^3$, while this figure was 59,782 $m^3$ in the second half of the year. This shows that the total timber exports in the second half of 2011 increased by 55% compared to the first half of the same year. In 2000 a volume of 18,201 $m^3$ of timber with a value of US$ 3,295,800 was exported from Suriname. The timber export figures in the period 2000 up to and including 2011 show some fluctuations, but throughout the whole period we see an upward trend in the exports.

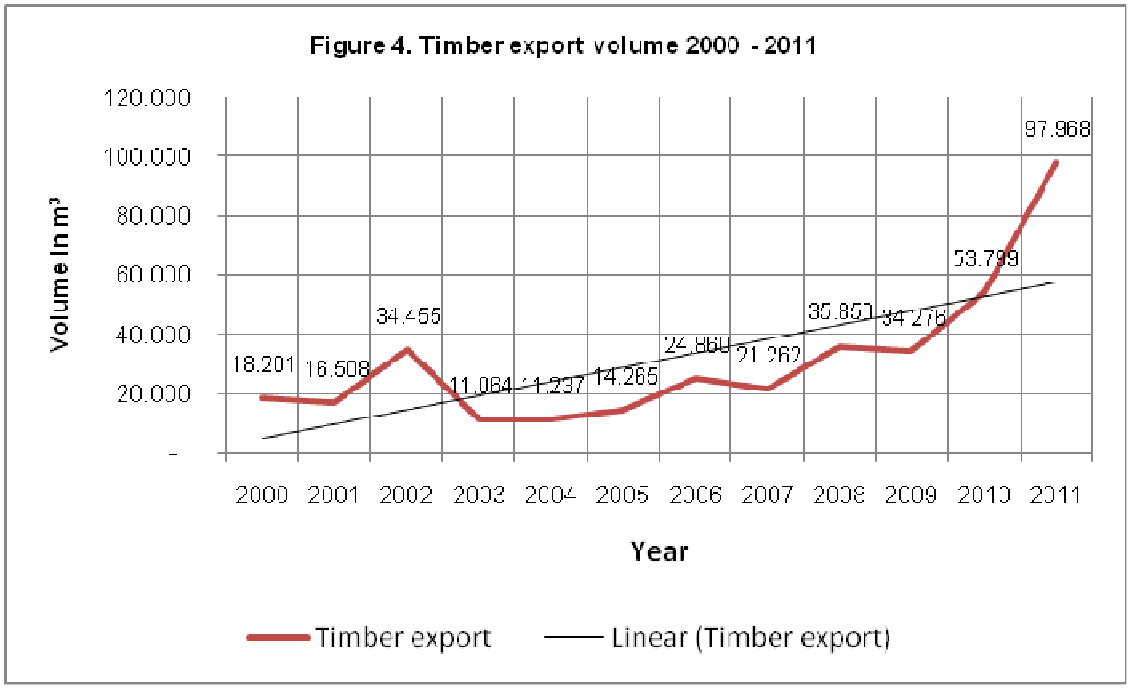
The exports in 2010 increased by 58% compared to 2009. In 2011 the exports increased by no less than 82% compared to 2010.

It is expected that in 2012 the export will increase by 10 – 20%.

The total national exports of Suriname amounted to US$ 2,500,000,000 in 2011, of which approximately 0.6% can be attributed to timber exports.

**Table 7.Timber exports 2000 – 2011**

| Year | Volume in $m^3$ | Value in US$ |
|---|---|---|
| 2000 | 18,201 | 3,295,800 |
| 2001 | 16,508 | 3,520,500 |
| 2002 | 34,455 | 5,405,000 |
| 2003 | 11,064 | 2,488,100 |
| 2004 | 11,237 | 2,339,500 |
| 2005 | 14,265 | 2,936,100 |
| 2006 | 24,860 | 4,554,100 |
| 2007 | 21,262 | 4,957,100 |
| 2008 | 35,850 | 5,542,900 |
| 2009 | 34,276 | 5,180,300 |
| 2010 | 54,157 | 8,299,977 |
| 2011 | 98,359 | 14,260,359 |



# 4. TIMBER IMPORTS

**Table 8. Import of timber products in 2011**

| **Assortment** | **2011** | |
|---|---|---|
| | Volume in $m^3$ | Value in US$ |
| Particle board | 1,732 | 649,389 |
| Fibreboard | 6,721 | 980,618 |
| Plywood | 4,597 | 2,159,837 |
| **Total** | **13,050** | **3,789,844** |

Source: Bureau of Statistics

The most important timber products imported by Suriname in 2011 were particle board, fibreboard and plywood. The import volumes were 1,732 $m^3$, 6,721 $m^3$ and 4,597 $m^3$ respectively. The total import value of these products was US$ 3,789,844.
The most important trade relation of these products is China, where approximately 53% of the total imports come from. 15% of these products came from The Netherlands and 6% from Thailand.
Total national imports in 2011 amounted to US$ 1,700,000,000, of which about 0.2% can be attributed to timber imports.

## 5. DOMESTIC TIMBER CONSUMPTION

**Table 9. Production, export, import and domestic timber consumption in $m^3$**

| Assortment | Production | Export | Import | Domestic consumption |
|---|---|---|---|---|
| Roundwood | 347,566 | 89,953 | | 257,613 |
| Hewn square poles | 769 | 1,590 | | |
| Sawn wood | 100,000 | 6,240 | | 93,760 |
| Plywood | 2,500 | | 4,597 | 7,097 |
| Particle board | | | 1,732 | 1,732 |
| Fibreboard | | | 6,721 | 6,721 |

Domestic timber consumption is determined by comparing the local timber production, timber imports and timber exports with each other. In 2011, 257,613 $m^3$ of roundwood was sold domestically. It can safely be assumed that this roundwood was locally produced, since there is no import of roundwood. This timber is processed into hewn square poles, sawn wood and plywood by the local timber processing industry.
In 2011 the domestic consumption of sawn wood was 93,760 $m^3$. Here as well we are talking about locally produced sawn wood.
In 2011, 7,097 $m^3$ of plywood was sold domestically, 4,597 $m^3$ of which was imported plywood and 2,500 $m^3$ was locally produced plywood.
The consumption of particle board amounted to 1,732 $m^3$ in 2011, while the consumption of fibreboard in the same year was 6.721 $m^3$. These are primarily imported timber products, since as we know, Suriname does not produce particle board and fibreboard.
The total domestic timber consumption expressed in $m^3$ roundwood equivalent in 2011 was 174,179 $m^3$. The timber consumption per capita expressed in $m^3$ roundwood equivalent in 2011 amounted to 0.32 $m^3$.

## 6. EARNINGS FROM THE FORESTRY SECTOR

The direct earnings from the forestry sector for the country come from forest levies. These are exploration fees, retribution on harvested and removed timber, grading fees, export duties on unprocessed and semi-processed timber and concession fees. In 2011 the earnings for the state were comprised of SRD 116,506,- from concession fees, SRD 6,741,499.- from retribution, SRD 4,303.- from grading fees and SRD 5,787,278 from export duties on unprocessed and semi-processed timber, so that the total revenues this year were SRD 12,652,652.-.
The export earnings realized by the sector by exporting timber and timber products was US$ 14,260,359.- in 2011.
The value of the local traded timber and timber products is estimated at SRD 150,000,000.

The Gross Domestic Product in 2011 was about SRD 14 billion, of which 1.3% (SRD 182,000,000.-) can be attributed to logging and timber processing.

The forestry sector provides work for 5,000 people, this is 4% of the workforce of Suriname.

## 7. CARBON IN THE FORESTS

The total forest area of Suriname is 14.8 million ha. With an average of 205 tons of carbon per hectare, the forests of Suriname absorb approximately 3,040 million tons of carbon in the above-ground & below-ground biomass and in the forest soil. The production forests of Suriname with an area of 4.5 million ha. absorb approximately 923 million tons of carbon. Due to logging activities, shifts in the carbon content or emissions of carbon dioxide can occur. The direct causes are:

- Approximately 20% of the felled tree in the form of branches and leaves remains on the forest soil where the tree was felled.
- Soil disturbance is caused by the extraction of the roundwood, etc.
- The undergrowth in the surrounding area is also affected by the felling and extraction.
- The surrounding trees of the tree that was felled are damaged during the felling and extraction process.

In 2011, 366,395 $m^3$ of timber was extracted from the production forests of Suriname. Because of this, approximately 176, 000 tons of carbon were removed from the forest. The local sawmills processed 257,613 $m^3$ of roundwood. This resulted in approximately 100,000 $m^3$ of processed products. Because of this processing 157,613 $m^3$ of timber was released in the form of waste, which was presumably destroyed by burning. This process resulted in the emission of approx. 278,000 tons of carbon dioxide into the atmosphere.

**Photo 22. Canopy**

## Sources:

General Bureau of Statistic (ABS), Division National Accounts

General Bureau of Statistic (ABS), Suriname Basic Indicators 2012-1

SBB, Forest statistics, Production, export and import of timber and timber products in 2011