


# SUSTAINABLE FORESTRY RESOURCE MANAGEMENT



## BRIEF SUMMARY

 Forest resources provide Pacific Islanders with food, medicine, building materials, raw materials for crafts, as well as a multitude of other goods and services which cannot be replaced by imported products. **In the 1970s, a large-scale campaign to plant Caribbean pines was launched in New Caledonia, French Polynesia and Wallis and Futuna.** This initiative demonstrated how adopting sustainable forestry management practices that can withstand competition from imported wood products could contribute to resilient economic development in the face of climate change.

**"Caribbean pine, *Pinus caribaea*, planted in the 1970s"**


During a PROTEGE regional workshop held at the start of 2020, forestry sector stakeholders from the three territories recognised many similarities both in the specific characteristics of their industries and in the challenges they face to ensure their activities are sustainable. **The preliminary conclusions from the workshop were consolidated into a comparative forestry industry study on the three territories to make it possible to implement regional cooperation activities and strengthen sustainable forestry resource management, particularly through tree farming.**







## BACKGROUND

 In **New Caledonia, French Polynesia and Wallis and Futuna**, the forestry industry almost exclusively focuses on plantation of **Caribbean pine (*Pinus caribaea*)**, a fast-growing species that was introduced in the 1970s. These trees are recognised for their mechanical qualities during processing and construction.

In **New Caledonia**, pine plantations are estimated to span 5500 to 6000 hectares, primarily on public and customary land. In **French Polynesia**, such plantations cover 5300 hectares, 60% of which is on private property, while in **Wallis and Futuna** they cover 500 hectares of exclusively customary land. However, production generally remains under-promoted and underutilised, with a low local market penetration rate. The lack of competition with imported products (such as Scots pine) and construction industry restrictions on the use of this species in public projects due to building standards are the main obstacles to the sector's development.

In building a forestry policy for **Futuna**, the Wallis and Futuna Agriculture Department (DSA) consulted with the traditional leaders of the Kingdoms of Alo and Sigave to identify shared concerns on forest management and the specific priorities of each village and kingdom. This revealed a growing trend of residents abandoning agriculture in the hilly areas of the island, as well as increasing scarcity in hardwood varieties for traditional uses (artisanal, medicinal and construction). In addition, Tropical Cyclones Raja (1986) and Tomas (2010) severely damaged forests and Caribbean pine plantations on Futuna's peaks, stripping the land near to the island's rivers. Discussions with traditional leaders revealed that the lack of timber drove the transition to the use of concrete in construction, which requires large amounts of sand and contributes to coastal erosion.

In **French Polynesia**, nearly 5000 hectares of Caribbean pine were planted during the 1970s and 1980s. Some 50 years later, the development of the forestry-timber industry has become a priority for local authorities, who aim to partially substitute imported products with locally produced wood. A large portion of the stands can be sustainably logged and transformed into timber and by-products for the local market. However, foresters are largely uninterested in smaller trees (less than 20 cm in diameter), which are left behind in forests after logging. Solutions must be found to combat this underutilisation, as large amounts of small timber will be produced from tree thinning operations on new plots over the next 8 to 10 years. Replanting and management of these tree farming stands are expected to result in the thinning of some 50 hectares per year starting in 2037, representing a total estimated volume of between 1500 cu m and 2000 cu m.







## ISSUES & OBJECTIVES

### Forest environment restoration

Based on the recommendations from local initiatives as well as from PROTEGE's regional workshop, **the DSA has decided, in collaboration with traditional leaders, to reforest specific degraded areas on the island of Futuna that have high environmental value.** The aim is to limit erosion, protect water resources and facilitate the population's access to natural resources. The actions underway in the villages of Kolias and Vaisei will preserve Futuna's biodiversity by promoting non-wood forest products and local wood. The selected plots will therefore contribute to conserving ecosystem services that regenerate soil damaged by agriculture, combat erosion and invasive species, and protect water resources.

This initiative has provided technical and organisational support for the development of private and community-based forest nurseries and aims to ensure a steady supply of local forest species in the form of a diverse range of saplings for agroforestry and non-wood plants of high economic value.

To bolster the survival rates of saplings in forest environments, these programmes have benefited from soil mycorrhizae analyses conducted by a New Caledonian company. The goal of such analyses is to improve soil regeneration and optimise environmental restoration (of forest species) through biological methods.

**"Reforestation limits erosion,  
protects water resources and  
enhances biodiversity"**





## ISSUES & OBJECTIVES

### Promoting local wood from tree farming

Held in March 2020, PROTEGE's regional workshop highlighted how similar the Caribbean pine industry was in the three territories. It became necessary to compare the current state of forestry management in the three territories in order to advance the development of cooperation projects among the relevant stakeholders.

A study was conducted by comparing available data on the characteristics of Caribbean pine, its logging and initial processing, the regulatory frameworks in place for its use in construction, preservation treatments, and market requirements. The aim was to determine the areas and opportunities for cooperation among the OCTs, particularly as it relates to revising the current mechanical classification of Caribbean pine (standards, regulatory and legal framework for construction, etc.), identifying the development capabilities of each territory and diversifying the income of stakeholders in the industry.

### **"A comparative assessment of forestry management in the three territories"**

In terms of methodology, the study was implemented in a manner specific to each territory.



## ISSUES & OBJECTIVES

Loka Forest on **Wallis**, with its 120-hectare plantations, is the easiest to log thanks to its accessibility and ownership status (considered as public property). Its standing volume is estimated at more than 60,000 cu m, with an annual growth rate of around 1000 cu m. Following the regional workshop and based on the findings of the comparative study on the forestry sector in the three territories, the DSA called on the expertise of New Caledonia's Sud Forêt semi-public company for recommendations on how to optimise the forestry-timber industry on Wallis and improve the performance of SMJ Sawmill, the only tool for primary wood processing on the island. Several objectives were set:

Characterising the wood resources present in Loka Forest: assessing the production potential of the Caribbean pine forests and their capacity to meet market needs. The aim was to categorise and prioritise areas for logging and reforestation, together with the use of mapping.

Market study on timber in Wallis and Futuna: analysing the size of the market, the products consumers want, the supply of imported products, regulations on construction materials, tax structures, and obstacles to the sale of locally produced Caribbean pine.

SMJ Sawmill's consultancy: providing recommendations to optimise operations, adjusting capacity and determining the scale of production tools so that local resources could best meet the current and future needs of the market.

### "Demonstrate local wood quality to promote its use"

At the same time, PROTEGE's regional workshop provided an opportunity for stakeholders from New Caledonia to engage in discussion with their **French Polynesian** counterparts on significant differences in the sector in each territory. In New Caledonia, the log sector developed around 30 years ago and represents 40% of the total annual production of Caribbean pine today. French Polynesia, inspired by New Caledonia's experience, is looking into the feasibility and conditions required to develop a log sector to diversify its timber and sawmill revenue. The International Cooperation Centre of Agricultural Research for Development (CIRAD) has been entrusted with assessing this opportunity and will examine the availability of resources, the state of demand for and use of logs, the type of possible products, and the size of the market for each identified product.

In **New Caledonia**, though silviculture practices are considerably more sustainable than in major wood-exporting countries, the market is still dominated by imported wood, most of which does not come from sustainably managed forests. By processing local wood and making it resistant to the climate conditions in New Caledonia, it should be possible to rival competition from imported products. If the local industry is to gain a larger market share, it must demonstrate the quality of its processing techniques when compared to imported wood products. Currently, there are no laboratories in New Caledonia that can certify local wood according to regulatory standards in the construction sector, unlike imported wood which is analysed in exporting countries. The creation of a specialised laboratory in New Caledonia would allow local wood to provide the guarantees required in construction industry tenders. This initiative would be doubly beneficial for the environment, as it would promote the use of wood from local and sustainable value chains.







## OUTCOMES

### Forest environment restoration

In Wallis and Futuna, the DSA set up two pilot sites, each adapted to the specific forest restoration priorities of the two kingdoms of Futuna: Site 1: Reforestation and restoration of a *toafa* (heath) plot in the village of Kolia in the Kingdom of Alo to preserve endangered tree species; Site 2: Reforestation of plots to combat erosion and protect water resources in the village of Vaisei in the Kingdom of Sigave.

The Kolia site illustrates how adaptable the planting methodology can be based on the existing plant cover, by cleaning up and reusing canopy gaps. However, the mortality rate of saplings rose slightly, due to the invasion of plantlets by ferns. The cleaning and refilling recommendations provided by the Futuna forest technician to residents in the village were useful in overcoming these challenges.

### "Pilot site monitoring with sign panels to encourage preservation"

The Vaisei site, covering some 2.6 hectares, is located at the foothills of the mountain peak overlooking the village. It has experienced severe erosion since the passage of Tropical Cyclone Thomas in 2010. A landslide threatened the mountain's ecosystem, the village and the Sauma river water source located below. This site perfectly illustrates how well planting can be adapted based on the contours in order to stabilise erosion-prone soil. Plantations were organised by maintaining high plant density in steep areas, while density was reduced along lower gradients. However, due to the tight deadlines, the village was unable to harvest seeds from a variety of traditional plants and trees, which are becoming rarer on the island of Futuna. The seasonal nature and availability of seeds, as well as germination rates, did not fall within the retroplanning set up for planting the plot.

DSA agents monitored changes on both sites and made note of the lessons learned on the growth rates of the rare traditional tree species. Signs were posted in villages and along roads leading to the experimental sites to inform the public, promote the work done by residents and encourage the sites' preservation.





## Promoting local wood from tree farming


The comparative analysis of the industry in the three territories allowed for greater characterisation in the following areas: available resources, organising processing and processing (sawmills), markets served and potential support for the industry.

The following are the similarities among the three territories: i) strong unharvested potential that is developed or being developed, which could supply the local market and capture a portion of the substitutable demand (the entirety of the wood demand is not currently substitutable for structural reasons); ii) wood quality that is not always guaranteed, particularly wood from existing plantations that could be processed into construction timber; iii) the existence of a growing logging and processing sector (new investments, hiring, etc.); iv) public policies that support development of the industry, but whose means are limited and/or becoming restricted; v) a poor image of local wood due to the history of its usage; and vi) the existence of obstacles that hinder the increase in demand or supply of local wood. These are obstacles that could be eliminated, particularly by using local wood in public tenders, promoting joint products and biomass for renewable energy production, and increasing competitiveness of local wood by reducing production costs for local companies.

**"A study visit and continued cooperation between Wallis & Futuna and New Caledonia in the area of sustainable forestry management"**



## KEY FIGURES

**90**   
**people,**  
including 40 youth aged 18 to 25,  
some 13 of whom were young women,  
were provided with information on  
forest restoration on Futuna

**4.5**   
**hectares**  
of forest restored on Futuna

**15**   
**years**

this is how long the 82 hectares of forestry  
resources in Loka Forest will be able to meet  
local demand for wood on the island of Wallis

**1**   
**regional**  
wood-treatment  
testing laboratory



The outcomes and recommendations from this study were presented to the three territories in September 2021 to serve as a basis for their cooperation projects.

In addition to demonstrating that local resources were of quality and could meet local needs, the work carried out by Sud Forêt on **Wallis** made the unique sustainable forest management actions a reality. The residents in the district of Hihifo recognised the urgent need to log Loka Forest, particularly on the Caribbean pine that was starting to die off. The need also arose to reflect on the future of the forest and on replanting efforts to preserve it, so it could continue to provide the necessary resources for future generations on the island. Hihifo's traditional leaders requested that the DSA organise a study visit to New Caledonia to learn how to sustainably manage the Loka Mountain and gain the basic principles of logging and processing Caribbean pine. This visit, funded by PROTEGE, saw a delegation composed of traditional leaders, elected officials from the Territorial Assembly and DSA agents travel to New Caledonia in August 2023. It culminated with the drafting of a preliminary Sustainable Management Plan for Loka Forest and Wallis and Futuna. At the same time, the village of Alele increased felling of Caribbean pine in the first quarter of 2023. This allowed the DSA's Forestry Office to run the necessary volume tests and provide data for Sud Forêt's assessments.

**In French Polynesia, the work undertaken highlighted the weakness of the log market, which is estimated at only 500 posts per year.** In addition, current small tree stocks are insufficient to supply the pine log industry. In the absence of precise data on the sustainability of local pine logs over the long term, the market faces strong competition from metal posts, which last longer and are less costly. As a result, the wooden log market in French Polynesia is still a sluggish niche market for the time being.

**With support from PROTEGE, a technical and economic feasibility study was conducted to identify the necessary and depreciable equipment to suit local wood production volumes in New Caledonia.** Thanks to financial support from local authorities and PROTEGE, the study led to the creation of a partnership where the New Caledonia Foresters Group obtained new equipment, while the Laboratoire de Nouvelle-Calédonie (New Caledonia Laboratory) was tasked with management. The Laboratoire de la Nouvelle-Calédonie, under the Animal Health, Food and Rural Affairs Office (DAVAR), is the only official laboratory dealing with the rural sector in New Caledonia.

## KEY FIGURES



**1**  
**comparative review**  
of the status of  
Caribbean pine

**13**  
**strains**  
of mycorrhizae  
present in the soil of  
Wallis and Futuna



**5**  
**strains**  
of mycorrhizae from Wallis  
and Futuna are cultivated  
in the laboratory

**1**  
**new strain**  
of mycorrhizae  
discovered on Futuna



## FIRST-HAND ACCOUNTS



### SEASI LUAKI

*Forestry Unit officer, Futuna Branch of Agriculture, Forestry and Fisheries Department*



*The Vaisei restoration project aims to combat soil erosion and prevent landslides that directly threaten the village and its water source. The reforestation of the mountain was done with local, resistant and well-adapted species such as the Tilo and Fetau (*Calophyllum inophyllum*), which we tested in the village of Kolia during the first restoration project on Futuna. The chief and families in the village have been deeply involved from the nursery stage to the tree planting exercise. For this particular project, we cleared a pathway more than 2 km long by machete to reach the planting area, and we transported the 1500 seedlings on our shoulders. It was not easy, but we did it, and we will continue working together to restore and protect the forest.*



### MAUFEHI

*Chief of the village of Alele, Wallis*



*Our objective is to benefit from the potential of Loka Forest, which was first planted by our ancestors and is ageing rapidly today. We absolutely must harvest it to replace imports and replant it with new trees. The forest can give our young people jobs. This is the meaning behind our work with the DSA and New Caledonia's Sud Forêt company.*







## PROSPECTS AND SUSTAINABILITY

**Reforestation of degraded areas of high environmental value is a major challenge for the island of Futuna.** The success of the projects carried out with the support of PROTEGE shows that **it is possible to reproduce these types of actions to protect biodiversity while combatting soil erosion and invasive plants.** On Futuna, the terrains are hard to access (steep slopes, lack of access for motorised vehicles, etc.), scarcely fertile and are taken over by invasive species, with a rapid rise in weeds. Brush clearing efforts are physically demanding and need to be accompanied by a raft of incentives to encourage villages to continue this work so forests can regenerate, as they are shared assets that are vital for mitigating the effects of climate change.

The results from the analyses on the mycorrhizae strains present in the soil on Wallis will allow for the creation of an inoculum made of strains that are endemic and indigenous to **Wallis and Futuna.** An inoculum is a nature-based solution that should be promoted to improve soil regeneration and optimise the environmental restoration of forest species.

Thanks to the positive outcomes from the local wood resources project, negotiations have begun on a technical cooperation agreement to develop the forestry-timber industry, to be added to the existing agreements between New Caledonia and Wallis and Futuna.

If the current situation in **French Polynesia** is not deemed favourable for the development of a local log sector, other opportunities may arise in the next 8 to 10 years when the first set of plots that are being replanted will have to be thinned. To solve the difficulties linked to treating log wood, on-plantation trials could be implemented. These may also serve as demonstration sites to assess how the logs fare under the design and usage conditions specific to French Polynesia.

**A laboratory to analyse wood treatments will be implemented. It will be able to offer its services to the industry stakeholders in Wallis and Futuna and French Polynesia,** so they can have access to comparative data on the properties of local and imported wood.







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