

# Summary of the Management Plan 2016 for the Forests and Tree Resources of Tonga



## Introduction

The landscape of Tonga is dominated by trees. The original forests have been extensively cleared and modified by more than 2,500 years of settlement, resulting in a unique mixture of agroforestry plantings, coconut woodlands, small areas of remnant natural forest and a timber plantation.

Forests and trees make a significant contribution to the economic, environmental and social well-being of all Tongans. Forests and trees enhance the natural beauty of the landscape and provide multiple benefits, including shade and shelter for crops, protection of the coastline and sensitive areas from storm damage and erosion, habitat for many species of plants and animals and timber, food, medicines and other traditional products for economic, social and cultural use. Forests and trees store carbon and they therefore have a critical role to play in mitigating the effects of global climate change. It is therefore important that they are managed in a sustainable manner for both current and future generations.

The nature of the forest and tree resources in Tonga is very different to other countries for the following reasons-

- The area of 'forest' is very small but the area of tree cover is very high. Most tree cover occurs as scattered trees or groups of trees within the predominantly agroforestry system of land use.
- The timber resources are very small and are managed mostly under individual private holdings (allotments) of 3.3 and 5 hectares in area.
- The environmental risk of tree establishment and harvesting activities is generally low due to the small scale of operations, predominantly gentle topography, relatively low risk of erosion and an absence of streams.



## Management objectives for the forests and tree resources of Tonga

The objectives of management for the forests and tree resources of Tonga are laid down in the *National Forest Policy for Tonga 2009* as follows-

*to support the management of the forests and trees of Tonga in a sustainable manner to provide benefits for current and future generations of the Tongan people. This includes indigenous forests, planted exotic forests, agroforests, and trees on farms and in urban communities. Implicit in this objective is the requirement to manage the forests and trees for the conservation of biodiversity, soil, water and other environmental values, as well as for economic and social benefits. The inherent impacts of climate change, growing urbanisation and globalisation have been closely considered.*

The Management Plan 2016 for the Forests and Tree Resources of Tonga recognises that forest management is a long term and dynamic process and that management objectives and priorities will change over time in response to changes in social, economic and environmental factors.

The current objective of the management plan for the forests and tree resources of Tonga is to maintain and enhance the diverse suite of values currently provided by the forests and trees and to foster the sustainable management of these resources through the following key actions-

1. Improving the information about the extent and nature of the forests and tree resources through improved inventory
2. Promoting the benefits of tree planting and management
3. Fostering community engagement
4. Improving the management of protected areas
5. Maintaining forest health
6. Improving the legal and policy framework
7. Building capacity for enhanced co-regulation
8. Improving the enforcement of forest laws
9. Monitoring and reporting on sustainable management

Implementation actions to foster the sustainable management of Tonga's forests and tree resources are summarised in Table 2.

## Managing threats to the sustainable management of forests and trees

The challenges for the sustainable management of Tonga's forests and tree resources are similar to those faced by most other countries in the region, namely-

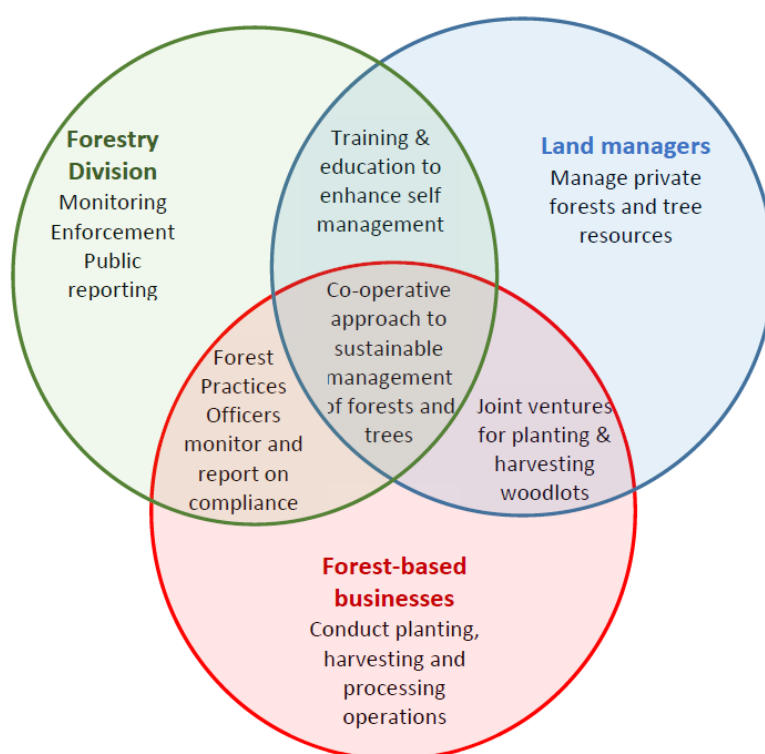
- Limited and declining capacity within government to support forest management and regulate forestry activities.
- Transition to a cash economy and declining involvement of younger generations in traditional farming and rural communities.
- The effects of climate change.
- Social and economic pressures on remaining forests and trees, resulting in the loss and degradation of these resources in the absence of an appropriate management and regulatory framework.

The specific threats to Tonga's forests and tree resources include the following-

- |  |   |
|--|---|
| 1. Clearing for agriculture                    | 9. Insecure land tenure                                   |
| 2. Unsustainable cutting of sandalwood         | 10. Markets and certification                             |
| 3. Lack of knowledge                           | 11. Coastal development                                   |
| 4. Social and economic factors                 | 12. Biological factors                                    |
| 5. Lack of inventory                           | 13. Illegal tree removals for firewood and other purposes |
| 6. Poor logging practices                      | 14. Rubbish and pollution                                 |
| 7. Climatic factors, including climate change  | 15. Limited institutional capacity                        |
| 8. Wood processing capacity and infrastructure |   |

The involvement of most Tongan landholders in tree planting and felling has traditionally been relatively infrequent and small scale for subsistence use. In general, these activities do not warrant measures such as individual forest management plans or detailed operational plans. However, social, economic and environmental changes will affect the future extent and management of forests and trees. Accordingly, government and society have a collective responsibility to ensure that the forests and tree resources are equitably managed in a manner that recognises both the private rights of landholders and the public benefits that are enjoyed by the broader community.

It is unlikely that government or the private sector alone will have the resources and capacity to tackle all of the threats to the sustainable management of Tonga's forests and trees. Therefore, the most appropriate approach is an 'enhanced co-regulatory model', which seeks to build the capacity for self-management and self-regulation by land managers and forest-based businesses, whilst allowing the government to focus its limited resources on core functions in the areas of training, education, monitoring, enforcement and reporting.



*The relationship between the Forestry Division, land managers and forest-based businesses for the implementation of the management plan under an enhanced co-regulatory framework*

## Description of the forests and tree resources of Tonga

More than 90% of the original vegetation of Tonga has been modified through agricultural practices, which have produced the present day mosaic of crops and trees. Estimates of forest type and area are provided in Table 1. Native forest covers less than 10% of the land mass and it occurs mainly as small remnants in steep, inaccessible or remote areas and coastal strips, swamps and mangroves. A small forestry plantation of 500 ha is situated on 'Eua. Much of Tonga is dominated by coconut woodlands, which form an overstorey of variable density above grassland, shrubland and cropland.

**Table 1– Estimated forest and tree cover** (from the National Forest Policy for Tonga 2009)

Land class	area/ %	Island Group					Total
		Tongatapu	Vava'u	'Eua	Ha'apai	Niuas	
woodland	ha	619	1,133	1,454	2,450	802	6,458
	%	2	9	17	19	11	9
coconut	ha	22,340	10,079	6,553	8,199	3,924	51,095
	%	82	79	74	63	55	74
forest plantation	ha	0	0	500	0	0	500
	%	0	0	6	0	0	1
mangroves and wetlands	ha	1,319	373	0	0	76	1,768
	%	5	3	0	0	1	3
non-forest	ha	2,809	1,113	300	2,330	2,315	8,867
	%	10	9	3	18	33	13
total area	ha	27,087	12,698	8,807	12,979	7,117	68,688

Overall, more than 85% of Tonga is covered in trees. Most of this area is not classified as 'forest' according to the FAO definition of forest because the land is used predominantly for agriculture. However, the concepts of 'forest' and 'sustainable forest management' are much broader in Tonga than in other countries as they encompass both areas that are dominated by trees as well as other parts of the landscape where trees are integrated into agricultural and other forms of land use. Tonga's National Forest Policy defines 'forestry' as *the economic, social and environmental interaction of forests, and trees outside of forests, with people.*

### Natural forests

The natural forests comprise three main communities-

1. **Lowland forest** is dominated by species such as *Calophyllum neoebudicum* (tamanu), *Myristica hypargyrea* (kotone), *Planchonella grayana* (kalaka) and *Maniltoa grandiflora* (pekepeka). The largest areas of lowland forests are located in Vava'u and 'Eua. Mature remnants are mainly restricted to remote and inaccessible areas. Successional vegetation and secondary growth occurs within allotments that are not being actively managed for agricultural crops. These regrowth stands vary in age from a few years to 20+ years and they may comprise a significant proportion of the land base in some parts of Tonga.



2. **Littoral forest** occurs as a narrow band of salt tolerant plants that grow from the high water mark to 5 or 10 m elevation. The native tree species are *Hernandia nymphaeifolia* (fotulona), *Tournefortia argentea* (touhuni), *Guettarda speciosa* (puopua), *Xylocarpus moluccensis* (lekileki), *Excoecaria agallocha* (feta'anu), *Terminalia catappa* (telie) and *Allocasuarina equisetifolia* (toa).
3. **Mangrove forest** is common on Tongatapu and Vava'u. The three most typical mangrove species are *Rhizophora mangle* (tongo), *Rhizophora stylosa* (tongo), and *Bruguiera gymnorrhiza* (tongolei). Mangroves thrive in saline, waterlogged, anaerobic situations where other trees cannot grow.



Remnant native forest in Vava'u (left) and on the steep coast of 'Eua (middle). Secondary growth in Ha'apai (right)

Sandalwood (*ahi*) is an important commercial species of the lowland forest. Only one species, *Santalum yasi*, occurs naturally in Tonga. The Indian sandalwood, *S. album*, has been introduced to Tonga where it grows very well and readily hybridises with the local *S. yasi*. Sandalwood was widely distributed throughout Tonga in the past but natural stands are now restricted to small remnants of native forest. Ongoing harvesting of young sandalwood and a low level of replanting are the major factors contributing to the ongoing decline of the sandalwood population.

### Forest plantation

Tonga's only major forestry plantation is located in 'Eua, comprising about 500 hectares of predominantly Caribbean Pine, with some red cedar, mahogany and other species. The plantations are managed by Tonga Forest Products Limited. There is also a small pine plantation of approximately 50 ha within the Queen's estates on 'Eua. Some land holders have small woodlots of timber species.



Plantings in 'Eua: sandalwood in an allotment (left); pine plantation (right); kauri pine woodlot (right)



## Coconut woodlands

Coconut woodland covers 74% of the country. The resource provides multiple products and benefits. However, the number of coconut trees has substantially declined in recent years due to a number of factors, including the loss of copra exports, natural senescence and clearing for more intensive forms of agriculture.



*Coconut woodlands cover much of Tonga (left); the trees provide many products and services (middle), but much of the resource is old and in need of replanting (right)*

## Agroforestry and other tree resources

Trees have been extensively planted throughout Tonga for many purposes, including shade and shelter for agricultural crops, and the provision of fruit, timber and firewood. The main species planted are Caribbean pine, breadfruit, eucalypts, mahogany, kauri pine, teak, sandalwood and red cedar.



*Red cedar planted in a tax allotment in Tongatapu (left); breadfruit is a highly valued tree resource throughout Tonga (middle); agroforestry planting of mixed tree species in 'Eua (right)*

## Review and public reporting

The Forestry Division will review actions taken and progress made under the management plan as of 30 June each year. The Division will prepare a report on progress and relevant issues for inclusion in its annual report.

The Division will, in consultation with stakeholders, undertake a review of the progress made under the plan every five years. The Division will prepare a report on progress for submission to the Minister responsible for the administration of the Forests Act. The report will include any recommended changes to the management plan.

**Table 2 – Management actions for the sustainable management of Tonga’s forests and tree resources**

<b>Improving the information about the extent and nature of the forests and tree resources through improved inventory</b>	
1.	Proceed with the proposed national forest inventory (NFI) in collaboration with a funding body.
2.	Design and conduct the NFI to better define and quantify the various categories of forest and tree cover.
3.	Ensure that the assessment of biodiversity is undertaken as part of the NFI or associated projects.
4.	Ensure that an inventory of sandalwood is undertaken as part of the NFI or as a separate ongoing inventory.
5.	Develop a practical, cost-effective mechanism capable of being managed within internal forestry division budgets for monitoring changes in the NFI.
6.	Publish the results of the NFI to encourage private sector investment in tree planting and utilisation.
<b>Promoting the benefits of tree planting and management</b>	
7.	Seek to better quantify and publish the effects of trees on agricultural productivity through ongoing research.
8.	Disseminate information on the benefits of trees, including effects on agricultural productivity and the financial returns from the use of trees for timber and carbon.
9.	Enhance the capacity and motivation of landholders to plant and maintain trees for multiple purposes through education and information
10.	Develop and launch a program for landholders and lessees for the reforestation of abandoned allotments with native regrowth and/or high value timber species such as sandalwood.
<b>Fostering community engagement</b>	
11.	Foster the establishment of industry-based and community-based cooperatives for the establishment and management of forests and trees, including community coastal care committees to develop and implement management plans for the rehabilitation of degraded foreshores and for the improved management of foreshores, particularly in areas most vulnerable to rising sea levels and storm surges.
12.	Foster the establishment of industry-based and community-based cooperatives for the processing and marketing of forest products
<b>Improving the management of protected areas</b>	
13.	Ensure that management plans are in place and are implemented for national parks and reserves.
<b>Maintaining forest health</b>	
14.	Support programs for weed control by local community groups.
15.	Maintain strict quarantine controls for weed species.
16.	Develop quarantine controls on sandalwood species other than <i>S. yasi</i> and <i>S. album</i> .
17.	Develop and implement management plans to maintain the genetic purity of natural populations of <i>S. yasi</i> , including discouraging nearby planting of other species of sandalwood.
18.	Continue to support school and community education programs to discourage the dumping of rubbish.
19.	Ensure that landholders have access to suitable sites for the disposal of rubbish.

<b>Improving the legal and policy framework</b>	
20.	Ensure that the Forests Act, National Forest Policy (NFP) and national forest inventory (NFI) recognise the tree resources of Tonga as part of a broader definition of 'forests' in Tonga
21.	Improve the integration of the Forests Act with other acts and planning systems
22.	Clarify that the 'Eua code of harvesting practice is legally enforceable
23.	Appoint Forest Practices Officers (FPOs) to prepare, certify and monitor the implementation of timber harvesting plans for plantations
24.	Improve public access to reports on monitoring, enforcement and sustainable forest management
25.	Develop guidelines under the <i>Land Act 1988</i> and the <i>Environmental Impact Assessment Act 2003</i> for circumstances under which developments, including roads, buildings and sand mining, may be permitted within the foreshore zone and conditions that must be applied to mitigate any adverse impacts.
26.	Clarify at law the extent to which a landholder's use of land may be constrained in order to provide a contribution to the public good for 'common pool resources' such as biodiversity, aesthetics and carbon storage.
27.	Develop mechanisms for situations where landholders are asked to manage all or part of their land for the public good.
<b>Building capacity for enhanced co-regulation</b>	
28.	Develop and implement a transition strategy for the transfer of knowledge and capacity from government to the private sector, including clarification of the core functions to be retained by government and the role of government in fostering entrepreneurship and business development in the forestry sector.
29.	Develop manuals on topics such as biodiversity and silviculture to support the application of the codes of practice.
30.	Develop a training framework for Forestry Division, FPOs and contractors
<b>Improving the enforcement of forest laws</b>	
31.	Develop and implement enforcement protocols for the forestry framework, including legislation, sandalwood regulations, management plans and codes of practice.
32.	Implement the Sandalwood Regulations.
33.	Review and if necessary improve and enforce regulations to control the dumping of rubbish and pollution under the Environmental Management Act.
<b>Monitoring and reporting on sustainable management</b>	
34.	Develop and implement procedures for regular monitoring and public reporting on the outcomes of actions taken, the standards being achieved, areas for improvement and progress towards sustainable forest management.
35.	Continue to liaise with regional countries and agencies to develop and adopt a regional framework for the verification of legality and the certification of sustainability of forest and tree management.

## Further information

A copy of the Management Plan for the Forests and Tree Resources of Tonga, and advice on the sustainable planting and management of forests and trees, can be obtained from offices of the Forestry Division of the Ministry of Agriculture, Food, Forests and Fisheries.