



Government of Vanuatu

**Ministry of Agriculture, Quarantine, Forestry and Fisheries (MAQFF)**

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# **Forest Data and Resource Assessment of Forestry in Vanuatu**

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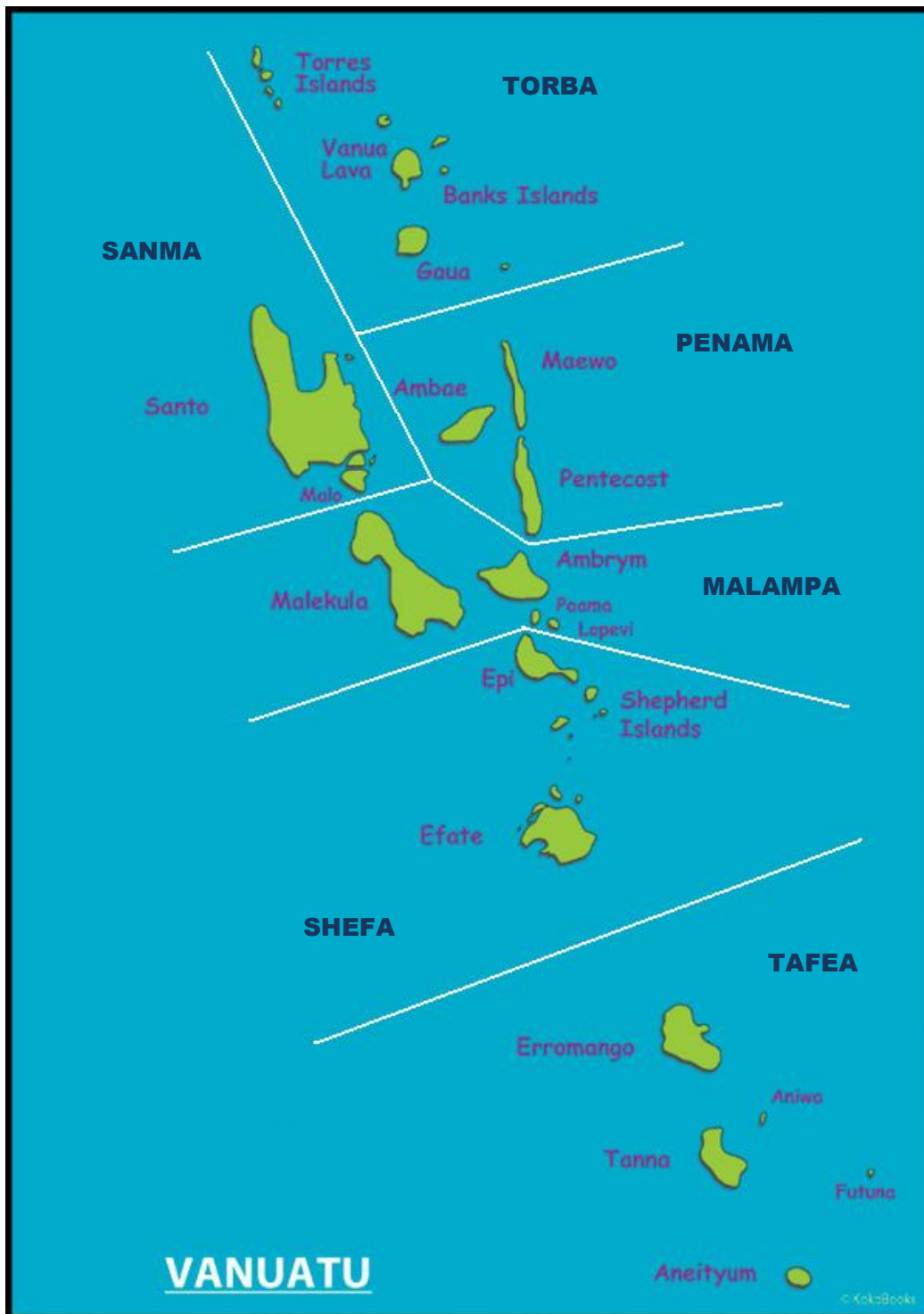
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## Map of Vanuatu (showing Provinces)



## 1. Introduction

The Constitution of the Republic of Vanuatu is the foundation of the Vanuatu National Forest Policy. Its formulation was guided by Article t(d) which states that every person has the fundamental duty to “...*protect the Republic of Vanuatu and to safeguard the natural wealth, resources and environment in the interests of the present generation and of future generations.*” The principal goal for the forest sector is “*to ensure the sustainable management of Vanuatu’s forests to achieve greater social and economic benefits for current and future generations*”.

Forestry is the responsibility of the Ministry of Agriculture, Quarantine, Forestry and Fisheries. The Department of Forests, officially established in January 1980, covers the areas of forest research, extension, utilization and conservation. Forestry is important to Vanuatu’s rural communities and provides a source of cash income. In addition to the commercial forestry operations, the forests provide a wide range of products for the subsistence lifestyle of Ni-Vanuatu.

An inventory of Vanuatu forests was conducted from 1990 to 1993 (Baldwin et. al., 1993). The resulting estimates are out of date but they remain the only data on which to base Vanuatu’s forestry planning and management.

Timber volumes in the forest are much lower than neighbouring Papua New Guinea and Solomon Islands and are frequently 10-20m<sup>3</sup>/ha. Therefore the existing forest on moderate terrain is in high competition between logging companies, and commercial and domestic agriculture in the local communities. The Vanuatu Department of Forests is working hard to administer both the volume harvested as well as refining harvesting techniques. In recent years timber harvesting in Vanuatu has been below the national total sustainable yield levels (68,000 m<sup>3</sup>/year) (Bakeo et. al. 2003).

The 1990-1993 forest inventory found that around 74% of Vanuatu was covered by woody vegetation, half of which is closed forests and the remainder discontinuous scrub and thicket. Of this, only 10% is primary forest. The estimated commercially exploitable forest was set at about 35% of forest cover. However, this situation is fast changing. Vanuatu is utilizing more forests than is being planted and some of the customary landowners are developing their logged forest areas for other activities, like the rearing of cattle, or in coastal and lowland areas of Efate and east Santo for real estate development.

The New Forestry Act (Forestry Act No. 26 of 2001) was developed after reviewing the existing forestry Act [Cap 147]. The Act was passed by Parliament in the fourth quarter of 2001. Regulations to the Act were finalised in 2002, and it was gazetted in 2003. The new Forestry Act is particularly important because it carter for several ad hoc amendments made to the 1981 Forestry Act [Cap 147], and includes sections relevant to developments in the forestry sector.

As well as the forest management duties the Department of Forests is tasked with reporting regionally and internationally on the status of Vanuatu Forests. There are often sections of these reports to regional and international bodies that go unanswered because there is insufficient or out of date information, or the data exists but is held in another section of the Government and in a form that is unsuitable for use in the reports.

There are also a number of issues hampering data collection and sustainable forest management in Vanuatu e.g. industry non-compliance with Code of Logging Practice, lack of industry interest in training their own staff to meet standards, industry reliance (more than 95%) on two species Whitewood and Melektree which is unsustainable, and then there is the continuous decline in the natural forests to support existing and future industries. In addition to this the Department has a lack of human and financial resources, and receives political interference and pressure to issue licences without observing proper procedures.

## **STRENGTHENING MONITORING, ASSESSMENT and REPORTING (MAR) on SUSTAINABLE FOREST MANAGEMENT (SFM) in ASIA**

Sustainable forest management (SFM) is defined in a number of different ways by different organisations. ITTO (2005) defines SFM as:

*“The process of managing permanent forest land to achieve one or more clearly specified objectives of management with regard to the production of a continuous flow of desired forest products and services without undue reduction in its inherent values and future productivity and without undue undesirable effects on the physical and social environment.”*

FAO in their Global Forest Resources Assessment 2005 (2006) state that the concept of SFM has continued to evolve since 1992 through international forest policy dialogue but state that despite this the SFM concept is difficult to define

explicitly. They consider that there are seven thematic elements of SFM; extent of forest resources, biological diversity, forest health and vitality, productive functions of forest resources, protective functions of forest resources, socio-economic functions, and legal and institutional framework.

ITTO (2006) stated that production forest in Vanuatu could not be considered to be managed sustainably because of the absence of long-term management plans and post-harvest care. Much of this can be attributed to a Department, which lacks resources and is unable to easily harness available forest data and use it for management purposes.

This particular study is part of a larger project with its main objective to develop globally harmonized forest-related national Monitoring Assessment and Reporting (MAR) system to directly contribute to the improvement of sustainable forest management (SFM) regimes in the Asia Pacific region. An associated objective of the project is to provide better information on forests coupled with enhanced access and sharing with civil society in order to facilitate and improve upon national decision-making, formulation of efficient forest policies and sustainable forest management and planning.

This report looks at the forest-related data that is collected and updated by the Vanuatu Government's Department of Forests or other institutions in Vanuatu, the data capturing capacity of the Department of Forests, the hardware and software available to them, and the technical capacity to capture and process data. The study also looks at possible alternative methodologies for data capturing and examines data harmonisation between the Department of Forests and its stakeholders under its national network<sup>1</sup>. The study also provides recommendations that could act as a road map for the implementation phase of MAR-SFM in Vanuatu.

## **2. Methodology**

The terms of reference for the review were to assess the technical capacity of the Vanuatu Department of Forests to capture and process data and information, to review equipment and tools used, as well as hardware and software and assess their usefulness and appropriateness, and organise a

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<sup>1</sup> The Department of Forest's National Network is made up of Government Departments, Port Vila Municipal Council, Vanuatu Chamber of Commerce and various Non-Government Organisations.

seminar with the Vanuatu Department of Forests to present the result of the study and discuss future activities.

The review had two components:

- A review of available documentation and reports; and
- Interviews with the Department of Forests staff, other Government Departments and forest-related businesses.

Reporting consisted of analysis of information during and following interviews, presenting draft findings report to a meeting with Department staff and the national network, and preparing a final report based on review feedback.

### **3. Vanuatu's Forestry-related Reporting Requirements**

The Department of Forests is required to provide forest data to national Government, report to regional organisations and committees, and to international conventions and organisations. These are all formal national communications requested through international commitments related to forests.

Nationally, regionally and internationally there is no harmonised reporting system. The international forest-related reporting ranges from processes that are not technically developed, relying on narratives, to very complex reporting requirements like carbon stocks. The International Timber Trade Organisation requires a reported based on 7 criteria, FAO Global Forest Resources Assessment for 2005 used 15 reporting tables to address 6 of 7 thematic areas of SFM, and the Intergovernmental Panel on Forests (IPF) and the Intergovernmental Forum on Forests (IFF) have 207 proposals for action to report against (although all are not relevant to Vanuatu).

The Department of Forests is also required to provide data to the central Government so that they are able to report against their international obligations e.g. on progress being made to meet the Millennium Development Goals, information for inclusion in the IV Chapters and IV Appendices for the national reports to the Convention on Biological Diversity, and data for the United Nations Framework Convention on Climate Change.



In total the Department is expected to prepare or contribute to at least 3<sup>2</sup> regional or international reports annually, and contribute data to 4 national statistics reports and one central government report annually.

### **3.1 National Reporting Requirements**

The Department of Forests (“the Department”) is required to submit an annual report to Central Government on activities such as fixed forest mill returns, mobile sawmill returns, timber exports and sandalwood harvest, as well as the revenue generated both in terms of royalties to landowners and for the central government. The annual report also includes issues relating to the general running of the Department such as staffing levels, programmes of work and budgets. As there is no set template in terms of the forest-related data, the Department is able to produce the annual reports. Much of the forest-related data for the report is compiled from information scattered in a variety of sources, reports, individual staff member’s computer data sets and from other Government Departments.

The Department is also expected to provide quarterly figures on domestic exports of sawn timber and other forest product exports to the Government’s National Statistics Office. The Statistic’s Office then publishes quarterly import and export reports. The National Statistics Office stated that they were often unable to collect the relevant statistics from Forestry and resorted to retrieving the data from the Department of Custom’s ASYCUDA (automated systems customs data) database. However, the data the Department of Customs collects is stored in a different format and uses different measurements making some of the data unusable by the National Statistics Office, leading to a possible underestimation of timber exports from Vanuatu.

### **3.2 Regional Reporting Requirements**

The Department of Forests is required to report biannually to the Secretariat of the Pacific Community (SPC) and biennially to FAO Asia Pacific Forestry Commission.

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<sup>2</sup> This can increase in some years as some of the report mechanisms are not required annually e.g. the FAO’s Forest Resource Assessment is every 5 years.

The FAO Asia Pacific Forestry Commission is currently comprised of 32 countries in Asia and the Pacific and they meet every two years in a general session to review forestry developments in the region, discuss problems of mutual concern, and set new agendas for inter-sessional work.

### **3.3 International Reporting Requirements**

The Department has to provide forest-related information to a number of international conventions and organisations. Each of these differs in their reporting requirements but many with the same objective of sustainable forest management.

#### ***3.3.1 International Tropical Timber Organisation (ITTO)***

Vanuatu became a member of ITTO in May 2000 and to full fill the requirement of its membership has to compile a specialised report. ITTO has established seven criteria and several indicators for ITTO member countries to measure their national efforts against as a means of reporting on the progress toward implementing sustainable forest management.

Vanuatu has been unable to complete many parts of the report because there are no benchmark data to measure the national efforts against. The ITTO Status of Tropical Forest Management 2005 report stated that in the absence of long-term management plans and post-harvest care, production forests in Vanuatu cannot be considered to be managed sustainably. However, they also noted that the current annual industrial log harvest was well below the estimated sustainable yield (68,000 m<sup>3</sup>).

ITTO measures SFM against 7 criteria: Enabling Conditions for Sustainable Forest Management; Forest Resource Security; Forest Ecosystem Health and Condition; Flow of forest produce; Biological Diversity; Soil and water; and Economic, Social and Cultural Aspects.

#### ***3.3.2 FAO Global Forest Resources Assessment (FRA)***

This report is published every 5 years and requires considerable input and forest data from the Department. Fifteen reporting tables were developed to address the thematic elements of sustainable forest management. In the Global Forest

Resources Assessment 2005 (FAO, 2006) Vanuatu's figure's are noted to be based on data for one point in time i.e. 1992. Therefore the report assumes no change in the forest area from the last resources assessment of 2000. This despite the fact that Vanuatu is utilizing more forests than is being planted and some of the customary landowners are developing their logged forest areas for other activities, like the rearing of cattle, or in coastal and lowland areas of Efate and east Santo for real estate development.

The assessment conclusion of no change is because Vanuatu has no updated inventory data nor does it have access to remote sensing images that could potentially provide data and analysis tools for assessing any change in forest area.

### ***3.3.3 UNFF – IPF/IFF***

The Intergovernmental Panel on Forests (IPF) and then the Intergovernmental Forum (IFF) on Forests have examined a wide range of forest-related topics over a five year period and have recommended more than 270 proposals for action to be adopted by the international community – although not all are relevant to Vanuatu. These range from the Development of National Forest Programs, handling forest information and awareness, underlying causes of Deforestation and Forest Degradation, supply and demand for forest products, forest conservation, forest research and development, traditional forest-related knowledge, to international cooperation in financial assistance and technology transfer. This is a huge burden for a small Department with very limited resources.

### ***3.3.4 Other International Conventions***

The Department is also asked to provide forest data for several International Conventions like the Convention on International Trade in Endangered Species of Flora and Fauna (ratified in 1989), the Convention on Biological Diversity (ratified in 1993), the Convention on Desertification (ratified in 1999) and the United Nations Framework Convention on Climate Change (ratified in 1993).

## **4. The Department of Forests, Vanuatu**

The Department of Forests, officially established in January 1980, covers the areas of forest research, extension, utilization and conservation. It has its headquarters at Tagabe in Port Vila, which includes the SHEFA Province office, and then offices in the remaining 5 provincial centres. The Department has jurisdiction over all the islands in Vanuatu. Travel and transport costs make it difficult for the Department to carry out their duties

The Department of Forests has been unlucky with respect to its two largest offices in Port Vila, Efate, and Luganville, Santo. The Department headquarters in the centre of Port Vila was rendered unsafe after an earthquake in 2002 caused damage to the structure. They were moved to temporary office accommodation at Tagabe that has now become a more permanent arrangement. The Department's Santo office was burnt to the ground on two occasions, and two separate locations, causing the loss of all hard and soft copies of forest data. The offices of Santo are now being housed with the Agricultural College until a permanent solution can be found.

There have also been a number of law suits against the Department that has meant the Department paying out to the claimants from the Department's own annual Government allocation. This together with successive Governments that do not seem to value Forestry extension programme work and we find a Department lacking funds to hire sufficient staff, provide them with adequate equipment to do the task in hand, to train and up-skill, and provide them the transport and money to do the job at even a minimum as required by the Forestry Act.

Revenue earned by the Government through timber exports continues to decrease significantly, after a peak in 1998. Much of the timber currently being logged and milled is being sold and/or used within Vanuatu. The Government's policy mentions the importance of agriculture, forestry and fisheries but insufficient allocations are made to any of these sectors instead the Government sees encouraging foreign investment as the way to economic growth and development. This is reflected in the fact that the Real GDP per capita is still lower than in the early 1980s, due largely to the lack of long-term growth in agriculture, forestry and fisheries.

## 4.1 Data collection and capture

The Department uses several means of forest data collection:

- where staff collect data directly in the field;
- where staff get data from industry e.g. log felling registers or small sawmill returns, sandalwood returns, coupe harvesting plans;
- from forest research projects;
- from the Department of Customs on timber and timber product exports;
- from the Department of Statistics; and
- from other Government projects that incorporate forest information.

Many of these data are held either in hard copy/paper form or in individual computers; the Department of Customs perhaps being the exception to this by virtue of that fact that they have a centrally located and fully-integrated database system.

The Forest Industry is required to submit a variety of information to the Department of Forests on a regular basis either monthly or at the end of the season; fixed forest milling returns, mobile sawmilling returns, sandalwood harvests as well as royalties paid to landowners. In many cases these data are not submitted to the Department by the businesses concerned.

The Department, lacking resources and staff, are often unable to visit the millers and businesses concerned, especially those located in remote locations on the outer islands of Vanuatu (see map on page ii). It should be noted that fixed mill owners are based only in Santo but that there are registered mobile sawmillers in all six provinces. We also have to consider the fact that data that was held by the Department's Santo Office was destroyed in the fires with no out-sourced backup of any of these data. Where these data are collected, either directly in the field or sent by the sawmillers, they are generally stored in individual files on personal computers and not in any centralised database.

According to the Forestry Act, logging companies are also required to prepare and submit a coupe harvesting plan, providing details of all operations. These plans have in the past been digitised and stored alongside forest inventory data and provided some useful data for the Department. However, the computer equipment has become outdated and much of the information they are unable to check and verify in the field.

#### **4.2 Equipment, tools, hardware and software**

The Department has no integrated or nationally networked computerised system. Nor does it have an integrated and standardised data collection and storage system. Some of the offices are without computers or have insufficient computer equipment. They also lack basic and essential tools to carry out their day to day tasks e.g. in Santo where the office was burnt to the ground, they are using Agriculture College computers, printers etc. They have recently purchased one printer and computer but have no access to the internet, VANRIS or FRIS.

The Department does have the database Forest Resources Information System (FRIS), which holds the outdated inventory data from 1990-1993. FRIS is a database in Microsoft Access, but before was in Foxpro. The Department staff no longer knows how to update this database to fulfil their data need requirements. The database was an output of from the Forest Inventory. In previous years they could use FRIS with the Vanuatu Resource Information System (VANRIS) to get the information on forested areas but now they must first load the data into MAPINFO to calculate the areas required.

The vegetation and land classification system developed as part of the National Forest Inventory was also incorporated into the national Vanuatu Resource Information System (VANRIS). This is an integrated information system that holds data from a number of different Departments; forestry, agriculture, geology, education, health, and lands. The system was made available in Government Departments throughout Vanuatu. However, again through lack of funding, VANRIS has not been kept up to date with information. Also, maps that are produced are said to have inaccurate information overlaid. However, this system together with the integrated FRIS for forestry would be a better model underlying a system like Customs have with recording imports and exports.

### **5. Forest-related Data held by Government Departments and organisations in Vanuatu**

There are a number of organisations and Government Departments, other than the Department of Forests, that collect, analyse and utilise forest data.

### **5.1.1 The Department of Customs**

The Customs Department have a computerised and nationally networked computerised data collection system called ASYCUDA (automated systems customs data). They record import and export information. The data is all collated on ASYCUDA either by the Customs Departments or by registered custom agents.

The data they collect that is relevant to the Department are exports of timber and timber products. In the customs declarations they record amongst other things the volume of the timber (m<sup>3</sup>), the species, export value, country of destination, and description of the product. However, they only have a few categories for timber and much of what is exported ends up lumped together with “others” thus rendering it useless for forest management purposes. For example, mouldings are listed as “others” and sandalwood is listed as “non-wood products”.

It is likely that the raw data does exist in the system (somewhere) and could be retrieved with some additional programming and/or new forest categories created so that the data can be of greater value to the Department.

This system is very specialised but it is in existence and seems to work and therefore could be adapted for some additional forestry related needs.

### **5.1.2 The National Statistics Office**

National Statistics Office is a Government Department and is Vanuatu's official statistical agency. They require information from the Department of Forests in order to publish their quarterly trade statistics recording trade in timber products. The information they require is sawn timber production, exports of sawn timber and sandalwood. There are problems in that they require data in kg whereas the Department tends to store the data they have in m<sup>3</sup>. There are no current conversion rates kg-m<sup>3</sup> for timber species. They hold all collected data within the Department and requests can be made to receive copies of held data. Again, their needs are different to that of the Department of Forests and they are not interested in species or island/place origin of the timber in question.

### 5.1.3 The Department of Meteorology

There is currently a project with the University of Wellington, Victoria, Australia, the Department of Meteorology and the Department of Forests working on a project to build capacity in Vanuatu to utilize carbon markets to help fund REDD – reduce or avoid emissions from deforestation and forest degradation. The project approaches one essential requirement: the development of a historical deforestation database using satellite observations. The project notes that the development of a deforestation database version would be complimentary to VANRIS.

In a recent publication they have been able to produce statistics on possible forest loss relying on data from satellite imagery.

#### Statistics of forest loss derived from satellite data analysis 1990-2000

Island (group)	Area (ha)	Loss of forest	Loss of forest
		1990-2000 [ha]	[ha/a]
Torres Islands	11.52	45,8	4,6
Banks Islands	75.359	56,8	5,7
Santo	423.897	1114,4	111,4
Maewo	30.39	217,0	21,7
Aoba	40.566	210,4	21,0
Pentecost	49.49	249,0	24,9
Malakula	206.756	293,4	29,3
Ambrym	73.246	447,4	44,7
Epi	53.324	190,3	19,0
Efate	97.004	302,5	30,3
Erromango	88.874	666,0	66,6
Tanna	56.668	811,6	81,2
Aneityum	17.21	73,0	7,3
<b>Total</b>	<b>1.224.304</b>	<b>4677,6</b>	<b>467,8</b>

Taken from "Vanuatu Carbon Credits Project. Reducing Emissions From Deforestation."  
[http://regserver.unfccc.int/seors/attachments/file\\_storage/0bgrsa2hrb77fee.pdf](http://regserver.unfccc.int/seors/attachments/file_storage/0bgrsa2hrb77fee.pdf)

Much of the project information collation, satellite data analysis and database development is being done in Australia meaning that staff in Vanuatu will not be involved or given the skills and tools to use this.



#### ***5.1.4 The Department of Lands***

The Department of Lands is the base for the VANRIS. Although, a lack of resources and time by the Department of Lands has meant that VANRIS has not been maintained. The database has a technical advisory group but lacks the budget and resources to bring the integrated database up to date.

The Department of Lands is also in the final stages of completing a new mapping exercise for Vanuatu in collaboration with the Australian Army and this not only includes data for the production of digital maps but also selected satellite imagery.

The Department of Lands is also involved with the CRISP – project coral reef – that is being hosted by SPC in Noumea, New Caledonia. They are talking about an integrated internet-based database system that would involve

#### ***5.1.5 The Environment Unit***

The Environment Unit hold data on some areas that are/have been protected by custom landowners that include forest. They hold information on forest inventories carried out in Santo as part of a large Biodiversity Action Plan. They hold information on over 20 protected areas covering some 17,000 ha. They also hold information on the 18 species listed on the IUCN's International Redlist as threatened as a result of forest loss/logging.

#### ***5.1.6 Other organisations holding forest-related data***

The Vanuatu Chamber of Commerce hold a small database on trees planted as part of their forest management and business programme.

## 6. Summary Conclusions

The Department of Forests (the Department) has been able to establish an excellent national network for the MAR-SFM project with participation from senior personnel from a good representative of relevant government and non-government agencies. This reflects the dedication and commitment of the staff of the Department to the project and improvement in its monitoring and reporting for sustainable forest management.

There are many reporting requirements demanded of the Department nationally, regionally as well as internationally but they have no central data system and limited resources available could be established to allow for all these reporting requirements.

Sadly, the Department lacks the resources and manpower for the collection of much-needed forest data. Industry often fails to report as required and there is little or no enforcement, again through lack of resources. Inter-island and intra-island travel and communications is difficult and expensive. The large volcanic islands with their rugged terrain and tropical forest mean that villages tend to be scattered and separated over large distances. The number of telecommunication facilities is often very limited on islands with national radio reception lacking in many areas. This makes data collection in the field or from the field very difficult for the Department. In Santo and Malakula there was a distinct lack of resources of the officers to assist with data collection. In Santo the Department of Forests offices were burnt down with the loss of all data. They are now being hosted in the Agricultural College and using much of the College's equipment as the Department has insufficient funds to replace the computers, GPS readers, and other equipments that were lost in the fires

The Department relies on outdated inventory information of the forests of Vanuatu from 1990-1993 and uses this when reporting nationally, regionally and internationally. The Department realises that this no longer represents the reality of state of Vanuatu's forested areas but they are without the necessary resources and tools to provide a more up to date picture.

The Department relies from time to time on data from other Government Department to cover their own shortfall e.g. the Department of Customs to get

figures for sawn timber exports. However, often these data are categorised in a way that renders the data meaningless to the Department.

The situation is slightly easier with sandalwood as this is harvested for the international market and the market is limited to two main buyers. They provide returns at the end of the season and seem to cooperate with the Department.

The Department does not have a system for regular recording of changes to forest cover and land use but recognises the importance and need for this. An updated National Forest Inventory would provide a useful second snapshot of forest cover and changes in land use. It is just that it is currently beyond the resources and capacity of the Department. Some satellite data are available but analysis is a specialised task. Given the training and in-country resources, working with these data is something well within the capabilities of Department of Forest and other Government Department staff.

## **7. Recommendations**

The following are a series of recommendations that could act as a road map for the implementation phase of MAR-SFM in Vanuatu. These will not take into consideration all international reporting requirements but should assist the Department of Forests in improving its own monitoring and reporting for sustainable forest management in Vanuatu. This will in turn lead to future and further developments that will improve international reporting requirements:

- a) To carry out an inventory of forest resources in Vanuatu to update the current outdated information. An updated National Forest Inventory would provide a useful second snapshot of forest cover and changes in land use. This should involve the purchase and use of satellite imagery with some ground truth checking to reduce costs;
- b) To assist in updating the Department of Forests existing Forest Resource Information System (FRIS) integrated with MAPINFO. Additional work will be required to include fields that will allow a reconnection with VANRIS (see recommendation c) below) for mapping exercises and area calculations;
- c) To assist with revising the Vanuatu Resource Information System (VANRIS). This should include the loading of the new Land Survey maps into the system and updating all other layers of data that can then be switched on

and off as required by the user. This will involve some programming updates to VANRIS. Resources should be included for some ongoing maintenance of the system and allowing meetings of the technical advisory group;

- d) Training on assessment of satellite imagery and interpretation for 5 persons and should be carried out in collaboration with technology and equipment upgrades; and
- e) A workshop that looks at various data categorisations in country and by different Government Departments to set standards that meet all Departments' needs. This could include proposed changes to the Department of Customs database so that the Department of Forest are able to retrieve relevant forest-related data from their system that they can then utilise in reporting.

## **8. References**

- Baldwin, P., Hidson, J., Siebuhr, J. and Pedro, F. 1993. Forest Resources of Vanuatu: A summary of the forest resources of Vanuatu derived from the National Forest Inventory. Department of Primary Industries, Queensland and Vanuatu Department of Forests.
- Bakeo, R., Kalsakau, T. and Smith, A. 2003. Country Report – Vanuatu. ACIAR Project FST/2001/045: Development of Forest Health Surveillance Systems for South Pacific Countries and Australia. Pacific Forest Health Workshop, Suva, 31 March- 3 April 2003.
- Department of Forests. 1997. National Forest Policy Statement. Department of Forests, Government of the Republic of Vanuatu.
- FAO. 2006. Global Forest Resources. Assessment 2005. Progress towards sustainable forest management. FAO, Rome 2006.
- ITTO. 2006. Status of Tropical Forest Management 2005. Summary Report. International Timber Trade Organisation, Japan.