



QUALIFOR PROGRAMME

Associated Documents

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Forest Management Certification

Public Summary Information

Project Number:	7224-jp
Client:	Tokyo University of Agriculture and Technology (TUAT)
Country:	Japan
Scope:	Forest Management of 902 ha of plantation and natural forests in Oyasan, Kusaki, Karasawayama and Chichibu
Main species/products:	<i>Cryptomeria japonica</i> (sugi) and <i>Chamaecyparis obtusa</i> (hinoki)
Annual production:	318 m³/annum
Assessment date:	13-15 March 2001
Certificate Number:	SGS-FM/COC-0824
Date of Issue:	30/10/2001
Duration:	5 years
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SECTION I - PUBLIC SUMMARY REPORT

1. INTRODUCTION AND SCOPE

This report presents the results of an assessment of the Tokyo University of Agriculture and Technology's (TUAT) forest management operations in Gunma, Tochigi and Saitama Prefectures carried out by SGS QUALIFOR during the period 13-15 March, 2001

The purpose was to assess the operations against the requirements of the QUALIFOR Programme, the SGS Group's forest certification programme accredited by Forest Stewardship Council.

The Assessment covered all forest management operations on the following forest areas:

Area	Total Area (ha)	Productive area (ha)	Average Production (m³)
FM Oyasan (Gunma)	91.93	91.05	0
FM Kusaki (Gunma)	414.82	412.72	243
FM Karasawayama (Tochigi)	161.73	160.35	76
FM Saitama (Saitama)	233.70	233.64	0
Total	902.18	897.76	319

2. COMPANY BACKGROUND

The Tokyo University of Agriculture and Technology (TUAT) is based in Fuchu just outside Tokyo. TUAT Department of Forestry is responsible for the management of four forest areas composed of a mixture of coniferous plantation and natural broad-leaved stands. The forest areas are used mainly for teaching and research purposes; a small directly managed labour force is responsible for forest operations which cannot be carried out by the students. Products are sold locally; however, timber production is not the main objective of management.

3. FOREST MANAGEMENT SYSTEM

3.1. Bio-physical setting

The TUAT forests are divided into 4 Forest Management Units (FMs): FM KUSAKI and OYASAN in Gunma prefecture, FM KARASAWAYAMA in Tochigi prefecture and FM SAITAMA in Saitama prefecture. The forests are located between 100 and 1,500m altitude, totalling 902 ha in area.

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The TUAT forests are located in the intermediate area between the evergreen forest and deciduous forest zones in Japan.

OYASAN

FM OYASAN is located between 560 and 1,080m altitude on the southern steep slope. The majority of the area (about 90%) is covered with coniferous plantation, composed of species such as *Cryptomeria japonica* (Sugi) and *Chamaecyparis obtusa* (Hinoki). The main species of the natural forests in the sub-alpine zone are *Abies homolepis*, *Betula ermani*, *Betula platyphylla*, and *Acer micranthum*. At lower elevations, *Quercus crispula*, *Quercus serrata*, *Castanea crenata* and *Carpinus laxiflora* frequently emerge.

KUSAKI

FM KUSAKI is located between 650 and 1,150m altitude on the southeastern and northern slopes. Coniferous plantation forests (mainly *Cryptomeria japonica* and *Chamaecyparis obtusa*) occupy 47% of the total area. There is a planted stand of exotic pine species for demonstration. The plantations are located at lower elevations (below 900m). At the higher elevations (about 1000m), there are mixed forests of conifers and broad-leaves. The main species of the mixed forests are *Quercus crispula*, *Abies firma*, *Abies homolepis* and *Tuga sieboldii*. *Fraxinus spaethiana* stands occur as natural precious forests on the streamside. FM KUSAKI is considered as the northern and eastern limit of this species.

KARASAWAYAMA

FM KARASAWAYAMA is located between 90 and 200m altitude on the hill. Although *Pinus densiflora* used to be planted widely, the stands were damaged severely by pine wood nematode and most of them were replaced with *Cryptomeria japonica* and *Chamaecyparis obtusa*. 54% of the total area is covered with coniferous plantation. The dominant species of the secondary broad-leaved forests are *Quercus serrata*, *Prunus jamasakura*.

SAITAMA

FM SAITAMA is located between 800 and 1,464m altitude on steep slopes in the temperate region and consists of secondary broad-leaved forests and coniferous plantation forests (36% of total area). The dominant species of broad-leaved forests are *Quercus crispula*, *Quercus serrata*. There is a small natural *Chamaecyparis obtusa* stands.

3.2. History of use

Local communities used to utilize the lands of FM Oyasan and Kusaki until about 100 years ago. The land was maintained as grassland using fire. In the 1910s, the Royal Forest Agency began to manage the areas and prohibited using fire, which allowed the broad-leaved forest to regenerate naturally. The Royal Forest Agency planted conifers such as *Cryptomeria japonica* and *Chamaecyparis obtusa*, over a small area. In 1940, these two forests were transferred to TUAT.

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FM Karasawayama was used by local farmers to gather grass and leaves. After TUAT began to manage this forest in 1940, TUAT permitted the continued utilization by local people, but this ended about 40 years ago because of industrialization and diminishing need for these products.

FM Saitama was transferred from Tokyo University to TUAT. At that time, it was covered with secondary broad-leaved forests. In FM Saitama, main products are not timber but charcoal and mushrooms.

TUAT has started plantation of conifers in four FMs since 1950s and used for the research and study for the professors and students. FM KARASAWAYAMA in particular is used for volunteer's forest activities and hikers.

3.3. Planning process

TUAT's forests are managed according to ten-year management plans. The plan is prepared by the Forestry Board, which is made up of professors using the forests. Education and research have priority in planning. The ten-year plan includes the method of harvesting and regeneration, Annual Allowable Cut, preservation forests, volume of harvest and an outline of sites to be harvested etc. At an annual meeting with forest workers, detailed harvest sites are decided.

3.4. Harvest and regeneration

In the coniferous plantation stands, clear cutting is adopted. The area of each clear cut is limited to a maximum of 1 ha. After cutting, generally, the same species are planted. In broad-leaved natural forest, selective cutting is carried out, but actually natural forest is rarely cut at present.

3.5. Silviculture

After harvest, branches are left on the site and arranged along the contour lines. This is a Japanese traditional method of preventing soil erosion. For about five years, periodic weeding is carried out to protect young trees from bamboo and shrubs. At the age of nine or ten years, non-objective species and trees of poor growth are removed, but some broad-leaves are left to make healthy stands.

Although thinning and pruning are also planned, it is difficult to implement them because of lack of labour.

3.6. Monitoring processes

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Day to day monitoring of operations is carried out by the Chief Forest Worker at each site, who reports to the academic staff of the university and hence to the Forestry Board.

TUAT carries out many research projects. Animals such as mammals, birds, snakes and frogs have been observed in four FMs since 1960. Recently research projects for butterflies, trees and shrubs species were executed. The results and records of these projects were published in articles. A research project for stream water chemistry of university forests across Japan started in 2000 and TUAT takes part in this project.

Point sampling is adopted to estimate stand volume. Form height is measured using Spiegel Relasckop and stand volume is calculated using form height in volume formula equations of each species. In the stands that are not subject to point sampling, stand volume is estimated using volume tables.

4. SOCIO-ECONOMIC AND ENVIRONMENTAL CONTEXT

4.1. Social aspects

The university forests are managed by the Forestry Department of the university, under the direction of the Forestry Board. Field operations which cannot be carried out by the students (such as felling, thinning, road construction) are done by directly employed forest workers. There are 3 forest workers at FM Kusaki, 2 at Karasawayama and 1 at Chichibu. Forest workers are under the supervision of a chief forest worker at each FM, who in turn report to the Forestry Department academic staff.

4.2. Environmental aspects

The TUAT forests are located on steep slopes which presents problems for road building, harvesting and thinning operations. Numerous small watercourses run through the FMs.

In Japan, lack of thinning in plantation forests is a serious problem. Dense stands especially *Chamaecyparis obtusa* are easily damaged by wind and cause soil erosion. TUAT has the same problem. The majority of the plantation stands in all four FMs are young or middle-aged and need to be thinned.

The research project for mammals, birds, snakes and frogs indicates there has been no extinct species since 1960. The populations of flying squirrel and badger are known to be decreasing. TUAT plans to investigate the reason of the decrease.

4.3. Regulations

There is no special regulation except FM SAITAMA. FM SAITAMA is part of Chichibutama National Park, and artificial construction is regulated under National Park Law. Some parts of FM Saitama also fall under the Erosion

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Control Law and Forest Law. According to these regulations, TUAT is required to exclude certain areas of forests from management and report their harvesting and planting plan to the prefecture.

5. LOCAL STANDARDS

There is no endorsed national FSC standard for Japan. The FSC working group has not yet been endorsed by the FSC, but has produced a first draft of the local standard. The local forestry specialist is a member of the FSC working group and has been integrally involved in producing the first draft of the standard.

For the purposes of this assessment, the generic QUALIFOR main assessment checklist was used, supplemented by requirements derived from Japanese legislation and regulations, including the

- Law concerning Wildlife, Hunting and Natural Environmental Preservation Law (1972)
- Forest Law (1951)
- Forest Basic Law (1964)
- Forest Pests and Disease Control Law (1950)
- Natural Park Law

The most recent guidance for best practice in Japanese forestry is the Manual for Foresters, which was written in 1949 and has a strong focus on silviculture. It is somewhat outdated.

6. THE ASSESSMENT

6.1. Schedule

The Assessment was preceded by a visit by an SGS QUALIFOR lead auditor in 1999 and pre-assessment questionnaire completed by TUAT in January 2001. This examined the management systems and identified any gaps that might preclude certification. Information gathered was used to plan the main assessment. Key stakeholders were identified by TUAT and SGS Far East.

The main assessment was carried out during the period 13-15 March 2001. A detailed schedule is shown in Appendix I of the full report.

6.2. Team

- Lead Assessor and Team Leader: SGS QUALIFOR Lead Auditor with 8 years forestry experience including 4 years experience of forest certification.
- Local Specialist: Forestry Consulting Engineer/ Environmental Counsellor for Citizen, with 30 years experience in Japanese and international forestry.
- Trainee Assessor/ Translator: Forestry graduate of Tokyo University

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Curricula vitae are provided in Appendix II of the full report.

6.3. Peer Reviewers

Two independent specialists have been selected to review this report. They include one from academia, one from the forest industry and one from an environmental organisation.

6.4. Process

The Main Assessment was conducted in the steps outlined below.

Preparation

Using the results from the pre-assessment and national legislation, a checklist was prepared from the generic QUALIFOR checklist.

Stakeholder notification

A range of stakeholders were contacted to inform them of the planned assessment and ask for their views on relevant forest management issues. These included environmental interest groups, local government agencies and forestry authorities, forest user groups, and workers' unions (see Appendix V of full report).

Opening meeting

An opening meeting was held at TUAT in Fuchu. The scope of the assessment was explained and the itinerary was determined (see Appendix III of full report for attendance sheets).

Document review

A review of the main forest management documentation was conducted to evaluate the adequacy of coverage of the QUALIFOR Programme requirements. This involved examination of policies, management plans, systems, procedures, instructions and controls.

Field assessments

Field assessments aimed to determine how closely activities in the field complied with documented management systems and QUALIFOR Programme requirements. Interviews with staff, operators and contractors were conducted to determine their familiarity with and their application of policies, procedures and practices that are relevant to their activities. A sample of sites was visited to evaluate whether practices met the required performance levels.

Stakeholder interviews

None of the stakeholders contacted requested a meeting or further contact. TUAT forestry staff were interviewed when met during the assessment. The leader of the forest volunteers group in Karasawayama was met in the field.

Summing up and closing meeting

At the conclusion of the field assessment, findings were presented to company management at a closing meeting. Any areas of non-

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conformance with the QUALIFOR Programme were raised as one of two types of Corrective Action Request (CAR):

- **Major CARs** - which must be addressed and re-assessed before certification can proceed
- **Minor CARs** - which do not preclude certification, but must be addressed within an agreed time frame, and will be checked at the first surveillance visit

6.5. Sampling

The TUAT forests are a relatively small area and TUAT's forest management is not intensive. Little harvesting, thinning and planting is being carried out. A list of planting, thinning and felling sites for 1999 and 2000 was used to determine field visit sites. Field visits were made to FM Karasawayama and FM Kusaki (ie. 50% of the forest management units). These FMUs were chosen because harvesting and planting operations have been concentrated in these areas. Because there are only one or two sub-compartments planned for operations in each FMU each year, an attempt was made to visit all active sites. Other sites were visited in passing and as issues arose during the FMU visits.

Detailed site visit records for each site are shown in appendix IV of the full report. Field sites visited during the assessment were as follows:

Ongoing operations

There were no currently on-going operations at the time of the assessment.

Completed operations

FM	Compartment	Operation
Karasawayama	8	Partially thinned 1999, steep slope, road maintenance below compartment
Karasawayama	5	Steep sub-comp. Planted 1999, Hinoki
Kuasaki	5	Road (track) construction, completed 2000/01.
Kusaki	3	Felling and restocking (1999/2000); cable extraction; buffer zones along streamside?

Other sites

FM	Compartment	Operation
Karasawayama	8	Hiking trail used by local walkers
Karasawayama	2	Broadleaf stand of natural forest
Karasawayama	4	Sugi stand, 1987, very dense.

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Karasawayama	6	Experimental trial, <i>Quercus</i> spp.
Kusaki	4	Protection forest of <i>Fraxinus spaethiana</i>
Kusaki	7	Protection forest
Kusaki/Oyasan	Nursery	Almost disused

7. ASSESSMENT RESULTS

Detailed assessment findings are included in the full report. For each QUALIFOR requirement, these show the related findings, and any observations or corrective actions raised. The main issues are discussed below.

7.1. Findings related to the general QUALIFOR Programme

PRINCIPLE 1 Compliance with law and FSC Principles

- ***Respect for national and local laws and administrative requirements***

TUAT is responsible for teaching forestry and keeps aware of changes to the legislation and regulations.

Employees met (including university staff and forest workers) were aware of relevant regulations. The university General Officer is responsible for ensuring staff are aware of regulations.

There was no evidence of non-compliances with legal requirements

- ***Payment of legally prescribed fees, royalties, taxes and other charges***

The university, as an educational institution, is exempt from payment of fees, royalties and taxes. No future fees are expected to be paid. This was confirmed with the University General Officer.

- ***Respect for provisions of international agreements***

University staff are aware of the requirements of international agreements, which are treated in the same manner as national laws and requirements. No examples of breaches of international agreements were apparent during the assessment.

- ***Conflicts between laws and regulations, and the FSC P&C***

No conflicts between the national laws and regulations and the requirements of the FSC P&C have been identified.

- ***Protection of forests from illegal activities***

Forest workers stated that there are few unauthorised activities in the TUAT forest area. The only issue mentioned was littering by hikers in FM Karasawayama, which has been reduced by closing off roads to

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vehicular traffic. Free access on foot is, however, still permitted. No litter was seen during the assessment.

- **Demonstration of a long-term commitment to the FSC P&C**

A policy for the university forests was approved by the University Forest Board in March 2000 and was been published in the TUAT Forest Report in March 2000. The policy states specifically a commitment to achieving FSC certification.

The policy is known in outline by the Chief Forest Workers, who have received copies, but the Forest Workers and Chief Forest Workers interviewed did not have a strong understanding of the requirements of the FSC Principles and Criteria or what the certification aimed to achieve.

Minor CAR 01 was raised, requiring the forest stewardship policy to be fully communicated to TUAT staff and workers.

PRINCIPLE 2 Tenure and use rights and responsibilities

- **Demonstration of land tenure and forest use rights**

The TUAT forests are owned by the Japanese State. The University has documentary evidence of its right to manage the state land, which comprises the four forests and the University campus. Local communities' legal or customary tenure or use rights

There are no communities with legal or customary tenure. Local communities do have customary rights to collect non-timber forest products such as mushrooms and firewood but, according to forest workers, this right is rarely exercised.

- **Disputes over tenure claims and use rights**

In the 130 years since the university was granted rights to manage the forest areas there have been no disputes over tenure or use rights.

PRINCIPLE 3 Indigenous peoples' rights

- **Indigenous peoples' control of forest management**

There are no indigenous people in this part of Japan.

- **Maintenance of indigenous peoples' resources or tenure rights**

Not applicable.

- **Protection of sites of special cultural, ecological, economic or religious significance to indigenous peoples**

There is one site of known historical interest (an old castle) in the TUAT forests, which extends slightly into the forest area of Kusaki. The neighbour who owns the Old Castle site has established a shrine on the spot.

Although there are no plans to carry out management activities in the area, in order to preserve the historical site, it has no designation in maps and plans and no formal protection. There are no current plans to

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carry out operations in the vicinity, so little immediate danger of damage being caused. There are no limitations on access in the forest and the site can be visited.

Minor CAR 02 was raised, requiring historical sites to be marked on maps.

- ***Compensation of indigenous peoples for the application of their traditional knowledge***

Not applicable.

PRINCIPLE 4 Community relations and workers rights

- ***Employment, training, and other services for local communities***

The forest workers and Chief Forest workers are members of the government forest service and are from the local communities in each area.

The university facilitates recreational use of the forests at Karasawayama, and they provide an extremely valuable educational resource to the wider community. At Karasawayama, the local community has formed a Forest Volunteer group, which takes an active role in identifying the services they want and assists with works in the forest.

The local city educational department near Karasawayama has requested to use the forest for children's educational purposes. However, this level of cooperation does not occur at all sites where communities are somewhat more distant from the forests.

- ***Compliance with health and safety regulations***

The General Officer of the University is responsible for ensuring that all employees are aware of health and safety requirements. Training is given to forest workers in the university on health and safety and records are kept of attendance at training. Certificates of proficiency for safety training, chainsaw use, loader use, treatment of dangerous materials and cable-yarding are kept at the TUAT offices for all forest workers.

All accidents have to be reported by law and the Public Officer must make a formal report. Two injuries have been reported in the last 3 years, which were not severe and were recorded in the University General Office.

No harvesting or thinning operations were on-going during the assessment; however, forest workers stated that they were provided with helmets and chainsaw gloves. Safety boots and overalls were in use during the visit. Forest workers carry small first aid kits when in the field. However, the kit seen at FM Kusaki did not contain adequate supplies for serious injuries.

Minor CAR 03 was raised requiring that first aid kits should carry adequate medicines and bandages for serious injuries.

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- **Workers' rights to organise and negotiate with employers**

TUAT members of staff and the forest workers are government employees. All forest workers are directly employed: there are no contract workers. Government employees do not have the right to strike; the rate of pay increases are decided annually taking into consideration the rise in private sector pay.

Forest workers stated that they had not needed to raise any issues with the TUAT management.

- **Social impact evaluations and consultation**

A formal social impact study has not been carried out by TUAT for its forest operations. The TUAT forests are relatively small and are dispersed over three different Prefectures, so the social impacts of each forest are limited. As no new operations nor operations in new areas are being carried out, it was considered more relevant to require the establishment of on-going consultation with local communities.

There was no up-to-date list of local stakeholders for each forest area. Although the forest workers are from the local area, this was not considered adequate contact or consultation with the local community.

At Karasawayama forest however, there are close links to the local community and the forest is well used by local hikers and joggers. An active Forest Volunteer group is well known to the staff and it assists with forest works. In the other TUAT forest areas this local liaison does not occur. Forest workers and staff felt that local people lived too far away to be consulted on forest operations, as the nearest people live some 2km away.

Minor CAR 04 was raised to require that an up-to-date list of local stakeholders for each forest area be compiled and a process of on-going consultation should be put in place.

Consideration of social impacts and cooperation with local communities are not included currently in the Management plan, which needs to be updated (see Major CAR 10).

- **Resolution of grievances and settlement of compensation claims**

There have been no conflicts involving loss or damage to property, etc.

PRINCIPLE 5 Benefits from the forest

- **Economic viability taking full environmental, social, and operational costs into account**

Current and future budgets do not specifically make provision for environmental, social as well as operational costs.

TUAT is aware that there is considerable under-investment in the productive management of the forest and that, in particular, thinning is very behind schedule. It was also mentioned by two stakeholders that there were insufficient forest workers to carry out the forest operations.

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Because of the age structure of the forests, with a large area in the 35-50 year age classes, there is a lot of thinning work to be done. Delay to thinning jeopardises future productivity, wood quality and environmental benefits of the forest, with dense stands preventing the development of ground vegetation.

Major CAR 05 was raised, which requires budgets to specifically include provision for operational, environmental and social costs and to ensure adequate investment in the long-term productivity of the forest.

- ***Optimal use and local processing of forest products***

Sales of logs are made from the TUAT logyards to local sawmills. Only local processors are invited to the auctions; timber is sold in small parcels to local processors.

- ***Waste minimisation and avoidance of damage to forest resources***

The harvesting sites seen at Karasawayama and Kusaki were relatively clear of large diameter waste timber. At the harvesting site at Karasawayama, there was more waste left on site which had been pushed into a small drainage line, but did not appear excessive.

Harvested products are transported to the log yard and sold from there. No harvested timber was seen lying in the forest.

During thinning operations, much of the thinned material is left in the forest rather than extracted. An Observation was made that TUAT should consider how they can better utilise the waste left from harvesting and thinning.

- ***Forest management and the local economy***

In Saitama the forest is managed for the production of mushrooms and charcoal; small timber is used for firewood. Local people are permitted to harvest mushrooms, edible leaves and firewood, at all sites, but this is not extensively practised.

- ***Maintenance of the value of forest services and resources***

The university is very aware of the range of products and services their forests provide to their students, researchers and local communities. Counts have been made of the numbers of people using the forests for recreation; there is less awareness of the importance of the forests for watershed protection and fisheries

Forest management activities of thinning, harvesting and planting are currently at a very low impact level because little work is being carried out. However, environmental impacts of operations such as road building are not assessed or minimised (see Principle 6).

- ***Harvest levels***

A complete inventory of the TUAT forests is carried out every 5 years. The data is summarised and published; recent installation of a GIS system has allowed the information to be computerised.

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The sustainable harvest level (based on the harvesting of conifer plantation stands which comprise approximately 50% of the forest stands) has been calculated in the long-term management plan for 1991-2000 as 995 cubic metres per year. In fact, actual production for 2000 was about 320 cubic metres. Harvest levels of timber are therefore well below sustainable levels.

Actual harvest rates do not exceed replenishment rates: in fact, the opposite may be a concern in relation to small volumes being removed from thinning (see Major CAR 05).

PRINCIPLE 6 Environmental impact

- ***Environmental impacts assessment***

There is no formal assessment of environmental impacts prior to site disturbing operations. An example of a recently built forest road was seen in Kusaki forest, where potentially severe environmental impacts had not been considered or mitigated. Staff have been given no training or instruction on assessment of impacts and environmental impacts are not always considered when planning and carrying out operations.

Major CAR 06 was raised requiring the development of a methodology for the assessment and avoidance (or mitigation) of environmental impacts.

However, the harvesting operation at Kusaki had been carried out very carefully, with relatively little site damage and rehabilitation of the site following harvesting.

- ***Protection of rare, threatened and endangered species***

The university has carried out surveys of a variety flora and fauna in their forest areas. To date surveys have been made of birds, snakes, frogs, mammals, shrubs and trees. No rare, threatened or endangered species have been identified

However, while surveys have been carried out and analysed for many groups, there is not yet a survey of insects of the forests and data has not been analysed for the vegetation survey.

Preservation areas have been marked on maps and noted in the inventory in three of the four forest areas: none have been identified in Karasawayama. Criteria for the identification of preservation areas are not clear. At present, no operations are planned or on-going in broadleaved forests, though no protection status is given either (see Minor CAR 07, below).

Hunting of deer in the TUAT forests is controlled under leases from the Ministry of Environment. Hunting has historically been limited in order to protect deer populations, but they have recently become a problem for forest management. An increased number of hunting leases were granted in 1999, due to requests from neighbours because of excessive damage from deer.

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- ***Maintenance of ecological functions and values***

A complete forest inventory is carried out every five years, giving excellent data on the status of the FMU with regard to species, ages and volumes. Observations in the field and comments from stakeholders highlighted the need for greater emphasis on thinning of coniferous plantation areas. In many areas thinning is very delayed, causing poor development of ground vegetation and impeding timber production. Inadequate resources and staff were cited as the reason for low thinning levels (see also Principle 5 and Major CAR 05).

Minor CAR 08 was raised requiring the development and implementation of a detailed thinning plan to ensure that stands are prioritised and thinned.

Ecological functions of broadleaved forest are currently protected as no forest operations are being carried out in this forest type.

- ***Protection of representative samples of existing ecosystems***

No operations are currently being carried out in the broadleaved areas of TUAT's forests. There are no management prescriptions for these areas. Some areas have been identified as 'preservation areas' to be protected, but the criteria for selecting these particular areas and not others are not clear. No preservation areas have been identified at Karasawayama.

For one of the preservation areas identified by TUAT, (Kusaki forest, compt. 7) the previous management plan (1991-2000) prescribed selective felling, although none has been carried out, nor (informally) is planned. The inventory data defines the compartment as a 'preservation area'. There are no management prescriptions for preservation areas.

Minor CAR 07 was raised to require TUAT to develop criteria for the identification and selection of protection or conservation areas and to develop management prescriptions for each area.

- ***Protection against damage to soils, residual forest and water resources during operations***

There are no written guidelines defining acceptable practice for erosion control, minimising damage during harvesting, road construction and protection of watercourses.

Examples were seen during the assessment of road construction activities which had not ensured that soil and water resources were adequately protected.

Minor CAR 09 was raised to require TUAT to develop and implement written guidelines defining acceptable practices.

- ***Chemical pest management***

No chemicals are currently used in forest or nursery operations.

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TUAT has rarely used chemicals. The last usage of insecticides was 1996 to protect pine stands in FM KUSAKI. Weeding is implemented using machine or scythe, and TUAT has never used herbicides.

- ***Use and disposal of chemicals, containers, liquid and solid non-organic wastes***

Oil for machinery is changed at petrol stations off site. Waste is collected every two weeks from the forest by the municipal waste collection service. Plant based oils are not in use.

An observation was raised that TUAT should consider the use of plant based oils for chainsaws.

- ***Use of biological control agents and genetically modified organisms***

Biological control agents are not in use in the forest. Experiments are being carried out in the university on the use of *Beauveria bassiana* a parasitic fungus of long horn beetle. TUAT has a permit from the Ministry of Agriculture, Fish and Forestry for the laboratory tests. Any use in the forest would require a new permit.

No genetically modified organisms are in use in TUAT (or in Japan as a whole).

- ***The use of exotic species***

Exotic species are not used in the TUAT forests. The only exception to this was a small number of Norway Spruce (*Picea abies*), which were chosen and planted by the Forest Volunteer group at Karasawayama forest, in the Memorial forest area The planting containing *Picea* is so small, and mixed with other species as to have no impact.

- ***Forest conversion to plantations or non-forest land uses***

No forest is being converted to plantation or non-forest land use.

PRINCIPLE 7 Management plan

- ***Management plan requirements***

There was a long-term management plan, for 10 years, which was valid from 1991 to 2000. The new plan has not yet been written. The previous 10-year management plan follows the regional management plan format required by the Forest Basic Law.

Management objectives are given in the old plan and are also described in the TUAT Forest Report (March 2000), which gives a general outline of aims, but does not prioritise them. Different members of TUAT staff may interpret these differently. Management objectives should be prioritised in the new plan.

The old management plan contains a general statement describing the forest resource. The full inventory data is also available as a description of the forest resource. However, there is no information on environmental limitations, adjacent land use and ownership status and

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socio-economic conditions. GIS maps of all the forest areas are available.

The rationale for harvesting is stated in the management plan as being all coniferous stands over 90 years. However, this is not always the case, and some selection of felling sites is done on the basis of access, quality of trees, use of the site for teaching purposes, soil erosion control and landscape.

Plans for the identification of rare, threatened and protected species are described in general terms in the TUAT Forest Report (March 2000).

Thinning, harvesting and planting activities are planned annually, between April and March. At the time of the assessment (March) the plan for the following year had not been finalised.

According to areas planned for felling in the 1991-2000 plan and the GIS maps produced in 2000, areas where harvesting was planned during this period had not consistently been carried out. Other areas where activities were not planned had been subject to operations. There was no written justification for deviations from the plan.

Major CAR 10 was raised requiring TUAT to produce an up-to-date management plan which covers all areas required by the FSC standard.

- ***Management plan revision***

The plan has not yet been revised for 2000 onwards. The new plan will need to incorporate results of monitoring and consultation with stakeholders, as appropriate.

The previous management plan was written for a period of 10 years. It is expected that the new plan will also be revised after 10 year

- ***Training and supervision of forest workers***

Training records were seen for the forest workers, which covered surveying, computer use, safety at work, thinning and felling and forest roads. Safety certificates were seen for forest workers. No training records were seen for environmental aspects of forestry operations.

There is a Chief Forest Worker at each forest who has considerable experience. The Chief Forest Worker is responsible for supervision of Forest Workers, students and volunteers

- ***Public availability of the management plan elements***

There is no publicly available summary of the management plan for each forest unit.

Minor CAR 11 was raised to require TUAT to produce publicly available summaries of the management plan for each forest area.

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PRINCIPLE 8 Monitoring and assessment

- ***Frequency, intensity and consistency of monitoring***

TUAT is involved in a considerable amount of monitoring and research. For example, ecological monitoring of a variety of floral and faunal groups is carried out every 5 years. Inventory data is collected every 5 years. Monitoring procedures for birds, snakes, frogs, trees and shrubs, and mammals have been repeatedly monitored since 1960 and provide the longest series of monitoring data from any university forest in Japan.

- ***Research and data collection for monitoring***

Research and data collection in the TUAT forests covers several areas.

Timber yields are recorded. Inventory data are collected every 5 years, which includes growth rates, regeneration and condition of the forest. A wide variety of other data are collected for specific studies being carried out by the university and its students, for example on provenance and species trials. Survival is checked during 10 years following planting; replanting is carried out during the first five years while cleaning surrounding vegetation. Data are collected on changes in flora and fauna, although not for ground vegetation and insects. Environmental and social impacts of forest operations are not formally considered. No post-harvest monitoring to assess waste and damage is carried out.

Minor CAR 12 was raised requiring TUAT to develop a monitoring methodology or data collection system for post-harvest site monitoring, productivity and efficiency and environmental or social impacts.

- ***Chain of custody***

Detailed sales records are kept of all products from the TUAT forests. All timber produced from TUAT forests is sold through the TUAT logyard, and no other timber is handled here. Records of all sales, including the species, length, diameter and volume of each sale lot, are kept in the University General Office. 320 cubic metres of timber was produced and sold in 2000

- ***Incorporation of monitoring results into the management plan***

Records of monitoring are kept, except areas noted above. Results of most monitoring and research are regularly analysed, in particular inventory data and ecological monitoring. The management plan is in the process of being updated and should make use of the results of monitoring.

- ***Publicly available summary of monitoring***

Several publications have resulted from the monitoring work carried out in the TUAT forests. Only the survey of flora carried out 7 years ago at Kusaki was not analysed or published, but could now form the basis for monitoring changes which have occurred in the past 7 years.

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PRINCIPLE 9 High Conservation Value Forests

It was not considered that the TUAT forests contained areas of High Conservation Value Forests within the management area. A small area of the most northerly distribution of *Fraxinus spaethiana* forest in Japan is located in the Kusaki forest and is regarded as a preservation area. All other areas of broadleaved forest in the TUAT forests are excluded from management activities, although prescriptions for their management are not yet developed (see Principle 6).

- **Assessment to determine high conservation value attributes**
Not applicable
- **Consultation process**
Not applicable
- **Measures to maintain and enhance high conservation value attributes**
Not applicable
- **Monitoring to assess effectiveness**
Not applicable

PRINCIPLE 10 Plantation

- **Statement of objectives in the management plan**
Management plan objectives are not clearly prioritised (see Principle 7 and Major CAR 10).
- **Plantation design and layout**
Natural broadleaved areas, comprising between 10 and 64% of the forest areas, are identified on maps and in the inventory data. These natural broadleaved areas are retained as wildlife habitat, although there are no prescriptions or formal criteria for identifying preservation areas.

There are no streamside buffer zones identified or protected in the TUAT forests. There are no written guidelines for their protection, or definition of what size of streamside zones should be protected.

Minor CAR 13 was raised requiring TUAT to develop guidelines for the protection of streamside buffer zones.

The plantation blocks are generally small (about 1 hectare) and are integrally mixed in a mosaic of broadleaved stands.
- **Diversity in composition**
The main species used for plantation areas are *Cryptomeria japonica* and *Chamaecyparis obtuse*. Local provenances of seed are used, collected in TUAT's own forests and grown in the TUAT nursery in Fuchu, which is organised and run by the students.

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Broadleaved forests are composed of a variety of species which occur naturally. Clear cuts are small throughout the TUAT forests and are generally less than 0.5 ha. In general, replanting is carried out with the same species as that felled, according to site. No new plantation area is planned and felling rates are low, leaving little opportunity for change to age classes.

Currently the age distribution of the coniferous component is concentrated in the 10-50 year age classes; the broadleaved areas add variation.

- ***Species selection***

The species used for coniferous plantation areas are those traditionally used on the site, from locally collected seed. Some experimental trials have been established as research plots to look at growth rates and form of, for example, *Quercus* species and Sugi sub-species. Exotic species are not used in the plantations.

- ***Restoration of natural forest***

There are no plans to fell large areas of broadleaved forest. These areas constitute set-aside areas for conservation, although the management prescriptions need to be clarified (see CAR 07). Small areas of *Fraxinus* forest (the most northerly distribution in Japan) have been set aside and defined as preservation areas.

- ***Impacts on soil and water***

There is no detailed information available about the soil types in the TUAT forest areas or their susceptibility to degradation from forest operations.

Minor CAR 14 was raised requiring TUAT to collect and document information on soil types and their susceptibility to damage. Major water bodies are identified on GIS maps.

Forest workers are not always aware of forest operations that might degrade soils, such as road construction, impacts on streams, etc. There are no written guidelines to avoid such impacts (see Principle 6, CAR 09).

There are no large degraded areas apparent in the forests; except for some areas debris from road construction which have been stabilised and are to be replanted.

- ***Protection from pests, diseases and fire***

There are no pests or diseases that attack the coniferous species making up the productive forest resource. Forest workers observe damaged trees and report any concerns to Dr. Kishi, who is a forest entomologist. Diseased or damaged trees are felled and removed. Chemicals are not used in the forest area.

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The fire prevention and control system is not documented, but fire is not considered to be a serious problem in Japanese forests. However, an observation is made that TUAT should consider the benefits of a formal fire prevention and control system, particularly in areas of high recreational use. Fires are reported to the municipal fire brigade and forest workers receive training from the fire brigade.

- **Monitoring of impacts, species testing and tenure rights**
TUAT has carried out water quality monitoring in cooperation with other universities in Japan and results were published in the Journal of the Japanese Forestry Society in August 2000. Monitoring should be repeated in future. Local people have free access to the TUAT forests
- **Plantations established in areas converted from natural forests after November 1994**
No areas of natural forest have been converted to plantation since 1994.

7.2. Issues raised by Stakeholders

Letters regarding the assessment were sent out to 19 stakeholder groups and individuals. Responses were received from 12 of them. (The full list of stakeholder contacted is contained in Appendix VI. Many respondents were positive about the TUAT forests.

The following points were made about TUAT's management of its forests and have contributed to observations. Resulting actions taken by the company will be followed up at the next surveillance visit:

Issue Raised	Response
The high-density stands in the TUAT forests need thinning.	CAR 08 was raised requiring increased investment, particularly in thinning, which is needed in order to improve the environmental as well as economic performance of the forests.
Buffer zones should be left next to rivers.	CAR 13 was raised requiring TUAT to develop written guidelines for the protection of streamside buffer zones.
Soil erosion is a problem especially as logs are left in the forest at thinning.	Logs are often left in the forest after thinning, both in the TUAT forests and elsewhere, as it is sometimes uneconomic and damaging to the soil to extract them. There is a balance between the benefits of extracting and leaving small logs during thinning. An observation was made that TUAT needs to consider how they can better utilise the waste left from thinning and harvesting.
The assessment of ecological diversity is	Certification assessments do not aim to assess ecological diversity during the field

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difficult in the winter.	visit. Instead, this sort of monitoring and assessment is regarded as the responsibility of the forest manager (i.e. TUAT). This assessment checked whether TUAT carry out assessments of ecological diversity (which they do) and whether the results are analysed and available to the public (which they are).
There are too few workers and they cannot carry out enough work.	CAR 05 was raised in relation to the need for more investment in the forest, in particular in order to carry out the backlog of thinning.

7.3. Issues raised by Peer Reviewers

This report was reviewed by two independent peer reviewers. No substantive comments were raised, and the reviewers endorsed the conclusions of the assessment team.

8. STRENGTHS AND WEAKNESSES

8.1. Strengths

TUAT is evidently very committed to achieving FSC certification and has demonstrated several positive aspects of their management. In particular:

- The use of the forests as a teaching and research resource is greatly appreciated and very important to the students of the TUAT forestry department.
- The large areas of broadleaved forests currently set aside from management as preservation areas are important for biodiversity conservation.
- The Forest Volunteer Group in Karasawayama is involved in the management of the forest area; TUAT and the volunteers have cooperated in the development of the Memorial forest.
- The Karasawayama forest provides a recreational area for many local people for jogging and hiking.
- TUAT researchers and forest workers have carried out monitoring of a variety of flora and fauna over a long time period and have analysed and published the data.
- The introduction of the GIS system will allow better planning to be developed and implemented over the next few years.

8.2. Weaknesses

3 Major and 11 Minor Corrective Action Requests (CARs), as described below, were raised. In the following table the requirement number refers to

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the indicator used in the QUALIFOR Programme to test each criterion from either the FSC P&C. Text in [...] brackets shows the objective evidence for each CAR.

CAR No	QUALIFOR requirement (FSC P&C)	Description
Minor CAR 01	1.6.2	The details of the forest stewardship policy have not been fully communicated throughout the organisation. [The Chief Forestry Workers do not know the details of requirements of the FSC Principles and Criteria.]
Minor CAR 02	3.3.4	Historical monuments, which are identified in the forest areas, must be marked on maps. [Adjacent Old Castle and shrine are not marked on maps.]
Minor CAR 03	4.2.6	First aid kits carried by Forest Workers do not contain adequate medicines/bandages for serious injuries. [First aid kit seen at Kusaki.]
Minor CAR 04	4.4.3	There is no up-to-date list of local stakeholders for each forest and no process of on-going consultation. [No lists available and no consultation process in Kusaki/Oyasan.]
Major CAR 05	5.1.1/2	Current and future budgets do not include specific provision for operational, environmental and social costs. There is inadequate investment in the long-term productivity of the forest (especially in terms of thinning). [Budget predictions are not divided into environmental, social and operational costs. Thinning is behind schedule in many stands due to lack of manpower.]
Major CAR 06	6.1.1	Environmental impacts of operations, particularly road building, are not assessed before operations begin. TUAT must develop and use a methodology for the assessment and avoidance (or mitigation) of environmental impacts. [No assessment was made of possible impacts of new road (compt. 5) at Kusaki.]
Minor CAR 07	6.4.1/2	TUAT needs to develop criteria for the identification and selection of protection/conservation areas, and management prescriptions for each protection area. Protection areas should be established in all 4 forest units. [Conservation areas exist in 3 of the 4 forest units but criteria for their selection are not clear and management prescriptions are not clearly defined.]

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CAR No	QUALIFOR requirement (FSC P&C)	Description
Minor CAR 08	6.3.2	The silvicultural system does not adequately make use of the resources. Thinning intensity in many compartments is very low, leading to dense stands. TUAT must develop and implement a detailed thinning plan to ensure that stands are prioritised and thinned. [Eg. Compartment 4 at Karasawasyama. Many very dense stands seen at Karasawayama and Kusaki. Stakeholder comment.]
Minor CAR 09	6.5.1	TUAT must develop and implement written guidelines defining acceptable practice for erosion control, minimising damage during harvesting, road construction and protection of water courses. [No written guidelines exist.]
Major CAR 10	7.1/7.1	There is no up-to-date management plan. A new management plan must be prepared and implemented. The new management plan must include all areas required by the FSC P&C, Criterion 7.1. The revised plan must incorporate the results of monitoring carried out and stakeholder consultation. [The previous management plan was valid from 1991-2000.]
Minor CAR 11	7.4.1	TUAT must produce a publicly available summary of the main elements of the management plan for each forest unit. [No public summary is available.]
Minor CAR 12	8.2.4	There is no monitoring methodology or data collection of post-harvest monitoring of site impacts; productivity and efficiency, or environmental impacts/social impacts of forest operations. [No monitoring is made of these elements.]
Minor CAR 13	10.2.2	TUAT must develop written guidelines for the protection of streamside buffer zones (eg. Width of buffer zones according to slope and stream size; guidelines for planting, thinning and harvesting.) [Guidelines do not exist. Planting in many areas does not leave any buffer zone along streams.]
Minor CAR 14	10.6.1	TUAT must collect and document information on soil types in the plantation areas and their susceptibility to degradation from forest operation. [No detailed information on soil types in the forest plantation areas is available.]

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9. CLOSE-OUT DETAILS FOR MAJOR CARs

Major CAR 05

Expenditure for 2000 and budget for 2001 was submitted by TUAT. It includes specific provision for operational, environmental and social costs. Generally, Japanese national universities do not have budgets divided into specific areas. However, FS manager of TUAT centre can create budget including specific provision required for university forest, considering previous expenditure. Plan of thinning and its cost was also submitted. Implementation of thinning will be checked at first surveillance.

Major CAR 06

As the first action to address this CAR, TUAT created a manual for operational road. However, Qualifor required further action to cover environmental impact caused by all forest management operations. TUAT submitted summary of "guidelines for all forest activities to prevent environmental impacts in FMs" as additional action. Full guidelines should be prepared before first surveillance and its contents and implementation (prior to commencement of any forest operations) will be checked at first surveillance.

Major CAR 10

TUAT submitted TUAT forest management plan, which is valid from 2000 to 2010. It includes enough information required by the FSC P&C, Criterion 7.1. except environmental protection. To cover all aspect, guidelines prepared for CAR 06 should be included in forest management plan. This will be checked at first surveillance.

10. CERTIFICATION RECOMMENDATION

There being no Major Corrective Action Requests, the assessment team recommends certification of TUAT's forest management of FM Oyasan, Kusaki, Karasawayama and Saitama Forests, in Gunma, Tochigi and Saitama Prefectures Japan.

The outstanding Minor Corrective Action Requests do not preclude certification, but TUAT is required to take the agreed actions before the first surveillance visit. These will be verified by SGS QUALIFOR during the first surveillance to be carried out about 6 months from the date of the issuance of the certificate. If satisfactory actions have been take the CARs will be 'closed out'; otherwise Minor CARs will be raised to Major CARs.