

Lessons from Japan's forest sector

by Mohd Adnan B. Ali

Kumpulan Pengurusan Kayu
Kayan Terengganu (Terengganu
Timber Management Group),
Malaysia
madnan@tm.net.my

I WAS AWARDED an ITTO Fellowship to spend more than four months in Japan last year with the Japan International Research Center for Agricultural Sciences (JIRCAS).

During the period I participated in field studies for a forest engineering course on forest machinery, road construction, forest management, planning and harvesting. In particular, the course concentrated on the theories and practical application—in an actual logging operation—of a cable logging system using a mobile tower yarder. It included cable system set-up, operation, dismantling and maintenance.

My studies were conducted at a number of Japan-based institutions, including the Forestry and Forests Products Research Institute, the Department of Agronomy and

Forestry at Iwate University, the Ryoshin Forest Engineering Institute, the Oikawa Motor Co Ltd (to study the operation and maintenance of forest machines, including the mobile tower yarder), Sōgo Zōrin Co Ltd, the Numata Forest Mechanisation Centre, the Iwate Prefecture Forest Technology Centre, and several others. I also worked in forestry operations in Miyagi and Iwate prefectures. By travelling widely, speaking with a wide range of people and getting 'hands-on' experience in forestry operations, I believe I gained valuable insight into the domestic Japanese forest industry. Perhaps the overriding impression was that the Japanese forest sector is in the business for the long term; all operations are conducted with an extraordinary level of care and a low impact on the environment.

Forest classification

The forests of Japan can be classified by ownership into three categories:

- private forest (shiyūrin): a total area of 14.6 million hectares (59% of the forest area), characterised by a large number of smallholders;
- public forest (kōyūrin): local authorities (shichōsōn) and prefectural governments (kenyūrin) control about 2.7 million hectares of forest. They are often managed with particular emphasis on the public functions and services offered by forests; and
- national forests (kokuyūrin): 7.6 million hectares of forest come under the jurisdiction of the Forestry Agency within the Ministry of Agriculture, Forestry and Fisheries.

Forest types

For management purposes there are three basic types of forest:

- protection forests, which are used in various ways to protect other natural resources, the public and its property from the adverse affects of Japan's weather and unstable soils;
- protected forests, which have the additional role of preserving unique habitats and areas of ecological value; and
- other forest areas, which are available for commercial exploitation, subject to certain restrictions.

Forest planning and activities

In Japan, the main commercial forestry species are sugi or cedar (*Cryptomeria japonica*), hinoki or cypress (*Chamaecyparis obtusa*) and karamatsu or larch (*Larix leptolepis*). Planting is done at a high initial density to quickly shade out the highly competitive weed vegetation. The growing season is short and well defined in Japan but growth is lush and weeding is usually undertaken once or

ITTO Fellowships offered

ITTO offers fellowships through the Freezailah Fellowship Fund to promote human resource development and to strengthen professional expertise in member countries in tropical forestry and related disciplines. The goal is to promote sustainable management of tropical forests, the efficient use and processing of tropical timber, and better economic information about the international trade in tropical timber.

Eligible activities include:

- participation in short-term training courses, training internships, study tours, lecture/demonstration tours and international/regional conferences;
- technical document preparation, publication and dissemination, such as manuals and monographs; and
- post-graduate studies.

Priority areas: eligible activities aim to develop human resources and professional expertise in one or more of the following areas:

- improving the transparency of the tropical timber market;
- improving the marketing and distribution of tropical timber species from sustainably managed sources;
- improving market access for tropical timber exports from sustainably managed sources;
- securing the tropical timber resource base;
- improving the tropical timber resource base, including through the application of criteria and indicators for sustainable forest management;
- enhancing technical, financial and human capacities to manage the tropical timber resource base;

- promoting increased and further processing of tropical timber from sustainably managed sources;
- improving the marketing and standardisation of tropical timber exports; and
- improving the efficiency of tropical timber processing.

In any of the above, the following are relevant:

- enhancing public relations, awareness and education;
- improving statistics;
- research and development; and
- sharing information, knowledge and technology.

Selection criteria: Fellowship applications will be assessed against the following selection criteria (in no priority order):

- consistency of the proposed activity with the Program's objective and priority areas;
- qualifications of the applicant to undertake the proposed fellowship activity;
- the potential of the skills and knowledge acquired or advanced under the fellowship activity to lead to wider applications and benefits nationally and internationally; and
- reasonableness of costs in relation to the proposed fellowship activity.

The maximum amount for a fellowship grant is US\$10 000. Only nationals of ITTO member countries are eligible to apply. The next deadline for applications is **29 August 2001** for activities that will begin no sooner than December 2001. Applications are appraised in May and November each year.

Further details and application forms (in English, French or Spanish) are available from Dr Chisato Aoki, Fellowship Program, ITTO; Fax 81-45-223 1111; itto@itto.or.jp (see page 2 for ITTO's postal address).

twice a year for the first 5–6 years after planting. Pruning of all stems begins when diameter-at-breast-height reaches 10 cm and two or three lifts are performed during the plantation cycle.

Since initial stocking is high, thinning is necessary to allow the correct distribution of increment and also to admit additional light to the forest floor and thereby stabilise the soil. This is done 3–4 times before clearfell.

Forest operations and harvesting

Forest harvesting is most commonly done as a highly mechanised clearfell operation. A variety of methods are used, but I studied most closely the use of a mobile tower yarder. This is a harvesting machine used for carrying, yarding and lifting the logs from stump to roadside. The machine is easy to move, having a telescopic or foldable tower, but the operator and assisting crew must nevertheless be well trained to use this machine efficiently and safely. Such training includes knowing how to set up the cables (skyline, mainline and haul-back line) and to fit the wire ropes. These machines are very suitable for thinning or clearfelling and their use reduces the density of forest roads.

A wide range of cable logging systems is used in Japan. It includes the endless-tyler, hoist carriage, self-propelled hoist carriage, running skyline, h-shaped skyline and double skyline systems.

The Ryoshin mobile tower yarder

One of the systems I studied was the Ryoshin mobile tower yarder, a highly efficient system that can operate at distances of up to 500 m. One advantage over some other yarding systems is the ease with which it can be set up and operated, reducing labour requirements. It can be used for uphill, downhill and lateral yarding.

A special model of the Ryoshin mobile tower yarder may be suitable for cable logging in tropical forest. The Ryoshin type RME 500TM was sent to Malaysia for a collaborative study between JIRCAS, the Forest Research Institute of Malaysia and Kumpulan Pengurusan Kayu Kayan Terengganu, Malaysia (KPKKT). The machine has been put into operation in the KPKKT concession to test both its technical feasibility and its ability to reduce logging damage.

Fellowship reports available

The following ITTO fellowship reports are available on request from the authors:

Variation in growth and wood traits among provenances of *Calycophyllum spruceanum* Benth. from the Peruvian Amazon

Contact: Mr Carmen Sotelo Montes, Programme for the Domestication of Agroforestry Trees, International Centre for Research in Agroforestry, Av. La Universidad 795, Apartado 1558, Lima 12, Peru; c.sotelo@cgiar.org

Multi-species glued laminated timber

Contact: Mr Calvin Nguedjio Fouepe, PO Box 13632, Yaoundé, Cameroon; nguedjiofouepe@yahoo.fr

Biodiversité, écologie et structure de la forêt de la région de Bipindi—Lolodorf—Akoni II

Contact: Mr Hubert Ngoumou Mbarga, c/o Abbé Jean Mbarga, BP 7287 Yaoundé, Cameroon; hngoumou@uycdc.uninet.cm

Análisis silvicultural de la regeneración natural de dos tipos de bosque de *Podocarpus* en San Ignacio, Cajamarca—Perú

Contact: Mr. Segundo Vaca Marquina, Bolívar 1342 Jaén, Peru; 19980469@correo.lamolina.edu.pe

Conservation of indigenous tropical tree species: genetic variability in eleven provenances of iroko (*Milicia excelsa*)

Contact: Mr Mark Appiah, Department of Forest Ecology, Unit of Tropical Silviculture, University of Helsinki, PO Box 28 (Koetilantie 3) Fin-00014, Finland; appiah@LadyBird.helsinki.fi

Demand forecast and analysis of Ghanaian certified timber products in the UK and US

Contact: Dr Timothy Afful-Koomson, International Environment and Resource Policy Program, The Fletcher School of Law and Diplomacy, Tufts University, Medford MA 02155, USA; koomson@netzero.net

Cable logging workshop

9–12 October 2001

Christchurch, New Zealand

Cost: US\$650

This 4-day workshop will present the advantages and disadvantages of cable logging and introduce the requirements in engineering design, technique and equipment systems needed to make cable logging productive. Like any harvesting method, cable logging must be environmentally acceptable and economically feasible. The workshop will discuss the different cable systems, their advantages and disadvantages, and the different techniques used to meet environmental and economic requirements.

Contact: Forest Engineering Inc, 620 SW 4th St, Corvallis Oregon 97333, USA; Tel 1-541-754 7558; Fax 1-541-754 7559; office@forestengineer.com; www.forestengineer.com