

ADVISORY COUNCIL ON THE ENVIRONMENT
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for information

Use of Tropical Hardwood Timber in the Construction Industry

Introduction

Members were briefed on 21 September 1992 and 22 February 1993 of the initiatives Government had taken to reduce the consumption of tropical hardwood in the construction industry. The Administration have agreed to keep the Committee informed of new developments in this regard. This paper briefs members on a recent consultancy study commissioned by the Architectural Services Department to look into the use and disposal of tropical hardwood in Hong Kong.

Background of the Study

2. In order to ascertain the extent of the problem and to identify possible measures to conserve tropical hardwood and reduce consumption the Architectural Services Department commissioned the consultants, ERM Hong Kong, to undertake a study into the use and disposal of tropical hardwoods in Hong Kong. The results of this study were subsequently used as the basis of a one day workshop entitled, "Tropical Hardwoods - a Time to Act", which was held at the Hong Kong Convention Centre on the 23rd February 1994. The objective of the workshop was to provide a forum in which ideas could be exchanged and solutions developed in establishing methods of reducing the impact of timber extraction in the fast depleting tropical rainforests.

Main Findings

3. The main findings of the study are summarised in the Executive Summary of the Final Report, attached for Members' information.

Options for the Future

4. The workshop, which was based on the Final Report, highlighted the options for future action which can broadly be divided into technical, educational and in due course policy.

Technical Option

5. The technical option to be considered relate to further research into and the development of a greater use of alternative materials. The use of tropical hardwood for temporary works on construction sites is an area where there is scope to reduce waste and the overall consumption. This aspect has already been addressed on Government sites through the implementation of the Works Branch Technical Circular on 1 March 1993. Substitution of tropical hardwood is also possible for works related to interior fittings.

Educational Option

6. Raising environmental awareness will be the key to the future of the tropical timber debate in Hong Kong. Regular exchange of views on the subject will raise awareness, sustain the momentum for action and generate practical solutions to the tropical timber problem. To encourage this contact and further the timber debate in Hong Kong, a common forum could be established for the exchange of ideas and information. This group, comprising representatives from the public and private sectors could monitor the status of timber initiatives established by such groups as the Tropical Forestry Action Plan (TFAP), the International Tropical Timber Organisation (ITTO) and the Forestry Stewardship Council (FSC) and keep in view international developments in the definition of "sustainable" timber.

Policy Option

7. Timber users could identify the source forests for timber used in Hong Kong and to follow the life cycle from supply to waste disposal. With the sources of tropical timber identified, consideration can then be given to sourcing only from those areas where forestry practices are in line with internationality accepted sustainable standards. The adoption of a policy of accepting timber only from certified sustainable sources would ensure that the timber supplied is from a well managed forest with minimum detriment to the environment.

Conclusion

8. Members are requested to note the results of the tropical timber consultancy study and to offer any views which they may have on the options that can be undertaken to reduce the use of tropical hardwood.

Executive Summary

ERM Hong Kong have been commissioned by the Architectural Services Department to carry out a study into the use and disposal of tropical hardwoods in Hong Kong. A life cycle approach has been employed to undertake a comprehensive analysis of how timber is sourced, distributed, used and disposed of with specific reference to Hong Kong's role in the cycle.

The results of this study were subsequently used as the basis of a one-day workshop entitled Tropical Hardwoods - a Time to Act which was held in the Hong Kong Convention Centre on 23rd February, 1994.

Background

The depletion of tropical hardwood forests in the Southern hemisphere is a topic of concern for the following reasons:

- reduction in forest resources;*
- potential changes in global climatic patterns;*
- irreversible loss of biodiversity;*
- loss of indigenous lands;*
- severe soil erosion; and*
- sustainable development.*

Objectives

The study sets out to fulfil two broad objectives: to research the uses, consumption and disposal of tropical hardwoods in Hong Kong; and to use the results of this research to set up a one day workshop involving the key players in the industry and Government representatives. From this event, the most effective approach in changing the use of tropical hardwood timber in Hong Kong could be developed.

Overview: Timber Production and Sustainability

The definition of sustainable management is a management system which allows and organizes the reproduction of the resource being exploited, in order to guarantee that available yield will not decrease. In the case of timber, the sustainable yield is the level of extraction of the commercial resource per year which guarantees not to reduce the long-term commercial biomass equilibrium volume, requiring constant re-planting of trees to make up for harvested quantities.

A number of other measures are employed including forestry practices and mixed strategies such as setting aside part of permanent forest estate (as protected areas) for producing outputs other than timber eg natural production or conversion to artificial forests.

Sources

The average annual traded flow of tropical hardwood timber and timber products into and through Hong Kong in the 1980's amounted to over 1.3 million m³. Hardwood timber exports to Hong Kong are broken down in m³ as follows:

| | |
|-------------|-----------|
| • Plywood | 698,000 |
| • Sawnwood | 138,000 |
| • Roundwood | 475,500 |
| Total | 1,315,000 |

Major Exporters to Hong Kong

Malaysia exports a large quantity of roundwood logs to Hong Kong most of which are now assumed to be from Sarawak; in addition, a mix of plywood and sawnwood is exported, which are assumed to come largely from the Peninsula. Indonesia mainly exports plywood at present, and this is consistent with its log export ban and great investment in plywood mills. China exports to Hong Kong only plywood, which may be softwood or temperate material since China has very little remaining tropical hardwood forests. Of the minor exporters to Hong Kong, Burma and PNG send only roundwood logs and only small amounts of plywood are currently exported to Hong Kong from the Philippines.

Distribution

Of the 1.3 million m³ of tropical hardwood timber that Hong Kong imports, 400,000 m³ is re-exported. Imports are roughly in the proportion of 60% roundwood logs and 40% sawn timber and plywood. The trend for re-exports is increasing particularly for wood based panels, plywood and sawnwood. The destination for these products is China, who in turn export back finished wood products, mainly for interior building works.

Uses and Consumption

The timber trade within Hong Kong

Hong Kong based timber importers handle the largest proportion of timber used by contractors. There is a significant level of vertical integration in the timber import industry. For example, log pond tenants are at the same time importers of roundwood logs whilst a number also operate sawmills or deal in other hardwood timber products such as sawn timber or plywood, and commonly have close business links with timber suppliers in Malaysia and elsewhere in South East Asia.

Consumption

Much of the consumption of tropical hardwood timber in Hong Kong is through the construction industry, which utilizes between 80% and 85% of plywood and sawnwood retained in Hong Kong. The cost contribution of timber to the overall project is however small with the share of timber (primarily of hardwood origin) in total material costs (excluding electrical and mechanical supplies) in construction works estimated to be about 3%.

This use of tropical hardwood timber roughly breaks down into the following areas of usage:

- Temporary works
(formwork, falsework, hoardings and proppings) 40%
- Permanent works/interior fittings
(floors, doors, windows and fitted furniture) 30%
- Refurbishment/shopfittings 30%

From discussions with developers, architects and contractors, key problems identified were the lack of integrated design (whereby the three groups do not discuss the specification of materials such as types of timber); the one-off use of formwork due to the non-modular design of many buildings in Hong Kong; unfamiliarity within the industry regarding substitute woods or alternative materials (such as metal); and the associated/perceived cost implications of changing from traditional practices to new ones.

Disposal

Construction waste, which represents the largest amount of timber waste, is disposed of primarily at landfills and public dumps. According to the EPD, 9.4% of construction waste disposed of at landfills in 1992 was timber waste, largely of tropical hardwood origin. This amounts to 410,000 tonnes per year. An equivalent amount is estimated to end up in public dumps.

Construction wastes would also cover timber from activities such as renovation and demolition work. This includes some decorative woods and furniture, as well as the timber used in large scale construction site materials, which could show up in the domestic waste stream long after it had originally been imported or been produced.

Recycling of Wood Waste

Approximately 18,000 tonnes of wood waste (including sawdust) were exported for recycling in 1991-2. Recycling is usually carried out by the informal, and largely undocumented, recycling sector. The potential markets for recovered wood waste include various industrial or soil applications, such as mulch, or soil conditioner. Other possible uses which require further research include animal bedding, compost, fuel, pulp mill feedstock, and chipboard manufacturing. None of these practices are currently carried out on a commercial scale in Hong Kong, though some does occur in China.

Options

Tropical hardwood timber consumption can be reduced in Hong Kong through the following two strategies:

- *Increased efficiency in materials usage.*
- *Substitution.*

Timber usage in Hong Kong appears relatively efficient in terms of timber processing and in the level of waste generated by construction sites. Processing of wood in Hong Kong (primarily the production of sawnwood and plywood) is very efficient, with an estimated wastage rate of 26% in the conversion of logs. Similarly, usage of timber in the construction industry is said to be efficient. Improved site management can be achieved by letting subcontractors purchase and manage their own materials. While this foregoes bulk discounts, contractors have achieved 10-20% efficiency gains in materials usage through better site management and wastage reduction. This delegation of the purchasing function to the level where material is used is a trend that could be implemented throughout the industry.

Alternatives for interior fittings are softwood materials of corresponding quality. Further alternatives for temporary works such as hoardings, formwork, falsework and proppings are the following:

- *Alternative timbers*
- *Metal (steel, aluminium)*
- *Combined metal/wood materials.*
- *Other materials.*

Promoting Sustainable Management of Forests

International efforts to promote sustainable forestry management are led by the International Tropical Timber Organization (ITTO) and the Forest Stewardship Council (FSC).

The ITTO process and the FSC are international initiatives for the promotion of improved forest management. Hong Kong is ideally placed in terms of its geographical location, its economic success and through the influence it has in the region to become active in such initiatives and others which are specific to the Asian region. These include protected landscape projects in Hainan, and several integrated protected area system projects in Indonesia, all of which are funded by the Asian Development Bank.