

Industrial forestry development in Solomon Islands — Kolombangara Forest Products Limited

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Introduction

The forestry sector is very important to the economy of Solomon Islands, ranking second behind fish and fish products in terms of export earnings. During the 1980s forest commodities have averaged almost 30 per cent by value of total exports (SI\$37.2 million in 1987).¹ Forestry is also important to formal employment; it is estimated that more than 2000 people are employed in the sector.

The present industry is considered to be non-sustainable in the medium to long-term. Non-sustainability of the industry arises because the rate of logging is higher than the rate of forest replacement. The Commonwealth Scientific and Industrial Research Organization (CSIRO)² commented that the accessible natural forest had an expected life of 36 years if logging was maintained at 1986 levels. If the maximum annual cut were to be achieved (i.e. all existing logging licences were fully utilized) the forest would last only about 15 years.³

Consequently, the Solomon Islands Government (SIG), through the Forestry Division, pursues a reforestation program with an ultimate aim of maintaining forestry sector activities once the commercially accessible rainforests have been logged. However, al-

though an estimated 65,000 hectares of plantations are needed to sustain the industry, to date less than 25,000 hectares have been planted.

The Kolombangara Forest Products Limited (KFPL) project which, as described below, includes more than 11,000 hectares of additional replanting over the next eight to ten years, will make an extremely important contribution to the overall reforestation program and to the sustainability of the forestry industry.

A greater level of processing of logs within the country is a policy aim of Solomon Islands. However, more than 85 per cent of timber is still exported as logs, while a lack of skilled manpower means that much of the sawn timber which is produced is of low quality. KFPL is an industrial forestry project in which all harvested timber will be processed before export.

Origin of the Kolombangara Forest Products Limited Project

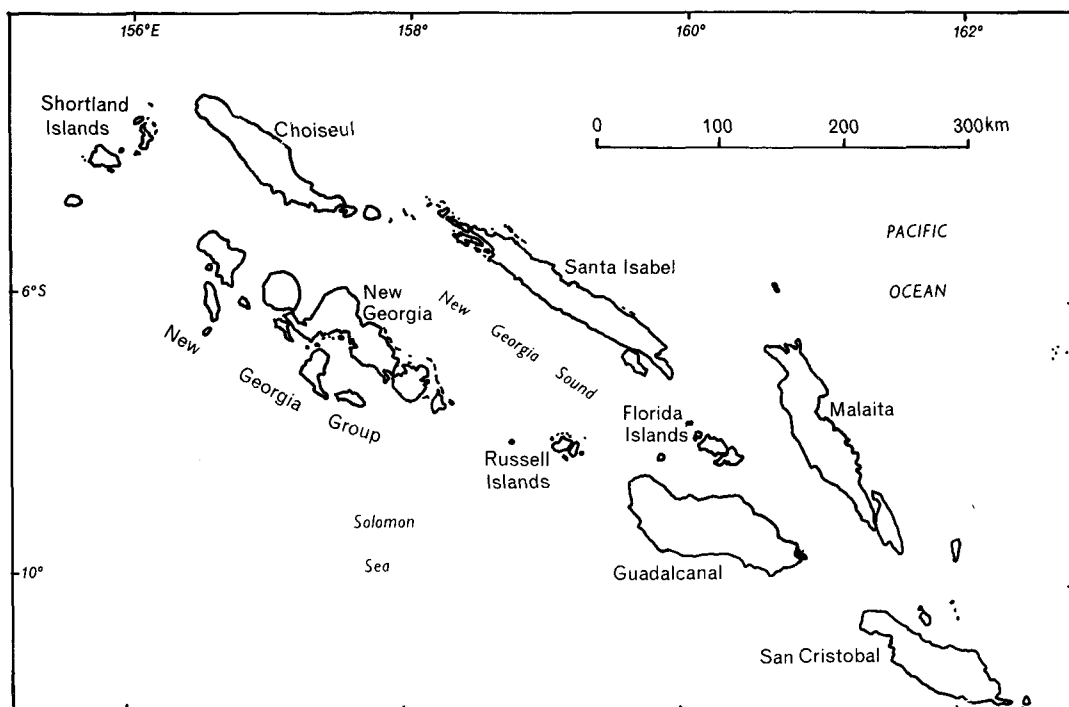
The island of Kolombangara is in the New Georgia group of islands in the Western Province of Solomon Islands. Kolombangara was intensively logged by Levers Pacific Timbers (LPT) from 1969 to 1978. The Forestry Division began an extensive tree planting program in the logged area in 1974. More than

1 Exchange rates prevailing at the beginning of 1989 were approximately SI\$1.00 = US\$0.50 or A\$0.55.

2 CSIRO, The Solomon Islands National Forest Inventory Project, Phase I report, CSIRO Division of Water and Land Resources, Canberra, 1987.

3 It is very difficult to estimate accurately the extent of remaining accessible forest as the resource is poorly understood. A National forest inventory study is being implemented in 1989 using Australian International Development Assistance Bureau funds. This will clarify the extent and nature of forest resources in Solomon Islands.

Solomon Islands



8000 hectares of hardwoods have since been planted under this program.

LPT constructed basic township infrastructure at Ringgi Cove, along with roads and bridges, to support their logging activities. These facilities were purchased by the SIG in 1986 and have been maintained by the Forestry Division since then. The infrastructural facilities were purchased by the SIG with a view to the establishment of a commercial forestry venture.

A number of proposals for the use of the logged land on Kolombangara have been formulated and analysed since the late 1970s. These included studies into oil palm, rubber and cocoa, none of which led to commercial development. Subsequently, the KFPL project was adopted.

The principal aims of the project are to contribute to the sustainability of the forest industry in Solomon Islands by bringing a major timber exporting enterprise into operation at a time when the natural forest is rapidly diminishing and to establish a substantial processing facility for timber products.

Table 1 Plantation components

Species/component	Hectares to be planted	Rotation length (years)
<i>Gmelina arborea</i>		
Chip wood working area	4,600	8
Sawlog working area	3,000	12
<i>Eucalyptus deglupta</i>		
Chip wood working area	3,000	8
Main plantation area	10,600	
Trials	130	
Hardwood diversification	570	
Total plantation area	11,300	

Project description

The project land will be replanted over a nine- or ten-year period, beginning in 1989. A plantation with features similar to those shown in Table 1 will be established.

The areas shown in Table 1 are those which will be planted under the project. However, the 8000 hectares which have already been planted by the Forestry Division on Kolombangara may also be brought into the operation of

KFPL. This would mean, in the first instance, that processing operations could be brought forward by about two years, thereby engendering an earlier cash flow and an overall better financial return to the project. Under the terms of current agreements, KFPL would pay a stumpage value for trees from the Forestry Division plantings which are used by the company.

The principal plantation crop, covering more than 70 per cent of the area to be planted by KFPL is to be *Gmelina arborea* (Gmelina). This is an exotic, fast growing hardwood which has good woodchip and sawlog qualities. It is a white timber believed to have a wide range of potential uses in the furniture industry, and is regarded as a high quality short fibre chip wood suitable for quality paper manufacture.

The second plantation species, *Eucalyptus deglupta* (Eucalyptus), is also an exotic, fast growing hardwood species. This species, already planted extensively by the Forestry Division, will be grown primarily as a chip wood crop on areas which are thought to be less suitable for Gmelina. These areas are generally those above the 300 metre contour.

The area allocated to long rotation hardwood diversification will have two functions. First, it will serve as an observation area from which information on the planted species will be collected. Second, it may also provide additional income to the project, probably after about 25 years.

The project includes a significant research and development component, based on the 130 hectares of trial plantings. The principal activities will be in areas of tree breeding and silvicultural techniques. This research is expected to make a substantial contribution to the project, as well as providing significant benefits for other forestry activities in Solomon Islands.

Based on the plantation components shown in Table 1 it is estimated that 331,000 cubic metres of chip wood and 104,000 cubic metres of sawlogs will be produced each year once full production has been reached.

The processing plant, consisting of both a chip mill and a saw mill, will be the subject of a detailed engineering design study in the early to mid 1990s. At that time it should be possible to predict plantation yields more accurately and, consequently, the capacity of the processing plant can also be more accurately determined. Further, the configuration of the

plant between chips and sawn timber capacity will need to be determined on the basis of predicted yields and the marketing strategy to be pursued. It is estimated that 141,000 bone dry units (BDU) of woodchips and 47,000 cubic metres of sawn timber will be produced each year.

Environmental considerations

The area to be planted under the project has previously been completely logged. The reforestation of this area will not recreate the natural forest. However, careful account has been taken of environmental aspects in the planning of the project. The remaining natural forest will be preserved, while every effort will be made to minimize further environmental damage.

To ensure that environmental considerations are properly taken into account there is an agreement in the joint venture documents that an environmental plan will be prepared by the project management team within the first six months of project implementation. Further project activities are based on acceptance of the environmental plan. It is envisaged that a cable logging system will be used so as to minimize compaction and erosion of the project soils.

Company structure and management

KFPL has been established as a 50:50 joint venture between the SIG and the Commonwealth Development Corporation (CDC). The government's shareholding, as with all government companies or joint ventures, is held through the Investment Corporation of Solomon Islands (ICSI). The day-to-day management of the company is being provided by the CDC under a management contract with the company.

The project is being implemented in three phases. The first phase covers the period 1989 and 1990, during which time mobilization of the needed resources will begin. The Ringgi Cove infrastructure will be renovated, environmental and operational management plans drawn up and agreed upon, and initial plantation development begun. The total cost of this phase is SI\$25.9 million. The second phase of the project will run for the period 1991-98 and will involve the completion of the plantation development and, towards the end of the period, the establishment of the chip and sawmill complex. Discussions will be held with

other interested parties during this phase with a view to the possible involvement of a further partner in the joint venture company. This partner would, most likely, be an organization with experience in processing and/or marketing the commodities to be produced by KFPL. The funds required for forest development in Phase II of the project are estimated at SI\$116 million in 1988 figures. The SIG contribution of 50 per cent is being sought as soft loans from international financial agencies. Commercial borrowings will not be used prior to the commencement of harvesting and processing operations because of the difficulties which would be encountered in servicing loan repayments. As previously indicated, processing facilities will be the subject of a detailed design study during the early to mid 1990s. However, preliminary estimates suggest a cost to establish these facilities of the order of SI\$75 million in constant 1988 terms.

The third phase of the project is the operational phase of harvesting, processing, marketing and replanting. The agreements signed by the SIG and the CDC provide initially for three full forest rotations. However, it is expected that the project will continue beyond these rotations.

In summary, the project cost, including capital equipment, forest and infrastructure establishment, and processing plant establishment, is estimated at SI\$216.9 million in 1988 constant prices.

Marketing

Gmelina is used widely throughout the world, particularly in parts of Asia. Although at this stage it is not a widely traded timber, several factors give cause for confidence in the marketability of the species once production quantities become available.

First, in countries such as India where Gmelina is widely used, domestic supplies are almost exhausted. A market for sawn timber of the quality of Gmelina is forecast in such countries. Furthermore, demand is expected to increase as availability of the product improves. It is noted that Kauvula timber, a pale hardwood produced in Fiji, was in a similar situation but became well established in the marketplace once supplies were available.

Second, Gmelina is grown for chip wood in other locations and its acceptability for this purpose is established.

Third, during the appraisal of the project, contact was established with leading timber and woodchip importers in Japan, where the chips are expected to be marketed, and these importers expressed considerable interest in the product. The importers confirmed that, subject only to the maintenance of quality, markets would be available for both the woodchips and the sawn timber. During the plantation development phase of KFPL, contact will be maintained with these and other users. Ultimately, long-term marketing contracts may be entered into and users or marketing agencies may possibly invest in the project at the time of establishment of the processing facility.

Fourth, the demand for short fibre hardwood chips for paper manufacture has grown steadily in Japan since the early 1970s. At present, much of the hardwood chip material is from mixed species natural forests (e.g. that from Australia). The product from Kolombangara will be a single species, white hardwood chip suitable for the manufacture of quality paper such as that used in facsimile machines and as quality business stationery.

The International Bank for Reconstruction and Development (World Bank) produces price projections for both hardwood chips and sawn timber and these projections were used in the financial analysis of the project. There is only a relatively short price history (1973-86) for the import of hardwood chips to Japan but over this period there has been a small but steady upward trend in real price levels.

In respect of sawn timber, information from Australia suggests that prices for quality pale hardwoods are extremely good and are likely to remain firm.

The projected prices used in the analysis (woodchips US\$96 per BDU, and sawn timber US\$227 per cubic metre at constant 1988 values) are considered to be conservative and it is believed that there is more upward potential in prices than the likelihood of a long-term price decline. Using these prices and the expected marketable volumes the projected gross export earnings from the project, once it reaches full production, are estimated to be SI\$27 million for wood chips and SI\$22 million for sawn timber each year (in constant terms). The project is therefore expected to earn about 50 per cent more export income than the total forestry industry earns at present. Most importantly, it is expected that these earnings will be sustainable over a long period of time.

Financial and economic appraisal

Based on the projected cash flows from the project (expressed in constant 1988 dollars) the internal financial rate of return is estimated to be 8.9 per cent over a 40-year period, exclusive of residual values. The inclusion of the estimated residual value of the assets of KFPL (SI\$130 million) lifts the internal financial rate of return to 9.3 per cent. In terms of profitability and dividends to shareholders, it is forecast that the company will show an operating profit from 1998 onwards and will commence paying dividends in the year 2000.

The calculation of the internal economic rate of return involved several adjustments to financial cash flow figures to allow for economic costs and benefits. The changes made include the following:

- Imported material costs were adjusted to remove the effects of import duties, and a standard conversion factor of 0.86 was used to convert the estimated local prices (accounting prices) to notional duty free prices (economic prices).
- Labour costs were adjusted using a shadow wage rate of one half the expected nominal rate to reflect the opportunity costs of employment.
- Transfer payments within the company, such as the use of accrued interest or other earnings, were excluded from the analysis.
- Expenditure on health and training programs by KFPL were added to the expected returns, as the project will provide benefits to the community.
- Expenditure on research and development has been added to project benefits to reflect the value of this component to forestry activities throughout the country.
- Working capital defined as net current assets has been excluded as this reflects a financial flow rather than an actual cost.
- Personal taxes payable to the government by the work-force have been estimated and credited to project benefits.
- The potential added value which will accrue to the existing Forestry Division plantations on Kolombangara as a result of the availability of processing facilities has been estimated. The processing facility will enable the timber to be processed into wood chips or sawn timber rather than being sold as round logs, thereby increasing the value

of the existing plantations. The estimated increase in timber value is included in the analysis as a project benefit.

- The residual value of the standing timber at the end of the 40-year period used in the analysis was estimated at SI\$130 million. This residual value was also included as a credit in the economic analysis.

When these adjustments had been made the internal economic rate of return was estimated as 13.8 per cent in constant 1988 prices.

Other items could also have been incorporated in the economic analysis but, largely because of the difficulties in estimating the costs of benefits arising, were excluded. Increased public services will be required on Kolombangara, but it was considered that the costs of these services will be at least matched by the benefits provided. External benefits such as improved air services to the island, improved roads for local people, and increased opportunities for local entrepreneurs to establish businesses were not included in the analysis.

Adjustments for the opportunity cost of the land to be used in the project were also excluded from the analysis as it was agreed that there were no alternative economic uses for the land (excluding a small area set aside for cocoa).

In the economic analysis, no premium has been attached to foreign exchange earnings. This, however, is a most important aspect of this project. KFPL is forecast to begin generating substantial foreign exchange earnings at a time when natural forest resources are under considerable pressure and when earnings from this source may be declining. Without the project there would, at some stage, probably early in the next century, be a substantial drop in the country's export earnings. Consequently, the Solomon Islands dollar would almost certainly have to be devalued so as to bring the external balance back into equilibrium.

While it is extremely difficult to estimate the extent of any such devaluation, given that forestry exports account for about 30 per cent of total export earnings the devaluation, without any other offsetting revenues, could be of the order of 20 to 25 per cent. Consequently, it could be argued that a premium of this order should be applied to the project's foreign exchange earnings. This would result in a significant increase in the internal economic rate

of return for the project. However, such an adjustment would be extremely hypothetical.

No explicit allowance has been made for risk in the economic analysis. The use of relatively conservative prices and production levels partly allows for this. However, some sensitivity analyses were also undertaken in the 1987 feasibility study. The greatest potential risk is that arising from cyclones. Although it is not possible to make specific predictions about their incidence, from the data available in the past twenty years Kolombangara has been in the direct path of only one cyclone. This issue was addressed in the 1987 feasibility study where it was concluded that the damage in forests for chip wood was unlikely to be catastrophic. Older plantations could be harvested and coppiced, whilst coppicing of younger trees would result in rapid recovery. Therefore, while the short term disruption to the project would be significant, the long-term viability of the project would be little affected by cyclones.

Conclusion

KFPL is an extremely important project for Solomon Islands. The implementation of this project will make a major contribution to the sustainability of the country's forestry industry; it will lead to the establishment of a major processing industry, and it will contribute markedly to export earnings.

KFPL is a project which is in line with government policy in that it adds to the reforestation program, incorporates local processing, is revenue and employment generating, and includes private sector investment.

Finally, notwithstanding some degree of technical and weather related risk, the future success of the project depends very largely on the marketability of the commodities produced. There is now a high level of confidence in Solomon Islands in respect of the marketing of chip wood and sawn timber but the capturing of profitable markets will be a key project activity during the early to mid 1990s.