

ECONOMIC AND FINANCIAL ASPECTS OF LEASING STATE FOREST LAND¹

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1. INTRODUCTION

The Government of South Africa has a major holding of forest land, with a total estate covering 892,000 ha of forest and associated land. Within the state's forest holding there is a wide diversity of forest and land types including: commercial plantations and other afforested land; indigenous forests; legally protected (indigenous) forest areas; and associated bare land. This land is partly owned by the state and partly held on behalf of local communities, some of whom also have existing rights to use the forest land for various purposes. The Government of South Africa is planning to withdraw from direct involvement in the forest sector and is currently considering options to involve the private-sector in the management of this resource.

In order to retain some control over the resource, the government is proposing to lease forest land to the private-sector rather than outright privatisation of the estate (for the purpose of this paper, leasing has been defined by the author to include a broad spectrum of arrangements between the public and private-sector, including: commercial land leases; harvesting permits; concession licences and forest management agreements). This paper has been prepared to assist the South African Department of Water Affairs and Forestry (DWAF) to evaluate the options for such leases. It considers various leasing options available to the government and draws upon experience other countries have had with involving the private-sector in the management of publicly owned forests.

Sections 2 and 3 of the paper discuss the objectives various countries have pursued with their policies to encourage greater private-sector involvement in forestry and the options typically available to governments. Section 4 discusses the economic aspects of forest leases such as how to determine the value of leases. Section 5 discusses some of the institutional aspects of leases such as how payment should be structured and collected and supervision of the lease arrangement. The final section presents the main economic and financial factors which should be considered when setting-up the leasing arrangements.

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² The designations and the presentation of material in this paper do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organisation of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries. The opinions expressed in this paper are those of the author alone and do not imply any opinion whatsoever on the part of FAO.

2. POLICY OBJECTIVES

For the success of any major forestry policy initiative such as privatisation or greater private-sector involvement in the management of publicly owned forests, it is essential that the objectives behind such a move are clearly defined and well understood. Typically, private-sector involvement in the management of publicly owned forests is often considered as an option to meet one or more of the four broad objectives described below.

Objective 1 - to improve government finances from the disposal of public assets

Over the last 20 years, many countries have thoroughly reviewed the role of the state in industry. Governments in several countries have disposed of a wide range of assets in industries and activities where they no longer see a necessary role for direct state intervention. In the case of forestry, the strongest arguments in favour of privatisation have been put forward in cases where the state's forest assets do not provide significant non-commercial (i.e. strategic, social or environmental) benefits, or where the production of such benefits in the future can be reasonably guaranteed through a strong regulatory framework. In cases where the main objective of encouraging private-sector involvement has been to improve government finances (due to the revenues from selling the assets and, in some cases, reduced financial liabilities in the future), forest resources have typically been completely privatised at market prices. Not many countries have pursued this objective to a great extent. The notable ones which have are the United Kingdom and New Zealand, in the case of their plantation resources (see Box 1).

Objective 2 - to increase efficiency by gaining private-sector management skills and investment

A common criticism of government services and nationalised industries are that they are badly managed. This can be due to a range of factors from political interference in their management to complicated and ineffective systems of management and control (often designed for running government departments rather than commercial operations). Government expenditure and, consequently, government borrowing, is also a tool of macroeconomic policy and is thus very sensitive to current macroeconomic conditions. So, poor performance is often also the result of underinvestment. In cases where governments wish to retain some control over assets for strategic or other reasons (e.g. the activity has major social or environmental effects), they often resort to initiatives ranging from competitive tendering for the provision of services to joint ventures and build-operate-transfer (BOT) schemes. Such initiatives allow the government to retain a certain degree of control, while increasing efficiency by leaving the day-to day management and financing of operations to the private-sector.

This approach to encouraging private-sector involvement is not currently very common in forestry, but is likely to become more common in the future. An example of the use of joint ventures is the development of forest plantations in Indonesia. Natural forest management in Canada is also moving away from concessions to cut timber to broader forest management agreements involving much more oversight and regulation by the state, which can be considered as a variation on this theme.

Box 1: Experiences with privatisation in the United Kingdom and New Zealand

Both the United Kingdom and New Zealand have privatised significant portions of their publicly owned forest resource since the late-1980's. However, the approaches taken to privatisation differed between the two countries. In the case of the United Kingdom, privatisation was first introduced in 1979, but the sale of publicly owned forests started only in the late-1980's. Forests picked for sale were primarily chosen where their disposal would rationalise the management of the state's forest estate. However, targets for the revenue from sales of forest and the area to be sold each year were also set by the government (£150 million and 100,000 ha by the year 2000). Forests were sold by competitive tender or negotiation and, by March 1997, the Forestry Commission had sold 66,000 ha (out of a total of 900,000 ha before the sales started) and raised £75 million.

The type of forests sold were mostly remote conifer plantations or areas difficult to manage in some other way. Forests providing a high level of non-timber benefits were not sold but, in the early 1990's, concerns were raised about the loss of public access. In response to this, the Forestry Commission initiated a policy of giving local government the opportunity to enter into legally binding access agreements over areas about to be sold.

Complete privatisation of the remaining publicly owned forest estate was considered in 1994. However, complete privatisation was rejected on the grounds that:

1. it would be unlikely that the whole resource could be sold in one go for a reasonable amount;
2. it would be legally and administratively complicated and, thus, expensive; and
3. there would be considerable public resistance to such a move.

The policy of gradual disposal therefore remained, with targets similar to before. However, the policy was halted before the last general election (March 1997) and has not been resumed by the new Labour government.

Privatisation in New Zealand was first announced in December 1987. Government assets were to be sold with the primary aim of reducing public debt. Other reasons for state asset sales were also given, namely;

1. that Ministers are not good owners of businesses;
2. to avoid the possible need for future government investment;
3. to minimise the government's risk exposure in the business sector of the economy; and
4. to enable Ministers to concentrate on matters of economic and social policy.

The criteria for asset sales were that taxpayers must receive more from the sale than they would from continued ownership and that the sale must make a positive contribution to the government's economic and social policies. A major objective in the forestry sector was to rationalise the estate and produce a more efficient, internationally competitive forestry sector. A particular concern was the need to provide security of supplies to processors in order to attract new investment into the industry. The sale of forests, allowing processors to integrate wood supply into their current operations was seen as the optimal mechanism to achieve this end in the long-run.

The first round of sales was in the form of a sealed bid tender, which closed in July 1990. Bids were made for the outright purchase of trees and fixed assets but with the forest land being leased under a tradable Crown Forestry Licence. This initial sales round was relatively unsuccessful: only two bids (for 72,600 ha in total) were accepted. All other bids were rejected as being too low. However, the government later entered into round of negotiated sales that resulted in the sale of another 174,000 ha. The third stage of privatisation, announced in the government's 1991 Budget, was the sale of forests managed by the state-owned enterprise: New Zealand Timberlands. In April 1992, New Zealand Timberlands was sold to an American Company, ITT Rayonier.

An important question in any privatisation process is the objective of the policy. In New Zealand the objective was clearly stated to be revenue maximisation and this was achieved by placing few constraints on bidders and maximising the competition for bids. A side effect of the policy was that it also marketed the opportunities for investment in New Zealand forestry. The entry of foreign investors benefited the sector with the introduction of new technologies, improved market awareness and enhanced domestic competition. The major downside to opening the sale to foreign bidders was a negative public perception of foreign resource control.

Sources: National Audit Office, 1998; Brown, 1998.

Objective 3 - to develop a domestic industry on the basis of a publicly owned asset

Some countries have chosen to develop significant domestic forest processing industries on the strength of their natural resources. In such cases, the objective of private-sector involvement has often been to develop the industry without the need for significant government expenditure. This has historically been a common objective of forestry policy, particularly in countries with vast natural forest resources such as Indonesia, Malaysia, Canada and the United States of America.

A major characteristic of the pursuit of this objective in the past, has been that governments have often subsidised the industries in such arrangements by offering cheap concession terms. In less developed countries where government finances are limited (and in some developed countries also), this has often also been accompanied by weak monitoring and control. In the worst cases, poor forest management practices as a result of poor control, have led to deforestation and forest degradation (major examples where this has occurred in the past are Thailand and the Philippines). However, pursuit of this objective need not lead to these problems. Such problems often reflect the way in which revenues have been distributed. Historically this objective has been common in forestry, but countries are now tending to move away from this objective as they pursue broader goals for forest management.

Objective 4 - to support local community development

At the local scale, an objective of greater private-sector involvement is sometimes to stimulate rural community development. This can take one of two forms. In some countries, forestry agencies have tried to directly involve local communities in forest management (e.g. Nepal). Others have tried to use some of the revenues from large-scale commercial management to support community development (e.g. Papua New Guinea and Indonesia). Success in achieving this objective through leasing and other types of private-sector involvement has been mixed (see Box 2).

Discussion

The purpose of the above discussion has been to show that there are probably a wide range of reasons why a government might wish to involve the private-sector in the management of public forests. Most countries have had several of the above objectives in mind when pursuing such policies. For example, Indonesia has developed a significant wood processing industry on the strength of its forest resources, has encouraged concessionaires to support local community development and has earned substantial government revenues from its forest concessions (although it has not maximised them). Even countries which have taken a fairly narrow view of private-sector involvement and have sold some of their forest resources (e.g. the United Kingdom and New Zealand) have only sold parts of their estates and have had other management objectives for the remaining assets. The main point to consider before entering into such arrangements is to be clear about what the government wishes to achieve before setting-out on a policy of encouraging private-sector involvement.

Box 2: Different approaches to private-sector involvement in community development

Landowner Companies in Papua New Guinea

The Landowner Company concept was developed as part of the 1979 National Forest Policy, with the aim of increasing local participation in the forestry sector. Since then, the number of Landowner Companies has increased dramatically and many of them have been issued with timber permits to develop their own resources.

While the concept is good in theory, the practical reality has not been so good. Most Landowner Companies have been plagued by mismanagement, corruption and in-fighting between different landowner factions. The result has been that most Landowner Companies have alienated the people they were supposed to represent. Most of the income from the Landowner Companies operations has also ended-up in the pockets of their directors and many have become closely linked to foreign logging companies

The government of Papua New Guinea is currently trying to rectify this situation by restricting the issuance of timber permits to these companies until they improve forest management and take measures to guarantee that they will distribute their profits to the groups they are supposed to represent.

Community forestry leases in Nepal

The Hills Leasehold Forestry and Forage Development Project in Nepal aims to improve the living conditions and income of families living below the poverty line. It also aims to improve the ecological condition of the Mid Hills of Nepal's central and western regions by leasing degraded and barren forest land to poor farmers.

In the five years to 1997, 600 leaseholder groups (representing 4,100 families or 27,000 people) have been formed covering just under 3,000 ha of degraded forest and hill land. After consultation with local communities, leases are given to groups of the poorest members of the community for 40 years for the development of forest and fodder resources. Benefits of the scheme have been a reduction in conflict over resources, increased involvement of women in resource management, improvement in the ecological condition of many of the areas, increased income from the sale of non-wood forest products and improved fodder yields.

The Bina Desa scheme in Indonesia

The Bina Desa scheme in Indonesia aims to use private-sector financing from the forestry sector to support the development of communities within forest concessions. As part of a concession agreement, concessionaires have to set aside some of their income for local development schemes such as the building of roads, schools, clinics, mosques and land improvement. Local needs are based upon diagnostic surveys also paid for by the concessionaires.

The impacts of the scheme have been mixed. There are, for example, many examples of inappropriate developments having been funded by concessionaires. This is mostly due to institutional weaknesses such as a lack of technical knowledge on the part of concessionaires and local forestry staff in the area of community development. Another criticism of the scheme is that it gives uneven support to communities in that some concessions have low timber income and many communities while the reverse is true for others.

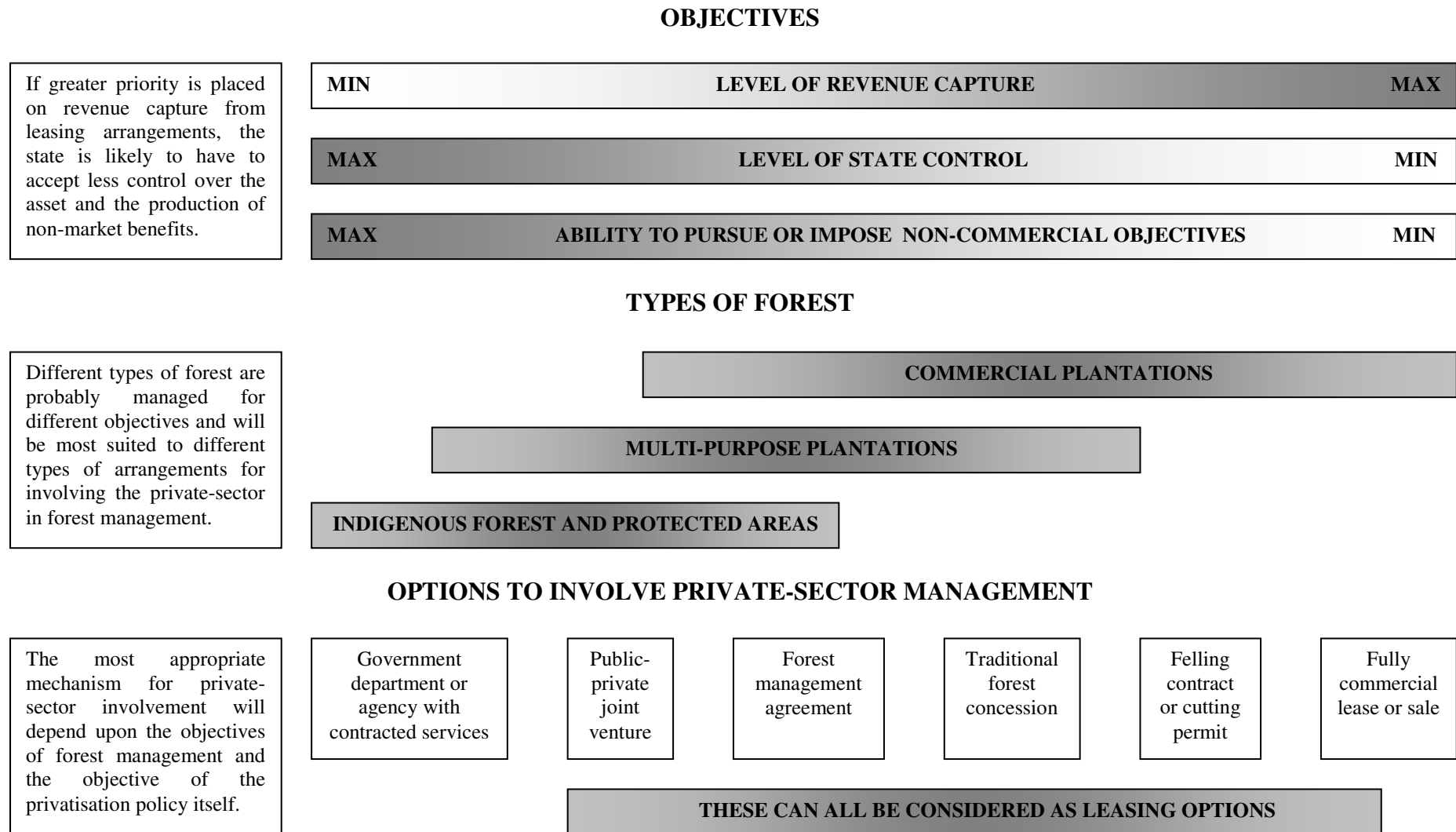
Sources: Government of Papua New Guinea, 1998; Sterk, 1998.

A second point to make is that the above objectives and other forestry policy objectives are often conflicting. As has already been noted, a policy to use the private-sector to develop a domestic processing industry often requires some sort of public subsidy in the leasing arrangement, which comes into conflict with the objective of raising revenues (if this is also a priority). More generally, in order to increase the level of government revenue from leasing arrangements, governments have to consider relinquishing gradually more control of the resource, which makes it more difficult to ensure that non-commercial objectives of management are achieved (see Figure 1). Within the wider context of sustainable forest management, governments must consider very carefully how sustainable forest management

can be achieved within the leasing arrangement with the private-sector or the wider regulatory framework.

A final feature worth noting is that the objective behind private-sector involvement in public forests will often vary between different types of forest. Thus, for example, a revenue raising objective may be appropriate for plantations with few non-market benefits and little social impact, but would probably be unsuitable for multipurpose plantations. In multipurpose plantations and indigenous forest, governments are much more likely to want to get private-sector management and financing to increase efficiency, while retaining strong control over the asset to ensure that other non-commercial good and services are still produced. Clearly setting-out the objective behind the leasing policy is therefore, important because it will affect the choice of which leasing option is most appropriate to meet that objective.

Figure 1: Objectives and options for private-sector involvement in the management of state-owned forests



3. OPTIONS FOR LEASING

Some of the various options for leasing have already been alluded to in the previous discussion of objectives. Briefly, the main characteristics of the various options are described below. Much of this discussion draws on experience with leasing arrangements in natural forest, because this is the most common type of forest where such arrangements exist. However, many of the points raised about each of the options would equally apply to plantations.

Fully commercial lease

In fully commercial leases, rights to use the land and associated property are assigned to the lessee for a fixed period, usually at market rates (sometimes subject to periodic independent revaluation). Payment charges are usually calculated on an area basis and collected as a lump-sum at the start of the lease, annually, or as a combination of lump-sum and annual payments. Fully commercial leases are typically only encountered in the forestry sector where a landholder has leased bare land to another party and they have planted some trees on it (for example, a small proportion of the UK Forestry Commission's forest estate has been planted on land leased from other landowners). Some rights (e.g. mineral and sporting rights) may be excluded from the lease and other restrictions may be placed on the lease (e.g. conditions of access, condition on transfer of the lease to third parties and restrictions on development). Such leases may also restrict the lessee to certain activities (e.g. only forestry and/or agriculture). Generally such leases do not involve forestry administrations in any special monitoring arrangements. Rather, monitoring is performed through the regulatory framework applicable to all private forests in the country. To be useful in the forestry context, such leases generally have to be for a reasonably long period of time.

Felling contract or cutting permit

Felling contracts or permits confer to the holder the right to fell and extract timber. FAO (1989) notes that such licences usually include:

1. definitions of the area covered by the license, the duration of the licence and the trees which may be felled (these are sometimes individually marked);
2. instructions regarding the felling methods to be employed, construction of roads, scheduling of coupes and payment of fees; and
3. estimates of the annual yield which might be expected, based on inventory data usually provided by the forest service.

They also sometimes include special provisions such as rules about what the timber can be used for and requirements for fire protection and simple silvicultural operations (although, if such measures are complex and the permit is for a reasonably long period of time, such arrangements would be more like a traditional forest concession).

Cutting permits were a common arrangement until recently in British Columbia (Tree Farm Licences) and Papua New Guinea and are still widely used today across much of Africa.

They are also sometimes used as an option for supporting community development. For example, in Peru, the most easily obtained logging permits (and the least exacting for their beneficiaries) are those issued for areas of natural forest of up to 1,000 ha. These are easy to obtain, in the belief that this will encourage and help small-scale enterprises. However, it has been noted that these arrangements are also open to abuse (FAO, 1993a).

The main criticism of cutting permits are that they concentrate almost exclusively on the harvesting aspects of forest management and don't pay enough attention to other aspects such as silviculture, environment and local social and economic needs (see for example, the highly critical commentary on British Columbia's past forestry policies in Garner (1991)).

However, cutting permits can work if properly supervised and if the state is willing to limit them to extraction rights and carry-out silvicultural treatments itself. For example, the Forestry Commission in the United Kingdom has progressively moved towards reducing its harvesting workforce and selling its timber standing. In 1994, 2 million m³ out of a total harvest of 4.3 million m³ (45%) was sold in this way and much of the remaining timber was felled using private contractors (Forestry Commission, 1994).

Forest concession

A forest concession can be considered as something similar to a cutting permit, but with more responsibilities placed upon the concession holder. Typically, forest concessions last from 10 years (e.g. Suriname) to 20 years (e.g. Indonesia), with options to revoke the concession if performance is unacceptable. Forest concessions give their holders some long-term security of supply from the parcel of forest in which they operate, but they are also often expected to carry-out many more forest management operations than would be expected under, say, a cutting permit. Such operations include, for example: surveys or inventories of growing stock; planning functions; replanting or enrichment of areas after harvesting; and, sometimes, research and training functions.

The main weakness of the traditional forest concession system is that, with so many operations placed under the responsibility of the concessionaire, it is difficult to ensure that a good job will be done. For example, even a 20 year concession period does not give the concession holder much of an incentive to ensure that the forest is left in a good condition after harvesting, particularly when most cutting cycles in the natural forest are at least 30 years and often more. This problem is exacerbated when monitoring agencies (i.e. forestry administrations) are technically or institutionally weak and underfunded (which is often the case).

A further (and more recent) criticism of forest concessions is that they also tend to concentrate very much on the timber production, silvicultural and operational planning aspects of forest management. They don't generally pay much attention to wider social and environmental aspects of forest management, which are becoming ever more important. Where they have been modified to accommodate some of these concerns, such modifications have generally been poorly designed and difficult to implement, particularly where they conflict with earlier regulations embodied in concession agreements.

Forest management agreement

In response to the call for sustainable development and sustainable forest management, many countries have started to think about how they can implement leasing arrangements which start to incorporate some of the principles embodied in these concepts in their leases. This is a relatively new development, so many countries are still exploring ways in which to do this. However, some common themes are starting to emerge from the various measures which are slowly being developed by countries. Compared with forest concessions, the following characteristics of forest management agreements seem to be emerging.

1. Forest management agreements generally use a wider definition of forest sustainability than sustainable timber yield. Thus, for example, issues such as: watershed and soil protection; conservation of biodiversity and logging damage are starting to be included in such agreements.
2. Forest management agreements also often give greater prominence to the needs of forest dwelling communities than concession agreements. Thus, the old system of an agreement between a private company and forestry administration (with, perhaps, some conditions related to community development) is tending to be replaced with much more of a tri-partite agreement between companies, administrations and local communities.
3. In order to give the private-sector more of a long-term interest in the area of forest they are managing, forest management agreements also tend to be longer than the concession or cutting permit systems they replace.

Several countries have started down this road such as Canada, Indonesia and Papua New Guinea. A major challenge which has to be faced, however, is the massive upgrading of skills which is often required with the implementation of such agreements on the part of both concessionaires and forestry administrations.

Discussion

This section of the paper has described the most common characteristics of the main leasing options available to governments. Generally, the main differences between the various options are the extent to which the private-sector is expected to carry-out non-income generating activities on behalf of the government. Thus, for example, forest concessions can be seen as more onerous (to the concession holder) versions of simple cutting permits and forest management agreements can be thought of as more complicated forest concessions.

The choice of which option is most suitable for a given situation will depend on a range of factors such as:

1. the type of forest and the complexity of management required;
2. the amount of revenue the government wishes to raise from the lease and the extent to which they are prepared to become involved in managing the forest or relinquish control;

3. the institutional capacity of the forestry administration to monitor the leasing arrangement; and
4. the strength of other measures, such as the general private-sector regulatory framework, to ensure that adequate forest management is carried-out.

Based on the experience of many countries around the world which have used these various arrangements to encourage private-sector management of publicly owned forests (see Table 1 for a brief synopsis of some of the arrangements currently or previously in place around the world), three main points seem to emerge.

Firstly, there has been a trend towards making leasing arrangements more complicated to cope with the increased demands placed on the forestry sector for the provision of non-timber goods and services. Thus, for example, many countries initially started issuing cutting permits, but have now moved to systems of forest concessions and some are considering going even further with the introduction of forest management agreements. As noted above, this places increasing demands on forestry administrations to ensure that ever more complex rules and regulations are followed.

In contrast, some countries (notably New Zealand and the United Kingdom) have jumped right from one end of the spectrum (public ownership) to the other (private ownership) in one go. It must be noted however, that both of these countries have very strong regulatory mechanisms for supervising private forestry.

The third point worth considering is that several countries have had considerable legal and technical difficulties adapting existing arrangements to the new conditions which governments have sought to put on their concession holders. Thus, for example, Papua New Guinea is currently finding it legally very difficult to make existing cutting permit holders comply with its new forestry policy (which is embodied in the forest management agreements it is replacing the cutting permits with). In other words, once a permit or concession has been granted it is sometimes very difficult to change the "rules of the game". Thus, it is important that leasing agreements are drawn-up with this in mind. In this respect, the full privatisation option (with appropriate regulation to guarantee minimum standards) may be one of the easiest to implement.

Table 1: A selection of some of the arrangements previously used and currently in use around the world to encourage private-sector participation in management of publicly owned forests

Country	Type of arrangement	Notes
Europe		
United Kingdom	Full sale	Commercial plantations with no significant non-market functions and which are expensive to manage are mostly sold by competitive tender, occasionally by negotiation. Gradual disposal with most sales in the 10ha to 1,000 ha size range. (National Audit Office, 1998).
United Kingdom	Cutting permit	Mostly for clearfelling and mostly auctioned or sold by competitive tender (charged by the m ³).
United Kingdom	Contracted felling and other forest operations.	Mostly awarded by competitive tender.
The Americas (FAO, 1993a)		
British Columbia (until 1990's)	Cutting permit (Tree Farm Licence)	Mostly awarded by negotiation, this system is gradually being replaced by Forest Management Agreements (charged by the m ³).
British Columbia (1990's)	Forest Management Agreement	Companies with cutting permits are gradually having them replaced by Forest Management Agreements (charged by the m ³) which last for 35 years.
Bolivia	Forest concession	Concessions of 10,000 ha to 20,000 ha are used for exploitation of natural forest.
Suriname	Forest concession	Concessions last up to 10 years and cover areas of up to 50,000 ha. Concession holders must also apply for an annual cutting permit, but this is usually granted if regulations are being followed
Suriname	Cutting permit	Cutting permits are offered to indigenous communities for an indefinite period.
Peru	Cutting permit	Relatively easy to get hold of for selection cutting of areas of less than 1,000 ha in natural forest.
Africa (FAO, 1996)		
Cameroon (1993-)	Forest concession	Cameroon issues forest concessions for 15 years, but these are really more like cutting permits because most silvicultural operations are in the hands of the state. World Bank is currently sponsoring a lot of work in Cameroon in the area of concession policy.

Table 1 (continued): A selection of some of the arrangements previously used and currently in use around the world to encourage private-sector participation in management of publicly owned forests

Asia-Pacific (FAO, 1993b)		
New Zealand	Full sale of timber and commercial lease of forest land	Mostly sold by negotiation after failure of competitive tender (Brown, 1998). All publicly owned plantation resources were sold in three stages.
Papua New Guinea (pre-1992)	Cutting Permit	Awarded to companies once they have the agreement of 75% of the local community.
Papua New Guinea (1992-)	Forest Management Agreement	Papua New Guinea is trying to move towards system of broader Forest Management Agreements, with better social and environmental safeguards.
Papua New Guinea	Landowner Companies	System for formalising local community agreement to forest harvesting (Landowner Companies still have to apply for a Cutting Permit).
Indonesia	Joint venture	For companies running plantation development projects, the government provides forest land and a subsidy from the reforestation fund, private-sector provides the other required capital.
Indonesia	Forest concession	Awarded for operations in the natural forest for a period of 20 years. Concessions include various forest management operations and can be 15,000 - 400,000 ha.
Indonesia	Forest Management Agreement (KPHP)	Government is currently trying to replace concession system with Sustainable Forest Management Units (KPHPs) - closer to a Forest Management Agreement.
Malaysia	Forest Concession	Awarded for selective harvesting in the natural forest. Malaysia is also moving towards developing broader Forest Management Agreements.
Philippines (1960-74)	Cutting permit	Typically awarded for 1-4 years for harvesting for log export.
Philippines (1974-)	Forest concession (Timber Lease Agreement)	Issued for 10-25 years, conditions include domestic processing of roundwood and various management activities. Concession monitoring has not been able to stop high rates of deforestation, primarily from conversion of forest to agricultural land.
Philippines (community forests)	Various forms of lease arrangements	Various leasing arrangements to promote rural development including: Certificates of Stewardship Contracts (for 25 years) and Community Forest Management Agreements. It is hoped these arrangements will promote reforestation and protect the remaining forest.
Thailand (1965-88)	Forest concessions	Forest concessions were awarded to public-private joint venture companies, with the private-sector very much in control. Due to massive deforestation and forest degradation, all harvesting in the natural forest is now banned.

4. ECONOMIC APPRAISAL OF FOREST LEASES

In calculating the amount which should be charged for each forest lease, experience from other countries would suggest that generally the amount should be such that the leasing arrangement is financially more rewarding to the government than if it was to continue to manage the resource. This is commonly referred to as the reserve price for the sale or lease. However, from the point of the national economy as a whole, a wider principle could apply: that the value to the economy of having the resource managed by the private-sector should be greater than if it was retained by the government. As this section will later show, if this principle is applied, then there may be cases where leasing or disposal to the private-sector at less than the government revenue maximising rate may be applicable.

Valuation of publicly owned plantations

Two techniques can be used to estimate the value of publicly owned plantations:

1. market prices of comparable plantations recently bought or sold can be analysed to get a guide price; or
2. the surplus of expected future revenues over costs from each plantation (adjusted to take into account the timing of revenues and costs) can be calculated (the expectation value method).

The first technique usually requires a large dataset of plantation sales prices in order to derive some sort of a valuation function. Assuming that this doesn't exist for the Republic of South Africa, this section will concentrate on describing how the second method can be used.

The calculation of the expectation value of a plantation requires four pieces of information:

1. an estimate of yield from the plantation (usually by size, species and, sometimes, by quality);
2. an estimate of the likely price at which the timber will be sold (broken down in the same way as the yield estimates);
3. an estimate of the future costs of managing the plantation; and
4. a discount rate for discounting future costs and revenues (see Box 3).

In order to calculate future revenues it is usual to estimate the long-run price of timber to take out the effect of short-run variations in timber prices. However, if a plantation is fairly close to maturity, it may be more appropriate to use current timber prices in the valuation process. For example, for the valuation of plantations for disposal in the United Kingdom, current timber prices tend to be used for the valuation of timber resources which will be harvested in the next five years, but all timber scheduled for harvesting more than five years away is valued based on long-run price-size curves, which are calculated as an average of historical timber prices. If there is insufficient market data on roundwood prices to calculate expected future revenues, it may be necessary to calculate ability to pay for the roundwood by examining product prices and production costs of the processing industry.

Box 3: Discounting the value of future costs and revenues

In order to take into account the timing of future costs and revenues, it is usual to reduce the value of future monetary payments by an amount which depends upon how far into the future they occur. This is based on the principle that an amount of money collected as revenue today is preferred to the same amount at some future time (time preference). The process of doing this is usually referred to as discounting, cash-flows which have been modified in this way are referred to as discounted cash-flows (comprising discounted costs and discounted revenues) and the amount by which values are reduced for each year into the future in which they occur is called the discount rate. A discounted value is calculated using the following formula:

$$\text{Discounted value} = \frac{\text{Future value}}{(1+r)^y}$$

where r is the discount rate (expressed as a decimal fraction) and y is the number of years into the future in which the payment occurs.

The major challenge in the process of calculating discounted cash-flows is usually choosing the appropriate discount rate for this calculation. Some institutions have set discount rates which they use across all investment projects. For example, the United Kingdom government uses a rate of 6% for non-commercial public investments (which, due to its high level of non-market benefits, applies to forestry) and 8% for other public investments (e.g. for the few assets remaining in state control such as the Post Office). Most of the international development banks use a rate of 10% in their project appraisals.

Once the timing and amount of all future costs and revenues have been identified and estimated, they are all discounted and put together into a cash-flow, which is then added-up to give the net present value (NPV) or expectation value of the plantation. This amount represents the value to the state of keeping the plantation under public management and should be added to the governments expected transaction costs from setting-up the leasing arrangement in order to set the reserve price (or the minimum price the state will accept) for entering into the leasing arrangement.

Valuation of other rights and assets

Wherever possible, the value of other rights and assets should also be identified, estimated and added into the calculation if these are to be included in the lease. An important point to consider here is whether the state really owns these rights or not and whether it would be more profitable to separate them from the lease agreement and enter into a separate agreement (possibly with a separate leaseholder) for these rights. National legislation should also be taken into account as well as case law regarding the definition and assignation of these rights. Examples of the sorts of rights commonly encountered in forestry in the United Kingdom are described in Box 4.

The exact rights to ownership, transfer and use of resources given to the leaseholder should be clearly specified in the leasing arrangement. So should rights which are not given to the leaseholder. The lease arrangement should also describe a mechanism by which disputes over such rights can be settled.

Box 4: . Examples of rights commonly encountered in forestry in the United Kingdom

The following are the sorts of rights which often appear in forestry sale or lease contracts in the United Kingdom. In order to avoid later legal argument, it is just as important to include rights not included in the sale or lease or rights which have been given to others as well as rights which are included. Some rights are also defined by national legislation and not negotiable.

Rights of use: The specific purpose for which land leased to the Forestry Commission can be used are sometimes specified in the lease. Some shrewd private landowners who wanted the privacy of forests around their properties (e.g. the Ministry of Defence), but not the hassle of day-to-day management of forests, leased land to the Forestry Commission with the restriction that the land must be used for forestry purposes.

Development rights: It is quite common in the United Kingdom for the development rights on leased land to be retained by the freeholder. Thus, they can negotiate to extract larger lease payments if the leaseholder wishes to convert the land to a more profitable activity.

Sporting rights: A significant non-market benefit to many landowners is the opportunities such land gives for fishing, shooting and hunting. These are often retained if land is leased for forestry or even, in some cases, when forests are sold. Such rights are often also leased or sold to third parties by the holder of the rights, where they can earn more revenue than if they were included as part of the forest lease.

First refusal rights: Sometimes it is specified in a leasing or sale contract that the previous owner must be given the right to first refusal if the lease is transferred or the land is sold to another owner.

Mineral rights: National legislation states that the rights to some minerals (e.g. coal and oil) are held by the state and can not be bought or sold. Other mineral such as peat, sand and gravel are not controlled in this way. Rights to extract these minerals are often retained by the freeholder in a forestry lease and are sometimes retained even when forests are sold.

Access rights: Public access in a densely populated country like the United Kingdom is a complex and controversial subject. In Scotland, the public generally has rights of access to all land. In England and Wales, public access to linear rights of way is enshrined in national law. Broader public access agreements between forest owners and local authorities can also be set-up. In this way, the Forestry Commission was able to guarantee public access to forests sold to the private sector. A more specific access right often specified in sale and lease contracts is the right of a third party to access their property through the forest (e.g. neighbouring landowners and utility companies).

Grazing rights: Grazing rights commonly occur in two forms in forestry in the United Kingdom. Firstly, some land managed by the Forestry Commission is common land, where neighbouring landowners or other individuals have the right to graze animals on the forest. In such cases (e.g. the New Forest), the Forestry Commission has to compensate these commoners when it encloses parts of the land for forest establishment. The second situation is where the Forestry Commission has leased rights to graze on non-forested land, which may be included in an overall parcel of forest sold to the private-sector.

Collection permits: The Forestry Commission also occasionally issues permits or leases the right to collect minor forest products such as: firewood; foliage; leaf litter (mulch); mushrooms and berries, but this is not common.

Adjustments for management constraints and other obligations

Apart from obligations to respect the rights of third-parties which hold such rights, any other obligations or management constraints placed on the forest are likely to reduce the value of the lease. Generally, the presumption in the case of plantations in many developed countries, is that the forest owner or leaseholder knows the most efficient way to manage the plantation. Leases and sale agreements tend, therefore, not to impose a great number of other conditions on the purchaser or leaseholder.

General requirements for good forest management are usually prescribed and enforced through the general regulatory framework. Thus, for example, across nearly all of Europe, there is a presumption that land covered with trees should be replaced with trees after felling and there are various mechanisms (e.g. felling licences, subsidies for replanting and fines for felling without replanting) to ensure that this takes place.

Experience has shown that generally, it is easier to prescribe through national legislation, what should not be done in the forest (e.g. planting right up to stream edges, cutting remnants of native woodland, draining sensitive wetlands). Most of the items which typically fall into this category occur during felling and replanting, so a strong regulatory framework governing these operations can generally address most of the concerns in these areas. This "minimum standards" approach also has the advantage that such regulations can be changed in one go without having to renegotiate individual leases or contracts and that such regulations can (and indeed should) apply to all privately managed forests.

In terms of additional measures and actions (above the minimum standard) which it would be desirable to have take place in the forest, many countries deal with such issues separately in other contracts, agreements and arrangements. Thus, for example, extremely sensitive areas of forest which would not be considered for harvesting are often retained in public ownership or managed under contract (to the concerned authority) by the landowner, leaseholder or a specialised agency. This has several advantages:

1. it clearly links payment to the owner or leaseholder (for management activities) to performance;
2. it places the burden of deciding what needs to be done on the part of the concerned agency (a private forest manager is not likely to know what is best for the management of a wetland, but a conservation agency will and can specify this in the management agreement); and
3. it clarifies the decisionmaking process and forces the forestry administration or conservation agency to choose the activities it would like to see take place on the land.

Wider social and economic benefits

It was noted at the start of this section that there may be situations where, for wider social or economic reasons, there may be a case for setting the reserve price at something less than the maximum expectation value. There are probably two main reasons where this might occur.

Firstly, there is the situation where the private-sector might not be prepared to pay the maximum expectation value but would, for something slightly less than this, lease the forest and develop a processing facility. In such cases, the additional value-added in downstream processing and linkages to other sectors of the economy may be sufficient to compensate for the discount to the maximum expectation value required by the processor, when taken in the context of the benefit of the total economy. Additional tax revenues from downstream processing may even make-up the shortfall in revenue to the government.

Subsidies for industrial development such as this should be administered through the Ministry with responsibility for industry. However, it is quite common for forestry administrations to make such arrangements on the strength of this justification. It should be pointed-out very strongly though, that weighing-up the costs and benefits of such arrangements can be very complicated and subject to political interference. They can also get countries into trouble with their main trading partners (for example, the United States of America and Canada had a major battle over the implicit subsidies involved in Canadian forest concession arrangements, resulting in the North American Lumber Agreement).

At a completely different scale, there may be good reasons for accepting less revenue in a lease agreement on social grounds. For example, proposals to involve local communities in harvesting and processing can bring significant social and economic benefits to the rural poor if they are well designed and this is an objective of the policy. The major challenges here are to balance the likely social and economic benefits against the suboptimisation of government revenues from the arrangement and to ensure that the scheme really benefits those it is intended to (see Box 2).

5. INSTITUTIONAL ASPECTS OF REVENUE COLLECTION

Having decided what the objective of the leasing policy is, which options should be used for each of the different types of forest being leased and the monetary payments or other benefits which would be expected to accrue to the government from the arrangement, the last major hurdle in the process is sorting-out the institutional aspects of how to implement the policy. This final section of the paper will discuss some of the institutional issues related to collection of lease revenues.

Timing and basis of charges

Once the reserve price for a plantation has been determined, two key issues related to the collection of fees need to be resolved: the scheduling of the payments and the basis of the charge.

With respect to the scheduling of payments, two issues are critical. Firstly, the priority given by the government to having payments early on and the private-sector's willingness or ability to pay charges according to any particular schedule. Secondly, the effect the payment schedule might have on the performance of the leaseholder.

The reserve price is, in effect, the lump-sum payment which would be required at the start of the lease to compensate the government for the transfer of the asset into the private-sector in perpetuity. This will vary depending on a range of factors related to the plantations condition, productivity and, especially, its age. A plantation five years away from clearfelling is worth considerably more than one that is only five years old. However, through the process of discounting, this amount can be converted into an equivalent annual payment or a mixture of a lump-sum initial payment and annual charges.

The government is likely to prefer to get an initial lump-sum whereas the leaseholder would probably prefer to pay an annual fee. However, a key factor which must be considered is how close the plantation is to felling. The private-sector is highly unlikely to be willing to pay a large initial lump-sum payment for a lease on a very young plantation. If the plantation is mature, then a large initial lump-sum payment will be easier to obtain. A high annual payment could probably be obtained in stead for a mature plantation but, once the plantation has been felled, the leaseholder will have little incentive to keep-up with the annual payments or engage in good forest management.

This would suggest that a combination of an initial lump-sum payment and annual charge would be the most appropriate charging structure. One defensible way in which the annual charge might be calculated is as the annual equivalent of a stream of plantation cash-flows, starting as if the first plantation was about to be planted (i.e. including all establishment and management costs - this is sometimes called the soil or land expectation value). The initial lump-sum payment (which is really a payment for the future use of the existing standing trees) should then be calculated as the residual of the reserve price less the NPV of the annual charges. A simple example of how such a structure might be calculated is shown in Box 5.

Box 5: Simple example of how to calculate a lease payment schedule

Mature plantation on a good site:

rotation age	= 30 years
current age	= 25 years
Land expectation value (@ 5%)	= R10,000/ha (annual equivalent = R500/ha)
NPV (@ 5%) of existing plantation	= R34,000/ha
Transaction cost	= R5,000/ha

Reserve price is calculated as the NPV of the existing crop, plus the land expectation value (discounted by the number of years into the future before the next crop will be planted), plus the leasing transaction cost:

$$= R34,000/ha + (R10,000/ha)/(1.05)^5 + R5,000 = R46,800$$

The lump-sum payment should be R36,800 and the annual lease payment should be R500/ha.

Young plantation on a good site:

rotation age	= 30 years
current age	= 5 years
Land expectation value (@ 5%)	= R10,000/ha (annual equivalent = R500/ha)
NPV (@ 5%) of existing plantation	= R13,000/ha
Transaction cost	= R5,000/ha

Reserve price is calculated as the NPV of the existing crop, plus the land expectation value (discounted by the number of years into the future before the next crop will be planted), plus the leasing transaction cost:

$$= R13,000/ha + (R10,000/ha)/(1.05)^{25} + R5,000 = R21,000$$

The lump-sum payment should be R11,000 and the annual lease payment should be R500/ha.

The reason that such a complicated charging structure is suggested is that, unlike selection systems in the natural forest, even aged plantations managed under a Clearfield and replant management system do not tend to give an even annual cash-flow. They also require large and periodically "lumpy" investments (particularly during replanting), which the private-sector would have to finance. Such a structure allows the government to recoup its investment in the existing standing trees while at the same time, taking into account the investments that the private-sector is going to have to make in future rotations. Of course, once the likely annual and lump sum charges are calculated in this way, they should be used as reserve prices. Any amount that the private-sector is willing to pay over and above these amounts represents a surplus to the government, which the private-sector believes it can afford to pay.

With respect to the issue of how the charge should be based (i.e. whether it should be based on volume or area), in the case of plantations an area based charge is clearly the preferred basis. Again, this is due to the contrast between plantations and the natural forest. Most work done on forest revenue systems has been carried-out with respect to selection systems in the natural forest (e.g. Gray, 1983). In the natural forest, where likely timber yields are often unknown, there is an argument for charging on a volume basis. Even in the natural forest however, such a basis is often criticised as leading to poor harvesting practices such as high-grading and high levels of logging damage. Plantation yields should be predictable with much more certainty suggesting that area charges (which encourage greater efficiency of land-use) would be preferable. A volume charge would also have the disadvantage that the government

would have to wait until harvesting before it could collect it. The only exception to this would be if the government wished to sell standing timber from the most mature plantations then start afresh charging an annual payment for use of the land for the next rotation.

To bid or not to bid

Generally, the best way to obtain the highest price for the lease would be to have an open tender or auction process. The only risk here is that there may not be sufficient market interest to generate serious competition for the leases (or, in extreme cases there may be collusion between bidders). This is likely to be the case if many conditions are tied to the leases. This risk can be minimised by making the leases simple and the process open to as many potential investors as possible. As long as the government stands by its reserve price for each lease, it can often negotiate terms as good as or close to the reserve price after the auction or tender closes if none of the bids meet the reserve price.

If the process of awarding leases is designed to favour certain groups, then the ground-rules for doing this should be clearly set-out and the financial consequences should be clearly understood. Any action which restrict the awarding of leases is likely to lower bid prices. It may also raise some controversy amongst the groups which would be excluded. This is essentially a political decision which the Department of Water Affairs and Forestry will have to consider.

Revenue collection and distribution

Another point to consider is who will collect the lease fees and how will they be distributed. If the forestry administration is no longer going to manage these areas but will have to monitor performance, a strong case for additional funding to do this should be made. Most countries have to submit all revenues from operational activities to central government, then argue separately for funding to carry-out their other activities. Notable exceptions in Europe, where forestry revenues are concatenated (i.e. tied to specific purposes) are: France, Italy and Norway (where a levy on volumes harvested from all private woodlands is used for various forestry development purposes) and Sweden (where an annual levy based on the area of a private forest landholding is charged each year). Concatenation was also popular in the former centrally planned economies of Eastern Europe, most of which are now trying to undo this arrangement. If revenues are tied to programmes, then the issue of where they are collected and spent can become controversial. For example, in Norway the levy on timber harvested is collected and used for forestry development purposes within the same local authority and is generally popular. In Sweden on the other hand, the levy is mostly collected in the South but spent on developing the utilisation of forest resources in the North. This is quite unpopular (FAO, 1988; Hummel, 1989).

6. MAIN CONCLUSIONS AND RECOMMENDATIONS

This paper has discussed the economic and general policy appraisal process which should be followed when considering the greater involvement of the private-sector in the management of publicly owned forests. Very briefly, the main stages which should be followed and main points which should be considered are as follows:

1. clearly define what the objective or objectives of the policy are and where they apply;
2. identify and appraise the appropriate options for each objective and type of forest;
3. clearly define the rights being offered in the lease and the obligations of the leaseholder, in particular, sort-out what requirements are specific to the lease and what would be better addressed through general forestry regulation; and
4. design a lease payment schedule, a leaseholder selection mechanism and other lease terms which support the policy objective.

Above all, keep it clear, simple and transparent, but ensure that there is enough flexibility in the leasing arrangement to keep up with forestry policy developments. In this respect, it is strongly suggested that management obligations should be kept out of the lease wherever possible and addressed through national forestry legislation. This increases transparency, gives the Department of Water Affairs and Forestry the scope to modify requirements as policy needs change and creates a "level playing field" between leased forests and the rest of the privately managed forest estate.

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