



INNOVATIVE FINANCING FOR SUSTAINABLE FOREST MANAGEMENT

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Preface

This is the final in a series of three preliminary background reports prepared for the UNDP Programme on Forests (PROFOR), dealing with one of the three core components of the PROFOR approach (see *Forest Management to Support Sustainable Livelihoods: A Strategic Framework for the UNDP Programme on Forests* in this series for reference). This paper discusses PROFOR's third component--developing innovative financing for sustainable forest management (SFM). The development objective of the UNDP Programme on Forests is to promote sustainable forest management (see *Sustainable Forest Management: An Evolving Goal* in this series for reference) and related public and private partnerships, at the country level, in order to safeguard the contribution of forests to sustainable livelihoods and to sustainable development in participating countries. The specific objective of the financing component of PROFOR is to define and strengthen new potential for financing mechanisms in the participating countries, in order to (i) support the implementation of national forest programmes (nfps) and forest partnership agreements (fpas), and (ii) promote public-private partnerships to finance sustainable forest management operations.

1. BACKGROUND

The role forests play in the economic, social, and environmental arenas is significant. Forests are dynamic productive systems, which deliver numerous goods and services benefiting mankind and the world. Forests are home to important flora and fauna, stores of biodiversity, gene-pools, and ecological mechanisms to regulate and assimilate carbon (a greenhouse gas) in the atmosphere—all critical to global, national, and local economics and environment. However, the state of forests in most developing countries is a serious concern. Unabated, forest exploitation has and is continuing to result in serious deforestation and degradation of resources. Such trends could lead to devastating ecological and economic consequences.

The threat of worsening forest depletion has led to the instigation of many national and international initiatives to conserve, develop, and use forests in developing countries in a more rational and sustainable way. Many policy reforms have been initiated, and resources have been mobilised to improve forest health and productivity. The trend in forestry now is to manage forests as ecological systems, as opposed to simply using them as sources of timber or clearing them for open land. The ‘harvest’ becomes the multiple economic benefits and environmental values standing forests provide, rather than the one-time liquidation of forest commodities. This new appreciation of the role standing forests play in maintaining global and local environment and economies brings with it an approach that incorporates a much broader public participation in the decision-making processes around forest use. This emerging concept, generally known as sustainable forest management, aims to ensure benefits derived from the forest (both material and intangible) meet present needs without endangering the forests’ continued availability and contribution to long-term social and economic development and regulation of environment (FAO 1997).

During the historic United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, world leaders asserted the importance of these services, and thus the need for immediate and meaningful actions to establish sustainable forest management regimes in all forests of the world. In the UNCED Agenda 21 resolutions, Chapter 11 (Combating Deforestation) and the Forest Principles explicitly call for (i) new and additional financial resources and (ii) for the transfer of environmentally-sound technologies to developing countries (Chandrasekharan 1997).

The Intergovernmental Panel on Forests (IPF) was established in 1995, under the aegis of the United Nations Commission on Sustainable Development (CSD), to facilitate the global political debates on forestry issues. In its final report to the UN General Secretary in 1997, the IPF found domestic financial resources insufficient to achieve the management, conservation, or sustainable development of forests. The Panel also realised the critical need for financial investment from international sources, and the need to improve the absorptive capacity of developing countries to use financial resources. It also urged the UNDP and other multilateral organisations to explore innovative ways for using existing financial mechanisms more effectively, as well as for generating new and additional financial resources. The Intergovernmental Forum on Forests (IFF) was recently established, also under the United Nations Commission on Sustainable Development, to follow up the IPF proposals, including those on financial resources.

A recent review observed three general financing trends in sustainable development efforts (under Agenda 21) in the world since the 1992 Rio conference: (i) policy reforms encouraging environmental conservation and economic development are increasing; (ii) both official development assistance (ODA) and domestic resource mobilisation have fallen far short of the commitments made at Rio; and (iii) private capital flows from developed to developing countries have significantly increased (CSD 1997). The financing—from existing as well as yet to be identified sources—committed to global sustainable forestry is the focus of this paper. This paper reviews the financing situation, summarises initiatives and issues in financing since the 1992 Rio conference, and highlights opportunities for and constraints on mobilising investments in the forestry sector. It also describes some innovations already in place in different countries. Emerging concepts of global environmental revenue-generating mechanisms applicable to forestry financing will also be explored. In discussing inventive financing mechanisms, the paper will analyse, in some length, the issues at play in public-private cooperation in leveraging newer funding sources for sustainable forest management.

2. FINANCING FORESTRY OPERATIONS

Investments in forestry include the costs of creating, managing, and conserving forest resources, and establishing facilities for the production and marketing of forest products and services. In developing countries, investments are required not only for forest resource development (e.g., plantations, silvicultural operations, natural forest management, etc.) and the forest products industry, but also for national forestry institution-building (administration, policy, law, planning, national and local capacity, etc.), research, education and extension, and market development.

There are four sources of financing for forestry operations in developing countries: domestic public, domestic private, foreign (international) public, and foreign private. In addition, there is another category: non-official international and regional organisations, which includes non-governmental organisations (NGOs). These sources finance various categories of public and private forestry investment, as shown in Figure 1 and Appendix 1 (McGaughey and Gregersen 1988). There include commercial and non-commercial investments, depending upon whether the sale of outputs (either goods or services) on the market is involved. Forestry investment projects can range from non-commercial projects with public financing to private, commercial projects entirely from private sources. Some projects use a mixed financing from both public and private sources. Often, commercial projects produce externalities, both positive (like conservation) as well negative (such as soil erosion and forest degradation).

Forest management in developing countries traditionally has aimed at three objectives: (i) to fulfil the basic needs of rural people; (ii) to produce raw materials and other goods and services for industrial and commercial purposes, and (iii) to provide ecological services (WB 1978). Thus, forests are expected to produce for indigenous consumption, industrial outputs, and provide ecological balance (this includes maintaining wildlife habitats and soil productivity). There is an emerging yet crucial goal for forest management: arresting global environmental degradation and attempting to restore what has been lost. This may manifest in forestry's contribution to halting desertification, watershed and erosion problems, and global warming (forests act as 'sinks' for carbon, which would otherwise exacerbate the problem). Based on which objective gets primary consideration, the strategy and sources of financing for forest management activities may differ. For example, if forests were to be managed primarily to meet the basic needs of rural populations, then higher shares of public and community investments may be necessary. This is so because the benefits of goods and services produced will not be directly traded, nor will they be commodities tradable on the market. Thus, domestic and international public financing may be the main sources of financing for this type of forest management. Community or social forestry, watershed management, and wildlife conservation are some examples of efforts requiring such public funding.

In contrast, if forests were to be managed for some degree of commercial purpose, there is the possibility for both public and private financing. This type of forestry is more tangible, transparent, and could be made market-based. Both domestic and foreign private sources of financing can be mobilised with appropriate policy mechanisms in place. However, some public financing (from both domestic and international sources) may be required, at least for some period and in some areas of the forest sector in many developing countries. From the newly

emerging awareness of the global dimensions of forestry, a more complex institutional infrastructure and financial strategy will be needed, including some mix of domestic and international funding types, from both public and private sources.

There is no easy way to estimate a single, fully agreed-upon number for the levels of global funding required to meet sustainable development goals. UNCED has stipulated a need for US\$31.25 billion annually for the period 1993-2000, in order to promote sustainable forest development through four programmes: institutional development, resource development, sustainable utilisation, and assessment and monitoring (Table 1). The UNCED estimate, however, does not account for loss due to deforestation. The estimate represents the magnitude of the net investment required, and assumes that deforestation will be halted (FAO 1994 as quoted by Chandrasekharan 1997). The estimate also does not include the costs of implementing forestry components under other chapters of Agenda 21, under the conventions, nor does it incorporate the full cost of putting the UNCED Forest Principles into effect (Chandrasekharan 1997). Therefore, the UNCED estimate is very conservative.

Based on current deforestation rates, Chandrasekharan (1996)¹ estimated the cost of deforestation alone (cost to make up for the loss of timber-growing stock due to deforestation) to be approximately US\$45 billion. Likewise, drawing upon many sources, he estimated a gross annual investment in forestry to be approximately US\$20.4 billion, indicating a net negative investment of US\$24.6 billion per year at present. Once the costs of countering the depreciation of forest capital due to deforestation, and other social and environmental harms, are taken into account, the required funding for SFM would exceed US\$70 billion per year (Chandrasekharan 1997).

No matter what data sources or assumptions are relied on it is obvious that sustainable forestry requires far more commitment of substantial financial resources, coordinated policy reforms, and institutional capacity building in developing countries than currently available. For this, the international community, national and local governments, and the private sector must be involved. Moreover, forestry in most developing countries lacks a strong tradition of scientific management. The Global Synthesis for the 1990 Forest Resources Assessment found the total percentage of areas under scientific management regimes had declined from its earlier estimate of 5 percent (FAO 1997). This presents a daunting institutional and technical challenge even as additional resources are available.

¹ Chandrasekharan calculated the costs of deforestation based on the FAO data as follows:

Average annual deforestation in developing countries during 1981-90 was 16.3 million ha. Assuming an average wood volume per ha as 113 cum, and assigning a value of \$25 per cum of wood, the loss of forest value (disinvestment) due to deforestation comes to 445 billion per year.

For gross investment in forestry in developing countries, he similarly estimated the total investment in plantations, maintenance of natural forests and plantations, and harvesting and processing facilities to be approximately 413.6 billion per year. He multiplied this number by a factor of 1.5 to account for missing components, giving an overall estimate of annual investment in forestry as \$20.4 billion.

2.1 Trends in forest financing

Out of the total UNCED estimate (US\$31.25 billion per year) of funding for sustainable forest management, it aims to raise US\$25.58 billion (82 percent) annually from domestic sources (both public and private) and US\$5.67 billion (18 percent) from foreign sources. Given the social and economic constraints of most developing countries, the capability to mobilise such a large share of domestic funds seems overly ambitious.

Due to difficulties in gathering data on investments and other expenditures in forestry and forest industry sectors, a comprehensive analysis of forestry funding is very difficult and often unreliable, particularly in the case of domestic sources. Domestic savings, both in public and private sectors, *are* the domestic sources for investment. Since countries have different amounts of forest resources and levels of forest industry, their capacity to generate revenues domestically through the sale of forest products, fees, and taxes also vary. A few developing countries, such as Indonesia, can allocate most of their current forestry sector financing (up to 90 percent) through domestic sources, while most others have limited capability to finance forestry investment and current expenditures from domestic sources. Some countries like Bangladesh and Tanzania can finance less than 20 percent of their current forestry expenses through domestic resources (Chandrasekharan 1996). In most developing countries, the forests are under public ownership and governments have to mobilise resources for the maintenance and improvement of forest resource bases, management of protected areas and wildlife reserves. Nevertheless, forest plantations, forest products industries, and other forest-based businesses (such as nature tourism) can be funded by both public and private sectors. Domestic public sources for forest financing come mainly from national treasuries. For various reasons, many countries are unable to raise public funds for forestry sector. For example, Mozambique, Senegal, Philippines, and Bangladesh depended on external development aid for more than 80 percent forestry sector investment (IPF 1996a).

Domestic private sector participation is an important source for financing forestry and forest industries. However, macroeconomic policies, levels of savings, the technology available, entrepreneurial forces, and market factors all influence the involvement of the private sector. A new wave of economic liberalisation is providing tremendous impetus for private participation in all sectors of the economies of developing countries. This, in turn, is significantly affecting financing in forestry. At present, in some countries such as Brazil and Chile, the private sector is the major source of financing for their forest industries. Nevertheless, many developing countries have limited private participation in forestry, particularly in the areas meaningful to sustainable forest management. Such countries have no alternative other than looking for help from external sources, mostly in the form of foreign aid. In many countries, problems are further compounded by low levels of general economic growth, the lower priority given to the forestry sector in national policy (thus smaller budget allocations), and the entrenched perception of forests as sources of quick revenue, and even as an obstacle to economic development.

2.2 International public sources

The remaining US\$5.67 billion of the UNCED's targeted funding levels for forestry should come from international sources. International sources include foreign public sources (known as official development assistance, or ODA) and foreign private investments. Traditionally, international funding from bilateral and multilateral sources in the form of official development assistance have remained the primary sources of assistance to the forestry sector in developing countries. ODA generally includes grants, concessional loans, and technical assistance through bilateral or multilateral mediums. There are some twenty donor countries and thirteen multilateral agencies involved in providing ODA to forestry. Multilateral assistance agencies include multilateral development banks, international agencies, non-official assistance agencies, and non-governmental organisations. Multilateral mechanisms, such as the Global Environment Facility (GEF) and Capacity 21, provide resources for targeted activities, including environmental and country capacity development.

ODA in general shows a declining trend in the 1990s (Table 2). Although ODA for forestry has doubled between the years 1986 and 1993, it shows a levelling-off of funds since 1990-91, and prospects for new and additional funds appear to be weak (Table 3). ODA going to forestry for the year 1993 was only US\$1.54 billion, a little more than a quarter of what was estimated (Table 1). Ironically, ODA in general has been declining in the years following the UNCED summit, despite the conference's landmark actions.

Nevertheless, among the ODA sources, assistance from the multilateral development banks has shown a significant increase during the period 1990-93. On the other hand, aid from bilateral and UN sources has declined in the same period. Chandrasekharan (1997) has noted that the FAO budget for field and regular programmes dropped from US\$83 million in 1992 to US\$70 million in 1994, a drop of 16 percent. Almost all funding from multilateral banks is in the form of loans, while that from bilateral and other multilateral agencies (such as the UN agencies) are mostly grants (Table 4). This indicates that international assistance in the form of grants and technical assistance is losing favour among the donor community. However, even for bank lending, the prospects are not bright. For example, the World Bank's loan approval in 1995 was only about 40 percent (US\$113 million), compared to that in 1994 (US\$278.0 million). Similarly, Asian Development Bank's loan approval fell by half in 1995 (US\$67.8 million) compared to that in 1992 (US\$138.7 million). The decline in official capital flows may be the result of aid fatigue (a growing impression that foreign aid in general is not successful in bringing about positive development) and of domestic economic stress in donor countries themselves (Bhattacharya et al 1997). This is certainly a serious concern to international forestry development efforts.

In addition, there are questions about the weak absorptive capacities of recipient countries to utilise foreign assistance funds (McGaughey and Gregersen 1988). Different and sometimes conflicting development priorities between donor agencies and recipient countries, a lack of coordination between donors and recipients, and little communication between donors and other institutional barriers also affect efficient and effective resource mobilisation (Chandrasekharan 1997 & UNDP 1997).

2.3 International private sources

Some critics of foreign aid argue that international assistance could reduce recipient governments' incentives to reform their development policies. They assert that nations with good policies do not need assistance. Private investors eagerly fill in the funding gap in countries with sound macroeconomic policies (Bandow 1997). The rapid globalisation of the economy and of trade has brought the increasing mobilisation of international financial capital in developing countries (Table 5). In 1996, total private capital flow amounted to US\$244 billion, a 32 percent increase over 1995 levels (US\$60 billion), and accounted for 80 percent of the total long-term capital flows (US\$285 billion) to developing countries (WB 1997). In general, sound policy initiatives promoting transparent and open economies, such as structural reforms and private sector growth, fostered economic growth in developing countries. Growth in world trade is one major factor in the expanding globalisation process--developing countries in general are increasing their trade volume at much faster rates than the industrialised nations, Asia being the top performer (ADB 1997).

By 1996, private capital flows had increased by more than five times. Foreign direct investments (FDI) in developing countries are the largest single source of private capital, and have seen a more than four-fold increase in past six years, reaching US\$110 billion in 1996 (WB 1997). The portfolio investment, though currently accounting for only the smallest share of private capital flows, is increasing at significantly faster rates than other investments, as more and more countries focused on and developed stock exchange and capital markets.

However, such private investments (like ODA) do not flow to regions or countries in a uniform or balanced way--73 percent of all foreign direct investments goes to only twelve countries and China alone receives more than one-fifth of the total private capital flows (WB 1997). The situation has been improving, albeit slowly, since 1990, when the top twelve beneficiaries received 84 percent of all foreign private capital investment. Even Africa, which received only a modest share of foreign private investment capital, has seen a tenfold increase in the past six years (WB 1997). However, even within Africa, the FDI inflows, which reached US\$4.6 billion in the mid-1990s, have been largely concentrated in a few countries, such as Egypt, Morocco, and Nigeria (ADB 1997). Most foreign direct investments take place through trans-national corporations (TNCs). The increasingly integrated global economy, freer trade, and TNC involvement have many implications. These forces not only exert pressure on individual countries to open up their economies and integrate more rapidly with the rest of the world, but also motivate national economies to become more competitive and efficient. The involvement of TNCs not only complements developing countries in capital formation, but also facilitates the transfer of technologies and managerial skill, human capital development, expansion of markets and foreign trade in developing countries. At the same time, however, global economic integration may make individual nations more susceptible to international economic cycles. Also, it can lead to shifts in economic policy-making capacity, sending policy decisions upward to international levels in the form of WTO, GATT, and other regional and global organisations. Recent economic crises in Asian countries illustrate how inappropriate economic and financial policies in those countries could lead to unsustainable economic growth, despite most unrestricted international private capital flow.

Despite the increasing trend of private capital flows to developing countries, the decline in official international capital is a matter of serious concern, because long-term development aid catalyses and complements private investments (Anonymous 1997). In many instances, cutbacks in international aid hurts programmes on health, education, forestry, and environment in general, which are essential elements for the economic and social development of a country. Yet such programmes attract little private sector funds, due to their traditional public domain. This has a severe impact on a number of poor countries that have little capacity to attract domestic or foreign private savings, and are traditionally dependent on official development aid.

Private foreign capital flows in forestry, although difficult to measure, are growing substantially and are estimated to be around US\$8 billion to US\$10 billion a year, from both domestic and foreign sources (Chandrasekharan 1997). Such private capital flows originate mainly from developed countries, but flows between developing countries also are growing (CSD 1997). As is the general trend, TNCs are the main source of private foreign capital flow to forestry in developing countries. Their coverage is increasing in more than thirty countries in Asia, Africa, and Latin America. In Africa, more than 60 percent of all forestry operations are foreign-owned and controlled. In China, US\$300 million of foreign investment is planned for the next four years, while US\$5 billion is channelled to former USSR countries through the U.S. Overseas Private Investment Company (OPIC). Likewise, Malaysian timber companies have invested more than US\$500 million in Papua New Guinea, and billions of US dollars of foreign capital has been invested in many paper, plywood, and medium-density fiberboard plants in southern Asia (IPF 1996b). Today, TNC investments increasingly involve local equity participation (IPF 1996a).

These foreign capital flows to developing countries represent both a potential opportunity to attract private investment in forestry, particularly in light of declining external public funding, and a possible threat to the long-term forestry if business simply continues as usual. Much of current private capital flows are directed to conventional extractive operations and export trade, with the objective of capturing as much 'rent' from the land as possible. Recent large-scale investments by Southeast Asian timber companies, acquiring concessions in the millions of hectares of natural forests in Latin American countries, are seen as serious concerns. Studies have shown that countries failed to collect true reflections of the economic rents (i.e., stumpage value) for forests granted as concessions to large TNCs, and thus end up awarding 'windfall' profits to these companies while encouraging rapid timber extraction and forest degradation (FAO 1997, WRI 1996, Barbier et al. 1994). Certainly, such investments contribute to unsustainable forestry practices.

3. PRIVATE SOURCES OF FUNDING FOR FORESTRY: CONSTRAINTS AND POTENTIALS

3.1 Constraints

Financing in forestry is a complex process due to many special features of forestry. Sustainable forestry is an emerging sector; the focus here is for the new and innovative funding for sustainable forestry in developing countries. These facts create two types of business risks: emerging sector risk and emerging market risk. To overcome these risks, capital markets must be informed of the potentialities, opportunities, and policy support available to mitigate those risks (Crossley et al. 1996).

Forest represents both inventory and capital. A growing tree is both the factory producing the wood, and eventually an output when harvested. Harvesting a tree, therefore, liquidates the capital. Forestry also involves a relatively long gestation period, involving decades, unlike other land-based economic activities like farming. A long rotation period creates investment uncertainties, because of biological and market risks affecting final returns on the investment. Such time requirements also highlight other characteristics of forestry: irreversibility and delayed cash flow. A forest can be liquidated rather quickly, but replacing it is difficult and uncertain. These uncertainties create problems in gaining access to credit and in setting terms (McGaughey and Gregersen 1988, Zinkhan et al. 1992).

There are externalities associated with growing trees, and with other forestry operations. Many economic and environmental goods and services provided by growing forests accrue to the society in large, but few may go to the forest investor (McGaughey and Gregersen 1988). Uncertainties in growth and yield from forests, due to factors such as climate, diseases, fire, and technical knowledge also affect the willingness of investors and creditors to finance forestry.

Forests' capacity to act as a carbon sink has extraordinary significance for the modern industrialised world. This is becoming as valuable an aspect of tropical forest resources as timber production, if not more. Great potential for medicinal plants and wilderness-based recreational resources of forests are other unique features gaining economic and political attention.

Private investors will always compare the investment opportunities between different sectors and vehicles. Investors like returns and dislike risk. A portfolio should offer the highest possible expected return for a given level of risk, or the lowest possible risk for a given level of expected return. Despite the complexities inherently a part of forestry (such as long gestation periods, and biological and economic uncertainties), recent studies suggest that investments in timberland (the most conventional forestry business enterprise) fares well. Between the years 1946 and 1988, for example, data on the US capital markets indicate that timberland outperforms many popular investments on a rate of return basis. The study shows that timberland returns (above 8 percent) were above those of residential real estate, commercial real estate, foreign bonds, US government bonds, corporate bonds, and short-term investments. However, the average annual return of timberland was lower than that for most stocks (national or foreign), farmland, and for art (Zinkhan et al. 1992). Other constraints experienced in the US regarding forestland investments

by the private sector could be experienced in developing countries as well. Such constraints include (ibid.):

1. *Stand-alone risk.* Forestland investments without sufficient diversification may run a risk of standing alone in portfolios (from fire, insect damages, political/regulatory changes, etc.) Timber price cycles, technological developments, and air pollution pose other risks, creating uncertainties in an investor's returns from forestland.
2. *Liquidity.* Forestland is not generally perceived as liquid. Low liquidity results from both less-than-perfect secondary markets and from relatively high stand-alone volatility. The degree of liquidity varies with a stand of merchantable timber (more liquid) versus one with a pre-merchantable stand (less liquid).
3. *Taxation.* Tax policies applicable to forestlands influence the management regime of forests significantly. Property or land taxes, timing of income, capital gains taxes, severance taxes, and provision (or absence of) of tax deductions and other tax incentives greatly influence forestry practices and investing decisions.
4. *Interest rates.* Demand for timber is a derived demand; thus, forestland returns are more sensitive to housing and construction activities (example, western United States). Housing in turn, are very sensitive to interest rates, and interest rates are influenced by expected inflation rates.

Private capital flows in sustainable forest products industries and trade depend on both real and perceived openness in the following: the industrial and trade policies of specific countries, political and economic stability, and domestic and international environmental concerns. The lack of sufficient business or financial orientation to forestry administration in most developing countries inhibits the formulation of policies that encourage private sector participation in the forest products sector. In many instances, the forestry sector fails to market itself as a viable investment option in order to gain political and other support. Moreover, a lack of coordination among the main stakeholders, including donors, constrains sustainable forest industry development (Chipeta 1996).

There are a number of other constraints specific to the forestry sector in developing countries. One primary obstacle is that forestry commands a low priority in public policy decisions, resulting in marginal resource allocation for its development and management. Due to accounting distortions, the forest sectors' contributions to national economic growth are undervalued in favour of other sectors like agriculture and animal husbandry. Thus, forests are liquidated to encourage conversion to other land uses without sufficient compensation. Moreover, unclear tenure rights and problems associated with common property complicate the long-term investment and management of forests. Additionally, the low economic development in general of most developing countries constrains the resources, willingness (resolution), and capability of regulatory and market institutions to finance long-term activities like forestry.

3.2 Opportunities

Demands for timber and other products from forests tend to increase with population and income worldwide. The demands for the global and regional environmental services provided by forests, particularly those from tropical forests, are also rising. In this context, the opportunities for new and additional forestry investment seem to be increasing. A recent survey conducted by the FAO, involving senior forestry officials and donor representatives in developing regions, indicated favourable investment opportunities for creating new forests or plantations to increase the world's supply base of forest resources. It also indicated strong potential for forest product industries (both small- and large-scale), processing facilities for non-wood products, trade, wildlife conservation, wilderness, Eco-tourism prospects, and the emerging awareness of environmental services provided by forests, such as carbon sequestration and bio-diversity prospecting (Chipeta 1996).

A typical commercial forestland under private ownership exhibits many analogies to conventional capital markets (Ibid.). It shows similarities to many forms of government or corporate bonds. A well-managed forest estate can provide the investor with regular income over time in a fashion similar to a *straight bond*. It can also be treated as a *convertible bond*, which is a bond that may be converted into another security, usually the issuer's common stock. An owner can put the forestland to alternate land uses, if the potential returns from uses other than timber growing increase dramatically--a feature similar to the conversion feature associated with a convertible bond. The main benefit of convertible bonds is that they provide the upside potential of common stock with the downside protection of a bond.

A forestland managed under an even-aged system resembles a *zero-coupon bond*. Zero coupon bonds do not pay annual interest, but do pay a full lump sum amount at maturity that exceeds the purchase price. An investor in newly regenerated forestland also expects to receive the equivalent of a lump sum at maturity: net harvest revenues plus the value of the bare land. Of course, there will also be some modest intermediate expenses and perhaps also revenues, which should be considered.

An investor may treat his forestland also as a 'bank account'. This 'bank account' can be used to meet certain expenditures, either expected or unexpected. Forestland owners can maintain liquidity to cover unexpected emergencies, such as taxes or medical expenses, or achieve numerous other financial planning objectives. In addition, like any equity stocks (shares), a forestland can also provide dividends.

However, there is much dissimilarity between investments in forestland and investments on the stock markets. Forestland investment markets are limited, less organised, less liquid, and proceeds are delayed compared to the well-organised, sophisticated, and highly liquid stock markets (Table 6).

Forestland investment has remained a prudent choice for some investors in the US. It is a long-term investment and returns are generated by several sources. Despite no possibility of hitting a jackpot in the conventional capital markets, forestland is a tangible asset over the long run, and

generally provides respectable--although not spectacular--returns. The primary engine producing these returns is biological growth--not financial sleight of hand or speculation (Zinkhan et al. 1992).

Forestlands generally offer greater inflation protection. The biological growth of timber is less sensitive to the financial and economic fluctuations influencing common stocks and bonds. Growth, along with possible price changes for both the timber and the land, exhibits a minimal, or possibly counter-cyclic, relationship between the returns of forestland and other conventional financial assets.

Due to the distinct characteristics of forests described above, many institutional investors in the United States (such as the insurance companies, pension funds, and mutual funds) are increasingly finding forestland as an attractive investment vehicle for their portfolio diversification scheme. This often meets their financial goals, based on their expected rates of returns, risk-tolerance, and desired stability. Many individuals and businesses--with goals as diverse as steady growth, hedging against inflation, and concern for nature--also seek to find appropriate instruments to invest in forestry-related portfolios. Although timber is the primary output, most forests have diverse potential for multiple use management (i.e., wildlife, soil and water conservation, wilderness and tourism, and numerous non-wood products). For this potential to manifest, ways must be developed to make forestland investment more attractive, visible, liquid, and to package them differently or in combination with other conventional instruments. Zinkhan et al. (1992) anticipate developments in the US forestland investment with the entrance of more institutional and individual investors, including foreign investors. This will result in more transactions and more a efficient forestland market. The entrance of additional players and purchasing power into the marketplace should serve to enhance the liquidity of forestland investors' holdings. This in turn should provide some upward pressure on long-term forestland prices. The involvement of major players in the forestland marketplace, potential economies of scale and risk-spreading opportunities for insurance companies, and better understanding of the risks involved might entice additional insurance companies to evaluate this market niche.

4. INNOVATIVE MECHANISMS FOR FORESTRY FINANCING

Given the constraints of forestry in general and developing countries specifically, the current level of financial resources available for forestry development is insufficient and the current mechanisms inadequate. New sources of and new mechanisms for financing must be sought. Entirely new sources, or the adoption of conventional mechanisms of financing from other sectors into forestry, is what we refer to here as ‘innovative financing’.

Innovative financing involves strategies that address special features of forestry (e.g., long rotation periods, uncertainties, risks, and environmental benefits) and observed constraints on forest financing. It takes benefit from available well-established private sector financial and capital markets and public sources. Thus, it involves reforming macroeconomic policies such as taxes, tax deductions, incentives, exchange rates, interests rates, export policies, industrial policies, and so forth. Innovative financing also deals with reforming forest and land policies (such as land tenure, land and forest taxation policies, and capturing full rent, reforms, royalties, fees, and charges that reflect true economic values).

The focus of innovative financing, however, will be to develop market-based instruments (MBIs) that encourage private capital investment in sustainable forest management. This is achieved primarily through targeting and convincing conventional capital markets to finance the forestry sector; they earn reasonable returns while still contributing to sustainability.

Perhaps the first innovation in financing mechanisms for developing-country forestry was the idea of ‘debt-for-nature swaps’, introduced in 1987. Since then, many new instruments have been identified and discussed; some are in various stages of implementation in many countries. The third UN Expert Group Meeting (Manila, February 1996) and UNDP/DANIDA/South Africa Meeting (Pretoria, June 1996) are two examples of conferences in which some of these mechanisms have been identified (see Box 1). The thrust of most emerging concepts and mechanisms is (i) to internalise the true economic value of forest resources; (ii) to reform the domestic public sector so as to improve its revenue-generating capacity and funding-allocation ability; (iii) to improve the legal and institutional climate so as to attract private savings (both domestic and foreign) in sustainable forestry activities; and (iv) to increase the efficiency of currently-available funding. They also aim at using ODA and domestic public funds to leverage more private investments through strengthening institutions, fostering better investment opportunities, resolving constraints, and providing information.

The debt-for-nature swap operations are used to alleviate developing countries' external debt burden and allocate funds to the protection of tropical forests. First started in 1987 in Bolivia, such operation have expanded to sixteen countries, and retired US\$159 million in face value of debt through such programmes. However, the use of this type of programme has declined in recent years (WB 1997). Reinvigorating this mechanism, and coordinating funds thus generated, into appropriate sustainable forest management and rural development efforts in developing countries could still play a significant role in addressing the funding problem.

Billions of US dollars of foreign capital have financed paper, plywood, and medium-density fiberboard plants in different parts of the world in recent years. It is obvious there is no dearth of private capital, but it is definitely challenging to redirect and channel existing private sector resources to support sustainable forestry activities. For this, the forestry sector needs to engage in some institutional restructuring and policy reforms, so as to make forestry an attractive, accessible, and reasonable (in risks and return) investment alternative for a wide range of private investors: domestic and foreign, large and small, institutional and household.

First, any country aspiring to increase private investment in the forestry sector must have some well-defined and effective macroeconomic and forestry-sector policies and institutions in place. Private investors have clearly indicated their discriminating attitude and preference for countries with sound policies. The facets necessary for investment policies to be attractive include stable foreign exchange rates, and guarantees from host countries, export credit agencies, and multilateral institutions such as the World Bank.

Some of the strategies the forestry sector can employ to attract private investors are typical of any emerging sector. They include (Crossly et al. 1996, IPF 1996b): (i) information support, (ii) support for mitigating sector and emerging market risks, and (iii) funding supports for some incremental and other costs associated with directing capital flows to a new investment area. Since sustainable forestry is a new and unfamiliar area for most investors and capital markets, it suffers in attracting potential investors in large part due to an information gap. There is a general lack of information on what constitutes a sustainable forestry enterprise. There must be a comprehensive and systematic campaign to engage and educate national and international capital markets, related stakeholders, and the financial media to overcome this lack of awareness. Most public organisations, particularly the multilateral organisations and non-official and voluntary organisations, could contribute their institutional expertise and infrastructure to this effort.

Sustainable forestry activities are different from conventional extractive forestry operations in use in most developing countries today. Sustainable forestry requires initial expenditures for assessing the total economic and environmental valuation of resource stocks and flows, determining management strategies, figuring the allowable magnitude and frequency of harvesting, defining and differentiating sustainable forest products, and promoting markets for such products. They also involve extra costs associated with the identification of investment projects in developing countries that are relatively unknown or isolated from mainstream capital markets. Additional forestry and managerial expertise are also needed for the preparation of business investment plans. These additional incremental costs should be covered, at least in part and in the early stages, by public and concessional funds, so as to make potential businesses competitive and interested in emerging sustainable forestry enterprises.

Moreover, the policy reforms aimed at attracting private capital into the forestry sector must be complemented by appropriate measures to encourage the sustainable development and management of forest resources, and discourage unsustainable forestry practices or environmentally damaging economic activities. For this, a set of incentives, codes of conduct, general public awareness, and markets at which to sell the goods and services forests provide should be developed both at national and international levels.

Innovative finance for sustainable forest development and management for developing countries could include all types and sources of finance: *domestic, foreign, public, private, and mixed*.

4.1 Domestic public sources

Forests are, or were, a major source of revenue for many governments (Chandrasekharan 1996a). However, most developing country governments fail to capture potential 'rent' from their sale of forest products. Strategies to increase domestic funds for forestry should address both increasing public revenues from forests as well as creating more a favourable investment climate for private sources. They should, thus, involve improving revenue collection, improving expenditure policies, reforming macroeconomic policies (including tax policies), and putting in place new incentives, subsidies, and technical and institutional supports. Furthermore, improving the administrative capacity of forestry agencies increases the efficiency of resource use.

Methods to increase forest revenues include the proper and accurate pricing of goods and services produced from public forests. The adoption of *market-based instruments* (MBIs) is one potential approach that needs serious consideration by policy makers, as a promising means to improving their domestic resources for the forestry sector. Market prices should reflect the true scarcity values of forest resources. The pricing of forest products can take the form of royalties, fees, levies, and other charges. It must increase rent capture, and incorporate full-cost pricing to reflect the depletion of natural resources represented by these products, as well as the other associated environmental, economic, and social costs of removing forest products, of selling trees versus letting them stand. Other potential MBIs for additional revenues could be found in environmental charges, pollution and carbon permits, environmental performance or assurance bonds, subsidies and other fiscal incentives, licensing and concession auctions, as well as the outright sale of forestland and forest resources. Experience from heavily-forested and highly-industrialised sectors indicate such instruments could probably be replicated in developing countries with similar profiles. Indonesia, Malaysia, Brazil, Canada, and Venezuela, for example, have been auctioning concession rights and other MBIs in varying degrees (IPF 1996b, Douglas and Magrath 1996).

Another widely-used financing mechanism is a special forest fund set up to finance specific activities for forest development. The funds are created from a percentage of forest levies or taxes. Most Latin American governments have such funds in use (McGaughey and Gregersen 1988). Indonesia has created a reserve of more than US\$700 million from their National Reforestation Fund, through a 32 percent share of forest revenues. Currently, the Fund is used to promote the establishment of private timber estates (FAO 1997). Similarly, the province of British Columbia in Canada, recently set up a Forest Renewal British Columbia Fund from a portion of its forest revenues. This fund goes towards financing the improvement of forest management and local community economic development through value-added manufacturing enterprises (Crossley et al. 1996).

Sources for most such funds come from earmarked taxes and receipts from sales of forest products. Although the funds provide a ready source of financing for forestry, they do face criticism when held to the optimal investment criteria of public funds (McGaughey and Gregersen 1988). This earmarking of sectoral revenues is a common practice in many states of the US, as

well. However, it is also a controversial policy. For example, revenues from gasoline sales in the United States are channelled back to finance highways. Similarly, many states earmark sales and other taxes for other specific purposes--for example, most revenues from state sales and income taxes in Alabama are earmarked for a public education trust fund. The criticism of such funds alleges such mechanisms make a public finance system very inflexible and resource allocation inefficient.

An *environment performance or assurance bond* is a market-based mechanism that does not provide additional funding, but rather promotes sustainable forest practices indirectly. This mechanism shifts the responsibility for controlling harvesting and other operations in public forests to individual producer companies. A company would be required to post a performance or assurance bond as a deposit into a fund, which is returned only after the company shows that damages have not occurred and that the forest has met a specified level of quality and health after the expiry of the company's concession rights. This has been tried in Malaysia and Indonesia (Crossley et al. 1996). Here the burden of proof is shifted from the public to the resource user, and a strong incentive would be provided to put the private sectors prodigious assets towards developing the least harmful exploitation techniques. This is an extension of the 'polluters pay' principle, and could even be called the 'polluters pay for the damage risk' or the 'pre-emptive polluter pays' principle. It works effectively when bond amounts are set sufficiently high (Costanza 1995).

Another way to increase revenues is to levy charges to beneficiaries for the range of services provided by forests, particularly fees on water protected and thus provided by forests. Taxing downstream beneficiaries has for a long time helped to fund upland conservation in Japan (FAO 1997). In Costa Rica, the national electricity company, the *Instituto Costarricense de Electricidad* (ICE) has remained the major source of funding for upland watershed and forest management, while all hydroelectric companies in Columbia transfer 2 percent of their revenues for watershed management programmes (McGaughey and Gregersen 1988 & FAO 1997). All these mechanisms are easily adopted in other developing countries, and should not go unnoticed in the search to generate additional public funds for sustainable forest management.

Lessons from public financing and economic development partnerships developed in the US and other developed countries could be applied to financing SFM in developing countries.

4.2 Tax-exempt municipality bonds

In the US, local and state governments (as well as some non-profit organisations) raise funding to invest in public projects like highways, bridges, hospitals, and schools. Some bonds are known as *obligation bonds*, and carry with them the full faith and liability of the issuing government. Others are known as *revenue bonds*; the bond debt is paid from revenues generated from the enterprises erected or expanded from those bond proceeds. Public agencies have been extending this form of public borrowing to emerging environmental areas, such as installing pollution control equipment in private industries. Generally, those bonds are tax-exempt or taxed at lower rates, giving some incentives to investors. There is a good possibility of applying similar mechanisms for funding sustainable forestry activities in developing countries. Such schemes

will not only mobilise resources without putting serious strains on government's regular budgets, but also make a clear linkage between private investors, forest management, and economic development in a country. These schemes are more transparent, more efficient, demand more accountability, and decrease dependency on external assistance.

A collaborative arrangement between the US Overseas Private Investment Company (OPIC), a US Congress-mandated fund, and The Global Environmental Fund, Inc. offers an example of a joint venture in which tax-exempt bonds are used to raise venture capital to target developing country environmental industries. This has a high replicability level for forestry.

Some environmental organisations in the United States are developing plans to use such bond money to buy private forests that have direct public environmental values (e.g., endangered species habitat, old-growth ecosystem, unique scenic values), and put them under a more sustainable management to produce public goods and services that a private owner is unable or unwilling to provide from the same forest. It will be an interesting case to observe, and may provide valuable insights on its replicability for developing countries. In principle, this is a very promising instrument for mobilising private savings through public-private partnership. Although not a new nor innovative mechanism in the public finance arena, the application to forestry, nevertheless, will be new and innovative, even for an industrialised nation like the US.

4.3 Private sources

It is paramount that the domestic private sector play a more active role in funding sustainable forestry development. In many developing countries, public funding alone cannot mobilise sufficient resources. Fortunately, the economic restructuring policies and emphasis on promoting privatisation in most developing countries are having positive influence on private sector expansion in most economic sectors. The forestry sector also has seen a renewed interest in encouraging the private sector to invest in sustainable forestry (FAO 1997). At present, except for a few countries, private funding in the forestry sector is limited, and where it is forthcoming, it is generally concentrated in extractive operations or small-scale processing. In Brazil, for example, domestic private enterprises account for 85 percent of the investment in the forest products industry, and in Chile it represents 95 percent of processing (IPF 1996a).

The critical issue for increasing private sector financing (both domestic and foreign) involves 'selling' forestry opportunities as investment options that are as viable and competitive as others. The major impediments to increasing investments are a lack of both access to and interest in forestry on the part of the private sector, due to the perception of unacceptable risks associated with it (FAO 1997, & McGaughey and Gregersen 1988). There is little familiarity with forestry on the part of bankers and national decision-makers. Also, the lack of credit terms that meet the cash-flow requirements of potential investors, as well as insufficient national forestry incentive mechanisms, both serve to further deter the private sector (McGaughey and Gregersen 1988).

The lack of interest in forestry investment by private landowners is a problem common to both developing and developed countries. Forestry must gain the confidence of the business community, and adapt to conventional capital market financial instruments. In general, strategies for generating interest in forestry investment include: (i) modifying traditional biases against

forestry investment and credits; (ii) increasing private returns through financial subsidies and public technical assistance; (iii) reducing investment risk and uncertainty; and (iv) eliminating or significantly reducing the cash flow problems associated with long planting and gestation periods (McGaughey and Gregersen 1988). While the first strategy is critical for domestic, mostly local small landowners, the other three are common to both domestic and foreign private investors. Thus, those three strategies should be considered jointly for tapping private sources.

Some cultures and societies have a strong bias against borrowing or being in debt; an individual would rather rely on their own savings or the equity participation of relatives to finance investments. In some cases, such bias is compounded by the fear that private landowners may lose control over their land and/or forest products to the government once it has been planted with trees, should the landowner participate in government programmes. There is a clear need for bringing changes in perception about financing mechanisms and sustainable development programmes, establishing stronger proprietary rights guarantees and various other public incentives and supports (Ibid.).

There are many ways to address the low financial rates of return on forestry investments, the most basic in use in many developed and developing countries are (i) fiscal subsidies and incentives, (ii) beneficiary cost-sharing, and (iii) increasing the productivity and efficiency of the operation.

The risks and uncertainties involved with the long-term horizon in forestry can be alleviated by several approaches, such as a contract arrangement between private tree growers and forest products industries. The industry may even help finance plantations, thus establishing a more secure market relationship. Another approach for reducing risks and uncertainties could be insurance programmes that protect landowners against losses. The experiences from Europe, Haiti, and Chile in forestry and agricultural crop insurance and fire protection insurance schemes could be drawn upon for developing similar programmes in other developing countries. The lack of clear and secure land tenure often inhibits mobilisation of private resources into forestry operations. Such situations also make the approval of loans for forestry investments difficult, as most credit agencies require borrowers to have land titles (McGaughey and Gregersen 1988).

Reducing cash-flow problems in forestry investment would be a significant incentive to attract private investment in forestry. For this, special concessional loans with longer grace and payback periods, contractual arrangements with industries and other forest product users, and cost-sharing by public sources (both domestic and ODA) are required.

Access to credit can be improved through concessional micro-finance programmes backed by both private and public sources. The Grameen Bank of Bangladesh, with the help of many NGOs, is promoting community and private forestry in Bangladesh. There are as many as 2,500 such small groups engaged in social forestry (IPF 1996a). CARE-Guatemala, FINCA-Costa Rica, and the five country FINNIDA-PROCAFOR projects provide similar micro-finance services and technical assistance for small-scale community enterprises. These schemes help farmers directly, and promote local and community sector investment (Chandrasekharan 1997).

While access to *concessional lending* is essential for landowners interested in forestry investment, steps to reduce the risk of loan defaults to lending agencies must also be taken. Public loan guarantees and some kind of cooperative arrangement among borrowers, particularly small farmers, improve credit availability. Appropriate legal frameworks to help secure lenders from default is essential. Similarly, mechanisms that help landowners access credit must also have a built-in mechanism to assure repayments. These micro-finance schemes not only provide access to credit for small farmers, but also ensure repayment by those farmers through group collateral and peer pressure. These approaches provide support to cash-poor entrepreneurs in various community businesses, and show remarkable loan repayment record. For example, Gems of Hope, a Toronto-based NGO active in international micro-loan projects providing financial and technical supports to poor entrepreneurs in developing countries, claimed that the rate of repayment of loans is as high as 98 percent (Henderson 1998).

Other examples of low-interest concessional credits for forestry investments include the following case studies:

- Columbia--Fondo Forestal provided low-interest, guaranteed loans through private commercial banks for tree planting and other forestry activities;
- Kenya—government-owned Agricultural Finance Corporation provides loans to individuals and cooperatives for growing fuelwood;
- India--National Bank for Agriculture and Rural Development, under its Farm Forestry Program, facilitates loans for farm forestry to individuals and farmers' organisations;
- Brazil--the National Petroleum Council finances the Small and Medium Property Reforestation Program.
- Poland—the Polish Environmental Bank, a national bank with a 44 percent share from the national fund provides loans with preferential terms to environment-sensitive projects, which can be replicated in forestry projects.

4.4 Tax incentives, subsidies, and abatements

Many local governments in the US use tax incentives in the form of tax holidays, exemptions, and abatements, lower tax rates, outright cash grants, and other incentives to encourage private investment in a particular economic sector, such as manufacturing. Brazil has a long history of providing very generous tax incentives for establishing plantation forests. Similar programmes have been being put in place in Panama since 1992 (Law no. 24 of November 23, 1992). The Panamanian incentives provide 100 percent tax exemptions for all incomes, imported equipment for reforestation, and immigration benefits to foreign investors. Such tax incentive policies have greatly stimulated investment in plantation forestry by both domestic and foreign investors, big and small. It has attracted more than US\$30 million in reforestation projects since 1992. What is interesting is that many companies involved in the field have created all-new businesses because of the activity generated by these incentive programmes and their sale of stocks, bonds, and reforested land. The sector produced a commercial exchange system through the Stock Market of Panama, accounting for approximately US\$10 million in 1995 (for details, see http://www.zonian.com/Articles/Panama_reforestation.htm). Though widely replicated, this is also a controversial policy mechanism. Malaysia began giving full tax exemptions for plantation forestry under two programmes (for ten years under the Pioneer Status, and five years under the

Investment Tax Allowance programmes). Nevertheless, response from the private sector has been low. A central issue for tax incentives is to understand the role such incentives play in the calculus of investors' decisions and avoid subsidising investors unnecessarily with public money.

Innovative financing that helps to ease problems with low rates of return, and encourages more private investments in sustainable forestry, could adopt some cost-share programmes used in the US. Under these programmes, federal and state governments offer cost-sharing payments that reimburse private landowners for tree plantation and forest management activities. A few such programmes in use are the Forestry Incentive Programme (FIP), Stewardship Incentive Programme (SIP), and Conservation Reserve Programme (CRP). These strategies, when implemented with care, can leverage significant private funding.

Incremental tax financing is a mechanism used to pay back public financial support, in order to establish a private industrial facility. The additional tax revenues generated from the operation of such a facility do not go to general public funds, but rather are put into a special fund to retire the debt. This mechanism can also be used in leveraging private sector investment for forest product industries.

4.5 Joint enterprises

Partnership between foreign, domestic, private, and public sectors can also provide financial and technical resources to forestry development. In Piqro, Mexico, a Mexican hardwood flooring company's entered into a partnership with a New Jersey flooring distribution company to modernise its plants and export products to developed nations. This is good example of a private-private partnership. Similarly, with the help from DANIDA, Dalhoff-Larsen & Horneman (DLH), a Danish timber trade company, collaborated with the Ghana Primewood Products, Ltd. (GAP), by assisting GAP with winning a concession of an additional 16,000 hectares of off-reserve forests for scientific management and harvest and for technical, managerial, and extension services from the DANIDA.

4.6 Capital market instruments

Engaging conventional capital markets by building innovative infrastructure to channel capital towards SFM is an approach showing tremendous potential. Such infrastructure mobilises capital through equity and debt financing. Some emerging examples in this direction are described below.

- Xylem Investment, Inc. This is an international timber investment company, based on equity investments in plantation forests in developing countries. It attracts the US institutional investors such as pension funds, insurance companies, and so forth, which prefer safer and steadier-growth investments. The company manages forest assets worth US\$235 million, which are comprised of six timber equity investments across 1.4 million hectares and ten companies.

- The Forestland Company. Like Xylem Investment, this is another investment company in the US interested in forestlands in developing countries. However, unlike Xylem it is interested in investing in natural forests rather than plantations. Its premise is that natural forests, when allowed to grow into larger-sized trees, produce timber that is more valuable.
- Precious Woods Ltd., established in 1990 to finance the creation and sustainable management of forest resources in tropical countries. It aims to invest in reforesting fallow lands, SFM of natural forests, and sustainable production of tropical timber through harvesting and reforestation. Precious Woods is investing US\$40 million in Costa Rica for plantations and rainforest conservation activities (IPF 1996a).

4.7 Innovation in international public funds for forestry

Given the declining trend in ODA, efforts to increase bilateral and multilateral funds for SFM have to be maintained. In addition, ways and means to utilise ODAs to efficiently leverage other sources of financing must also be continued. When used properly, ODA can still play an effective role, especially in removing barriers and providing 'seed money' to private entrepreneurs and technical assistance, and linking investors and consumers from abroad with domestic forestland owners, processors, and businessmen. Some examples of using ODA to leverage private funds are described below.

4.8 Seed money and venture capital

The World Bank's Sustainable Forest Market Transformation Initiative (SFMTI) demonstrates the use of international public funds to coalesce with private sector managers and leverage private capital for forest management and conservation activities. It promotes private sector participation in SFM through sharing information, and awarding prizes and recognition for excellent sustainable forestry operations. Similarly, USAID established the Biodiversity Conservation Network (BCN) with a US\$20 million grant to help the private sector by providing seed money to promote their participation in biodiversity-based businesses. The Biodiversity Enterprise Fund for Latin America (BEF), the International Finance Corporation (IFC), and the Fund for Sustainable Enterprises (FSE), backed by the Inter-American Development Bank (IDB), are other vehicles for providing seed money to entrepreneurs for sustainable forestry and environmental enterprises in the Central and South American regions.

The Finnish International Development Agency (FINNIDA) provided funds to the PROCAFOR, a Costa Rican NGO, to help create a local capital market infrastructure for poor rural farmers for forestry-related activities in Latin America. This is another example of using international public resources to leverage private funding. It provides group-based loans to individual farmers whom otherwise cannot get credits from traditional loan agencies. The USAID fund for FUNDECOR, another Costa Rican NGO, is yet another instance of how innovative uses of international public funds can provide small forestland owners with the necessary incentives for improving forest management. This project is geared to protect a 300,000-hectare World Biosphere Reserve in Costa Rica without hurting local people's livelihoods. It is helping local, small forestland owners

surrounding the Reserve to practice sustainable forestry, better timber marketing skills, and capitalise on a new carbon sequestration market.

4.9 Emerging global innovative financing concepts

Instruments or measures for the transfer of international payments that can be traded on the international market represent some of the innovations in mechanisms that aim to capture the value of global externalities and of environmental benefits of forests. These include the trade in carbon offsets, emission permits, global taxes on the environment, bio-prospecting fees, and speculative foreign exchange transactions (FAO 1997). Most of these instruments are still in the conceptual stage, and require much dialogue and research before they actually are installed. Nevertheless, some ideas are getting serious consideration, and a few have already been implemented.

4.10 Carbon offset trade

Growing forests sequester carbon from the atmosphere, thereby regulating the global environment. Countries that grow and maintain forest resources thus can be financed (compensated) by countries or industries (such as utility companies of industrialised countries) that produce excess carbon dioxide. This presents an opportunity for a new market and a possibility for creating an international financial transfer system. Some use of carbon offset mechanisms can already be seen in Belize, Costa Rica, the Czech Republic, Ecuador, Guatemala, Indonesia, Malaysia, Paraguay, Russia, Uganda, and in certain states of the US (FAO 1997). Nevertheless, many technical and legal issues have yet to be explored. For example, the carbon storage values of forests are still highly speculative. While a growing forest sequesters carbon, once matured it may actually produce an equal amount of carbon, producing a zero effect on net carbon sequestration. Global trade of carbon requires a global forest convention or a specific international institution to resolve issues, regulate, and monitor transactions.

Emission permits have been gaining preference among economists and environmentalists over command-and-control mechanisms, as ways to limit emissions. In an emission permit scheme, a regulatory authority allows only a certain level of pollution emission, and issues permits for this amount. These permits are tradable- that is, they can be bought and sold on a permit market (Pearce and Turner 1990). This scheme can be used to establish emission permits based on a country's available forest area. Should one country not emit as much pollution as it permit allows, it can sell its 'surplus' to another country that expects to emit beyond its permitted levels. Some or all of the profits from trading permits can then be put to finance protection of forests (Chandrasekharan 1997). Such emission permits also involve complex global mechanisms to determine the permissible emission levels for each country, creating regulatory and market infrastructure to allow permits to be traded and monitored. A portion of such an emission permit trade could be channelled to finance the sustainable management of forests in developing countries.

Biodiversity patents or *bio-prospecting fees* involve creating an international legal basis for licensing biodiversity use, and extracting a payment commensurate with its economic value should that biodiversity be negatively impacted (Chandrasekharan 1997).

The *Tobin tax* is an idea first proposed in 1972 by James Tobin, a Noble-prize winning economist. This is a tax on foreign exchange transactions; it is expected to generate substantial revenue, and discourage short-term, speculative transactions across currencies and nations. Such speculative international capital movements are potential contributors to currency crises (e.g., Mexican peso crisis). Such tax revenues can fund environmental cleanups, sustainable forestry, and human development programmes in developing countries (McQuaig 1998).

This is an intriguing concept of a global public good. There are many complex, new financial instruments such as spot trades, currency options, and outright swaps--all variations in the game of betting on the changing values of currencies. In two-thirds of all the outright forward and swap transactions, the money is moved into another currency for fewer than seven days. In only 1 percent of such transactions did the money stay for as long as one year. Currently, roughly US\$1.2 trillion is exchanged daily in currency markets. So imposing even a small tax on such transactions would generate a substantial volume of revenues for national governments to use towards sustainability goals.

There are many political and economic implications to this proposal. The dominant players in foreign currency markets are private banks. In swap transactions, which represent a major portion of the foreign exchange market, 86 percent of the transactions are actually between banks. Banks, and other key elements of international financial community, benefit the most from such transactions and are not ready to accept the idea of taxing such schemes. While volatile currency markets are bad for national economies, they are advantageous to the financial community. Thus, it may be too optimistic to expect this concept to become a reality in the near future (Ibid.).

These and other similar suggestions have been discussed, but not implemented, because of the obvious difficulties facing their implementation, including logistical and political obstacles (such as how to set, administer, collect, and distribute revenues).

5. IMPLICATIONS AND CONCLUSIONS

Managing world's forests sustainably is imperative for the sake of the planet and human survival. For this, the global community has committed substantial financial resources to utilising traditional as well as new funding sources. UNCED's call for additional of US\$31.25 billion per year for the forestry sector, as a conservative estimate. However, the actual levels of funding are far from that target. Domestic public sources are unable to capture potential forest revenues, due to entrenched distortions in public policies and market structures. Official development assistance from the international community has also failed in making its commitment to increased funding real. In fact, ODA is declining.

Private capital flow has been increasing over the past few years, as a result of the globalisation of economies and the explosion of information technology. It shows substantial potential for funding forestry activities in developing countries. There are some encouraging initiatives that could channel international private capital toward more sustainable and environmentally-desirable forestry investments. However, much of the investments in developing country forests are short-term extractive operations, which might not be sustainable in the long run. Thus, a balanced strategy strengthens the public sector (at national and global levels) and encourages the participation of the private sector in forestry through an array of fiscal incentives, infrastructure, information, and technology support is needed.

There is a need for new global instruments to internalise the global externalities of forests and to develop the international transfer of payments. Trading of carbon offsets and emission permits, as well as Tobin taxes, are some mechanisms worth pursuing.

Experiences with ODA have indicated several shortcomings. The multiplicity of donors with different priorities, and a lack of adequate coordination of ODA activities, are recognised as key obstacles to efficient and effective allocation of resources. The differing priorities of donors and recipients have also led to conflicts. The proliferation of frameworks for fund utilisation has affected the capacity of countries to demand and receive ODA. There is also insufficient national commitment and low absorptive capacity. The problems created by the low absorptive capacity of many countries must be dealt with through expanded technical assistance targeted at building the appropriate institutions; this is an important responsibility of the ODA.

Improved technological and planning capabilities are vital for sustainable forestry. Technology acquisition for forestry can take place through technology development locally, or through the transfer of technology from outside.

The economic potential for raising additional revenues through innovative financing has been discussed extensively. At the national level, such discussions have centred on establishing various forms of taxes, full-cost pricing, and the sale of management bonds. Although some of these innovations look promising, their feasibility is also subject to various factors--including current rates of royalties and taxes on forest products and services, size of forest resources, and status of forest-based industries. These new mechanisms could be implemented in countries that

have substantial enough forest resources and level of technology, but many other countries would not be able to benefit.

It is worth emphasising the need for a system of policy and programme evaluations, so as to assess and improve the impact, efficiency, and relevancy of funding a programme. While the search for innovative funding mechanisms should be encouraged, attention must also be given to strengthening and adapting conventional mechanisms by improving the allocation of domestic and external public funds, removing constraints on private sector participation, and strengthening policy coordination among sectors in developing countries.

Figure 1. Forestry Financing Sources and Transfer Mechanisms

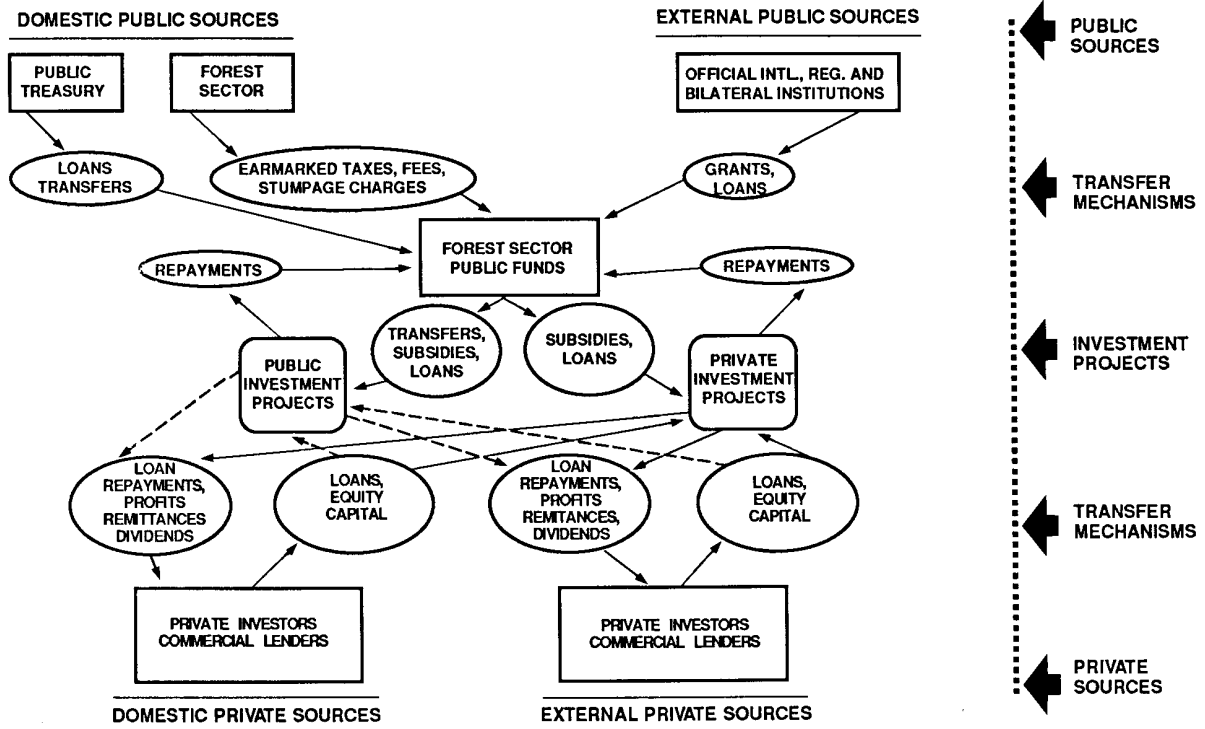


Table 1. Estimated UNCED annual needs for forestry financing, the sources, and the actual ODA flows in developing countries in 1993

Source	Millions of US Dollars	Percentage
Total Agenda 21, Chapter 11 Forestry program	31,250	100.0
Domestic sources	25,580	82.0
Foreign sources	5,670	18.0
Actual ODA in 1993	1,545	27.2 ¹ (of \$5,670 billion)

Source: IPF 1996a

¹ as a percentage of the targeted foreign contribution.

Table 2. Financial flows to developing countries¹ (billions of US dollars)

	1990	1992	1995	1996 ²
Total flows	100.6	146.0	237.2	284.6
Official development finance (ODA)	56.3	55.4	53.0	40.8
Grants	29.2	31.6	32.6	31.3
Loans	27.1	23.9	20.4	9.5
Total private flows	44.4	90.6	184.2	243.8
Debt	16.6	35.9	56.6	88.6
Foreign direct investment (FDI)	24.5	43.6	95.5	109.5
Portfolio equity flows	3.2	11.0	32.1	45.7

Source: World Bank. 1997.

¹ Aggregate net long-term resource flows.

² preliminary

Table 3. Level of ODA for forestry, 1986-93 (millions of US\$)

categories of donors	1986		1988		1990		1993	
	value	percent	value	percent	value	percent	value	percent
bilateral aid	434.5	57	723.0	65	937.3	66	915.7	60
multilateral development banks (MDBs)	142.5	19	200.3	18	253.7	18	420.3	27
UN Organisations	188.0	24	191.6	17	234.3	16	208.5	13
total	765.0	100	1 114.9	100	1 425.3	100	1 544.5	100

Source: FAO 1997.

Table 4. Sources and types of ODA for forestry in 1993 (millions of US\$).

source	total	percentage of	
		grant	loan
Bilateral aid	915.7	97	3
Multilateral development banks	420.3	1	99
UN Organisations	208.5	100	0
Total	1544.5	71	29

Source: Chandrasekharan 1997

Table 5. Net private capital flows to developing countries (billions of US dollars)

	1990	1992	1994	1996 ¹
All developing countries	44.4	90.6	161.3	243.8
Income group				
Lower income countries	11.4	25.4	57.1	67.1
Middle-income countries	32.0	64.8	104.2	176.7
Top five country destinations ²				
Brazil	0.5	9.8	12.2	14.7
China	8.8	21.3	44.4	52.0
Indonesia	3.2	4.6	7.7	17.9
Malaysia	1.8	6.0	8.9	16.0
Mexico	8.2	9.2	20.7	28.1

Source: World Bank. 1997

Note: Low- and middle-income developing countries are defined as those having 1995 per capita incomes of less than \$765 (low) and \$9,385 (middle), respectively.

¹ Preliminary.

² Country ranking is based on cumulative 1990-95 private capital flows received. Private flows include commercial bank loan guaranteed credit agencies.

TABLE 6. The stock market v. the timber and timberland markets

Stock Market	Timber and forestland Markets
Organised	Unorganised
Many buyers and sellers	Few buyers and sellers
Simple sales mechanism	Complex sales mechanism
Broad array of transaction evidence	Scarcity of transaction evidence
Broad availability of informed advisers	Few informed advisers
Highly liquid	Tends to have low liquidity
Rapid realisation of proceeds	Proceeds typically delayed
Few closing problems	Frequent closing problems

Source: Zinkhan et al. 1992.

BOX 1. EXAMPLES OF INNOVATIVE FINANCING MECHANISMS

Tradable carbon dioxide permits: no revenue estimates known. The Earth Council plans to launch a shareholder-owned Global Environment Trading System (GETS) operating from 1999 on a pilot basis. Some carbon offsets are already occurring (Belize, Costa Rica, Czech Republic, Ecuador, Guatemala, Indonesia, Malaysia, Paraguay, Russia, Uganda and the USA (certain states)).

Diversion of earnings on other commodities to forestry; revenue potential undetermined. Example: Columbia diverting income from coffee price support reimbursements by the European Union to sustainable forest management (SFM).

Bio-prospecting fees: Costa Rica.

Deforestation charge: Brazil, Central African Republic.

Ecotourism charges; Costa Rica, Kenya, Thailand.

Scientific tourism charge; Costa Rica, Indonesia, Madagascar.

Watershed charges: Costa Rica, Brazil, Indonesia.

Tradable reforestation credits: Costa Rica.

Tradable conversion credits: Costa Rica, Mexico.

Fiscal compensation for conversion areas: Brazil (certain states).

Biodiversity patent fees

Tax on air transport: potential annual revenue US\$ 1,000 million (under UN committee discussion and not yet operational).

Global taxes for environment: unknown revenue potential. Such taxes are only at idea stage and are far from operational. They would involve a tax on economic activities that have

negative global impacts (not necessarily environmental) which would be used to finance sustainable development.

The Tobin taxes on foreign exchange transactions: potential annual revenue US\$ 30,000 million; US\$ 150,000 million according to recent UNDP-supported research. Still under discussion.

Insurance: at speculation stage.

North-South transfer: under discussion in academic circles.

Diversion of military budgets to sustainable development: at speculation stage.

Source: FAO 1997.

Appendix 1. Classification and examples of forestry activities by types and output categories

		Goods/Products			Services (Protection)	
		Fuelwood (Energy) (A)	Timber (B)	Wildlife, forage, & other products (C)	Watershed, water resources, etc. (D)	Agricultural land and other (E)
COMMERCIAL						
I.	Groups (Cooperatives, corporations, governments)	Planting fuelwood trees; collection from natural forest; charcoal production.	Natural forest and/or plantation-based logging activities; establishment of plantations	Skin processing, production of handicrafts, toys, furniture, wood implements, etc.	na ¹	na
II.	Individuals (farmers or other land owners)	Establishment of small- scale plantations; collection in public forest.	Logging on own or public land for sale to industry or directly to users; smallholder plantation activity.	Individual processing of skins, meat, etc. production of wood handicrafts, etc.	na	na
NON COMMERCIAL						
III.	Groups (Cooperatives, corporations, governments)	Village coops, plantations; industrial/corporate fuel plantations.	Timber extraction for cooperative use, e.g., in colonisation projects.	Cooperative collection and/or processing for group needs.	Government forest watershed activity in hydroelectric power project or other water resource	Erosion control; government protection of fish or animal habitat.
IV.	Individuals (farmers, etc.)	Collection/production for own uses.	Collection/production for own uses.	Collection/production for own uses.	na	Planting of nitrogen fixing species, shelterbelts, etc.

na = Not applicable or not significant in the Latin America region.

¹ in some cases commercial activities are integrated with watershed management. These are included in Columns A-C.

Source: McGaughey and Gregersen 1988.

Appendix 2. Changes in the volume of ODA devoted to forestry, 1986-93 (millions of US \$)

	1986	1988	1990	1993	1990-1993 Annual variation
Bilateral					
Australia	2.7	5.3	6.3	11	4.7
Canada	79.8	75.1	113.4	48.6	-64.8
Japan	20.5	83	117.2	84	-33.2
New Zealand	4	4.1	4.5	3.3	-1.2
Norway	6.7	12.6	6.1	11.2	5.1
Switzerland	13.1	22.9	22.5	28	5.5
United States of America	54.6	117	149.6	121	-28.6
Sub-total	181.4	320	419.6	307.1	-112.5
Multilateral					
Austria	0.1	0.1	0.2	0.1	-0.1
Belgium	1.9	0.9	1.6	1.4	-0.2
Denmark	10	29.3	30.4	30.00(10.0) ¹	-20.4
Finland	31.2	22	36.8	28	-8.8
France	42.9	42.9	42.9	30.5	-12.4
Germany	34	147.3	203	173.1	-29.9
Ireland	0.3	0.2	0.2	0.2	-
Italy	NA	11.2	11.2	8	-3.2
Netherlands	28.5	32.1	46	60.6	14.6
Portugal	0.1	0.1	0.1	0.1	-
Spain	NA	0.9	0.3	0.3	-
Sweden	49.1	57.9	72	37.1	-34.9
United Kingdom	35.2	23.1	28.5	45.2	16.7
Sub-total	233.3	368	473.2	394.6	-78.6
European Commission	19.8	35	44.5	214	169.5
Sub-total European Union	253.1	403	517.7	608.6	90.9
Total bilateral	434.5	723	937.3	915.7	-21.6
Bank Total					
ADB	2.7	1	3	5	2
AsDB	9	77	71.4	74	2.6
IDB	8.5	6.8	9.8	65.3	555.5
World Bank	112.3	115.5	169.5	276	106.5
Bank Total	142.5	200.3	253.7	420.3	166.6
ITTO ²	0	3.6	12.8	15.5	2.7
FAO ³	10.8	11.4	14.8	14.1	-0.7
ILO	2.8	2	0.6	0.2	-0.4
UNDP	22	24.9	52	33.5	18.5
UNEP	1.7	1.5	0.1	1.1	1
UNESCO	1.2	1.8	0.5	2.4	1.9

UNIDO	2	2.8	2.8	0.4	-2.4
UNSO	15	12.2	18.1	10	-8.1
WFP	132.5	131.4	132.6	121	-11.6
GEF ⁴	0	0	0	10.3	10.3
Sub-total	188	191.6	234.3	208.5	-25.8
Total multilateral	330.5	391.1	488	628.8	140.8
Grand total	765	1 114.9	1 425.3	1 544.5	119.2

Source: Chandrasekharan 1997.

Note: The figures in brackets indicate that, lacking information, they are taken from the previous survey. NA: not available

¹ The Danish Ministry of Foreign Affairs has informed that Danish assistance is at a consolidated level of US\$30.0 million, and increasing, given new and additional funds to the environment sector in which forestry is defined as an independent subsector. Similar corrections are likely in respect to other countries.

² Total budget of the organisation plus special funding for projects.

³ Total budget of the FAO Forestry Department plus special funding for projects (TCP).

⁴ Spending on forestry components of GEF projects.

Appendix 3. ODA for forestry, 1993 (millions of US\$)

Category of Donors	Grant	Loans	Total ODA	Percentage of Total ODA
Bilateral Aid (Members of the				
European Union	384.2	10.4	394.6	25.50%
European Commission	214	-	214	12.90%
Sub-total European Union	598.2	10.4	608.6	39.40%
Other Bilateral Aid	287.1	20	307.1	19.90%
Total Bilateral Aid	885.3	30.4	915.7	59.30%
Development Banks	5	415.3	420.3	27.20%
Organisations of the United Nations				
(other than WFP)	87.5	-	87.5	5.70%
World Food Programme (WFP)	121	-	121	7.80%
Total Organisations of the				
United Nations	208.5	-	208.5	13.50%
Grand Total	1 098.8	445.7	1544.5	100%

Source: Chandrasekharan 1997

Appendix 4. COUNTRY PROFILES

1. Cameroon

Cameroon's economy is vulnerable to fluctuations in the primary commodity markets, as is the case in most African countries. Exports of its primary natural resources (oil, cocoa, and coffee) in the 1970s and early 1980s were record high, resulting in good economic performance. The economy grew by a 10 percent annual average rate during the years 1975-84. Agricultural production grew at an annual rate of 6.1 percent, while the industrial and service sectors expanded at an average annual rate of 23.2 percent and 6.1 percent respectively. However, the years 1985-1995 brought a recession, with a contraction of the economy at an average annual rate of 4.4 percent, due to the crash in oil prices of 1986, and declining cocoa and coffee markets. This has resulted in an increasing current account deficit in trade balance statistics. This economic decline has a profound impact on Cameroon's economy, and on the income levels of people. However, since 1994, with a realistic exchange rate in place (50 percent devaluation in 1994), and improved oil and commodity prices, the economy seems to be recovering. The turnaround of economy since the mid-1990s, is due mainly to an expanding manufacturing sector, at 7.7 percent, and agriculture sector, at 4.0 percent.

To finance the current account deficits, Cameroon resorted to borrowing from foreign sources. As a result, their external debt increased from US\$420 million (15.3 percent of GDP) in 1975, to US\$2.9 billion (35.3 percent of GDP) in 1985, and US\$9.2 billion in 1995 (100.0 percent of GDP). Compared to other African countries, Cameroon's debt service ratios have been small. Cameroon's economic structural readjustments were slow and ineffective. Its economic and institutional reforms started with the 1994 currency devaluation, trade reform, elimination of non-tariff barriers, price liberalisation, civil service reform, privatisation of public enterprises and liberalisation of coffee and cocoa marketing. The devaluation, and an accompanying package of economic reforms, have started to have some effect on the macro-economy. There are signs of rebound in the tradable sectors. Imports have also begun to recover from the dampening effect of the devaluation.

Fiscal policy--the total revenues increased by more than 50 percent from 1990, resulted in reducing the budget deficit by more than half. A privatisation programme is in high gear. However, Cameroon's business community feels that the tax rates are too high, and prevents them from making further investments.

Despite encouraging signs of an economic recovery, the debt problem seems to be the main constraint on Cameroon's economic prospects. Public sector debt amounts to 49 percent of the GDP. While debt constraint may limit the growth of the economy, the steady implementation of economic reforms has put the country on a path to sustainable growth for at least the medium-term.

Source: African Development Bank 1997

2. Guyana

This small South American country (83,000 square miles, 750,000 people) has an economy dependent upon agriculture and mining. Almost 80 percent of its interior territory is covered with rich tropical rainforests and mountains. A lack of infrastructure makes these areas inaccessible. Yet, many foreign firms have been granted lucrative mining and lumber concessions in those areas. Sugar and rice account for over half of the country's export earnings. Bauxite, gold, lumber, furniture, tropical fruits, fish, and shrimp are other commodities exported by the country. Guyana's unspoiled tropical rainforests and magnificent rivers and waterfalls have boosted the small but still growing industry of ecotourism, and the tourism sector in general.

The economy is growing for the fifth consecutive year, at or above 6 percent rate, as a result of ongoing macroeconomic reforms, investments in infrastructure, and strengthening the productive capacities of key industries. Forestry is one of the sectors attracting heavy investments. Guyana encourages private sector participation through an array of incentives. It has continued to take steps towards privatising state-owned companies. Guyana recognises the need to use its natural resources sustainably, to generate increased foreign exchange earnings and to assist economic growth. To strike a balance between economic growth and environmental protection, an environmental Action Plan has been recently approved by the Guyana Parliament.

Guyana seeks international help in alleviation of its enormous foreign debts, and is willing to make its forests available for global benefits in return for forgiveness of its debt burden.

Guyana's practice of granting forest concessions to foreign timber firms attract criticism from within and abroad. In 1989, only some 2.4 million hectares of Guyana's 14 million ha of loggable forests were being exploited. In 1994, it has contracted more than 8 million ha, and a further 4 million ha are in pipeline for concession.

Numerous local operators, and some large foreign companies, are engaged in forest harvesting and processing. The Barama Timber Company, a South Korean and Malaysian joint venture has received a timber harvesting concession for 4.4 million acres, and is building plywood manufacturing facilities. As of June 1995, Barama has invested US\$60 million in Guyana. Caribbean Resources Limited (CRL) is a timber concern owned by the Trinidad-based Colonial Life Insurance Company (CLICO), which bought the assets of the state-owned Guyana Timbers. CRL's total investment in Guyana is US\$15 million. Demarara Timbers Limited is owned by a consortium of European banks, which took over the assets of the original purchaser of the state-owned Demarara Woods. The firm's total investment in Guyana is US\$20 million.

Guyana is criticised for its lax forestry policy and generous timber concessions to foreign firms. This is especially noticeable as The Guyana Forestry Commission has only five trained foresters and a small budget. Thus, the Commission is incapable of controlling this massive expansion of timber harvesting (Greenpeace 1994).

Source: http://www.wam.umd.edu/~swi/Economy/invest_guy.htm

3. Costa Rica

Costa Rica's Forestry Law (Law 7174) is intended to promote the conservation and sustainable development of its natural resources. Its Forestry Bureau has developed several systems to encourage the reforestation and conservation of existing natural forests.

Forestry Trust Certificates (FTCs)

FTCs are negotiable bonds for tax payments, with a nominative value of US\$120,000 per reforested hectare. Any individual or legal entity involved in reforestation projects is also eligible for the following additional benefits.

- Exemption from land taxes for land registered under the Forest Regime Incentive System
- Exemption from land taxes for non-cultivated lands
- Protection against land squatters on empty lots

The amount of the Forestry Trust Certificates allowed per ha are allocated on a yearly basis. It is applicable to cover establishment and maintenance costs of a planted forest. During the first five years, the certificate is allocated as follows: 50 percent for year one, 20 percent for year two, 15 percent for year three, 10 percent for year four, and 5 percent for year five.

Reforestation programme

Reforestation programmes assist landowners whom are willing to reforest their lands with their own resources. Those landowners whom reforest without the benefits of the FTC can enjoy the above-mentioned three benefits. In addition, they also receive income tax exemptions on earnings derived from the sale of plantation products, and other management supports from the Forestry Bureau. Forest industries wishing to reorganise or increase productivity may receive priority in approval and endorsement of loans, support for product exports, and training benefits.

Source: <http://www.amerisol.com/costarica/business/incentives.html>

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