Forest-Backed Bonds Proof of Concept Study

EXECUTIVE SUMMARY - FINAL DRAFT

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Prepared by Forum for the Future and EnviroMarket Ltd for IFC and DfID
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About the programme

The research programme was established in mid-2006 by the International Finance Corporation (IFC) with backing from the UK Department for International Development (DfID) and sets out to test the technical feasibility and likely development impact of eco-securitisation by examining its potential role in the financing and/or re-financing of sustainable forestry in the developing world.

The Programme is divided into three stages. This first stage, a Proof of Concept Study, examines the technical feasibility of the idea. Based on its conclusions, subsequent phases are expected to explore concept development and identify and promote measures that would act as market catalysts.

Partners and Sponsors

The concept was originally promoted by Mark Campanale, then Head of SRI Business Development at Henderson Global Investors in London. In early 2005, a proposal to undertake a proof of concept study was developed in collaboration with EnviroMarket and Green & Gold. The initiative quickly attracted the attention of the International Finance Corporation (IFC) and the UK Department for International Development (DfID) and in mid-2006 the two parties agreed to fund a programme of research aimed at exploring the technical feasibility and developmental merit of the concept.

The Proof of Concept stage, which commenced in August 2006, is managed by UK-based sustainable development charity Forum for the Future and undertaken by EnviroMarket Ltd.

The R&D Programme is guided by an independent Steering Group, made up of Jon Williams (HSBC), Matthias Rhein (DfID), Juan Jose Dada (IFC) and Mark Campanale.
Executive Summary

This project looks at how conventional structured finance methods applied to natural tropical forest might give forest managers greater ability to access long-term finance. Improved finance has been identified as one of the ‘missing’ elements necessary to unlock the wider uptake of tropical Sustainable Forest Management (SFM).

We propose and test ‘EcoSecuritisation’, an innovative approach to the financing of natural forests that enables the development of long term asset value rather than short-term timber yield, through the issue of long duration Forest-backed bonds. The proposed mechanism utilises portfolio diversification; recent developments in forestry insurance and risk mitigation techniques; and the emergence of markets for ecosystem services in order to attract a diverse range of capital market investors.

The issue of forest-backed bonds in the proposed format will enable the creation of a long-term capital pool accessible to SFM operators and investors. Although governments remain the dominant owners of tropical natural forests, community and indigenous groups are playing an increasingly important role, and an increasingly diverse range of groups now carries out the management and harvesting of tropical natural forests. Significant financing gaps exist throughout the strata of tropical SFM, and viewing the sector as a whole is expected to deliver real benefits in terms of overall uptake. Important questions remain regarding how capital unlocked by EcoSecuritisation should be accessed by the different entities that could benefit from it.

The principles of EcoSecuritisation can be extended ‘up’ to government and ‘down’ to small and medium sized forest enterprises via alternative structures. Sovereign bonds issued against state income from SFM, and securitisation of small scale loans for SFM are both possibilities.

Natural Forest Assets
Over 30% of the world’s land area - about 40 million km² - is covered in forest. 96% of this is classified as natural forest. In addition to providing an economic and cultural backdrop for the lives of 700 million of the world’s poorest people, this vast global estate delivers an array of essential local and global environmental services, including water storage and filtration, soil stabilisation and carbon sequestration.
Loss of natural forests has been a core issue for environmental NGO and civil society groups for some time. Their call for action has gained new potency amongst the global policymakers in the wake of growing concerns at the onset of climate change. The Stern Review underlines the case for action by identifying avoided deforestation as the most effective and economically attractive action available to the global community to start addressing climate change (Stern, 2006).

Historically, the loss of natural forest has accompanied industrial development. The US has just 5% of its original primary natural forest cover. Today, deforestation is taking place at an unprecedented rate in the tropics. Although reasons for this vary from place to place, one common theme emerges: activities addressing immediate needs (food, fuel wood, shareholder returns etc) are more attractive than those connected with the ongoing stewardship of standing tropical natural growth forests (Chomitz, 2006).

Markets that assign financial value to the ‘non wood’ components of natural forests are in their infancy. For practical purposes, commercial decisions relating to forest management are based on the value of accessible standing timber, the land on which the forest grows, and the value of competing land uses. These decisions are usually taken from a short-term perspective; whilst the current value of tropical hardwood can be substantial, the high ‘time value of money’ in most tropical countries means that the net present value of any future/deferred harvest is often minimal. Slow growth rates, and the importance of different tree species within complex and interconnected forest ecosystems, makes the choice and execution of an appropriate harvesting regime vital.

Sustainable Forest Management (SFM) has evolved as a practical response to this need, and links the economic development of forestry with the desire for a more a holistic approach to its management. SFM emphasises the development of long term asset value over short-term timber forest yield.

There are no exact figures for the quantity of tropical natural forestry currently under sustainable management. Independent certification schemes, such as the FSC, which demonstrate that sustainable management is being undertaken, remain heavily underrepresented in the tropics.
The area defined as Permanent Forest Estate (PFE) - some 858 million hectares - provides an indication of forestry currently not threatened or under threat from external sources.

**Ownership & Management**

**Around 86% of forests are under government ownership, 79% under the direct control of central government** (FAO, 2005). Governments allocate the right to manage these resources via concessions to a range of commercial, community and NGO groups. Globally about 34% of forests are managed in some way.

However **the existence of clear and enforceable property rights - central to effective ownership - remains a contentious issue in many tropical countries**. Local political elites have often usurped and re-allocated traditionally held community and tribal rights - rarely recorded in any official statute book - and reallocated them as lucrative logging concessions, with predictable consequences in terms of local tension and conflict.

Management of tropical forestry - natural and plantation - is summarized as follows:

- **Government land**
  - Government management (forest reserves)
  - Concession management
  - Conservation management

- **Privately owned land**
  - Private plantation management
  - Private natural forest management
  - Wood processor (vertically integrated)
  - Small grower

- **Community Forests and Forestry Associations**

- **Company Community Partnerships**

**Investment Flow**

On a global basis, institutional investment in forestry remains focused on plantations. These man made forests can grow at up to 15 times the rate of natural forests and accommodate a far greater degree of management control, delivering a homogenous and relatively predictable supply of timber.

**US investors have led the way in forestry investment.** The US market, boosted by favourable tax, local supply and strong regulatory conditions, accounts for 66% of the $35 billion currently invested in the sector worldwide. Locally based Timber Investment Management Organisations (TIMOs) have delivered impressive returns by focusing on the revenue generating capacity of plantations.

By contrast, **investment flows into tropical natural forests are difficult to track**. Although foreign direct investment (FDI) into emerging markets stands at $149bn, and the value of roundwood

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1 ‘IFC & Emerging Markets at a Glance’ (IFC, 2007)
   [http://www.ifc.org/ifce/50thanniversary.nsf/Content/Fact_sheet_English](http://www.ifc.org/ifce/50thanniversary.nsf/Content/Fact_sheet_English)
removals from Africa, Asia, South America and Oceania exceeds $32bn (FAO, 2005), tropical forestry is still 90% funded by local domestic sources (Tomaselli, 2005).

The relatively small amount of institutional investment that has occurred is focused around plantations. A small group of ‘pioneer’ investment managers have successfully identified and acquired attractive opportunities. This success has actually led some market commentators to speculate that ‘all the great opportunities have already been taken’.

Investment in tropical forestry, both plantation and natural growth, is actively promoted by regional and local development banks, institutions and NGOs. Initiatives such as the Forestry Investment Attractiveness Index, produced by Inter American Development Bank (IADB), provide a comprehensive independent framework for assessing investment risk. Organisations such as the WWF Global Forest Trade Network (GFTN) and Forest Trends Business Development Facility facilitate market access (for finance and forest products) for smaller and medium sized producers involved in sustainable forest management, production of certified products and ecosystem services.

**Sustainable Forest Management**

Sustainable forest management (SFM) operators and investors seek to develop new income streams from natural forests such as carbon, conservation payments and ecotourism, and may blend this with income from plantations. The process emphasises quality and diversity of asset value and the development of long term cash flow. Enhancing underlying asset value in this way reduces overall investment risk over time.

Unlike plantations, natural forests yield a wide variety of hardwood timber species, and this requires a more flexible approach to marketing. Once a particular area has been harvested, it may be 40/50 years before the next harvest. Investment in modern processing equipment can ensure that the best use is made of the available resource, but this entails capital investment. Developing and maintaining complementary cash flow associated with SFM and payments for ecosystem services (PES), for example in achieving certification and in establishing detailed information on carbon sequestration, adds to the amount of capital required to run a forestry business.

**Equity financing of SFM**

Considering the perceived risk, most institutional investors view conventional exploitation of tropical natural forests as an equity play. Limiting timber extraction at an ecologically sustainable level sets up a three way relationship between (a) the value of the timber, (b) the total area/geography of the concession and (c) the cost of the concession. In short, equity financing applied to SFM tends to dictate the need for large-scale operations, which in turn carry their own additional set of risks and costs.
Debt financing of SFM

Cost effective borrowing is a well-established route through which investors can improve their equity returns. Although neither plantation nor natural forestry is particularly capital intensive relative to the primary and secondary processing activities they feed, forestry operations involve lengthy payback periods. Cost effective financing of timber inventory, harvesting and processing equipment is a key requirement for tropical forestry businesses.

The ease with which local operators can access local currency debt finance for forestry operations varies significantly. There is however a strong correlation between poor access to local capital and high deforestation rates at national level.

The use of structured commodity finance would enable forest operators to borrow against assets and/or future income. This is an attractive option because with SFM the interests of the lender are well aligned with those of the operator. In other words, they both want to protect and enhance the long term income generating potential of the forest.

The efficacy of structured commodity finance is largely determined by the level of security that can be achieved. This in turn depends on how cost effectively risk relating to forest cash flow can be isolated, managed and mitigated.

Risks of SFM

Commercial operators involved in tropical natural forestry face significant risks. The key to unlocking long term capital structures lies in the cost effective management and mitigation of these risks.

The major risks identified by investors are as follows:

- **Political risk** - Country risk is the greatest source of concern for investors. A high proportion of tropical natural forestry is in countries with poor governance, unstable currencies and a poor economic track record.

- **Insecure property rights** - Unclear or conflicting ownership or usage rights prevent the use of forestry as security and heighten potential for local tension and/or conflict.

- **Property loss** - Natural forests are spread over large and often remote areas. In addition to damage or destruction as a result of human intervention, they are subject to a range of natural disasters.

- **Income loss** - Variations in market price, failure of a major client or destruction of forestry could all lead to loss of income.

- **Operational risk** - Forestry is not an exact science, and the success of individual projects rests heavily on the skills of the manager. This is particularly the case for tropical forestry where the inability to easily swap managers is a considerable risk if the asset is providing security.

- **Reputation** - NGO and civil society groups are powerful stakeholders in the world of natural forestry, and owners of substantial tracts of land in their own right. Whilst some seek pragmatic solutions to enhancing economic value of forests, others are confrontational, creating significant risks for both investor and operator.
• Investment liquidity - Lack of ability to easily buy and sell forestry limits its appeal, and adds to the cost of financing.

Risk Management & Mitigation
A number of approaches to the mitigation and management of risk are available.

- Portfolio diversification
- Political risk insurance
- Investment insurance
- Property insurance
- Credit derivatives
- Securitisation

The cost effectiveness of each mechanism depends on the asset, the asset location and the objectives of the asset manager or investor.

EcoSecuritisation
Securitisation is a well-established branch of structured finance. The mechanism enables borrowers to raise capital by pooling and transferring assets to a separate legal entity, which then issues bonds on the basis of the security provided. Securitisation can unlock lending over longer tenor and at lower rates.

EcoSecuritisation merges existing securitisation techniques with rapidly emerging environmental markets, in order to attract low cost, long term ‘patient capital’ to projects that have potential to generate significant Payments for Ecosystem Services (PES), such as tropical forestry.

If suitably structured, the inclusion of PES in a portfolio of SFM related cash flow substantially increases overall credit quality, due largely to the nature of the buyers. The organisations concerned are generally major businesses or municipal and national governments, entities that are likely to be familiar to capital market investors and rating agencies.

Payments for ‘avoided’ deforestation are currently under discussion for inclusion post 2012 regulated carbon markets, and are already a reality in voluntary markets. Tropical plantations are able to access these regulated carbon markets through production of renewable bio-fuels, payments for carbon sequestration via the Clean Development Mechanism, and payments for watershed protection.

The development of forest revenue-generating capacity in these areas, coupled with the credit quality of the buyers, and good contract structure/duration, provides an attractive target for use of structured commodity finance.
**Forest-Backed Bonds**

Applying the principles of EcoSecuritisation to different tropical forest revenue streams suggests a number of possible structures. Assuming sufficient credit enhancement, forest-backed bonds could be issued against a variety of cash flows, including:

- A portfolio of cash flows from tropical plantation, natural forest and conservation
- Government income/licence fees from SFM
- A portfolio of SFM related loans to small and medium forest enterprises
- Plantation development linked to forest conservation.

Of these options, a portfolio of cash flows from tropical forest activity, structured as an export orientated future flow deal, is considered the most promising option in the short term. To be feasible the pilot deal will need to target $100m.

The feasibility of a tropical forest-backed bond is based on the availability and cost effective application of a series of risk management and mitigation procedures. Central to these are portfolio diversity, country selection and third party credit enhancement.

The ability to secure long-term offtake agreements with national governments for certified timber and carbon, and with multilaterals for carbon, is a key component in boosting the overall credit quality of the pool. Overall economic and political stability, good local/regional demand and effective local forest governance and institutions are the main factors in country selection. In general, tropical countries with high rates of deforestation have weak governance: this will limit the capacity of the portfolio to carry projects in these areas.

The availability of insurance for medium-sized forestry operators increases the potential to include them in a portfolio. Assuming an appropriate geographic spread, and an appropriate screen for quality - such as certification to an appropriate standard - the inclusion of a greater number of relatively smaller forests will lead to additional reductions in the risk profile of the portfolio and subsequently reduce borrowing cost further when Forest-backed bonds are issued.

**The Market for Forest-Backed Bonds**

The key areas of focus for investors in Forest-backed bonds are country risk, duration, the nature and scale of payments for environmental services, the availability of accurate data on asset performance, and the quantity, quality and cost of available credit enhancement.

Long-term investors with an interest in matching their liabilities against secure assets, such as pension funds and insurance companies, are the primary buyers at the 40/50-year duration proposed for forest-backed bonds. These ultra cautious investors target bonds that at least keep pace with inflation and guarantee a payback in line with their obligation to pensioners and annuity holders. To be attractive to this audience, forest-backed bonds need to be issued through a supranational entity, and incorporate powerful guarantees.
Information on the underlying asset will also be central to effective rating, marketing and post-issue performance analysis of forest-backed bonds. Significant gaps exist for biological and market data relating to tropical natural forestry (although data for plantations is more readily accessible).

Next Steps
Forest-backed bonds offer an attractive and effective solution to an urgent problem. They provide a means with which to kick start major private investment in tropical natural forests, enhancing their value relative to competing land uses in a way that benefits all key stakeholders.

The next steps in the development of a tropical forest-backed bond are:-

1. Improve information flow to capital market participants on the physical, financial and legal aspects of tropical natural forests.

- Tropical forestry businesses and traders should be approached to identify mutually beneficial opportunities for enhancing the transparency and overall effectiveness of local markets. An excellent medium term aim would be the creation of reliable local market price indexes.

- Research should be undertaken into existing and proposed methods of gathering physical data on forests. This should identify any shortfall in information flow against the requirements of structured finance teams, rating agencies and financial regulators involved in the development of a forest-backed bond.

- Information on the legal, political and economic environment in which tropical natural forests exist should be collected, collated and made more widely available to investors. The format should be authoritative, easily accessible, accurate and up-to-date. Contributors should be encouraged to use the site as a means of communicating challenges, achievements and opportunities related to tropical natural forests.

2. Develop existing third party credit enhancement facilities for application in tropical forestry.

- A Tropical Forestry Reinsurance Facility should be created in order to increase the capacity of local insurers to cover key forest risks. Although this capital will be ‘at risk’, the likelihood of loss is very low. The facility should remain operational just long enough to build awareness and confidence amongst the global insurance community. Private capital will then be available to take its place.

- Further research should be undertaken to establish capacity/interest amongst market participants to deliver price hedging and indices for tropical timber and other natural forest revenue streams. Consideration should be given to establishing a global tropical timber index
to facilitate equitable pricing of long-term contracts (this could be based on local timber indexes described earlier).

3. Reinforce national commitments on the purchase of sustainable tropical forest products by public bodies

- Governments should extend and strengthen their commitment to public procurement of certified timber. Local markets are at least as important as the international market, and may be more so: government commitments should extend to all jurisdictions where significant trade in tropical timber is taking place.

- Annex I governments should prioritise their purchase of forestry carbon generated under the Clean Development Mechanism (CDM) for the first Kyoto phase, and should commit to making advanced purchases of carbon created through avoided deforestation at the earliest possible opportunity.

- The EU Linking Directive should be amended to allow the inclusion of forestry carbon from the CDM within the EU Emissions Trading Scheme (EU ETS) at the earliest possible opportunity.

4. Support the structuring and issue of a debut forest-backed bond

- A pilot EcoSecuritisation should be undertaken in 2007, enabling the issue of a tropical Forest Backed Bond early in 2008. An independent vehicle should be created and funded in order to provide a clear focus for the management and marketing of the deal. The project should bring together key capital market participants · rating agencies, insurers, governments and so on · as a ‘learn by doing’ exercise.

- The pilot should target forestry operators and investors in lower middle-income countries, where forest resources come under most strain from economic growth in China and elsewhere. In the selection of countries heavy weighting should be given to the Forest Law Enforcement Governance and Trade (FLEGT) process and the presence of current or proposed Voluntary Partnership Agreements.

- A future flow structure should be employed, and utilise existing guarantee mechanisms where possible (for example, the Multilateral Investment Guarantee Agency (MIGA)).

- Development of a pilot EcoSecuritisation should occur in conjunction with that of the proposed Reinsurance Facility (described in 2), to allow for maximum cross-fertilization of ideas and benefits.

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2 Annex I countries as described by the UNFCCC which divides countries into three main groups according to differing commitments.