

**THE POTENTIAL ROLE OF UK INSTITUTIONAL
INVESTORS IN FINANCING SUSTAINABLE FORESTRY**

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INTRODUCTION

Unregulated or poorly regulated logging in tropical forests has been identified as a significant cause of tropical forest loss and degradation (Rudel and Roper, 1996). Harvest rates typically exceed the productive capacity of forests, and little effort is made to reduce damage to the residual stand during logging. Over-harvesting can deplete the value of the forest for timber production, and conversion to other land uses may result.

In response to concerns over the impacts of unregulated logging and the role that it plays in deforestation, national and international guidelines have been developed to promote the sustainable management of tropical and temperate forests (IIED, 1996). Third party organizations such as the Forest Stewardship Council have been created in order to audit or certify a forest products company's compliance with these new regulations. Sustainable forestry guidelines generally call for restricting harvests to levels that will permit indefinite harvests of timber, and to varying degrees, for additional measures ensuring that environmental and social benefits provided by forests are maintained. Both of these measures may reduce the short term profitability of sustainable forestry compared to conventional logging, though the extent that this is true is not well understood.

Both environmentalists and governments hope that the private sector will finance sustainable tropical forestry (TFF Working Group citation). The reason the emphasis is switching to the private sector is that private capital flows are rapidly outpacing public sector financing such as overseas development assistance (UNDP ref). For example, 24.5% of all UK pension funds (excluding property) is invested in foreign instruments (World Equity, 1997).ⁱ This represents approximately \$XX, and harnessing even a fraction of this would represent many times the amount currently received as overseas development assistance for the protection and management of forests.

In recent years portfolio investment (bond and equities) has been the largest type of private capital flow to emerging markets. The purpose of this study is to determine whether UK institutional portfolio investors are likely to invest in tropical sustainable forestry. This will depend upon whether sustainable forestry companies can meet the investment criteria of fund managers, such as requirements for minimum rates of return, acceptable levels of risk, and minimum market capitalization size.

Specifically, this study sets out to answer the following questions:

(1) *Do the financial returns from tropical sustainable forestry meet fund manager requirements?*
This question is answered by conducting a questionnaire survey to quantify fund manager requirements with regards to minimum required rates of return, and comparing this to what is known about the returns from sustainable forestry in the tropics. We use a combination of the scientific and development literature, along with a questionnaire survey of existing certified sustainable forestry operations to attempt to determine the profitability of sustainable tropical forestry (both plantations and natural forest management).

(2) *Are the risks associated with sustainable forestry investments acceptable to fund managers?*
Investment decisions are based not only the projected financial return, but also on the perceived level of risk associated with the investment. Investors expect to be compensated with higher returns from higher risk ventures, and conversely, are generally willing to accept lower returns from lower risk investments. While the reduced harvests and increased management costs of sustainable forestry operations might reduce profitability, this might be compensated for by a reduction in the level of certain risks (disease, fire, eliminating the need to find and acquire new productive forest areas) and by price premiums and better and more stable market access for products derived from certified/sustainable forests. According to portfolio theory, the risks of different companies/sectors can be compared by using a measure of risk known as the beta coefficient.ⁱⁱ Thus, beta coefficients for certified/sustainable forest products companies can, in theory, be compared with those for conventional forest products companies, and so enable a comparison of the sectoral investments risk of the two types of companies. In this study we attempt to gather betas from certified and uncertified forestry companies in order to see whether the risk of investing sustainable forestry companies is less than conventional logging.

We also collected qualitative information on the perception of the relative risks of certified versus uncertified forestry by querying institutional investors about whether they perceive a lower (or higher) level of risk to be associated with sustainable forestry versus conventional forestry, and whether they would accept a corresponding lower (or higher) rate of return.

(3) Do sustainable forestry companies need to be publicly listed in order to attract portfolio investors?

We examine this issue by determining the proportion of responding fund managers that use various types of investment vehicles. We also compare these preferences with the current ownership structure of the certified forestry companies to see how conducive at present the current ownership structure is to portfolio investment.

(4) Are there are further investment requirements?

Listing by itself may be necessary but not sufficient to attract portfolio investors, who may have additional criteria that they use to make their investment decisions with regards to market capitalization. Accordingly, fund managers were asked for the minimum market capitalization of a company that they would require as a prerequisite to investing.

(5) Are there certain geographical regions where investors are most likely to invest?

The last issue is simply whether there are regions where investors have strong preferences or will avoid entirely, independent of the potential financial returns available. For 13 tropical countries selected on the basis of their current importance as timber producers and their representation in the literature survey, fund managers were asked whether they would consider an investment there. This provides an estimate of within and among regional variation in the attractiveness of emerging markets to investors.

Taken as a whole, the answers to these questions should help determine whether at present significant investment flows can be expected from UK institutional portfolio investors into sustainable tropical forestry. This study also should also help identify any of the remaining obstacles to increasing such investment flows, if indeed they exist. The data sources and the techniques used to collect this information are described in detail in the Methodology section below. Major study findings are presented in the Results section, with tangential and supporting information included as Appendices. The paper concludes with the integration of the findings to answer the five questions described above that are the focus of this study.

METHODOLOGY

The three main data sources and techniques used to collect information for this study are described below.

Questionnaire survey of certified timber producers

A questionnaire survey of sustainable timber producers was undertaken for information on ownership structure, size, and financial returns. We limited the survey to those companies that had received independent FSC accreditation as this has the most widespread acceptance of the various certification initiatives. The FSC UK-Working Group provided a list of all 54 forestry operations that had been certified as of March 1997. A summary of the geographic distribution and size of certified timber producers is shown in **Table 1**. Twenty-three of these companies are located in temperate regions (North America and Europe), with the remaining 31 in sub-tropical and tropical countries. Although this study is concerned primarily with tropical forestry, as the total number of certified producers is quite small, and certified companies in temperate regions account for 87.5% of the 2.9m ha of forest certified worldwide, we included temperate certified timber producers in the survey in an attempt to derive a more complete picture of risk-return profiles, and the size and ownership structures of these types of companies.

Questionnaires were sent to most certified forest products companies (see **Appendix One**). Nine certified companies were excluded from the survey either because they were so small that they could not be of interest to fund managers, or because no contact address was available. If no response had been received after three weeks, the companies were reminded to complete the questionnaire and send it in, or given the opportunity to complete it over the phone.

The survey requested information on the following:

Background information: information on the type, ownership structure, size, and financing arrangements was requested, to assist in determining whether the companies would be of a size and structure that would qualify them for listing on a stock exchange (if they aren't already listed).

Risk-return profiles of certified forestry operations: respondents were asked to provide financial information (e.g., Internal Rates of Return, Net Present Value, cash flow data) from which financial returns could be derived.

Information on beta coefficients was requested so that a risk-return profile for certified forest products operations could be constructed.

Impacts of certification on company profitability: respondents were asked to provide information on the costs of certification (direct costs of being certified, and indirect costs of compliance) as a percentage of normal operating costs, and whether they received price premiums for their certified products, and if so, how much. Respondents were asked to provide basic information on the contribution of earnings from certified forestry operations to overall earnings.

Literature survey on tropical forestry operations

Because there are only a few existing certified timber producers, and some of the financial information requested is commercially sensitive and not available for the public domain, the certified timber producer survey was complemented with a review of the scientific and development literature for information on financial returns from plantation and natural forest management systems in the tropics and sub-tropics. Where possible, information on the following attributes was extracted from each study:

(i) *location and characteristics of managed forest*, including geographic location, and type and size of forest standing crop and productivity;

(ii) *characteristics of management system*, including re-entry period¹, harvest intensity, and additional silvicultural practises such as thinning and enrichment planting;

(iii) *environmental and social impacts of the management system*, including for natural forest management, measures such as reduction in primary forest biomass, and area of forest allocated to protected reserves, and for plantation operations, the number and type of planted species; and

(iv) *financial performance*, as the goal of these studies reported in the literature was usually to rank the underlying economic performance of alternative land use projects, the financial outputs given were typically the standard costs benefit analysis measures, NPV and IRR. Plantation studies typically reported both measures, while natural forest management projects usually provided NPV only. NPV figures have been standardised to per hectare values, and standardise currencies to 1996 US dollars.

Questionnaire survey of the investment community

UK fund managers – mainly in the City of London – were surveyed for criteria used in their investment-decision making processes, for past experiences and current interest in investing in the forest products sector, and for information on their attitudes towards the environmental and social aspects of their investments. The survey questionnaire is included as **Appendix Two**.

The managers of two types of funds were included in the study. Emerging markets fund managers were included as these are the most likely to invest in tropical regions of interest to this study. Green/ethical fund managers were targeted as it was expected that they would be most sympathetic to the non-financial objectives of sustainable forestry operations (e.g., biodiversity conservation, and maximization of social benefits).

The majority of potential respondents were contacted by phone first. Those who agreed to participate in the survey were sent a questionnaire. In a few cases when fund managers could not be reached immediately, an unsolicited questionnaire was sent to them. Respondents were given approximately two weeks to complete the survey and return it. If they had not done so within this period they were contacted and reminded to do so, and also offered the opportunity of completing the questionnaire over the telephone.

The purpose of the survey was to collect information on:

Main characteristics of the funds and investment criteria: fund managers were asked for information on investment objectives, investment vehicles, investment restrictions, methods of investment analysis, methods for risk measurement or assessment, and fund performance over the past five years.

¹ Time between successive harvests in the same area of forest.

Risks and returns: fund managers were asked for information on minimum required rates of returns, and variations of these amongst different countries. They were also asked to indicate whether any quantitative measures of risks were used (e.g., beta) when making their investment decisions. Fund managers were also asked to provide a qualitative assessment of risks pertaining to tropical forest products companies.

Attitudes towards investing in the forestry sector: fund managers were questioned on their motivations for buying and selling forestry investments, and on the financial returns realized from these investments. They were also asked whether and why they would be interested in investing in the forest products sector in the future.

Environmental and social impacts of forest management practices: fund managers were asked to indicate whether they thought that improvements in the environmental and social impacts of forest management systems would impact the risk of a forestry investment, and whether this would affect the minimum required return. They were also questioned about whether investors in a fund (i.e., their clients) have expressed concern over the social or environmental impacts of a fund's investments, and whether this level of interest is likely to change in the future, and if so, what factors will drive this trend.

RESULTS

This section presents the main findings from the literature review and the two questionnaire surveys.

Certified Forestry Company Survey Results

Sample size: twenty-two of the 45 companies contacted either did not wish to participate in the study, or were unable to provide relevant information. Reasons given for not participating included company policy not to disclose financial information, and lack of time to complete the questionnaire. Of the 23 companies that agreed to participate, only 15 ultimately provided information for this study. Where not all fund managers responded to a question, the sample size is provided. Tables are included in **Appendix Three**.

General characteristics: the majority of the responding certified forestry companies are private companies. Only 1 of the 14 responding certified forestry companies is publicly listed (**Table 2**).

Financial information: in most cases, companies were either unwilling or unable to divulge financial information. On average, certified companies derive about half of their revenue from certified forests (min=0%, max=100%), with the remainder coming from uncertified forests, other commodities such as tea or rubber, or alternative investments.

Risk factors: because most of the certified forest products companies are not publicly listed, beta coefficients were not available.

Impact of certification on company profitability: ten of 13 certified forestry companies stated that the cost of implementing sustainable forestry was higher than for conventional forestry, while the remaining three companies said that the certification process had not resulted in any increase in operating costs. Seven of the ten companies claiming higher operating costs were able to estimate them. The median increase in costs was 12.5% (min=3%, max=74%). Five companies (of ten responding) indicated that they do receive price premiums for their products, with a median increase of 5% (min=5%, max=15%). Five companies said that they do not receive price premiums, though their products are more salable as a result of being certified.

Literature Review Results

Information was found on financial returns from 35 natural forest management, and 37 plantation management systems (note that the actual number of studies was much smaller, as some studies provided information on many systems). South America was the region with the greatest number of studies available for both natural forest management and plantation studies, with the remainder fairly evenly distributed between Central America, Africa, and south-east Asia. For both natural forest management and plantation systems, the majority of studies were simulations or projections, rather than documentation of actual returns from operational forestry companies. The most relevant findings from the database are presented below. The complete database is given in **Appendix Four**.

Characteristics of Natural Forest Management

Average values for the forest and management characteristics are given in **Table 3**. These operations are typically 50,000 ha in size (n=18), cut an average of 18 timber species, have a re-entry period of 31 years (n=27), and each harvest removes about 29 cubic metres of timber per ha (n=28). The environmental impacts of these management systems are reported infrequently, but we calculate that on average, the logged forest have a biomass of about 50% of primary (unlogged) forests.

Few of the available assessments of natural forestry studied large scale concession operations. The most common measure of profitability used in these studies was NPV, calculated for a range of discount rates, typically spanning from 5-20% or more. The IRR, which is more useful for comparing with fund manager requirements of minimum rates of return, was almost never reported in these studies. Instead, the discount rate at which NPV remains positive can be used to provide a lower bound for IRR, as IRR is equal to the discount rate that reduces NPV to zero. **Table 4** lists those studies that provide NPVs at discount rates above the average minimum required rate of return for fund managers of 15%. In general, NPVs were still positive and large for the largest discount rates, so the figures given represent conservative estimates of IRRs. In cases where NPVs were not calculated for discount rates above 15%, if cash flow information was sufficiently detailed an IRR has been estimated. However, few papers contained sufficient information on operating harvesting costs, required capital investments for harvesting and milling equipment, etc., to enable such an analysis. These data are shown in **Table 4**.

In general, it would appear that there returns from natural forest management are very variable, but in many cases - albeit based on a very small sample - do seem capable of meeting fund manager requirements.

Characteristics of Plantation Forestry

Average values for the plantation management systems included in the database are shown in **Table 5**. These operations are typically about 10,000 ha in size, are planted with a single exotic species, and harvest 319 cubic meters per ha every 25 years. Environmental impacts of these management systems are reported infrequently, but the following observations can be made: in the majority of cases, primary forests were not cleared for the establishment of plantations; natural regeneration of indigenous species was permitted only in a minority of cases; and as was noted previously, few plantations used indigenous species, or planted more than a single species.

In contrast to the natural forest management studies, most plantation studies did provide IRRs. A histogram of these is shown in **Figure 1**. In some cases the IRR exceeded 40%; the mode was 10-20%. Although the sample size was too small to do a statistical comparison of returns by regions, they do appear to be generally quite similar, with perhaps a slightly lower performance for plantations in Africa. As is the case with natural forest management, the returns from plantation forestry are variable, but in many cases do appear capable of meeting fund manager requirements.

UK Fund Manager Survey Results

General background information

Sample size: of the 108 investment institutions approached, 50 responded to the questionnaire, including 37 emerging markets funds, and 13 green/ethical funds. Some of the questionnaires were completed through telephone interviews (23 emerging markets, and nine green/ethical fund managers), while the remainder were completed independently and sent in by fund managers (or in one instance by a chief investment officer, and in another by a research analyst). The survey was conducted between June and August 1997. The software package used to analyze the questionnaire results was SPSS for Windows. Where not all fund managers responded to a question, the sample size is provided. In some cases, additional background information was obtained from the marketing departments of investment institutions. Tables are included in **Appendix Three**.

General characteristics of emerging markets funds: twenty-five of the 36 responding emerging markets fund managers managed money for unit trusts, 22 managed money for pension funds, and ten managed money for life (insurance) funds. Investment institutions represented by emerging markets funds (n=4) allocated, on average, 8.3% of their total assets to emerging markets. The value of emerging markets funds ranged from \$82.5m to \$343m, with an average size of \$98m (n=23).

General characteristics of green/ethical funds: eleven of the green/ethical representatives managed money for unit trusts, three managed money for pension funds, and two managed money for life funds. On average, the investment institutions represented by green/ethical funds (n=7) allocated 1.7% of their total assets to green/ethical

funds. The value of green/ethical funds ranged from \$7m to \$1.5bn, with an average size of \$170.6m. The majority of the green/ethical funds (n=8) did not invest in emerging markets.

Geographical profile of investments: 70% of emerging markets fund managers invest in global emerging markets, while 16% of the funds specialize in the Far East/south-east Asia, 8% specialize in Latin America, and 3% invest in Europe. Just over half of the green/ethical fund managers invest in the UK only, 15.4% invest in the UK, Europe, and North America, two fund managers (15.4%) invest on an international basis, and one each (7.7%) specializes in investing in global emerging markets, and Far East/south-east Asia. In total, 38.5% (n=5) of green/ethical fund managers invest in emerging markets.

Investment vehicles: listed equities comprise the main investment vehicle for both emerging markets funds (n=31), and green/ethical funds (n=11) (**Table 6**).

Approaches to investment management: most emerging markets funds (n=35) are actively managed; two are passively managed. All responding green/ethical funds (n=13) are actively managed.

Investment restrictions

Maximum size of investment holdings: on average, the maximum investment size in a company as a percentage of a fund's total capital was 7.1% for emerging markets funds (n=28), and 6.9% for green/ethical funds (n=10). Some fund managers noted the maximum size of an individual investment; for emerging markets fund managers this was, on average, \$16.9m (n=3); for one green/ethical fund manager this was \$4m (**Table 7**).

Minimum size of investment holdings: on average, the minimum investment size as a percentage of a fund's capital in an individual company by emerging markets fund managers (n=14) was 1.6%, and for green/ethical funds (n=1) this was 0.5%. In dollar terms, on average, the minimum size of an investment for emerging markets funds (n=9) was \$1.3m, and for green/ethical funds (n=5) was \$0.4m (**Table 7**).

Minimum market capitalization: in some cases, fund managers will only invest in companies which are above a minimum size. On average, emerging markets fund managers (n=15) require a minimum market capitalization of \$180m (range of \$10m to \$500m), while for green/ethical fund managers (n=6) this is \$33m (range of \$16.5m to \$50m) (**Table 7**).

Minimum required rates of return: minimum annual rates of return required by emerging markets fund managers (n=17) ranges from 10-50%, with a median value of 15%. The median requirement for a minimum rate of return for green/ethical fund managers (n=2) is 12.5%.

In terms of geographic variation amongst minimum required rates of return, on average, minimum required returns from investing in emerging markets ranges from highs of 19.3% (Colombia and Peru) to a low of 13.5% (Costa Rica). This compares with average minimum required returns of 10.5% for developed countries (USA, UK, and Sweden). Based on this small sample, the emerging markets "premium" required over developed countries ranges from 3-10%. One caveat to these results is, that even for those fund managers which provided a minimum return requirement, many stated that in practice they do not estimate a potential or expected return, but instead aim to pursue the best investment opportunities, based on, for example, earnings potential.

Investment experience in the forestry sector

Past investments in the forestry sector: the majority (70.6%) of emerging markets fund managers (n=34) had previously invested in forest products companies (mostly represented by pulp and paper companies) (**Table 8**), with 27.3% having invested in three or more companies. Only one green/ethical fund manager (n=13) had invested in forestry. Most of these investments had been in Brazil and Indonesia (34.8% of respondents in each case), and Chile and Canada (21.7% of respondents in each case) (**Table 9**).

Reasons for not investing in the forestry sector: emerging markets and green/ethical fund managers emphasized different reasons for never having invested in the forestry sector (**Table 10**). Emerging markets fund managers were primarily concerned with the cyclicity of the commodity prices of forest products, and corresponding unsustainable returns. Some respondents cited a poor understanding of the sector as a reason for never having invested, and a few said that they were not against the sector, but they had never come across an attractive investment opportunity. For green/ethical fund managers, the primary reason for never having invested in the

forest products sector was a lack of suitable (i.e., quoted or sufficiently liquid) certified/sustainable forestry companies. About one-third of green/ethical fund managers also specified low returns as a reason for not investing in this sector.

Reasons cited for investing in forest products companies: emerging markets fund managers' (n=17) main reason for having previously invested in the forestry sector was to benefit from expected good returns (76.5% of cases). Over one-third of fund managers also indicated that they also invested to take advantage of cyclical aspects of forest products prices (**Table 11**).

Reasons cited for disposing of forestry investments: The main reason given by emerging markets fund managers (three of eight respondents) for selling related to a downturn in the forest products price cycle (**Table 12**).

Geographical location of forestry investments: most of the investments in forest products companies by emerging markets fund managers (n=23) were in Brazil and Indonesia (34.8% of cases each), and Chile and Canada (21.7% of cases each). On average, investors received a return of approximately 32.5% for holdings over different periods.

Interest in investing in the forestry sector: eighty-five percent of emerging markets fund managers (n=33) said that they would be interested in investing in the forest products sector in the future. A similar percentage of green/ethical fund managers (n=13) indicated that they would be interested in investing in forestry, but for most of these, the companies would have to be certified, more liquid, and preferably based in the UK, Europe, or North America. Only one green/ethical fund manager ruled out investing in forestry in the future.

Geographic patterns of investment: almost all emerging markets fund managers are willing to invest in south-east Asia, while a little less than half (42.6%) will invest in Latin America. Least desirable regions for investing are Africa and the Pacific Islands, with 11.1% and 5.6% of fund managers willing to invest respectively. Within geographic regions there is variation in where fund managers are willing to invest: in Latin America, for example, 77.8% of fund managers would invest in Brazil, but only 3.7% would consider making an investment in Surinam (**Table 13**).

Forestry sector risk characteristics

Risks associated with investments in the forestry sector: cyclicity of commodity prices was ranked by both emerging markets and green/ethical fund managers as the most significant risk associated with investing in forest products companies (**Table 14**). Both types of fund managers also expressed concern over management quality, as well as over-capacity. Less commonly cited concerns included vulnerability to environmental regulations, macroeconomic factors (such as currency risk), and environmental factors (such as natural disasters and disease).

Impacts of certification on risks and returns: the consensus for both emerging markets and green/ethical fund managers was that a good rating on aspects of forest management as assessed by certification agencies would somewhat reduce investment risk (**Table 15**). However, overall, they would not accept a lower rate of return for certified forestry operations: sixty percent of emerging markets fund managers (n=30) and 90.9% of green/ethical fund managers (n=11) said that they would accept no change in the required minimum rate of return (**Table 16**). Three emerging markets fund managers would accept a lower return of about 3.5% (on average) from a certified forestry investment.

Demand for information on environmental and social aspects of investments: about half of emerging markets and green/ethical fund managers said that they thought that an independent environmental audit, social audit, and environmental rating system would be of some importance in making a decision about whether to invest in a forest products company (**Table 17**), though overall, these were all given importance ratings less than virtually all other sources of information used to make investment decisions (see question 2D in **Appendix Two**).

Client interest in environmental and social impacts of investments: on average, 5.6% of the clients of emerging markets fund managers (n=28), and 82% of the clients of green/ethical fund managers (n=11) have expressed an interest in the social and environmental impacts of their investments (**Table 18**). Despite the current low level of interest in environmental and social issues by investors in emerging markets funds, 59.4% of emerging markets fund managers (n=28), (and 91.7% (n=13) of green/ethical fund managers) think that investor interest in the social and environmental impacts of investments will grow in the future. Both types of fund managers believe that this will be driven mainly by media pressure, and by better education and availability of information.

DISCUSSION

The investor survey revealed that the majority of emerging markets fund managers had made forestry investments in the past (though not in certified companies), while almost without exception, green/ethical fund managers had not invested in this sector. Despite the different experiences, both groups had fairly similar perceptions of the sector, and both expressed interest in making future investments. We now apply the findings of the literature review and questionnaire surveys to the focal study questions to examine the extent to which sustainable forestry can meet the requirements of these two types of institutional portfolio investors.

(1) Do the financial returns from tropical sustainable forestry meet fund manager requirements?

Emerging markets fund managers said that they would require a minimum rate of return of 15% as a precondition for investing, slightly more than the response of green/ethical fund managers. This agrees quite well with the five year average return from emerging markets funds, at about 15% (Micropal ref). It is worth pointing out though that many fund managers said that they do not usually use absolute returns when making investment decisions, rather they simply choose investments with the highest earnings potential.

Ideally we would compare this requirement with the financial returns from operational sustainable forestry companies. However, as noted previously, respondents were generally either unwilling or unable to provide commercially sensitive financial information. As a result we must rely exclusively on the literature review. The returns documented in the literature review are generally in excess of the minimum rates of return required by fund managers, particularly in the case of natural forest management. However, it should be noted that there may be some problems using these studies as the basis to estimate returns for sustainable forestry. First, most of the studies are financial projections and simulation studies, not the documentation of returns from operational forestry companies. Second, the management systems used in these studies were designed to meet sustained timber yield objectives, but not necessarily to meet all of the other environmental and social criteria that are currently implied by the term "sustainable". As a result, the financial returns of these operations may be somewhat different than an operational certified company. Information from the survey of certified timber producers suggests that the costs of compliance with FSC certification may be on the order of 5-15%, but there may be the potential to offset at least some of these costs through better market access, and in a very few cases, price premiums for certified products.

The tentative conclusion here is that although much more work is needed in this area to better understand the financial performance of certified forestry companies, the preliminary information suggests that these management systems are, in some cases, capable of meeting the minimum rate of return requirements of fund managers.

(2) Are the risks associated with sustainable forestry investments acceptable to fund managers?

The next goal was to look to see whether there are less risks associated with investing in the sustainable forest products sector with other forestry investments, and to establish whether fund managers would be willing to accept a corresponding lower rate of return.

The survey of the investment community showed that the majority of emerging markets and green/ethical fund managers believe that FSC certification would somewhat reduce the investment risk of a forest products company. The rationale behind this response appears to be largely driven by the fact that they consider that by virtue of being certified, companies would be less susceptible to certain risks (legal action through failure to adhere to national environmental regulations, labor unrest or land use rights disputes with local communities, and the necessity of locating new productive forest areas once a plot has been exhausted). However, it appears that fund managers would not be willing to accept a lower rate of return for a lower level of risk. This is perhaps because the main risk fund managers identified with investing in forestry – cyclicity of commodity prices – is not addressed by third party certification.

The lack of established, listed, certified forestry companies meant that it was not possible to derive any quantitative measure of risk (i.e. beta coefficients) for them. Moreover, there is little evidence in the literature documenting whether risks associated with forestry are affected by the adoption of sustainable forest management systems. The results of the certified forest products producers survey, however, do suggest that some certified companies receive preferential market access and price premiums. Therefore, it could be speculated that these companies occupy a niche market, and so be less susceptible to the swings in commodity prices which tend to characterize the forest products sector in general. One might speculate that this factor would render these companies more

attractive investment prospects, considering that fund managers view cyclicity as a major risk associated with investing in the forest products sector. More research is needed to test this hypothesis.

(3) Do sustainable forestry companies need to be publicly listed to attract institutional portfolio investors?

The most commonly used investment vehicle for both emerging markets and green/ethical funds are listed equities. This suggests that while not strictly necessary, sustainable forestry companies would attract more investment from institutional portfolio investors if they were publicly listed. **Table 19** shows whether the developing countries which have certified/sustainable forestry operations have stock exchanges, and **Table 20** shows some listing requirements for some of these.

(4) Are there further investment requirements?

The next issue is whether there are additional requirements with respect to market capitalization in excess of those that enable a company to become publicly listed. For example, for full listing in the United Kingdom, a company must be capitalized at a minimum of £700,000. However, this still may not be large enough to attract substantial amounts of investment if fund managers restrict their investments to larger companies. The fund manager survey showed that they do, in fact, prefer to invest in companies that are considerably larger than the minimum requirements for listing. On average, emerging markets fund managers require a minimum market capitalization of \$180m to invest in a company, while green/ethical funds have a lower average requirement of \$33.1m. Unfortunately the survey of existing certified timber producers revealed little about market capitalization. However, these capitalization requirements are quite large in relation to existing forestry operations, and it seems unlikely that many single companies on their own are large enough to meet these.

(5) Are there certain geographical regions where investors are most likely to invest?

The final issue considered was whether there are certain geographical regions where fund managers prefer to invest, or others that they will avoid entirely. Clearly, if investors will not invest in a region independent of how high the financial returns are, sustainable forestry companies will have little hope of attracting necessary capital. The fund manager survey revealed large variation in terms of where fund managers are willing to invest. The most popular investment destination for emerging markets fund managers was south-east Asia, and the least popular were the Pacific Islands and Africa. Green/ethical fund managers were generally less likely to invest in emerging markets. Clearly the location of sustainable forest products companies can have a large bearing on their ability to attract portfolio investors.

CONCLUDING REMARKS

In summary, it would appear that the financial returns and levels of risk that typify sustainable forestry businesses in the tropics are likely to meet or exceed fund manager requirements, though it would be desirable to have some more operational examples of this type to reinforce these conclusions, particularly in the case of natural forest management. The most serious impediment to attracting larger investment flows from institutional portfolio investors is the lack of large, publicly listed forest products companies, and in the case of green/ethical funds, companies that are certified as well. Fund managers are interested in ensuring maximum liquidity of their investments, and to achieve this they need to buy small percentages of large, publicly quoted companies. Most existing certified timber companies are not large enough, and are not listed on stock exchanges, and are therefore unavailable for portfolio investment. Finally, the location of forest products companies will have a large bearing on their ability to attract investment.

It is proposed that one solution to overcoming the current small size and unlisted status of certified forestry companies would be through the formation of forestry funds. Such funds would take on the ownership of many smaller companies, becoming themselves large enough to meet fund manager investment criteria. There are already at least two of these funds being put together. An added advantage of these types of funds, would be that they could invest in countries in which fund managers may be unable or unwilling to invest (either because they are not within a fund's remit, or because the country in question does not have a stock exchange) but because the forestry funds are listed on a stock exchange in the UK or Europe, they would be available for investing in by green/ethical funds.

ⁱ March 1997, World Equity, p.30-1 "Pension funds forced to tighten up by new law - this article discusses funds changing (narrowing) attitudes to risk somewhat).

ⁱⁱ Beta coefficient: The price movement of a security measured against the overall stock market. The bigger the beta coefficient of a security, the greater its volatility. Beta is used in the Capital Asset Pricing Model (CAPM) which is a mathematical model used in portfolio theory, in which the expected rate of return (E) on an investment is expressed in terms of the expected rate of return (r_m) on the market portfolio and the beta coefficient (β). $E = r + \beta(r_m - R)$.

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APPENDIX THREE : TABLES

Table 1: FSC certified forestry operations (as of 24 March 1997) and the number participating in this study.

Region	No. of operations	No. included in survey	Total certified area (ha)	% of global certified forest	Median forest area	Min. forest area	Max. forest area
Pacific Islands	14	1	16,796	0.58	200	30.00	12,500
N. America	12	3	620,906	21.30	4,179	3.60	364,000
UK/Europe	11	4	1,928,142	66.16	254	0.20	635,000
C. S. America	7	1	252,040	8.65	25,000	1734.00	86,215
Africa	6	2	83,632	2.87	2,979	300.00	51,922
Asia	4	1	12,977	0.45	3,625	251.00	5,476

Table 2: Ownership type of certified forestry companies participating in the study.

Type of ownership	Number (n=15)
Private	5
Subsidiary	4
Charitable trust	3
Over-the-counter	1
Publicly listed	1
Community owned	1

Table 3: Management characteristics of natural forest management studies.

	n	Average	Minimum	Maximum
Size of concession (ha)	18	50,000	800	150,000
Standing volume of forest (m ³ /ha)	22	82	28	250
Number of species harvested		18	1	60
Harvest rate (m ³ /ha)	28	29	3	240
Re-entry period (years)	27	31	5	100
Growth rate (m ³ /ha/yr)	19	2.4	0.4	7.0
Reduction of primary forest biomass	5	50%	4%	73%
Presence of protected areas (proportion of studies)		19%		

Table 4: Internal Rates of Return from tropical natural forest management projects.

Source	Country	Minimum IRR*	NPV/ha (1996 US\$)	IRR
Barreto, P. In press.	Brazil	20%	430	
Barros, A.C. and Uhl, C. 1995	Brazil			54%
Howard, A.F. et. al. 1996	Bolivia	25%	92	
Howard, A.F. et. al. 1996	Bolivia	25%	121	
Howard, A.F. et. al. 1996	Bolivia	25%	195	
Howard, A.F. et. al. 1996	Bolivia	25%	304	
Rice and Howard unpubl.	Bolivia			10-65%
Kishor, N.M. , Constantino, L. F. 1993	Costa Rica	35%	1,078	

*Highest discount rate given with NPV>0. [Nb: still another 1/2 dozen or so to add on].

Table 5: General management characteristics of plantation studies in database.

	n	Average	Minimum	Maximum
Size of plantation (ha)	9	10,500	10	37,300
Volume of plantation at harvest (m3/ha)	27	319	64	703
Harvest rate (m3/ha)	23	308	22	703
Reentry period (years)	35	25	5	80
Growth rate (m3/ha/yr)	24	15	4	27
Additional silvicultural treatments (% of studies)	37	49%	-	-

Table 6: Investment restrictions.

	Emerging markets					Green/ethical				
	n	med	mean	min	max	n	med	mean	min	max
Min. holding (% of fund's capital)	14	0.8	1.6	0.1	5	1	0.5	-	-	-
Min. holding (\$million)	9	0.2	1.3	0.01	10	5	0.4	0.4	0.2	0.7
Max. holding (% of fund's capital)	28	5	7.1	1.5	10	10	7.5	6.9	2	10
Max. holding (\$million)	3	5.5	19.2	2	50	1	4	-	-	-
Min. market capitalization (\$million)	15	100	180	10	500	6	33	33.1	16.5	50

Table 7: Frequency of past forestry investments.

No. of past forestry investments	Emerging markets	Green/ethical
0	10	12
1	9	1
2	4	0
3	7	0
4 or more	2	0

Table 8: Countries where have invested in forest products companies.

Country	Count
Brazil	8
Indonesia	8
Chile	5
Canada	5
Malaysia	3
New Zealand	3
Mexico	1
Venezuela	1
Portugal	1
Sweden	1
Latin America	1

Table 9: Reasons for not investing in forestry

Reasons	Emerging markets (n=6)	Green/ethical (n=11)
Shortage of opportunities (small, illiquid, not quoted or marketable)	8	1
Low returns	4	1
Lack of sustainable forest products companies	4	-
Don't invest in emerging markets	3	-
Cyclical and sustainability of returns	2	4
Lack of sector understanding/ information/valuation problems	2	2
No opinion	2	2
High risk sector	2	1

Table 10: Reasons for investing in forest product companies (n=17 emerging markets fund managers).

Reason for investing	Number of times cited
Expected good returns	13
Cycle turning up/cycle timing	6
Likes (fundamentals of) sector	2
Good company fundamentals	2
Owns land	1

Table 11: Reasons for disposing of forestry investments (n=8 emerging markets fund managers)

Reason for selling	Number of times cited
Cycle turning down/cycle timing	3
No more share price upside	2
Disappointing returns / underperformed market	2
Poor management	2
Too much debt	1
Looked expensive	1
Did not like sector	1
Concern about transfer pricing	1
Still hold	2

Table 12: Investor willingness to invest in selected countries.

Region	Country	Would invest/consider investing (%)	
		Emerging markets (n=27)	Green/ethical (n=13)
South east Asia	<i>Malaysia</i>	100.0	15.4
	<i>Indonesia</i>	92.6	-
Pacific Islands	<i>Solomon Islands</i>	3.7	-
	<i>PNG</i>	7.4	-
Latin America	<i>Brazil</i>	77.8	-
	<i>Bolivia</i>	33.3	-
	<i>Surinam</i>	7.4	-
	<i>Colombia</i>	59.3	-
	<i>Costa Rica</i>	18.5	-
	<i>Peru</i>	74.1	-
Africa	<i>Nigeria</i>	11.1	-
	<i>Cote d'Ivoire</i>	22.2	-
	<i>Gabon</i>	11.1	-
North America	<i>USA</i>	90.1	30.8
Europe	<i>UK</i>	59.3	69.2
	<i>Sweden</i>	70.6	38.5

Table 13: Risks relating to investments in the forest products sector

Risk Factor	No. of times cited	
	Emerging markets (n=30)	Green/ethical (n=11)
Cyclicality of commodity prices	7	20
Quality of management	3	11
Over capacity - supply/demand	3	7
Macroeconomic factors	3	6
Currency depreciation/exchange rates	2	4
Political factors	2	2
Environmental laws	1	5
Weather/climate/disease/quality of location	1	5
Growing time for trees	1	1
Limits to land ownership	1	1
No reforestation	1	1
Land ownership	0	2
Over leverage	0	2
Too much capital expenditure	0	2
Business risk	0	1
Lack of forest products companies to compare	0	1
Cost of production	0	1
Insufficient downstream integration	0	1
Labour considerations	0	1
None specific to forest products companies	0	1

Table 14: Impacts of certification on the investment risk of forest products companies.

Environmental/social impact	Impact on risk	Emerging markets (n=26)	Green/ ethical (n=8)
Environmental impacts	<i>increase</i>	1	1
	<i>decrease</i>	20	5
	<i>don't know</i>	0	1
	<i>no change</i>	5	1
Sustainability of harvest	<i>increase</i>	3	0
	<i>decrease</i>	10	2
	<i>don't know</i>	0	3
	<i>no change</i>	11	3
Non-timber forest products	<i>increase</i>	1	0
	<i>decrease</i>	17	3
	<i>don't know</i>	1	1
	<i>no change</i>	6	4
Good labour relations	<i>increase</i>	2	0
	<i>decrease</i>	16	2
	<i>don't know</i>	1	2
	<i>no change</i>	7	4
Local community/indigenous relations	<i>increase</i>	1	0
	<i>decrease</i>	17	3
	<i>no change</i>	8	3
Written management plan	<i>decrease</i>	18	4
	<i>don't know</i>	1	0
	<i>no change</i>	7	3

Table 15: Impact on minimum rate of return required for a certified company.

Change in required minimum return	Emerging markets (n=30)	Green/ethical (n=11)
No change	18	10
Accept lower return	10	1
Require higher return	0	0
Don't know	2	0

Table 16: If fund managers consider additional environmental and social information to be of importance.

Type of information	% of fund managers which consider information of some importance	
	Emerging markets (n=21)	Green/ethical (n=13)
Environmental audit	50	80
Social audit	38.1	66.7
Environmental rating system	57.1	66.7

Table 17: Client interest in the environmental and social impacts of investments.

Perception	Emerging Markets (n=28)	Green/ethical (n=12)
% clients expressing interest in social and environmental impacts of investments	5.6%	81.5%
If think interest will increase in near future	64.3%	91.7%

Table 18: Stock market presence

Country	Has stock market?
Malaysia	Y
Indonesia	Y
Solomon Islands	N
PNG	N
Brazil	Y
Bolivia	Y
Surinam	N
Colombia	Y
Costa Rica	Y
Peru	Y
Nigeria	Y
Cote d'Ivoire	Y
Gabon	N

Table 19: Selected emerging stock market listing requirements

Country	Market capitalisation of paid-up capital	Min. total value of assets	Number of shares to be listed	Minimum number of total shareholders	Minimum percent of shares in public hands	Number of years company established & in operation	Number of years company has made operational and net profits	Aggregate after-tax profit over 3 years
Malaysia (Main Board)	RM 50m	-	-	500	25%;	5	3	RM25 m
Malaysia (Second Board)	Min: RM10m; Max: RM50m	-	-	500	25%	5	3	RM25m
Indonesia	Rp4bn	Rp20bn	1,000,000	200	-	3	2	-
Brazil	-	-	-	-	-	3	-	-
Peru	-	-	-	-	-	2	-	-

N.b. Where there is no information provided (-), this means there is no requirement for that category.

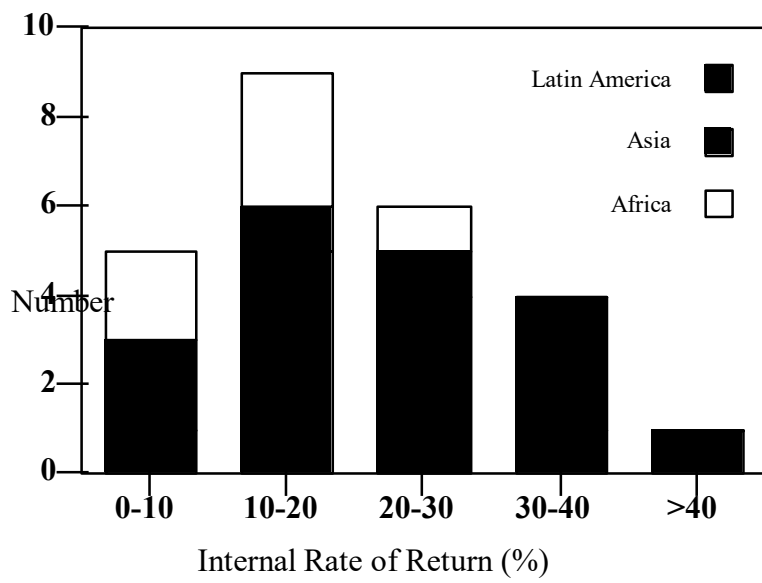


Figure 1: Internal rates of return from tropical plantation projects in database.