

Opportunities for Investment

Capital Markets and Sustainable Forestry

A Report for the John D. and Catherine T MacArthur Foundation

By

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with

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How to Use This Report

This report provides a broad overview of the opportunities for investment in the growing sector of sustainable forestry. It is intended for many audiences:

- Investors with little experience in the forest industry.
- Investors with much experience in the forest industry.
- Investors. from across the capital spectrum:
 - Philanthropic grant makers
 - Foundation treasurers and trustees
 - Investment fund managers, other institutional investors and investment advisers
 - Family office managers
 - Individual investors
 - Policy-makers and public agency personnel
 - Development institutions
- Anyone interested in the capital issues and opportunities within sustainable forestry

In this report, we frame the differences in the business models of conventional forestry and sustainable forestry. We cover the sustainable forestry sector "from the forest to the floor," along its value chain of business enterprises.

We consider the varying situation in tropical, temperate and, to some degree, boreal forests. We endeavor to give a global perspective, while grounding the report in specific examples of business opportunities from a variety of countries. Finally, we lay out a strategy for scaling up the sector to a higher level of commercial success, including opportunities for investment from the three main capital pools: private, public and philanthropic.

Therefore, the scope of this report and its potential readership is considerable. However, not everyone will need to read every section, depending on your level of familiarity with forestry and capital markets. While the full report provides the most complete picture, feel free to select from within the report for the information most relevant to your interests.

We strongly recommend to those who cannot invest the time in reading the full report to read the opening Summary of Findings and closing Strategic Investments in Sustainable Forestry.

For readers with an interest in learning in more detail about the commercial potential of sustainable forestry, we suggest you be sure to read Section III: Understanding the Sustainable Forestry Business Model and Section VI: Sources of Return: The Spectrum of Forest Products.

CONTENTS

| | |
|---|-----------|
| <i>Figures and Tables</i> | i |
| <i>Preface</i> | iii |
| <i>Prologue</i> | vii |
| I. Summary of Findings | 1 |
| II. Introduction | 5 |
| III. Understanding the Sustainable Forestry Business Model | 7 |
| A. Sustainable Forestry in Context | 7 |
| B. Comparing the Sustainable and Conventional Forestry Business Models | 10 |
| IV. An Overview of Forestland Investment | 17 |
| A. Forestland as an Asset Class | 17 |
| B. Global Forest Distribution, Production and Ownership Patterns | 19 |
| C. Forestland Ownership and Trends | 21 |
| V. Sources of Capital: Forestry Investors and Investment vehicles | 29 |
| A. Overview of Sources of Capital | 29 |
| B. Forms of Forestland Equity | 32 |
| C. Trends in Forestland Investment Capital Organization and Implications for Sustainable Management | 33 |
| VI. Sources of Return: The Spectrum of Forest Products | 35 |
| A. Timber-related Returns | 35 |
| B. Additional Sources of Return | 35 |
| VII. Strategic Investments in Sustainable Forestry | 47 |
| A. The Forest Products Value Chain | 47 |
| B. A Strategy for Investment | 47 |
| C. The Potential of Sustainable Forestry Funds | 63 |
| D. Conclusion | 65 |
| Bibliography | 67 |
| About the Authors and Contributors | 71 |
| Appendix | 73 |

Glossary

79

Figures and Tables

| | | |
|------------|---|----|
| Figure 1: | Capital Sources within the Business Cycle | 6 |
| Figure 2: | Basic Capital Types by Relative Volumes | 6 |
| Figure 3: | Global Softwood Harvests Compared with World Population Growth | 7 |
| Figure 4: | Global Softwood Supply and Demand 1996-2020 | 8 |
| Figure 5: | The Continuum of Forest Management: Comparing Sustainable and Conventional Forestry | 9 |
| Figure 6: | Stages in Forest Management | 10 |
| Figure 7: | Generalized Comparison of Returns | 15 |
| Figure 8: | Stumpage Value of U.S. Northwest Species (1959-1997) | 18 |
| Figure 9: | Forestland is Negatively Correlated with Stocks (1965-1994) | 18 |
| Figure 10: | Comparative Risk>Returns of Different Financial Assets | 18 |
| Figure 11: | Countries with Largest Percentage of World Forest Area | 19 |
| Figure 12: | Top 20 Producers of Industrial Roundwood | 19 |
| Figure 13: | Supply of Industrial Roundwood from Natural and Plantation Forests (1995) | 20 |
| Figure 14: | U.S. Commercial Forestland Ownership by Acres | 22 |
| Figure 15: | U.S. Commercial Forestland Ownership by Market Value | 22 |
| Figure 16: | U.S. Commercial Forestland Value by Region | 22 |
| Figure 17: | U.S. Forestland Productivity by Region | 23 |
| Figure 18: | Forestry Investment Capital Pyramid | 47 |
| Figure 19: | Forest Products Value Chain and Sustainable Forestry Investment Needs | 48 |
| Table 1: | Top 5 Countries: Wood Production and Forest Area | 20 |
| Table 2: | Share of Wood Production from Plantations among Countries with Significant Plantation Estates | 20 |
| Table 3: | Profile of U.S. Private Forestland Ownership | 21 |
| Table 4: | Strategic Investments in Sustainable Forestry | 49 |

PREFACE**EXPANDING ACCESS TO CAPITAL MARKETS FOR SUSTAINABLE FORESTRY**

By Michael Jenkins,
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The John D. and Catherine T. MacArthur Foundation
Executive Director, Forest Trends

The MacArthur Foundation has had a long-standing interest in sustainable forestry as a strategy for halting the loss of forest cover in the tropics, where much of the world's biological diversity is concentrated. Since 1985, we have been actively making grants to support sustainable forestry projects from Peru to Papua New Guinea. It has become apparent from our experience that grant-making can only go so far in reversing the

trends of deforestation. Those who have the greatest-and potentially the most positive-influence on the global forest estate are private sector businesses and their investors.

The global forest products industry represents close to 3% of the world's gross economic output and the forests upon which it depends are particularly important ecosystems for the health of the planet and for human well-being. The size of the industry, its links to the rest of the world economy, and the centrality of its resource base to environmental sustainability make it an industry subject to intense controversy and growing public and regulatory scrutiny.

Dramatic change is underway in the forests products industry. For most of its history, the industry has consisted largely of companies oriented toward the rapid harvesting of standing native forests. Yet this practice clearly cannot last: at current rates of cutting, only a tiny remnant of original native forests will remain intact by the middle of the next century. At the same time, demand for wood products is expected to keep growing, driven by population increase and economic development. This increasing scarcity of natural forests is a concern for both the forest products industry and for the rest of us who depend upon the array of services forests provide. Humid tropical forests alone harbor at least half of the world's terrestrial species, provide plant-derived pharmaceuticals that are worth more than \$40 billion per year, represent a huge carbon sink, and directly support around 400 million people. For some, the forest is their home, a source of culture, knowledge, and livelihood; others receive aesthetic and recreational benefits from forests. For all of us, the forest provides local and global ecosystem services, such as clean water, protection from floods, and climate stability.

The forestry sector offers an unusual opportunity to demonstrate just how strongly commercial interests (the marketplace) and conservation objectives (the public good) can be aligned. The challenges to the industry have led to a wave of experimentation around the globe. Over the past decade, a small but growing number of companies in the forest products sector have emerged as innovators in the movement toward what is being called "sustainable forestry". Low-impact forestry methods, local community involvement, forest management certification, green buyers' groups, and affirmative government procurement programs have all emerged over the past decade. The concept-that managing forests for multiple uses within the bounds of ecological limits makes solid economic sense in both the short and long term-is gaining momentum. In addition to environmentalists and academics, a growing number of investors, both institutional and individual are recognizing the merits of this approach.

Yet there remain critical gaps in moving these experiments and this interest from marginal or niche status to large-scale mainstream activity. Clearly, one of the largest and least-addressed obstacles constraining the expansion of the sustainable forestry sector worldwide is the nascent industry's lack of integration into the capital markets and, consequently, its poor access to mainstream private capital. This is a particularly critical issue given the extent to which private capital flows to developing countries are rapidly outpacing public sector financing such as overseas development assistance (from 1985 to 1995, private capital flows grew from US \$25 billion to \$170 billion). Institutional investors such as pension funds, mutual funds, and insurance companies represent a growing proportion of these flows and are now the largest type of private capital investing in emerging markets.

The impact of the capital markets lies in the influence it has over companies' investment and management decisions. The capital markets send strong signals through ongoing valuation of companies and through the pricing of new capital companies need, as well as directly through investors' use of their rights as shareholders and owners.

In an attempt to better understand the linkage between capital markets and the emerging sustainable forestry sector, the MacArthur Foundation undertook a series of linked research projects over the last two years.

The first of these studies was a major survey of investors to gain a clearer picture of the perceived and real obstacles and opportunities for attracting major capital investments into this emerging sector. Donald J. Hoffman, an investor with longtime experience in the forestry sector, was hired as a consultant. A small advisory group from the international forestry industry was formed, representing additional experience and a variety of international perspectives. Over the course of 12 months, more than 100 interviews were conducted with a broad array of appropriate investor types, including family offices representing high net worth individuals; public sector investors; insurance companies that have major timber investments; the reinsurance firms that are increasingly sensitive to climate change effects; pension funds; investment banks; university and philanthropic endowment funds; and energy companies that are exploring carbon sequestration options.

We asked about rates of return, risk, and market capitalization as well as geographic preferences, investment structure preferences, their response to sustainability, and certification.

We traveled to Northern Europe to understand why the investors there seemed so much more interested in

green or environment issues. The major findings of this inventory are integrated throughout this report.

The second major element was a survey of the universe of sustainable forestry deals. With the assistance of Abraham Guillen, we undertook research to describe the profile of more than two dozen investment opportunities in Brazil and Bolivia that could suit a diversified forest investment portfolio. The survey compiled general information about each company, including size, structure, products, markets, and return on investment.

The survey results were published as "Strategic Investments in Sustainable Forestry." The intent of this piece of research was to provide us a clearer view of the opportunities and needs of the emerging businesses around sustainable forestry. While a quick inventory of conventional channels for forestry deals yielded few prospects, "beating the bushes" in these two countries exposed numerous opportunities that investors were not aware of.

This final report is a synthesis, an attempt to marry these two sets of information—investor interest with companies' needs—while setting the context with a full analysis of this emerging investment sector. It lays out opportunities utilizing different kinds of "catalytic capital" pools and instruments drawing from philanthropic, public, and private sources. It suggests opportunities for financial engineering, matching and bundling investor types with investment opportunities—within existing financial instruments and by creating new financial instruments.

Our findings closely complement work that is underway by other groups, including the report for the United Nations Development Program by Indufor and Ecosecuritas, and the recent World Wildlife Fund report, "Investing in Tomorrow's Forests." As a group, they all point to the financial opportunities that are alternative to destructive "mining" forest practices that have been widespread.

PROLOGUE

AN INVESTOR'S PERSPECTIVE

*By John Earhart, Managing Partner
Global Environment Fund*

Sustainable forestry is a bit like the weather, everyone is talking about it, but no one is doing much to effect it. This is especially true in nations characterized as "emerging economies" where the percentage of native forests under any type of sustainable forestry management regime is negligible and the rampant destruction of biologically rich native timberlands continues unabated. Although there appears to be a great deal of political interest in supporting the development of the business of sustainable forestry, there is little evidence of progress. To date, very little capital, public or private, has been directed to sustainable forestry activities in developing nations, and, relatively speaking, not a lot in the developed world either. The first studies on the subject, more than ten years ago, found that less than 1% of tropical forests could be classified as sustainably managed. Since then, given the enormity of the problem, the amount of additional capital invested into such opportunities has been relatively insignificant.

On the other hand, timberland as an investment asset class and generator of capital in "developed economies" has been explosive. The price of timberlands in North America, Western Europe and New Zealand is at all time highs. Several forest products companies have chosen this recent bull market in timberlands to monetize company forests, using the proceeds for consolidation. Billions of dollars have been invested in timberland acquisition, plantation development, corporate merger/acquisition and forest management in recent years as the sector becomes recognized as a low risk/high return investment strategy. Mainstream institutional investors now see this asset class as a safe harbor to hedge against inflation and cyclical economies and are allocating large sums of long-term investment capital to acquire timberland assets. All this is being driven by the sense that demand for wood products will continue and the relatively safe supplies of raw material are becoming more and more constrained.

This certainly begs the question as to why this same level of financial euphoria has not been directed at forest lands and timber companies in emerging markets? These nations will witness enormous economic growth during the next fifty years and become major consumers of wood products, adding considerably to worldwide demand. Furthermore, they house more than half of the world's forests, have production costs significantly less than their temperate neighbors and possess the potential for biological growth rates well above those found in the temperate zones of developed nations. Yet these countries have received very little investment into the forestry sector, even from conventional sources unconcerned about "sustainability" per se.

When put in the context of the recent phenomenon of free market development, trade liberalization and the privatization of state-owned assets occurring in many tropical nations, it is surprising that the forest products sector hasn't participated more in this mobilization of capital. Virtually every multinational energy, water and communication company in the world has looked to the emerging markets as a source of future earnings growth; yet except for a few isolated cases, the forest products industry has not participated in this wholesale transfer of assets. Are the "perceived" risks to the investor too great given the "perceived" rewards? Is there even a basis for analysis?

In those cases where capital has flowed to emerging markets, it has generally gone to replicate the "temperate" model of plantations with fast growing, softwood species for commodity products, rather than the sustainable management of native hardwood stands. (In the temperate northern hemisphere, the primary forests have already been converted and plantations or semi-natural secondary forests dominate commercial wood production, with its own impacts on biodiversity).

This kind of forest investment in emerging economies brings with it a number of environmental implications since the management of natural tropical forests has been promoted as a pro-active strategy for maintaining standing forests, ergo biodiversity, while extracting economic benefits to prevent conversion. Are native forests being deforested to make way for more efficient exotic-tree plantations, with the attendant loss of biodiversity? Does the absence of natural forest management suggest that these forests will eventually be converted to alternate land-use practices such as agriculture, thereby significantly reducing ecosystem biodiversity?

This report attempts to answer the question of why, with the considerable worldwide interest in the forestry sector, there has been so little capital directed to sustainable forestry activities. It describes some of the barriers to capital flow and suggests mechanisms for catalyzing investment in private sustainable forestry endeavors.

In developing this analysis, we have made several assumptions about the global economy and the role of wood products within it:

- World human population will continue to grow, nearly doubling by the year 2050;
- The majority of this population growth will occur in the so-called developing nations, which essentially overlay with the emerging market economies;
- Per capita GDP will also increase during this 50-year period, with particularly strong growth found in these same emerging markets;
- Wood will continue to be the raw material of choice for several societal needs including fuel for cooking and heating, construction material for commodity housing products, value-added items, and paper and packaging materials;
- The combination of total population growth and per capita GDP increases will drive the demand for forest products increasingly higher. This will continue to place enormous pressure on forest resources leading to mis-management or outright conversion to other land uses unless economically viable silvicultural regimes are implemented;
- Raw material supplies for industrial wood products will come increasingly from developing nations that currently hold a majority of the world's forest resources;
- Public financial support for sustainable forestry activities is small relative to the scale of the issues and will decline over time, so mechanisms will need to be put in place to attract private capital;
- Concerns about the environment, including biodiversity conservation, global warming, and watershed quality, will continue to grow, particularly in temperate nations. This will increase pressure to limit forest exploitation in certain regions of the world. Furthermore, management practices will be scrutinized and consumer demand for environmentally sound wood products will grow rapidly.

Although any one of these assumptions can be challenged, there are over-whelming amounts of data supporting these conclusions. Indeed, many multinational corporations and public sector development assistance agencies have based long-range strategic planning on these circumstances occurring.

Between the years 1960 and 1995 world population more than doubled. It is estimated that from its current base of 5.8 billion, human numbers will grow to 7.1 billion by the year 2010 and could reach 10 billion by 2050. The bulk of that growth will come from nations that are considered to be in a developing economic mode. In absolute terms, this will be a major driver of demand for natural resources such as food, water and fiber, putting both direct and indirect pressure on forested areas in these countries.

During this same 1960-1995 period, world GDP grew in real terms by 350 percent. This included grain production growth of 200%, fuelwood harvesting and use up by 250%, sawtimber manufacturing increasing by 300%, and pulp and paper consumption growing by 300 percent. Per capita GDP has grown at a similar pace and has been particularly strong in emerging markets (350% emerging vs. 85% developed economics). FAO has concluded that a greater number of countries are demonstrating GDP per capita expansion and together with this rapid population growth suggests that:

"The combined impact of economic growth and increasing population size on demand for forest products is likely to be significant, particularly so since per capita consumption of industrial forest products is especially responsive to income change at low levels."

FAO State of the World's Forest 1997.

In addition to the direct impact this will have on tropical forests, the need to satisfy food demand will also put pressure on standing timber. Again, FAO estimates that an additional 90 million hectares of tropical forests will be converted to agricultural use by 2010 to keep pace with rising demand for food. Like demand for forest products, demand for food will increase by 1.8% per annum during the foreseeable future.

The scenario goes something like this:

- + Growing human populations in emerging markets,
- + Increasing economic activity and disposable income,
- + Declining wood supplies in historically key producing countries-Indonesia, Malaysia, Russia-due to over-cutting and economic uncertainty,
- + Growing land conversion pressures to supply agricultural demand,
- + Reduced supply availability due to environmental concerns,
- + Chain of custody demand and forest practices scrutiny,

= Significant medium term pressure on the world's forests and longer-term supply constraints.

So where will the wood come from? Studies indicate that in the near term, supply will more or less equal demand, but this will give way to significant supply constraints, particularly in the softwood commodity product area, in the year 2020. This will be driven by a shift toward greater consumption of industrial wood products as economic wealth redirects product demand. How will this shift effect forested regions in emerging markets' Currently, although developing nations house more than 60% of the world's forests, their role in industrial wood production is small, representing only 11% of world trade in forest products. Of the seven largest forested nations, five are developing countries, but only one, Indonesia, is an actor on the -world stage of timber trade. This should change with time.

As good supplies grow at a pace of 1.2%-1.7% per annum during the next 30-35 years, the bulk of the increase will come from both hardwood and softwood plantations in the tropics, particularly Latin America and Asia. Whereas today about 15% of the world's wood production is derived from plantation forests, by 2030 the number will be closer to 37% of total. Because of favorable growing conditions and lower production costs, most of these gains will come from tropical nations.

Another area of supply concern will be in the sawtimber product area. In spite of gains made in engineered lumber and other lower cost substitute products, demand for high quality veneers and lumber, along with value-added products such as furniture, doors, flooring, decking, etc., will continue to grow. With declining inventories and increasing harvest restrictions in North America, and significant forest depletion in Asia. the industry will necessarily move into the last great native hardwood forests of Latin America and Africa. The question is, will these same forests be managed on a long-term sustainable basis or will they go the way of the Asian forests?

What will the mechanisms be to ensure that the remaining forests of the developing world are managed in a sustainable way? Who will make capital investments in restoring native biodiversity and older age forests in the developed world? How is private capital that is both patient with returns and enlightened towards management regimes attracted to the sector? Are these concepts considered mutually exclusive? Is there no capital because there are no good deals, or are there no good deals due to a lack of capital? Are the deals too small or too illiquid to attract significant investment? What about the relative roles and capacities of international and in-country investment groups? Will the investment community be open to the efforts of governments of emerging markets nations to privatize or secure long-term tenure of forest resources, as they have in other sectors such as energy and communications? These are questions that cannot be fully resolved in any report, but will ultimately be answered in the market place.

Perhaps what is needed most are sustainable forestry success stories with attractive risk adjusted returns to attract larger pools of investment capital. Creating those much needed successes, ultimately, may require innovative sources of funding to prime the pump, thereby catalyzing the growth of the sustainable forestry sector and attracting a wider range of capital sources.

Forests are being simplified, fragmented and lost around the world at an alarming rate. The liquidation value of forests is high, creating a strong economic incentive for conversion. Further, financial markets reward short-term returns more than long-term ones. There is little in the economic status quo to encourage natural forest stewardship and the Protection of biological diversity. Without strengthening and expanding the commercial success of sustainable forestry, it is unlikely the tide will be turned in the momentum of loss of primary forests and degradation of natural forests generally.

Sustainable forestry represents a new way looking at forests and forest management. Its approach seeks to protect and enhance the forest ecosystem, while profitably deriving goods and services that meet human needs. Sustainable forestry draws on the latest scientific knowledge of forest ecosystem dynamics and management, as well as an understanding of the spectrum of marketable forest products, including but not limited to wood. Sustainable forestry works with the complex—and sometime, chaotic—natural systems of forests rather than seeking to simplify them into a mechanical model. The sustainable forestry sector seeks to replicate the ecology of the forest in its own operations, emphasizing diversity, interconnectedness, feed-back, adaptation and continuous improvement. This business model is to the conventional forestry business model what the information economy is to the industrial economy.

As *The Wall Street Journal* columnist Tom Petzinger, Jr. wrote in his book, *The New Pioneers*, "Until recently, business people saw their worlds through the Industrial Age metaphor of the machine and built their organizations accordingly. Now, in irreversibly increasing numbers, they see business as more of a living system." Ironically, for a sector built on the outputs of natural ecosystems, forestry is only now embarking on its own version of this widespread revolution in management.

The widening application of sustainable forestry holds great promise for the protection and improvement of biological diversity, fish and wildlife habitat, water supplies, carbon sequestration, recreation and forest-dependent communities around the globe. Combined with conservation of whole forest landscapes—embracing primary forests set aside from timber production extensively managed secondary forests and more intensively managed plantations in previously deforested areas—sustainable forestry could provide the resolution to the on standing conflicts between commodity production and resource protection.

Sustainable forestry emphasizes building and maintaining forest assets on the ground. Thereby some near-term income is foregone in favor of long-term capital appreciation. Analyses suggest that the incremental difference in financial returns between the conventional and sustainable forestry business models could be made up by revenue generated through the marketing of value-added wood products, non-timber forest products, recreational opportunities, provision of clean water, long-term storage of atmospheric carbon and the sheer conservation value of forests. As this is still a new approach in a wide commercial context, the data is more qualitative than quantitative.

There are a growing number of initiatives in the private and public sectors to implement sustainable forestry practices and expand the market for sustainable forest products. While the sector as a whole is young, commercial opportunities exist and are increasing all along the forest products value chain. Timely, strategic investment could strongly catalyze the sector's growth.

To be profitable and competitive with conventional forestry operations, expanded and better organized markets are needed for the diverse wood products, non-timber products and ecosystem services derived from sustainably managed forests.

To achieve wide-scale application, sustainable forestry requires successful examples of profitable and effective

operations at various scales, in major timber-producing and consuming countries. The sector as a whole will gain momentum as success breeds success.

The combination of these factors can build the overall sector, improve efficiencies and likely yield returns from sustainable forestry comparable to the conventional forest products sector.

To break through "business as usual" in the forest products industry and in the capital markets, catalytic risk capital must be marshaled to prove the commercial viability of innovation in forestry. A concerted effort on the part of interferences investors—philanthropic, public and private—to provide appropriate R&D, seed, early stage and expansion capital to sustainable forestry would catalyze its growth to a broader commercial scale. Timely, strategic investing of relatively small amounts of capital has the potential to fuel the growth of young sustainable forestry enterprises, bringing them more quickly than might otherwise occur to the stage at which they are capable of mobilizing larger, conventional capital flows.

Each major source of capital—philanthropic, public and private—has opportunities that are highlighted in this report:

Philanthropies committed to sustainable forestry and conservation need to utilize both the grant-making and investment sides of their institutions. Grant-making, program-related investments and corpus investments can all support appropriate non-profit and for-profit sustainable forestry initiatives and enterprises.

Public agencies and institutions can use direct appropriations, grant-making, low-cost financing, educational training, technology transfer programs, loan guarantees, low-cost insurance underwriting and public policy initiatives to broaden the implementation of sustainable forestry

Private investors can make debt or equity investments in the R&D, start-up, early stage and expansion of sustainable forestry ventures. Commercial banks can provide targeted lending for sustainable forestry.

Given the social and environmental goals of sustainable forestry, and given the earlier stage nature of many sustainable forestry investments, the sector currently tends itself to pooling of investment capital in public-private-philanthropic partnerships. Lead investing by philanthropies and public agencies, including international development institutions, is critical to this stage of development of the sustainable forestry sector. Co-investment with private sources will mitigate risk that inhibits conventional capital flows.

Several hybrid sustainable forestry funds have recently been organized. Innovative investment joint ventures can provide companies with a variety of financing mechanisms appropriate to different stages of development and different capital needs (from grants to export insurance to mezzanine finance). They can also provide industry expertise and other technical assistance in addition to capital.

The other big question, of course, is "If the money is there—are there sustainable forestry businesses in which to invest?" The answer that is clear from this report is yes.

We have identified five areas of strategic investment opportunity to leverage the growth of the sustainable forestry sector:

- Forestland acquisition and management, especially of natural forests.
- Advancements in scientific silviculture and harvest systems.
- Improved technology for harvesting and processing.
- Sustainable forestry products R&D and development of market intelligence.
- Market-making for all sustainable forestry goods and services.

Investments in these areas not only benefit that aspect of sustainable forestry, but synergistically build the strength of the sector. Sustainably managed natural forests can provide a greater array of goods and services that fuel other enterprises. Markets developed for value-added processed products feed back opportunities to forest managers.

New markets for ecosystem services can pay for forest conservation efforts, improvements in utilization of all wood reduce extractive pressures on natural forests while increasing profits to processors.

There are major structural changes in forestland ownership underway, concurrent with the emergence of sustainable forestry. These changes are leading to the disposition of many tens of millions of acres over the next few years. Forestland is moving from being held as an industrial or personal asset to a financial asset.

While such huge turnover may threaten vast areas of forest with conversion or more intensive harvest, this historic transition also holds many opportunities for the expansion of sustainable forestry, if committed sustainable forestry capital can be organized to take advantage of these dispositions. Forest investment management organizations (FIMOs)—alternatives to existing timber investment management organizations (TIMOs) that represent institutional investors—need to be created to pool capital for the acquisition, conservation and sustainable management of forestland for timber and non-timber revenue sources.

In the crucial area of forestland acquisition, funds [(or similar pooled vehicles) are an advantageous method of ownership. By holding interests in a portfolio of diversified forest properties, risk-natural, market and environmental—can be better mitigated. The creation of a variety of sustainable forestry investment funds may in fact be the most efficient way to organize capital flows into the many opportunities within the sector. For investors, funds provide:

- A means to leverage their own investments by co-investing with others (including public, philanthropic and private sources).
- Potentially easier diversification within the overall sector.
- Management by professionals knowledgeable in the field with established intelligence networks, deal flow and due diligence capability.

For sustainable forestry companies, funds can open up access to investors that might otherwise be impossible to reach. Funds can also make fund-raising more efficient for companies, and provide access to needed expertise or business networks as well.

By targeting investments to achieve the greatest strategic value in building this new sector, interested investors have the potential to profit while promoting the growth of sustainable forestry. By focusing catalytic investment capital on this sector at this stage in its growth, there is the opportunity for sustainable forestry to achieve the scale and momentum necessary to demonstrate its viability as an alternative to conventional forestry. With spreading commercial success and application on the ground, sustainable forestry offers the best means to both conserve the world's forests and continue to provide the goods and services that people need for coming generations.

