

Transforming the Forestry Asset Class

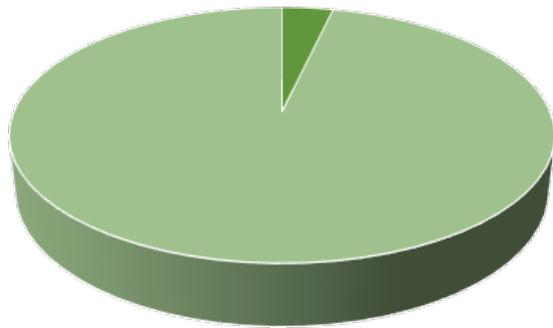
David Brand
New Forests

New Forests' CEO David Brand remarks on the history of the forestry asset class and major forces that will underpin a successful forestry investment strategy. He outlines five major trends facing the forestry sector that will transform the asset class into a kind of natural infrastructure that can provide both renewable materials and ecosystem services.

Imagine an asset class that has low correlation with other major asset classes, positive correlation with inflation, and generally good returns relative to risk and volatility. Imagine that the underlying assets are perpetual in nature, with continuing cash yield once properly managed. What if I suggested that same asset class can provide an important contribution to addressing global challenges like climate change, biodiversity conservation, ensuring fresh water supply, and rural economic development? It might sound too good to be true, but that asset class is forestry.

Forests cover 31% of the world's land surface, about 4 billion hectares. Most of the world's forest, is remote, extensive government-controlled lands, and is not considered "investible" under current market conditions. Several hundred million hectares more have extensive, but active forest management under government control in areas like Canada, the United States, Russia, Southeast Asia, Africa, and Latin America. The remainder is around 100 to 200 million hectares of intensively managed forest, which forms today's "timberland" asset class (Exhibit 1).

Most of these assets are forests managed primarily for wood production, often as timber plantations. If you look around the world at where these forests are located, there are about 30-40 million hectares in the United States, mostly in the US South and Pacific Northwest; 7-8 million hectares in Brazil, and another 3-4 million hectares in Uruguay, Argentina, and Chile; about



- Currently Investible Timberland (100 - 200 million hectares)
- Global Forest Cover (4 billion hectares)

Exhibit 1: Investible Timberland is a Small Proportion of the World's Forest Cover

4 million hectares in Australia and New Zealand (included in Oceania as a region); 3 or 4 million hectares in Southeast Asia; 2 million hectares in Africa; and 4 or 5 million hectares in Europe. There are also intensively managed natural or semi-natural forests that could be considered part of the forestry investment universe both on privately owned land and government leases. This would include parts of Scandinavia, Canada, Southeast Asia, and Africa, for example.

When you look at the total value of this “investible universe” of timberland, it is relatively small as a pool of assets, probably in the order of USD 200-400 billion depending on how you define “investible.” Exhibit 2 provides an estimate of the current investible universe, considering what is already investor-owned and what assets might be made available to investors in the near term. Of the total investible universe, around USD 100 billion is already owned by timber REITs and institutional investors, whether via investment managers or directly.

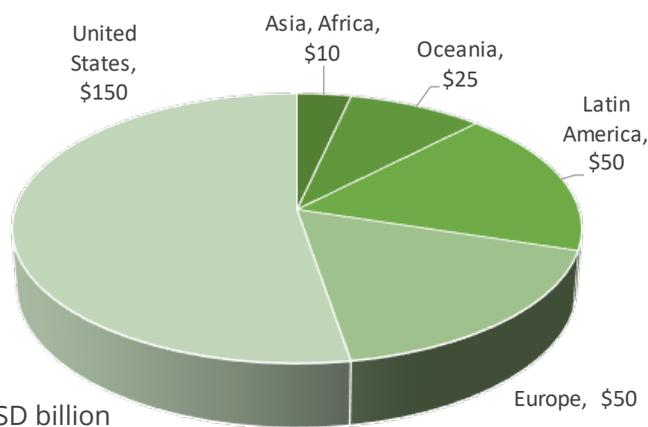


Exhibit 2: Distribution of the World's Investible Timberland

The forestry asset class began in the United States. Owing to GAAP accounting rules and the tax-free status of pension funds, it became clear that having forestry assets owned by the forest industry was inefficient, and a steady process emerged from the mid-1990s until about 2008 with the US forest industry selling billions of dollars of forestry assets to institutional investors. As a track record emerged of the investment performance of these assets, a consensus arose that this was a financially interesting asset class, and investor demand increased. As the asset class grew, discount rates declined as demand outstripped supply and investors determined that rising liquidity and predictability of returns reduced the risk premium needed. For example, basic timberland discount rates for US Southern pine plantations dropped from about 800 bp over the risk-free rate in 2000 to about 500 bp over the risk-free rate by 2007.

Alongside this was the early stages of an internationalization of the asset class. Initial institutional forestry investments in Latin America, New Zealand, and Australia began in the 1990s. Over the past 15 years, this has accelerated—in Australia and New Zealand more than half the forestry plantation estates are now in institutional ownership and that trend is still evolving. Latin America has been somewhat more challenging for international investors to navigate for various reasons, including restrictions on foreign landholding in some countries, competition from local firms often backed by government loans, bureaucratic regulations, and volatile currencies. Other emerging markets like Asia or Africa have attracted some investor interest, but for many investors the risks associated with emerging markets have run counter to the desire for forestry assets with low volatility and stable, predictable returns.

As noted above, there is around USD 100 billion of institutional and REIT-owned forestry assets today, of which approximately 70% is in the United States, 20% is in Australia and New Zealand, and 10% is in the rest of the world. Putting aside the REITs, about 60% of institutional investment is via funds, and more than half of the capital is from public pension funds.

The large-scale rationalization of first the US and then the Australia-New Zealand forestry sectors has largely run its course and asset turn-over is slowing. The wave of capital seeking real assets over the past 20 years has meant that forestry has been a sellers’ market, much like core real estate and infrastructure. Some investors are becoming frustrated and saying that the forestry asset class is overbought.

All this brings us to the central question for investment strategy: where to from here?

I see a set of five big trends that are transforming the nature of forestry markets, forest production, and even the fundamental purpose of the forestry asset class and believe that these are the road map for investors today (Exhibit 3).

The Rise of Asian Demand

The Shift to Plantation-based Wood Supply

Changing Timber, Wood Fibre and Biomass Markets

Sustainability Performance and Opportunity

The Rising Role of Investment

Exhibit 3: The Five Big Trends Transforming the Forestry Sector

The Rise of Asian Demand

The first trend is the rise of demand for all types of wood fibre, timber, and biomass in Asia, principally China. If we go back 20-25 years, there were three big forestry markets—the United States, which was serviced by US and Canadian forestry production; Europe, which was largely serviced by timber from Scandinavia and central Europe, supplemented by hardwood from Africa; and Japan, which was largely serviced by softwood from North America and hardwood from Southeast Asia. China was a small market, with almost enough wood supply domestically to meet its own needs and even exporting some raw materials like woodchips.

That began to change in the 2000s, and today China is the largest importer of wood in the world. That includes round logs, woodchips, lumber, and pulp. In some ways, the accommodation of China's rising demand was facilitated by the global financial crisis of 2008-2009 where US and European housing collapsed, and suddenly there was substantial excess wood supply that could be diverted to China. Trade has now re-adjusted around China, with Australia and New Zealand set up to export logs and woodchips into coastal China, Russia restructuring to provide lumber exports via Northern China, Vietnam expanding rapidly as a woodchip exporter to China, and excess log and lumber supplies from Western Canada and the US also flowing into the Chinese demand vortex (Exhibit 4).

China's continuing demand increase is now starting to cause supply imbalances. For example, hardwood fibre supply is now unable to meet demand, and relatively significant upward price adjustments have occurred. Softwood log prices used to have an 18 to 24-month cycle and then would drop about 20% to 30% before recovering. There has been no down cycle now for more than three years, and buyers are clamouring for more supply. In early 2018 it appeared that exports from the US south in containers may have ameliorated the rising softwood log supply shortage, but now rising tariffs are hampering that trade.

The challenge for China is that Australia and New Zealand are at peak supply of softwood logs and hardwood fibre, and future Siberian wood supply remains uncertain despite recent softwood lumber production increases. Southeast Asian natural forests are largely logged out, and while plantation supply from Vietnam has grown rapidly, it is questionable as to how much further that can expand. China will likely need to shift to importing wood pulp from low-cost producers like Brazil, rather than woodchips from Australia, and the country will likely need to import more lumber from all around the world, rather than increasing softwood log imports much further.

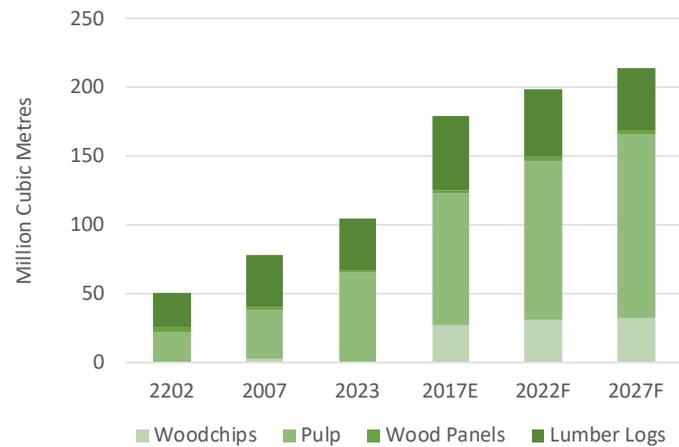


Exhibit 4: China's Rising Import of Wood Products
Source: RISI (2017.) 2017 China Timber Supply Outlook

The Shift to Plantation-based Wood Supply

The second trend is changes in the sources of supply of wood. The forestry sector originally operated using natural forests as a kind of reservoir where market demand and price would create economically viable timber supply in regions with abundant timber resources. Over time, the inevitable process of harvesting the best timber first led to rising operating costs in natural forests and a move to intensify production in the most productive, economically attractive regions. Today about 1.8 billion cubic metres of industrial roundwood are harvested annually around the world, of which about 1 billion are from natural or semi-natural forests, and the remainder are from intensively managed timber plantations.

In general, the old reservoirs of wood are depleting or already depleted. Canada's timber supply has peaked, as has the US since policy changes in the 1990s. The most viable natural timber in Southeast Asia, Africa, and Latin America has been exploited. On the other hand, plantation production has been growing in the southern hemisphere, especially Latin America, Oceania, Southeast Asia, and, to a limited extent, Africa. While there is still substantial timber production in Europe, the establishment of new plantations is limited by access to land.

Plantations in the southern hemisphere, while capital intensive, often grow 10 to 20 times as fast as the production from natural forests. At the extreme in Brazil, eucalyptus plantations can grow at 60 cubic metres of wood fibre per hectare per annum. Plantation production is also steadily rising as better genetics, cultural practices, and control of physical and biological risks improves. These plantations also produce very homogenous log quality and fibre quality, which increases processing efficiency. I expect all incremental wood supply will come from plantations (Exhibit 5).

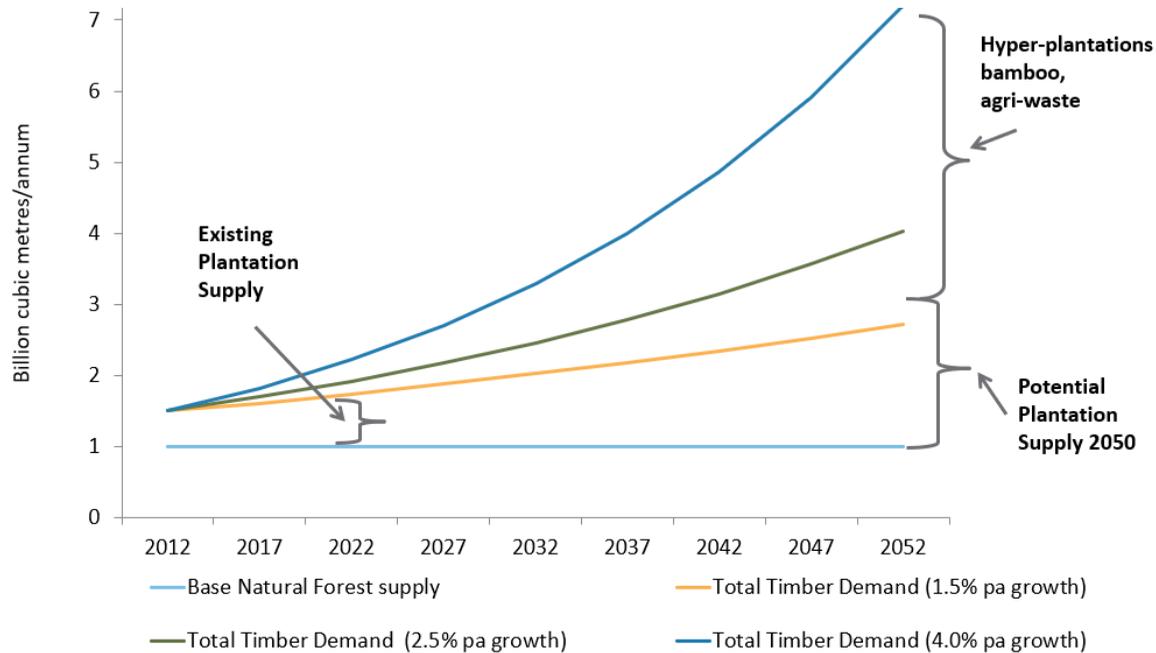


Exhibit 5: Demand and Supply Outlook at Different Demand Growth Rates to 2050

Graphic based on New Forest's estimate and analysis of Sources: WWF 2013, "Living Forests Report." FSC 2012 Strategic Review on the Future of Forest Plantations.

Ultimately, these trends suggest ongoing investment in highly productive timber plantations in the southern hemisphere is needed to supply growing Chinese growing demand.

Changing Timber, Wood Fibre, and Biomass Markets

There is a fundamental shift occurring in the forestry sector itself. When New Forests was founded in 2005, there was no iPhone or iPad, and people read newspapers, mailed bills, read books, etc. Today, while newsprint has declined substantially, and we have probably reached peak printing and writing paper usage worldwide, an array of new markets for wood, wood fibre, and biomass is emerging. Companies like Stora Enso or UPM Kymmene have begun operating bio-refineries and produce bio-plastics and other exciting new materials.

The industry is moving away from the need for large logs and heavy sawn wood to more engineered or refined materials. Again, that leads to potential opportunities for intensively managed forestry plantations that can provide substantial volumes of homogenous materials that can be processed into engineered wood products, forms of wood fibre for everything from packaging to fabrics to diaper fillings; and biomass that can produce energy, fuels, and biochemicals (Exhibit 6). There is a growing need for investors in the forestry feedstock and processing businesses to work together to create efficient, value adding systems to support this bio-economy transition.

Sustainability Performance and Management

The fourth trend relates to the concept of sustainability in the forestry sector. There is a set of forest sustainability performance considerations, such as forest management standards, certification schemes, ESG (environmental, social, and governance) metrics, and sustainability reporting. However, what is changing is the recognition that sustainability is not a cost, but an opportunity



Exhibit 6: The Rising Bio-Economy Includes Growing Demand for Timber and Wood Fibre in a Wide Range of Applications

for forests to be a central part of solutions to major challenges like climate change, biodiversity conservation, freshwater regulation, and community development and land rights. This opportunity requires a transformation from the forestry sector of the past, as well as a new way of thinking about the value of forests.

Forestry was seen in the past as destructive and unsustainable, and forests were often viewed as an impediment to land development for agriculture. Natural forest harvesting often ignored or made modest accommodation to environmental or social values.

The underlying issue was unpriced externalities. Forests contain 1.6 trillion tonnes of carbon dioxide equivalent, which is more than the carbon dioxide in the atmosphere. Forests support about 50% of the diversity of life on earth. Almost all freshwater cycles through forests, and forests regulate water flow and water quality for downstream users. These benefits are called ecosystem services, and they are provided to our human society for free by nature. In an economic context, they are unpriced positive

externalities from maintaining, enhancing, or restoring forests. The problem with free goods is that they are used wastefully or destroyed, often alongside economic activities where the value of a market good or service is more attractive. For this reason, we see deforestation associated with commodities like soy, cattle, and palm oil. This has been a central threat to forests and has led to substantial deforestation driven by agriculture and has made forestry a less commercially valuable land use than market crops.

Fortunately, this trend is changing. Forest conservation, reforestation, and forest plantations are now seen as a central part of action on climate change. The California carbon market, operating since 2012, has shown that forests can be valued for their carbon storage as well as their timber value, and there are also emerging and expanding policies related to using green infrastructure for watershed management as opposed to grey infrastructure based on concrete, pipes and treatment plants. In some ways we are in a race to create price signals for the positive externalities of forests so that they become a kind of natural infrastructure asset class providing both renewable, environmentally sustainable goods and ecosystem services on a perpetual basis.

The Rising Role for Investment

To realize the opportunities inherent in the first four trends, we require the fifth and final trend: the rising role for investment. The global forestry sector needs to be transformed and recapitalized by long-term, patient capital. The old paradigm of a “timberland” asset class is going to be replaced by new investment models that encompass both conservation and production as commercial businesses; embrace community forestry and shared rights to land with community groups or indigenous peoples; may be increasingly focused on emerging markets, rather than the traditional forestry regions of the US and Europe; and may integrate development, philanthropic, and commercial capital together.

That is not just a tinkering with the existing timberland asset class, it is disrupting it and re-inventing it. But what does that do for the portfolio characteristics of forestry investment? First, the underlying nature of forestry assets remains based on biological characteristics that generate the low correlation with other asset classes, and timber value will remain an important part of the return characteristics of the asset class. Second, the low volatility of timber comes from the optionality of trees—they can be grown for capital appreciation or cut for income. In poor market conditions the forest still generates capital appreciation even if there is a decision to reduce harvest rates. Exposure to markets for carbon offsets, watershed conservation, biodiversity conservation, etc. creates even more optionality and ability to optimize returns over decadal periods of time. Lastly, the perpetual nature of the asset class is preserved and even enhanced in such a new structure.

This transformed forestry asset class may also include a changing risk profile. There may be greater exposure to emerging market risks, for example, but when we think about portfolio construction, the bulk of forestry assets for the next 20 or 30 years will remain in developed markets with a geographic shift slowly but steadily over time. In a successful global economy, emerging markets will also steadily decline in risk and improve in their

business characteristics. It may even be that new forms of blended finance structures mitigate the emerging market risk and provide investors the capacity to segregate financial and sustainability related outcomes. All this is already emerging.

New Forests and the Evolving Forestry Asset Class

The five trends above describe the economic drivers and rationale that can fuel and sustain the evolution of the forestry asset class. How would this change the investible universe of forestry? What types of forestry and forestry investment would we see? New Forests suggests that by 2050 we could see a trillion-dollar forestry asset class, comprised of forests with combined production and conservation value (Exhibit 7).

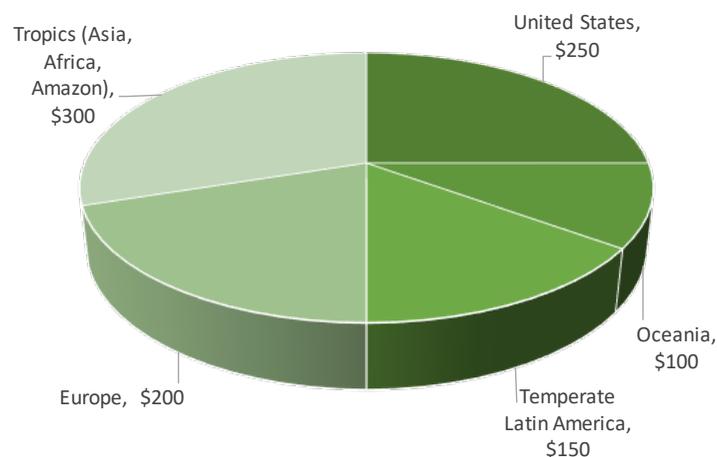


Exhibit 7: What Might the Investible Universe of a New Trillion-Dollar Forestry Asset Class Look Like in 2050? (in Billions USD)

New Forests’ business is organized around regional investment programs that start by asking the question of what the market opportunity for sustainable forestry in this region is, and then designing investment strategies to target those opportunities.

- In Australia and New Zealand, a large-scale restructuring of retail forestry investment schemes, government plantations, and corporate plantations is occurring alongside the rising demand from Asia. This presents an opportunity for recapitalization, enhancing core operations and efficiency, and providing reliable supplies of timber and wood fibre to both domestic and Asian markets.
- In Asia, the decline of natural forest timber supply and the need for sustainable timber plantations, especially of high-quality tropical hardwood timbers, presents the opportunity to establish both highly productive and highly valuable timber plantations.
- In the United States, an opportunity to re-segment a mature market, targeting forests with both timber market access and exposure to the increasingly secure California carbon offset market, is creating an opportunity for a differentiated approach to US forestry.

In managing these three distinct investment programs, we have been able to add value by stepping back and thinking about how the forestry sector is changing. For example, our activities have included integrating investment in processing facilities with our forests as well as applying agroforestry and agricultural strategies to optimize land use in an extensive estate. In Asia, we are working across three countries, and integrating community forestry, out-grower schemes, and community benefit sharing into the investments we manage. In the United States we have worked with Native American tribes and tribal corporations to unlock carbon value from well-managed forests. We have also used advanced technologies to develop proprietary approaches that identify forests that offer high climate impact.

These are innovations within an existing asset class but are also reflecting a shift of the asset class to take advantage of new opportunities and market changes. This will continue, and the rate of innovation will increase. As we head towards a world with 10 billion people earning an average of \$30,000 per capita, that means one planet with a \$300 trillion gross world product. Sustainability will be central to everything, and renewable materials from sustainably managed natural infrastructure will need to become a key asset class.

Author Bio



David Brand, PhD

New Forests

David Brand is the Chair and CEO of New Forests. New Forests, founded in 2005, is a sustainable forestry investment manager offering leading-edge strategies in forestry, land management, and conservation with approximately USD 4 billion in assets under management across the US, Australia, New Zealand, and Southeast Asia. David has over 35 years of experience in timberland investment, forest management, science, and public policy. David is dedicated to innovative, responsible investment strategies in the forest sector that address climate change mitigation, community development, and expanding the use of sustainable renewable materials in society. Previously, David was responsible for investment programs that integrated timber management with emerging environmental market opportunities at Hancock Natural Resources Group (HNRG). Prior to joining HNRG, David was the Executive General Manager of State Forests of NSW where he led pioneering transactions in the commercial development of environmental markets. From 1985-1995 David worked with the Canadian Forest Service as a scientist, director of scientific programs, and ultimately as national Director-General of Science and Sustainable Development. He serves on the Board of Directors of the Washington, DC-based non-governmental organization Forest Trends and on the Board of Trustees of Bangkok-based Intergovernmental Organisation, The Centre for People and Forests. David has a PhD from the University of British Columbia and a Bachelor of Science in Forestry from the University of Toronto in Canada.