



Sustainable Land Bonds

How governments can finance climate commitments
and strengthen rural economies



Executive Summary

This paper shows how tropical forest countries can tap mainstream bond markets and secure long-term capital at extremely low net cost through the issuance of Sustainable Land Bonds to finance the large-scale transition to sustainable and low-carbon land management practices.

Sustainable Land Bonds (SLBs) are backed by the full faith and credit of the issuing country, but differ from regular sovereign bond issues in two important respects:

- **The proceeds are utilized to finance the transformation of rural economies onto a low-carbon, sustainable footing, thereby reducing net greenhouse gas emissions**
- **The issuer simultaneously enters into a long-term Results-Based Payment agreement with a third-party that partially or even fully offsets the interest payments on the SLB, provided that pre-agreed levels of land-based emission reductions are achieved**

SLBs target institutional investors in mainstream capital markets (where interest rates are at record low levels and demand for emerging market sovereign debt is high) and **match with results-based payment agreements** that pay countries for achieving **emission reduction outcomes**. As such, they build on the success of the Green Bond market, and go a step further by establishing a transparent link to outcomes in terms of national emission reductions.

SLBs secure funding up-front so that governments can make large-scale interventions, while results-based payment agreements will lower the cost of borrowing—potentially to zero—so long as agreed emission reductions are achieved.

SLB financing can help countries achieve their Nationally Determined Contributions (NDCs) under the Paris Agreement while, at the same time, protecting the environmental infrastructure that supports rural production. By doing this, governments can catalyze a virtuous cycle of inward investment, higher rural productivity and increased employment, as well as meeting their climate mitigation targets.

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Photo credit: © Erika Nortemann

In this paper we show how tropical forest countries can access large amounts of inexpensive capital through issuing SLBs that can be used to finance the large-scale transition to sustainable and low-carbon land management practices

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Agriculture and forestry are vitally important to the economies of many developing countries, especially those in the tropics, and provide income and food security for billions of people

One in three of all jobs worldwide are in agriculture, second only to the service sector, and this rises to 60% or more in sub-Saharan Africa and parts of Asia¹.

Demand for food and other resources is increasing² as populations grow and as incomes rise. This demand is creating new commercial opportunities in land-rich countries, particularly those with well-established export markets for their crops.



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The key contributions of land-use to the economies of developing countries

In Indonesia,³ agriculture accounts for about 15% of GDP, 30% of land area, 41% of employment and some 26% of exports.

And in Brazil,⁴ the comparable figures are 6% of GDP, 32% of land area, 15% of employment and 40% of exports.

However, rural productivity is especially vulnerable to the effects of climate change and the economic potential of agriculture and forestry can only be fully realised if land is managed sustainably and key ecosystem inputs are protected.

Existing agricultural practices, combined with conversion of forests, wetlands, peatlands and mangroves, currently contribute around a quarter of the world's greenhouse gas emissions⁵, thus creating a negative feedback loop that undermines the sustainability of rural economies.

In fact, without urgent changes to land management systems we will simply not be able to reach the targets set out in the Paris Agreement of keeping global warming well below 2°C this century⁶ nor meet the Sustainable Development Goals.

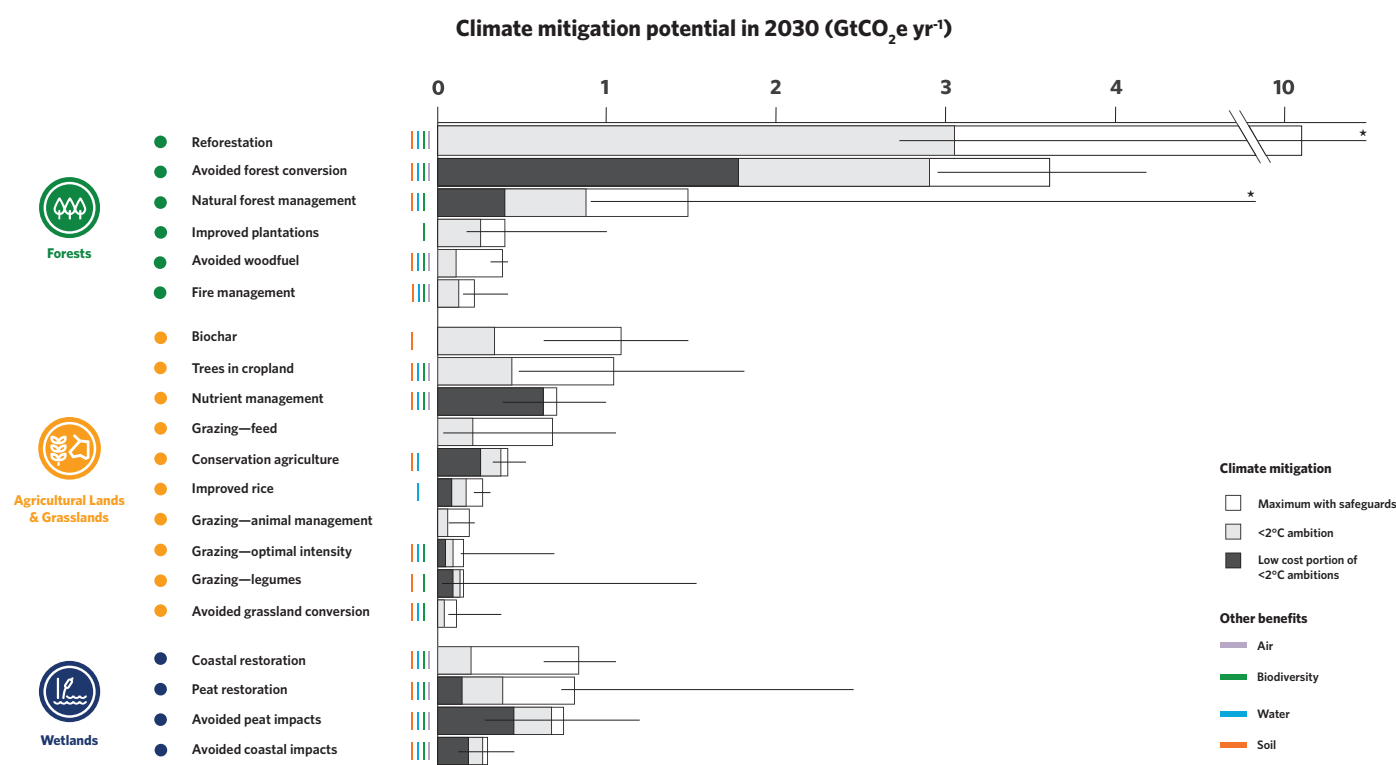
The latest research shows that improved land management regimes ('natural climate solutions') can deliver 37% of all cost-effective CO₂ mitigation needed to 2030⁷. Rather than being a major source of greenhouse gas emissions, changing the way land is managed can substantially reduce greenhouse gases and ultimately achieve negative emissions

The importance of reducing land-derived emissions is widely accepted and more than 140 governments include commitments to more sustainable land use in their Nationally Determined Contributions (NDCs)⁸. For example, Indonesia⁹ has unconditionally pledged a reduction target of 29% (and a conditional reduction target up to 41%) versus a business-as-usual scenario by 2030. Of its unconditional target, Indonesia projects that almost 60% of its pledged emission reductions (497MtCO₂e out of 834MtCO₂e annually) will come from changes in the way forests and peatland are managed.

Natural Climate Solutions and the Paris Agreement

Recent research, led by The Nature Conservancy, indicates that natural climate solutions can deliver 37% of cost-effective emissions reductions needed by 2030 to hold global warming below 2 degrees Celsius this century. This adds up to 11.3 gigatonnes CO₂e per year by 2030, or the equivalent of all current emissions from burning oil.

Natural climate solutions are proven ways of increasing the capacity to sequester carbon and reduce greenhouse gas emissions in the world's forests, grasslands and wetlands. One-third of this mitigation can be delivered at a cost of less than \$10 per tCO₂e —much cheaper than emerging technologies such as bioenergy and carbon capture.



Source: Bronson et al, PNAS (2017)

Sustainable Rural Economic Growth

Understandably, many developing countries are seeking to expand their output of agricultural and forest products to meet demand. In the past 10 years, for example, Argentina has converted ten million hectares to cropland, whilst Brazil has added eight million hectares¹⁰. Obviously, conversion like this cannot go on forever and, indeed, Brazil in particular has been able to sharply reduce the rate of deforestation in the Amazon since 2010 though not yet to zero.

There are only two ways tropical forest countries can continue to increase their output of precious agricultural goods like palm oil, cattle and soy without converting the valuable ecosystems critical to meeting their NDCs. One is by exploiting already converted but abandoned land; the other is by increasing the intensity of production on currently used land. Both of these approaches require significant capital investment and the payback periods are often long.



Cattle herding on the Ponderosa farm in Paragominas-Pará in the Brazilian Amazon.

Strategies to control deforestation and promote the responsible production of soy and beef among farmers and ranchers to create wealth, while also protecting environmental infrastructure and reducing greenhouse gas emissions

Photo credit: © Ami Vitale

The key challenge for governments, therefore, is how to reconcile rural economic opportunities with climate mitigation. Put another way, these countries face the challenge of how to fund their transition to a low-carbon economy. This challenge is greatest for those countries that have large areas of tropical forest and important agricultural sectors, but limited financial capacity for investment in transforming land-use at scale.

To achieve widespread change in the way in which land is managed, governments will need to influence and leverage the existing domestic private sector investment that largely dominates agriculture and forestry (see Figure 1.). Spending by government is required to support policy frameworks and incentives that promote redirection of private sector investment.

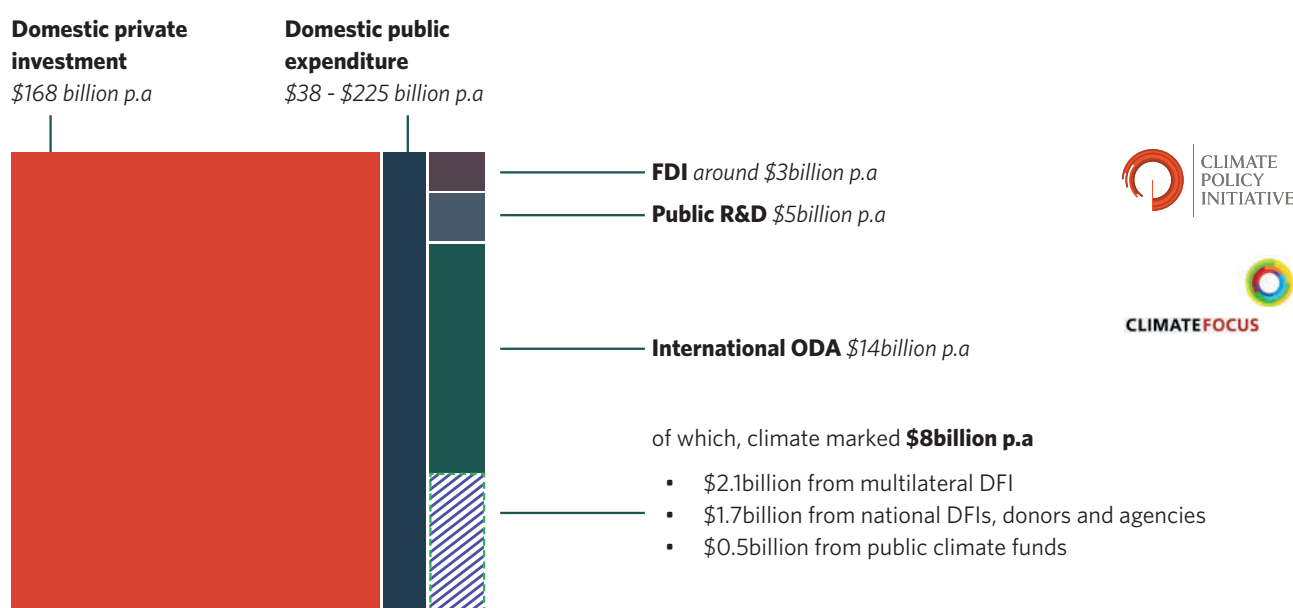


Figure 1: Opportunity to redirect the hundreds of billions spent annually on agriculture and forestry (Climate Policy Initiative, FAO, 2012)¹¹

Sustainable Rural Economic Growth, cont.

In this respect, governments can draw lessons from other areas of the economy, where incentives and policies have supported new investment, for example in the development of renewable energy projects, which benefitted from policies designed to attract private capital.

Alongside carbon mitigation, sustainably managed land can protect against extreme climate events and can also improve soil fertility, water resources and air quality. These co-benefits have substantial economic, social and developmental value and are a pre-requisite for rural productivity to be maintained or enhanced in the future.

But they all require substantial investment with long payback periods.

Sustainability has become an important goal for major commodity traders whose customers in wealthy consumer markets oblige them to seek deforestation-free commodities, including soy, beef, cocoa and timber. Initiatives such as the Tropical Forest Alliance 2020¹² and the Blended Finance Taskforce for the Global Goals¹³ bring together large corporations to collaborate in targeting investment in developing sustainable supply chains in supportive countries.



The environment and the economy

Major buyers increasingly seek deforestation-free commodities, including palm oil, soy, beef, cocoa and timber

Photo credit: © Haroldo Palo Jr.

Some tropical forest countries are already tightening enforcement of laws that protect natural capital and sustainability, as Peru has recently done in response to trade in illegally logged timber¹⁴. However, transition comes with a cost, with potential short-term consequences for rural economies affected by such otherwise desirable changes in land-use practices, and this could present a substantial expense to government.

In the long run, there is no question that the rewards of protecting natural capital are high, but the funding to finance transition will be in short supply without full recourse to the biggest pools of private capital.

The rationale for Sustainable Land Bonds

Sustainable Land Bonds (SLBs) are long term fixed-rate bonds issued by a government (or government agency or development bank) and placed with investors in the mainstream international capital markets.

They are backed by the full faith and credit of the issuing entity and rank *pari passu* with all other bonds from the same borrower. In this respect, SLBs are conventional debt instruments and could be structured either as regular bonds or Sukuk. They can easily be slotted into a country's normal bond issuance calendar.

Maturities would typically be 7-30 years, reflecting the timescale that investments in sustainable land development might take to fully realize. It should be noted, though, that countries such as Mexico, Argentina and Austria have successfully placed bonds with a 100-year maturity.

However, the SLB differs from regular bond issues in two important respects:

- The issuer uses the proceeds for sustainable land management initiatives to reduce net greenhouse gas emissions
- The issuer simultaneously enters into a long-term results-based payment agreement (RBP) with a third-party that is designed to partially, or even fully, offset the annual interest payment on the SLB, provided that pre-agreed levels of land-based emission reductions are achieved in that year

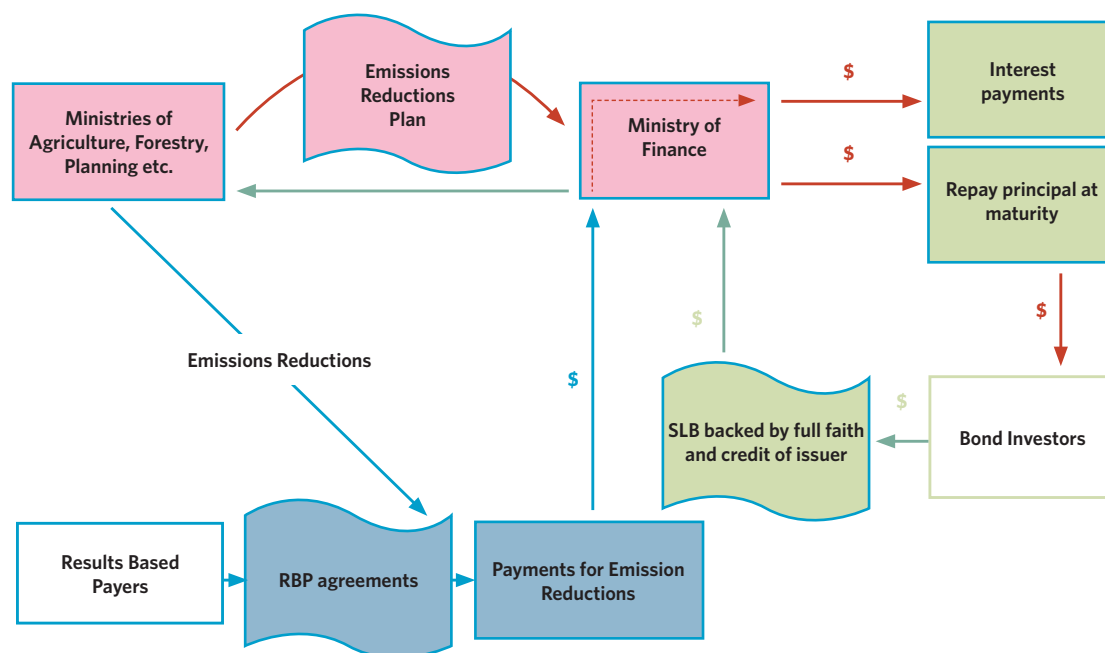


Figure 2: How Sustainable Land Bonds work

Even before taking account of the RBP agreement, it is likely that the interest costs will be slightly lower for a SLB, just as we are beginning to see prices tightening for sovereign Green Bonds.

As we have seen, results-based payments are a well-established mechanism used by the World Bank and several European governments. What is novel here is that the RBP agreement is attached to a simultaneous capital markets bond financing. The cost of servicing the debt obligation by the issuing tropical forest country is mitigated by its obligation to deliver emission reduction outcomes.

The SLB will send a strong public signal of a country's commitment to making measurable transparent progress towards meeting its NDCs. It will also likely enhance the country's standing in capital markets more generally; Rating Agencies, for example, are taking account of commitments to sustainable land-use and Paris Climate contributions when evaluating sovereign debt ratings¹⁵.

The rationale for Sustainable Land Bonds, cont.

The SLB structure is a collaboration between the host country and the results-based payers and matches both their interests. This marks a **step-change in delivering emission reductions at scale**.

There is no question that a SLB will be the “greenest” of all sovereign Green Bonds, and will have the added advantage of introducing to the Green Bond market the concept of **valuing outcomes**, something many commentators are arguing is critical to the long-term prospects of the market.

It is also worth noting the exceptionally low level of interest rates prevailing today in US dollar and other major currency bond markets (figure 3). There has never been a better opportunity to borrow long-term money at low cost. Or, said another way, **the spread between the cost of financing and the returns from nature has never been higher**.

From the perspective of investors, an SLB is identical to a conventional sovereign or agency bond issue by every financial risk/return analysis, but it will have the advantage of qualifying as Green Bond based on a transparent Use of Proceeds. The sovereign sector of the green bond market is rapidly evolving with countries as varied as France, Belgium, Poland, Nigeria and Fiji having recently issued in this sector¹⁶.

As SLBs tap into mainstream capital markets and the largest institutional investors, the potential supply of capital is in the tens or even hundreds of billions of dollars. The only constraint will be the capacity of results-based payers. As long as emission reductions are achieved, the effective financing cost for the issuing country can be as low as zero and will certainly be less than normal funding cost.

From an issuer’s perspective, at a national level, preparing for a SLB connects, by design, the environmental, economic development, and finance arms of government. Because they are linked to results-based payments for sustainable land-use, SLBs encourage governments to draw up its sector and regional programs, rather than simply focusing on individual projects. This should encourage coordination between relevant ministries such as finance, agriculture, forestry, planning and environment, and between central, provincial and local government.

A successful SLB financing can result in a virtuous cycle of better investment conditions, higher productivity, more resilient GDP growth, in addition to improving climate mitigation outcomes.

Interest rates have not been this low in living memory.



Source: TRADINGECONOMICS.COM | FEDERAL RESERVE

Figure 3: USD 30-year bond yield

Payments for Climate Mitigation

It is well established that wealthy nations need to provide financial assistance to developing countries to support the necessary and urgent transitions in their economies, and this is already being supplied through aid and development finance budgets. A subset of such support includes climate finance—investment which connects sustainability, economic development and reductions in carbon emissions to help countries deliver on the Paris Agreement.

One way in which assistance is being provided is through results-based payment agreements that reward countries for achieving specific climate-related outcomes. These agreements for reduced emissions from land-use are established through bilateral or multilateral programs, such as the World Bank's Forest Carbon Partnership Facility Fund. Country donors include the UK, Norway and Germany, which together have pledged \$5 billion in 2016-20¹⁸. Norway has also signed \$1 billion Letters of Intent with both Indonesia and Brazil, as well a number of smaller agreements with other countries such as Guyana, Liberia and Peru.



Photo credit: © Bridget Besaw

Results-Based Payment Agreements

Tropical forest countries are uniquely positioned to supply carbon sequestration and storage through biological growth—services that the world badly needs.

Those countries that commit to SLB finance will have a strengthened hand when negotiating RBP agreements as they will already be demonstrating their commitment to achieving results.

While it may be possible to make an agreement based upon a measure of CO₂e emissions under either a voluntary or (pre-) regulatory scheme such as REDD+, we think that early SLBs should be part of an urgent movement to incentivize avoided deforestation activity and reforestation at scale, and not risk getting bogged down in carbon reporting. Measurements of forest cover, conversion of natural grasslands, incidences of wild fires, or other high-level data might be used as proxies for emission reductions.

In time, however, it should be possible to structure agreements as purchases of credits which in turn could be sold or traded to meet offset obligations, or simply retired. In this instance, assessments would be based on transparent and scientifically-assured measures, agreed in advance. Payments for results at a national or jurisdictional level are now becoming practical because rapidly improving satellite and Light Detection and Ranging (LIDAR) mapping technology is able to reliably measure and monitor emissions at low cost.

Existing bilateral (ODA) agreements are not the only way to transfer value and the payer does not have to be a foreign government of development bank.

A number of commercial entities, such as the International Civil Aviation Organization¹⁹ and some oil majors, are currently looking at how to offset emissions through purchase of land-based credits. The most attractive offsets are those which represent 'negative emissions', in essence, forests and grasslands that can be protected to increase their natural capacity for photosynthesis and thereby carbon storage. Those tropical forest countries that successfully demonstrate their ability to deliver carbon storage through natural climate solutions could position themselves well for payment through future results-based agreements or offset purchases.

The risk-sharing between tropical forest country borrowers, capital market investors and results-based payers embodied in SLBs is a step change in four important ways:

- First, SLBs can reduce the borrower's financing costs for climate change mitigation
- Second, a government's commitment to low-carbon land-use is a catalyst for additional investment in sustainable land-use practices, notably from the private sector
- Third, the funding raised by issuing a SLB can help a tropical forest country achieve sustainable economic and broader environmental gains, especially in rural areas
- Fourth, an SLB and its related RBP agreement ties-in international support for sustainable land-use from governments, lenders, NGOs and private investors. It can also catalyze domestic support by encouraging coordination between relevant government departments and engaging local stakeholders

Healthier soils and more sustainable land management practices can result in higher yields on a given area of land, raising rural incomes, rolling up to more robust GDP growth and higher tax revenues. Environmental benefits in turn strengthen the land's resilience to the increased intensity and frequency of extreme weather events caused by climate change, such as storms and droughts.

For the global community, carbon storage capacity is increased—the 'technology' is available and the returns on 'assistance' are high. Progress towards the Paris goals is accelerated. The providers of results-based payments can meet their development and environmental goals while helping advance the international agenda for combating climate change.

All this can be done if we start to tie the largest financial markets in the world into the achievement of measurable, transparent outcomes.

Authors

Peter Wheeler

Peter Wheeler joined The Nature Conservancy as a London-based executive vice president in September 2013. Earlier in his career, he spent 25 years in investment banking in New York, Hong Kong, and London with Goldman Sachs and Standard Chartered and oversaw some of the earliest listings of mainland Chinese companies on overseas stock exchanges.

Peter was a seed investor and board member of Climate Change Capital until it was sold to Bunge in 2012. He sits on the Board of Rift Valley Corporation, a dynamic African agro-industrial enterprise which owns and operates a diversified portfolio of subsidiary companies across seven operating platforms in three countries, Tanzania, Mozambique and Zimbabwe. He is an active seed investor in a personal capacity in innovative new companies in the renewables and low carbon economies.

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Stuart Clenaghan is a senior fellow of the Climate Bonds Initiative and a senior adviser to The Nature Conservancy. He has extensive experience in capital markets, having spent 23 years of his career at Lehman Brothers and UBS.

Since leaving UBS in 2004, Stuart has specialized in environmental finance. He is a co-founder of Green Gold Forestry Peru SA, now Peru's largest forestry company by area of forest and the only company in Loreto, Peru's largest region, to be certified by the Forest Stewardship Council.

Stuart is a trustee of Botanic Gardens Conservation International, which is the world's largest plant conservation network.

References

- ¹ <http://www.fao.org/docrep/015/i2490e/i2490e01b.pdf>
- ² http://www.fao.org/fileadmin/templates/wsfs/docs/Issues_papers/HLEF2050_Global_Agriculture.pdf
- ³ Pertanian di Indonesia <http://www.indonesia-investments.com/id/budaya/ekonomi/ikhtisar-struktur-ekonomi/pertanian/item378>
- ⁴ Central Intelligence Agency <https://www.cia.gov/library/publications/the-world-factbook/geos/br.html> and <http://www.tradingeconomics.com/brazil/agricultural-land-percent-of-land-area-wb-data.html>
- ⁵ <http://www.ipcc.ch/ipccreports/sres/emission/index.php?idp=77>
- ⁶ http://unfccc.int/paris_agreement/items/9485.php
- ⁷ <http://www.pnas.org/content/early/2017/10/11/1710465114.full>
- ⁸ <http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx>
- ⁹ http://www4.unfccc.int/ndcregistry/PublishedDocuments/Indonesia%20First/First%20NDC%20Indonesia_submitted%20to%20UNFCCC%20Set_November%20%202016.pdf
- ¹⁰ <http://www.fao.org/americas/noticias/ver/en/c/904161/>
- ¹¹ Three Tools to Unlock Finance for Land-Use Mitigation and Adaptation, Angela Falconer, Charlie Parker, Paul Keenlyside, Adeline Dontenville, Jane Wilkinson, July 2015 Climate Policy Initiative
- ¹² <https://www.tfa2020.org/en/>
- ¹³ <http://businesscommission.org/our-work/blended-finance-taskforce-for-the-global-goals>
- ¹⁴ <https://eia-global.org/blog-posts/fighting-illegal-logging-in-peru-the-full-story>
- ¹⁵ <http://www.unepfi.org/ecosystems/erisc/>
- ¹⁶ <https://www.climatebonds.net/files/reports/cbi-green-bonds-highlights-2017.pdf>
- ¹⁷ <https://tradingeconomics.com/united-states/30-year-bond-yield>
- ¹⁸ <http://forest-trends.org/blog/2015/11/30/new-finance-commitments-for-forests-build-momentum-in-paris/>
- ¹⁹ <https://www.icao.int/environmental-protection/Pages/EmissionsTrading.aspx>