



Impact Report 2015

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Introduction to the 2015 Report

Over the past year, the project has continued to make good progress in delivering a diverse programme of social and environmental benefits to the communities with which we work. In particular, our impact has significantly widened beyond the 1000 farmers within the core ArBolivia project, extending to the indigenous communities in the Monte Verde area of North East Bolivia. Within our core purpose of demonstrating a commercially viable and climate smart alternative to current unsustainable smallholder farming in Bolivia, we are providing multiple social and environmental solutions to the very serious challenges that smallholder farmers and the rainforest face in the Bolivian Amazon. These challenges include:

- Unsustainable farming driven by poverty
- Deforestation from slash and burn farming
- Lack of cash in a subsistence economy
- Lack of capital to invest in the future
- Lack of knowledge and education
- Poor bargaining position with buyers
- Lack of infrastructure



The project is helping farmers like Ruben to create opportunities for their families

The project is tackling all of these challenges through a programme of climate smart agro-forestry, embracing training, microfinance, capital equipment, timber processing and sales. Over the past year the project has begun to generate the first timber revenues for farmers. Although these are small at this stage, they mark a very important juncture for the project and herald the start of major economic benefits for the farmers.

On a visit to the project in April 2015, I was especially struck by the high regard which the farmers have for the project and the very real difference that it is making to the lives of people without the same opportunities that we have. The project is giving them the economic resources, training and support, that in turn, give them the chance to adopt more sustainable and rewarding livelihoods as this report sets out.

John Fleetwood, Director



Long term solutions to deforestation have to involve integrated sustainable land management

The Challenge

The ArBolivia Project was a response to the deforestation caused by unsustainable farming practices in Bolivia. Driven by poverty, significant numbers of people from the Highlands migrated to the fringes of the Amazon to begin a new life. Having been awarded 25-30 hectares of land including prime rainforest, these areas were deforested to grow rice, bananas and other crops, or to raise cattle. Without knowledge or capital, these unskilled farmers were forced to engage in slash and burn farming to survive and as the land quickly became denuded of nutrients; more prime rainforest has been lost in a cycle of slash and burn.

At the same time, indigenous communities on the fringes of the rainforest were granted concessions to fell rainforest for timber. The logging companies are inefficient in how they process timber and the communities get a raw deal for their timber, meaning that they have to fell more than would otherwise be necessary. Furthermore, their farming is inefficient and unsustainable.



Poverty and an accompanying lack of alternatives and resources is driving slash and burn farming

In both cases, farmers lack capital, knowledge and the wherewithal to make the most of the land allocated to them, meaning that they are locked into a cycle of unproductive and environmentally destructive subsistence farming.

Our Response

The project provides training and advice on the whole farm (not just the small amount relating to tree planting), which means that there is much less pressure on them to engage in further slash and burn agriculture involving the felling of prime rainforest. Given that the average farm size per engaged farmer is 30 hectares, the project directly influences more than 26,000 hectares of farmed land. Farmers receive training and ongoing support in more sustainable land management, with each farmer getting formal training and advice from a professional agro-forestry technician. This includes an analysis of the site and provision of very modest inputs and equipment means that farmers can increase yields at the same time as making the enterprise more sustainable. For example, farmers receive training in how to make a cheap bio-fertiliser from readily available and cheap inputs, that significantly enhances yields.



Making bio-fertiliser from cheap, readily available inputs improves fertility



Each farmer receives individual training and support

The indigenous communities in the Monte Verde region have received integrated land management plans, whilst a timber processing business has been established to provide an alternative to logging companies and to add value for the communities. Training is also provided to communities in processing and sustainable land management, in order to build their capacity to manage their land more sustainably and productively.

Social Impact

Farmers within the core ArBolivia Project are enabled to make much better use of their labour and land, which ultimately feeds through to their incomes and the longevity of their farm. This marked increase in long-term income is the key impact of the project, but won't be seen for some years as detailed later in this report. In the shorter term, the activity amongst the community at Monte Verde has started to generate more immediate benefits:

- Moving away from reliance on the commercial saw mills means that the Community gets a much better deal for its sawn timber, receiving **an extra \$20 per m³ of processed timber**
- **7 people are employed in the community saw mill**, generating revenue in the community which otherwise would be provided by the timber companies.
- The processing of timber is also more efficient, meaning that the **less trees are cut down**.
- Income generation has just begun, but just **over £2,000 has been generated for the community** thus far.



The community saw mill employs 7 local people



The challenge is to find ways to reconcile food production with forest protection, and to decouple agricultural growth, which has an important role in meeting food security goals, from deforestation¹

The Challenge

The Bolivian Amazon continues to shrink at an alarming rate. This is one of the most important ecosystems on earth, yet it is being cut down from the edges inwards. Part of the problem is slash and burn farming by smallholder farmers as described above. The image below of one of the project areas shows just how aggressive this deforestation has been.



Deforestation in the Santa Cruz area. Source: UNEP, n.d., Santa Cruz. Environmental Change Hotspots. Division of Early Warning and Assessment (DEWA). United Nations Environment Programme (UNEP)

Our Response

The project has helped around 1000 farmers to plant and maintain 1411 hectares of mainly native hardwood trees on part of their land. Seedlings, shared equipment and fencing are provided, along with small payments to enable the farmers to grow and look after the trees. Farmers also receive training and advice so that they can farm their land more efficiently and avoid the need to engage in further slash-and-burn farming.

¹ Pablo Pachero, [Global Comparative Study on REDD+ and the CGIAR Research Program on Forests, Trees and Agroforestry](#), 2014

Social Impact

This comprehensive package of support delivers a *double* benefit of reforestation and avoided deforestation:

Reforestation

The project has now reforested **a total area of 1713 hectares** that was previously deforested rainforest. This includes 302 hectares of agro-forestry plantations. In 2015, 122 hectares were planted, of which 66 hectares relate to agro-forestry. At an average density of 1100 trees per hectare, this equates to around **1.88 million hardwood trees**.



A small number of the project's 1.88 million trees

Avoided Deforestation

Provision of capital and inputs enables more intensive land use. For example, farmers can replace cattle grazing which requires little maintenance but is environmentally destructive, with crops that require more looking after but have a higher yield. The estimated impact of this is a saving of one hectare in avoided deforestation per 30 hectare plot, so around **1000 ha of prime rainforest has been saved from further deforestation**.



Forests contribute around one sixth of global carbon emissions when cleared and have the potential to absorb about one tenth of global carbon emissions up to 2050²

The Challenge

It scarcely needs repeating that climate change is one of, if not the most, pressing global problem we face today. The more we can do to stop the accumulation of carbon in the atmosphere, the more secure our future will be. Forests are one of the world's largest carbon sinks, absorbing 2.4 billion tonnes of carbon dioxide each year and storing billions more. As much as a sixth of global emissions are estimated to come from deforestation, so avoided deforestation and reforestation are absolutely critical in meeting the targets on carbon emissions and avoiding environmental catastrophe.



Forests are critical in providing a carbon sink to avoid the release of carbon into the atmosphere

² FAO, 2012

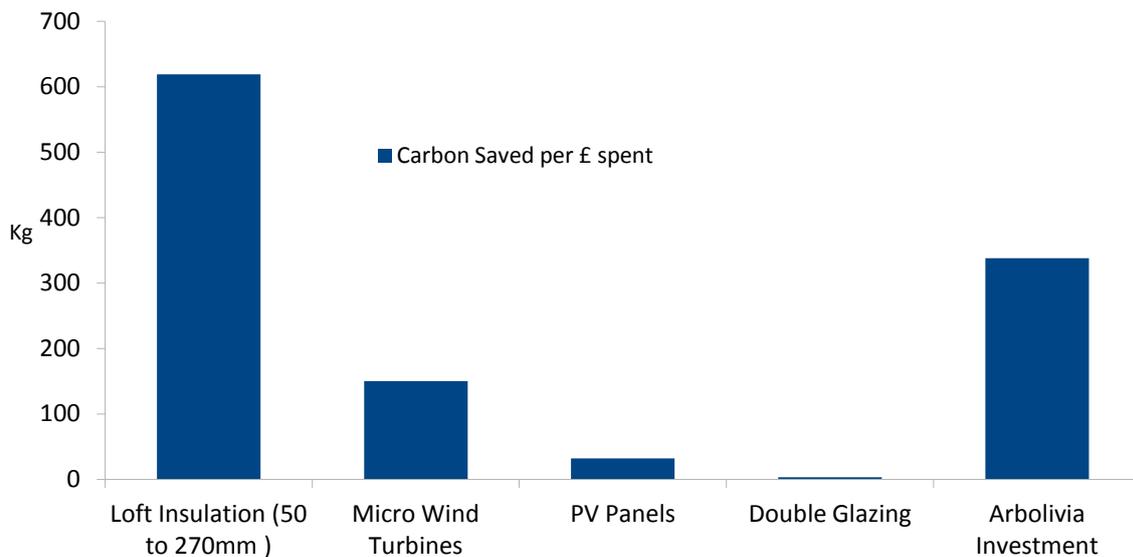
Our Response

We help farmers to move out of an environmentally destructive cycle of slash-and-burn farming, and thus avoid further deforestation. At the same time, farmers are helped to grow native hardwood trees. These trees grow quickly in the tropics and lock up carbon for the long term.

Social Impact

One of the key environmental benefits of the project is the sequestration of carbon which directly counters climate change. We estimate that the project has already **sequestered 162,000 tonnes of carbon and will absorb 621,000 tonnes of carbon over the lifetime of the project.**

This includes an estimate for the conservation and agro-forestry areas and is higher than the verified 300,000 tonnes for 995 hectares of plantation forestry (this includes a 30% contingency allowance and only relates to a proportion of the planted area). It doesn't include the very significant potential saving of carbon which might otherwise be released on felling more trees, as is the likely scenario without the project's intervention. In any case, it is a significant amount of carbon, equivalent to that consumed by 606 average UK families over the lifetime of the project.³



Pound for pound, investing in the project has been shown to be one of the most cost effective ways of mitigating carbon footprint.⁴

³ Assumes 26 million households in UK, average carbon footprint of 25.6Tonnes a year, 40 year project.

⁴ Small World Consulting, 'Comparing returns in Carbon Mitigation Investment Projects', November 2010



“The trees are for our children, but the maintenance payments keep us going” – Nimia

The Challenge

Smallholder farmers are largely subsistence farmers with very little capacity to earn cash for everyday needs, let alone saving and investing in their future. This means that they are locked into a cycle of poverty, barely growing more than they need for their own consumption and having very little cash for essentials that they cannot produce themselves. Neither is there any money to fund further education, which severely limits the opportunities open to the children of smallholder farmers, continuing the cycle of poverty.



Farmers like Nimia rely on short-term maintenance payments

Our Response

The project pays participating farmers a small but vital sum to look after the trees. Four payments of \$50 are made in the first year when more work is involved, reducing to one payment of \$50 after year four.

30951 cacao trees
43 hectares conservation areas
Food and Trees
 2445 rubber trees 2721 mandarin trees
 692 mango trees 1917 orange trees
73718 citrus trees
3622 kg seeds 18760 shade trees
 2444 rolls wire fencing



Farmers like Ruben use the trimmers provided by the project to save time and be more productive

Plant material for cash crops such as coffee and citrus fruits are provided free of charge, along with technical advice for the maintenance of the crops. Farmers are thereby enabled to grow cash crops in the shade of the trees and to generate short-term revenues.

Farmers are also provided with inputs which they couldn't otherwise afford, which enable them to farm more productively and therefore, more profitably. These include fencing, trimmers, low cost natural fertiliser and seedlings.

Although native hardwood trees take a long time to grow and don't reach commercial maturity for 25-40 years, trees are required to be thinned to optimise overall returns. This involves the felling of the weakest trees in order to leave sufficient room for those remaining. The trees removed (the thinnings) may be sold and the farmer receives 50% of any commercial value.

Social Impact

In 2015, a total of \$45,000 was paid to farmers in respect of maintenance. This doesn't sound a lot, but it can make the difference between being able to afford a basic good such as cooking oil, or not. A recent visit confirmed how important some farmers regard these payments. In one case, a family had been reduced to killing a monkey for meat to avoid going hungry and the payment had been used to buy essentials for the family that they could not otherwise have afforded.



Farmers receive modest but vital payments for the work they carry out in maintaining their trees

In 2015 farmers received gross revenues of \$30,500 from cash crops. None of this is retained by the project and goes directly to the farmers. This further enhances the attractiveness of the climate smart agricultural system employed by the project, meaning that farmers' incomes are bolstered in the short-term whilst they wait for the longer term timber revenues.

Farmers are also receiving a short term benefit in the form of **wood that can be used for their own construction or for firewood.** The first thinnings have no commercial value due to the costs of transportation, but some of the thinnings can be used by the farmers themselves. We are investigating making commercial use of these first thinning in the form of biomass fuel, but this is still in the embryonic stages.



Don Pedro (right) looks on as 5year old Palo Yugo is thinned. This sizeable tree has no commercial value but can be used by Don Pedro for his own building.

The second thinnings are just starting to be realised and a total of **\$15,215 was realised for farmers from timber sales in 2015.**

The project has already had a material benefit on the lives of farmers. Isidro Colque Condo (above left and right) was visibly wealthier on our return to see his plot after just 2 years. And his youngest child will be the chief beneficiary.



February 2011



July 2013



“If we sell the wood in Bolivia it’s not a good business, because they are always cheating us. Only farmers get poor. It’s always the same. The people who don’t work get rich and fat. The farmers get poorer. Its why we are going to export this wood and right now ArBolivia is leading this activity to get a fair price and we are like one association” - Ezekiel Salvatierra Hurtado, Farmer

The Challenge

Plantation forestry almost always perpetuates a model that extracts the majority of the profits overseas. Even so-called ‘sustainable’ forestry businesses operate on the basis of buying up land, employing people and exporting the profits overseas. Even if this enhances the welfare of the relatively select few that are employed, it does little to really change the situation, with local employees having very little power. Smallholder farmers in Bolivia are also subject to the terms dictated by more powerful institutions. In particular, with few choices in selling their produce, they get a poor deal.

Our Response

Rather than just paying wages and continuing the model above, the project seeks to enter a mutually beneficial partnership with profits being split equally.



The farmer owns the land and provides the labour, whilst investors in the project invest capital to pay for seedlings, equipment, project oversight and all important training and technical advice. Timber profits are then split equally between the farmer and investors in the project.

The project has also established a timber harvesting, processing and sales business so that farmers receive a return for the thinnings as well as the mature trees. The project is able to aggregate timber from widely distributed plots meaning that farmers can sell timber that they would not otherwise be able to do. Furthermore, ArBolivia has obtained the licences needed to harvest timber, which individual farmers do not have the capacity to obtain. Through its' knowledge of markets and sales capability, the project is reaching out to buyers with the aim of securing better prices for farmers.



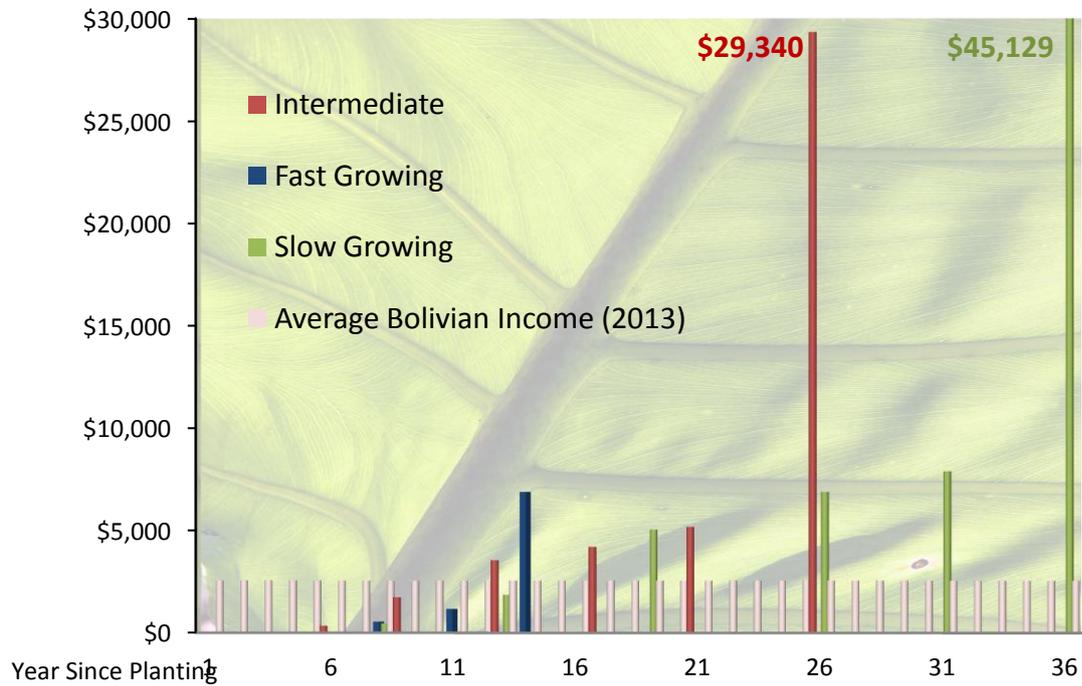
The project aggregates timber enabling farmers to sell at a much better price

Social Impact

Although the first sales of timber from thinnings have been achieved, the key benefit of this project is the long-term income from an equal share of timber. Trees are viewed as a long term asset that can be used to fund specific needs such as further education for children and grandchildren, or for unforeseen healthcare provision. The growing of trees also gives lenders confidence so that farmers can secure microfinance loans.

Collateral for Microfinance
Further Education for Grandchildren
Tree Bank
Retirement Funding
Emergency Healthcare **Cash**

The actual income to the farmer, and when it comes, depends on the type of trees being grown. Although much of the income comes at the end when the plantation reaches maturity, there are significant incomes from later thinnings.

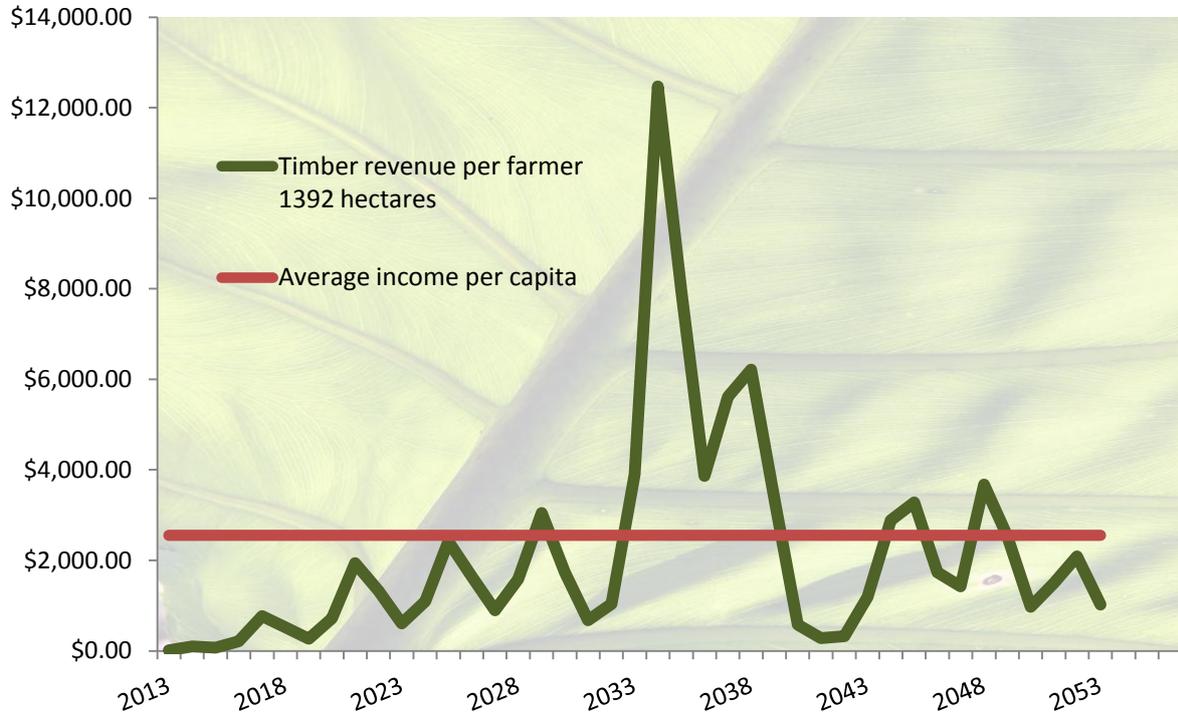


Projected Timber income from 1 Hectare of Fast, Intermediate and Slow Growing Species



Many people live at levels close to the poverty line

Long term income from the trees promise to move farmers out of a subsistence economy. Income is projected to amount to an average of \$87,000 per farmer over the lifetime of the project, a very significant amount in a country where the average income per capita was just over \$2,500 in 2013 and where many people still live on much less than this at levels below the poverty line.



This income is still to be realised, as trees take a long time to reach maturity and the only timber income realised thus far is from early thinnings.

However, the potential social impact goes much further than the farmers within the project. If we can prove this model of plantation forestry, it can be replicated on a much wider scale both within Bolivia and elsewhere.

“If we can have 1000 people in the world working with ArBolivia in different places, then our planet has more chances”

– Norman, Madidi Jungle Ecolodge Guide



“You give a poor man a fish and you feed him for a day. You teach him to fish and you give him an occupation that will feed him for a lifetime.” - Chinese proverb

The Challenge

Smallholder farmers operate in a highly challenging environment. They lack access to capital, knowledge and markets, whilst also being forced to denude their environment in order to survive. This is familiar pattern repeated throughout the world, where those without power or advantage have the least opportunities and remain locked into poverty.



Training is a core part of ArBolivia’s capacity building, here at a community in Monte Verde

Our Response

The whole project is designed on the principle of building the capacity of smallholder farmers to look after their land more sustainably and in doing so, earn that all important cash to give their families the opportunities that they wouldn’t otherwise have. This has been delivered through ongoing site visits, group training and access to capital and markets. In 2015 the following was delivered:

- On site training on plantation management for 889 farmers
- Workshops on fire prevention for 311 farmers
- A workshop for 45 farmers on business development of wood products
- A workshop and site visits for 98 farmers in climate smart agroforestry
- A workshop for 25 farmers on business planning for crop production
- Facilitation with microfinance institutions
- A workshop and on site training for 12 farmers in wood processing
- A seminar for community business leaders in business administration
- Promotion of crops and wood at 8 fairs to secure markets for farmers
- Workshops and meetings with forestry committees representing 500 farmers
- Workshops on land use planning for 40 farmers

Social Impact

Many of the impacts will only be seen over time. However, a number of quantifiable outputs were achieved in 2015:



Marina Torres has successfully repaid her microfinance loan within 21 months and this has allowed her to sell coffee

A **Sustainable Management Plan** has been developed for the Santisima Trinidad Community in the Monte Verde area. This is an overall management plan for the more sustainable management of the community's land and gives them a blueprint for the future. I can personally vouch for the enthusiasm of the community in supporting this plan which has been developed on climate smart principles.

Microfinance has been secured for 12 farmers to invest in income enhancing processing equipment that allows them to sell coffee and other crops.

A **locally operated and run saw mill** is established in the Santisima Trinidad Community. This is generating employment for 7 people and most importantly allows the community to make use of smaller trees and to increase the efficiency of their timber operations. They also receive a 20% premium over what they might otherwise have received for their timber.



The saw mill is run by the local community at the Santisima Trinidad community



“Monoculture forests tend to be seen as a good thing, because they are green and pretty. But if you approach them, you won't hear a single bird, because there is nothing there, just silence” - Guadalupe Rodríguez, Rainforest Rescue

The Challenge

The Bolivian rainforest constitutes one of the most bio-diverse environments on earth and the progressive deforestation inevitably results in a catastrophic loss of biodiversity. They are replaced by grazing for cattle, rice and bananas, with low levels of bio-diversity. More generally, timber plantations resemble ‘green deserts’ of identikit trees that are a sad replacement for the rich diversity of the rainforest. These monocultures of non-indigenous trees may grow quickly, but they do little for the natural environment. Loss of trees has also exacerbated flooding. Some of the areas in which the project operates has seen unprecedented flooding in recent times, with significant loss of life and property.



Biodiversity is a critical part of the ArBolivia Project



Technicians sample the soil to ensure that trees are naturally suited to the local conditions

Our Response

By way of contrast, the project works with 10 native species and teak (which is naturally suited to the area). Instead of establishing a large area of one species, ArBolivia works with farmers who own plots of land that are varied and very widely distributed over many hundreds of miles. Site surveys are conducted at outset to ensure that trees are selected on the basis of their natural suitability to local conditions. In particular, 230 hectares of flood resistant, Palo Maria trees have been planted. 290 hectares of conservation areas are also being created.

Social Impact

The growing of diverse plantations of native hardwood trees has an **intrinsic ecological value**, the trees being thing of great beauty. This is in stark contrast to the typical monoculture plantations of non-indigenous trees.



A typical monoculture is poor for biodiversity



In contrast, the project's plots are varied places of beauty and biodiversity

The increase in biodiversity can be objectively measured. The Shannon Wiener Index of richness or evenness of biodiversity is used to identify the scale of the biodiversity gain. A normal range is considered to be 1.5 -3 and 4 is considered rare. Without intervention farms carry a very low index value of 0.8. In plantation areas, the value rises to 2-3 or 4, depending on the land management practices. In simple terms, this means that **biodiversity levels have been restored to 'normal' levels and in some cases, well above normal**. It will never achieve biodiversity on a par with the natural rainforest, but the project clearly results is a major biodiversity gain.



A clear bio-diversity gain – a typical plot on the left compared with deforested grassland on the right

Trees also play an important role in preventing flooding by stabilising soils. This is one of the most important functions of the project's conservation areas. The value of this was underlined when the worst flood in living memory occurred in the Beni area in 2013. The flood waters extended 10km from the river causing huge devastation and loss of property and livelihoods. Whilst the non-flood resistant trees died in the floods, the project's flood resistant Palo Maria trees survived.



In 2013, the worst floods in living memory hit the Beni area. Although some farms were ruined, the project's trees helped to reduce the damage.

Left: The brown colour on the trees indicates the level of the floods.

Right: Palo Maria is grown by farmers where flooding is an issue, since it can tolerate standing water..



What the Farmers Think

The project is wholly dependent on the goodwill and hard work of the farmers, so one measure of success is what they think about it. Here's what some of them said:



Ezekiel Salvatierra Hurtado

“The wood is going to be more valuable because there is no more forest ... right now Arbolivia is leading this activity to get a fair price and we are like one association.”

– Ezekiel Salvatierra Hurtado

“These people who trust in us – we need to tell them that they can trust us because we are hard working. We want to re-assure investors that we are going to accomplish the contract.”

– Isidro Colque Condo

“I like the plantation. This is because I have children and I will have grandchildren. Something could happen any time – diseases, illnesses – but this will stay.” – Antonio Abrego

I think that the partnership is equal and fair. Although the maintenance payments don't meet the full costs of looking after the trees, they are okay as I would have to do it anyway. The main benefit is the training I receive in looking after my other crops. – Elias Marmani

I was interested in the project but my husband wasn't. As the land was mine I decided to go ahead and my husband has come to regret it and says that I have done better than him – Nimia



Elias Marmani

And our investors

14 of our existing investors have also been to visit the project and universally praised the project:

“The targeted farmers appear to genuinely need and appreciate our help and partnering ... you can see the project is making a difference to their lives” – JW

“It turned out to be a really inspiring trip. The level of support that the project gives to farmers is exceptional” – AS

“I found the whole visit extremely positive. I had never doubted that trees were growing, but it was good to see them looking so healthy and well tended” – AC

“We were very, very impressed” – CGJ



Investor meets farmer



A few investors with some of the ArBolivia staff



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