

World Land Trust Ecosystem Services Annual Report 2010



Mountain scenery at Tapichalaca Reserve, Ecuador, with (inset) images from Ecosystem Services projects © Andrew Smiley, Guyra Paraguay, Roberto Pedraza



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1. Executive Summary

Over the past 22 years the World Land Trust (WLT), an international biodiversity conservation charity, has been working to safeguard some of the world's most threatened habitats. Based in Suffolk, England, the Trust operates through a global network of carefully selected conservation NGOs, our project partners, in whom the ownership and management of the habitats we support is vested. This model of indirect intervention draws on the detailed knowledge possessed by these partner organisations and ensures that direct control of project areas remains in the hands of trusted local institutions. The ultimate benefit is a form of habitat preservation that is sustainable and effective over the longer-term.

'Ecosystem Services by the World Land Trust' was originally formed in 2005 as the Restoration Ecology Programme and overlays this partner-oriented approach to conservation with a greater focus on the delivery of quantified environmental benefits. Ecosystem services can be thought of as the suite of beneficial environmental outputs, or products, delivered by natural ecosystems. Forests, in particular, provide a wealth of these benefits, with the most widely recognised being carbon storage, or sequestration. Others include:

- hydrological benefits such as purification and stabilisation of run-off from catchments
- filtration and cleansing of air
- provision of nutrients to improve soil fertility
- pollination (wind and insect-based) of crops in hinterland areas
- supply of plants and genetic stock for food and medicinal purposes

Often taken for granted, these ecosystem services represent an inherent part of what makes natural ecosystems so valuable to mankind, above and beyond their evident cultural significance and aesthetic value. WLT's Ecosystem Services Programme shares the Trust's core biodiversity conservation objective but promotes this through projects that draw upon and quantify the embedded ecosystem service benefits. They link the funds of our supporters with quantified deliverables as a result of habitat preservation and/or restoration. At present our work can be further divided into four main themes: the Carbon Balanced programme, the Tree-Establishment programme, Large-Scale REDD+ project development, and NGO knowledge exchange.

Carbon Balanced by WLT:

Developed in response to the growing threat of significant climate change and the continuing decline in biodiversity at a global scale, the programme offers private individuals and small-medium sized organisations a means to calculate and offset their unavoidable carbon footprint. Underpinning this is WLT's fundamental belief in the importance of energy reduction and efficiency measures as the first steps in reducing one's environmental impact. Once these areas have been addressed, Carbon Balanced projects are designed to offset those residual greenhouse gas emissions that cannot be avoided, whilst delivering real benefits for biodiversity conservation.

Offsets are generated by preserving forest under imminent threat of deforestation, supplemented where necessary by selective reforestation and assisted natural regeneration to connect fragmented and degraded forest habitats. Combining WLT's emphasis on sites of critical conservation importance with the technical requirements for robust emissions offsetting, our Carbon Balanced projects are principally located in Ecuador. In 2010 we continued the expansion of the Carbon Balanced programme, with existing project areas extended and the development of a new project, launched in early 2011.

Tree-Establishment:

When accomplished using an appropriate mix of native species, reforestation can be a powerful tool for restoring degraded and fragmented forest habitat, and creating buffer zones around key biodiversity hotspots. Slope stabilisation, reduced rates of soil erosion and improved hydrological flow are other observable benefits of reforestation and of particular significance in upland areas. In 2006, WLT and major energy provider Scottish and Southern Energy (SSE) entered into a partnership that has enabled the establishment of over 1.2million trees during the intervening years. Now in its third phase, this successful programme has advanced biodiversity conservation by restoring habitats across three continents. Programme targets are couched purely in terms of the number of trees planted and not the carbon storage that is achieved through such action. Consequently the initiative directly recognises the wider

environmental benefits from tree planting, rather than focussing narrowly on any one ecosystem service in particular.

Large-Scale REDD+ projects:

REDD+, or enhanced Reduced Emissions from Deforestation and forest Degradation, has become a focal point for international climate change negotiations within the United Nations (UN). With forest loss contributing from 12-18 per cent of annual global emissions, REDD+ is now widely recognised as the most cost-effective way of achieving the drastic emissions cuts that will be required to avoid the scale of climate change capable of causing severe and lasting damage to people and ecosystems. Mindful of the co-benefits for biodiversity/habitat conservation of reducing deforestation rates, WLT has long been at the forefront of trials into the application of REDD+; as far back as 1995 the Río Bravo project explored such ideas, while our small-scale Carbon Balanced projects also made use of the technique well before it rose to its current prominence.

From December 2008, WLT's involvement in piloting REDD+ as a catalyst for emissions reductions and tropical forest conservation expanded to incorporate the design of large-scale carbon offsetting projects utilising the concept. These initiatives are an order of magnitude larger than Carbon Balanced projects and their design is subjected to a lengthy external validation process. In 2010, a significant milestone was reached when the Paraguay Forest Conservation Project, a collaboration between WLT, Singapore-based Swire Pacific Offshore Operations Pte Ltd. (SPO) and WLT's Paraguayan project partner, Guyra Paraguay, was certified to Gold level under the internationally recognised Climate, Community and Biodiversity (CCB) standard for voluntary carbon offsetting. Through the application of REDD+ and an innovative Payments for Ecosystem Services mechanism, whereby individual landowners are directly rewarded for taking concrete steps to preserve and enhance forest cover on their land, this project will preserve two critically threatened forest ecosystems and improve the socio-economic standing of one of Paraguay's more deprived communities. In so doing the project will sequester sufficient carbon dioxide to offset SPO's carbon footprint over a 20 year period.

NGO Knowledge Exchange:

Having played an active role in habitat conservation for many years, WLT has amassed considerable practical experience in project development, including the effective application of ecosystem services to stimulate funding for conservation. We are also able to call upon the collective knowledge possessed by our project partners across the world. In view of the unprecedented scale of biodiversity and habitat loss, WLT, in partnership with IUCN National Committee of the Netherlands (IUCN NL), embarked on a programme of knowledge-sharing for conservation NGOs based in Africa. Beginning in February 2010 and taking the form of tutor-led workshops, the Knowledge-Exchange programme focussed on the use of carbon as a funding mechanism for conservation. This is an area that WLT believes will increasingly become the focus of public and private funding and yet it is widely recognised that Africa, a continent possessing significant forest resources, is disproportionately underrepresented in the development of forest-carbon projects. Blending three phases of theory with practical application, the Knowledge Exchange workshops aimed to impart the skills required to capitalise on future funding opportunities. Staff from WLT and IUCN NL, together with representatives from the Nature Conservation Research Centre Ghana, and Face the Future, a developer of forest carbon projects according to international carbon standards, attended these events in a training and support capacity. With more than 20 NGOs from across Africa present, the Knowledge-Exchange was judged a success by both participants and trainers. WLT is now finalising the production of an output report summarising the present forest-carbon landscape and lessons learnt during the workshop programme.

None of this would be possible without the funds contributed by the Ecosystem Services Programme's supporters, from businesses and private individuals to other conservation organisations. As always, we appreciate both the financial contributions and the feedback we receive from our supporters. WLT's actions are founded on a fundamental belief in the importance, value and beauty of Earth's biodiversity in all its forms; we are fortunate to have supporters that share this appreciation of the natural world and are willing to commit to its preservation.

2. The Carbon Balanced Programme

Both climate change and the continuing decline in biological diversity at a global scale pose a significant threat to the integrity of the Earth's natural ecosystems, terrestrial and marine alike, and are to a certain extent anthropologically-induced.

With this in mind, the Carbon Balanced Programme was launched as a mechanism through which organisations and private individuals could calculate their carbon footprint and, should they choose, voluntarily offset their unavoidable greenhouse gas (GHG) emissions. This distinction between one's existing carbon footprint and the unavoidable, or residual, element highlights WLT's belief in the importance of offsetting *as part of a wider environmental strategy*. Emissions offsetting has at times attracted criticism as an indulgence of western culture serving only to excuse individuals/organisations for continuing to lead fossil fuel-intensive lifestyles. However, in view of the severity of potential climate change, WLT feels that there is a place for responsibly-practised offsetting alongside and in addition to energy reduction and efficiency measures.

Carbon Balancing is not, however, a one-dimensional means of addressing climate change. Contributions to the programme might be denominated in tonnes carbon dioxide equivalent (t/CO₂e.), but they should instead be viewed as broader payments to ensure the preservation/restoration of critically threatened tropical forests, and in so doing, the provision of a wide variety of ecosystem services, including carbon storage. All Carbon Balanced projects are designed according to the principals of the widely recognised Climate, Community and Biodiversity (CCB) standard for voluntary carbon offsetting, a protocol that places considerable emphasis on ensuring the delivery of biodiversity and social 'co-benefits' alongside the climate-related aspects. Likewise, project locations are selected to fulfil both the conservation-driven requirements common to all WLT projects and strict additional criteria governing their emissions offsetting effectiveness.

2.1. Carbon Balanced Offsets

The theory behind emissions offsetting is relatively straightforward. In common with all gases, GHG's move freely within the Earth's atmosphere. The warming effect of gases emitted at any given location can therefore be counterbalanced by reductions in the emission, or alternatively by absorption from the atmosphere, of an equal volume of gases at another location. Different GHG's have different warming 'potentials' but all can be equated to the warming effect of carbon dioxide through the use of 'equivalence factors'.

The basic mechanisms through which Carbon Balanced offsets are generated fall into two categories:

- Preventing the release of carbon stored in plant matter when this vegetation is burnt or decays naturally. The principle behind avoided deforestation/REDD.
- The absorption of atmospheric CO₂ in plant matter as it grows. The basis of reforestation and habitat restoration activities.

These principles lie behind the following recognised practices employed at Carbon Balanced projects:

- **Reforestation** – The planting of young seedlings on recently cleared areas of land to reconnect fragmented forest and create buffer zones around key biodiversity sites. Native species are always used, taking account of the original forest composition.
- **Assisted natural regeneration** – Concrete actions to promote the re-vegetation of partially cleared areas of forest through natural succession. Common steps include preventing incursion by grazing livestock and establishing effective fire management programmes.
- **Rehabilitation of degraded woodland** – Promoting the regeneration and recovery of degraded areas of habitat. For example, practical steps to achieve this include preventing the harvesting of residual scrub vegetation for firewood and charcoal production. This is assisted, where necessary, by selective enrichment planting.
- **REDD** - Sometimes referred to as avoided deforestation, REDD involves preventing forest under imminent threat of deforestation from being cleared. A simple concept but one dependent on a range of extremely complex technical criteria being satisfied.

Foremost among them is the necessity for a real and quantified threat of forest clearance in the *imminent* future, were the project not to be initiated.

Each of these mechanisms is suited to a different set of circumstance and while earlier projects were predominantly reforestation-based, more recent projects focus on the application of REDD. The latter is WLT's preferred strategy as it helps preserve existing forest with its entire biodiversity component intact and requires fewer cost inputs. Although the CCB standard is used as the basis for project design, Carbon Balanced offsets themselves are presently self-certified. This is largely down to the significant costs, monetary and in human resources, involved in the assessment process, which reduce its viability for small-scale projects. Another advantage of this self-certified approach is the freedom to innovate in project design, enabling WLT to consider methods that have yet to become established in the language of formal offsetting protocols. In this respect, Carbon Balanced projects provide a valuable test-bed and function in capacity building within our project partners.



Figure 1. Distribution of Ecuadorian Carbon Balanced projects and key Ecuadorian National Parks (outlined) © WLT.

2.2. Carbon Balanced Projects

Of the five existing Carbon Balanced project sites, the majority are located in Ecuador, a nation of critical importance for biodiversity conservation. WLT project partner Fundación Jocotoco owns and manages these sites and has been instrumental in developing the Carbon Balanced programme to date. Grupo Ecológico de Sierra Gorda (GESG), WLT's Mexican partner has also assisted in this regard, with a small volume of offsets placed at their Sierra Gorda Biosphere Reserve. In 2010 the Trust entered into partnership with Ecuadorian NGO, Nature and Culture International, Ecuador (NCI), and together we are now in the final stages of developing yet another Carbon Balanced project within the globally renowned Podocarpus-El Condor Biosphere Reserve.



2.2.1. Fundación Jocotoco – Buenaventura, Ecuador

Home to one of the richest and most diverse avifauna to be found in Ecuador, Buenaventura is located in the Andean foothills to the south-west of the country. Despite the predominantly dry regional climate, a narrow band of low-altitude cloud forest exists here between ~500 and 1,200m a.s.l. and it is this increasingly rare vegetation type that explains the high levels of biodiversity.

The moist conditions found at these altitudes support a lush, varied sub-tropical flora, which in turn provides the ideal habitat for birds such as the Long-wattled Umbrellabird (*Cephalopterus penduliger*) and El Oro Parakeet (*Pyrrhura orcesi*). These are among 12 Globally Threatened bird species present at Buenaventura, with the site acting as the 'type locality' for both the latter species and the similarly named El Oro Tapaculo (*Scytalopus robbinsi*). Beyond its birdlife, the Buenaventura reserve is also noteworthy for the recent discovery of a new species of glass frog, subsequently named for the location: *Cochranella Buenaventura*.

Being relatively accessible to the nearby settlements of Piñas and Zaruma, the forests on these slopes have suffered from extensive deforestation. In response, Fundación Jocotoco commenced a programme of land acquisition in 1999, gradually raising funds to purchase the

few remaining pockets of original forest with a view to reconnecting them through habitat restoration.

In 2005 the Carbon Balanced programme contributed to this initiative, with funds raised by

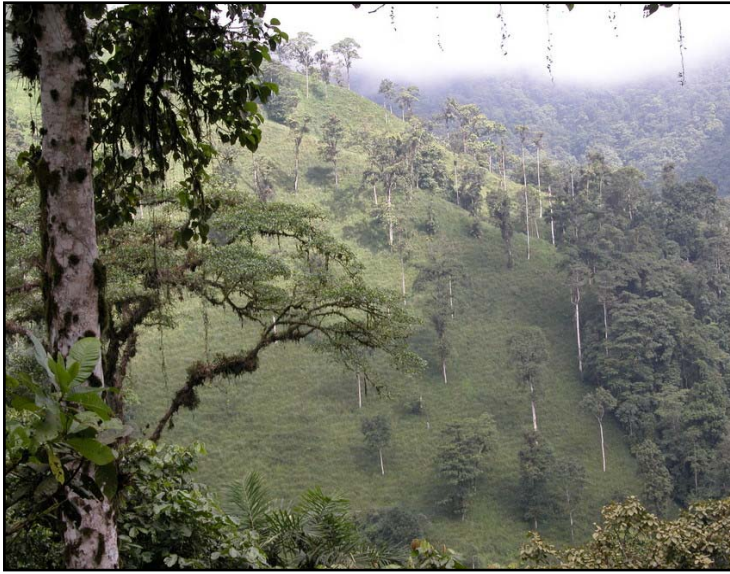


Figure 2. Subjected to widespread clearance and degradation, the hillsides at Buenaventura are extremely important sites for conservation within Ecuador. Carbon Balanced funding enabled Fundación Jocotoco to purchase areas similar to that pictured above for reforestation and natural regeneration. Over time this will generate carbon offsets and reconnect forest fragments, thereby enlarging the corridors through which animals can travel © WI T

individual and business supporters enabling the purchase of an area of recently cleared land. Since this time, Fundación Jocotoco has initiated and managed the process of habitat restoration. Seedlings from 14 native tree species, all of which purchased from local nurseries, were established on the site and will sequester atmospheric carbon dioxide whilst gradually reconnecting nearby fragments of forest. Based on the most up-to-date available data, WLT forecasts that this activity will offset in excess of 1,400t/CO₂e over the 20 year project accounting period.

2.2.2. Fundación Jocotoco – Tapichalaca, Ecuador

Reserva Tapichalaca, named after the Andean peak centrally located within this ~2,000ha wilderness, is of considerable significance for conservationists, in addition to being the site of a Carbon Balanced project. In contrast to many WLT projects, the climate at this relatively high altitude reserve, which is situated within the Andes Mountain range, is predominantly temperate and extremely wet. These conditions allow the development of a diverse, montane broad-leaved forest unique to the south-eastern corner of Ecuador and characterised by a distinctive climax vegetation that includes tree species of the *Podocarpus* genus. The importance of this habitat is recognised by the adjoining Podocarpus National Park, a site of considerable conservation significance globally, and for which Reserva Tapichalaca acts as a buffer zone.

Floral diversity at Tapichalaca is matched by that of its fauna,



Figure 3. The Podocarpus-El Condor Biosphere Reserve, within which Tapichalaca is located, is of global significance for the diversity of its flora. There have been 150 threatened species of plant found here, many of them endemic to this corner of Ecuador, with Epiphytes being particularly abundant – the orchids pictured here are among an estimated 70 plus varieties to have been recorded © Nigel Simpson, Francisco Sornoza.

with the reserve itself founded by Fundación Jocotoco in order to preserve the only known habitat of the Jocotoco Antpitta (*Grallaria ridgelyi*). This ground-dwelling species is one of ten Globally Endangered birds present and was first discovered here in 1997 by WLT-US deputy-director Dr Robert Ridgely. With large mammals such as the Mountain Tapir (*Tapirus pinchaque* – Globally Endangered) and a wide range of similarly classified reptiles having been recorded, Tapichalaca's status as a conservation priority is well-founded.

Forest clearance for timber and new agricultural land is a growing threat to the continued survival of this unique habitat. In response to the imminence of this threat, the Carbon Balanced programme funded the purchase of additional land on the immediate agricultural frontier to the south-west of the previous reserve boundary. Incorporating this site into the existing reserve lifted any threat of deforestation and, in so doing, is generating emissions offsets for business and individual supporters over the 20 year project horizon used by WLT Carbon Balanced projects.

2.2.3. Fundación Jocotoco – Yanacocha, Ecuador

The Carbon Balanced project at Yanacocha, high on the slopes of the Pichincha Volcano in north-central Ecuador, is a perfect example of the broader ecosystem services concept and the other functions served by WLT/Fundación Jocotoco's conservation activities.

Yanacocha Reserve, currently 1,250ha in size, lies in the upper montane zone at altitudes of 3,500-4,000m a.s.l. In common with other Carbon Balanced sites, the floral diversity of the original habitat is exceptional, with a form of *Polylepis* woodland – a threatened habitat type – present as the mature vegetation. The principal drivers of deforestation here are incremental burning and harvesting of wood for charcoal, as a result of which the slopes at Yanacocha have been denuded of much of the original arboreal cover. Fundación Jocotoco is now working to purchase what little forest remains and reconnect these areas through regeneration of the intervening degraded secondary vegetation.

These actions are preserving a vitally important habitat for biodiversity conservation, supporting four near-endemic bird species in addition to the Critically Endangered Black-breasted Puffleg (*Eudocnemis nigrivestris*), a hummingbird whose entire global population is restricted to the forested ridges at Yanacocha. This site is also within the known territories of large predators such as Puma (*Felis concolor*) and Spectacled Bear (*Tremarctos ornatus*), indicating a well-functioning ecosystem when in its primary state.



Figures 4 & 5. Reforestation and forest rehabilitation are employed at Yanacocha to restore the original forest habitat. Both techniques make use of seedlings purchased by Fundación Jocotoco from local community-run nurseries, an example of the social legacy of WLT projects. Landslides and unsustainable rates of soil erosion are major problems in such steep upland areas following forest clearance, but gradually decline in severity as forest cover is restored © Paul Bamford, Andrew Smiley

In 2007 Carbon Balanced funding enabled the purchase of an area of mixed-composition standing forest, degraded woodland and recently cleared pasture. Under the management of Fundación Jocotoco a projected 10,500t/CO₂e. of emissions offsets will be generated through avoided deforestation, forest rehabilitation and assisted natural regeneration.

Equally important are the slope stabilisation and hydrological benefits delivered as a result of maintaining and enhancing the forest cover. Run-off from these slopes helps supply fresh water to residents of the Ecuadorian capital, Quito, located only 15km from the reserve - the importance of this contribution is formally recognised by Yanacocha's inclusion in the regional

water supply scheme. The reserve's proximity to Quito is also useful in its role as an educational resource, showcasing the benefits and importance of conservation.

2.2.4. Fundación Jocotoco – Río Canandé, Ecuador

At only 500m a.s.l. the tropical forest at Río Canandé, situated in Esmeraldas province in the north-west corner of Ecuador, could not be more different from the montane woodlands of Yanacocha. The prevailing climate is warm and extremely wet, with some areas receiving up to 16,000mm rainfall p.a. In such humid conditions vegetation growth rates are phenomenal, resulting in the development of a lush tropical flora known as the Chocó.

Particularly important for its restricted-range avian fauna, the Ecuadorian Chocó is one of 25 designated global hotspots of endemism and has five separate localities recognised as Important Bird Areas (IBAs) by Birdlife International. Invertebrates, reptiles and mammals are also noteworthy for their diversity and importance to conservation; South America's largest feline the Jaguar (*Panthera Onca*) and primates such as the Critically Endangered Brown-headed Spider-Monkey (*Ateles fusciceps*) are two iconic examples.

Chocó forest originally extended uninterrupted from central Ecuador to Panama but is now a habitat of global conservation concern due to escalating deforestation over the past 50 years. To the north the majority of the Columbian Chocó has been cleared to make way for oil palm plantations and this is a pattern of land-use change that has spread to Ecuador in recent decades. The trend has exacerbated the existing pressures on these forests (logging and the expansion of agricultural land) and thus contributed to increased rates of deforestation across the Ecuadorian Chocó – quantified at 3.8 per cent over the past decade.



Since 2009 the Carbon Balanced programme has supported Fundación Jocotoco's efforts to preserve one of the largest remaining patches of the now-fragmented Ecuadorian Chocó at Río Canandé. REDD is an ideal means of funding forest conservation here due to the very real threat posed by agricultural expansion and/or logging. Through funds raised by business and private Carbon Balanced supporters, WLT has helped Fundación Jocotoco expand the reserve to its present size of 2,150ha, generating emissions offsets in the process.



Figures 6 & 7. The Purple-chested Hummingbird, (*Amazilia rosenbergi*) is among the many species of hummingbird found at Río Canandé. This diversity of avian fauna here is recognised by the area's status as an Important Bird Area (by Birdlife International). The threat of deforestation is, however, all too real; incursion of oil palm (above right) plantations into these forests has prevented the expansion of Carbon Balanced activities at this reserve on at least one occasion over the past year © VIREO, Andrew Smiley

The Ecosystem Services team are presently actively engaging with our Ecuadorian partners to extend the Carbon Balanced project area at this reserve through the purchase of nearby forest threatened with clearance for oil palm development.



2.2.5. Grupo Ecológico de Sierra Gorda – Sierra Gorda Biosphere Reserve, Mexico

Grupo Ecológico de Sierra Gorda (GESG), based in the central Mexican state of Queretaro and WLT's Mexican project partner, has evolved over the past three decades to become one of the most advanced Latin American conservation organisations. Although biodiversity conservation is a priority, GESG also has a strong social dynamic; Queretaro is one of the most socially deprived regions in Mexico and this has been a key driver of widespread environmental

degradation across the state over the past 50 years.

GESG works in the Sierra Gorda Biosphere Reserve (SGBR), established with the twin aims of preserving what is one of the most diverse and ecologically rich landscapes in Central America, whilst also improving the socio-economic standing of local communities. Located in north-central Queretaro, SGBR exhibits almost unmatched levels of biodiversity and habitat diversity. This is a product of the geophysical character and biogeography of the region: topography is extremely varied, affecting both temperature and precipitation ranges, while the reserve also sits at the confluence of two of the globe's eight biogeographic realms – the Nearctic and Neotropical. This biogeographic convergence is exemplified by the overlapping ranges of large mammals from the Nearctic zone, such as North American Lynx (*Lynx rufus*) and American Black Bear (*Ursus americanus*), as well as representatives from the Neotropics, the Jaguar and Margay (*Leopardus wiedii*) for example.



Figure 8. At 3,700ha in size, Sierra Gorda Biosphere Reserve encompasses a wide range of habitat types, from low-lying semi-arid deserts dominated by cacti to lush cloud forest at over 3,100m a.s.l (inset images). This variation is reflected in the flora and fauna; 334 species of birds and 650 species of butterfly have been recorded to date, for example. The reserve was developed by GESG in response to increasing rates of human-induced environmental degradation over the past 50 years and has been expanded through an active programme of local community engagement that includes reforestation of hillsides and restoration of watercourses © Roberto Pedraza,

GESG's conservation strategy places a heavy emphasis on engagement with local populations and their active participation in environmental initiatives. Examples of this are community-based reforestation, restoration of stream channels and sustainable business enterprises, and an advanced Payments for Ecosystem Services (PES) scheme. The latter is one of the more developed working models of the PES concept anywhere in the world and rewards local landowners for taking steps to conserve existing habitats and/or enhance degraded habitats under their tenure. Aggregated and subject to stringent carbon stock monitoring by GESG, these activities generate carbon offsets and other ecosystem 'products' for purchase by those wishing to offset their activities. Although different to other Carbon Balanced projects in being developed solely by GESG, WLT entered into an agreement to purchase ~3,500t/CO₂e. of emissions offsets from SGBR in 2007 due to our close links with GESG and consequent knowledge of the integrity and conservation benefits of this carbon offsetting programme.

2.2.6. New Carbon Balanced Projects

Nature and Culture International, Ecuador (NCI)

Nature and Culture International, Ecuador is a community-oriented conservation organisation with a strong presence in southern Ecuador. WLT and NCI

NATURE
& CULTURE
INTERNATIONAL

have worked together on a number of initiatives over the past decade, culminating in our two organisations signing a partnership agreement in late 2010.

The Ecosystem Services team are particularly keen to strengthen ties with NCI, whose priorities and organisational capabilities are closely aligned with those of our own programme. At a global level, the use of Payments for Ecosystem Services as a means to secure funding for biodiversity conservation remains in its infancy, yet NCI already have considerable experience in this area. These capabilities will be valuable assets in further developing the Carbon Balanced programme and our desire to focus increasingly on the wider utility of ecosystems in provisioning environmental services.

Río Nea Project, Ecuador

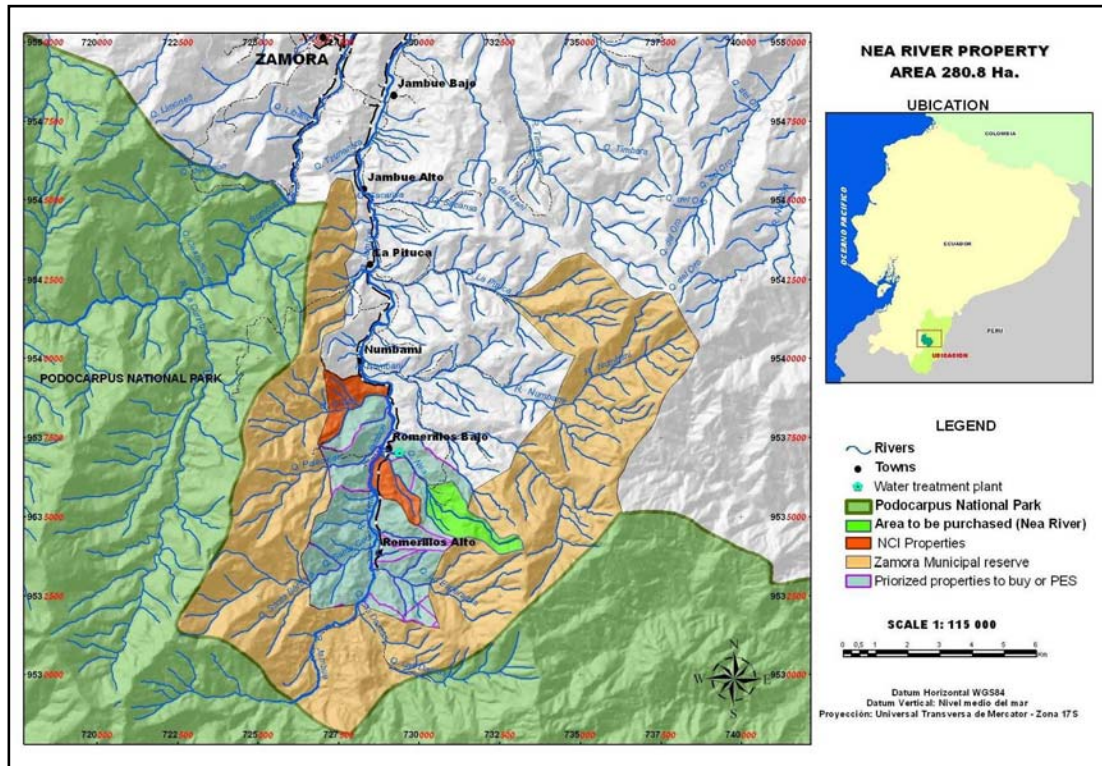


Figure 9. The Río Nea project, located in the Zamora-Chinchipec Province of south-east Ecuador, will form part of a more extensive complex of protected areas that includes the renowned Podocarpus National Park © NCI

Located in the same region of south-eastern Ecuador as WLT's existing Tapichalaca project (Section 2.2.2), Río Nea is a site of key biodiversity importance and a contributor to the municipal hydrological services programme in this area. Negotiations for the purchase of the 280ha property through the Carbon Balanced programme took place over the final Quarter of 2010 and, as of early 2011, carbon sequestration is now underway.

Set on the eastern slopes of the Andes Mountains, the project site acts as a 'buffer zone' for nearby Podocarpus National Park (Figure 9), itself the centrepiece of the globally renowned Podocarpus-El Condor Biosphere Reserve. As a lower-altitude 'saddle' within the Andes, the area acts as a corridor allowing the gradual east-west flux of plant and animal species. Consequently, regional biodiversity levels are exceptional, with three priority ecosystems for global conservation being represented in the National Park and surrounding areas: the Tumbesian Dry, Andean and Upper Amazonian Forests.

Over 5,000 varieties of plant and 800 bird species have been recorded within the wider Biosphere Reserve and this diversity is reflected at a micro-scale within the Río Nea project site, a broad stretch of cloud forest encompassing the headwaters of the Nea River. Exhibiting remarkable diversity and endemism, flowering plants and ferns are particularly



Figures 10 & 11. Orchids and other epiphytes are particularly abundant at Río Nea, with the endemic orchid pictured above (of the *Oncidium* genus) common with the Carbon Balanced project area. The White-necked Parakeet, *Pyrrhura albipectus* (right), is the symbol of Zamora City © NCI

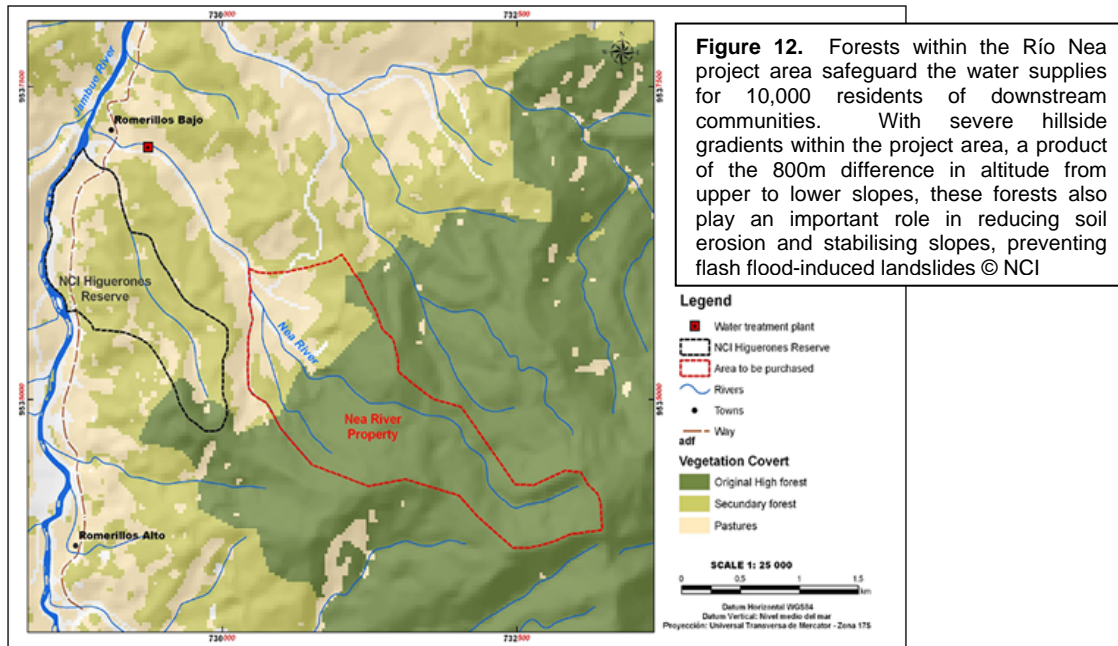


noteworthy, although large mammals and birds are also extremely well represented. Charismatic examples of the latter include the White-necked Parakeet (*Pyrrhura albipectus*) and Coppery-chested Jacamar (*Galbula pastazae*), both classified as Vulnerable on the IUCN Red List.

The Río Nea property remains in a predominantly forested state, with 74 per cent covered by undisturbed primary forest. Unfortunately the high biodiversity levels of forests in this corner of Ecuador are almost matched by the severity of the threat of deforestation that hangs over them. Logging, intentional fires and demand for increased grazing/agricultural land are the dominant drivers of deforestation at a regional scale, with the former of these being of prime concern at Río Nea itself. Around 7.5 per cent of the property was cleared of trees by its owner prior to NCI's intervention and it is known that further logging rights had already been awarded at this time. With such a demonstrable threat of imminent deforestation, the majority of emissions offsets at this site will be generated through avoided deforestation. Additional carbon sequestration will be achieved through rehabilitation of secondary degraded forest and assisted natural regeneration of the recently cleared marginal land.

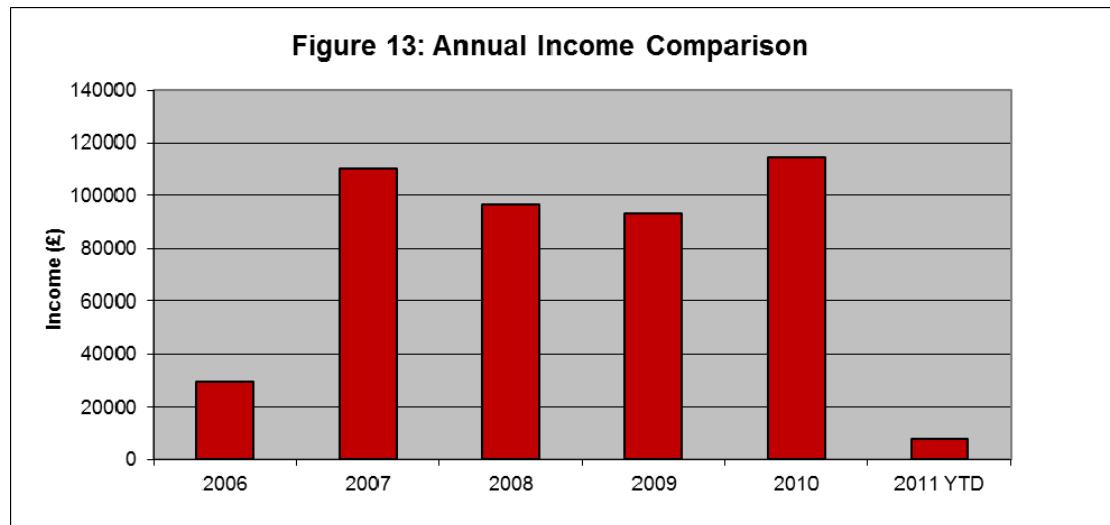
Emissions mitigation is only one element of the ecosystem services provided by forests at Río Nea, however. The Nea River supplies 10,000 residents of Zamora and other downstream settlements with a stable flow of clean water throughout the year and the forests in its headwater areas are the key to this. In 2010 the Municipality of Zamora (MoZ) became part of the southern Ecuador Regional Water Fund (FORAGUA), a financial trust developed by NCI and seven regional Municipalities. Within this framework, the MoZ have instigated an environmental services levy on water users within their jurisdiction, with payments channelled to FORAGUA. Funds are then directed toward the preservation and subsequent management of habitats of conservation value that play a direct role in the supply of water to local residents.

In the case of the Río Nea, Carbon Balanced funds secured the initial purchase of the property for incorporation into the wider regional protected areas complex. In so doing, carbon offsets will be generated for Carbon Balanced supporters and supplies of clean water to downstream users in the immediate catchment area are safeguarded. Levies raised by the MoZ for the provision of this clean water supply will then facilitate the on-going management of the land for conservation.

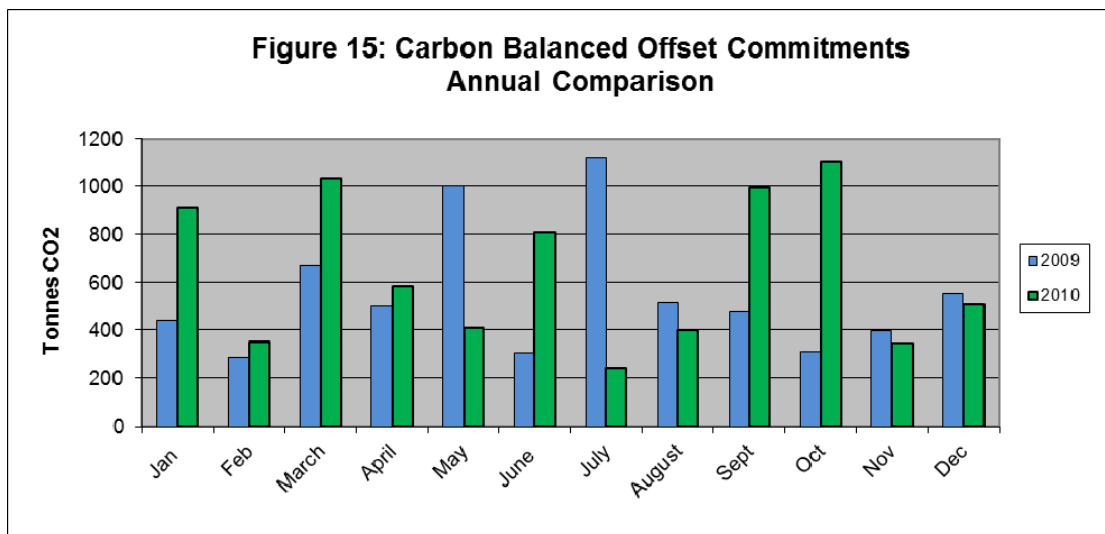
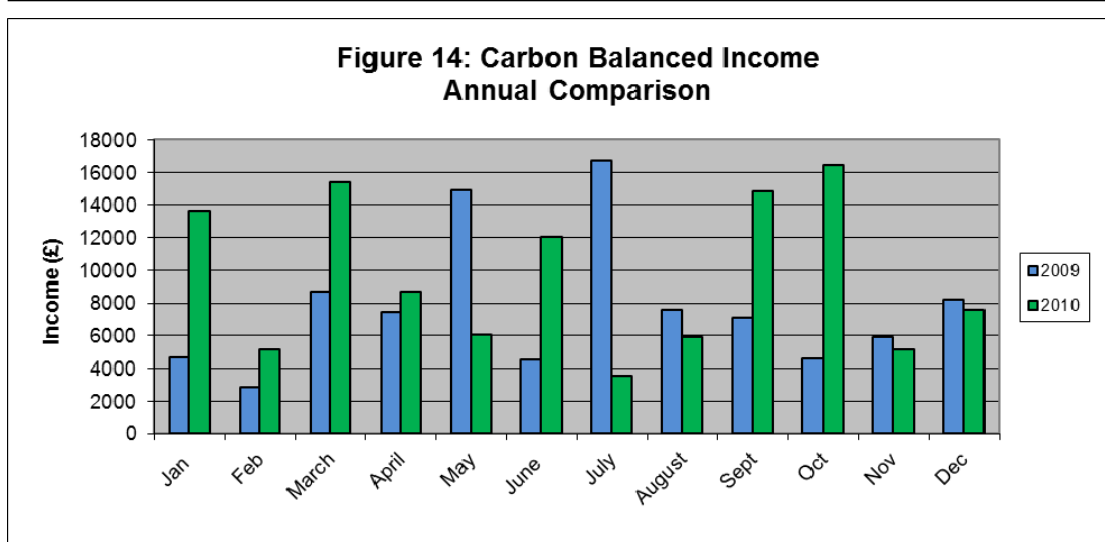


2.3. Carbon Balanced Income/Forecast

Financially, 2010 was the Carbon Balanced programme's most successful year to date, with annual income exceeding £114,000 for the first time (see Figure 13). This marks a 23% increase on the preceding twelve months and comes in spite of the continued financial pressures experienced by most sectors within the wider UK economy, charities included.



While monthly income peaked in October, financial performance was strong in each Quarter, with March, September and January also noteworthy (see Figure 14). Carbon Balanced offsets are priced at a standard rate of £15/tonne CO₂e., so it follows that the observed trends in annual/monthly income are mirrored by the volume of offset commitments received (see Figure 15). As useful as the financial indicators of performance are, it is these underlying offset commitments that reflect the true potential of the Carbon Balanced programme to bring about conservation through carbon sequestration.



In monetary terms, contributions from businesses and other organisations outweigh those of private individuals, making up almost 90 per cent of total annual income in 2010. Offset commitments were received from 55 different organisations during the year (see Page 19), over 83 per cent of these being existing supporters choosing to renew previous Carbon Balanced arrangements.

Trends in annual income are a valuable indicator of the Carbon Balanced programme's financial health and in this light WLT considers the programme's strong performance in 2010 to be an endorsement of its appeal. First and foremost, however, this financial success is a resounding testament to the commitment of our supporters, both businesses and private individuals, to biodiversity conservation and the imperative to address climate change. We would like to take the opportunity to recognise this support and thank all contributors to the programme during 2010.

The Ecosystem Services team are extremely optimistic about prospects for the Carbon Balanced programme over the coming twelve months and believe that the positive momentum of 2010 is sustainable. Carbon Balanced income through January and early February has been strong and, as illustrated above, we are fortunate to benefit from a committed and loyal supporter base. For 2011 we are pleased to have gained the additional support of Aeye Technologies Ltd, Anyjunk Ltd. and Ingenco2, all of whom are new Carbon Balanced organisations.

We are also looking forward to further growth of the Carbon Balanced Paper initiative launched last April. As a partnership between WLT and existing supporter Howard Smith Paper Group, Carbon Balanced Paper enables HSPG's customers to order products that have been Carbon Balanced to the point of supply – i.e. paper whose production and

immediate distribution-related GHG emissions have been Carbon Balanced by WLT. As of January 2011 this concept has been extended to The Paper Company, enabling an ever wider cross-section of those paper products available within the UK to be ordered as Carbon Balanced. Further information on this concept can be found at the following websites:

<http://www.hspg.com/carbon/home.html>

<http://www.paperco.co.uk/carbonbalancedpaper/index.cfm?ccs=716&cs=2509>

3. WLT Tree-Establishment Initiative

In 2006 WLT commenced a major tree-establishment programme, made possible through the support of major energy supplier Scottish and Southern Energy (SSE). Now in its third phase, this has been a transformational partnership; it has provided multiple benefits for biodiversity conservation, the wider natural environment, and for WLT's project partners involved in its delivery.

While carbon sequestration is one such environmental benefit of tree-planting, WLT's obligations under the Tree-Establishment programme are couched purely in terms of the number of trees to be established, rather than a specific volume of emissions to be offset. The current phase of tree-planting will see an additional 450,000 trees established, building on the 600,000-tree commitment under the two previous phases of the programme.

Conducted with sensitivity to the ecological context and the needs of local communities, tree planting can be a powerful tool for habitat restoration. Supplementary enrichment planting helps the recovery of degraded forests, while more comprehensive approaches can reconnect and restore the continuity of fragmented woodland or create buffer zones around sites of critical importance for biodiversity. Such actions also enhance the wider ecosystem

services provided by these habitats, some localised to the immediate vicinity, others of global benefit.



Figure 16. The Bunduki Gap, Tanzania, a tree-planting site under the SSE programme. Planting activities are conducted by WLT partner WCS Tanzania and will improve slope and drainage channel integrity, stabilise run-off and improve water quality, all of vital importance on such steep hillsides. Other ecosystem services provided by a well-designed reforestation programme include carbon sequestration, nutrient provisioning and improved air quality © WCST

The use of native tree species is key to delivering real benefits for biodiversity through habitat restoration. Likewise it is important to approximate the balance of species found in the local environment. WLT's project partners are integral to the delivery of the Tree-Establishment programme and possess the detailed conservation knowledge required to ensure these biodiversity gains materialise. In turn, SSE's commitment to the Tree-Establishment programme helps build long-term capacity within these NGOs, providing funding to maintain seedling nurseries, equip work teams and for ongoing training.

During the course of the 2010-11 planting season over 187,000 trees will be established by WLT's project partners in their wildlife reserves: Brazil (REGUA's Guapi Assu reserve), Ecuador (Fundación Jocotoco's Buenaventura, Jorupe and Tapichalaca reserves, and Pro-Bosque's Cerro Blanco reserve), India (Wildlife Trust of India's Garo Hills reserve), and Tanzania (WCS Tanzania's Bunduki Gap reserve). Previous phases of this long-running restoration programme have also involved WLT partners Fundación Ecominga (Ecuador-based) and Guyra Paraguay.

Recent feedback from our partners confirms that strong progress is being made toward the delivery of WLT's final year tree-establishment target. Having adopted a conservative approach to project planning in order to account for unforeseen seedling mortality, recent monitoring confirms that present tree-establishment figures exceed the final year target by a healthy 260,000 margin.

With the programme entering its final year in mid-2011, WLT is confident of fulfilling its obligations to SSE under this initiative, and of the programme delivering lasting benefits for habitats and biodiversity in five countries across three continents. The success of the tree-establishment programme in delivering these conservation benefits has encouraged WLT to explore possible options for continuing these 'pure tree-planting' activities (i.e. no quantification of carbon sequestration benefits) after 2012. As part of this process, WLT entered into a smaller-scale tree-planting agreement during 2010 with Seotajji Fandom, an environmentally-conscious fan club for South Korean rock musician Seo Tai Ji. This project will see WLT's Brazilian partner, REGUA, establish a new area of forest habitat dedicated to Seo Tai Ji in recognition of his constructive stance on ecological issues.



Figure 17. Tree-planting areas at Guapi Assu in Brazil. Bordering some of the largest remaining fragments of the critically threatened Atlantic Rainforest, these hillsides and wetlands were cleared of forest cover but are now being restored to their original state by WLT partner REGUA, with funding provided by the SSE programme © WLT

4. Large-Scale REDD+ Projects

Deforestation was recognised as a major contributor to global GHG emissions by the Bali Roadmap, an output of the December 2007 Conference of the Parties to the UN Framework Convention on Climate Change (UNFCCC). This document affirmed the urgent need of UN signatories to take meaningful action to reduce emissions from deforestation and forest degradation. Since this time REDD+ has become a focus of global attention in efforts to address climate change and it is now certain that the mechanism will play a pivotal role in restricting future warming to levels that will not prove catastrophic for people and ecosystems.

Climate change is not just a preoccupation of national governments or the concerned citizen. It is now an important consideration for the global business sector, with companies throughout the world increasingly subject to statutory emissions 'caps' or reporting requirements. Even where this is not the case, many businesses choose to take a proactive stance in addressing their environmental impact, incorporating this into extensive Corporate Social Responsibility (CSR) policies. REDD+ is an attractive concept from a CSR perspective as it delivers a much more rounded package of environmental benefits than is achievable through, for example, investing in renewable energy-based carbon offsetting projects.

4.1. The Paraguay Forest Conservation Project

Over the past two years WLT has been engaged in the design and development of a large-scale, independently validated, voluntary carbon offset project on behalf of Swire Pacific Offshore Operations Pte Ltd. (SPO). A major provider of services to the offshore oil and gas industry, SPO has long held a position of environmental leadership in its sector, with a well-developed CSR strategy central to its operations. A key plank in this strategy is the organisation's desire to offset its unavoidable carbon footprint over a 20 year period. Quantified at some 800,000t/CO₂e., the requirements are beyond the scope of the Carbon Balanced programme both in terms of the volume of emissions to be mitigated and the

necessity for any emissions reductions to be verified through a complex third-party audit process.

The Paraguay Forest Conservation Project (PFCP) has been designed in close consultation with SPO and will meet these needs whilst significantly advancing habit preservation within Paraguay, a country that has been largely ignored by mainstream conservation despite possessing many critically threatened ecosystems of high biodiversity value. WLT has supported biodiversity conservation in this South American nation for almost a decade through project partner Guyra Paraguay (GP) and will continue to work with GP, the key project implementer, on the PFCP.

The project is based in two distinct eco-regions within Paraguay, the Dry Chaco and the Atlantic Forest.

- A globally unique habitat, the Dry Chaco is an arid forest whose vegetation is highly adapted to life in the harsh climate of this region. Despite the severe climate, biodiversity levels are high, with a particularly wide assemblage of large mammals, ranging from Tapir and Puma to Armadillos and the Giant Anteater (*Myrmecophaga tridactyla*). The Dry Chaco is also one of the world's most threatened habitats; present deforestation rates suggest its entire extent will be lost within 20 years, outside of the few existing national parks. Preservation of the remaining forest is of critical importance as, unlike tropical forests, vegetation growth rates in this dry environment are so low that for practical purposes habitat restoration is not a realistic option.



Figure 18. The Dry Chaco is the site of one component of the Paraguay Forest Conservation Project. Aerial over-flight reveals the scale of deforestation, much of which is driven by large agro-industrial farming concerns striving to expand their lands for ranching and soya cultivation © Guyra Paraguay, WLT

- The Atlantic Forest, a patchwork of moist to wet semi-evergreen tropical habitats straddling the Paraguayan frontier with Brazil and Argentina, faces equally severe threats to the Dry Chaco but possess even higher levels of biodiversity. Collectively these areas form part of the second most threatened eco-region on Earth, with only seven per cent of its original extent remaining. The focus of the PFCP is San Rafael, a complex patchwork of primary forest inhabited by indigenous Mbyá Guarani Indians, small settlements of previously landless rural poor ('campesinos'), and larger landowners. Formal ecological assessments have confirmed the site's remarkable biodiversity levels, yet with relations between the various social groups represented within San Rafael strained, and further land invasions by a growing campesino population in the wider region possible, the probable 'no-project' scenario is an escalation of rapid unplanned deforestation.

Figure 19. Far less widely known than the forests of the Amazon, the Atlantic Forest is equally important for biodiversity but faces much greater threats. San Rafael, site of the PFCP, is a case in point; designated an International Bird Area (classified by Birdlife International), ecological inventories have confirmed its importance for almost all classes of flora and fauna, from mammals and amphibians through to vascular plants and invertebrates © Andrea Ferreira, Silvia Centron, Emily Horton, WLT.



Emissions reductions will predominantly be delivered through REDD, while the project is also notable for the initiation of an advanced iteration of the Payments for Ecosystem Services (PES) concept. Although the latter constitutes a relatively minor component of the overall carbon sequestration to be achieved by the PFCP, it will be integral to the success of the Atlantic Forest component, building support for the project among the extant campesino community. By rewarding landowners for taking verifiable steps to conserve and enhance forest stocks, the proposed PES mechanism is also central to ensuring community participation in the project.

The PFCP has been designed to achieve independent validation under two internationally recognised standards for voluntary emissions offsetting. In October 2010 an important milestone in gaining this dual certification was passed when the Atlantic Forest component of the project attained Gold level validation under the CCB standard. Developed by the Climate, Community and Biodiversity Alliance, this framework assesses the rigour of the overall project design with respect to its delivery of real benefits on climate, social and biodiversity grounds. Following similar validation of the Dry Chaco component both elements will again be submitted for independent assessment, this time through the VCS (Verified Carbon Standard). In contrast to the CCB, this standard concentrates on the detailed carbon accounting methodologies behind the project and is required to generate the Verified Emissions Reductions desired by SPO as a project output.

Contextually the Paraguay Forest Conservation Project represents a major step forward in the conservation of two of the world's most threatened habitats. More than this, it will improve the socio-economic standing of some of the most impoverished communities in Paraguay and offers a pioneering model for the introduction of an equitable framework of formalised land tenure. Often described as 'co-benefits', WLT firmly believes these biodiversity and social aspects to be of equal importance to the climate-related benefits of any REDD+ project.

4.2. Future Projects

The Ecosystem Services team are currently undertaking detailed feasibility studies for a second large-scale REDD+ project, this time focussing on the Indian sub-continent. Site visits over the past year have confirmed the carbon sequestration potential of a number of locations in north-east India, which have also been identified by WLT partner, the Wildlife Trust of India (WTI), as biodiversity conservation priorities. In common with the PFCP, this initiative would be funded by a corporate supporter looking to expand their existing CSR activities through biodiversity conservation and emissions offsetting. The complex logistical framework underpinning such large projects is currently being discussed with WTI, who would act as the key project implementer and coordinate project delivery on the ground. Although very much in the development phase, WLT is optimistic about the prospects for biodiversity conservation and carbon sequestration that could be brought about through partnership with WTI on such an initiative.

5. Knowledge Exchange for African NGOs: using carbon as a funding mechanism for conservation

REDD, or Reduced Emissions from Deforestation and forest Degradation, is expected to play a key role in future international efforts to combat climate change. Funds are becoming increasingly available for REDD+ carbon projects but Africa is behind in this opportunity, being involved in less than 16 per cent of projects.

In 2010, WLT worked in consultation with IUCN National Committee of the Netherlands (IUCN NL) to develop and carry out a training programme on the use of carbon as a funding mechanism for conservation. The aim was to enable African partner NGOs to benefit from increased carbon funding opportunities. The programme focused on REDD+ in particular as it is considered the most promising bio-carbon financing mechanism for the immediate future. The programme was funded mainly by the IUCN NL Ecosystem Grants Programme with additional contributions from the World Land Trust.

Workshops were held in Ghana and Uganda and attended by participants from 21 organisations from all over Africa. The objective was to assist partners through training and networking to assess whether REDD+ was a suitable option for their organisation and to improve access to carbon funding, thereby adding to their conservation effectiveness and long term financial sustainability. This would also create a network of stronger African NGOs



Figures 20 & 21. Twenty one NGO's from across Africa were represented at the Knowledge Exchange workshops, held in Ghana (above) and Uganda. Workshops blended theoretical training with practical application, the latter benefitting from the second workshop's location within Kibale National Park (right) © WLT

positioned to profit from carbon opportunities, and to spread knowledge and capacity to mitigate climate change whilst delivering many other environmental benefits.



The programme has received excellent feedback and confirmed the need and demand for capacity building in this area. It is clear that good, innovative demonstration projects are needed to get policy-makers to start talking with project implementers and to help link the climate negotiations to practical experience. Early success is important for leveraging more political acceptance and stakeholder interest.

WLT has produced a report based on the training programme – “Using carbon as a funding mechanism for conservation; Is REDD+ right for you? An introductory Guide” – that collates the main outcomes and is designed to be of use to a wider audience. The report provides introductions to key issues and aims to condense the most useful outcomes from the two workshops, focussing on key points raised, questions, barriers and lessons learnt from both the trainers and participants' experiences.

One of the key outcomes from these workshops was the realisation of the commitments required from a NGO to fully engage in a REDD+ project and that it is not necessarily suitable for everyone in their present capacity.

The report will help NGOs answer the following questions:

- How does an organisation know if it is ready to tackle a REDD+ project?
- What sort of questions do they need to ask themselves?

- If they are not ready, what alternatives are there to help prepare for future engagement?

The report includes a feasibility study template, with extensive guidance notes drawn from trainers' experience and feedback from the Climate Community and Biodiversity Alliance (CCBA) who develop project standards. This is a key document of any REDD+ project development plan and we hope this template will provide useful guidance.

The training was held in English but both French and English versions of this report will be made freely available from the WLT website. It will be available in both interactive PDF format and CD for those NGOs who have difficulties accessing the internet.

6. Looking to the Future

The Ecosystem Services Programme has always highlighted the multiple benefits deliverable through habitat preservation and restoration. Concepts such as tree-establishment are readily identifiable to supporters and project partners, and represent an accessible entry point to the principles behind 'Payments for Ecosystem Services'. Paying an organisation with experience in habitat restoration to plant a tree is of benefit to the climate (absorbing atmospheric carbon dioxide), to biodiversity (regenerating habitats), the earth (stabilising slopes and reducing soil erosion) and ultimately to people (improving soil fertility, helping pollinate crops, or providing food and materials).

Carbon offsetting, the technicalities of which can be extremely complex, is also now a widely recognised practice and one that can be employed to preserve and enhance the environmental services provided by natural habitats. 'Carbon Balanced by WLT' stands out from many other emissions offsetting programmes by delivering these wider additional benefits, such as biodiversity conservation, whilst maintaining the robust approach to project design required to guarantee real climate benefits. As understanding and acceptance of carbon offsetting as a means to bring about biodiversity conservation grows, WLT looks to draw increasing attention to the wider suite of benefits provided by Carbon Balanced projects, and even to explore opportunities to use these benefits directly to catalyse funding for conservation. The new Carbon Balanced project at Río Nea is an example of this gradual evolution; the project is equally important in securing the continued supply of fresh water to 10,000 local people as it is in helping mitigate climate change.

At a global level, REDD+ presents a very real opportunity to bring about rapid reductions in both greenhouse gas emissions and tropical forest loss. The potential benefits for biodiversity conservation and forest-dwelling peoples are significant but will only be achieved with a concerted drive at all levels to ensure that the necessary safeguards are included within any global REDD+ policy framework. As a developer of large-scale REDD+ projects in the current 'pilot' phase of international REDD+, WLT has the chance to deliver robustly-designed projects that showcase the concept's ability to provide multiple benefits for biodiversity conservation and forest-dwelling communities, whilst also satisfying the Corporate Social Responsibility motivations. The Paraguay Forest Conservation Project will do just this and is all the more valuable for helping further the conservation agenda in a country lacking significant funding for this from other sources. Progressing from the development to the implementation phase during 2010, WLT eagerly anticipates completion of the validation and verification process in 2011.

7. Acknowledgements

The Ecosystem Services Programme is dependent on the committed support of private individuals and businesses, from sole traders through to multinational organisations. We are extremely grateful for such goodwill and, equally important, for the enthusiasm shown by our supporters for biodiversity conservation. This is the overall aim of WLT the preoccupation of those who work here, and clearly an interest shared by our supporters from the considerable feedback we receive. We look forward to 2011 with optimism and will relay news from our growing portfolio of activities.

Carbon Balanced Organisations 2010

Alder Tree Ltd.	Go-Between Couriers Ltd.	Quills Office Supplies Ltd.
APH Ltd.	Howard Smith Paper Group Ltd.	RKYR /Y&R
Aromafoods / Cool Gardens	Ittio Ltd.	Santander UK Ltd.
Artillery Architecture & Design	John Heyer Paper Ltd.	Secure Airparks Ltd.
BeGreener Ltd.	Lovehoney Ltd.	Shambala Festival
Bird Holidays	Man Bites Dog Ltd.	Simoon Travel
Birdfinders	Maryvale Farms	Stafford Railway Building Society
Bluefin Leisure Ltd.	Multileasing Ltd.	Tasker & Stone Ltd.
Bluechip Holidays Ltd.	Nature Picture Library Ltd.	Team Aqua
Call Assist Ltd.	Naturetrek	Team Norden
Casey Tree Care & Landscape Services Ltd.	Nikwax & Paramo Ltd.	The Travelling Naturalist
Chest of Drawers	Nomadical Ltd.	The Wildlife Survey Unit
Clarence Medical Centre	Norfolk County Council	Transmission AS
Coreix Ltd.	Planning & Transport Department	Travel Nation
Ecoigo Ltd.	One Deep Breath Ltd.	Travel Republic
Economics for the Environment Consultancy	Orkney Archaeology Tours	Tucan Travel
Finders Genealogists Ltd.	Osmond Group Ltd.	Underworld Products
Fulmar Television & Film Ltd.	Petrenel	VW Heritage Parts Centre Ltd.
		Web Wiz Ltd.
		Webmart Ltd.
		Wildlife Travel

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