Darwin Initiative
Final Report

*To be completed with reference to the Reporting Guidance Notes for Project Leaders (http://darwin.defra.gov.uk/resources/) it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)*

Darwin project information

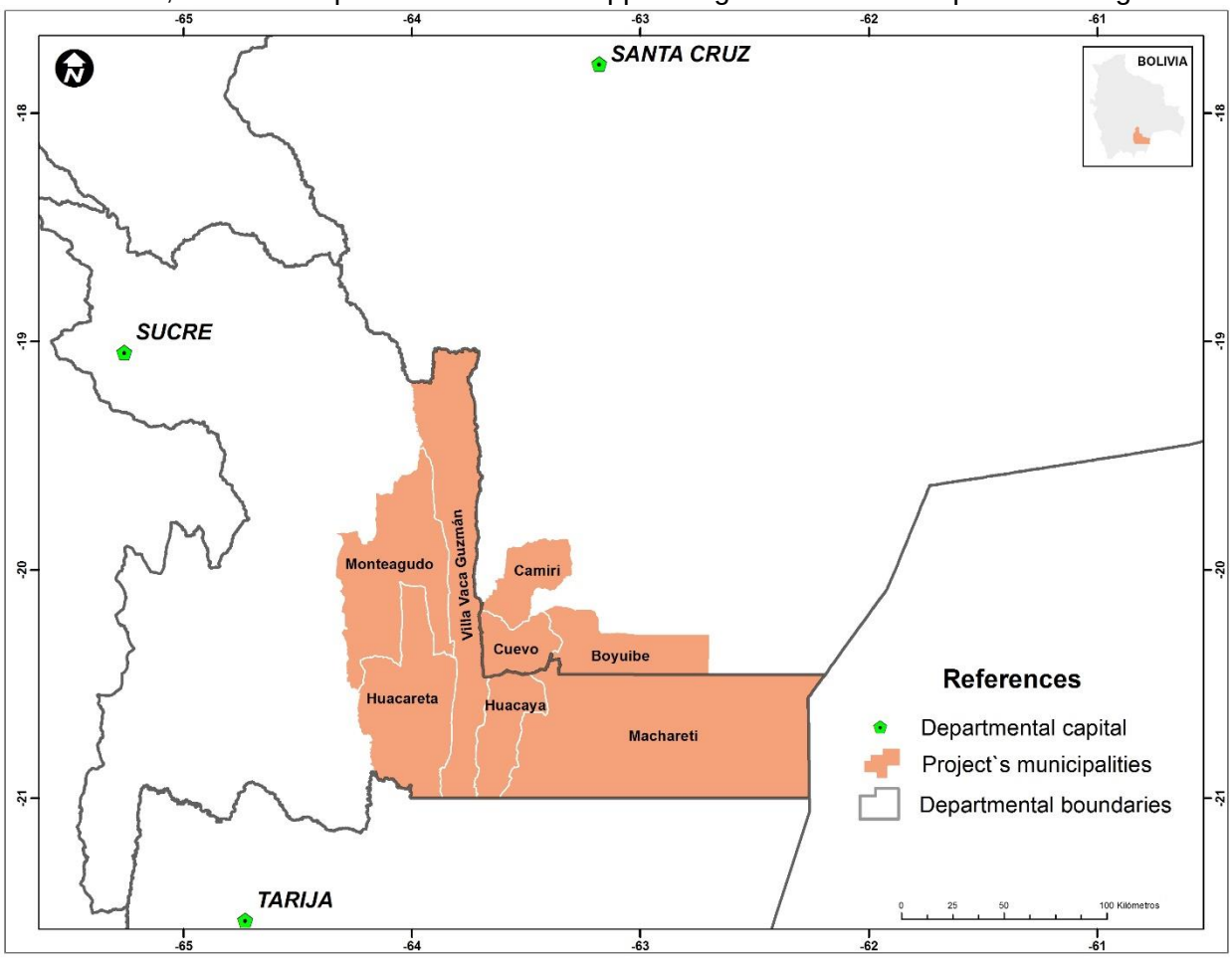
Project reference	21-008
Project title	Reciprocal Watershed Agreements: Conserving Bolivia's Chaco through Improved Livelihoods
Host country(ies)	Bolivia
Contract holder institution	Fundación Natura Bolivia
Partner institution(s)	Municipal governments of Huacaya, Machareti, Villa Vaca Guzman, Cuevo, Huacareta, Camiri, Boyuibe. Monteagudo, Assembly of the Upper Parapeti Guarani Indigenous Groups
Darwin grant value	£262,600
Start/end dates of project	April 1 2014 / March 31 2017
Project leader's name	Nigel Asquith
Project website	www.naturabolivia.org
Report author(s) and date	Nigel Asquith August 2nd 2017

1 Project Rationale

Bolivia's Gran Chaco encompasses swamps, salt flats, scrublands, and the largest virgin dry forest on earth. Although the region offers high soil fertility, it receives minimal rainfall. Most of the economic activity in Chaco requires water, so there is an urgent need to increase water efficiency and, most importantly, ensure that the water even arrives in the lowlands. The Chaco is home to more than 3,400 plant species, of which 400 are endemic, and 150 mammal species, (12 of which are endemic) including eight different types of armadillo. Nevertheless, upper watershed farmers often have no economic alternative other than to deforest their land for agriculture. Forests are destroyed and cows enter streambeds to drink, forage, urinate and defecate. The subsistence agriculture of upper watershed farmers is unproductive, while downstream water sources are contaminated, children miss school with diarrhoea, and waterholes dry up.

Our Darwin project was designed to create/consolidate eight Municipal Water Conservation Funds (MWCF). These MWCF were designed to catalyze local investment in upstream "Water Factories" and thereby simultaneously 1) mitigate climate change (conserve old growth forests), 2) adapt to climate change (maintain water sources), 3) increase food security (maintain quantity of irrigation water and diversify upstream production systems) and 4) improve human health (enhance water quality). Based on our previous experiences the MWCF were designed as follows: Three parties sign a 10-year agreement: the downstream water provider opens a separate bank account, into which revenues from a new "environmental services" tariff are channelled, local government purchases beehives, fruit tree seedlings,

irrigation pipes or other development tools, to be given in compensation for upstream forest conservation, and Natura provides technical support to get the schemes up and running.



2 Project Partnerships

We had two main partner groups, the most important of which were the Municipal governments/water providers of Huacaya, Machareti, Villa Vaca Guzman, Cuevo, Huacareta, Camiri, Boyuibe and Monteagudo.

The creation of the MWCFs was by decree or a signed partnership agreement between Natura, the municipal governments and the water providers. In some cases, it was possible to sign three-way agreements immediately (Cuevo, Boyuibe, Villa Vaca Guzmán, Monteagudo and Machareti). In other cases, things took longer than we had hoped—usually because of personal issues or political posturing. Indeed, we never actually achieved formal MWCF agreements in Huacaya and Huacareta. However, both municipal governments contributed, as *ad hoc* support, grants for compensation payments—showing their commitment to the project.

Our second primary partner was the Assembly of the Upper Parapeti Guarani Indigenous Groups. The Assembly is more of a political “umbrella” partner, which supported project diffusion and communication with its component institutions. For example, and as a direct result of our partnership with the Assembly, we were able to hold various meetings with the Nembuiti Capitanía that resulted in the definition of new conservation areas. Meanwhile the Boyuibe Capitanía committed £2,500 to work in three communities in the municipality, while discussions with the Kaami Capitania helped identify two new conservation areas.

3 Project Achievements

3.1 Outputs

	Base line	Change recorded by 2017	Comments (if problems were encountered)
Output 1. 8 Municipal Water Conservation Funds (MWCFs) with statutes, legal status, and board gender balance			
Indicator 1.1.a Number of MWCF created	2	6	
Indicator 1.2.b Number of MWCF consolidated	0	6	We did not sign formal agreements in Huacaya and Huacareta, but in both we opportunistically created "pseudo-funds" with municipal money. Thus we effectively created all 8 MWCF, although we could not consolidate those in Huacaya and Huacareta
Indicator 1.2. Number of women on MWCF board	10%	15%	This proved more difficult than expected. We have not achieved what we had hoped for, but we have had some notable success. The president of the Boyuibe fund is the female mayor of the Municipality, while the president of the Villa Vaca Guzman fund is the female Director of Productive Development of the municipality. In Monteagudo and Machareti, two women will join the funds in September.
Output 2. 20,000 ha of forest conserved through conservation contracts or municipal decrees			
Indicator 2.1. Hectares conserved under RWA	0	96,510	
Indicator 2.2. Municipal decrees	0	3	
Output 3: 500 families have signed conservation contracts, and received compensation packages			
Indicator 3.1. Contracts signed	0	1,475	
Indicator 3.2. Number of families with compensation packages	0	1,475	
Output 4: 10,000 downstream water users contribute to Municipal (MWCF) funds			
Indicator 4.1. Number of resolutions of water providers to either charge downstream users or to use a percentage of general funds for upstream conservation	0	4	The water cooperatives demonstrated little interest in assuming the responsibility of leading the conservation and management of the MWCF. Some water cooperatives, like the one in Camiri also had internal problems, which delayed their participation in the MWCF.
Indicator 4.2. Number of users contributing	0	9,660	By March 31st 2017, only 2160 users were contributing. However, since the official project-end, the Camiri cooperative has levied a charge on users, so now 9,660 are contributing.

Indicator 4.3. Annual bank transfers from water providers to MWCF accounts	0	6	Two from Villa Vaca Guzman and Boyuibe, one from Cuevo, and one from Camiri
Output 5: 5,000 ha under improved cattle management, honey production and fruticulture			
Indicator 5.1. Number of hectares under improved management	0	4,000	This is our best estimate of the number of hectares under improved management. It is unfortunately imprecise as we do not have details of, for example, how many hectares were protected from cattle grazing by the 1382 rolls of barbed wire and 64 cattle drinking troughs we delivered, or how many hectares are now used for honey production using the 71 bee hives we delivered, or how many hectares are under fruit production using the 4,290 tree seedlings we delivered. What we do know is the MWCF delivered more than ten thousand compensation items to help communities better manage their farms (Section 4.3), and these items have been used to that effect.

3.2 Outcome

Outcome: Conservation of 20,000 hectares of forest that supply water to 10,000 Bolivians, through bottom up contributions for environmental service provision (Reciprocal Watershed Agreements, or RWA) to 500 poor upstream farmers.				
	Base-line	**Change by 2016**	**Means of verification**	**Comments (if necessary)**
Indicator 1. Hectares under conservation (expected project-end total of 20,000 ha).	0	96,510	Signed contracts	Evidence of outcome can be verified in the contracts and agreements with local authorities and individual landowners. In addition we can provide scans of these documents if required.
Indicator 2.a. Upstream landowners compensated (expected project-end total of 500).	0	1,475	Signed contracts	
Indicator 2.b. Water users contributing to compensation payments (expected project-end total of 10,000).	0	9,660	Agreements with water cooperatives	
Indicator 3. Water cooperatives strengthened, facilitating creation and consolidation of water funds (expected project-end total of 8).	0	6	List and minutes of meetings	
Indicator 4. Families trained and equipped to adopt conservation-based management practices (expected project-end total of 500).	0	553	Signed contracts and lists of meeting attendance	

Impact: achievement of positive impact on biodiversity and poverty alleviation

Impact statement from logframe: Enhanced agricultural productivity in the Bolivian Chaco through incentive based watershed management that contributes to income diversification for local farmers and indigenous groups

During the three years of the project, we compensated 1,475 upstream landowners who voluntarily decided to conserve 96,510 ha of water producing forests in the Bolivian Chaco. These compensation packages comprised different types of development projects such as improving cattle management, fruit tree husbandry and honey production.

In addition to the 96,510 ha conserved under individual Reciprocal Watershed Agreements, there was a high demand from local authorities for us to build on the success of the project and help them new municipal protected areas. We used some Darwin funds, along with counterpart support to help create total of three municipal protected areas (Serrania Los Milagros, Heroes del Chaco and Cuenca Alta del Río Parapeti). The creation of these areas—which was an unexpected "bonus" for the project—has conserved a total of 490,589 ha of important forest for biodiversity in the Chaco. However, while Darwin support has helped us with reserve creation, this is simply the first step in a long process. We now need to work with local authorities to develop management plans for each protected area.

4 Contribution to Darwin Initiative Programme Objectives

4.1 Contribution to Global Goals for Sustainable Development (SDGs)

The SDGs relevant to our project are 6, 13 and 15. Our project was designed to help meet these goals, and specifically the SDG targets of:

- **Goal 6 target:** ¨protect water-related ecosystems including mountains, forests (and) rivers¨; and ¨strengthen participation of local communities in water management¨.
- **Goal 13 target:** ¨strengthen…adaptive capacity to climate-related hazards…¨.
- **Goal 15 target:** ¨…ensure the conservation and…sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests (and) mountains¨, and ¨promote…sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase…reforestation¨.

Our project contributed to these goals through the implementation of Reciprocal Watershed Agreements and establishment and consolidation of eight Municipal Water Conservation Funds. These new funds are the finance vehicles that have helped catalyse local investments to conserve 96,510 ha of water producing forests, compensating 1,475 upstream families with development project for the conservation efforts.

In addition, the project has helped these forests and communities become more resilient in the face of climate change. The project helped communities to simultaneously: 1) mitigate climate change (conserve old growth forests), 2) adapt to climate change (maintain water sources), 3) increase food security (maintain quantity of irrigation water and diversify upstream production systems) and 4) improve human health (enhance water quality).

4.2 Project support to the Conventions or Treaties (CBD, CMS, CITES, Nagoya Protocol, ITPGRFA))

Please see table in Annex 4 to show the contribution made by the project to biodiversity conservation as defined in the CBD.

Although a CBD signatory, Bolivia has long been opposed to the current direction of negotiations. The country believes that there is too much of a focus in the CBD on the "mercantilization" of nature, and on markets as a primary solution. At Rio + 20, at the UNFCCC, and at the CBD, Bolivia's Chief Negotiator, Rene Orellana, and the Forests Negotiator, Diego Pacheco, developed concrete proposals for non-market alternatives that link the conventions. Our major contact with the Bolivian government during the project duration was not with the

convention focal points. Rather we discussed the project with government officials high up within the Vice Ministry of Economic Planning. In addition, in 2016 we received a no-objection letter from the government to extend and scale up the Darwin project to seven municipalities in the Chaco Tarijeno, on Bolivia's southern border with Argentina. This government approval unlocks for us a $1.3 million donation from the Inter American Development to build upon our Darwin results and extend the model further south.

4.3 Project support to poverty alleviation

The short-term direct way that this project will benefit poor people is through financial transfers from richer downstream water users to the relatively poorer upstream landowners. In exchange for protecting their forests, these upstream farmers received development tools and projects, which has diversified their income sources away from climate susceptible annual crops, to more resilient perennial crops, such as fruit trees, and other drought-resistant livelihood strategies such as honey production.

The project has delivered more than ten thousand tools, inputs and projects to 1,475 upstream landowners, in return for the conservation commitments. The project also provided training, as and when necessary, on the use of these tools to help increase incomes and reduce poverty.

Incentive	**Amount/Municipality**								**TOTAL**
	Hua	**Huacay**	**Mach**	**VVG**	**Cuev**	**Cam**	**Bo**	**Mont**	
Barbed wire	472	19	28	603		63		197	1382
Clamps	598	19	49	1035		16		206	1923
Fruit tree seedlings (Orange, tangerine)	1.558			743	100	700		1189	4290
Vegetable seeds (Corn, tomato, pumpkin etc.)					148	30			178
Bee boxes	22			4		45			71
Beeswax	241			173		252		13	679
Overalls, gloves, smoker	3			17		14			34
Roof tiles	52			115				10	177
Cement	44	38	19	230				73	404
Plastic irrigation tubes	25	47		116	6			36	230
Hose connectors					225				225
Water tanks	3			52				4	59
Livestock drinkers	3	15		44				2	64
Centrifuge	1			1					2
Grass seed (kg)	50			188				28	216
Plastic pipe				75					75
Corner insulators				663					663
Sprinkler systems				1					1
Motor pump				2					2
Bricks				1200					1200
Faucet					1			1	2
Filters		3							3
Connections/valves		81			10				91

These items were purchased using funds invested in the MWCF by Natura, the water cooperatives and municipal governments with a total value of £110,035.

	Cooperative (£)	Municipal Government (£)	Natura (£)
2014		6.700 (Huacareta)	10,000 (Huacareta)
		4.000 (Huacaya)	
	7,650 (VVG)		
	1,350 (Cuevo)		
	1,000 (Boyuibe)		
2015		1,000 (Cuevo)	
	6.960 (VVG)	8,225 (VVG)	
		2,544 (Huacareta)	
		6,960 (Monteagudo)	8,446 (Monteagudo)
		8,956 (Huacaya)	
		6,960 (Camiri)	
2016	844 (Boyuibe)	937 (Boyuibe)	
		8,377 (Camiri)	
		9,143 (VVG)	
		10,982 (Monteagudo)	
TOTAL	**17,804**	**74,785**	**18,446**
Total counterpart support to MWCF = £111,035			

The second, indirect, livelihood impact on both upstream and downstream community members came from increased quality and quantity of water. With more water in the dry season, agricultural productivity increases, especially if this is linked to compensation projects, such as drip irrigation that improve the efficiency of water use. We also seem to be seeing (albeit not quantified) that increased water quality, and reduced fecal coliform load have had a beneficial impact on health, especially of children, with concomitant improvements on school attendance.

4.4 Gender equality

Traditional development activities in the Chaco, which focus on improving crop yields and productivity, invariably benefit men. RWA, as a form of incentive-based conservation provides an innovative option, because 1) Women landowners can benefit from compensation payments directly: land itself, becomes a revenue-generating asset, and 2) RWA can target compensation forms that benefit women. For example, honey production is traditionally a female activity in the Andean foothills, so having beehives as compensation increases income-generating opportunities for women. RWA can thus transform forests into cash without the need for hard (often male) labour. We had the specific project goal an increase of female representation on the board of the water providers from 10% to 35%. We try and lead by example, many of our institution's leaders are female, and we discuss this issue with each of our partners.

Having an impact on gender equality proved more difficult than we had expected, although we have had some notable successes. The president of the Boyuibe MWCF is the female mayor of the Municipality, while the president of the Villa Vaca Guzman MWCF is the female Director of Productive Development of the municipality. In Monteagudo and Machareti, two women will be incorporated in to the fund boards by the end of September. Male heads of households signed 78% of agreements, with only 22% being signed by females.

4.5 Programme indicators

- **Did the project lead to greater representation of local poor people in management structures of biodiversity?**

The project created and strengthened eight new biodiversity management structures, the Municipal Watershed Conservation Funds (MWCF). Local, poor, downstream water users are now responsible, and have a budget for, upstream watershed and biodiversity conservation.

- **Were any management plans for biodiversity developed?**

As part of the project's unexpected "bonus" we were able to work with the Municipal governments of Machareti, Huacareta and Monteagudo to create almost 500,000 of new protected areas. A small amount of Darwin funds (mainly staff salaries) were matched with support from Nature and Culture International to develop proposals to the municipal governments that justified the creation of the reserves. These documents were not management plans per se, but rather outlined management strategies for the next five years.

- **Were these formally accepted?**

The reserve proposals were presented to the municipal governments of Machareti, Huacareta and Monteagudo and accepted, resulting in decrees to create the new protected areas.

- **Were they participatory in nature or were they 'top-down'? How well represented are the local poor including women, in any proposed management structures?**

Reserve creation required the emission of municipal decrees, so the entire process needed to be bottom up, involving local landowners, traditional authorities and community members. The municipal councils are democratically elected, as is the mayor, and these authorities were the signatories for the decrees. The management structure of the new areas has still to be defined, but we expect that the local poor including women, will be well represented on the decision-making structure.

- **Were there any positive gains in household (HH) income as a result of this project?**

Annual incomes are highly volatile in rural Bolivia, and any annual differences in differences in small samples have a possibly of being due to chance. A more useful dimension to evaluate may thus be income diversity. Although fruit trees take at least three years (the duration of the project) to bear fruit, beekeeping, irrigation and improved pastures and livestock management, plus water access for all uses can provide economic benefits by the next agricultural season. These assets are environmentally friendly and have other valuable features in common: do not require iterative investments like annual agriculture and generate almost passive returns once established/installed, reducing labor and capital intensity per unit of income generated. Apart from our records of who received what items, we have found it very difficult to quantify economic impact of the project. Typical of development projects in rural remote areas, we found it difficult to collect a large follow up sample from the farmers who were surveyed before the project started. We could find only 36 people (of whom 4 are women), in the municipalities of Monteagudo, Villa Vaca Guzman and Macharetí. Further, the treatment (i.e. what types of compensation packages were received) was highly diverse in kind and intensity, which is detrimental for comparison purposes. We therefore have not yet found any significant differences in socioeconomic indicators before and after the project.

- **How many HHs saw an increase in their HH income?**

1,475 households signed contracts and so saw an immediate increase in incomes.

- **How much did their HH income increase**

Households received inputs and projects with an average value of £75. Annual incomes in this part of Bolivia average £1500, so £75 represents a 5% increase in incomes.

4.6 Transfer of knowledge

The entire premise of the project was to transfer knowledge about watershed and biodiversity conservation from Natura Bolivia to local municipalities and the water users who depend on upstream conservation for their water supplies. This has been achieved, with downstream users contributing more than 85% of the direct costs of upstream conservation. This transfer of knowledge has been in the form of meetings, workshops and social marketing and media campaigns.

Did the project result in any formal qualifications?

No one achieved formal qualifications as a result of the project

4.7 Capacity building

We do not have any knowledge of any of our staff seeing an increase in their status because of the Darwin project per se. However, during the lifetime of the project staff members have indeed been invited to participate in various national expert committees and expert panels and have been promoted.

5 Sustainability and Legacy

As we mentioned in our original proposal "*This effort is designed to be self-sustainable. We expect that the seed funds provided by the Darwin initiative will "prime the pump" that will get the schemes off and running so that local resources, primarily the block grants from the municipal governments, and expected increases in water tariffs, can fully kick in within 2 years*".

The design of each MWCF commits Natura to 10 years of support, but at decreasing levels of financial contributions over time. The Darwin project is subsidizing the first phase—high levels of support—with the expectation that support will decline after these funds are used. Therefore, right from our initial meeting with municipal governments, we have made it clear that it is the local authorities that must support the program in the long term.

In addition, local governments are gradually developing the internal capacity to run and fund the program on their own, as witnessed by the three-way institutional agreements that have been signed. We thus believe our exit strategy is still valid.

All project staff will continue to work for Natura Bolivia with the exception of our lawyer (Eduardo Franco) who has decided to pursue options elsewhere. Most staff have transitioned into a new project funded by the Interamerican Development Bank that will build on the results of the Darwin project.

6 Lessons learned

What worked well, and what didn't work well: The project ran far more efficiently than we could ever have expected. Even the one issue that was a major problem mid project appears to now have been resolved. In 2016, despite having set up a new protected area with Natura and put areas into conservation, the Mayors of Huacareta and Huacaya municipalities showed intense antipathy towards the project. Their attitude was not that we should stop the project, rather that we should do far more then we were already doing in their municipalities. One of these mayors has simply stopped being a problem, and the second has done a 180 degree about turn, and is now asking for Natura's support to set up a new protected area, using municipal funds.

What we should have done differently: We underestimated the interest of the municipal governments in the project area to create new protected areas. In retrospect we should have budgeted project funds to his activity, given the huge potential opportunities in the Chaco. At the time we designed the project, though, we didn't know about this potential. Fortunately however, we have accessed other funds to support protected area creation, from Nature and Culture International (NCI). This has allowed us to use Darwin funds to conserve watersheds using the RWA tool around a series of three new protected areas.

Recommendations for others doing similar projects: It has been advantageous to have had the ability to be flexible about where we implement the project. This has allowed us to be opportunistic about linking our Darwin project to the creation of new protected areas within the project area. One of the reasons we can be so flexible is that because our institution has focused for more than 10 years on developing one specific tool (RWA), we now know that we

can apply in many diverse situations. This constant refinement and focusing of the tool and our turning RWA into a generalizable model has given us the ability to be flexible about where we apply it, and hence given the potential for rapid take-up and scale-up. We would suggest to others that the might usefully search for similar generalizable tools.

We continue to try to improve and adapt the RWA model. We are becoming aware—and project reviewers have helped us with this—that we can profitably add to the RWA model by increasing our level of follow-up support, and helping beneficiaries with marketing, business planning etc. We have successfully applied for funding from the Inter American Development Bank to add this new component to this work in our future.

Perhaps the best way to se how we have learned lessons from the Darwin project is to examine what we will be doing differently with the new Inter American Development Bank funds. Our new RWA project in the Chaco differs from the Darwin "pilot" in three fundamental ways:

a) A new focus on not just delivering development tools, but increasing landowners' capacity to use such tools and to get additional value from them
b) Working with regional, not just municipal governments, in an attempt to scale and replicate the project more quickly and efficiently
c) Focusing conservation activities within the critical areas of important watersheds, and making sure that a larger part of a smaller number of watersheds is protected, rather than a scattershot approach across the landscape, which we did with Darwin funds.

6.1 Monitoring and evaluation

We designed the project to have a very simple series of four outcome indicators. By project end we had achieved:

1. **96,510 ha** *(of expected project-end total of 20,000 ha)* **were put under conservation**.

2. **1,475 new upstream landowners were compensated** *(of expected project-end total of 500)* for the forest conservation activities, and an additional **9,660 water users** *(of an expected project-end total of 10,000 users)* **are newly contributing** to payments

3. **8 water cooperatives** *(out of an expected project-end total of eight)* **have been newly strengthened**, facilitating the consolidation of two municipal water funds

4. **533 families** *(out of an expected project-end total of 500)* **have been trained** and equipped to adopt conservation-based management practices.

We believe that there is a very clear link between outputs, activities and outcomes. Internal reporting on these outcomes was undertaken every month, and there was no need to make changes to our M&E plan. The Project Coordinator wrote a monthly report to the institution's Technical Director, who then passed it to the Executive Director. The coordinator also presented his report to the institution's management team the first week every month. We also requested from our field teams short, bi-weekly updates to make sure things are on track. This proved a very practical M&E scheme.

Other than our internal monitoring, we did not commission an external project evaluation.

6.2 Actions taken in response to annual report reviews

The first year's review asked us to "explain whether you are planning on or have carried out any feasibility/marketing/business studies for the farmers that are switching to growing fruit tree crops and starting honey-production enterprises". We took this comment very seriously: we are increasingly suspecting that this lack of technical support may be a fundamental flaw in the RWA. The reviewer's comments thus gave us another data point to suggest we should so something about this. Unfortunately though, there was no space in the Darwin budget to add

such activities. In 2016 we therefore negotiated follow-up funding to the Darwin project from the Multi lateral investment Fund (MIF) of the Inter American Development Bank (IADB). This new $1.3 million project, which started in late 2016, has up-front and centre exactly the activities suggested by the reviewer i.e. feasibility/marketing/business studies, and a "new" of RWA that integrates the productive inputs with more intensive support on how to use them. The marketing studies and business plans will not be focused on individual farmers but instead tailored for specific communities. We expect that the results of these studies, and the new plans and activities they catalyze, will be applicable to the municipalities of the Darwin project.

In terms of the other action item, the Darwin logo has been prominently displayed in our annual report and in other general publications and on our website.

7 Darwin identity

We have ensured that the Darwin logo appears on our website (www.naturabolivia.org). The Darwin Initiative funding is recognised as part of our larger Chaco programme (co-financed previously by USAID, currently by Nature and Culture International and starting in 2016 the Inter American Development Bank). All of our publicity is thus currently about the larger Chaco RWA program, and indeed is often about the entire RWA model and its general applicability. We display the Darwin logo whenever we present the institution and our advances in the project area so local mayors, other authorities and community members are likely familiar with the role of the Darwin Initiative in our work.

8 Finance and administration

8.1 Project expenditure

Project spend (indicative) since last annual report	2016/17 Grant (£)	2016/17 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)			-1.02%	
Consultancy costs			+2.9%	
Overhead Costs			-1.03%	
Travel and subsistence			+4.17%	
Operating Costs			-3.64%	
TOTAL	£94,200	£94,200		

Staff employed (Name and position)	Cost (£)
Nigel Asquith, Project Lead	
Tito Vidaurre, Chief Scientist	
Maria Teresa Vargas, Municipal Government Relations	
Milton Huayrana, Field Manager	
Hugo Vallejos, Administrator	
Roxana Amonzabel, Office Manager	
Lucindo Gonzales, Biologist	
Eduardo Franco, Lawyer	
Osvaldo Sanchez, Accountant	
TOTAL	**49,686**

Capital items – description	Capital items – (£)
None	
TOTAL	

Other items – description	Other items – cost (£)
None	
TOTAL	

8.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)
Seven municipal governments	
Three water cooperative	
Natura (counterpart funds from Nature and Culture International)	
TOTAL	**111,035**

Source of funding for additional work after project lifetime	Total (£)
None formally, but we expect to continue with similar or higher amounts from the water cooperatives and municipal governments	

8.3 Value for Money

The first indicator of value for money is that we committed to support 500 families get 20,000 hectares conserved. We actually helped 1,475 families conserve 96,510 hectares. In other words we achieved between 300 and 400% more than we expected and budgeted for.

A second indicator of value for money is the counterpart funding that the Darwin project has leveraged. Local water users and municipal governments provided more than £92,500 to the project. Thus the donors investment of ~£280,000 (Darwin ~£280,000 and Natura and Culture ~£18,000) received a match of almost 35% from local actors.

Even more importantly, these local users funded almost 85% of the direct costs of conservation—the cost of the compensation packages. It appears that the project has already engendered significant local financial sustainability.

The final indicator of value for money comes from the fact that the municipal governments have already shown willing to proactively expand their conservation activities by creating three new water sanctuaries, for a total of almost 500,000 ha of new protected areas.

Annex 1 Project's original (or most recently approved) logframe, including indicators, means of verification and assumptions.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Impact: Enhanced agricultural productivity in the Bolivian Chaco through incentive based watershed management that contributes to income diversification for local farmers and indigenous groups			
Outcome: Conservation of 20,000 hectares of forest that supply water to 10,000 Bolivians, through bottom up contributions for environmental service provision (Reciprocal Watershed Agreements, or RWA) to 500 poor upstream farmers	**1.** 20,000 ha of forests conserved along the major rivers that provide agricultural water for the Chaco, including the Rios Parapeti and Pilcomayo. **2.** 500 upstream landowners compensated for the forest conservation activities that better secure dry season water supplies for 10,000 users **3.** 8 water cooperatives and community-based organizations strengthened /developed to better manage their water resources **4.** 500 farmers equipped to adopt conservation-based management	Rapid eye satellite imagery 5 m resolution, Conservation contracts, water cooperative records, Articles of association, minutes of meetings and records of training events.	**1.** Farmers will rationally respond to a change in incentive structures. We believe that simply by changing incentive structures—making reciprocity contributions to give intact forests value and so decrease the opportunity cost of conservation—we can change landowner behaviour. **2.** There is a forest cover-water quality relationship. However, we recognize that our data our insufficient, so we will be advised by Conrado Tobon of the Universidad Nacional de Colombia to ensure that data collection/ analysis meet global standards
Outputs: **1**. 8 Municipal Water Conservation Funds (MWCFs) with statutes, legal status, and board gender balance	**1.** Number of MWCF created (prior to project 2, after project 8) and consolidated (prior to project 0, after 8) **2.** Number of women on MWCF board (prior to project 10%, after – 35%).	MWCF articles of creation and statutes, resolutions naming board members	**1.** If strengthen institutions including, for example, increasing the number of women on the boards of water funds and cooperatives, that management will improve and interest in conservation will increase, and that stronger upstream institutions will increase the interest of downstream users in contributing **2.** Downstream willingness to contribute for environmental service provision is more than willingness of upstream landowners to accept payments for conservation; initial donor investments will catalyze local similar action, rather than resulting in the moral hazard of downstream users concluding that
2. 20,000 ha of forest conserved through conservation contracts or municipal decrees	**1.** Hectares conserved under RWA (prior to project 0, after project 20,000) **2.** Number of municipal decrees (prior to project 0, after project 3)	Rapideye satellite imagery based maps, signed contracts with GPS locations, municipal decrees	
3. 500 families have signed conservation contracts, and received compensation packages	**1.** Number of contracts signed (prior to project 0, after project 500) **2.** Number of families with compensation packages (prior to project 0, after project 500)	Signed contracts with compensation packages described, photos of package delivery	

4. 10,000 downstream water users contribute to Municipal (MWCF) funds	**1.** Number of resolutions of water providers to either charge downstream users or to use a percentage of general funds for upstream conservation (prior to project 0, after project 8) **2.** Number of users contributing (prior to project 0, after project 10,000) **3.** Annual bank transfers from water providers to MWCF accounts (prior to project 0, after project 8)	Water provider records of the number of users/connections, resolution of water providers to either charge downstream users or to use a percentage of general funds for upstream conservation, bank transfers from water providers to MWCF accounts	donors will continue to cover their losses
5. 5,000 ha under improved cattle management, honey production and fruticulture	**1.** Number of hectares under improved management (prior to project 0, after project 5,000)	Rapideye satellite imagery based maps, signed contracts with GPS locations, interviews with beneficiaries	

Activities

1.1 Design eight cooperative-managed Watershed Conservation Funds to facilitate and channel investments by water users in upstream conservation

1.2 Hold a series of meetings to develop and/or improve statutes, legal status of water cooperatives, promote gender balance on boards, and develop Water Fund rules and regulations in eight municipalities

2.1 Undertake baseline biodiversity and water quality data collection prior to project and collect follow up data at project end

2.2 Present project concept to upstream landowner, offer compensation packages, and sign contracts

2.3 Fence and/or exclude cattle from, and conserve 20,000 ha of downstream riverine forest to support infiltration and aquifer recharge, and provide pollen for foraging bees

3.1 Undertake socioeconomic data collection prior to project and collect follow up data at project end

3.2 Negotiate and then provide compensation packages to 500 upstream landowners, including beehives for honey production, fruit tree seedlings, and grass seeds and barbed wire for cattle management

4.1 Undertake, and then present to users, hydrological data collection and modeling to better quantify impact of upstream deforestation on water availability, flooding and droughts

4.2 Finalize negotiation and continue annual lobbying for at least a 1:8 match for project funds with resources from municipal water users and irrigators, ensure that at least 10,000 water users are contributing to watershed protection

5.1 Train and equip up to 200 families in organic honey production and commercialization

5.2 Train up to 200 families in improved cattle management and drip irrigation techniques

Annex 2 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements
Impact: Enhanced agricultural productivity in the Bolivian Chaco through incentive based watershed management that contributes to income diversification for local farmers and indigenous groups		During the three years of the project we compensated 1,475 upstream landowners who voluntarily decided to conserve 96,510 ha of water producing forests in the Bolivian Chaco (See signed contracts). These compensation packages comprised different types of development projects such as improving cattle management, fruit tree husbandry and honey production. At the same time, 3 municipal protected areas (Serrania Los Milagros, Heroes del Chaco and Cuenca Alta del Río Parapeti) were created, partially with Darwin resources, conserving a total of 490,589 ha of important forest for biodiversity in the Chaco.
Outcome Conservation of 20,000 hectares of forest that supply water to 10,000 Bolivians, through bottom up contributions for environmental service provision (Reciprocal Watershed Agreements, or RWA) to 500 poor upstream farmers	**1.** 20,000 ha of forests conserved along the major rivers that provide agricultural water for the Chaco, including the Rios Parapeti and Pilcomayo. **2.** 500 upstream landowners compensated for the forest conservation activities that better secure dry season water supplies for 10,000 users **3.** 8 water cooperatives and community-based organizations strengthened /developed to better manage their water resources **4.** 500 farmers trained and equipped to adopt conservation-based management practices	**1. 96,510 ha have been put under conservation** during the entire length of the project. (2014: 3693 ha, 2015: 65.779 ha, 2016: 27.038 ha). **2. 1,475 upstream landowners have been compensated**, for the forest conservation activities (2014: 263, 2015: 654, 2016: 558). 9,660 **water users have contributed** to make the compensation payments**.** **3. Six water cooperatives have been strengthened**, facilitating the creation and consolidation of six municipal water funds. **4. 553 families have been trained** and equipped to adopt conservation-based management practices (2014: 151, 2015: 205, 2016: 197).
Output 1. 8 Municipal Water Conservation Funds (MWCFs) with statutes, legal status, and board gender balance	**1.** Number of MWCF created (prior to project 2, after project 8) and consolidated (prior to project 0, after project 8) **2.** Number of women on MWCF board (prior to project 10%, after –project 35%)	**1. Six MWCF were created and six consolidated** during the project**.** **2. MWCF boards are comprised of 15% of women**

Activity 1.1 Design eight cooperative-managed Watershed Conservation Funds to facilitate and channel investments by water users in upstream conservation		This activity has been entirely accomplished (two funds were already created pre-project and we have created six more (although the Huacaya and Huacareta funding mechanisms only include the municipal governments and so need further work to become fully fledged MWCF). After creation, we focused on working with the parties to keep strengthening and consolidating the funds. For example, in Macharetí there is a two party MCWF because there is no water cooperative. We have been working with the municipality to strengthen it, for them to assume the responsibility of managing the water resource and then create a water cooperative.
Activity 1.2. Hold a series of meetings to develop and/or improve statutes, legal status of water cooperatives, promote gender balance on boards, and develop Water Fund rules and regulations in eight municipalities		Building on our advances on the last period report, we have been helping improve the statutes and legal status of the water cooperatives of Cuevo, Camiri and Villa Vaca Guzmán. For example, in Villa Vaca Guzmán we revised the three-party MWCF contract to update the rules and regulations of the fund, to promote gender balance on the board. The president of the Villa Vaca Guzman Fund is the female mayor of the municipality and is looking to incorporate more females on the boards. In Monteagudo and Machareti, we have been working on identifying potential female candidates to be part of the boards. In September, we plan to incorporate more women into these funds.
Output 2. 20,000 ha of forest conserved through conservation contracts or municipal decrees	**1.** Hectares conserved under RWA (prior to project 0, after project 20,000) **2.** Number of municipal decrees (prior to project 0, after project 3)	**1. 96,510 ha have been put under conservation** during the entire project. **2. 3 municipal decrees published.** In 2014, the Municipality of Huacareta decreed the creation of the 103.274 ha Serrania de los Milagros Water Sanctuary. On October 25th 2016, the Municipality on Macharetí decreed the creation of the 268.913 ha Heroes del Chaco Historical and Wildlife Municipal Reserve. On January 19th 2017, the Municipality of Monteagudo decreed the creation of the 118.402 ha Cuenca Alta del Río Parapetí Integrated Management Natural Area.
Activity 2.1. Undertake baseline biodiversity and water quality data collection prior to project and collect follow up data at project end		We collected water quality follow up data at the water intake of the main municipal capitals across the bolivian Chaco, which included the municipalities of Monteagudo, Machareti, Camiri and Villa Vaca Guzmán. One of the main conclusions of the study was that the municipalities of Camiri (upstream), Monteagudo and Villa Vaca Guzman comply with the regulations of zero fecal coliforms in the water.
Activity 2.2. Present project concept to upstream landowner, offer compensation packages, and sign contracts.		We presented the project concept and offered compensation packages to families of Machareti, Huacaya, Huacareta, Boyuibe, Villa Vaca Guzman, Camiri, Cuevo and Monteagudo municipalities. 1,475 families signed contracts.

Activity 2.3. Fence and/or exclude cattle from, and conserve 20,000 ha of downstream riverine forest to support infiltration and aquifer recharge, and provide pollen for foraging bees		We measured conservation parcels, mapped them and put a total of 96,510 ha under RWA conservation agreements.
Output 3. 500 families have signed conservation contracts, and received compensation packages	**1.** Number of contracts signed (prior to project 0, after project 500) **2.** Number of families with compensation packages (prior to project 0, after 500)	**1. 1,475 contracts have been signed** in eight municipalities. **2. 1,475 families in eight municipalities received compensation packages**, comprising of more than 10,000 items to help with agricultural production and economic development.
Activity 3.1. Undertake socioeconomic data collection prior to project and collect follow up data at project end		We are undertaking long-term socioeconomic data in terms of agricultural incomes at the municipalities of Camiri, Monteagudo, Villa Vaca Guzman and Machareti, to try to better understand the impact of our intervention. We will have a report available by the end of 2017. In the meantime our follow-up data show that the compensation packages were indeed received and that participants have been conserving their land parcels. Annual deforestation rate in the project municipalities is 0.23%, while in the conservation parcels this was reduced by 75% to 0.06% (n= 49 parcels). Interestingly, deforestation was lowest in community-owned parcels (0.005%), and in female-owned parcels (0.03%) while deforestation was highest in male-owned parcels (0.1%). In other words, men showed a lower level of contract compliance.
Activity 3.2. Negotiate and then provide compensation packages to 500 upstream landowners, including beehives for honey production, fruit tree seedlings, and grass seeds and barbed wire for cattle management		Since the start of the project, we have signed 1,475 contracts.
Output 4. 10,000 downstream water users contribute to Municipal (MWCF) funds	**1.** Number of resolutions of water providers to either charge downstream users or to use a percentage of general funds for upstream conservation (prior to project 0, after project 8) **2.** Number of users contributing (prior to project 0, after project 10,000) **3.** Annual bank transfers from water providers to MWCF accounts (prior to project 0, after project 8)	In 2016 a total of £30,273 (in the local currency 266.584,7 Bs) was invested in the project by the municipal governments of Boyuibe £937 (8.250 Bs), Camiri £8,377 (73.740,7 Bs), Villa Vaca Guzmán £9,143 (80.488,5 Bs) and Monteagudo £10,982 (96.675,6 Bs). The water cooperative of Boyuibe contributed £341 (3.000 Bs.) and the Center for Research and Promotion of the Peasantry of Machareti (CIPCA by its acronym in Spanish) contributed £503 (4.430 Bs.). Over the lifetime of the project a total of £92.577 was channelled from the municipalities and water cooperatives of Huacaya, Huacareta, Machareti, Villa Vaca Guzmán, Cuevo, Camiri, Boyuibe and Monteagudo into the MWCF to help compensate landowners for the conservation of their water producing forests, and another £18,446 was provided by Natura.

Activity 4.1. Undertake, and then present to users, hydrological data collection and modeling to better quantify impact of upstream deforestation on water availability, flooding and droughts.		We presented the results of the follow up water quality data to the municipalities of Monteagudo, Machareti, Camiri and Villa Vaca Guzmán.
Activity 4.2. Finalize negotiation and continue annual lobbying for at least a 1:8 match for project funds with resources from municipal water users and irrigators, ensure that at least 10,000 water users are contributing to watershed protection.		We lobbied and negotiated with each municipality and eventually reached a 1:5 match for project funds. Natura invested £18,446 in counterpart funds which ws matched by £92.577 of local resources. 9,660 water users are now directly contributing to watershed protection.
Output 5. 5,000 ha under improved cattle management, honey production and fruticulture	**1.** Number of hectares under improved management (prior to project 0, after project 5,000)	**1.** Around **4.000 ha are under improved management.** This is our best estimate of the number of hectares under improved management. It is unfortunately imprecise as we do not have exact details of, for example, how many hectares were protected from cattle grazing by the 1382 rolls of barbed wire and 64 cattle drinking troughs we delivered, or how many hectares are now used for honey production using the 71 bee hives we delivered, or how many hectares are under fruit production using the 4,290 tree seedlings we delivered. What we do know is the MWCF delivered tens of thousands of compensation items to help communities better manage their farms (Section 4.3), and these items have been used to that effect.
Activity 5.1. Train and equip up to 200 families in organic honey production and commercialization		Over the lifetime of the project we trained 187 families in honey production and commercialization of the product (2014: 50, 2015: 87, 2016: 50), and another 89 families in fruit tree husbandry.
Activity 5.2. Train up to 200 families in improved cattle management and drip irrigation techniques		Over the lifetime of the project we trained 231 families in improved cattle management and drip irrigation techniques (2014: 100, 2015: 118, 2016: 58) and another 46 families in building chicken coops.

Annex 3 Standard Measures.

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
1a	Number of people to submit PhD thesis	0					
1b	Number of PhD qualifications obtained	0					
2	Number of Masters qualifications obtained	0					
3	Number of other qualifications obtained	0					

4a	Number of undergraduate students receiving training	0					
4b	Number of training weeks provided to undergraduate students	0					
4c	Number of postgraduate students receiving training (not 1-3 above)	0					
4d	Number of training weeks for postgraduate students	0					
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification (e.g., not categories 1-4 above)	0					
6a	Number of people receiving other forms of short-term education/training (e.g., not categories 1-5 above)	553	Bolivian	50% female	Use of seeds, seedlings, beehives and other inputs and tools	Spanish	
6b	Number of training weeks not leading to qualification	0					
7	Number of types of training materials produced for use by host country(s) (describe training materials)	0					
Research Measures		**Total**	**Nationality**	**Gender**	**Title**	**Language**	**Comments/ Weblink if available**
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (ies)	3	Bolivia		Technical justification for the creation of three new protected areas	Spanish	
10	Number of formal documents produced to assist work related to species identification, classification and recording.	0					

11a	Number of papers published or accepted for publication in peer reviewed journals	0					
11b	Number of papers published or accepted for publication elsewhere	0					
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	0					
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	0					
13a	Number of species reference collections established and handed over to host country(s)	0					
13b	Number of species reference collections enhanced and handed over to host country(s)	0					

Dissemination Measures		**Total**	**Nationality**	**Gender**	**Theme**	**Language**	**Comments**
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	8	Bolivia	Mix	Conclusion workshops in municipalities	Spanish	
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	0					

Physical Measures		**Total**	**Comments**
20	Estimated value (£s) of physical assets handed over to host country(s)	0	
21	Number of permanent educational, training, research facilities or organisation established	0	

Physical Measures		Total	Comments
22	Number of permanent field plots established	0	

Financial Measures		Total	Nationality	Gender	Theme	Language	Comments
23	Value of additional resources raised from other sources (e.g., in addition to Darwin funding) for project work						

Annex 4 Aichi Targets

	Aichi Target	Tick if applicable to your project
1	People are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	X
2	Biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	X
3	Incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.	X
4	Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.	X
5	The rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.	X
6	All fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	
7	Areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	X
8	Pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	
9	Invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	
10	The multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	
11	At least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.	X
12	The extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	
13	The genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	

14	Ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	X
15	Ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	
16	The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	
17	Each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.	
18	The traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.	
19	Knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	
20	The mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.	

Annex 5 Darwin Contacts

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