

Darwin Initiative Main Annual Report

To be completed with reference to the “Project Reporting Information Note”:
(<https://www.darwininitiative.org.uk/resources-for-projects/information-notes-learning-notes-briefing-papers-and-reviews/>).

It is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

Submission Deadline: 30th April 2022

Darwin Initiative Project Information

Project reference	26-013
Project title	Conservation and poverty alleviation through sustainable ranching in Paraguay
Country/ies	Paraguay – Chaco
Lead partner	Wildlife Conservation Society - WCS
Project partner(s)	Minerva Foods; National Vice-Ministry of Livestock; Faculty of Veterinarian Sciences - The National University of Asuncion; Government of the Department of Alto Paraguay
Darwin grant value	£399,132
Start/end dates of project	1 June 2019 – 30 September 2022*
Reporting period (e.g. Apr 2021 – Mar 2022) and number (e.g. Annual Report 1, 2, 3)	1 April 2021 – 31 March 2022 Annual Report 3
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Project website/blog/social media	paraguay.wcs.org / facebook.com/wcsparaguay
Report author(s) and date	Maria del Carmen Fleytas, 29 March 2022

1. Project summary

Paraguay houses 25% of the Gran Chaco, an area of over 1,000,000 km² and the second-largest forest and second-largest jaguar stronghold in the Americas. Home to other priority wildlife, the Chaco also includes 170,000 km² of cattle ranches, which exert a significant environmental impact. With an estimated deforestation rate of over 3,000 km² per year, there is also habitat fragmentation causing biodiversity loss and human-wildlife conflict, including retaliatory killing of carnivores by ranchers.

In the social aspect, in Alto Paraguay, our focal area for small ranchers, ranching employs 49.5% of the population, and over 40% of its population has at least two basic needs unsatisfied in housing, water and sanitation, education and/or subsistence capacity, being the highest percentage in the country. This situation is aggravated by the area’s relative geographical isolation, and weak government technical assistance. Additionally, during the 2020-2021 period, rural communities from Paraguay and the entire world suffered severe impacts to their agricultural production, when restrictions imposed due to the COVID-19-pandemic affected severely their economies, forcing producers to seek alternative sources of income to provide for themselves and their families

To address the multifaceted threats to biodiversity and basic human needs that we identified through our previous action in the area, our project focuses on i) adaptive and efficient, environmentally responsible management for market-driven cattle production, and ii) targeted assistance for local communities to address food security.

Beneficiaries also commit to conservation actions (such as no hunting, using more sustainable cattle management systems, prevent forest fires), in exchange of assistance with livestock management and access to clean water, through agreements signed with WCS. Thus, we are implementing a multidimensional sustainability model tying improved ranching practices with broader biodiversity benefits, and improved access to basic human needs is effective at addressing the most pressing environmental and human needs in the Chaco, and can be scaled across the region.

2. Project stakeholders/ partners

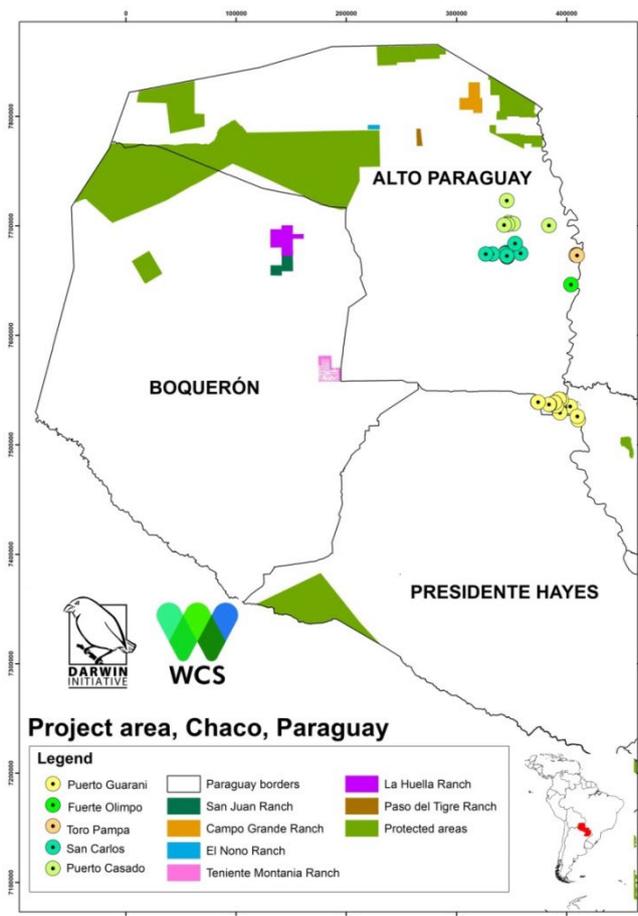
At the start of this project, our formal alliances included; Minerva Foods; National Vice-Ministry of Livestock; Faculty of Veterinarian Sciences from the National University of Asuncion; and the Government of the Department of Alto Paraguay.

These partnerships were thought as the most adequate and necessary to advance the project objectives, taking into account their areas of expertise, previous actions and prioritization of the same project area. However, from Year 2 on, we strengthened our relationship with the Vice-Ministry of Livestock, with whom we have developed a detailed planning of activities, and co-executed theoretical and practical technical training we identified as the most needed by our beneficiaries. The Vice Ministry significantly contributed and continue to contribute with their professional staff composed by agrarian Engineers and veterinaries to provide capacity building training in animal health, animal nutrition, pasture storage and others. **ANNEX 1 – Pictures of activities in the field with partners.**

A lesson learned in this sense is that, when building alliances with the public sector, we have to anticipate they will have budget limitations to fulfil their roles. This applies not only to the Vice Ministry but also to the Faculty of Veterinarian Sciences, which is also from the public sector, and the Government of Alto Paraguay. Another situation was that the political factor influences where (geographically and thematically) do they concentrate their resources, making the agreement on plans very difficult with them.

Nevertheless, we managed to successfully comply with our objectives through our successful alliance with the Vice Ministry and other partners that were incorporated during the project life, and more importantly, the alliance with the local government and the University will importantly contribute to the sustained impact of the project. All agreements are in **ANNEX 2** and these are their details:

1. Green Chaco Project, led by the Ministry of Environment and Sustainable Development (MADES) and implemented by the United Nations Development Programme (UNDP), with funding from the Global Environment Facility (GEF): this project, even when concluded in March 2022, significantly contributed to the consolidation of the sustainable productive practices in the field, by providing inputs to implement in the field the knowledge acquired, and has also contributed to the improvement of the demonstrative plots. WCS signed with them and



the Vice Ministry a working plan from March 30, 2021 to November 30, to mutually support our development objectives in the project area.

2. Municipality of Puerto Casado: at the end of February 2022, we have incorporated this local government as a new partner. They have committed their contribution to consolidate with WCS and the local groups of producers, a demonstrative plot in the city of Puerto Casado so that this can be a site for practical training and the efforts made during this project have sustainability in the long term. We have signed in March 2022 an act with this Municipality and representatives of the local beneficiaries to support this demonstration plot in the long term.

3. National University of Concepcion – Fuerte Olimpo branch: they approached WCS and Vice Ministry's staff during training activities in the district of Fuerte Olimpo and proposed to sign an agreement to provide training for their students in the last year of Agrarian Sciences, to strengthen their knowledge. We agreed considering the important effect this action can have in the short term, as these local students will be probably working in the field soon, and hopefully adopting and replicating the sustainable practices diffused by the project. The agreement is in **ANNEX 2** and the details of training provided (lists of attendance, certificate award ceremony and others) are in **ANNEX 7.4**

3. Project progress

3.1 Progress in carrying out project Activities

In Year 1 of the project, we identified the key actions to achieve the project objectives (after obtaining the baseline of our beneficiaries), while in Year 2, we implemented those actions aiming at increasing productivity and at the same time securing conservation of the ecosystem resources where the target communities are located, through the different strategies including technical assistance, food security, quality and improvement of the livelihood and resources, and others. In previous reports we have summarized the findings of the baseline, training and technical assistance provided, diffusion of project activities and mid-term impact of the project in areas such as forest cover and abundance of species in intervened properties.

In Year 3, the initial goal was started measuring final results of the project investments in improving the life quality and, at the same time, conserving the natural resources of our target beneficiaries. But in the face of a strong and extended dry season in the project area, and with the relaxation of previous COVID-19 restrictions, in this period, we directed our efforts to secure food availability and assist our beneficiaries in the implementation of palliative measures such as the provision of water systems, training in fodder storage, and fire preventive measures due to the high possibilities of forest fires following last year's records. Despite of this situation, we are making progress in achieving the project objectives as described below:

OUTPUT 1: IMPROVED SUSTAINABLE RANCHING SYSTEMS

1.1 Conduct baseline economic, social and environmental surveys: This activity was completed in previous periods, surpassing the initial target of 150 small producers and 8 large producers surveyed, by completing 188 surveys with small producers and 8 with large ranchers. Based on these surveys, we obtained a baseline that allowed us to orient our actions and assistance during Year 2. In this third year, and after obtaining a six-month extension to consolidate our results, we have started the re-measurement of the initial baseline data to identify progress towards the project objectives. The first results of the baseline re-measurement for small producers are detailed in **ANNEX 3**, and for large producers we have systematized their adoption of sustainable practices in **ANNEX 4**.

a) Small producers (project goal: 150 families):

Whereas the goal was achieved and exceeded in previous periods, not all beneficiaries stayed within the project, due to diverse factors: the extended drought made them search for working opportunities outside their own farms, for food security; some migrate to other cities closer to urban centres where they could be employed in commerce, services, and others, and other situations. But most of them are still dedicated to small agricultural and cattle production, and were directly benefitted by technical assistance and inputs provided by the project according to

their needs, especially on pasture and cattle management, animal health, pasture storage to resist the dry season, and agricultural crops for food security and eventually market sales. After re-measuring data from the initial baseline survey, we found 171 beneficiaries active and reporting benefits from the project; of which 55 (32%) were women, and 116 (68%) men. These 171 people reported an average of 45% of improvement in agricultural/cattle productivity and 32% of improvement in their sales, as shown in **ANNEX 3**.

b) Large producers (project goal: 8 properties):

We continued working with the initial 8 large ranches, totalling 196,688 hectares surpassing the initial target of working for more sustainable ranching practices in at least 150,000 hectares. This area is distributed in the following ranches: Campo Nuevo (30,000 hectares), San Juan (22,000 hectares), Campo Grande: (38,627 hectares), El Nono (4,000 hectares), Montania (37,411 hectares), La Huella (45,000 hectares), Paso de Tigre (6,650 hectares) and Rodeo Porá (12,000 hectares), all located in the departments of Alto Paraguay and Boqueron and in the proximity of *Defensores del Chaco National Park*, the largest protected area of the Chaco. Initial baseline surveys showed that 100% of these properties are devoted to cattle breeding and/or fattening, and while they have access to technology and infrastructure to elevate their productivity, there are factors out of their control that still cause economic losses, such as human wildlife conflicts including cattle-felid conflict, forest fires and drought/water management issues. Therefore, we center our actions on those aspects, aiming at avoid further forest conversion to balance economic profits at these properties. In order to keep records of our actions, we have started a detailed systematization of practices adopted at each ranch, attached as **ANNEX 4**. This will help measure progress in each property, and will also facilitate replication of best practices at the final stage of the project. In parallel, we continued monitoring biodiversity (**ANNEX 5**) and forest cover (**ANNEX 6**) in these ranches, to confirm our findings.

1.2. Deliver training for sustainable ranching: During this period, we continued to make significant progress in this activity. **With small ranchers:** we have been working supported by our partner, the Vice Ministry of Livestock and the Green Chaco project. Even when Year 2 was a key period for the training component, with the development of 45 theoretical and practical training modules, in Year 3 we aimed at consolidating training in those areas where improvements were still needed, and considering the changing scenario due to the extended dry season faced by the project area. For that purpose, we have developed 14 training modules including theory and practice, and reached 255 people (80 more than in Year 2, due to a high level of interest in the topics by the communities): 88 in Puerto Casado, 92 in Fuerte Olimpo, 56 in Puerto Guaraní and 19 in San Carlos and Maria Auxiliadora.

From this total of trainees, 187 (71%) completed 20 hours of training each, surpassing the project target of 150 beneficiaries receiving a minimum of 20 hours each of practical and theoretical training in improved ranching practices. From these 187 people, 74 were women (40%), doubling the originally expected indicator of 20% women trained. Each of the participants represents a family, and according to our survey results we are indirectly benefiting 689 people, thus expanding significantly the positive impact of the training provided.

Topics covered in these trainings included:

- Fodder management and storage, proposed treatments in case of pest attacks.
- Basic animal health care, reinforcement of treatment of the most common diseases.
- Parasite control, reinforcements according to situations raised by the beneficiaries of the project.
- Implementation of food security and market crops. Reinforcements based on local lessons learned. Proposals for new planting calendars in the face of prolonged drought scenarios
- Use of electric fences, implementation in the field
- Water management, installation of water tanks in each of the demonstration plots for adequate distribution in the productive properties.

ANNEX 7 shows the lists of attendance, pictures of the events, contents developed and demonstrative plots installed, plus statistics of training per community, gender and beneficiary. **ANNEX 7.4** also contains the details of an agreement signed with the National University of Concepcion - Fuerte Olimpo branch, to train students of Agrarian Sciences in aspects of

sustainable production, such as forage planning, health management and farm records. A total of 24 students: 16 women and 8 men completed the 8-hours training and received a certificate.

During Year 3, we have received also an important in-kind contribution from the Vice Ministry of Livestock, consisting of a motorized tiller, which was previously requested by Puerto Casado beneficiaries. This tool motivated the installation of one additional demonstrative plot in the benefited community, to be used for hands-on training in direct sowing, soil preparation and comparative studies for diverse pasture types according to the climate conditions in the location. With this additional plot, the project has already installed a total of 7 demonstrative sites for the five target communities. **ANNEX 8** shows details and pictures of the new plot in Puerto Casado. This plot will be the center of the second exchange visit of the project planned for May 2022, which had to be delayed due to the impact of the dry season in the project area. With large ranchers: we have not properly developed a training program with them, but technical advice tailored to each property on adjustments to be introduced for better economic and environmentally friendly results, aiming at reducing the need for further forest conversion. This advisory is reflected in **ANNEX 4**, showing the current and newly adopted practices.

1.3. Deliver training for water management and treatment: We have reported in previous years about the assistance provided to women to mitigate health problems arising from the bad quality of water, composed by the delivery of 40 artisanal mud water filters and training in water management / use and importance of the filters to 49 people, of which 28 were women and 21 men. This training was supported by Puerto Casado's Health Centre and the main target were women, since they have a main role in caring for their families. In year 3, when we delivered training on water management again, more men were interested, and the attendance to this training, as shown in **ANNEX 7**, was 15 men and 3 women. With this number, we completed the target of 31 women (20% of the small ranchers' families) receiving practical and theoretical training in water treatment and management.

During year 3 we continued monitoring the proper use of filters and reinforced awareness of the importance of changing habits for the care and consumption of clean water to improve the quality of life and health of the project beneficiaries. During this period we also identified a group of 20 families of small producers from the San José community in Puerto Casado that obtain their drinking water from a water source they share with the domestic animals they raise on their farms. WCS obtained Darwin's approval to expand the project for an additional 6 months period. During that period, we will include these 20 families in the delivery of filters and training for proper water management, and continue targeting women in these trainings, considering their key role in education and care of their families.

1.4. Assist ranchers for on-the-ground implementation: We have made regular field trips to large and small ranchers under this activity:

- Large ranchers: we have continued monitoring each of the 8 large ranches: Rodeo Pora, El Nono, Paso del Tigre, Campo Grande, La Huella, Montania, San Juan and Campo Nuevo, to advice owners on best practices for cattle production. During this period we have verified the implementation of best practices such as waste management, installation of signs to prohibit hunting, or for wildlife crossing on internal roads and in forest reserve areas within properties, as shown in **ANNEX 4**. Due to extended damage of forest fires during 2020, proprietors were very interested in measures to prevent fires. Under WCS' suggestion, there were two measures that benefitted all of our eight landowners: a simple management measure consisting of the implementation of firewalls, and an early warning system consisting of a Whatsapp group where they communicate to each other news about fires in their areas, weather alerts and other, helping them to prevent future events. We are also planning training events with a firemen group for the upcoming months, as shown in ANNEX

- Small ranchers: During this period, WCS helped small producers to enter the National Registry of Beneficiaries (RENABE), a database for the identification and characterization of producers, as well as the services received from the Ministry of Agriculture:

Their integration into this system will be a key part of the project exit strategy, as these beneficiaries are now registered as users by the public extension service, improving their chance to be assisted in the near future.

We also continue to use our 7 demonstrative plots with small ranchers in Puerto Casado, Fuerte Olimpo and Puerto Guarani to provide hands-on training to our beneficiaries, as shown in **ANNEX 7.1**. Some of the practices being observed are: **a)** Fodder storage, management and use of water shortage-resistant seeds; **b)** Installation and use of electric fences for cattle management; **c)** Water storage and distribution for cattle, and others.

An unexpected but positive result was the significant support provided to small communities to mitigate the negative effects of the extreme drought affecting our project area, consisting of technical assistance and inputs for pasture and water storage. Supported by the *Vice Ministry of Livestock* and the inputs provided by our project and project partners (as listed in **ANNEX 9**), we were able to improve the knowledge and preparation of our beneficiaries to better cope with the negative effects of a long drought season, demonstrated in decreased livestock deaths, supplementary livestock food reserves and improved water storage and distribution for human and animal consumption, as shown in **ANNEX 7.1.**, and numerically in **ANNEX 3**.

In addition, equipment was delivered to beneficiaries (electric fences, shadow nets, weed and pest control equipment, etc.), basic animal health kit, bovine sperm to improve genetics (donated in previous period by private companies), and others. The complete list of inputs provided this period is in **ANNEX 9**, and the pictures are in **ANNEX 7.1**.

OUTPUT 2: CONSERVATION AGREEMENTS

2.1. Generate Conservation Agreements: conservation agreements have been signed with 8 (eight) large ranches and 42 small ranches in the previous period. During this period we adjusted our approach, after discussing it with small producers, and decided to change to signing agreements with small groups (to reflect a 'landscape' approach, reflect the community work they do and to increase the chances of compliance). This measure was successful, and we manage to obtain signed agreements (individually or as a group) representing a total of 134 producers (Fuerte Olimpo: 43; Puerto Guarani: 50; Puerto Casado: 33; Toro Pampa: 8) which added to the 42 signed in Year 2, gives a total of 176 conservation agreements representing the commitment of small beneficiaries to adopt more sustainable production practices, exceeding the original target of 150. Agreements signed in this period are attached as **ANNEX 10**.

2.2. Monitor performance of Conservation Agreements: The signed conservation agreements were permanently monitored through a follow-up form (**ANNEX 11**). This made it possible to keep track of the most relevant actions at each of the intervention sites. With large producers: there has been a positive collaboration in the implementation of best practices. Of the eight large properties, six continued experiencing conflicts between wildlife and human activities, and WCS provided the guidance to install non-lethal techniques that avoided the indiscriminate killing of these large carnivores during the life of the project. The adoption of non-lethal predation control measures and the prohibition of wildlife hunting were complied with by 100% of the large ranchers which reported conflict with large carnivores. They have also joined an early warning network through a Whatsapp group that allowed the early implementation of firewalls to prevent fire, reducing the risk of economic losses they have suffered in previous years from major forest fire.

In addition, 100% of the 8 properties implemented more than 3 (three) improved management practices in their productive area. The details of these findings are in **ANNEX 4**.

With small producers, the fulfilment of their commitments is closely linked to the mitigation strategies they are adopting in the face of the long drought, which largely rely on the project assistance, consisting of training and provision of veterinary and agricultural inputs, allowing them to improve their water storage and distribution, pasture storage and to reduce their livestock mortality rates through the use of animal health kits provided by the project. The adoption of such measures avoids the need to further forest conversion as they can maintain their livelihoods adopting these practices.

OUTPUT 3: DIFFUSION AND REPLICATION OF BEST PRACTICES:

3.1. Elaboration of a final publication: this activity is to be completed by the end of the project, now extended for 6 months. Nevertheless, WCS has started systematization of best production practices incorporated by project beneficiaries, as shown in **ANNEX 4**. The goal is to elaborate a final publication showcasing the main sustainable practices introduced by the project in the productions systems of the beneficiaries, and share the lessons learned throughout the process.

3.2. Local, national and regional diffusion of best practices: During Year 3, WCS continued to promote the project activities through various means.

The project hired a journalist, Alcides Manena, and he wrote several articles in different communication channels, as showed in the following links:

April 1, 2021:

<https://m.facebook.com/1743738715705735/posts/3922516764494575/?sfnsn=mo>

April 2, 2021: <https://www.launion.com.py/wcs-paraguay-fortalece-practicas-de-ganaderia-sostenible-de-pequenos-productores-de-alto-paraguay-158295.html>

April 3, 2021: <https://www.ultimahora.com/practica-conservacion-fortalece-ganaderia-chaquena-n2934407.html>

September 8, 2021: <https://www.ultimahora.com/instalan-sistemas-provision-agua-productores-chaquenos-n2960259.html>

We also hired a network called Red Chaqueña de Comunicación (RCC), which reaches the entire Chaco region, and consists of a TV channel, a web page and a radio station, which has been diffusing messages on the project:

September 7, 2021: <https://rcc.com.py/chaco/realizan-instalacion-de-sistemas-de-aprovisionamiento-de-agua-en-plena-seguia/>

September 9, 2021: an interview to project leader Maria del Carmen Fleytas was transmitted in their prime time newscast: <https://youtu.be/-12d3X3W84c>

The alliance between WCS, the Vice Ministry of Livestock and the Green Chaco Project, explained earlier in **section 2 - Project stakeholders/** partners and in **ANNEX 2**, was reported by different means:

November 25, 2021:

<https://greencommoditiesparaguay.org/proyectogreenchaco/2021/11/25/alianzas-para-impulsar-la-produccion-ganadera-sostenible-en-el-chaco/>

November 30, 2021:

<https://rcc.com.py/chaco/realizaron-cierre-oficial-del-proyecto-green-chaco-2021/>

<https://rcc.com.py/videos/realizan-cierre-del-proyecto-green-chaco/>

Our partner the Vice Ministry of Livestock has also been promoting the project through its social networks, as seen below:

April 19, 2021:

https://m.facebook.com/story.php?story_fbid=2286093091534211&id=1187343951409136

September 7, 2021: <https://fb.watch/8Rh6u6YkGs/>

September 24, 2021:

<https://www.facebook.com/viceministeriodeganaderiaparaguay/posts/217696073726056>

Finally, our partner the Green Chaco project elaborated with WCS support two videos to promote actions developed by our partnership in Fuerte Olimpo and Puerto Casado, The videos, which feature project beneficiaries, landscapes and actions, are in English and can be seen at:

Fuerte Olimpo: https://youtu.be/b7r_UtyDGNM

Puerto Casado: https://youtu.be/XtEJ9_5yqu4

3.3. Field exchange visits:

No activity was developed during this period. We are planning the second field exchange event for May-June, to be organized and developed with the Vice Ministry of Livestock, using the demonstration plots installed by the project.

3.2 Progress towards project Outputs

Output 1 - Improved sustainable ranching systems: With small ranchers, we continue working in Year 3 to address basic needs in relation to the information collected in the baseline survey. To this end, we provided technical assistance, agricultural inputs and printed guiding material, both on agricultural crops and cattle management. For that purpose, we have developed 14 training modules including theory and practice, and reached 255 people in total: 88 in Puerto Casado, 92 in Fuerte Olimpo, 56 in Puerto Guaraní and 19 in San Carlos and Maria Auxiliadora (**ANNEX 7**).

From this total of trainees 187 (71%) completed 20 hours of training each, surpassing the project target of 150 beneficiaries. From these 187 people, 74 were women (40%), doubling the originally expected indicator of 20% women trained. If we consider the number of member per family, we are indirectly benefiting 689 people, expanding significantly the positive impact of the training provided.

Women that received water filters in Year 2, participated in training to improve their knowledge on water quality and management, and men also joined these trainings in Year 3. We will continue these trainings with a new group of families identified in Year 3, with significant need to improve their water quality as described in section 1.3. Thanks to Darwin approval, we have re-directed some funds to purchase and deliver more water filters to these communities, and will also officially measure improvements in their health in the final period of the project. But our field staff has already implemented a rapid survey to evaluate efficiency of filters among the 40 families that received them, and the incidence of diseases of stomach origin was only of 6 out of 57 people using the filter daily, resulting in 90% efficiency of the filters (**ANNEX 12**).

This year we have emphasized the use of the demonstration plots in training events with the Vice-Ministry of Livestock (**ANNEX 7.1**). This hands-on experience helps to fix the skills and knowledge acquired. The assistance provided by the Vice-Ministry in animal health and sanitation also used the practical approach for the same reason. Since assistance included crops for food security, in the face of an extended drought, they have not focused on sales, but on secure their nutrition with their own production. Production increased in 100% in some cases thanks to assistance, training and inputs provided by the project, but others have more difficulties due to the climate conditions, and make little progress. Nevertheless, there was an average of 45% increase in productivity of agricultural crops and cattle, and average of 32% increase on sales measured this year, as shown in **ANNEX 3**. Training has been an important tool for this improvement, as it has contributed to better cattle nutrition, pasture productivity through rotation, improved management systems, and others, as means to reach higher productivity. Thanks to veterinary kits provided by the project, more than 100% of beneficiaries can now implement animal care as addressed during training, and all beneficiaries have increased their knowledge on animal health issues.

We also see as an unexpected but positive result the agreement signed and subsequent training in sustainable production practices provided to students of the National University, considering these students are local people, who will then apply their acquired knowledge in their communities and landscapes (**ANNEX 7.4**)

Regarding large ranchers, the baseline survey revealed that they all had the necessary infrastructure for production and access to basic services. In their case, training is mostly developed with ranch workers, since they are the ones implementing the cattle management practices in the field. We have identified that most large ranches have conflict with felids, causing economic losses due to cattle killing. Therefore, we have implemented non-lethal measures to mitigate predation such as LED light systems and others (see **ANNEX 4**) in some of these large properties, to help them diminish those losses, with a high level of efficiency. We also need to repeat training with ranch workers periodically, since there is a high level of personnel' rotation in these highly isolated places, and we have to start over when new personnel arrive. Other aspects where we have contributed are in the improvement of registers about wildlife sightings and mortality records, which served as a basis to work in better harmonizing production with conservation of existing biodiversity and minimize conflicts.

Output 2 - Conservation Agreements: in large ranches, we have helped make some initial adjustments in ranch management, that are both low cost and effective in protecting existing biodiversity and allowing a sound, efficient cattle management. Changes in land planning, advice on selection of pasture, stocking rate of plots, ways to mitigate conflicts with wildlife, are discussed with owners and managers during each visit. The main difference between large and small ranchers is the level of technical knowledge they have and need, in order to improve their productivity. Small ranchers need to improve their level of knowledge, and large ranchers have access to most of it, but still need to clearly relate those improvements with securing long-term ecosystem services, which is a clear contribution of WCS in this project. **ANNEX 6** shows the minimum changes in forest cover and **ANNEX 5** shows the important biodiversity that lives in these ranches. With small ranches, our main achievement is building their capacity not only for more agricultural productivity but also to be more resilient in front of emerging contingencies such as climate disasters (the recent drought which is still ongoing with a slight improvement in rainfall) or a pandemic. Visits to monitor conservation agreements were systematized as shown in **ANNEX 11**, and served as the basis to elaborate **ANNEX 4**.

Output 3 - Diffusion and replication: so far, we have been disseminating project activities through the local radios, a very important national newspaper and our social networks, reaching an estimate of 10,000 people. People in the rural communities are now more aware of the existence of the Darwin Initiative scheme, as a majority has participated in some type of activity in the target communities, where we always display Darwin logo and materials marked (see **ANNEX 1, ANNEX 4, ANNEX 7** and **ANNEX 8**, plus videos mentioned in **section 3.2.** above. We expect to continue working on strengthening this aspect until the end of the project. An important part of diffusion and replication will also be the final publication, compiling all the best practices transferred and lessons learned during the project, and our participation in upcoming events to diffuse the project objectives and outcomes.

3.3 Progress towards the project Outcome

OUTCOME: Reduced deforestation and reduced biodiversity loss are achieved through implementation of sustainable, efficient and scalable ranching practices in the Chaco, which protect biodiversity while improving the welfare of vulnerable rural populations. During Year 2, we worked to assist beneficiaries with technical advice and training to develop skills and be able to implement those improved ranching practices. These are the preliminary progress and results:

1. Local Livelihoods (income): Baseline surveys in Year 1 showed most small ranchers lacked technical assistance in the form of knowledge and inputs to enable them a higher income level, and also a majority reported low productivity, complementing their income by developing other economic activities. By the extended technical assistance provided in Year 2 and Year 3, we transferred valuable knowledge (**ANNEX 7**) and inputs (**ANNEX 9**) on topics such as vegetable gardens, animal health, cattle management improved techniques they used to increase their production efficiency (more production per hectare), which has so far resulted in an average of 45% increase in productivity of agricultural crops and cattle, and an average of 32% increase on sales measured in Year 3. We have also helped them to diversify their income source from only cattle ranching to include agricultural crops, which is not only for sales purposes but also to secure income and nutrition in case of adverse conditions (climatic or others). We have delivered this assistance in the form of theoretical and practical training, mainly with our partner the Vice Ministry of Livestock, and also with Minerva Foods and the Green Chaco project, during field visits and also by installing 7 demonstration plots that served and will continue to serve as hands-on experience for these producers (**ANNEX 7.1**)

2. Local livelihoods (access to clean water): From initial surveys we know 68% of the households did not have access to safe water, and as communicated by the local Health Centre, most have incidence of water quality-related diseases, especially diarrhoea and parasites. We have made progress towards mitigating that problem through the distribution of 40 water filters to equal number of families, and providing training on water management / use and importance of the filters to 49 people (28 women and 21 men) in Year 2 and other 18 (15 men and 3 women) in Year 3, thus reaching the target of 31 women (20% of the small ranchers' families) receiving practical and theoretical training in water treatment and

management. **ANNEX 7.1** shows pictures of the events, **ANNEX 7.2** shows the signed lists of attendance and **ANNEX 7.3** shows the detail of participants by gender and cumulative participation. The local Health Centre has also contributed to the training modules, and will contribute to measuring impacts in the next period. It has not presented an updated report due to sanitary restrictions and a peak in cases of respiratory diseases also made their staff prioritize their efforts. Nevertheless, to have a more accurate perception of the effectiveness of the water filter, WCS staff made a rapid survey to the 40 families who received filters, and from a total of 57 people surveyed, only 6 showed symptoms of diseases of stomach origin, showing a 90% effectiveness of filters in this sense (**ANNEX 12 – Rapid survey on water filters**)

3. Biodiversity: In Year 1, we have collected baseline data through various methods, including current camera trapping results, interviews with ranch workers and studies from previous years in the same sites. We have now compared the results of our monitoring with the baseline data on biodiversity, and found that 23 out of 25 species registered in the Defensores del Chaco National Park are present in the eight large ranches where we work, a coincidence of 90% with the biodiversity records of the largest protected area of the country (**ANNEX 5 – Biodiversity monitoring**). From the 8 properties surveyed, initially all 8 had conflict with felids, which has now decreased to 6, but the losses diminished, by adopting non-lethal control methods to deter predation (**ANNEX 4**). We have also assessed these large properties in best practices to increase productivity in the same area, such as rotational grazing, pasture improvement, water management and others. These simple measures help diminish the need for further forest conversion, as shown in the forest cover analysis (**ANNEX 6**), enabling forest connectivity and thus a viable habitat for wildlife.

4. Forest Cover: the 8 ranches with whom WCS has conservation agreements, cover some 195,688 hectares. In the third year of the project, we have monitored land use change in these properties, showing that total conversion from forest to pasture in the three years' period 2019 - 2022 was 4,488 hectares, which represents 2.3% of the total area intervened (**ANNEX 6 – Forest cover**) This is a very valuable result, since in the Chaco, conversion of forest to pasture is legally allowed up to 75% of each property, and the current rate of deforestation is 264,000 hectares (2%) per year. (source: <https://es.mongabay.com/2018/12/paraguay-deforestacion-chaco/#:~:text=Como%20muestra%20de%20la%20impunidad,con%20ocho%20a%C3%B1os%20de%20c%C3%A1rceles>). If we were having this same rate in the project area, the forest area converted in three years would be 11,741 hectares, approximately three times the area finally converted.

Therefore, this small percentage of conversion detected in these ranches represents 1/3 of the current rate in the rest of the Chaco, and it implies a high level of commitment of these proprietors towards a more sustainable production model as targeted by our project. We expect that, through the adoption of the sustainable practices, the need of further conversion of forest to pasture will be further reduced compared to the baseline forest area, enabling habitat conservation and diminishing fragmentation for the benefit of biodiversity, also favouring the biological connectivity with the giant Defensores del Chaco National Park, which is in the vicinity of all the large properties.

To this part of the project, we believe project indicators are adequate to measure advances. We are almost at the end of the project, and thanks to the interventions of the project, we have obtained significant improvement in the original indicators. Other important factors are that we have earned the trust of local communities and incorporated valuable local partners, including agreements with two local governments (Municipalities of Fuerte Olimpo in Year 2 and Puerto Casado in Year 3), which will support the sustainability of our actions after the project ends.

3.4 Monitoring of assumptions

OUTCOME LEVEL:

Assumption 1: Local Livelihoods (income): changes due to improved ranching practices are effective and measurable and no significant disease, climatic or market conditions diminishing cattle production during the lifespan of the project.

Comments: the COVID-19 (coronavirus) pandemic was an unexpected event in Year 1 and 2, but most restrictions and health risks have now decreased. Livestock prices registered a tendency to stabilization now, benefitting especially large ranches who sell most of their production to external markets (<https://www.productivacm.com/carne-bimestre-registra-el-mejor-precio-medio-de-exportacion-en-8-anos/>). The most impactful situation in the project area was the significant dry period which has now extended into Year 3, and cattle had to be sold at any price or they would die, impacting negatively the price scenario. In the case of small producers, their more urgent need was food security - rather than market-driven cattle production— specifically crops for their own consumption. Links are provided in **section 10** of this report.

Assumption 2: Local livelihoods (access to clean water): changes due to training and subsequent improved knowledge are effective and measurable during the lifespan of the project.

Comments: this assumption has no change so far, and we expect it to hold true for the rest of the project. Puerto Casado Health Centre did not present an updated report, first because of sanitary restrictions and then, emergencies due to respiratory diseases saturated the work area and the staff had to prioritize their efforts. Nevertheless, we are still relying in the local Health Centre to help us monitor these changes towards the end of the project.

Assumption 3: Biodiversity: Fluctuations due to climatic conditions, major disease outbreaks and/or forest fires are not significant to diminish wildlife populations during the project. Participant responses to baseline and final jaguar killing surveys are honest.

Comments: more than the COVID-19 pandemic, the major impacts in the project area were due to forest fires and climatic conditions (extended drought). Even large producers, with more capital and economic possibilities to face this kind of scenario, felt the impact of not having enough pasture to feed their animals, and this impact is aggravated on the more vulnerable producers, which might want to further intensify their production to compensate economic loss, or encroach previously conserved areas, WCS has been closely supporting project beneficiaries, both large and small producers, and fortunately, there has not significant negative impact on species or forest loss in the target ranches. There is a minimal variation (two or three less) in the numbers of species registered in large properties (see **ANNEX 5**), probably due to their migration to other places with more water availability. WCS will continue monitoring those impacts, and will adjust project activities in case it is needed. We continue to be confident our relationships with producers are close enough to return honest responses to our questionnaires.

Assumption 4: Forest Cover: There are no extreme climatic conditions, major disease outbreaks and/or forest fires that significantly diminish forest cover. Satellite imagery is available for window of project execution

Comments: As said in the previous assumption, there was in fact a serious drought that has been impacting the area for almost two years. But at least in the eight monitored properties, the change in forest cover has been minimum (**ANNEX 6**). Regarding availability of satellite imagery, there are no changes affecting our project.

OUTPUT LEVEL:

Assumption: Small and large ranchers are willing to participate in project activities.

Comments: After different situations affecting the project area, such as the pandemic and the prolonged drought, we have seen an increased interest of ranchers at all scales to interact with the project, since the Paraguayan economy is suffering a significant stagnation with lower sales of goods and services in all areas, and any assistance is welcome. We have seen our participation targets met and surpassed (**ANNEX 7.1, 7.2 and 7.3** details attendance to workshops and training) due to that reason, which increases possibilities of meeting all our goals.

Assumption: Women are not culturally banned from participating in training events.

Comments: Women are actively participating in project activities, especially training, as shown in the assistance lists and pictures attached in **ANNEX 7.1, 7.2** and **7.3**. Therefore, this assumption still holds true.

Assumption: Women will feel comfortable participating, and will have adequate time to contribute in a way that will not negatively impact completion of their normal daily tasks.

Comments: As said under previous assumption, and after tailoring training to their possibilities, women are actively engaged in project activities.

3.5 Impact: achievement of positive impact on biodiversity and poverty alleviation

The desired impact of our project was: Implementing sustainable cattle ranching in the Paraguayan Chaco results in reduced deforestation and land conversion, improved biodiversity conservation, and strengthened livelihoods of the most vulnerable socio-economic sectors.

We are making significant contributions to each of these targets: by working with large ranchers, and influencing each aspect of their production, we are diminishing the need for further land conversion (**ANNEX 6 – Forest cover**) and creating a sound habitat for biodiversity (**ANNEX 5**). By implementing non-lethal predation control measures, we are favouring co-existence between humans, cattle and wildlife. By implementing improved ranching practices and by their high uptake by ranchers, we are creating a transferrable model which can be shared in many other private properties (**ANNEX 4 – Improvements at large ranches**). Since around 80% or more of the Chaco region is composed by private properties, any improvement in the sustainability of their production models will have significant impact in the biodiversity conservation of the region. And the model can even be transferred to other similar regions in Latin America where production coexists with biodiversity

With the small ranchers, we are definitely contributing to their increased capacity to produce and secure their livelihood by transferring knowledge in animal health, agricultural crops, use of improved production systems for more efficient production, and others. Proof of that contribution, are the indicators of improvement in production and sales, despite the adverse climate and market conditions (**ANNEX 3**). We expect to see this knowledge continuing to be translated into better production, higher and more diversified income until the end of the project, and hopefully beyond. And finally, as access to safe water is another indicator of poverty, we expect that, by providing these families better access to safe water and training on its importance (**ANNEX 7.2 and 7.3**, lists of attendance and details of training on water management by community and gender), we will decrease the adverse health effects of bad quality water.

4. Project support to the Conventions, Treaties or Agreements

CBD, Aichi Strategic Goals:

Goal A, mainstream biodiversity:

We have actively been working with our partner from the Government, the Vice Ministry of Livestock, and ranchers at small and large scales, in the implementation of plans for a more sustainable production, which reduces the impacts of use of natural resources well within safe ecological limits by increasing efficiency in the same area through practices such as rotational grazing, pasture improvement, animal health care, and others (Target 4). This is the main objective of our project and we will continue working on it until the end of the project.

Goal B, reduce direct pressures on biodiversity and promoting sustainable use:

Our project is transferring sustainable ranching practices to increase efficiency in already converted areas, thus reducing pressure on unconverted habitats and mitigating further forest loss (Target 5) as shown in **ANNEX 6 – Forest cover**. We have signed agreements with 8 large ranches, of which more than 80,000 hectares are still standing forests. We can see the **2.3% conversion in three years** in the project area versus the **2% (or more) annually** converted in the rest of the Chaco. Conservation agreements signed between the project and ranchers contains specific commitments to ensure biodiversity conservation, through the prohibition of

hunting, use of non-lethal methods to mitigate human-wildlife conflicts, and others. We are monitoring the fulfilment of all these commitments in each field visit to the ranches (**ANNEX 11**).

Goal C, improve biodiversity status:

By working with sustainable ranching practices and large ranchers surrounding the Defensores del Chaco National Park, we are positively impacting the conservation of a large area which is of particular importance for biodiversity and ecosystem services. By improving the sustainability of the production systems in these ranches, introducing effective area-based conservation measures to improve productivity, we are avoiding horizontal expansion of production (**ANNEX 6 – Forest cover**) and thus favouring the conservation of habitats, and improving biodiversity status (**ANNEX 5– Biodiversity monitoring results**) (Target 11).

With the installation of non-lethal carnivore control techniques, such as LED lights systems and others, extinction of known threatened species, such as jaguars, is prevented through decreased human-cattle-carnivore conflict, translated into a decreased number of calves lost to predation, and diminished retaliatory killing of jaguars. Their conservation status is thus improved and sustained (Target 12).

Goal D, enhance the benefits to all from biodiversity and ecosystem services:

The needs of rural groups, especially women and local communities, are addressed by safeguarding ecosystems that provide essential services, including water, that contribute to health, livelihoods and wellbeing (Target 14). We are also further contributing to provide clean water through the provision of water filters and training in water management. The project is also implementing technical assistance for improved ranching practices that reduce deforestation, and this will result in improved conservation of degraded ecosystems, whereas reduced risk of fires contributes to better quality of life, carbon stock conservation and mitigation of climate change (Target 15).

Goal E, enhance implementation through participatory planning, knowledge management and capacity building:

By monitoring conservation agreements in situ with large ranchers (**ANNEX 11**); implementing hands-on training (**ANNEX 7.1**) and demonstration plots (**ANNEX 6**) with small ranchers, we are incorporating and disseminating local lessons of small and large ranchers and knowledge of project partners (Target 18), and building the capacity of ranching communities and natural resource managers (Target 19), focusing on the most vulnerable socio-economic sectors.

We also support:

The CBD Programme of Work on Agricultural Biodiversity, as we promote the positive effects and mitigation of the negative impacts of agricultural practices on biodiversity in agro-ecosystems in our project messages diffused through local TV programs, newspapers and social networks (described in section **3.2 - Local, national and regional diffusion of best practices**) and during training sessions in the field (also previously mentioned in other sections).

The CBD Programme of Work on Forest Biodiversity: in the same line as stated above, our interventions are aimed at the conservation of forest biodiversity through the transformation of ranching practices towards more efficient ones, diminishing the need for further forest conversion and thus protecting habitats for biodiversity, and these are the messages we have been diffusing to various audiences this past year.

The Convention on the Conservation of Migratory Species of Wild Animals (CMS); as jaguars (*Panthera onca*) have been listed in the COP13 – CMS (2020) on both Appendices of the Convention, our project is contributing to its protection by promoting among ranchers the prohibition of hunting this species, and “*addressing human/wildlife conflicts that lead to persecution of Jaguars that kill livestock*” (**ANNEXES 4, 5 and 11**), as mentioned between the benefits from CMS-listing of the jaguar

5. Project support to poverty reduction

The Paraguayan Chaco is a region characterized by its rich biodiversity, low population density (less than 1.3 persons/square kilometre), isolation and large cattle ranches. Hosting a large

part of the 15 million head of cattle that made Paraguay the world's sixth beef exporter, many of the 182,000 Chaco inhabitants still have unmet rudimentary needs. The Basic Unsatisfied Needs (NBI) index shows over 40% of the entire Chaco population has at least two basic needs unsatisfied in housing, water and sanitation, education and/or subsistence capacity, being the highest percentage in the country. Coverage of public services, including governmental technical assistance, is almost inexistent. To address the coupled issues of biodiversity loss and access to basic needs, WCS and its partners are implementing an environmentally responsible program of livestock management, including large and small ranchers.

By working with 5 small communities: Puerto Guaraní, Fuerte Olimpo, Toro Pampa, Puerto Casado and San Carlos in the Department of Alto Paraguay, we will be **directly** addressing the multi-dimensional aspects of poverty such as income, by transferring knowledge to increase production efficiency, and diversifying their income source (from just cattle to include vegetable gardens) the project also gave access to food security and markets; health through the provision of clean water with water filters; gender equality through women-specific training in family water management and vegetable gardens, which in turn will result in their empowerment; and knowledge on animal health/husbandry and improved ranching practices in partnership with the Vice Ministry of Livestock (**ANNEX 7.1 – Summary of training**). We have 187 people (40% women) who completed 20 hours of training each, surpassing the project target of 150 beneficiaries receiving a minimum of 20 hours each of practical and theoretical training in diverse topics, all related to their increased wellbeing and of practical, immediate application to that end. Each of the participants represents a family, and according to our survey results we are indirectly benefiting 689 people, thus expanding significantly the positive impact of the training provided (**ANNEX 3 – Baseline data and comparative re-measurement**) And we can still further expand this impact through different activities we will continue in the last months of the project, such as diffusion and communication, field days, exchange of experiences, and others.

Indirectly, the project will contribute to poverty alleviation in the long-term, by contributing to decrease overexploitation of natural resources and conflict with wildlife, through the work with 8 large ranches of 195,688 hectares in total, who have committed to conservation actions that, considering the extension for their properties, will result in conservation of large portions of biodiversity habitat, an indirectly, in improved ecosystem services. **ANNEX 4, ANNEX 5 and ANNEX 6** show the achievements so far in this sense.

6. Consideration of gender equality issues

From its original design, the project included a specific component to approach gender equality: We provided direct training and inputs for improved water management and training to 40 families (33% more than planned). We purchased and delivered 40 water filters and elaborated educational material for them. Women are empowered as focal points for water management within the participating households, ensuring project benefits are more equally distributed across genders, and starting a more equitable division of responsibilities and leadership in their families.

When disaggregating data by gender to measure their participation in project' training activities we see that, from the 187 people who completed 20 hours each of training in different issues, 74 were women (40%), doubling the originally expected indicator of 20% women trained.

Other ways we have considered gender inclusion from the start was by ensuring female participation in the baseline development (surveys), resulting in 28% (53 women) from 188 beneficiaries answering the surveys. This is 8% more than expected in the logframe. In the re-measurement of the baseline data to identify progress in production and sales, we see that 55 (32%) of the 171 people showing progress in those two aspects are women (**ANNEX 3 – Survey data**), showing they are taking an active role in using the lessons learned from the project to benefit themselves and their families.

We also facilitate their participation in all project activities by adapting times and dates considering their other tasks.

7. Monitoring and evaluation

Monitoring and evaluation play an important role for this project since we aim at improving effectiveness of sustainable ranching by a suite of interventions at two different scales: small and large ranches, and thus be able to demonstrate these results and promote adoption of sustainable practices across Latin America.

To assess progress made until this stage of the project, we have used strong indicators which are measurable, easy to demonstrate, such as surveys, interviews, lists of attendance, maps, training materials, photos, etc. Each of these indicators has helped construct a solid initial baseline. In Year 3, we have used these indicators to assess impacts in biodiversity and poverty status and changes towards an improved resource management, resulting from the comparison between initial and final status. Indicators and their monitoring methods have already been detailed in **Section 3 – Project progress**. As part of the logical framework, each level of indicators (outcome, outputs, and activities) leads to the accomplishment of the following level, meaning that if activities are executed, and outputs are achieved, then the overall outcome of the project, characterized by a change in the initial situation, will also occur, in this case, it will be about how the project will contribute to reducing poverty and contribute to the more sustainable use of resources and biodiversity conservation.

As a summary, some of the success indicators achieved which are leading to the outputs are:

- We are making progress towards **Output 1 –Improved sustainable ranching systems** by; 188 baseline surveys with 188 small producers, surpassing in 38 producers the initial target of 150. From these 188, 53 (28%) were women, also surpassing the initial target of 20% of women participating in initial surveys. When re-measuring the baseline data to identify progress in production and sales, we see that 55 (32%) of the 171 people showing progress in those two aspects were women (**ANNEX 3**). Based on the baseline data, we determined thematic areas for training, and surpassed the initial target of 150 small producers trained: 187 people completed 20 hours of practical and theoretical training each in various subjects related to ranching practices. From these 187 people, 74 were women (40%), doubling the originally expected indicator of 20% women trained. We have also reached more women than expected (40 vs. 30 initially planned) as beneficiaries of water filters, also providing them training material to use them, and additionally have trained 20 women and 15 men in water management and treatment (**ANNEX 7.3**). **Regarding** the 8 large ranchers, we have also completed 8 surveys totalling 195,688 hectares of land, surpassing the initial target of at least 150,000 hectares under improved management, as presented in Year 2.

- Under **Output 2: Conservation Agreements**, we have signed 8 conservation agreements with large ranchers. With our technical advice and assistance to adjust production practices to increase efficiency and avoid the need for further forest conversion, we have contributed to reduce the deforestation rate in the target properties to one third (2.3% in the 8 properties in three years against 2% annually on the rest of the Chaco), enabling the conservation of 81,208 hectares of forest in the large ranches where we are working (**ANNEX 6**). With small ranchers, we have changed the strategy, orienting the signature of agreements with groups of small producers, instead of individual agreements. We thus obtained signed agreements (individually or as a group) of a total of 176 small producers, representing their commitment to adopt more sustainable production practices, and exceeding the original target of 150 (**ANNEX 10**). This is a case where we have modified the methodology to be more effective towards achievement of the Output.

And finally, we will continue until the end of the project with **Output 3 – Diffusion and replication of best practices** by actions such as promoting the project and its objectives through social networks, videos, appearances in TV programs, written media (see section **3.2**).

Local, national and regional diffusion of best practices), and will make the final publication with the summary of the project and its lessons learned, available to the public.

No specific changes have been introduced in the original M&E plan. WCS is in charge of performing M&E in the project. At least once each year, monitoring data was reviewed with ranchers, communities, project partners, local governments, NGOs and other stakeholders and compared against expected results to adapt each subsequent year's work plan.

8. Lessons learnt

We learned to apply adaptive management by adjusting our actions to the different and changing scenarios and the requests from our beneficiaries. For instance, we first planned to sign individual conservation agreements with large and small proprietors. Then we figured out that such agreements with small landowners: a) had a non-significant impact in biodiversity conservation; b) were irrelevant for transforming their practices if we did not consider the community work they do, and c) after significant consequences of the prolonged drought, they were more reluctant to assume individual commitments, and strongly relied on the support of their communities. Therefore, we signed group agreements, applying a landscape approach instead of an individual approach, and achieved representation of 176 small producers.

Climate change is a reality and hit more significantly vulnerable producers. We have provided communities of small producers with inputs to cope with climate change, such as shade nets to cover their crops, and have installed the diversification of production to avoid their dependence on one item that can be lost under extreme climate conditions.

Our project partners have experienced different situations which have avoided them to collaborate as we expected within the project: the Government of Alto Paraguay is extremely influenced by policy. Being 2021 a municipal election year, we had to be very careful to avoid the project being used for political purposes. Minerva Foods was facing commercial constraints that have their staff very committed to solve those problems for the last year; the Faculty of Veterinarian Sciences almost completely its field activities due to COVID-19 pandemic. These situations were unexpected and completely unpredictable, but as we learnt, having more than one partner, and building new partnerships along the process is always beneficial (**ANNEX 2 – New partnerships during Year 3**).

9. Actions taken in response to previous reviews (if applicable)

There were three questions to be answered in this Annual report:

1. Has the adoption of non-lethal predation mitigating techniques halted the killing of jaguars on the larger ranches?

We trust the level of trust earned with ranchers and their workers is high enough to obtain honest answers from them when asked about jaguar killings. We have not find any evidence on the contrary, and in all 6 ranches still affected by jaguar attacks to cattle, owners and workers have expressed firmly their will to adopt non-lethal predation techniques, and have prohibited wildlife hunting, even with signage provided by the project, being this a positive attitude towards this species.

2. The Application indicated that Minerva Foods would have sought to open sustainable beef markets for Paraguay producers, but it is not clear if this role will be taken up by another partner.

Minerva Foods is still committed to fulfil their role, but it will probably be after the project end. As WCS will continue working in the project area due to its conservation focus in the Chaco, they have expressed their will to continue supporting our work with small beneficiaries, after solving some institutional problems described in previous reports. We have also had conversations with another meat packing company, Frigorifico Concepcion, who has also expressed their will to find ways to cooperate with these communities, working with WCS.

3. The project is contributing to SDG 15 (life on land) through its reduction in deforestation, from 2% per year to 1.43% in its target ranches. But given that the area has “the fastest global deforestation rate”, is the project optimistic that this can be reduced much further?

Being very honest we do not believe that it can decrease much more than that, but that the project aims to show alternatives of better productive practices in order to maintain the forest cover even when our beneficiaries have areas on their property that by law they can still deforest or transform.

After three years of monitoring forest cover, and working closely with large ranchers in the improvement of their production practices, we are indeed confident we can further reduce the need for forest conversion. In fact, ranchers who have converted forest to pasture (which, we should note, it is legal in the Paraguayan Chaco until the 75% of the property and with a land use plan) have expressed that unusual and consecutive years of forest fires and extreme drought are main causes behind this conversion, trying to maintain the charging capacity of their ranches, but they are committed to find alternatives to tackle those two motivations and conserve their natural landscapes.

10. Other comments on progress not covered elsewhere

During this period, there were two major facts that affected the project, but only one of them was significant and unexpected: the extremely long dry season the Chaco region has been suffering since 2020, as seen in the links below:

- <https://www.ultimahora.com/chaquenos-sufren-la-falta-agua-y-claman-asistencia-n2963998.html>
- <https://www.lanacion.com.py/pais/2021/08/21/chaco-sequia-altas-temperaturas-y-vientos-son-las-principales-causas-de-incendios/>
- <https://www.youtube.com/watch?v=T3-pEY9zqgw>
- <https://www.abc.com.py/nacionales/chaco/2022/01/07/la-sequia-complica-cultivos-en-comunidades-nativas-del-chaco/>

This has significantly re-oriented the technical assistance towards containing and reducing the cattle mortality rates and addressing the low pasture production, considering the low availability of water. Despite of that, we have managed to obtain a generally positive production improvement in the communities assisted, balancing extremes such as those with 100% improvement to those of our beneficiaries who have lost all their production. In this sense, the project was a key support and provided a much necessary emergency assistance to these communities.

Another challenge was the change of municipal authorities on October 10, 2021, which made the project staff restarts all conversations with the new authorities to plan for long-term sustainability of the project. But this fact was expected as per the election calendar, and in the end, it did not affect very negatively, since we have already signed two cooperation agreements with the new authorities.

11. Sustainability and legacy

Since the development of baseline surveys, we noted an increasing interest by local stakeholders in being part of the project, especially from small producers. We have to consider that the project area is highly isolated, the development indicators are low, and there are many unsatisfied needs as described in **section 1 - Project summary**. Therefore, they see our project as a much needed assistance to tackle poverty in a sustainable way.

This observation was subsequently proved by the fact that from 150 originally targeted beneficiaries of this group, we initially had 197 producers interested and we had to narrow down that list to 188. Then we also surpassed the target of 150 small producers with at least 20 hours of training, having 187 people, of which 74 (40%) were women trained, exceeding also the gender participation targeted originally (**ANNEX 7.3**) We strongly believe that, in order to provide a sustained legacy, the project must show livelihood and conservation benefits that will engage the interest and commitment of local, national and regional stakeholders. And for that

end, the project strategy was threefold: 1) provided technical capacity to promote sustainable ranching practices that reconcile poverty alleviation and biodiversity conservation objectives; 2) documenting and communicating the sustainable ranching practices and its economic and environmental benefits, and 3) presenting the achievements of the project to the authorities so that they can scale up by being incorporated into local, national and regional policies. Under number 1, interest from local communities already exceeded our expectations as mentioned above. Under number 2, we have obtained satisfactory results in increasing productivity in 45% and sales of exceeding production in 32% as shown in **ANNEX 3**. We will develop number 3 in the last period of the project.

We are also carrying out complementary projects with additional donors aiming at the promotion of more sustainable ranching practices and the need to harmonize biodiversity conservation and cattle production, with cattle ranching as the core economic activity in our conservation landscape (Chaco). In 2021 we will start a 5 year-project to promote this harmonization in partnership with the international WWF and funded by USAID. And also will continue to devote efforts to mitigate felid-human conflicts and enable coexistence, in a two-year project starting in 2021, supported by the US Fish and Wildlife Service (USFWS) and contributing to better natural resource management at large cattle ranches surrounding the Defensores del Chaco National Park, through another project also started in late 2021 with the Department of Interior (DOI) of the US Government. These three projects will positively impact the same geographic area of this current effort with support from Darwin.

In the last period of the project, we will make efforts to promote our work at two levels: at the national authority level, presenting the results of this project, and also at the producers' level, from small to large ranchers, especially sharing knowledge and lessons learned. We will also develop a final publication with all the project results in order to facilitate replication.

The Chaco region is WCS' focus landscape in Paraguay, so we will continue working in the area with both small and large ranchers in the future, to ensure sustainability and scaling up of the results.

12. Darwin identity

The Darwin Initiative is now familiar to NGOs and central government, but less so with local community groups; therefore, in Year 2 the project aimed at raising awareness of the Darwin Initiative at the local level. For that end, we continuously posted short news on the project in our social networks, and also in beneficiaries and partners' social media, local newspapers and others as can be seen in section **3 – Project progress**, under number **3.2. - Local, national and regional diffusion of best practices**.

We also gave importance to the use of Darwin logo: WCS printed a banner to use at project events in Paraguay, showing the Darwin Initiative logo. WCS staff explains at each event or field visit the project objective, as a distinct project, even in the cases when Darwin logo was accompanied by other partners' logos as in the demonstrative plots. We have clearly explained how it supports our work to combine biodiversity conservation, sustainable ranching and poverty reduction. During each technical activity, either training or field visits, Darwin Initiative is present through its banner and the logo in attendance lists, and we have also elaborated other merchandising items, such as t-shirts and caps, as shown in **ANNEX 1, ANNEX 7.1 and ANNEX 4**, showing WCS staff and beneficiaries in the field, further reinforcing Darwin identity.

13. Impact of COVID-19 on project delivery

Due to COVID-19, in previous periods we had to halt key on-the ground activities such as travel, resulting in a slower pace of assistance being delivered. For that reason, on-the ground results were slowly being achieved, a situation which worsened due to the extended period of drought that depressed land productivity and food security, further impacting our project goals. To address this, we asked and received approval from Darwin to extend the project for 6 more months via a no-cost extension request, to secure the project expected results are achieved in full. Most restrictions are now lifted, and no further delays are expected in this last period of execution.

Another adjustment we made in previous periods was applying adaptive management and responding to the needs of our beneficiaries, who requested that the project expanded its actions to include not only support for market-driven cattle production, but also assistance in food security, specifically crops for their own consumption, to be able to cope with the difficult economic and health scenario. We then provided these families with seeds and other inputs for vegetable gardens, and also continued providing assistance to improve sustainability in cattle production. As a result, we now have diversified income sources that were the basis to reach the targets of increased production as shown in **ANNEX 3**. Knowledge acquired and practical learning on this wider variety of economic activities will greatly increase resilience of these families before any future similar events.

Finally, new ways of working such as the use of virtual means for meetings are not feasible options for these isolated rural communities due to the technological gap and limited internet connection they face.

14. Safeguarding

Please tick this box if any safeguarding or human rights violations have occurred during this financial year.

If you have ticked the box, please ensure these are reported to ODA.safeguarding@defra.gov.uk as indicated in the T&Cs.

In practice, all staff receive orientation to WCS commitments detailed in the Code of Conduct at the start of their employment and during periodic refresher trainings. The Code of Conduct covers diverse issues such as conflicts of interest, safeguarding human rights, combatting human trafficking, sexual harassment, protection of whistle blowers and many others. Under the Code of Conduct WCS, personnel are accountable for their actions and the actions of others under their management authority, and for ensuring compliance with the Code of Conduct. The Code of Conduct prohibits bullying, harassment and sexual exploitation and abuse, and child abuse as well as documents WCS's organizational commitment to comply with human rights standards and human subjects' protections as it undertakes its conservation work. WCS follows established national and global standards for safeguarding human rights including the World Bank Social Framework, the UN Declaration on the Rights of Indigenous Peoples, and the Belmont Report that outlines the ethical principles and guidelines for the protection of human subjects of research. WCS has also established a Global Grievance Redress Mechanism to ensure that we respond in a consistent and timely way across the organization to investigate, document and take appropriate action to address complaints of alleged human rights abuses by WCS staff, partners, consultants or anyone working on our behalf. All downstream partners associated with our projects are vetted prior to engagement and all written contracts clearly issue a flow through of WCS policies and responsibilities. WCS ensures local partners and staff have access to, are familiar with, and know their responsibilities under these policies and WCS partners receive training on safeguarding at a level commensurate with their role in/for the organization. WCS provides clear processes for receiving and addressing suspected violations of these policies through a locally adapted global grievance redress mechanism. Failure by WCS staff and partners to take preventive measures against safeguarding violations, to investigate and report allegations by their personnel, or to take corrective actions when safeguarding violations have occurred, or any other violations constitute grounds for WCS to terminate its agreement or relationship with any WCS staff or partner.

15. Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2021 – 31 March 2022)

Project spend (indicative) since last Annual Report	2021/22 Grant (£)	2021/22 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)			0%	

Consultancy costs			-1%	
Overhead Costs			2%	
Travel and subsistence			-9%	
Operating Costs			-3%	
Capital items (see below)				
Monitoring & Evaluation (M&E)				
Others (see below)			-1%	
TOTAL	96.601	96.601		

16. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes

I agree for the Darwin Initiative Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here).

With the increase in global demand for food, agricultural production is constantly expanding. More than 80% of the Paraguayan Chaco is composed by private properties, being this an area rich in natural resources, but at some points, severely affected by climate conditions and highly isolated. Communities of small producers living in this part of Paraguay have low possibilities of strengthening their economic development, needing more efficiency in their production. They lack training and knowledge, and adequate tools to go forward. In these conditions, when trying to improve their quality of life and that of their families, they sometimes resort to depleting their natural resources (increasing pressure on forests, fauna and water). This project had the dual purpose of improving the living conditions of these people through a more sustainable production and building their capacity to secure the conservation of natural resources for generations to come.

To this end, one of the main achievements of the project was to work in alliances, which were strategic to increase and ensure the expected impact. Key partnerships were built with local governments, in order to ensure the sustainability of the efforts initiated. And other strategic alliances were built with partners such as the Vice-Ministry of Livestock; Minerva Foods; MADES-GEF Green Chaco Project, implemented by UNDP; and the USAID-WWF Alliance for Sustainable Development. Each of these partners contributed to different components of the project from their working area.

WCS not only implemented the expected actions from the project's logical framework, but also worked hard to build relationships with each of the beneficiary groups and partner organizations to achieve results with added value, trying to secure an exit strategy and the sustainability of results.

In summary, the greatest achievement up to this part of the project, in addition to having reached all its objectives, was building a network of alliances and relationships that will strongly support not only this project, but also future actions WCS or any other actor could implement in this area for conservation and poverty alleviation.