

Darwin Initiative Main Annual Report

To be completed with reference to the “Writing a Darwin/IWT Report” Information Note:
(<https://www.darwininitiative.org.uk/resources-for-projects/reporting-forms-change-request-forms-and-terms-and-conditions/>).

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

Submission Deadline: 30th April 2021

Darwin Project Information

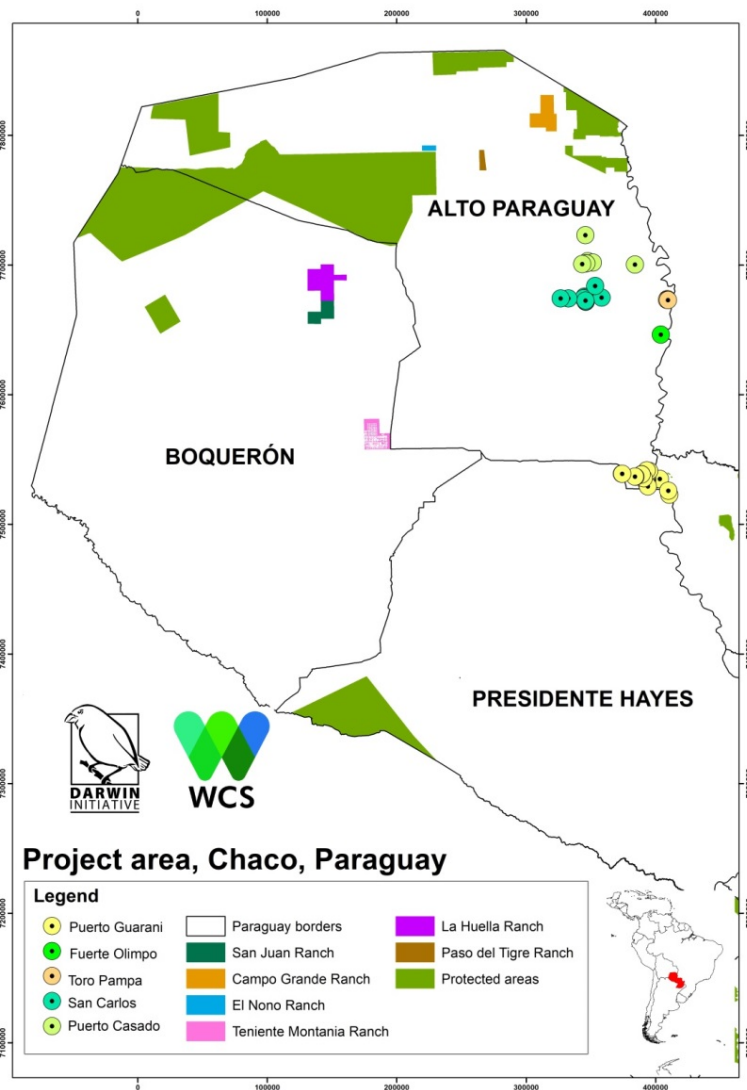
Project reference	26-013
Project title	Conservation and poverty alleviation through sustainable ranching in Paraguay
Country/ies	Paraguay – Chaco
Lead organisation	Wildlife Conservation Society - WCS
Partner institution(s)	Minerva Foods; National Vice-Ministry of Livestock; Faculty of Veterinarian Sciences - 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 – 31 March 2022
Reporting period (e.g. Apr 2019 – Mar 2020) and number (e.g. Annual Report 1, 2, 3)	1 April 2020 – 31 March 2021 Annual Report 2
Project Leader name	Maria del Carmen Fleytas
Project website/blog/social media	paraguay.wcs.org / facebook.com/wcsparaguay
Report author(s) and date	Maria del Carmen Fleytas, 30 April 2021

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 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. Specifically, environmentally responsible management surpassed our original target group of 8 large ranchers and 150 small ranchers, reaching 188 small producers, and 111 small producers have already reached more than 20 hours of training, of which 36% were women (16% more than the original target). As a consequence, we are setting a firm basis to an increased production efficiency, access to markets and income, all of which we will measure in Year 3. Overexploitation of natural resources decreased as shown by the minimum forest conversion seen in the 8 large properties, of just 1% in two years, as did conflict with wildlife from 8 ranches initially with cattle-felid conflicts to 5 ranches. Key to this project, food security of small ranchers improved from no vegetable gardens to 117 people with training and inputs for installing them at their backyards, as can be seen in the Training Annex. More broadly, beneficiaries also committed 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.



Drawing from the progress and lessons learned during the execution of this project, it is clear that 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 partnerships

Our formal partnerships in this project are with: 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. We have also started a partnership (in process of formalization) with the United Nations Development Program (UNDP) through their Green Chaco project, who is acting in the same area of our project, and contributing with agricultural inputs (seeds and tools) to extend the impact of our actions in sustainable production practices.

These partnerships were thought as the most adequate and necessary to advance the project objectives, taking into account their areas of expertise and previous actions. However, during

this period, 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 also contributed with their veterinaries to provide capacity building training in animal health. **Annex 1 – Pictures of activities in the field with partners**) and served as a key replacement to the initial contribution expected from the Faculty of Veterinarian Sciences, largely limited in their field movements due to the pandemic. We could not receive the expected collaboration from Minerva and the Academia, due in the first case to institutional problems they had (they were accused of monopolizing the national beef markets by the ranchers' sector and faced some legal processes due to that accusation), and in the second case due to the COVID-19 restrictions. We have also counted on the support of the Government of Alto Paraguay, who has contributed especially in the component of training for water management and treatment. They made the connection between our project and the Ministry of Health, and through it, to the Puerto Casado Health Centre, which has significantly contributed to measuring efficiency of improved water quality through project activities in this city.

3. Project progress

3.1 Progress in carrying out project Activities

During the second Year of the project we have focused in implementing the actions identified in the baseline survey collected previously. In particular, those actions focus on increasing productivity through technical assistance, food security, and safe water provision, in the case of small ranchers, and improved sustainability of their ranching practices, in the case of large ranchers. Overall, progress is satisfactory, since the majority of targets are been accomplished, and some even exceeding the initial expectations. We have exceeded our expected results regarding the number of beneficiaries surveyed and trained, percentage of women trained, number of hectares of avoided deforestation and the audience reached with our diffusion of the project through different means. During this year 2, we set the basis for an increased capacity of our small and large producers to produce more efficiently and in harmony with the natural environment. We expect that, building on the transferred knowledge, small producers will have an increased productivity and sales at the end of Year 3.

As outputs 1, 2, 3 have related interventions and activities, it is essential to efficiently manage all information on the context, current situation and needs of project beneficiaries and stakeholders, and to document progress. We have developed a database to document our target communities and beneficiaries and to map progress against planned initiatives and activities, as well as needed changes. In the case of small producers, our database records the communities and beneficiaries, the training received and upcoming activities, so that we can plan the entire project execution and monitor their progress. In the case of large landowners, the databased tracks progress against the Conservation Agreements signed with them and, specifically the checklist they contain, to control their compliance of commitments agreed on.

Output 1: Improved sustainable ranching systems

1.1. Conduct baseline economic, social and environmental surveys: this activity was concluded on schedule, in the first months of Year 2, and reached a greater number of stakeholders than initially targeted, therefore increasing the amount of contextual information obtained.

In Year 1 we completed 87 surveys with small ranchers and 6 with large ranchers. These surveys were complemented in year 2 with 101 additional surveys with small producers and 2 surveys to large ranchers. Overall, this activity reached a total of 188 small producers and 8 large ranches, surpassing our original small producer target of 150 families. **Annex 2 – Surveys completed with small and large ranchers in Year 2.**

Small producers (project goal: 150 families):

We made small adjustments in the number of final beneficiaries. In order to rationalize our resources, concentrate on certain geographic areas and also prioritize the communities we originally approached at project conception, from an initial number of 197 families surveyed we have narrowed down to 188 small-scale producers to be assisted. These are located in the towns of Puerto Casado (47 families), Puerto Guaraní (63 families), Fuerte Olimpo (33 families), San Carlos (17 families) and Toro Pampa (28 families). We will still provide occasional assistance to the rest of the surveyed families, but we will concentrate our efforts on those targeted.

Results from our surveys show that we reached 188 small producers with surveys, from which 53 (28%) were women, representing 8% more than original target. An estimated 89% of beneficiaries are agricultural producers, all of which have cattle and none of which have agricultural crops. One hundred percent of producers showed a clear need for technical assistance, as reflected by the low level of productivity in their lands; and 100% of them also lack at least one basic service (access to safe water, housing, others), and have low economic income, with isolated situations aggravating their vulnerability. In addition, 72% of the producers surveyed depend exclusively on their production for family income, and yet almost 100% of them consider their production insufficient to fulfill their basic needs. As a result, 28% of producers are currently developing other economic activities.

The complete profile of our beneficiaries will enable us better orient our assistance, providing for example, training in water management, vegetable gardens, animal health and others.

Annex 3: Baseline generated on data obtained from the surveys.

Large producers (project goal: 8 properties):

We surveyed 8 large ranchers. They all add up to a total of 196,688 hectares of ranches working with the project, distributed in Campo Nuevo (30,000 hectares), San Juan (22,000 hectares), Campo Grande (38,627 hectares), El Nono (4,000 hectares), Montanía (37,411 hectares), La Huella (45,000 hectares), Paso de Tigre (6,650 hectares) and Rodeo Porá (12,000 hectares). All of them are located in the Departments of Boqueron and Alto Paraguay, and 100% are devoted to cattle breeding and/or fattening. They all have the needed infrastructure, have basic services provided, and are located in the proximity of Defensores del Chaco National Park, the largest protected area of the Chaco. As such, any effort made to make their cattle production more sustainable will greatly benefit this protected area and the surrounding region. From eight properties, currently five are experiencing human wildlife conflicts including cattle-felid conflict, causing economic losses variable in severity from one ranch to another, and damage ranging from no losses to considerable losses of about 80 calves per year. Therefore, non-lethal predation control measures and the prohibition of wildlife hunting are key good practices to elevate productivity. **Annex 4: Monitoring of Conservation agreements signed with large landowners**

1.2. Deliver training for sustainable ranching: This activity has started during this reporting period and we made significant progress. For most families in the project area, the Darwin-WCS project was the only aid during the pandemic. Based on the results of baseline surveys and according to the potential of these communities, WCS and the Vice Ministry of Livestock selected priority thematic areas and developed activities of capacity building around them. So far, we have developed 45 training modules including theory and practice, supported by the Vice Ministry, and reached 175 people from the 5 communities (Puerto Casado, Puerto Guaraní, Fuerte Olimpo, San Carlos and Toro Pampa) to date. The subjects covered in these training efforts are detailed below:

- forage management and storage,
- basic animal health care,
- parasite control
- implementation of vegetable gardens and crops
- pasture management for animal food security
- use of electric fences
- water management

In **Annex 5 – Information on training events** we show all pictures, lists of attendance and contents of training developed. From this information, we can monitor the usefulness of the training provided. For practical training, and to facilitate implementation of acquired knowledge, we have installed 6 additional demonstration plots to the 2 plots installed in Year 1, resulting in 8 plots to build practical capacity in the 5 communities (**Annex 6 – Details and pictures of the demonstration plots**). This point will be further developed in section 1.4.

1.3. Deliver training for water management and treatment: from the baseline survey, we have learned that some 93% of families within the project have no access to clean, safe water. Water distribution in Puerto Casado (selected as the recipient of the water component based in its indicators) only covers the center of the city, while people working in agricultural properties drink water for any natural source they can find or from water reservoirs devoted to farm animals. Only a small percentage of Puerto Casado inhabitants have their own source of safe, clean water. Therefore, after signing a three year-agreement (already sent as attachment to Annual Report 1) with the local Puerto Casado Health Centre, they have taken blood and fecal material samples to analyze health conditions of a group of 25 habitants to gather basic initial data. The results show parasites in 20% of the samples collected. We will strive to collect more samples in the next period, and improve coverage of analysis, to have a more complete overview of the situation regarding health issues derived from poor water quality including as diarrhea, dysentery, vomits, intestinal parasites, and nutritional deficiency. **Annex 7 - Report of tests and conclusions – Puerto Casado samples**

To mitigate these health problems while information is gathered, during the first semester of Year 2, WCS delivered artisanal mud water filters to 40 families. These devices turn any water into safe water in just 20-30 minutes through a filtering process, and it can be consumed right away through a tap located in the lower part of the filter. We also provided training in water management / use and importance of the filters to 49 people, of which 28 were women and 21 men. This training was provided together with staff from the Health Centre and the main target were women, since they have a main role in caring for their families. Please see **Annex 5 – Information on training events**

1.4. Assist ranchers for on-the-field implementation: Together with the Vice Ministry of Livestock, WCS has identified individual needs for the implementation of best practices in small and large ranchers. With **large ranchers**, we facilitated an exchange visit, which will be further described in section **3.3. Field exchange visit**, aimed at putting ranches into contact with one another, and enable experience sharing on best sustainable practices that work for the Chaco region regarding water management, pasture rotation and others. WCS also visited in three opportunities ranches El Nono, Paso del Tigre, Rodeo Pora and Campo Grande, and in two opportunities ranches: La Huella, Montania, San Juan and Campo Nuevo to continue delivering technical assistance to ranchers and performing biodiversity monitoring and efforts to mitigate cattle-felid conflicts, whose results are shown in **Annex 4: Monitoring of Conservation agreements signed with large landowners** and **Annex 12 – Biodiversity monitoring in large ranches**.

With **small ranchers**, supported initially by USAID matching funds, and subsequently with Darwin support (after a change request), WCS provided to these families inputs for cattle and agricultural production, such as wires for electric and conventional fencing, solar panels, vegetable seeds, covering nets for crops, batteries, kits for animal health care, in all cases accompanied by practical training for their use, as seen in **Annex 5 – Information on training**. Importantly, we managed to obtain donations from local ranchers and companies of bovine sperm as in-kind contribution for small ranchers, considering the difficult situation due to COVID-19, and thus allowing a diversification of income sources to benefit of the economic development of these families (**Annex 8 – Contributions of ranchers and private companies**).

We also prioritized assistance in the implementation of vegetable gardens, as seen in **Annex 5 – Information on training events**, to secure food in times of economic difficulties, and as a response to COVID situation (**Annex 9 – COVID-19 response**). Additionally, we elaborated

and distributed a guiding material to further support practical training (**Annex 10 – Publications**)

In addition to installing 6 new demonstration plots, as explained earlier in section 1.2 and **Annex 6**, we have managed to obtain progress in the two pilot experiences installed at the start of Year 2. Both pilot projects were installed in small properties at Puerto Casado and their owners invested their own resources to make them work and also helped WCS to systematize their experiences. These experiences already served as demonstration sites for the practical training provided by the project in the second half of Year 2:

Pilot project 1 – Pasture installation and rotational grazing system: Developed in a property of 30 hectares with the goal to intensify cattle fattening in 10 hectares and avoid damage to the remaining 20 hectares. The rotational grazing system uses 2.5 hectares per block, with a maximum cattle load of 15 heads of cattle in each block. The type of pasture used (variety Callide) was not tested before in this type of soil, and it is recommended for dry soils with low levels of rainfall. During this period, we evaluated the aptitude of this pasture for the project location, as well as the efficiency of rotation practices and the increase in weight gained in relation with the available land and time of testing. This pilot project has already served as practical hands-on training site during Year 2.

Pilot project 2 – Pasture recovery through cleaning and rotational grazing: this 40 hectare plot was cleaned by the proprietor to recover the pasture, and then he tested the efficiency of the rotational grazing system under the project's guidance. The rotational system uses 10 hectares per block, with four blocks in total, and a maximum stocking rate of 60 heads of cattle. Due to extreme drought, in December 2020 and January 2021 it was not possible to measure progress indicators. But in January-February 2021, some growth was observed. The goal now is to measure resilience indicators in the upcoming months, translated into the increase in kilograms of beef produced related to time and available land.

More details of these pilot projects can also be found in **Annex 6 on Demonstration plots**

Output 2: Conservation Agreements:

2.1. Generate Conservation Agreements: We have signed conservation agreements with all 8 large landowners. We also initially started signing individual Conservation Agreement with each of the small producers, but after observing the situation in the field for almost two years, we considered it would be more meaningful for landscape-level conservation to sign Conservation Agreements with groups of producers, represented by their leaders. First, most small producers are not working individually, but as communities, so an agreement that reflects this spatial scale is more adequate for the project. Second, most large owners do not own sufficient extent of land in order to be subject, simultaneously, of all commitments as stated in the Agreement (for instance, most do not have enough forested land individually to host key wildlife species, or to install silvopastoral systems). And finally, their community leaders are a strong force behind their individual fulfilment, and their signature can be a key factor for a successful exit strategy, as they will reinforce and supervise the fulfilment of commitments by small producers in their groups. Therefore, these agreements are a win-win situation, where both parties commit to a series of actions; ranchers to pursue conservation outcomes and WCS/the project to provide technical assistance in exchange for those conservation actions. **Annex 11 - Conservation agreements signed with large and small producers in Year 2.**

2.2. Monitor performance of Conservation Agreements: During field visits and the diverse training events, we have been monitoring the level of fulfilment of commitments assumed by producers through Conservation Agreements. With large producers, this has been more in the form of conversations, exchange of information and experiences on which best practices for cattle management better fit the conditions of their properties. We have also checked their level of adoption of non-lethal predation mitigating techniques, and we continue monitoring presence and abundance of biodiversity in their productive lands. **Annex 4: Monitoring on Conservation agreements signed with large landowners.**

With small producers, the main progress has been based on extended theoretical and practical training provided and provision of veterinary and agricultural inputs, which will allow them to improve their productivity, cattle health and management. They have also contributed with their labor for the installation of demonstration plots and have actively taken part of training events. For more information, please refer to **Annex 5 and Annex 6**.

Output 3: Diffusion and replication of best practices:

3.1. Elaboration of a final publication: this activity is to be completed by Year 3.

3.2. Local, national and regional diffusion of best practices:

We are promoting best practices through various means: we have hired a local journalist, Alcides Manena, who owns a local radio station, “90.5 - Frecuencia Pantanal”, covering Puerto Casado (7,000 habitants) and the neighbor communities (about 1,000 people), who periodically broadcasts important messages to the community on how to produce more efficiently and how the project is helping Chacoan communities to do so. An interview he made to WCS’ Laura Villalba on the project can be heard in **Annex 15**. The same journalist also writes articles for the second most important national newspaper, Ultima Hora (around 2,000 readers daily), where he has already published one article and written another in a local network, Comunicacho, for the project. We have also signed another service contract with a Chacoan radio station, Radio Pai Puku, with has a broader audience, covering the entire Chaco region (please see <https://www.radiopaipuku.org.py/nosotros/>), with 200,000 potential listeners, who are diffusing radio spots with messaging on the project and its activities (**Annex 16** shows a sample spot). While it is difficult to identify, from the total audience, the number of people actually reached with a specific radio segment, a very conservative estimate of 5% of the total audience reached provides a meaningful figure. We therefore estimate reaching with project messaging at least 5% of all these audiences, or 10,000 people. In the case of radio programs, this will be possible thanks to a rotational structure of the spots along the day, which allow messages to have more possibilities of reaching different listeners.

And finally, WCS Paraguay, our partner the Vice Ministry of Livestock, actively used the social networks and websites to diffuse information about the project as shown in these links below, and also our Facebook account is followed by several project beneficiaries who amplify our messaging

WCS Paraguay Facebook posts:

<https://www.facebook.com/WCSParaguay/posts/1362408280612096;>

<https://www.facebook.com/WCSParaguay/photos/a.347780202074914/1362408247278766/>

<https://www.facebook.com/WCSParaguay/posts/1379844978868426>

<https://www.facebook.com/WCSParaguay/posts/1389865854533005>

<https://www.facebook.com/WCSParaguay/posts/1476508349202088>

Articles written by Alcides Manena:

https://www.facebook.com/permalink.php?story_fbid=3922516764494575&id=1743738715705735

<https://www.ultimahora.com/pequenos-ganaderos-se-alistan-reducir-la-deforestacion-el-chaco-n2921200.html>

Vice Ministry of Livestock Facebook and Twitter posts:

<https://www.facebook.com/viceministeriodeganaderiaparaguay/posts/2115222291954626>

<https://www.facebook.com/viceministeriodeganaderiaparaguay/posts/2124482901028565>

<https://www.facebook.com/viceministeriodeganaderiaparaguay/posts/2147049165438605>

<https://www.facebook.com/1187343951409136/posts/2056534591156730/>

<https://twitter.com/vmganaderiapy/status/1319738292351488002>

<https://twitter.com/magparaguay/status/1318919088945725440>

We also published an article in December 2020 in the Darwin Newsletter to diffuse our experience to that date, available in this link:

<https://www.darwininitiative.org.uk/assets/uploads/Darwin-Newsletter-December-2020-Hungry-for-Biodiversity-FINAL.pdf> (page 15 and 16)

3.3. Field exchange visits:

We sought opportunities to target field visits along known ranchers in order to build confidence in the project and amplify our reach on beneficiaries. In Year 2, we organized a visit alongside a large rancher, Federico Robinson, who owns 5 ranches in the Eastern and Chaco regions, and with large experience in cattle management under all type of conditions. WCS staff and Mr. Robinson visited 4 of the 8 large ranches which are part of the project. During these visits, each rancher exchanged ideas with Robinson and WCS staff on pasture management, water collection/storage, fire prevention, and other good practices for ranchers. The properties visited included Campo Grande, El Nono, Rodeo Pora and Paso de Tigre. The exchange was very beneficial for all parties, as they took the opportunity to enrich each other and learn. Further information on this activity is in **Annex 4: Monitoring of conservation agreements signed with large landowners.**

3.2 Progress towards project Outputs

Output 1 - Improved sustainable ranching systems: With small ranchers, we have worked the entire Year 2 to address basic needs in relation to the information collected in the baseline survey (**Annex 3**). To this end, we provided technical assistance, agricultural inputs and printed guiding material. From an original target of 150 small producers, we over performed, reaching 175 small producers with training provided, 37% of them were women, a significant increase from our original target of 20%. From these 175 producers, 111 (of which 40 were women) have already fulfilled 20 hours of training, as expected by the project. Additionally, 40 women and their families (10% more than initial target of 30) have received water filters, benefitting indirectly the health of some 160 people (estimating an average of 4 members per family) and 17 women and 26 men have already participated in training to improve their water quality and management. We will continue these trainings and also measure improvements in their health in Year 3. Since assistance included crops for food security, these families have already started collecting some vegetables from their gardens to improve their nutrition. In some cases the excess in production could be sold, but we will measure this aspect and potential economic benefits during next period. The most important changes are estimated to be measurable in Year 3, as differences in production results can be evaluated. However, training has already provided them the tools to improve cattle nutrition, pasture rotation, improved management systems, and others, as a means to reach higher productivity. Thanks to veterinary kits provided by the project, 100% of beneficiaries can now implement animal care as addressed during training, and all beneficiaries have received an increased knowledge on animal health issues.

Regarding large ranchers, the baseline survey revealed that they all had the necessary infrastructure for production and access to basic services. The exchange visit we facilitated helped four of them to share experiences and acquire knowledge on different management systems to increase efficiency. We have identified that most large ranchers 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 three of these large properties, to help them diminish those losses, whose efficiency we are still testing. We also need to repeat training with ranch workers, since there is a high level of personnel' rotation in these highly isolated places, and we have to start over when new personnel arrive.

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 an enhanced environment (WCS is contributing in this aspect). 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 or a pandemic. **Annex 4: Monitoring**

of Conservation agreements signed with large landowners; and **Annex 5 – Information on training events.**

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. We have identified not many people in the rural communities are aware of the existence of the Darwin Initiative scheme, therefore, we are supporting all our activities with a variety of items marked with Darwin branding. We expect to strengthen progress towards this output during Year 3.

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 (**Annex 5 – Information on training**), which will continue in Year 3, we are transferring valuable knowledge vegetable gardens, animal health, use of electric fences, they will use to increase their production efficiency (more production per hectare), which we will measure 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 in case of adverse conditions (climatic or others). We have delivered this assistance in the form of theoretical and practical training, with our partner the Vice Ministry of Livestock, during field visits and also by installing 6 demonstration plots and two pilot projects that served as hands-on experience for these producers (**Annex 6**)
- 2. Local livelihoods (access to clean water):** From initial surveys we know 68% of the households do 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 through the distribution of 40 water filters and providing training on water management to 42 people (**Annex 5**); the elaboration of an educational material (**Annex 10**), and the signature of an agreement with the local Health Centre, who has already elaborated a health baseline (**Annex 7**) based on a group of 25 beneficiaries, to later measure the impact of those improvements in each family benefitted, and monitor the effectiveness of our assistance. The Health Centre has also contributed to the training modules.
- 3. Biodiversity:** 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 determined the baseline data on biodiversity, we have an inventory of the diversity of species they contain and will continue monitoring them along the project. (**Annex 12 – Biodiversity monitoring**). From the 8 properties surveyed, initially all 8 had conflict with felids, which has now decreased to 5 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, and we have the valuable input of another rancher to facilitate and exchange of experiences during a field visit to 4 of the eight ranches. These simple measures help diminish the need for further forest conversion, as shown in the forest cover analysis (**Annex 13**), enabling forest connectivity and thus a viable habitat for wildlife.

4. **Forest Cover:** the 8 ranchers with whom WCS has conservation agreements, cover some 195,688 hectares. In the second year we have monitored land use change in these properties, showing that only 2,792 hectares (1.43%) were converted from forest to pasture (**Annex 13 – Forest cover**) in two years (2019 to 2021). 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 per year (or 2% of its total forest coverage 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%A1rcel>). Therefore, this small percentage of conversion detected in these ranches represents half 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 also expect that at the end of the project, and thanks to the interventions of the project, we will accurately measure significant improvements through these indicators. Other important factors are the fact that we have earned the trust of local communities and also incorporated valuable partners, including a development project (UNDP's Green Chaco) and a local government (Municipality of Fuerte Olimpo), who will support our efforts in achieving our project goals.

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 is an unexpected event and continues to have a significant impact especially in the economic situation of the country in general. Prices have decreased, with a tendency to stabilization now, affecting especially large ranches who sell most of their production to external markets. In addition to COVID-19, an extended dry period in the first part of Year 2, where cattle had to be sold at any price or they would die, aggravated the price scenario. In the case of small producers, their more urgent need was for food security - rather than market-driven cattle production— specifically crops for their own consumption.

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. We are relying in the local Health Centre to help us monitor these changes during Year 3.

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: in the same line as the local livelihoods assumption, there is currently a COVID-19 pandemic worldwide, which, even though it does not affect directly wildlife, will probably have some indirect impacts on the environment, considering the economic impact on employment, market prices and other areas that are being experienced by producers. This can have a potential impact on the more vulnerable producers which might want to further intensify their

production to compensate economic loss, or encroach previously conserved areas, WCS is committed to closely monitor those impacts, and will proceed to adjust project activities accordingly as soon as impacts are clearer and if needed. We are also confident our relationships with producers are close enough to continue permitting 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: This has remained true until now. 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: as mentioned in Assumption 1 above, with the current pandemic in progress, and especially after it, we foresee an increased interest of ranchers to interact with the project, since the Paraguayan economy is suffering a significant decline with lower sales of goods and services in all areas, and any assistance will be welcome. In Year 3, we expect to see more interaction with our partner Minerva Foods, who will contribute with market knowledge and will help tailor production of these ranchers to the market demand.

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 5 – Information on training events**. 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 and creating a sound habitat for biodiversity. 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. 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 setting the basis for an increased capacity to produce and secure their livelihood by transferring knowledge in animal health, agricultural crops, use of electric fences as an improved technology tool for more efficiency, and others. We expect to see this knowledge translating into better production, higher and more diversified income by Year 3. 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, we will decrease the adverse health effects of bad quality water.

4. Contribution to the Global Goals for Sustainable Development (SDGs)

Goal 1 - End poverty

Through our technical assistance program, we are transferring knowledge and inputs on animal health/husbandry to improve ranching practices of small ranchers in collaboration with our project partners. We expect this knowledge and inputs will result in higher **income** for these families. Also, as poverty is not limited to the lack of income, we are also making progress towards:

- **Improving health conditions** of our beneficiaries: in Year 2, we set the basis for this goal through the provision of clean water, by delivering water filters, elaborating educational materials and providing training especially to women in water treatment and management.
- **Gender equality:** We are directly benefitting 65 women with technical assistance that will empower them, as contributors to the adoption of better agricultural practices by their families. And we have also provided specific training on water management to 18 women.

Goal 2 – Zero hunger

We have contributed to this goal by expanding our assistance to better and more directly impact on food security and production, so that hunger is now not a problem for small producers benefitted by the project. They all have their vegetable gardens, and have diversified their food and income sources from only cattle to agricultural crops. We are working towards increasing their agricultural productivity by providing extension service, knowledge and inputs for more efficient use of natural resources, which will directly provide them food security.

Goal 6 - Clean water and sanitation: we are providing greater access to clean water by providing water filters to 40 families (33% more than originally planned). We have also elaborated an educational brochure to show them the correct use of filters and the importance of clean water and sanitation, and we have increased their knowledge on water treatment and management through training.

Goal 15: Life on land:

We have managed to diminish the regular trend of deforestation (2% per year in the rest of the Chaco vs. 1.43% in two years in large ranches part of the project) by implementing simple and inexpensive ranching practices that improve efficiency per hectare without further need to convert forest into pasture, for example: better pasture management, rotational grazing, forest curtains and connectivity between them, among others. This is helping protect biodiversity habitats and prevent the extinction of threatened species while reducing ranchers' conflict with wildlife, which often result in retaliatory killings.

5. 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 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 throughout Year 3.

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 13 – 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 1.43% conversion in two years in the project ranches 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 4**).

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 13 – Forest cover**) and thus favouring the conservation of habitats, and improving biodiversity status (**Annex 12– 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 implementing exchange visits (**ANNEX 4**) with large ranchers 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 the local radio and newspapers, the exchange visits, and during the training sessions in the field (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.

6. Project support to poverty alleviation

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, 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 5**). We have already provided 111 people, of which 40 were women (36%), 20 hours of training on diverse topics, all related to their increased wellbeing and of practical, immediate application to that end. By benefitting these 111 people, we are also having a positive impact in their families, which, considering an average of 4 members per family, total 444 people. And we can further expand this impact through different activities such as diffusion and communication, field days and exchange of experiences, and others.

We will indirectly decrease overexploitation of natural resources and conflict with wildlife, by working 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 11** and **Annex 12** show the achievements so far.

7. Consideration of gender equality issues

The project includes 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.

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

We are also disaggregating data by gender to measure their participation in training activities of the project, resulting in that, from 175 people trained in Year 2 through different events, 65 (37%) were women. From this number, 40 women have already reached the project target of 20 hours of training, which is 10% more than the original target of 30 women.

8. 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. At the end of Year 3, we expect to use 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 discussed and 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%) are women, also surpassing the initial target of 20% of women participating in surveys; and with 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. From that baseline data, we determined thematic areas for training, and surpassed the initial number of targeted small producers trained (175 against 150 as initially planned). From these 175, 11 have already reached the project target of 20 hours of training, of which 40 (36%) were women, also surpassing in 16% the initial target of at least 30 women receiving 20 hours of training. 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 17 women in water management and treatment.

- Under **Output 2: Conservation Agreements**, we have signed 8 conservation agreements, with large ranchers, and have changed the strategy with small ranchers, orienting now the signature of agreements with groups of small producers, instead of individual agreements. This is a case where we have modified the methodology to be more effective towards achievement of the Output. With our technical advice and assistance to improve production efficiency, we have contributed to half the deforestation rate in the target properties (1.43% in the 8 properties in two years against 2% annually on the rest of the Chaco), enabling the conservation of 83,590 hectares of forest in the large ranches where we are working.

And finally, we are starting with **Output 3 – Diffusion and replication of best practices** by actions such as promoting the project and its objectives through local radios and written media, besides uploading the project materials to make them 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 will be 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. Changes in local livelihoods and environmental status will be closely monitored to ensure improvements are introduced in time and manner if needed.

9. Lessons learnt

In-depth knowledge on new communities (where we have never worked before) and building a relationship with them, can take longer than expected and in some cases can prove challenging and might yield different levels of success. We should plan ahead and devote more time in the schedule to this process.

We first planned to sign individual conservation agreements with large and small proprietors equally, but then we figured out that such agreements with small landowners had a non-significant impact in biodiversity conservation; and were irrelevant for transforming their practices if we did not consider the community work they do. Therefore, we plan to sign group agreements in this upcoming year, applying a landscape approach instead of an individual approach.

Weather unpredictability continues to be a challenge, but we have now learned to concentrate field trips on the most favourable part of the year (usually March to November) and avoid December to February for field activities.

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 good advices would be: "Have more than one partner", or "do not 100% rely on any one partner for your work".

And COVID-19 was probably the most unexpected challenge, due to travel restrictions imposed by the Government and the risk/fear of infection between our staff and beneficiaries. We are (and will continue to) constantly evaluating what kind of activities we can transition to 100% virtual and what activities will continue dealing with restrictions until sanitary conditions improve.

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

We received the following comments in the **Annual Report Review** issued in June 2020, to be addressed in the next Annual Report (current):

COMMENT: The Application indicates that the project aims to reduce the rate of forest clearance by 50% in eight targeted large ranches, but the Report implies that the project ranches will not need to convert further forest into pasture. Clearly, the latter would be the most desirable outcome, but could the project clarify this point please.

Response: Most ranchers already have a legal permit to convert their forests to other uses (like pasture), which is permitted under the Paraguayan laws in the Chaco. But, the project goal is exactly to help spread among ranchers good production practices that minimize the need to further horizontal expansion. And in fact, we have proved this can be achieved by the minimum percentage of deforestation (1,43%) detected in two years in these properties, legally permitted, against the current rate of deforestation in the rest of the Chaco, which is about 2% annually. We are confident the project will achieve its target of supporting producers to produce environmentally soundly and economically profitably, in the same area currently being exploited, without further conversion and/or at least reducing the need to do so.

COMMENT: The reviewer translated one rancher agreement, which indicated that the rancher agrees to inform WCS about carnivore sightings and suspected attacks, and that they will 'search' for all non-lethal methods for solving conflicts with felines, and limit the hunting of natural prey of the jaguar in its properties and place signage to this effect. Would it be possible to request ranchers to 'undertake' to use non-lethal methods, which are familiar to the project team?

Response: In fact it is exactly what happens in practice. They do not need to "search for" techniques, as we have been testing their effectiveness for more than a decade, and by "searching" what we tried to say is that they need to find (with technical support from WCS) the ones that better suit their context, from the broader toolbox. We even have a cost/benefit analysis for most of the non-lethal methods we recommend, favouring its adoption by ranchers

COMMENT: The project reports that it is already reaching a 'modest' estimate of 25% of the local population through radio broadcasts (4,000 people), although it is not clear how the project determined the number of people who listen to the project's programmes.

Response: We do not have a specific method to measure audience who is listening specifically to the project's programs. However, we expect to have an increased audience, as we have increased the means of communications where we diffuse our messages. The local radio Frecuencia Pantanal reaches Puerto Casado and its surrounding populations, covering about 8,000 people; Diario Ultima Hora, the second largest newspaper in the country, only in its printed version reaches 2,285 people daily (its digital version probably reaches many more). And finally Radio Pai Puku, which covers all three departments of the Chaco (220,000 habitants), and even reaches border communities in Argentina, Bolivia and Brazil. We estimate reaching at least 5% of all this audience, or 10,000 people, based on the coverage of these means and also in the structure of the diffusion of radio spots, which will rotate in different turns throughout the day, making it more probable to reach target audiences.

COMMENT: Is it possible that ranchers may need alternative sources of income if there is a demand for more sustainable non-animal protein, and markets for beef decline?

Response: It is not likely, at least not in the near future or within the project life. Sustainable beef makes a small segment of the beef small in Paraguay, i.e. it is not yet strong enough to deviate current production trends, even when the future markets may do so. Price decline has stabilized and the decrease in price has been compensated by an increase in exports, as shown in this link: <https://www.lanacion.com.py/negocios/2021/02/02/ingresos-de-la-carne-arrojaron-4-menos-en-enero-debido-a-reduccion-del-precio/>

COMMENT: More detail on the M&E would be helpful.

Response: We perform M&E on an adaptive way, WCS project staff are working closely with partners to continuously track project implementation every time we meet. We adhering strictly to success indicators included in the logical framework, and, as said in the original M&E plan, we have committed to monitor these indicators at least once each year with our partners and beneficiaries. And we do this on a more frequent basis than originally planned, since we are constantly meeting with them (at least every two months) to compare achievements against expected results to adapt our work plan in time and manner. Proof of this are the advances we are reporting according to (and in some cases, ahead of) Darwin schedule.

11. Other comments on progress not covered elsewhere

Our project involves working with isolated communities who lack access to all kind of public services and/or technical support from the government, and they have experienced considerable negative economic impacts due to the COVID-19 pandemic (which will be further discussed in section 14) aggravated by extreme climate conditions (absence of rainfall) for more than 6 continued months, harming the market prospects of cattle, and leading our beneficiaries to seek as much diversification as possible of their economic activities. As a result, they asked and we achieved Darwin permission to expand our assistance to cover inputs for agricultural crops, such as seeds for self-consumption and market crops; and other minor infrastructure items, accompanied by training materials. By expanding our assistance to diversify their production and income sources, we are helping them more significantly to increase their resilience before health and climate adverse situations, which is exactly the type of exit strategy we want to build.

We have also perceived the lack of awareness about the Darwin assistance scheme and by elaborating a wide variety of marked items, we have increased visibility of this assistance and many more rural communities, local governments and ranchers are learning about Darwin Initiative.

12. Sustainability and legacy

Since the baseline surveys were still being developed, we noted an increasing interest by local stakeholders in being part of the project, especially from small producers, proved by the fact that from 150 originally targeted beneficiaries of this group, we have first 197 producers interested and we had to narrow down that list to 188. 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 is threefold: 1) providing 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, where we are now, interest from local communities already exceed our expectations, since 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.

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 USFWS. These two projects will positively impact the same geographic area of this current effort with support from Darwin.

In the third year of the project, we will make efforts to promote our work at two levels: at the national authority level, by visiting and presenting the project to different Ministries, such as Agriculture, Environment, and others, and also at the producers' level, from small to large ranchers, especially sharing knowledge and lessons learned. We will also develop materials for 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.

13. Darwin identity

The Darwin Initiative is 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 have also been featured several times 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**

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, and 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, the logo in attendance lists, and marked training materials (**Annex 10 – Publications of training materials**). In addition, we have elaborated other merchandising items, such as t-shirts, mugs, caps, calendars and agendas, as shown in **Annex 14 – Darwin identity in the field**, to further reinforce Darwin identity in the field.

14. Impact of COVID-19 on project delivery

The first impact of COVID-19 pandemic on the project was travel and meeting restriction. During various periods, we had to stop field visits to comply with restrictions imposed by the Government, but managed to stay in contact with beneficiaries through various communications means. Baseline surveys took longer to be collected but this was finished with minimum delay. We adopted the virtual modality to meet with our partners for coordination and planning. At training events (when it was possible to make them), we implemented a no-signed list of attendance, thus avoiding contact, and documented the events through photos. Other safety measures and adaptations can be seen in **Annex 9 – COVID-19 response**.

The second impact was in terms of the outcome. Over the past year, rural communities suffered severe impacts to their agricultural production, when COVID-19-related restrictions, added to the already devastating effects of a 6-month-long period of drought. Economies were severely affected forcing producers to seek alternative sources of income to provide for themselves and their families. Thus, being Darwin-WCS assistance practically the only form of aid they counted on during the pandemic, beneficiaries requested that the project expand its actions to include not only support for market-driven cattle production—since sales and prices plummeted and were at their lowest in years—but also assistance in food security, specifically crops for their own consumption. Applying adaptive management, we first provided these families with seeds for vegetable gardens, along with other materials such as shade nets and

wires to fence their plots. And with our partner, the Vice Ministry of Livestock, we also continued providing assistance to improve sustainability in cattle production. Activities were implemented in the field with safety measures for staff and beneficiaries: using social distancing, wearing masks and practicing hand washing, with inputs provided by WCS.

We do not expect longer-term delays. On the contrary, we have now diversified income sources that can be considered to reach the targets of increased production. Knowledge acquired and practical learning on this wider variety of economic activities can greatly increase resilience of these families before any future similar events.

Regarding virtual means, we expect to continue these with our partners in the future. But there are still irreplaceable in-person activities, such as training events for rural communities, as they: a) lack a good Internet connection in many locations; b) are more used to and value more the personal contact and visits than a virtual contact, due to their culture; and c) practical, hands-on training greatly help fix the acquired knowledge. We will continue to implement these activities, except in case of governmental ban, with all preventive measures in place.

15. 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.

16. Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2020 – 31 March 2021)

Project spend (indicative) since last annual report	2020/21 Grant (£)	2020/21 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Monitoring & Evaluation (M&E)				
Others (see below)				
TOTAL				

Changes to the original budget were agreed by Darwin, through successive Change Requests approved by Darwin in April 2020, October 2020 and February 2021.

Specifically, moving the Accountant from the Staff costs to the Consultant costs, have not yet been discussed with Darwin, since we just detected this wrong allocation. But it will be presented for Darwin consideration through a Change Request within the next few days.

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2020-2021

Project summary	Measurable Indicators	Progress and Achievements April 2019 - March 2020	Actions required/planned for next period
<p>Impact</p> <p>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.</p>		<p>We are making significant contributions towards the expected impact of the project by: working <u>with large ranchers</u>, and influencing each aspect of their production, we are diminishing to half the need for further land conversion (Annex 13) and creating a sound habitat for biodiversity. By implementing non-lethal predation control measures (Annex 4), we are favouring co-existence between humans, cattle and wildlife, characterized by a persistent register of key species such as jaguars and their wild prey (Annex 12) in these properties. By implementing improved ranching practices and being these accepted and adopted by ranchers, we are creating a transferrable model which can be shared in many other of the private properties, which compose 80% or more of this region.</p> <p>With the <u>small ranchers</u>, we are setting the basis for an increased capacity to produce and secure their livelihood by transferring them knowledge in animal health, agricultural crops, use of electric fences as an improved technology tool for more efficiency, and others (Annex 5), inputs for production, and implementing practical demonstration sites (Annex 6). We expect to see this knowledge translating into better production, higher and more diversified income by Year 3. 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 5), we will decrease the adverse health effects of bad quality water.</p>	
<p>Outcome Reduced deforestation and biodiversity loss are achieved through implementation of sustainable, efficient and scalable ranching practices in the Chaco, which protect biodiversity while improving the</p>	<p>0.1 Local Livelihoods (income): By the end of the project, at least 150 households (750 people) in rural districts of the Paraguayan Chaco, will directly benefit from a 20% increase in production efficiency (more kilos of meat or more agricultural production per hectare), and 20% more sales in local markets, as a result of trainings and knowledge acquired</p>	<p>0.1 During Year 2, we continued setting the basis for the improvement of this indicator. Baseline data (surveys and the data base generated on them are in Annex 2 and Annex 3, respectively), were completed for 188 people, showing a majority of the surveyed communities lack technical assistance to improve their productivity and sales. Therefore, we concentrated in providing them 45 training events in agricultural and cattle-related themes (Annex 5); inputs for agricultural production (seeds, shadow nets, others), and for cattle production (kits of animal health, electric fences, forage machines, others) and we installed</p>	<p>0.1 We will measure the results of the technical assistance component by measuring the increase in productivity among small producers, and we expect our partner Minerva Foods will help in tailoring their products for the market and allowing higher income to be obtained.</p>

<p>welfare of vulnerable rural populations</p>	<p>through the project, compared to a baseline survey in 2019.</p> <p>0.2 Local livelihoods (access to clean water): At least 20% of the 150 households will experience a reduction in water quality-related diseases, thanks to trainings and knowledge acquired through the project, compared to a baseline survey in 2019.</p> <p>0.3 Biodiversity: Retaliatory killing of jaguars is reduced in 50% in 8 targeted large ranches; and populations of large and medium sized predator such as the jaguar and ungulate prey species (red deer, collared peccary) will be stable or increasing compared to a 2019 baseline, in 8 target ranches with at least 150,000 hectares, and species composition become significantly more similar to that of the intact Defensores del Chaco National Park forest.</p> <p>0.4 Forest Cover: By the end of the project, the rate of deforestation in 150,000 hectares of private ranches in the Defensores del Chaco National Park buffer zone is reduced by 60% from 2019 baseline in the same area.</p>	<p>two pilot projects and 6 demonstrative plots to serve as practical training sites to strengthen their knowledge on best production practices (Annex 6).</p> <p>0.2 We have selected Puerto Casado for this component, considering that surveys (Annex 2) showed that only 33% of the surveyed in this community had access to safe water. Then, after an agreement with the local Health Centre, we provided 40 women with water filters; trained 43 men and women in water management and importance (Annex 5), and selected a sample of 25 beneficiaries to test health indicators of water quality-related diseases, such as parasites and diarrhoea (Annex 7), to serve as a baseline to measure impact of our actions.</p> <p>0.3 We have elaborated biodiversity inventories in each one of the 8 large ranches (Annex 12), and concluded the high biodiversity level in the targeted ranches is in fact very similar to the neighbor Defensores del Chaco National Park. From the 8 properties, initially all reported conflicts with large carnivores, namely jaguars and pumas in the initial survey, but in Year 2, only 5 still have that problem (Annex 4), having undertaken non-lethal control measures as recommended by WCS. With the 8 ranches totaling 195,688 hectares (Annex 3), we have surpassed in 30% the initial target of 150,000 hectares.</p> <p>0.4 As it can be seen in Annex 13, in the total of 195,688 hectares, from 2019 to 2021 (two years), there has only been a conversion of 2,792 hectares of forest, representing 1.43% of the total area, in comparison to 2% annual, the rate for the rest of the Chaco. This was the result of field visits, technical advice, and exchange visits paid by WCS to these proprietors, proposing them small adjustments in their production systems to obtain more profitability in the same area: rotational grazing, adjustment in stocking rates, improved water and pasture management, and others.</p>	<p>0.2 We will continue capacity building with women, and the Health Centre will monitor the health indicators it obtained this past period, to measure the effectiveness of the assistance provided.</p> <p>0.3 We will use baseline inventory results to update them at the end of Year 3, and measure effectiveness of our intervention.</p> <p>0.4 We will continue working with ranchers to favour the adoption of the sustainable practices, increasing efficiency so that the need of further conversion of forest to pasture will be further reduced, enabling habitat conservation, diminishing fragmentation and enabling connectivity with surrounding protected areas and other private lands, for the benefit of biodiversity.</p>
<p>Output 1. Improved sustainable ranching systems: more</p>	<p>1.1 At least 150 small ranchers (20% women) and 8 large ranchers participate in baseline economic, social and environmental surveys by Year 2.</p>	<p>1.1. 188 small ranchers have been surveyed (surpassing 25% the initial target of 150) and from these 188, 53 (28%) were women (surpassing in 8% the target of 20% women). 8 large ranchers have also been surveyed. Evidence is provided in Annex 2 and Annex 3).</p> <p>1.2. We managed to provide training to 175 people, as listed in Annex 5. From this total, 111</p>	

<p>environmentally sustainable and market-ready production models are designed, tested and adopted by 150 small cattle producers and 8 large ranchers in two Departments of the Chacoan region,</p>	<p>1.2 At least 150 small ranchers (20% women) and 8 large ranchers receives a minimum of 20 hours each of practical and theoretical training in improved ranching practices such as stocking rate, rotational grazing, improved pastures, cattle nutritional and reproductive management improvements, animal health care, reduced livestock-carnivore conflict and others, by Year 2.</p> <p>1.3 At least 30 women (20% of the small ranchers' families receives a minimum of three day training in water treatment and management, in the form of practical and theoretical training by Year 2.</p> <p>1.4 150 small ranchers and 8 large ranchers implement at least <u>three</u> improved production practices each (adequate stocking, rotational grazing, native forest management, non-lethal carnivore control, etc.) in their properties by Year 3 (baseline = 0 in 2019).</p>	<p>people received 20 hours or more of practical and theoretical training. From these 111 people, 40 (36%) which is 16% more than initially expected. The specific subjects were: implementation of vegetable gardens; forage and animal nutrition; animal health and sanitation; use of electric fences and water management. For the practical training, we installed 2 pilot projects and 6 demonstration plots (Annex 6) in properties of these small ranchers that are being used as practice sites.</p> <p>1.3. 40 women received their water filters, and they were trained in their use. From them, 17 participated in other water training days, as did 26 men of their families. We plan to continue training on water treatment and management in the next period until this indicator is achieved.</p> <p>1.4. This indicator is planned to be measured from Year 3 on. However, we have seen large and small ranchers already implementing improved production practices, as it can be seen in Annex 4 (large ranchers) and Annex 6 (demonstration plots and pilot projects).</p>	
<p>Activity 1.1 Conduct baseline economic, social and environmental surveys: with 150 small ranchers and 8 large ranchers.</p>	<p>This activity was completed in early Year 2. We surveyed 87 small ranchers in Year 1, and completed other 101 surveys in Year 2, totalling 188 small ranchers surveyed (surpassing 25% the initial target of 150) and from these 188, 53 (28%) were women (surpassing in 8% the target of 20% women). 8 large ranchers have also been surveyed. Evidence is provided in Annex 2 and data base obtained from surveys is in Annex 3</p>	<p>We will continue using data obtained from surveys to orient our training and measure improvement in production and poverty indicators.</p>	
<p>Activity 1.2. Deliver training for sustainable ranching</p>	<p>Year 2 was strongly devoted to this activity. With our partner, the Vice Ministry of Livestock, and our new partner, UNDP's Green Chaco project, we held 45 training events, benefitting</p>	<p>This activity is planned to start in Year 2, supported by our partners. We will tailor the different activities</p>	

	<p>175 people, as listed in Annex 5. From this total, 111 people received 20 hours or more of practical and theoretical training. From these 111 people, 40 (36%) which is 16% more than initially expected. The specific subjects were: implementation of vegetable gardens; forage and animal nutrition; animal health and sanitation; use of electric fences and water management. We produced two publications: on animal sanitation and vegetable gardens (Annex 10) to strengthen the acquired knowledge. For the practical training, we installed 2 pilot projects and 6 demonstration plots in properties of small ranchers that are being used as practice sites, and whose location and characteristics can be seen in Annex 6. We have managed to obtain in-kind donations from a large rancher and a genetic centre, who donated bovine sperm straws (Annex 8) to improve the quality of the herd of small producers, aiming at the increase of their productivity.</p>	<p>and contents to either large or small ranchers, with different approaches.</p>
<p>Activity 1.3. Deliver training for water management and treatment</p>	<p>40 women received their water filters, and were trained in their use, using the training material elaborated in Year 1 with technical support from the Puerto Casado Health Centre. From these 40 women, 17 participated in training on water management and treatment, as did 26 men of their families (Annex 5).</p>	<p>We plan to continue training on water treatment and management in the next period, supported by Puerto Casado Health Centre as per agreement signed.</p>
<p>Activity 1.4. Assist ranchers for on-the-field implementation:</p>	<p>We have fulfilled this activity on a case-by-case basis, assisting small and large producers in their own ranches during field visits (Annex 4 and Annex 5). In the case of small producers, we have installed two pilot projects and 6 demonstrative plots to serve as practical training sites to strengthen their knowledge on best production practices (Annex 6). Finally, the practical publications produced during this period, are a further guidance for on-the-field implementation (Annex 10).</p>	<p>In Year 3, we expect to continue and expand the technical assistance in a practical manner, doing this at a larger scale, supported by our partners, especially Minerva Foods and the Vice Ministry of Livestock.</p>
<p>Output 2. Conservation Agreements: agreements between project beneficiaries and WCS are signed to commit to conservation outcomes by 150 small ranchers and 8 large ranchers from two</p>	<p>2.1. Conservation agreements signed and implemented by Year 2, by 150 small ranchers and 8 large ranchers, including conservation commitments to reduce lethal carnivore control, reducing forest conversion and others. Baseline: 0 conservation agreements. 2.2 158 Conservation Agreements</p>	<p>2.1. This activity is finished, but we have introduced adjustments on it, without changing the original indicators: we have now 8 Conservation Agreements with large landowners (3 signed in Year 1 and 5 obtained in Year 2). But when it comes to small landowners, even when they have indeed signed the agreements, we have found as more appropriate signing group agreements than individual agreements, considering the special characteristics of these small groups. Annex 11 shows the signed agreements. 2.2. We are continuously monitoring the compliance of the agreements, more than once per year, with both large and small landowners, during field visits (Annex 4), and will continue doing so in Year 3.</p>

Departments of the Chaco	(150 with small ranchers and 8 with large ranchers) are officially monitored by WCS once per year each, from Year 2 on, and randomly throughout the year, outside official monitoring dates.	
Activity 2.1. Generate Conservation Agreements	<p>We have now signed Conservation agreements with 8 large ranchers (Annex 11 shows the five agreements signed in Year 2). With small ranchers, we signed 22 agreements in Year 1, and other 20 are attached in Annex 11 for Year 2. Then we introduced an adjustment to fit more properly the profile of small beneficiaries: We first planned to sign individual conservation agreements with these small proprietors, but then we realized that such agreements: <u>first</u>, had a non-significant impact in biodiversity conservation, because of the individual areas they own, needing a landscape approach instead of an individual approach; <u>second</u>, the commitments were irrelevant for transforming their practices if we do not consider the community work they do; and <u>third</u>, when signed as part of their community group, and under the responsibility of their local leader, the agreements tend to be reinforced and with more probability of being complied.</p>	We will sign the remaining group agreements to represent the 188 small producers, after changing the methodology for this activity during Year 2.
Activity 2.2. Monitor performance of Conservation Agreements	<p>With <u>large producers</u>, this monitoring has been more in the form of conversations, exchange of information and experiences on which best practices for cattle management better fit the conditions of their properties. We have also checked their level of adoption of non-lethal predation mitigating techniques, and we continue monitoring presence and abundance of biodiversity in their productive lands, to verify their production systems are harmonized with wildlife. Annex 4: Monitoring on Conservation agreements with large landowners.</p> <p>With <u>small producers</u>, the main progress has been based on extended theoretical and practical training provided and provision of veterinary and agricultural inputs, which will allow them to improve their productivity, cattle health and management. They have also contributed with their labor for the installation of demonstration plots and have actively taken part of training events. For more information, please refer to Annex 5 and Annex 6</p>	We will continue developing this activity until the end of the project

<p>Output 3. Diffusion and replication: the model where improved ranching practices help to achieve broader biodiversity benefits via technical support and shared responsibility is disseminated in order to expand future impact</p>	<p>3.1. By the end of the project, a publication is produced, summarizing livestock management practices, knowledge, attitudes, wildlife-human conflicts and other aspects measured during the project, and outlining the effectiveness of sustainable ranching, and shared at national, regional and/or international events by Year 3.</p> <p>3.2. By Year 3 of the project, at least 600 people (beyond project target beneficiaries) know about sustainable production practices through local radio programming, press reports, national outreach by the Vice-Ministry of Livestock and participation in regional and international conferences, from a zero baseline in 2019.</p> <p>3.3. At least 3 exchange visits, involving a minimum of 100 people, are held between small and large ranchers in the Chaco, to share sustainable ranching concepts and practices and thus promote wider adoption, by Year 3 (baseline = 0 exchanges).</p>	<p>3.1. Activity is planned for Year 3. Nevertheless, we are already gathering data from our activities to feed the publication since day 1.</p> <p>3.2. Our calculations estimate that we are currently reaching at least 10,000 people, based on the reach of the two radios we have hired to diffuse project messages; the press articles written by a the journalist hired by the project; and the followers of Facebook pages where WCS and the Vice Ministry of Livestock has posted information on the project. Evidence is provided in section 3.2 of report, under “<i>Local, national and regional diffusion of best practices</i>”, and Annexes 15 and 16 shows the contents of a sample radio program and a radio spot on the project.</p> <p>3.3. This activity is planned for Year 3. However, we have already implemented an exchange visit between large ranchers, to allow experience sharing and wider promotion of best practices, as seen in Annex 4.</p>	
<p>Activity 3.1. Elaboration of a final publication:</p>	<p>This indicator is expected to be completed by Year 3. Nevertheless, we are already gathering information from project activities that will serve for that end.</p>	<p>Continue systematizing information from biodiversity, sustainable ranching practices, water management and poverty reduction, between other aspects of the project.</p>	
<p>Activity 3.2. Local, national and regional diffusion of best practices:</p>	<p>We are promoting best practices through various means: a local radio station, “Frecuencia Pantanal”, covering some 8,000 persons from Puerto Casado and neighbor communities, broadcasting messages on how to produce more efficiently and how the project is helping Chacoan communities to do so (Annex 15); a journalist is writing</p>	<p>Continue enhancing the coverage and frequency of the radio programmes, press articles and finding other ways of diffusing project messages.</p>	

	<p>articles on the project for the second most important national newspaper, Ultima Hora (around 2,000 readers daily), having already published one article https://www.ultimahora.com/pequenos-ganaderos-se-alistan-reducir-la-deforestacion-el-chaco-n2921200.html and written another in a local network, Comunicacho, for the project: https://www.facebook.com/permalink.php?story_fbid=3922516764494575&id=1743738715705735</p> <p>We have also signed another service contract with a Chacoan radio station, Radio Pai Puku, with has a broader audience, covering the entire Chaco region (see https://www.radiopaipuku.org.py/nosotros/), with 200,000 potential listeners, who are diffusing radio spots with messaging on the project and its activities, and which will greatly enhance our coverage (Annex 16). We estimate that, by reaching at least 5% of all these audiences, the project messages will be listened to or read by 10,000 people.</p> <p>WCS Paraguay and the Vice Ministry of Livestock actively used the social networks and websites to diffuse information about the project as shown in links in section 3.2. of report, and also our Facebook account is followed by several project beneficiaries who amplify our messaging</p> <p>We have also uploaded the project's two training materials in animal health and vegetable gardens to our website so that they can be available for the general public, the link is: https://paraguay.wcs.org/en-us/About-Us/Publications.aspx</p>	
<p>Activity 3.3. Field exchange visits:</p>	<p>This activity is planned for Year 3. However, we have already implemented an exchange visit between large ranchers, to allow experience sharing and wider promotion of best practices, as can be seen in Annex 4.</p>	<p>We will continue searching the best opportunities, speakers and subjects to attract ranchers and achieve high levels of attendance in our upcoming events, to foster replication.</p>

Annex 2: Project's full current logframe as presented in the application form (unless changes have been agreed)

Project Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p>Impact: (Max 30 words) 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.</p>			
<p>Outcome: (Max 30 words)</p> <p>Reduced deforestation and biodiversity loss are achieved through implementation of sustainable, efficient and scalable ranching and agricultural practices in the Chaco, which protect biodiversity while improving the welfare of vulnerable rural populations</p>	<p>0.4 Local Livelihoods (income): By the end of the project, at least 150 households (750 people) in rural districts of the Paraguayan Chaco, will directly benefit from a 20% increase in production efficiency (more kilos of meat or more agricultural production per hectare), and 20% more sales in local markets, as a result of trainings and knowledge acquired through the project, compared to a baseline survey in 2019.</p> <p>0.2 Local livelihoods (access to clean water): At least 20% of the 150 households will experience a reduction in water quality-related diseases, thanks to trainings and knowledge acquired through the project, compared to a baseline survey in 2019.</p> <p>0.3 Biodiversity: Retaliatory killing of jaguars is reduced in 50% in 8 targeted large ranches; and populations of large and medium sized predator such as the jaguar and ungulate prey species (red deer, collared peccary) will be stable or increasing compared to a 2019 baseline, in 8 target ranches with at least 150,000 hectares, and species composition become significantly more similar to that of the intact Defensores del Chaco National Park forest.</p> <p>0.4 Forest Cover: By the end of the project, the rate of deforestation in 150,000 hectares of private ranches in the Defensores del Chaco National Park buffer zone is reduced by 60% from 2019 baseline in the same area.</p>	<p>0.1. Local Livelihoods (income): Baseline family survey in 2019 disaggregated by gender and subsequent survey in 2022; calving rate, sales' records. Project reports</p> <p>0.2. Local livelihoods (access to clean water): Water analysis and/or local health services reports. Project reports. Surveys to beneficiaries.</p> <p>0.3. Biodiversity: Quantitative baseline data in 2019 and subsequent monitoring data in 2020 and 2021, obtained from personal surveys with ranch workers, analysis of camera trap sampling in forests at target ranches to obtain species composition, and comparison with Defensores del Chaco data base. Project reports</p> <p>0.4. Forest cover: Baseline remote sensing images from 2019 of each large property showing forest cover and subsequent annual monitoring in 2020 and 2021. Project reports</p>	<p>0.1 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.</p> <p>0.2. Local livelihoods (access to clean water): changes due to training and subsequent improved knowledge are effective and measurable during the lifespan of the project.</p> <p>0.3. Biodiversity: Fluctuations due to climatic conditions, major disease outbreaks and/or forest fires are not significantly to diminish wildlife populations during the project. Participant responses to baseline and final jaguar killing surveys are honest.</p> <p>0.4. 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.</p>

<p>Outputs: 1. Improved sustainable ranching systems: more environmentally sustainable and market-ready production models are designed, tested and adopted by 150 small cattle producers and 8 large ranchers in two Departments of the Chacoan region,</p>	<p>1.5 At least 150 small ranchers (20% women) and 8 large ranchers participate in baseline economic, social and environmental surveys by Year 2.</p> <p>1.6 At least 150 small ranchers (20% women) and 8 large ranchers receives a minimum of 20 hours each of practical and theoretical training in improved ranching practices such as stocking rate, rotational grazing, improved pastures, cattle nutritional and reproductive management improvements, animal health care, reduced livestock-carnivore conflict and others, by Year 2.</p> <p>1.7 At least 30 women (20% of the small ranchers' families) receives a minimum of three day training in water treatment and management, in the form of practical and theoretical training by Year 2.</p> <p>1.8 150 small ranchers and 8 large ranchers implement at least <u>three</u> improved production practices each (adequate stocking, rotational grazing, native forest management, non-lethal carnivore control, etc.) in their properties by Year 3 (baseline = 0 in 2019).</p>	<p>1.1. Digital and/or physical surveys completed. Reports on the findings.</p> <p>1.2. Individual training proceedings / lists of attendance (in the case of group training). Photos of the training. Project reports.</p> <p>1.3. Training proceedings / lists of attendance. Photos of the training. Project reports.</p> <p>1.4. Reports from field visits by WCS and partners, with photos. Ranchers' logs showing improvement in productivity and sales. Changes in knowledge and practices captured by pre and post surveys.</p>	<p>Small and large ranchers are willing to participate in project activities.</p> <p>Women are not culturally banned from participating in training events.</p> <p>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.</p>
<p>2. Conservation Agreements: agreements between project beneficiaries and WCS are signed to commit to conservation outcomes by 150 small ranchers and 8 large ranchers from two Departments of the Chaco</p>	<p>2.1. Conservation agreements signed and implemented by Year 2, by 150 small ranchers and 8 large ranchers, including conservation commitments to reduce lethal carnivore control, reducing forest conversion and others. Baseline: 0 conservation agreements.</p> <p>2.2 158 Conservation Agreements (150 with small ranchers and 8 with large ranchers) are officially monitored by WCS once per year each, from Year 2 on, and randomly throughout the year, outside official monitoring dates.</p>	<p>2.1 Signed agreements, photos, project reports, list of attendance to preparatory events.</p> <p>2.2 Monitoring visits reports, with photos and list of attendance. Project reports.</p> <p>2.3 Training visits proceedings/lists of attendance (in the case of group assistance), photos of the training. Project reports.</p>	<p>WCS and ranchers are able to reach consensus over the terms of each agreement.</p>

<p>3. Diffusion and replication: the model where improved ranching practices help to achieve broader biodiversity benefits via technical support and shared responsibility is disseminated in order to expand future impact</p>	<p>3.1. By the end of the project, a publication is produced, summarizing livestock management practices, knowledge, attitudes, wildlife-human conflicts and other aspects measured during the project, and outlining the effectiveness of sustainable ranching, and shared at national, regional and/or international events by Year 3.</p> <p>3.2. By Year 3 of the project, at least 600 people (beyond project target beneficiaries) know about sustainable production practices through local radio programming, press reports, national outreach by the Vice-Ministry of Livestock and participation in regional and international conferences, from a zero baseline in 2019.</p> <p>3.3. At least 3 exchange visits, involving a minimum of 100 people, are held between small and large ranchers in the Chaco, to share sustainable ranching concepts and practices and thus promote wider adoption, by Year 3 (baseline = 0 exchanges).</p>	<p>3.1. Digital and 500 printed versions of the publication, attendance list and pictures of presentations/knowledge sharing event at national, regional and international level.</p> <p>3.2. Lists of attendance to presentations of project results at national, regional and international events, including presentations to extension agents at the Vice-Ministry of Livestock. Radio campaign media outputs, including number of people reached. Copies of outreach materials (digital and/or printed materials and presentations, leaflets, press, radio spots). Project reports.</p> <p>3.3. Participant lists of field exchange visits. Photos and project reports</p>	
--	--	---	--

ACTIVITIES

Output 1: Improved sustainable ranching systems

1.1. Conduct baseline economic, social and environmental surveys: with 150 small ranchers and 8 large ranchers. Some of the questions will be adapted only to target small ranchers and some to large ranches, regarding income level, nutritional status, and others. We will try to secure women's participation in this stage by adapting the time and date of surveys, thus reaching the participation of a minimum of 40% of women at the moment of surveys.

1.2. Deliver training for sustainable ranching: we will deliver theoretical and practical training, tailored to the specific contexts, for implementation of improved ranching practices, in areas such as stocking rate, rotational grazing, improved pastures, cattle nutritional and reproductive management improvements, animal health care, reduced livestock-carnivore conflict and others. It is expected that each beneficiary will receive a minimum of reaching some 150 small ranchers (20% women) and 8 large ranchers.

1.3. Deliver training for water management and treatment: the targeted small ranchers and their families are highly vulnerable and they lack basic infrastructure and services such as safe water provision, To tackle that, we will take advantage of the series of capacity building activities we will provide them and include a women-specific practical and theoretical training on water treatment, empowering them by increasing their knowledge. At least 30 women (20% of the total small households) will receive this benefit.

1.4. Assist ranchers for on-the-field implementation: after training is provided, ranchers willing to implement the improved production practices will need *in situ* assistance to be provided by WCS staff and partners. It is expected that through this technical assistance, implementation of at least a set of three practices will occur more easily at each ranch, expanding rapidly the adoption of these techniques.

Output 2: Conservation Agreements:

2.1. Generate Conservation Agreements: through a negotiation process with each rancher, WCS will sign a tailored conservation agreement with 150 small ranchers and 8 large ranchers, from two Departments and at least 6 different communities, including conservation commitments to reduce lethal carnivore control, reducing forest conversion and others.

2.2. Monitor performance of Conservation Agreements; the entire group of 158 agreements will be officially monitored by WCS once per year each, from Year 2 on, and randomly throughout the year, outside official monitoring dates. This will help identify any ongoing deviations and implement continuous improvement processes.

Output 3: Diffusion and replication of best practices

3.1. Elaboration of a final publication: By the end of the project, livestock management practices, knowledge, attitudes, wildlife-human conflicts and other aspects measured during the project, along with the effectiveness of sustainable ranching, will be systematized in a publication with 500 printed units and which will be shared in digital and/or printed format at national, regional and/or international events by Year 3.

3.2. Local, national and regional diffusion of best practices: By Year 3 of the project, we aim at reaching at least 600 more people (beyond project target beneficiaries) with the models on sustainable production through local radio programming, national outreach by the Vice-Ministry of Livestock and participation in regional and international conferences. We will also share information through WCS and partner social networks, websites, including at least two events held to share project results with NGOs, government entities including CBD focal points and ranchers, advocating for national policies that favour the adoption of best ranching practices. We also expect to publish at least one press article each year, and in at least one outlet such as National Geographic by Year 3.

3.3. Field exchange visits: these are considered as first-hand learning opportunities, and we will organize at least 3 exchange visits, involving a minimum of 100 people, where small ranchers will learn on site and in a participatory way from large ranchers in the Chaco, share sustainable ranching concepts and practices, discussing challenges and successes, and thus promote wider adoption.

Annex 3: Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Gender of people (if relevant)	Nationality of people (if relevant)	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
6a	Number of people receiving other forms of short-term education/training							
	a) In improved ranching practices* *more than 20 hours of training	71 men 40 women (36%)	Paraguayan		111 people		111 people	At least 150 small ranchers (20% women)
	b) in water management and treatment	17 women 26 men	Paraguayan		17 women 26 men		17 women 26 men	30 women
7	Training material on water importance, management and treatment	Female (main editors and target audience)	Paraguayan (editors and audience)	1			1	0
	Training material on vegetable gardens	N/A	Paraguayan (editors and audience)		1		1	0
	Training material on basic animal health	N/A	Paraguayan (editors and audience)		1		1	0
22	Permanent field plots to showcase good practices in cattle management, located in private properties of small ranchers	7 men 1 woman	Paraguayan	2	6		8	0

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
Agua limpia: Mejor calidad de vida	Educational brochure	WCS Paraguay, 2020	Female (editor)	Paraguayan	WCS Paraguay, Asuncion	Digital version available at: https://paraguay.wcs.org/en-us/About-Us/Publications.aspx
Guia Ilustrada de Produccion Horticola	Educational brochure	WCS Paraguay, 2021	Male	Paraguayan	WCS Paraguay, Asuncion	Digital version available at: https://paraguay.wcs.org/en-us/About-

						Us/Publications.aspx and in Annex 10
Sanitación básica y uso de productos veterinarios en animales de granja	Educational brochure	WCS Paraguay, 2021	Female	Paraguayan	WCS Paraguay, Asuncion	Digital version available at: https://paraguay.wcs.org/en-us/About-Us/Publications.aspx and in Annex 10

Table 3 Financial Measures

Code No.	Value of resources raised from other sources	Description
23	£ [REDACTED]	200 bovine semen straws for artificial insemination, to be used in herd improvement for project beneficiaries (small producers).

*Donations were made in local currency. Please see **ANNEX 8** for the details.

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	✓
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	X
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	✓
Do you have hard copies of material you need to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number. However, we would expect that most material will now be electronic.	X
Have you involved your partners in preparation of the report and named the main contributors	✓
Have you completed the Project Expenditure table fully?	✓
Do not include claim forms or other communications with this report.	