

## Darwin Initiative Main and Post Project Annual Report

To be completed with reference to the “Writing a Darwin Report” guidance: (<http://www.darwininitiative.org.uk/resources-for-projects/reporting-forms>). It is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

**Submission Deadline: 30<sup>th</sup> April 2020**

### 1. Darwin Project Information

Project reference	DIR25S2/100016
Project title	Green Health: improving indigenous participation through the CBD's ABS
Country/ies	UK, Guatemala
Lead organisation	UCL, UK
Partner institution(s)	UVG, Guatemala
Darwin grant value	324056 GBP
Start/end dates of project	01 May 2019 - 31 Jan 2022
Reporting period (e.g. Apr 2019 – Mar 2020) and number (e.g. Annual Report 1, 2, 3)	Apr 2020 - Mar 2021 Annual Report 2
Project Leader name	Michael Heinrich
Project website/blog/social media	<a href="http://www.twitter.com/HealthDarwin">www.twitter.com/HealthDarwin</a>
Report author(s) and date	M. Berger, F. Scotti, A. Garcia, M. Heinrich, A. Hesketh, M. Hitziger, 25th April 2021

### 2. Project summary

Biodiversity loss in the Guatemala's Petén lowlands and central highlands is rapidly increasing due to urbanization, African palm plantations, and cattle farms (Torres, 2018). Our previous projects in these areas (MACOCC, Berger et al., 2016) co-researching use of medicinal plants with Q'eqchi' and Kaqchikel healers (Hitziger et al., 2016) show many species are at risk due to habitat loss and degradation, having a negative impact on livelihoods of vulnerable and impoverished indigenous populations. Up to 60% of the local populations with poor access to official healthcare services rely mainly on traditional Maya practitioners (Hitziger, Berger et al., 2017), which is compromised by losing this natural capital. Therefore, organized groups of healers have requested the consortium's support in researching medicinal plant knowledge in order to protect it, and to develop strategies for ascertaining the equitable and sustainable use of biodiversity. With limited research capabilities in Guatemala, this requires international collaboration and equitable access to such biological resources for the purpose of research, requiring importantly implementing international biodiversity policies at a national level based on a community driven approach (document Raxnaq'il-Nuk'aslemal: Maya Medicine in Guatemala, 2016). This project follows on a transdisciplinary process with five Councils of Maya Elders, Guatemalan and European academics, health practitioners, and government representatives that since 2010 has addressed equitable access to healthcare supporting cultural perseverance. Guatemala ratified the Nagoya protocol, but lacks procedures for putting access and benefit

sharing (ABS) into practice. The project aims at a mutually acceptable implementation procedures proposal that comply with pertinent national and international regulations. Implementing ABS mechanisms, linked to ongoing empirical research on traditional medicine and intercultural health, will foster mutual appreciation of the procedures. We specifically address the challenge to secure the benefits of biodiversity for the most vulnerable, poor communities. Petén in particular has a Human Development Index of 0.33 (IDH report UNGua 2018), one of the lowest in the regions. Alternative sources of income related to sustainable use of biodiversity are of great importance.

The project is located in Guatemala, mainly in the Petén Department in the North of the country. The local indigenous partner is the ACGERS Council (Association of Councils of Spiritual Guides Releb'aal Saq'e') based in the Poptún Municipality. However, the network of Q'eqchi' indigenous healers working in this project extends to the regions of Izabal, Alta Verapaz and Baja Verapaz.

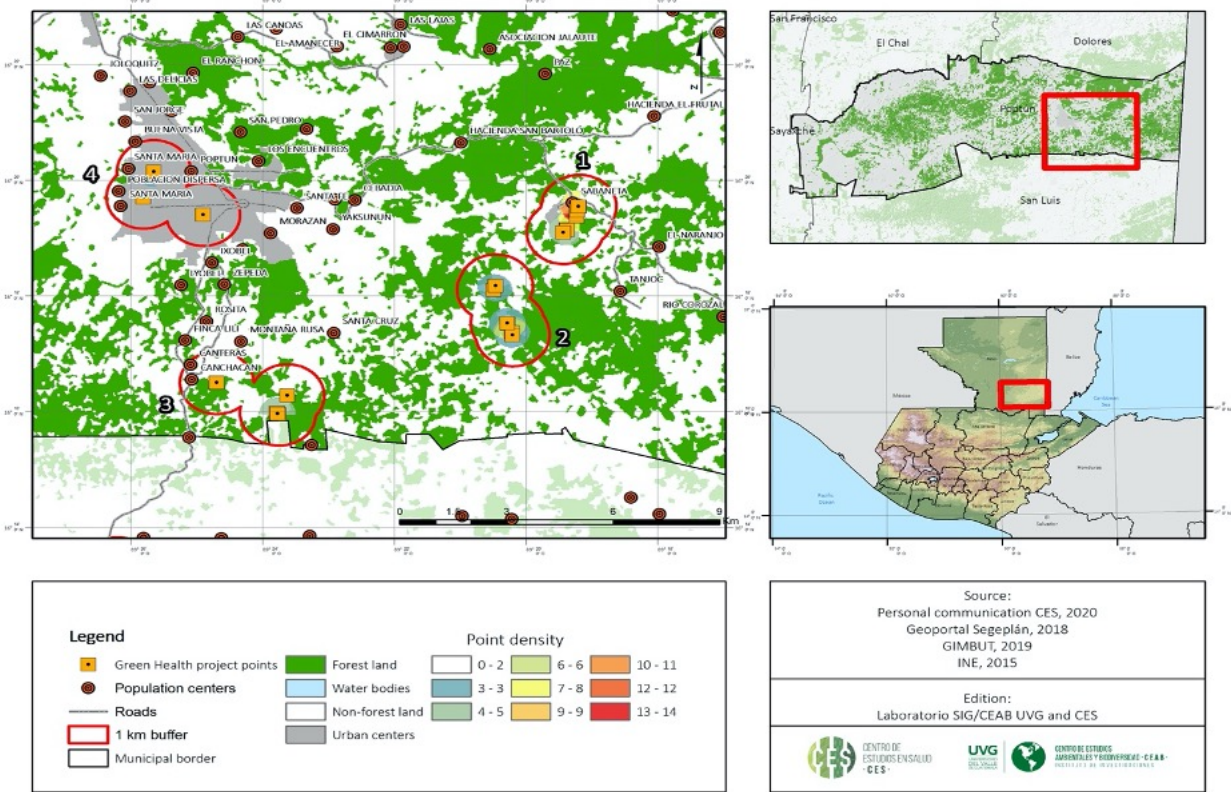


Figure 1. Study region, dynamics of forest coverage, non-forest lands, and points for plant collection by traditional healers (From Berger et al submitted MS).

### 3. Project partnerships

UCL has continued its official partnership with Universidad del Valle de Guatemala (UVG) as the local leading institution in charge of most research activities in the Petén, and with Indígena Biodiversity Ltd., the industrial partner (SME) that provides the know-how and links relevant for future ABS agreements with the relevant sectors of industry (esp. pharmaceutical, supplements, cosmetic sectors).

On top of the, already established, collaboration with the Indigenous Council of Elders ACGERS, during the COVID-19 pandemic, the Council’s involvement became even more important as the healers (previously trained) helped the UVG in their Petén endeavours, to the point of leading independent botanical collection trips when travel across the country was not possible for the team. The collaboration with ACGERS remains a solid pillar of this project. The governmental authorities responsible for the regulation of biodiversity use in Guatemala (CONAP, MARN) and other interest groups, such as the Kaqchikel Maya University remained engaged in the project’s development and discussions and took part in December’s TD workshop. Additionally, the links

with the CITES office of the United Nations in Geneva, has been maintained with involvement in joint publications and participations in topic seminars (online, see file 5.2a, 5.2b and seminar minutes or slides in Folder 1.4.1).

The partnership has been successful in conducting research activities according to the operational plan agreed at the TD meeting but it has encountered management/administration challenges mostly linked to the pandemic, but also problems with the transfer of funds esp. in yr. 1 (see the previous report).

The British Ambassador in Guatemala visited the ACGERS Council site in January 2021, being able to see first hand all the activities implemented in the project's lifetime and identifying potential avenues for further implementation.

## **4. Project progress**

### **4.1 Progress in carrying out project Activities**

#### **Output 1:**

#### **1.1 A 'round table' comprising all relevant stakeholders to sign a cooperation agreement for the project's duration, following a TD format.**

This activity was completed and achieved in Year 1, and was reported in the End of Y1 Report.

#### **1.2 Writing and submission of IRB protocols for UK, Guatemala and Maya Council.**

In prior reports, we submitted evidence of compliance with the Maya protocol and consuetudinary community protocols. This activity has been completed in terms of writing and submitting a protocol to the IRB of CES UVG in the time and manner planned, in 2019. Delayed feedback from UVG was finally provided in April 2020 and the requested changes to the protocol were submitted in August 2020, including an extension to 2021. Approval is still pending.

Evidence: IRB letter of feedback (April 2020, file 1.3a), letter of resubmission (August 2020, file 1.3b)

#### **1.3 Appointment/election of a TD steering board constituted by at least 30% women and 25% indigenous leaders, signing of MOU with operational plan for year 1.**

This activity was completed in Year 1, and was reported in the End of Y1 Report.

#### **1.4 Steering board meetings are conducted to discuss the development of the framework with all stakeholders (including preparation of materials for discussion)**

For the past 12 months, steering board meetings have continued online, allowing discussion, decision-making and guiding the project through challenging conditions i.e. the ongoing pandemic and ABS proposal pathways. As of October 2020, monthly meetings were reinstated in person, allowing for an accelerated research phase aimed at recuperating lost time. Further meetings are scheduled and will continue throughout the duration of the project provided that this is feasible based on the development of the public health scenario.

Evidence: See list of minutes (file 1.4) and Folder 1.4.1 containing some of the available minutes (all the other minutes are available on request)

### **1.5 Conduction of eight TD workshops for discussion and negotiation of components for implementing Addis Ababa's principles and Nagoya.**

In the Y1 report, evidence has been submitted for 3 TD workshops. In Y2, this activity has been severely affected by the pandemic, delaying the first workshop of Y2 originally scheduled for May 2020. which instead took place on the 3-4 December 2020. The workshop was held in Guatemala and took an online format for the stakeholders from other countries to be able to participate. This allowed discussions and the presentation of the project progress and perspectives of the different stakeholders. However, it is most likely that this remote mode reduced the effectiveness of policy discussions and persuasive reasoning with Government officials and other stakeholders. As of 2021, two other TD workshops with national Guatemalan stakeholders have been held.

Evidence: minutes of the TD workshop of Dec 2020 - all partners (file 1.5a), minutes of TD workshop of Nov 2020 - local partners (file 1.5b)

### **1.6 Drafting of procedural protocols for inclusive application of Addis Ababa principles in sustainability assessments (NDFs), monitoring and management of medicinal plant resources**

A draft outline for activity 1.6 exists and is being further developed by the project team. Stakeholder consultations on the outline were delayed due to reduced opportunity for interaction during the COVID-19 pandemic, and a prioritisation of ABS-related outputs during the limited interaction time that was feasible during the year 2020. A stakeholder consultation with the Q'eqchi' council of Elders is foreseen to take place during summer 2021. It is, however, at this moment, not clear whether CONAP will contribute to the development of this guideline. The finalization of the proposed guideline is foreseen by project end.

### **1.7 Production and dissemination of procedural tools (manuals and documents) for implementing Guatemala's Nagoya protocol including the proposed ABS pathways for Guatemala and Q'eqchi' participating communities.**

Procedural tools are an ongoing activity during Y3Q1 & Q2. The stakeholders are developing functional ways to address what the ABS proposal could look like, taking into account the laws in Guatemala and the challenges they imply. A series of seminars has been organised to better inform each party of the national and international legal context. An unresolved issue relates to the benefit sharing aspect for commercial developments. Based on current Guatemalan law, a 50% mandatory patent share going to Guatemala is mandatory. This is holding back negotiations, since it is not acceptable to any commercial entity our partner Indigene Biodiversity Ltd. Is connected with. It is likely that the ABS pathway to present to indigenous communities will be hypothetical until the patent sharing mandate is resolved.

Evidence: Seminars minutes and slides (Folder 1.4.1)

#### **Output 2:**

#### **2.1 Organisation of community meetings via AGERS Council to present project details to elders, individual enrolment of healers, creation of participants' list within Maya ceremonial protocol.**

This activity was completed and achieved in Year 1, and was reported in the End of Y1 Report.

#### **2.2 Initial ethnographic research of most-common referred plant lists per ailment (syndromic and cultural ailments).**

This activity was completed and achieved in Year 1, and was reported in the End of Y1 Report. This activity was repeated in 2020 to enlarge the available body of evidence.

Evidence: Plant database (updated to 30th March) (file 2.5, sheets 1 and 2) - please note this is shared in confidentiality - while examples of the epicultural booklets, from which the ethnographic data come from, have been provided with the Y1 report.

**2.3 Participatory observation, interviews and focus groups to build up medical case studies.**

This activity is ongoing for Y3 Q1 & Q2. The Q'eqchi' Ajilonel, traditional healers, recorded initially about 200 patient case stories (epicultural booklets) as referred above for activity 2.2. Following this exercise, the Council received training for implementing Phase 2 of the research protocol, where selected patient cases are to be systematically recorded to follow-up detailed Maya medical treatment and use of local plants. In late February 2020 healers started referring the first patient cases, which need the clinical verification process of a Medical Doctor from our team. However, the COVID-19 pandemic affected this activity severely due to Guatemala's lockdown. Reactivation of this process started in January 2021 after implementing safety protocols. With the help from the Council the patients from the selected cases are being recontacted. Currently, there are 9 cases documented and the 25 cases are planned to be finished by Y3Q2.

Evidence: One example of patient case study (Spanish) (folder 2.3)

**2.4 Analysis of the ethnomedical and ethnobotanical data to assess how gender, age and socio-cultural background affect access and use of medicinal plants.**

An intersectional assessment on access and use of medicinal plants is presented below. Table 2.4 is to be considered as the baseline against which changes should be compared by project end (MOV 4.1). The analysis is based on evidence from 15 healers that completed six months of recording of all their patient cases through cultural epidemiology booklets, which provided the lists of plants employed in treatment for this 24-week period. These were collected through transect walks, allowing to measure the distance to the collection points as a determinant of access. Evidence: complete table presenting the summarized data (file 2.4)

Table 2.4a Baseline: Access and Use of Medicinal Plants by Gender	
Men	Women
N= 15	N=0
100%	0%

All traditional healers with access to plants are male.

Table 2.4b Baseline: Access and Use of Medicinal Plants by Age			
15-30 years old	25-40 years old	45-60 years old	65-80 years old
0	1	13	1
-	6.66%	86.66%	6.66%

The majority of traditional healers using plants are men older than 45 years.

Table 2.4c Baseline: Access and Use of Medicinal Plants by Ethnicity	
Maya Q'eqchi'	Mestizo
N= 15	N=0
100%	0%

All users of medicinal plants are Maya Q'eqchi'.

Access to plants needed in a six month period, in terms of availability and distance based on a group of older Mayan men, is calculated as follows:

No.	Code of Healer	Locality	Total of patients treated	Total of plants referred	Plants pending collection	Distance (in Km) to collection point A	Distance (in Km) to collection point B	Measure of Access (Level of difficulty)
1	Q_01	Barrio Ixobel, Poptún Petén	12	11	0	6.633		3
2	Q_02	Barrio Ixobel, Poptún Petén	10	2	0	5.713		3
3	Q_06	Concoma Poptún Peten	14	9	0	2.052	0.192	2
4	Q_07	Se' jolobob Poptún Peten	11	14	0	2.421		2
5	Q_08	Barrio la Florida San Luis Peten	12	11	0	1.145	0.605	1
6	Q_09	Cas. Sehamay San Luis Peten	16	21	0	0.304		1
7	Q_10	Caserio Chimay San Luis Peten	11	6	0	1.547		1
8	Q_11	Caserio Chimay San Luis Peten	13	8	0	0.811	0.776	1
9	Q_13	Se'Canxan Chahal Alta Verapaz	17	15	0	1.155		1

10	Q_14	Barrio San Lucas San Fernando Chahal, Alta V.	92	17	3	1.599		1
11	Q_15	Barrio Nuevo Amanecer Chahal Alta Verapa	46	19	6	0.603		1
12	Q_16	San Jose la Pasion Chahal Alta Verapaz	21	21	0	14.342	13.672	3
13	Q_17	Los zapotillos Livingston Izabal	64	43	7	2.919		2
14	Q_18	Caserio Chunacte Livingston Izabal	21	11	5	1.985	1.002	1
15	Q_19	San José Pacayal Livingston Izabal	30	19	2	2.236	0.037	2

The degree of difficulty in accessing plants is classed into three categories:

1: Plants more easily accessible (less than 2 km away from the healer's home)

2: Plants moderately accessible (between 2 and 4 km away from healer's home)

3: Plants of difficult access (more than 4 km away from healer's home).

20% of healers (N=3) have difficulties accessing the medicinal plants they need to provide treatment to their patients, while 26.6% only have moderate levels of access to the medicinal plants they need. More than half of all healers can access needed plants in less than a 2km radius from the healer's homes.

During a workshop conducted with all healers in September 2020, all listed species were analysed and a short list of 50 species was selected for assisted reproduction due to their importance in Q'eqchi' medicine. These species will be prioritized in the medicinal plant garden to ensure access is improved and sustainable sourcing will be ascertained.

## **2.5 At least 90% of plants used by the healers in the medical case studies are collected, deposited and identified at UVG herbarium.**

This activity, started in Nov 2019, is ongoing, and continued with field trips scheduled during March 2020. As a consequence of the pandemic, fieldwork was postponed until October 2020. Due to lockdown restrictions, the community researchers from the Council (previously trained by UVG team) led independent botanical collection trips from August to October 2020, when travel across the country was not possible for the UVG team. New transect walks were reinstated in January 2021. By March 2021, a total of 253 specimens have been collected, curated, and are under study at the UVG herbarium for species identification. Of these, 62% have been identified.

Evidence: Botanica database file 2.5 (this is shared in confidentiality, please do not publish this document)

## **2.6 Integration of academic knowledge on the species collected through literature research on traditional uses, toxicological and pharmacological assessment (safety and efficacy) based on bibliographic evidence.**

A total of 59 plants have been selected in order to be assessed based on the bibliographic evidence on the species' known phytochemistry, as well as toxicological and pharmacological data. This activity was meant to inform the industrial partner's decision on which plants have commercial potential and could be used as examples for the development of an ABS proposal. Out of those 59, 43 were investigated for bibliographic evidence. This reduction is a result of excluding plants not endemic to Central America (as they would need to be genetic resources of Guatemala) or too widely found or used (e.g. *Theobroma cacao* (cocoa)). The information was shared with the industrial partner at an earlier stage, as their evaluation informed some of the steps taken in Y2. By that time, collection of plant specimens had been interrupted due to the COVID restrictions and only resumed in late 2020. This meant that plants collected later could only be identified in early 2021. Therefore there is a backlog of recently identified species that have not been researched in academic literature yet. Please note that this does not influence the rest of the project (which has moved forward based on the industrial partner's assessment). This research activity will continue in order to provide an evaluation of the species in the complete botanical database.

Evidence: Database of bibliographic findings for published uses, pharmacological/chemical investigations and toxicity data for 43 species (file 2.6)

## **2.7 Production of maps highlighting areas of medicinal plant diversity, risk assessment and proposed areas for protection.**

Five maps have been generated and an analysis of environmental-ecological risk is taking place. Recent negotiations with the Municipal government of Poptun have advanced, where an area of 80 manzanas of an abandoned municipal park called Enea is being considered for a co-management plan with UVG and the ACGERS Council in order to become a medicinal plant reservoir with assisted reproduction.

Evidence: Maps (folder 2.7)

### **Output 3:**

#### **3.1 Sharing information on medicinal species (from Output 2) with industrial partners and identification of species with commercial potential, protectable by IP rights.**

This activity has been completed. The information gathered in regards to the species already identified (see activity 2.6) have been shared with the industrial partners, who proceeded to make their evaluation, resulting in the selection of species with potential to generate an ABS MAT and further investigation.

#### **3.2 Selection of 1 or 2 plants from the list produced by the industrial partners in 3.1 that will be used as a proof of concept.**

This activity has been completed. As mentioned above (3.1), the industrial partners conducted their research from the list of species provided. The evaluation resulted in four species of plants according to their studies for the commercial potential of production and research.



Evidence: Report by Indigena Biodiversity Ltd. on the selected species, and the rationale behind the choice (file 3.2)

### **3.3 Stakeholders meetings/workshops led by the industrial partners to build a model ABS agreement.**

During the TD workshop held in Dec 2020, the team started the process to build the ABS proposal, with a MAT draft proposed by the industrial partner. The project partners were involved in a detailed evaluation of the current situation and an assessment of what opportunities may arise based on the current legal framework. Due to the information provided by the government institution CONAP (concerning a mandatory share of patents by 50%) and the subsequent discussion on ethnobiological research related to traditional knowledge and distribution of benefits, the proposal was deemed unviable and it is currently being reassessed. Along with a team of legal advisers, the consortium is assessing scenarios to find a solution that truly represents a real MAT, which is yet to be discussed with the stakeholders.

Evidence: Minutes of TD workshop (Dec 2020) the discussion regarding the model is on page 11 (file 1.5 for the whole minutes, file 3.3 for page 11 only)

### **3.4 Workshops to present the model agreement to the broader indigenous groups to facilitate consensus and agreement on potential pathways to benefits.**

Due Q2Y3. At this time, it was not recommended by government agency CONAP that the draft agreement should be discussed with broader indigenous groups, since each agreement is unique and solely applicable to the stakeholders involved in the development of such model agreement. Additionally, the effervescence of the topic in congress acts as a deterrent to reach positive consensus with larger indigenous groups. It will surely represent a model for institutions like CONAP to follow a pathway for negotiation with indigenous groups, and a case study to resolve issues around ABS and Nagoya Protocol in countries like Guatemala.

### **3.5 Stakeholders' meetings to discuss examples of non-monetary benefits of interest to the communities involved or propose new ones.**

Non-monetary benefits were discussed since the third TD meeting and explored in the international TD meeting held in Dec 2020. Initial consensus by the ACGERS Council prioritizes such benefits as follows:

- a) Assisted reproduction of key medicinal species in a plant nursery in order to increase access and protect the continuation of endangered species
- b) Develop a demonstration garden in the Popol Jay project (building a house of the Council) in order to train future generations of healers
- c) Train women of the Council as midwives
- d) Train members of the Council in mechanisms to conserve plants better (install a local lab to make tinctures, dry pulverized plant capsules, etc)
- e) Assist in the education of young members of the Council (provide scholarships, train them in English, computer skills, etc).

#### **Output 4:**

#### **4.1 Establish the baseline of access and availability of medicinal plants to the healers.**

This activity was completed and achieved in Y1, and was reported in the End of Y1 Report. During plant collection walks, GPS coordinates were collected and could be triangulated to extrapolate the distance from the healer's village. Collection walking time was also recorded.

Evidence: Tables of time and general location (file 2.4).

#### **4.2 Consensus meeting with ACGERS Council elders to choose local options for assisted (artificial) reproduction of key species**

This activity has been completed. A workshop to prioritize a list of species was held with Council members, in order to discuss which plants would be eligible for assisted reproduction. In November 2020, places to create the nursery for assisted reproduction were assessed, resulting in the selection of an area near the Council's office and of a small forest in the town of Cantutu, which belonged to one of the Elders and is planned to be acquired by the Council.

Evidence: photos of the workshop and a catalogue of the selected species (folder 4.2)

#### **4.3 Creation of medicinal plant gardens and seed repository (following technical assessment of the areas, suggested by ACGERS, and adaptation needs for reproduction of selected species).**

This activity is ongoing and scheduled to be finished by Y3Q2. Two local areas for assisted reproduction have been established by the Council: a nursery to assist with plant reproduction and a broader forest area to protect naturally occurring key species relevant to healers (as mentioned above in 4.2). The process of acquiring the area for protection will be completed in 2022 with external funds to this grant.

Evidence: photos and plan of the plant nursery (folder 4.3)

#### **4.4 Planting of selected species in the gardens and disseminated via seed and seedling exchange (based on the assessment in 2)**

This activity is ongoing and will be completed by Y3Q2. Planting of selected species via seeds and seedling started in the nursery established near the council's office in February 2021.

Evidence: pictures of planting activity (folder 4.4)

#### **4.5 Organization, training and supervision of women that will be tending/managing the garden.**

This activity started in January 2021 and is ongoing. So far, 8 women, members of the Council, have been trained on local production and care strategies for the plant nursery. They are the ones that will be in charge of taking care of seeds and seedlings. In order to stimulate a higher demand in the use of medicinal plants by women, a series of training workshops is ongoing to train 11 women as midwives.

Evidence: pictures of women's participation in nursery activities and list of participants to plant nursery training (showing 42% attendees are women) (folder 4.5).

#### **4.6 Meetings for the identification of biodiversity-rich areas (including key medicinal plants) that could be targeted for protection (GIS mapping).**

Two meetings with the Municipal Government of Poptun and one e-meeting with CONAP have been held to negotiate the creation of a medicinal plant-oriented park, acting as a sanctuary to safeguard key species. To date, a critical route is being prepared to assess the steps and potential financing mechanisms for its creation.

#### **4.7 Discussion with government officials on the feasibility of the creation of protected areas with presentation of mapped areas.**

This activity is ongoing and expected to be finished at the end of Y3. Meetings with local authorities of the municipality are scheduled. An area was shown and discussed to be used in the creation of a protected area.

#### **Output 5:**

##### **5.1 Writing of lay publications regarding process (replication) and outcomes (communities' information process), dissemination in digital and printed forms.**

This is an ongoing activity and is due to be completed by project's end; a guide for seed and seedling nursery is being created to show the process led by the Council and its future replication.

##### **5.2 Writing of academic papers.**

In Y1 report we presented evidence of a paper on ABS in 5 Latin American Countries submitted. This analysis has helped the project team to understand the situation in Guatemala in the context of the wider situation in Spanish-speaking American countries and the project received additional funding outside of this project. It was published in June 2020, in an Open Access journal (MOV 5.1, article available at <https://www.frontiersin.org/articles/10.3389/fphar.2020.00765/full>), and already has over 4500 views. An academic paper on the process of how to build trust and partnership for developing herbal medicine evidence-based was produced and submitted for publication in Botany (Canadian Science Publishing) for the special issue "Ethnobotany and ethnopharmacology of the Americas". A paper on traditional indigenous knowledge concerning forest use and adaptation to climate change is being prepared for an invited submission to the International Journal on Climate Change Strategies and Management.

Evidence: Email confirming submission of paper to Botany (file 5.2a), abstract of the paper submitted to Botany (file 5.2b), abstract of the paper proposed to IJCCS (file 5.2c)

##### **5.3 Production of videos and dissemination in online-formats.**

This is an ongoing activity. A video has already been recorded and is being edited in order to publicize it. It's not yet published (MOV 5.4)

Evidence: Transcript of video footage - Spanish/Q'eqchi' (file 5.3)

##### **5.4 Conference presentations.**

An abstract (available on request) was submitted at the II Simposio Regional de Etnobiología en Guatemala to present the overall project and intermediate results of the project.

An abstract (available on request) has been submitted to the Congreso Regional de Latino America celebrated in the Dominican Republic to present the progress and results so far on the ethnobotanical approach of the project.

Two additional abstracts have been submitted for the International Transdisciplinary Congress 2021 in Switzerland to share results on the participatory process.

We presented a paper at the conference ASA 2021 in March (Association of Social Anthropologists) with the abstract submitted in Y1 report (at the time it was ASA2020 - then rescheduled for March 2021).

Another abstract for a presentation was submitted and accepted in Y1, for ISE2020 (International Society of Ethnopharmacology) which was rescheduled for April 2021 and presented by F. Scotti.  
Evidence: ASA2021 PowerPoint slides (file 5.5a), ASA2021 background paper (file 5.5b)

## 4.2 Progress towards project Outputs

*Output 1: Policy Framework: an implementation framework for a policy on biodiversity and ABS is developed through a dialogue between government, local indigenous groups, academia and industry, which could break down barriers and misunderstandings that have opposed the ratification of Nagoya, and serve as a basis for future research collaboration on traditional medical Maya knowledge, sustainable use of biodiversity, intellectual property recognition and other forms of benefit sharing.*

In the Y1 Report, Indicator 1.1 was met and evidence provided for the formation of the Steering Board.

The second year of the project took part in the middle of the COVID-19 emergency. The annual transdisciplinary workshop with all stakeholders, initially scheduled for May 2020, was cancelled and postponed in the hope to be able to hold it in person but, unfortunately, it ended up taking place online, in December 2020 (Indicator 1.2). The remote mode has reduced the effectiveness of policy discussions and persuasive reasoning with Government officials and other stakeholders but at this stage there was no alternative, this affected the ability to agree on the terms proposed (Indicator 1.5).

A draft proposal for Access and Benefit Sharing (ABS, indicator 1.3) has been prepared and reviewed by Ian Thompson, the independent consultant hired for this purpose, as suggested by DEFRA in the first stages of the project.

Indicator 1.4: IRB protocols have been submitted in a timely manner and approval has been obtained by the Maya council, while UVG approval was delayed as outlined in Chapter 3.1, Activity 1.2

A draft outline for output 1.5 exists and is being further developed by the project team. Stakeholder consultations on the outline were delayed due to reduced opportunity for interaction during the COVID-19 pandemic, and a prioritisation of ABS-related outputs during the limited interaction time that was feasible during the year 2020. A stakeholder consultation with the Q'eqchi' council of Elders is foreseen to take place during summer 2021. The finalization of the proposed guideline is foreseen at project end.

Evidence for indicator 1.2: minutes of TD workshop (Dec 2020) (file 1.5, MOV 1.2B); list of general meetings (file 1.4), collection of some of the meetings minutes (folder 1.4.1, MOV 1.2B)

Evidence for indicator 1.3 proposed MAT (file 3.4) and draft of ABS framework (file 3.5, progress towards MOV 1.4)

Evidence for Indicator 1.4: IRB UVG feedback to ethical protocol submission (April 2020) (file 1.3a); letter of resubmission of ethical protocol (August 2020, file 1.3b)

*Output 2: Information Collection: ethnomedical body of information on selected Maya phytomedicine is produced.*

Bibliographic research on the most used medicinal plant species' pharmacology and toxicology has been completed for the specimens identified (indicator 2.1). The botanical identification is still ongoing and is supposed to end in year 3 (indicator 2.3). Newly identified species are added every month to the database. Therefore, bibliographic research is still ongoing for the latest species added. The collection of plant specimens had to be adapted to the limitations in travelling across Guatemala due to the COVID restrictions, and transect walks have been the method of choice for plant collections. The Herbarium has been keeping track of all collected and identified samples up to March 2021 (Indicator 2.3). Nine case studies have been completed (Indicator 2.2) so far as, during COVID, follow up of medical visits was not possible. The remaining case studies will be completed over Y3.

Evidence for Indicator 2.1: A database with scientific information on each species backed by references, in regards to distribution, published traditional uses, scientifically investigated uses, investigated activities

and toxicity data (when available) (file 2.6, corresponding to MOV 2.3). Please see Chapter 3.1 activity 2.6 for more details.

Evidence for Indicator 2.2: example of complete patient case study (folder 2.3, corresponding of MOV 2.2)

Evidence for Indicator 2.3: UVG Herbarium database (file 2.5, please do not publish, corresponding to MOV 2.1) - please note that some specimens still need to be identified as the collection expeditions have been severely delayed throughout 2020.

*Output 3: Access and Benefit Sharing Proposal: proposal for access and benefit sharing and protection of intellectual property, based on mutually agreed terms, coordinated is defined by the industrial partner, and reviewed by an independent ABS expert (to be coordinated by M. Hitziger).*

The information collected to date has been shared with the industrial partner who has completed the evaluation of commercial potential and selected one or potentially two species to be the object of the ABS proposal (Indicator 3.1). The proposal was first discussed during the Transdisciplinary workshop of December 2020 (which was rescheduled after the one in June had to be cancelled due to COVID). There are some hurdles due to new regulation approved by CONAP in 2020 but further discussions are upcoming.

Evidence for Indicator 3.1 List of species with commercial potential documented (file 3.2, corresponding to MOV 3.1a); Minutes from stakeholders' meetings (folder 1.4.1 and list file 1.4, file 1.5, corresponding to MOV 3.1b); proposed draft MAT and ABS framework (file 3.4 and 3.5, progress towards MOV 3.1c); community and stakeholders group attendance sheet (MOV 3,1d) are not available for meetings held online, please refer instead to the list of attendees named for each meeting listed in file 1.4.

*Output 4: Local Framework: improved (from baseline) and sustainable access and availability of key medicinal plants for indigenous healers/communities based on locally defined strategies and terms, ensuring equal participation of women*

Increased access and availability (Indicator 4.1) will only be achieved later in the project, in the meantime the planning of a locally managed medicinal garden has been completed and the building works have started as well as some planting activities. Please refer to Chapter 3.1 activity 2.4 for evidence of MOV 4.1.

Evidence for Indicator 4.1: Garden progress report (folder 4.1)

In line with Indicator 4.2, women, which in this community are rarely involved, have been encouraged to participate in the PopolJay medicinal garden planning and activities. Among the trainees at the workshop on using tools for plant nursery, 42% were women. Please see Chapter 3.1, activity 4.5 for further details. The MOV 4.1, 4.2 and 4.3 can only be provided at the end of the project.

Evidence: participation list and pictures (folder 4.5)

*Output 5: Dissemination: dissemination of the project's results and strengthening of the national dialogues on biodiversity and traditional knowledge. The dissemination will include CBD processes.*

Please refer back to Chapter 3.1, activities 5.2 and 5.4.

### **4.3 Progress towards the project Outcome**

**Outcome:**

***Implementation framework for sustainable use, access and benefit-sharing in Guatemala involving consensus between indigenous groups, government, academia and industry, based on natural capital and traditional knowledge to sustain healthy livelihoods.***

*0.1 Participation of indigenous people within the project increased by at least 40% in relation to prior similar initiatives led by CONAP. Of these, by the project end, at least one fourth are women.*

In the Y1 Report, the baseline for the project indicated a zero participation of indigenous peoples in concrete ABS mechanisms developed with CONAP. The Steering Committee and Advisory Board for this project in Y1, includes 54% indigenous participants. Of these, almost half (6/13) are women, which is well above the initial 25% projected in the application. In the last year, an additional indigenous woman took an active role in the advisory board and has been leading the negotiation of non-monetary benefits.

Evidence has been provided in Y1 report.

*0.2 A multi-stakeholder, transdisciplinary process to foster dialogue at equal footing between government, academia, industry and indigenous communities has resulted in a new framework of collaboration by project end and is documented for replication.*

In the Y1 report, the process outlined in this indicator has been fostered throughout the project lifetime, especially since the beginning of activities in 2019. The process continues to be documented as a second international TD workshop was held in December 2020 and it will continue throughout the whole project. Evidence was provided in Y1 report and minutes of December 2020 TD workshop file 1.5 (further minutes are available on request, see file 1.4). The TD process has been in fact the main factor allowing a quick adaptation of methodology when challenged by the pandemic, since a strong mutual trust between partners with shared degrees of agency enabled local indigenous partners to take larger responsibilities in the field. This is indeed a novel framework that will be studied and shared in academic and non-academic formats.

*0.3 New scientific information on indigenous Maya medical knowledge and on the relevance of natural capital to sustain healthy livelihoods (ethnography and plant collections in herbarium) based on collaborative research is produced by the end of the project.*

In the Y1 report we stated the initial process and progress of the TD process as an element of the joint research. The plants referred by healers have almost all been collected, yet due to the pandemic outbreak, there have been halts in collecting the plants. A total of 253 plant samples have been collected and are being curated at UVG's herbarium, with 62% identified. This TD process of joint-research following in-depth case reconstruction of selected patient cases will allow a deeper understanding into the links between forest use, the dependency on local plants of the indigenous medical system, real access to key ethnobotanical specimens, and the risks the Q'eqchi' medical system faces to continue providing critical healthcare to local populations. Overall, we expect that the convergence of multiple emic and etic views brought together through a TD mechanism improves trust building and will provide more scientifically and socially robust data by the end of the project.

Evidence: Botanical database (file 2.5), epicultural booklets' database was provided in the Y1 report in file 2.2a

*0.4 Maya healers have increased access to medicinal plants by at least 20% more through biodiversity protection initiatives in the study area by year 3, as evidenced through local repositories of biodiversity and knowledge about them.*

This indicator is at the core of the project and will be met as a result of the project activities. Currently, there are 50 key species selected by the elders to be prioritized into a nursery to have better access to them, reducing access inequalities. A local area has been identified to be used as a protection area of medicinal plants which is being assessed by the council, assisted reproduction is taking place with 42 different plants currently in process of germination, and another area is being contemplated with local authorities to create local repositories of biodiversity. We foresee the completion of this result.

*0.5 A concrete strategy for benefit sharing opportunities for indigenous groups is defined and ready for implementation by project end.*

Initial assessment of a priority group of species has been undertaken by the industrial partner, selecting four species initially and then moving to one species for further assessment, while others are clearly not suitable. In addition to the initial plan and proposal, the partner from industry is interested in developing a real-life ABS model that could be achieved by project's end. However, a problem emerged in the analysis of the legal Guatemalan framework that will most likely prevent the completion of this activity. While most countries have a 1-2% sharing of benefits, an old Guatemalan law stipulates 50% of benefits and patents need to be kept by Guatemalan authorities. This is a deal breaker that will most likely result in this project modelling a theoretical ABS strategy, suitable for being implemented in other countries, while in Guatemala, only once authorities can amend the law.

Evidence: list of species selected by industrial partner (file 3.2).

*0.6 A concrete strategy for implementing the Addis Ababa principles for the sustainable use of biodiversity, by eliciting pertinent traditional knowledge and incorporating into CITES decision-making processes, is proposed by project end.*

A draft outline for activity 1.6 exists and is being developed further by the project team. Stakeholder consultations on the outline were delayed due to reduced opportunity for interaction during the COVID-19 pandemic, and a prioritisation of ABS-related outputs during the limited interaction time that was feasible during the year 2020. A stakeholder consultation with the Q'eqchi' council of Elders is foreseen to take place during summer 2021. It is however, at this moment, not clear whether CONAP will contribute to the development of this guideline. The finalization of the proposed guideline is foreseen at project end.

#### **4.4 Monitoring of assumptions**

##### **OUTCOME**

*Assumption 0.1: The polarized political climate in Guatemala still allows participation of all stakeholders under a Transdisciplinary format that fosters dialogues at equal footing.*

Comments: As mentioned in Y1 report, in spite of the change of government in January 2020, there is still political will to continue in the transdisciplinary dialogue. The COVID emergency has, instead, prevented in person transdisciplinary format, which then had to be moved on an online platform. This is not the platform of choice for the interpersonal nature of the Transdisciplinary process but we hope to be able to organise the last Transdisciplinary workshop in person.

*Assumption 0.2: Government authorities in charge of CBD-Nagoya and CITES remain dedicated to facilitate consensus building to overcome the temporal suspension of the Nagoya protocol and CITES implementation.*

Comments: Government authorities continue in their efforts to reach consensus to develop ABS mechanisms through instruments devised under the CBD's core articles. They have made it clear that restarting the debates around the Nagoya protocol in Congress is unlikely to take place. If pushed, this could be counterproductive to the positive advancement made with this project under new pathways of national policy. The project can reach the goals of this project independently of whether the Nagoya protocol is ratified or not. In fact, a great part of its importance lies in providing alternative avenues to develop ABS mechanisms for indigenous peoples' knowledge. The academic paper published in collaboration with other partners offers perspectives on what options there may be in the case of Guatemala and is influencing the debate in the country.

*Assumption 0.3: Organized indigenous Communities participating in the process remain open to dialogue with all other stakeholders and continue to actively participate in joint research efforts.*

Comments: Still holds true. The transdisciplinary process that respects the consuetudinary law referred to as "The Maya Protocol" has positively built trust among project partners in Y1 and the indigenous communities have continued to support the project, even though the difficulties of 2020.

*Assumption 0.4: The represented industry sector is capable of finding reasonable and viable avenues for access and benefit sharing for the Guatemala context and for indigenous groups in particular.*

Comments: still holds true. The information shared with the industrial partners until now has already sparked some interest.

*Assumption 0.5: Enough matching funding is allocated by project partners to secure newly identified and defined project activities derived from the dialogue and consensus-building process.*

Comments: Still holds true.

*Assumption 0.6: Legitimacy of the dialogue is reached/afforded by all stakeholder representatives at the onset of and during the project's development.*

Comments: Still holds true.

Assumption 0.7 (NEW): It will be possible to resume our fieldwork and regular meetings within the next four months (i.e. by September 2020)

Comments: the fieldwork was resumed in November 2020 and regular online meetings kept replacing in-person ones. The delayed in-person Transdisciplinary workshop was finally held online in December 2020.

## **OUTPUT 1**

*Assumption 1.1: The ethical approval will be granted (this process follows a Transdisciplinary (TD) approach solidly based on ethical approval consented by all partners, as well as ethical approval by UVG and UCL's IRB procedures and/or the IRB representing the government in Guatemala. It will also follow consuetudinary law as defined by Maya participants in the project, in order to ensure that design and implementation of project activities has the buy-in and ethical acceptance of all involved). We will be in a pre-campaign year for presidential elections, some IRB procedures within government might take longer than usual, or negotiations with Mayan authorities may take longer than planned.*

Comments: The ethical approval from UVG was obtained, with some delays due to the appointment of a new IRB (Ethics Board) director. Due to changes in the methodology in the context of the pandemic, and the duration of a 1 year valid permit, the team has resubmitted a revised protocol, and followed up, after feedback with re-submission in August 2020 and an extension until 2021 (currently awaiting approval).

*Assumption 1.2: Upcoming electoral process in Guatemala half-way into the project does not hinder participation of government stakeholders into the project, nor does it polarize indigenous representatives in a way that prevents them from reaching consensus to participate in the entire project life.*

Comments: As mentioned in the Y1 report, CONAP officials have not been changed and they maintained their involvement in the project, despite the change of government after the elections.

*Assumption 1.3: The constitutional court of Guatemala resumes the judicial process to restore the Nagoya protocol validity, or at least allows the national authority to implement joint research under approved CBD statutes.*

Comments: The temporal suspension of the Nagoya protocol was lifted due to the expiration of the date set by the Court. However, the government will not ratify the Nagoya protocol, given the political strife that can be caused by pushing it in Congress, and due to the request of indigenous congressmen that a thorough consultation process with indigenous peoples is ascertained, honouring the Convention 169 of the OIT. However, it is committed to developing alternative pathways for developing ABS mechanisms under CBD statutes and the development of specific national legislation. The current framework does allow for the implementation of joint research under approved CBD statutes.



*Assumption 1.4: CITES scientific authority of Guatemala, and CITES Secretariat in Geneva maintain priority on attending transdisciplinary roundtable.*

Comments: After initial contact, both through Dr Monica Berger (UVG) and Dr Martin Hitziger (CITES Secretariat), a relationship couldn't be established with the CITES scientific authority in Guatemala. Therefore, for this part, this assumption does not hold true. The CITES Secretariat, on the other hand, in the person of Martin Hitziger maintains an interest and engages in the TD roundtable.

*Assumption 1.5: All participants understand and value sustainable use of biodiversity as resulting from fair and equitable access and benefit sharing and integration of traditional knowledge into biodiversity assessment, monitoring and management.*

Comments: still holds true

## **OUTPUT 2**

*Assumption 2.1: Ethical approval is granted (is part of Output 1 but applies here too).*

Comments: see 1.1

*Assumption 2.2: CONAP grants all legal permits to academic partners and indigenous groups for plant collection.*

CONAP has granted legal permits to UVG and two Council members. However, a particular permit to indigenous groups independent of academic research can not be negotiated since the law establishes that indigenous peoples are exempted from requesting licenses when engaging in a traditional use of the forest.

*Assumption 2.3: Maya healers continue to lead collaborative research for secure documentation of plant medicines and lead expeditions into habitats for their collection.*

Comments: Still holds true, every field activity was on stall for several months because of the emergency measures taken by Guatemala in view of the COVID-19 outbreak, with indigenous partners taking all fieldwork responsibilities until November 2020, when joint activities were resumed.

*Assumption 2.4: Climatic conditions allow for the timely collection of full specimens (during flowering times) to facilitate process of species' identification.*

Comments: Still holds true even as not all specimens needed flowers to be identified. Out of 253 specimens collected 96 have not been identified yet (due to delays in collection), of those, 29 have been deemed definitely unidentifiable because:

1. Do not have flowers or any other part like fruits to help identify the specimen
2. We cannot even ID to family level because the specimens are too damaged or broken, the parts are only leaves and/or stems and there was no other specimen available at the moment of collection
3. Have not been able to find another specimen or specimen with other characteristics than the ones we already have
4. Plants are not available anymore at collection site for reasons unknown (i.e. Saq'kar q'een is not anymore and have not been found somewhere else)
5. Even though we have looked for the plant 2 different moments in time during the year, it didn't have flowering parts, flowering times are still unknown
6. Some of them are not plants to be collected in a forest, but are shipped from other places upon request of the healer so there's no full specimen available, only dried parts.

Comments: Still holds true

### **OUTPUT 3**

*Assumption 3.1: Presence of species with commercial potential.*

Comments: still holds true.

*Assumption 3.2: The political climate does not hinder participation of industry in the consortium.*

Comments: Still holds true.

*Assumption 3.3: Communities and stakeholders agree on IP and ABS principle proposals.*

Comments: This principle does not hold true. Even though the partners from academia, industry and the indigenous groups all agree on the foundations of an IP and ABS contract, the competent authority CONAP has presented legal demands that contradict those initial agreements. Specifically, the legal demand from Guatemala's government retaining 50% of patents and benefits has created a void where negotiations cannot advance further.

*Assumption 3.4: The project consortium will identify an independent expert from academia or international policy arenas with demonstrated expertise in ABS policy and implementation processes, who will review the developed documents and guidelines for their adherence to pertinent international standards.*

Comments: Ian Thompson (an independent consultant with an expertise in the implementation of the NP) and Martin Hitziger from CITES are still supporting the project by providing such expertise and remain engaged in the project's activities [as also evidenced in their contribution to the academic paper(s)].

*Assumption 3.5: Key indigenous leaders adhere to commitments made within the TD stakeholders' platform and abstain from smearing campaigns which previously impeded advancing dialogues, such as the misinformation campaign of 2016 placing Nagoya regulations in the same law-package informally known as the "Monsanto" law (allowing benefits to multinational companies in detriment of small farmers), which generated great opposition.*

Comments: Still holds true. Our project partners are committed to this project.

### **OUTPUT 4**

*Assumption 4.1: A satisfactory process of Outputs 1 and 2 is able to be transformed into direct actions for protection and increased availability of medicinal plant species selected as by indigenous healers and other stakeholders.*

Comments: Still holds true

*Assumption 4.2: Population adjacent to the medicinal garden site do not interfere with the establishment/extension of the garden.*

Comments: Still holds true - the garden is currently being implemented and so far no complaints have been encountered

*Assumption 4.3: Data showing the value of natural capital for improving health in Maya communities is legitimate and recognized by project partners, allowing implementation.*

Comments: Still holds true

*Assumption 4.4: Enough funding is available to implement the main activities chosen by this consortium (TD platform).*

Comments: the Darwin funding for Y2 was appropriate for the scheduled/rescheduled activities but the project incurred in some administrative hurdles which combined with the some socio-political circumstances have led to difficulty in accessing funds. Please see Chapter 11 for further details.

## **OUTPUT 5**

*Assumption 5.1: Discussions and agreements on intellectual property rights of indigenous groups follow due-process as described in the CBD/NAGOYA and local TD table agreements during the course of this project and allow for the timely publication and dissemination of results.*

Comments: Still holds true

### **4.5 Impact: achievement of positive impact on biodiversity and poverty alleviation**

The overall project impact states that Guatemala's national policies related to ratified international conventions for biodiversity protection and access/benefit sharing are strengthened and have operational implementation mechanisms inclusive and respectful of indigenous people's knowledge and priorities. Overall, this project is contributing to identifying all the gaps and barriers in the legal framework that need to be bridged as a precondition to have operational ABS mechanisms. This project also contributes to a model methodology on respectful collaboration with indigenous peoples through documenting the transdisciplinary process.

In relation to biodiversity conservation, the project proposes to identify a biodiverse area for conservation and sustainable use of plant species that is suitable of being managed by local communities and the Maya Council. Due to the recent negotiations with the Municipal Government of Poptun, this project will not only identify the area, but will also advance its legal negotiation for immediate implementation. However, this implementation would require additional funding not foreseen in the Green Health project grant. The project will also contribute by identifying potential corridors in forest patches to generate bigger areas of biodiversity for conservation and management to mitigate urbanization pressures on land. These exist mostly on the areas surrounding individual healers' homes, and do not constitute a regional endeavour.

Additionally, the project will provide Insights on policies at national level on how to address biodiversity and genetic resources utilization, exchange and conservation efforts, within participatory frameworks.

Guatemala health authorities will also gain from a research process by which indigenous knowledge on traditional medicine and phytotherapy is analysed to determine mechanisms for inclusion into the healthcare system, which is of direct interest to biodiversity authorities in the country (CONAP) as a way of formalizing recognition of intellectual property of indigenous groups. This can be seen in UVG's recent relations with the Unit of Indigenous Peoples at the Ministry of Health, where data from this project is being considered to provide a base of evidence for augmenting the list of species allowed for use in the first and second levels of attention.

In the long-run, this project's results will strengthen Guatemala's national policies as they relate to ratified international conventions for biodiversity protection and benefit sharing, modelling an internal dialogue capable of reaching consensus and bridging differences that had earlier made implementation stagnant. So far, this claim is substantiated by the identification of pre-existing laws hindering the advancement of an ABS national implementation framework, prompting our team into defining recommendations of legal pathways to follow in order to overcome the constraining factors.

## **5. Contribution to the Global Goals for Sustainable Development (SDGs)**

The project supports SDG 3 (healthy lives and well-being for all), particularly by addressing access to traditional medicinal plants for the most marginal sector of society: impoverished indigenous populations. In the last year, the project documented health seeking pathways (demand) and cultural epidemiology cases that showed the relevance of the traditional healer's

work in providing care amidst a pluri-medical system in inequity. These results have been used to negotiate with the UK embassy, a private funding body and the ministry of health, new mechanisms for supporting the work of traditional healers in the Peten area.

The project also addresses SDG 16, by promoting “just, peaceful, and inclusive societies” through offering those traditionally marginalized a mechanism to participate in the public policy domain. This was exemplified in the empowering movement led by the ACGERS Council after the tragic murder of healer Domingo Choc, who was set on fire after being accused of witch craft. This project provided the platform for visibility so that the case made it to the national and international media, and the trial was taken seriously by the government. New leaderships among the Q’eqchi’ healers have emerged from this project that directly contribute to building more equitable conditions in the area.

The project has also contributed to SDG 17, “revitalize the global partnership for sustainable development” through a concrete North-South TD platform for strategic alliances in research and opening opportunities for benefit sharing.

## **6. Project support to the Conventions, Treaties or Agreements**

A core outcome reported previously is a comparative study analysing the situation in six Spanish-speaking countries, with all of these aside from Panama and Chile having a strong indigenous presence, relating to the different implementations of the CBD and NP. Due to the pandemic, the planned activities lined to the CoPT have not been followed up. As indicated before, Guatemala, with about 50% of the national population being indigenous, is a particularly challenged Party since there remains fraught relations between these groups and national institutions. The implementation of the Nagoya Protocol in Guatemala has thus been particularly challenging, with the validity of the NP currently suspended by the constitutional court. Consequently, and despite the country’s rich biodiversity resources and rich traditional knowledge associated to it, there currently are only two internationally recognized certificates of compliance published by the CBD international ABS clearing house, both of which are for local, not international, access. We conducted a careful analysis of the situation, and while in 2016 the ratification of the NP had been challenged by Guatemala, temporarily, the time for the suspension has lapsed but the future steps remain uncertain. We continued with our intensive dialogue with CONAP, and a core point for discussion remained the level of benefit-sharing. In 2020, CONAP, released a directive requiring, in all cases, that 50% of the “patent rights and benefits” need to go to a Guatemalan entity (CONAP 2020). From any industrial partner’s perspective, this created a major hurdle for the collaboration and is currently preventing any commercial collaborations. Thus, we have identified the critical issue which is delaying successful implementation of CBD and NP in Guatemala. In the specific case of this project, Indigena is not prepared to sign an ABS agreement (with mutually agreed terms - MAT) under the proposed terms when there is no way for a company to develop business relations while abiding by the law; therefore, this part of the collaboration remains on hold until the regulations can be changed.

This links back to the previous SWOT analysis which highlighted among other points:

- ‘No policy in place to regulate Intellectual Property rights and limitations
- Unrealistic expectations in relation to potential royalties arising from commercialization of products deriving from genetic resources’.

We have defined the need to create an action plan to revise the relevant laws in Guatemala. Our TD process and framework provides an excellent starting point for that next step.

## **7. Project support to poverty alleviation**

Regarding impacts on poverty alleviation, this project is already contributing directly to develop income generation strategies for indigenous men and women associated with the ACGERS Council. The plant nursery is involving women that are receiving payment for its implementation and will be able to commercialize locally the plant produce. The documentation of the ethnomedicine of traditional healers and its epistemic bridging to biomedical standards, is

positioning traditional healers in the region, so they have been approached by other funding bodies (Agexport, UE-Asobalam) to transform this evidence into green microbusinesses. In an area where two thirds of the health seeking pathways of impoverished people begin and end with a traditional healer, this project is helping to guarantee the continuation of the availability and accessibility of key medicinal plant species so that the Q'eqchi' medical system can continue to serve those most in need.

The Botanical garden implemented will be managed by locals, primarily women, whose salary will be paid by income generated through: i) the sale of medicinal plants to the surrounding communities and ii) a complementary strategy of community-based tourism around medicinal plant knowledge, linked by the Ajilonel men of the association in an alliance with the local tourism sector. It is expected that by the last month of the project, in Y3, initial income may already be possible.

It will develop a replicable mechanism for jointly developing conditions for biodiversity research and benefit-sharing between indigenous communities, government, academia, and the private sector. The importance of developing tools for supporting implementation mechanisms in a complex political setting is extremely relevant in the Guatemalan context.

Monetary and non-monetary benefits potentially arising from the implementation of the CBD and Nagoya Protocol in Guatemala, will be defined jointly, serving as specific indicators for biodiversity's future potential impact on Mayan communities. Concrete and tangible mechanisms for recuperating, protecting and potentially utilising endangered medicinal plants will be included. Outputs will contribute to assessing conservation status, threats and trends of selected species populations (CITES Non-Detriment Findings), a precondition for complying with sustainable use regulations. Funds to jumpstart some initiatives (i.e. seed repositories, plant nurseries, protected areas, etc) will be included, as well as guidance on the up-scaled sustainable use of the local biodiversity.

## **8. Consideration of gender equality issues**

In the Q'eqchi' region most of the people involved in local/traditional medical and phytotherapy activities are men. Women are often dedicated to housekeeping activities. We made a commitment to increase participation of women to a minimum of 30%, tracking gender-sensitive participation lists in all project activities related to the Transdisciplinary process for fostering a dialogue towards implementation of Nagoya procedures and concrete ABS procedures. Our reported indicators show an increased participation of women in positions of leadership, double (50%) of what we had anticipated. The strategies to include women in training as midwives and as caretakers of the plant nursery has also increased participation of women by 200% related to the baseline at the onset of the project.

Maya indigenous beneficiaries: We have agreed with the ACGERS Maya Council of elders to balance the participation of women in the local medical/phytotherapy research component and the implementation and caring of the medicinal plant garden, keeping precise records of participation by gender in each activity conducted at the local level. Initial commitments are to ensure that women always participate in Council decision-making to a minimum of 25%, and that 80% of upkeep activities for the medicinal plant garden are in the hands of women. This year the first goal was doubled, while the second is at 45% (not the estimated 80% yet).

## **9. Monitoring and evaluation**

Based on the very detailed indicators in the logframe (updated) it is straightforward to adhere to the requested measures, which directly relate to the outcomes and outputs. UVG staff schedules and supervises monthly activities and the relevant invoicing.

The monitoring and evaluation have been challenged by the limitations imposed by the COVID emergency. Remote monitoring is more demanding. In addition, moving online many discussion-based activities has diluted the approach and its efficacy. This resulted in the necessity to tighten monitoring with more one-to-one check points.

The general M&E is managed, as previously, by UCL and UVG and the M&E plan (including timeline and responsibility roles) has been reviewed during December's online TD workshop. For local activities in Peten, locals have been assigned some monitoring duties.

At first, during the complete lockdown, collected specimens were being curated at the team's home, having UVG's herbarium materials taken from the university installations to the team curator's home. During July, online meetings with the community researchers took place to explain and plan the collection of the pending list of plants. A tighter schedule for online meetings was implemented with community researchers for the fieldwork and phone calls were part of the monitoring activity. A weekly schedule was created, but due to different factors in the field, this was not always followed. Every week a batch of plants was sent to the UVG team to be curated while fieldwork continued. Some of the specimens were damaged during the transportation. Instructions were given through phone calls but too much information affected the collection process with some data collected (later corrected when fieldwork was available again for the UVG team).

## **10. Lessons learnt**

From a technical, execution and monitoring point of view, resilience from the team was a key enabler to achieve all the activities proposed at the beginning of the project for Y2. Staff members learned to maximize the benefit of their resources (time, money, transportation) to keep doing fieldwork activities despite covid-19 restrictions.

Creativity and the ability to solve problems when few resources are available are essential for this kind of unexpected situation.

The tragic murder of healer Domingo Choc was a tremendous shock to all partners, showing how vulnerable the sociopolitical context in Guatemala really is. This tragic event demanded that the science partner UVG engaged in political activism to guarantee the protection of remaining healers, as it seemed a wave of violence against traditional healers was on the rise. It was a complex situation that required collaboration with lawyers and mobilizing many additional resources to help the widow and family of Domingo, support trial expenses, and facilitate a witness protection program. Staff of this project wrote articles and mobilized media, embassies and even the presidential office to guarantee measures would be taken to prevent this tragedy from being repeated. The lesson on vulnerability is still a harsh one. In spite of our best efforts to conduct a transparent, fair, participatory TD process, unexpected violent events such as this one make visible the precarious context in which this consortium is working. Evidently, the event has left us all feeling aware of pressures that hinder our work beyond our control.

As a result of the ACGERS Council becoming a supporting party to the prosecution in the trail to seek justice for the killing of Domingo Choc, political prosecution to the Council has taken passive forms of aggression that have hindered the execution of the Green Health project. Concretely, all legal paperwork requested by the Council in government offices this year was delayed, impeding the completion of paper work to print receipts that were needed to receive a grant from Darwin to execute the plant and tree nursery component. As a result, 5,000 pounds could not be given to the Council to invest in the plant nursery.

## **11. Actions taken in response to previous reviews (if applicable) - NA**

## **12. Other comments on progress not covered elsewhere**

There have been fewer delays in payments to the UVG partner in the last two quarters, but the accumulation of money to be spent in a 4-month period caused a reaction within the UVG administration system that delayed agglomerated invoices, preventing the liquidation of a considerable sum of money by the end of the financial year. However, an important external factor prevented the use of the largest sum of money originally allocated for the plant nursery. This factor relates to political persecution of the ACGERS Council after adhering to the trial seeking justice for the murder of traditional healer Domingo Choc. Since the trial began, all legal

requests presented by the Council to certain bodies of government have been denied, among them the request to print formal receipts. The lack of legal receipts prevented ACGERS from submitting an invoice for 5,000 pounds to UVG before the financial year ended.

### **13. Sustainability and legacy**

In spite of the pandemic, the Green Health project received unexpected attention by national and international media due to the tragic murder of Domingo Choc, a healer from the ACGERS Council. At a time when some fieldwork activities were shifting strategies to be conducted by Q'eqchi' researchers, UVG staff in the city engaged in approximately 23 interviews for TV, radio, national and international press, and other mass media coverage. We received the visit of the UK ambassador in Peten, the visit of the president of Guatemala, and the visit of four different organizations with funding mechanisms that were interested in the work made visible by the press. Before this tragic event the project had maintained a low profile, but it received massive attention over night. The positive aspect of this is that the COuncil has received now continuing interest of other organizations to support part of the work they plan to do in the next decade to declare biodiverse areas for protection of native medicinal plant species, as well as support the creation of small microbusinesses in Poptun. The municipal government has agreed to engage in a co-management proposal for a park of 2.4 hectares, the Seeds regenerative world-wide movement has contacted the Council to explore financial mechanisms to expand their work of protecting and cultivating medicinal plant species, and private donations made it possible for the Council to buy a 2-manzanas plot of land (20,000 varas or about 18,00 square meters) to create a small sanctuary for very specific species that are hard to find. These examples show the ramifications of our research and empowerment of the local Q'eqchi' communities to continue with important work even beyond the lifetime of this project. The transdisciplinary format employed has installed capacity in local Q'eqchi' leaders, creating agency to guide their own development.

### **14. Darwin identity**

The Darwin Initiative has been mentioned and publicised on our Twitter page (<https://twitter.com/HealthDarwin>)

The project (with its link to the Darwin Initiative webpage) has been featured in an article in English by HealthEuropa

(see <https://www.healtheuropa.eu/uk-helping-indigenous-communities-protect-ancient-traditional-medicine/105664/>)

All presentation and submitted papers acknowledge Darwin funding, as well as each presentation or poster, either in writing or through the display of the Darwin logo. In each case it is always made clear that the Darwin funding has been allocated to this specific project, which is distinct from the others that are being carried on in the UK. In Guatemala, our partners have been working within this field for many year but no project of this kind has been done before by them; this Darwin-funded project is one different way to tackle some of people's and environment's issues in Guatemala.

It has to be noticed that, due to COVID-19, most events we were supposed to attend, where we could have talked about the Initiative, have been cancelled. Nonetheless, every time there has been the occasion for a presentation we have acknowledged the funding, explained the purpose of the Darwin initiative, and provided a link to Darwin's webpage.

### **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](mailto:ODA.safeguarding@defra.gov.uk) as indicated in the T&Cs.

The partnership we have built up provides a safe and trusted environment which safeguards anyone who the organisation has contact with. Specifically, the physical space created offers an opportunity for the elders and other interested Q’eqchi to interact and to develop their work in a safe environment. Our work is based on the code of conduct for staff of the partner institutions (for UCL see for example <https://www.ucl.ac.uk/human-resources/summary-employment-policies-procedures-and-services-new-staff>)

Sadly, the project was also affected by a major atrocity. “Tata Domingo,” (Choc Che) in Guatemala - a Maya Q’eqchi’ spiritual guide, expert in medicinal plants, and master of traditional medicine was brutally killed on June 6, 2020. He participated in several research projects to conserve traditional Maya knowledge. At the time of his death, he was one of 30 participants in a project to document traditional medicinal plants in the Petén department of Guatemala. Launched in May 2019, this ongoing initiative is a collaboration among University College London (UCL), Zurich University, and Universidad del Valle de Guatemala (<https://www.herbalgram.org/resources/herbalgram/issues/128/table-of-contents/hg128-wnews-choc-che/>). While the murder seems to be linked mostly to internal community conflicts relating to religion and was not linked to the project, it clearly affected it. At the same time the atrocity gained – because of its international links – global attention including many news outlets in the USA and the UK:

<https://www.independent.co.uk/news/world/americas/medic-burned-alive-witchcraft-guatemala-uk-funded-project-a9554241.html>

<https://www.theguardian.com/world/2020/jun/10/guatemalan-maya-spiritual-guide-tortured-burned-alive>

<https://www.reuters.com/article/us-guatemala-murder-idUSKBN23G0DV>

<https://www.herbalgram.org/resources/herbalgram/issues/128/table-of-contents/hg128-wnews-choc-che/>

<https://www.culturalsurvival.org/news/celebrating-life-tata-domingo-choc-che-and-demanding-justice-his-assassination>

The UK’s ambassador the Guatemala public condemned the murder. Overall, the international visibility of the project has certainly helped in highlighting the enormous conflicts in the Petén and beyond. Thus while we certainly are creating a small nucleus for safeguarding the participants, we are also faced with the wider challenges of the Guatemalan society, certainly a problem outside of our control.

**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)	
<b>TOTAL</b>	

\* Due to receiving most funds in Dec 2020, a month where UVG does not process contracts, there were only 3 months available to catch up with backed up expenditure and contracts. There was no time to process contracts for the legal advisors contemplated to be hired in Oct 2020.

\*\* The political persecution of ACGERS caused the government to delay the approval to print receipts, so the Council could not invoice UVG to transfer the expected [REDACTED] pounds to invest in the medicinal plant nursery. We hope this money can be moved Year 3 as it is extremely important for the Council.

**We would be grateful for the Darwin's office advice - if possible - on how to resolve these issues in the mid-term.**

**17. Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2019-2020**

18. Project summary	19. Measurable Indicators	Progress and Achievements April 2018 - March 2019	Actions required/planned for next period
<p><b>22. Impact</b></p> <p>Guatemala's national policies related to ratified international conventions for biodiversity protection and access/benefit sharing are strengthened and have operational implementation mechanisms inclusive and respectful of indigenous people's knowledge and priorities.</p>		<p>A process of negotiation between policy makers and indigenous representatives has been started, facilitated by the project partners from industry, academia and the international cooperation sector, that have set the foundations for developing an ABS framework within the CBD as part of a national policy effort.</p>	

<p><b>Outcome</b></p> <p>Implementation framework for sustainable use, access and benefit-sharing in Guatemala involving consensus between indigenous groups, government, academia and industry, based on natural capital and traditional knowledge to sustain healthy livelihoods.</p>	<p>0.1 Participation of indigenous people within the project increased by at least 40% in relation to prior similar initiatives led by CONAP. Of these, by the project end, at least one fourth are women.</p> <p>0.2 A multi-stakeholder, transdisciplinary process to foster dialogue at equal footing between government, academia, industry and indigenous communities has resulted in a new framework of collaboration by project end and is documented for replication.</p> <p>0.3 New scientific information on indigenous Maya medical knowledge and on the relevance of natural capital to sustain healthy livelihoods (ethnography and plant collections in herbarium) based on collaborative research is produced by the end of the project.</p> <p>0.4 Maya healers have increased access to medicinal plants by at least 20% more through biodiversity protection initiatives in the study area by year 3, as evidenced through local repositories of biodiversity and knowledge about them.</p> <p>0.5 A concrete strategy for benefit sharing opportunities for indigenous groups is defined and ready for implementation by project end.</p> <p>0.6 A concrete strategy for implementing the Addis Ababa principles for the sustainable use of</p>	<p>0.1 Registered participation in project meetings, conformation of steering board by gender and ethnicity – this has been achieved, in the way and with the conformation planned</p> <p>0.2 Signed cooperation agreement by all project partners, meeting reports, final written publication of the process in the form of manual and tools – the agreement has been signed, meeting reports are available.</p> <p>0.3 Digital ethnographic reports, plant collections in UVG herbarium, reports of identified species shared with CONAP, UCL and UVG – ethnographic reports are available with the most recent collected data, collected specimens are being identified and a botanical database is being kept updated. Initial reports have been shared between UCL and UVG.</p> <p>0.4 A report on the number of species accessible from Year 1 (baseline), Y 2 and a final report in Year 3, per healer in each area, which can be compared – the baseline has been established for the species collected.</p> <p>0.5 Report by Indigena Biodiversity Ltd. (in English and Spanish) - The industrial partner has started the evaluation of the commercial potential for some species.</p> <p>0.6 Report on guidelines for operationalization of the Addis Abbaba principles for traditionally used medicinal</p>	<p>0.1 Steering board meetings will continue throughout the project as they are a fundamental part of the TransDisciplinary process that drives this project. Some meetings will be managed virtually, in response to the COVID-19 emergency but workshops and training will have to be run in person.</p> <p>0.2 Ethnographic reports will be produced based on the findings.</p> <p>0.3 UVG Herbarium will do more collection trips until May 2021 (as delayed due to COVID-19) and will continue identification of specimens.</p> <p>0.4 The baseline is almost concluded and until May 2021 plants in current lists will be collected to try an augment specimens with flowers for ID.</p> <p>0.5 The consortium will receive legal advice on how to find paths for pushing an ABS model agreement forward in spite of the 50% patent wall encountered in Year2. Other TD meetings with the Acgers Council are planned to further explore desirable non-monetary benefits, as an exercise in modelling negotiations.</p> <p>0.6 An assessment of the AA principles is projected for Y3.</p>
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	<p>biodiversity, by eliciting pertinent traditional knowledge and incorporating into CITES decision-making processes, is defined and partially implemented by project end.</p>	<p>species are elaborated (in English and Spanish) – no progress.</p>	
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<p><b>Output 1.</b></p> <p>Policy Framework: an implementation framework for a policy on biodiversity and ABS is developed through a dialogue between government , local indigenous groups , academia and industry , which could break down barriers and misunderstandings that have opposed the ratification of Nagoya, and serve as a basis for future research collaboration on traditional medical Maya knowledge, sustainable use of biodiversity, intellectual property recognition and other forms of benefit sharing.</p>	<p>1.1 The appointed/elected TD steering board with at least 30% women and 25% indigenous leaders is active by month 3</p> <p>1.2 Dialogues and achieved agreements on project objectives based on at least 2 TD meetings per year starting from year 1, where European collaborators will be expected to take part in person once a year; any additional meeting will be joined via proxy, using conference calls</p> <p>1.3 Production of a policy draft for ABS, reviewed by an independent ABS expert by month 18.</p> <p>1.4 Ethical approval is completed in academia, government and Indigenous consuetudinary practice and is approved by month 8.</p> <p>1.5 Stakeholder’s agreement on the guidelines for accessing traditional ecological knowledge for sustainability assessments (NDFs), monitoring and management of biodiversity by month 24</p>	<p>Indicator and MOV 1.1 Achieved - evidence mentioned in section 1.3 of report (provided in Annex 3)</p> <p>Indicator and MOV 1.2 Ongoing, two TD workshops were successfully conducted – MOV 1.2 evidence mentioned in sections 1.1, 1.3, 1.4 and 1.5 of report (provided in Annex 3)</p> <p>Indicator 1.3 (MOV 1.4) Action completed.</p> <p>Indicator 1.4 IRB protocols have been submitted in a timely manner and approval has been obtained by the Maya council, while UVG approval was delayed as outlined in section 1.2 of report; finally feedback was obtained in April 2020 (minor changes) and the protocol was resubmitted, currently awaiting approval. MOV 1.3 evidence mentioned in sections 1.2 of report (provided in Annex 3)</p> <p>Indicator 1.5 Action to be taken in the next period</p>	
<p>Activity 1.1</p> <p>A ‘round table’ comprising all relevant stakeholders to sign a cooperation agreement for the project’s duration, following a TD format.</p>	<p>Completed</p>	<p>Completed</p>	

<p>Activity 1.2</p> <p>Writing and submission of IRB protocols for UK, Guatemala and Maya Council.</p>	<p>Completed for Maya protocol. Completed for phase 1 of IRB Guatemala. Almost completed for phase 2 IRB Guatemala.</p>	<p>Awaiting official endorsement from UVG after submitting Covid19 changes.</p>
<p>Activity 1.3</p> <p>Appointment/election of a TD steering board constituted by at least 30% women and 25% indigenous leaders, signing of MOU with operational plan for year 1.</p>	<p>Completed</p>	<p>Completed</p>
<p>Activity 1.4</p> <p>Steering board meetings are conducted to discuss the development of the framework with all stakeholders (including preparation of materials for discussion).</p>	<p>Ongoing</p>	<p>Meetings will continue throughout the project. Our latest TD workshop had to be rescheduled due to the COVID-19 emergency (potentially for Nov 2020).</p>
<p>Activity 1.5</p> <p>Conduction of eight TD workshops for discussion and negotiation of components for implementing Addis Ababa's principles and Nagoya.</p>	<p>Ongoing</p>	<p>We expect the pandemic will allow for the final TD meeting in Guatemala in summer-fall 2021.</p>
<p>Activity 1.6</p> <p>Drafting of procedural protocols for inclusive application of Addis Ababa principles in sustainability assessments (NDFs), monitoring and management of medicinal plant resources.</p>	<p>Not scheduled for this period</p>	<p>Scheduled for the next period, M. Hitziger from CITES has started drafting the protocols in Y2Q4</p>
<p>Activity 1.7</p> <p>Production and dissemination of procedural tools (manuals and documents) for implementing Guatemala's Nagoya protocol including the proposed ABS pathways for Guatemala and Q'eqchi' participating communities.</p>	<p>Not scheduled for this period</p>	<p>This activity will be held in the next period of the project.</p>

<p><b>Output 2.</b></p> <p>Information Collection: ethnomedical body of information on selected Maya phytomedicine is produced.</p>	<p>2.1 General list of most used plants and ethnomedical bibliographic research (including safety assessment) is completed by year 2.</p> <p>2.2 A minimum of 25 patient cases are researched through ethnography and traditional Maya medical treatment comprehensively documented by month 24.</p> <p>2.3 Plants collection, identification and cataloguing is completed by year 2 (the number of species collected cannot be specified prior to case studies completion).</p>	<p>Indicator 2.1 The list is being compiled, in line with updates from the epicultural booklets and the herbarium identified specimens MOV 2.1 Evidence mentioned in section 2.5 of report (and provided in Annex 3) MOV 2.3 Evidence mentioned in section 2.6 of report (and provided in Annex 3)</p> <p>Indicator 2.2 Epicultural booklets have been compiled by the healers, providing a collection of case studies. Selection of cases to investigate further is being undertaken and will continue in the next period MOV 2.2 Evidence mentioned in section 2.2 and 2.3 of report (and provided in Annex 3). Additionally, all of the booklets and recordings are available on request.</p> <p>Indicator 2.3 Ongoing. Evidence mentioned in section 2.5 of report (and provided in Annex 3)</p> <p>Means of verification updates:</p> <p>2.1 Due to delays (and official approval of deferral from Darwin) in the collection of specimens (and, subsequently, of their relative identification) not all species have been researched from a pharmacological point of view. As collection is now over, in the next quarter the Herbarium will complete the identification and therefore the pharmacological research and safety assessment will be completed as well.</p> <p>2.2 44% of the cases are being researched through ethnography and traditional Maya medical treatment and will be comprehensively documented and completed by month 30.</p> <p>2.3 This activity will be due until the cases are completed. Currently, the list of named plants in the case reconstructions is made up of 19 plants.</p>	
<p>Activity 2.1</p> <p>Organisation of community meetings via AGERS Council to present project details to elders, individual enrolment of healers, creation of participants' list within Maya ceremonial protocol.</p>	<p>Completed</p>	<p>Completed</p>	
<p>Activity 2.2</p> <p>Initial ethnographic research of most-common referred plant lists per ailment (syndromic and cultural ailments).</p>	<p>Completed</p>	<p>Completed</p>	



<p>Activity 2.3</p> <p>Participatory observation, interviews and focus groups to build up medical case studies.</p>	<p>Ongoing</p>	<p>As soon as activity resumes after the COVID-19 emergency selection of case studies for follow up will continue and will be completed by the end of Y2.</p>
<p>Activity 2.4</p> <p>Analysis of the ethnomedical and ethnobotanical data to assess how gender, age and socio-cultural background affect access and use of medicinal plants.</p>	<p>Ongoing</p>	<p>As soon as data gathering is completed (depending on time of recovery from COVID-19), data analysis will start</p>
<p>Activity 2.5</p> <p>At least 90% of plants used by the healers in the medical case studies are collected, deposited and identified at UVG herbarium.</p>	<p>Ongoing</p>	<p>Collection trips have been delayed into Y2 due to late blooming species and COVID-19 emergency preventing 2 trips in March. Herbarium activities are on halt during the emergency, therefore in the next period more collection trips will take place and identification of plants as well.</p>
<p>Activity 2.6</p> <p>Integration of academic knowledge on the species collected through literature research on traditional uses, toxicological and pharmacological assessment (safety and efficacy) based on bibliographic evidence.</p>	<p>As mentioned for indicator 2.1 - (approved) deferral of collection/identification of species has subsequently deferred the completion of this activity to Y3.</p>	<p>In the next 2 quarters, this activity will continue, in order to keep up with the increasing number of identified species and will be therefore completed.</p>
<p>Activity 2.7</p> <p>Production of maps highlighting areas of medicinal plant diversity, risk assessment and proposed areas for protection.</p>	<p>Not scheduled for this period</p>	<p>This activity can only take place towards the end of the project, starting towards the end of Y2</p>

<p><b>Output 3.</b></p> <p>Access and Benefit Sharing Proposal: proposal for access and benefit sharing and protection of intellectual property, based on mutually agreed terms, coordinated by the industrial partner, and reviewed by an independent ABS expert (to be coordinated by M. Hitziger).</p>	<p>3.1 Stakeholders' agreement on the proposal for benefit sharing (including non-monetary benefits relevant to local priorities), in the event that a commercial product is developed, by the end of month 20 and indigenous community approval by month 24.</p>	<p>Indicator 3.1 Information on the species is being shared with the industrial partner (following updates from the herbarium) who has started the evaluation of the commercial potential for the first species. The proposal for benefit sharing is due to be drafted in the next period MOV 3.1a Evidence is mentioned in section 3.1 of report (and provided in Annex 3)</p>	
<p>Activity 3.1</p> <p>Sharing information on medicinal species (from Output 2) with industrial partners and identification of species with commercial potential, protectable by IP rights.</p>		<p>Ongoing – information on medicinal species is being shared with the industrial partner</p>	<p>Information sharing will continue in parallel to updates on identified species (from herbarium), considering that activities had come to a halt, it is possible that this activity will take extra time. In the meantime, it is possible to work with the material already available, without jeopardising delivery</p>
<p>Activity 3.2</p> <p>Selection of 1 or 2 plants from the list produced by the industrial partners in 3.1 that will be used as a proof of concept.</p>		<p>Ongoing – evaluation of commercial potential of medicinal species has started</p>	<p>This activity will continue and the species will be selected in the next period. As mentioned above it is possible that this activity will take extra time. In the meantime, it is possible to work with the information already available, without jeopardising delivery.</p>
<p>Activity 3.3</p> <p>Stakeholders meetings/workshops lead by the industrial partners to build a model ABS agreement.</p>		<p>Ongoing - a workshop to discuss the building of the ABS agreement was scheduled for early June 2020, but it had to be rescheduled for later in 2020 (date unknown) and therefore the relative preparation and discussions will be delayed.</p>	<p>The workshops on this topic will take place in the next period and an ABS model will be developed during such workshops and remote discussions</p>

<p>Activity 3.4</p> <p>Workshops to present the model agreement to the broader indigenous groups to facilitate consensus and agreement on potential pathways to benefits.</p>	<p>Not scheduled for this period</p>	<p>Once drafted and agreed on by the stakeholders, the model will be presented to the broader indigenous community, during a TD workshop. This will take place towards the end of Y2, considering the potential delays mentioned earlier.</p>
<p>Activity 3.5</p> <p>Stakeholders' meetings to discuss examples of non-monetary benefits of interest to the communities involved or propose new ones.</p>	<p>The Q'eqchi ACGERS community has already discussed with the stakeholders the non-monetary benefits, in the form of a local medicinal garden (and seed repository) to be led and managed by their community. This garden and its facilities are currently being prepared</p>	<p>Garden building will continue</p>
<p><b>Output 4.</b></p> <p>Local Framework: improved (from baseline) and sustainable access and availability of key medicinal plants for indigenous healers/communities based on locally defined strategies and terms, ensuring equal participation of women</p>	<p>4.1 The number of species to which individual healers have direct access by the end of year 3 is increased by at least 20% in relation to the baseline at the onset of the project.</p> <p>4.2 Participation in medicinal garden cultivation and management is over 50% by knowledgeable women by the end of year 3.</p> <p>4.3 A municipal proposal for potential implementation of one protection area still holding biodiversity of medicinal plants is drafted by month 22 and evaluated and potentially agreed by the government by year 3.</p>	<p>Indicator 4.1 The baseline of access has been established, but increased access cannot be calculated until the end of the project. Though, the construction of a medicinal garden (which already started), access to certain species will be increased MOV 4.1 Baseline is being measured as walking time to place of collection. Recent negotiations with municipal government may yield a 2-4 hectare reserve for safeguarding medicinal plants.</p> <p>4.2 42% of the people that were trained on tools for nursery activities were women. As well as 47% of the people working on the implementation of the plant nursery are women, they made care activities such as watering and reproducing seedlings and seeds.</p> <p>4.3 There have been consultations with the mayor of Poptún in relation to working on a forest management plan with the ACGERS Council on a public protection area of 80 manzanas - a signed letter of commitment is being obtained at the moment</p>

<p>Activity 4.1</p> <p>Establish the baseline of access and availability of medicinal plants to the healers</p>	<p>Ongoing – the baseline has been calculated as walking distance (time) from healers’ households.</p>	<p>Some plant collection trips have been delayed due to the emergency measures for COVID-19 and therefore in the next period remaining information on baseline will be collected, until may 2021.</p>
<p>Activity 4.2</p> <p>Consensus meeting with ACGERS Council elders to choose local options for assisted (artificial) reproduction of key species</p>	<p>Completed.</p>	<p>Agreement on a list of key species to plant was obtained through local meetings of the healers, starting the list produced by the result of Output 2.</p>
<p>Activity 4.3</p> <p>Creation of medicinal plant gardens and seed repository (following technical assessment of the areas, suggested by ACGERS, and adaptation needs for reproduction of selected species).</p>	<p>Ongoing – the garden is currently being developed, the land is available, a small warehouse and office has been built, an engineer visited the site to prepare a blueprint</p>	<p>Blueprints for the garden were created, a tree and plant nursery was started in January 2021. Work will continue in Y3.</p>
<p>Activity 4.4</p> <p>Planting of selected species in the gardens and disseminated via seed and seedling exchange (based on the assessment in 2)</p>	<p>Initial species (30%) planted at the end of Y2.</p>	<p>Based on the plant list compiled by a consensus of healers, 70% of seeds will be planted in the garden in Y3 when the garden will have started being operational.</p>
<p>Activity 4.5</p> <p>Organization, training and supervision of women that will be tending/managing the garden.</p>	<p>Ongoing.</p>	<p>As the construction of the garden proceeds, the Q’eqchi’ women are being trained in garden maintenance and management, through locally-led workshops.</p>

<p>Activity 4.6</p> <p>Meetings for the identification of biodiversity-rich areas (including key medicinal plants) that could be targeted for protection (GIS mapping).</p>	<p>Completed. Five maps were generated and presented to the Municipal Council of Poptun for assessment of potential areas for declaring a protected park.</p>	<p>This activity will continue being promoted in Y3</p>
<p>Activity 4.7</p> <p>Discussion with government officials on the feasibility of the creation of protected areas with presentation of mapped areas.</p>	<p>Not scheduled for this period</p>	<p>This activity will take place in Y3</p>

<p><b>Output 5.</b></p> <p>Dissemination: dissemination of the project's results and strengthening of the national dialogues on biodiversity and traditional knowledge. The dissemination will include CBD processes.</p>	<p>5.1 At least five academic papers published (Open Access) addressing key findings of project components by project end.</p> <p>5.2 Online and printed publication of tools developed via the TD process in the form of a manual, to foster replication by project end.</p> <p>5.3 Lay publications for stakeholders use according to strategy defined jointly by TD table by project end.</p> <p>5.4 At least one video documenting the process of the stakeholders' dialogue to develop the project, and one on research outcomes (traditional medical knowledge and biodiversity protection).</p> <p>5.5 At least two presentations at international conferences relevant to the ABS processes (CITES, CBD, and/or academic)</p>	<p>Indicator 5.1 One first paper has been published in Frontiers in Pharmacology, a second one has been submitted to the (Ottawa here) , and two more are being drafted, dedicated to the project methodology and results.</p> <p>Indicator 5.2 not scheduled for this period.</p> <p>Indicator 5.3 not scheduled for this period. A Nursery Management Manual is being created to systematize key activities to take care of the plant species, according to its specific necessities.</p> <p>Indicator 5.4 not scheduled for this period. The video has already been shot in Poptun and the script is being finalized in the next month.</p> <p>Indicator 5.5 Two abstracts have been submitted for international conferences in 2020 MOV 5.5 Evidence mentioned in section 5.4 of report (and provided in Annex 3)</p>	
<p>Activity 5.1</p> <p>Writing of lay publications regarding process (replication) and outcomes (communities' information process), dissemination in digital and printed forms.</p>	<p>Not scheduled for this period</p>	<p>This activity is more likely to take place in the last phase of the project, Y3.</p>	
<p>Activity 5.2</p> <p>Writing of academic papers.</p>	<p>Ongoing. One paper published, one submitted, two being drafted.</p>	<p>Further papers will be drafted, in regards to results and methodology of this project.</p>	

<p>Activity 5.3 Production of videos and dissemination in online-formats.</p>	<p>Ongoing, videos of the interviews are being recorded and are available on request.</p>	<p>Further videos will be recorded for other patient case studies. All videos will be edited prior to dissemination</p>
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**208. 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><b>Impact:</b> Guatemala’s national policies related to ratified international conventions for biodiversity protection and access/benefit sharing are strengthened and have operational implementation mechanisms inclusive and respectful of indigenous people’s knowledge and priorities.</p>			
<p><b>Outcome:</b> Implementation framework for sustainable use, access and benefit-sharing in Guatemala involving consensus between indigenous groups, government, academia and industry, based on natural capital and traditional knowledge to sustain healthy livelihoods.</p>	<p>0.1 Participation of indigenous people within the project increased by at least 40% in relation to prior similar initiatives led by CONAP. Of these, by the project end, at least one fourth are women.</p> <p>0.2 A multi-stakeholder, transdisciplinary process to foster dialogue at equal footing between government, academia, industry and indigenous communities has resulted in a new framework of collaboration by project end and is documented for replication.</p> <p>0.3 New scientific information on indigenous Maya medical knowledge and on the relevance of natural capital to sustain healthy livelihoods (ethnography and plant collections in herbarium) based on collaborative research is produced by the end of the project.</p> <p>0.4 Maya healers have increased access to medicinal plants by at least 20% more through biodiversity protection initiatives in the study area by year 3, as evidenced through local repositories of biodiversity and knowledge about them.</p>	<p>0.1 Registered participation in project meetings, conformation of steering board by gender and ethnicity.</p> <p>0.2 Signed cooperation agreement by all project partners, meeting reports, final written publication of the process in the form of manual and tools.</p> <p>0.3 Digital ethnographic reports, plant collections in UVG herbarium, reports of identified species shared with CONAP, UCL and UVG.</p> <p>0.4 A report on the number of species accessible from Year 1 (baseline) and a final report in Year 3, per healer in each area, which can be compared.</p> <p>0.5 Report by Indigena Biodiversity Ltd. (in English and Spanish).</p> <p>0.6 Report on guidelines for operationalization of the Addis Abbeba principles for traditionally used medicinal species are elaborated (in English and Spanish).</p>	<ul style="list-style-type: none"> <li>- The polarized political climate in Guatemala still allows participation of all stakeholders under a Transdisciplinary format that fosters dialogues at equal footing.</li> <li>- Government authorities in charge of CBD-Nagoya and CITES remain in their current efforts to facilitate consensus building to overcome the temporal suspension of the Nagoya protocol and CITES implementation.</li> <li>- Organized indigenous Communities participating in the process remain open to dialogue with all other stakeholders and continue to actively participate in joint research efforts.</li> <li>- The represented industry sector is capable of finding reasonable and viable avenues for access and benefit sharing for the Guatemala context and for indigenous groups in particular.</li> <li>- Enough matching funding is allocated by project partners to secure newly identified and defined project activities derived from the dialogue and consensus-building process.</li> <li>- Legitimacy of the dialogue is reached/afforded by all stakeholder</li> </ul>



	<p>0.5 A concrete strategy for benefit sharing opportunities for indigenous groups is defined and ready for implementation by project end.</p> <p>0.6 A concrete strategy for implementing the Addis Ababa principles for the sustainable use of biodiversity, by eliciting pertinent traditional knowledge and incorporating into CITES decision-making processes, is proposed by project end.</p>		<p>representatives at the onset of and during the project's development.</p>
<p><b>Output 1</b></p> <p>Policy Framework: an implementation framework for a policy on biodiversity and ABS is developed through a dialogue between government , local indigenous groups , academia and industry , which could break down barriers and misunderstandings that have opposed the ratification of Nagoya, and serve as a basis for future research collaboration on traditional medical Maya knowledge, sustainable use of biodiversity, intellectual property recognition and other forms of benefit sharing.</p>	<p>1.1 The appointed/elected TD steering board with at least 30% women and 25% indigenous leaders is active by month 3</p> <p>1.2 Dialogues and achieved agreements on project objectives based on at least 2 TD meetings per year starting from year 1, where European collaborators will be expected to take part in person once a year; any additional meeting will be joined via proxy, using conference calls</p> <p>1.3 Production of a policy draft for ABS, reviewed by an independent ABS expert by month 18.</p> <p>1.4 Ethical approval is completed in academia, government and Indigenous customary practice and is approved by month 8.</p> <p>1.5 Stakeholder's agreement on the guidelines for accessing traditional ecological knowledge for sustainability assessments (NDFs), monitoring and management of biodiversity by month 24</p>	<p>1.1 Signed document by all project partners of the TD process.</p> <p>1.2 A. Minutes from steering board constitution. B. Minutes from all meetings held</p> <p>1.3 Letter of ethical approval from the IRB of Guatemala, signed agreement with Releb'aal Saq'e stating approval of Maya protocol compliance (equivalent to an IRB).</p> <p>1.4 Policy document draft signed as received by government authorities.</p> <p>1.5 Completed manuscripts of tools/manuals in electronic format.</p> <p>1.6 Project and guidelines presented at side event of CITES policy conference</p>	<p>- The ethical approval will be granted (this process follows a Transdisciplinary (TD) approach solidly based on ethical approval consented by all partners, as well as y ethical approval by UVG and UCL's IRB procedures and/or the IRB representing government in Guatemala. It will also follow customary law as defined by Maya participants in the project, in order to ensure that design and implementation of project activities has the buy-in and ethical acceptance of all involved). We will be in a pre-campaign year for presidential elections, some IRB procedures within government might take longer than usual, or negotiations with Mayan authorities may take longer than planned.</p> <p>- Upcoming electoral process in Guatemala half-way into the project does not hinder participation of government stakeholders into the project, nor does it polarize indigenous representatives in a way that prevents them from reaching consensus to participate in the entire project life.</p>

			<p>-The constitutional court of Guatemala resumes the judicial process to restore the Nagoya protocol validity, or at least allows the national authority to implement joint research under approved CBD statutes.</p> <p>- CITES scientific authority of Guatemala, and CITES Secretariat in Geneva maintain priority on attending transdisciplinary roundtable.</p> <p>- All participants understand and value sustainable use of biodiversity as resulting from fair and equitable access and benefit sharing and integration of traditional knowledge into biodiversity assessment, monitoring and management.</p>
<p><b>Output 2</b></p> <p>Information Collection: ethnomedical body of information on selected Maya phytomedicine is produced.</p>	<p>2.1 General list of most used plants and ethnomedical bibliographic research (including safety assessment) is completed by year 2.</p> <p>2.2 A minimum of 25 patient cases are researched through ethnography and traditional Maya medical treatment comprehensively documented by month 30.</p> <p>2.3 Plants collection, identification and cataloguing is completed by month 27 (the number of species collected cannot be specified prior to case studies completion).</p>	<p>2.1 Catalogues of plants collected available at UVG herbarium (complete of scientific name, common names, Maya names)</p> <p>2.2 Database of reports, original audios and transcriptions from each completed case study</p> <p>2.3 Document on bibliographic findings on collected species (including potential health benefits and risks)</p>	<p>- Ethical approval is granted (is part of Output 1 but applies here too).</p> <p>- CONAP grants all legal permits to academic partners and indigenous groups for plant collection.</p> <p>- Maya healers continue to lead collaborative research for secure documentation of plant medicines and lead expeditions into habitats for their collection.</p> <p>- Climatic conditions allow for the timely collection of full specimens (during flowering times) to facilitate process of species' identification.</p>
<p><b>Output 3</b></p>	<p>3.1 Stakeholders' agreement on the proposal for benefit sharing (including</p>	<p>3.1a List of species with commercial potential documented.</p>	<p>- Presence of species with commercial potential.</p>

<p>Access and Benefit Sharing Proposal: proposal for access and benefit sharing and protection of intellectual property, based on mutually agreed terms, coordinated by the industrial partner, and reviewed by an independent ABS expert (to be coordinated by M. Hitziger).</p>	<p>non-monetary benefits relevant to local priorities), in the event that a commercial product is developed, and indigenous community approval by month 30.</p>	<p>3.1b Minutes from stakeholders' meetings.</p> <p>3.1c Approved agreements.</p> <p>3.1d Community and stakeholders group attendance sheet.</p>	<ul style="list-style-type: none"> <li>- The political climate does not hinder participation of industry in the consortium.</li> <li>- Communities and stakeholders agree on IP and ABS principle proposals.</li> <li>- The project consortium will identify an independent expert from academia or international policy arenas with demonstrated expertise in ABS policy and implementation processes, who will review the developed documents and guidelines for their adherence to pertinent international standards.</li> <li>- Key indigenous leaders adhere to commitments made within the TD stakeholders' platform and abstain from smearing campaigns which previously impeded advancing dialogues, such as the misinformation campaign of 2016 placing Nagoya regulations in the same law-package informally known as the "Monsanto" law (allowing benefits to multinational companies in detriment of small farmers), which generated great opposition.</li> </ul>
<p><b>Output 4</b></p> <p>Local Framework: improved (from baseline) and sustainable access and availability of key medicinal plants for</p>	<p>4.1 The number of species to which individual healers have direct access by the end of year 3 is increased by at least</p>	<p>4.1 Healers and community household surveys on access to medicinal plants to be compared to the established baseline at the beginning of the project</p>	<p>- A satisfactory process of Outputs 1 and 2 is able to be transformed into direct actions for protection and increased availability of medicinal plant species</p>

<p>indigenous healers/communities based on locally defined strategies and terms, ensuring equal participation of women</p>	<p>20% in relation to the baseline at the onset of the project.</p> <p>4.2 Participation in medicinal garden cultivation and management is over 50% by knowledgeable women by the end of year 3.</p> <p>4.3 A municipal proposal for potential implementation of one protection area still holding biodiversity of medicinal plants is drafted by month 27 and evaluated and potentially agreed by the government by year 3.</p>	<p>4.2 Pre and post training knowledge assessment</p> <p>4.3 List of appointed garden managers</p> <p>4.4 Proposal draft in Spanish (with English summary) and eventual signed agreement on the protection area by the government.</p>	<p>selected as by indigenous healers and other stakeholders.</p> <p>- Population adjacent to the medicinal garden site does not interfere with the establishment / extension of the garden.</p> <p>- Data showing the value of natural capital for improving health in Maya communities is legitimate and recognized by project partners, allowing implementation.</p> <p>- Enough funding is available to implement the main activities chosen by this consortium (TD platform).</p>
<p><b>Output 5:</b></p> <p>Dissemination: dissemination of the project's results and strengthening of the national dialogues on biodiversity and traditional knowledge. The dissemination will include CBD processes.</p>	<p>5.1 At least five academic papers published (Open Access) addressing key findings of project components by project end.</p> <p>5.2 Online and printed publication of tools developed via the TD process in the form of a manual, to foster replication by project end.</p> <p>5.3 Lay publications for stakeholders use according to strategy defined jointly by TD table by project end.</p> <p>5.4 At least one video documenting the process of the stakeholders' dialogue to develop the project, and one on research outcomes (traditional medical knowledge and biodiversity protection).</p> <p>5.5 At least two presentations at international conferences relevant to</p>	<p>5.1 Academic papers will be published on Open Access journals</p> <p>5.2 All tools developed will be available also in an online format and accessible to all through publication on Open Access platforms.</p> <p>5.3 The lay publications will be available online on Open Access platforms.</p> <p>5.4 Videos will be uploaded on Open Access platforms, in order to be accessible to all.</p> <p>5.5 Conference abstracts and proceedings will be available online.</p>	<p>- Discussions and agreements on intellectual property rights of indigenous groups follow</p> <p>due-process as described in the CBD/NAGOYA and local TD table agreements during the course of this project and allow for the timely publication and dissemination of results.</p>

	the ABS processes (CITES, CBD, and/or academic)		
<p><b>Activities</b> (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1)</p> <p>1.1 A 'round table' comprising all relevant stakeholders to sign a cooperation agreement for the project's duration, following a TD format.</p> <p>1.2 Writing and submission of IRB protocols for UK, Guatemala and Maya Council.</p> <p>1.3 Appointment/election of a TD steering board constituted by at least 30% women and 25% indigenous leaders, signing of MOU with operational plan for year 1.</p> <p>1.4 Steering board meetings are conducted to discuss the development of the framework with all stakeholders (including preparation of materials for discussion)</p> <p>1.5 Conduction of eight TD workshops for discussion and negotiation of components for implementing Addis Ababa's principles and Nagoya.</p> <p>1.6 Drafting of procedural protocols for inclusive application of Addis Ababa principles in sustainability assessments (NDFs), monitoring and management of medicinal plant resources</p> <p>1.7 Production and dissemination of procedural tools (manuals and documents) for implementing Guatemala's Nagoya protocol including the proposed ABS pathways for Guatemala and Q'eqchi' participating communities.</p> <p>2.1 Organisation of community meetings via AGERS Council to present project details to elders, individual enrolment of healers, creation of participants' list within Maya ceremonial protocol.</p> <p>2.2 Initial ethnographic research of most-common referred plant lists per ailment (syndromic and cultural ailments).</p> <p>2.3 Participatory observation, interviews and focus groups to build up medical case studies.</p> <p>2.4 Analysis of the ethnomedical and ethnobotanical data to assess how gender, age and socio-cultural background affect access and use of medicinal plants.</p> <p>2.5 At least 90% of plants used by the healers in the medical case studies are collected, deposited and identified at UVG herbarium.</p> <p>2.6 Integration of academic knowledge on the species collected through literature research on traditional uses, toxicological and pharmacological assessment (safety and efficacy) based on bibliographic evidence.</p> <p>2.7 Production of maps highlighting areas of medicinal plant diversity, risk assessment and proposed areas for protection</p> <p>3.1 Sharing information on medicinal species (from Output 2) with industrial partners and identification of species with commercial potential, protectable by IP rights.</p>			

- 3.2 Selection of 1 or 2 plants from the list produced by the industrial partners in 3.1 that will be used as a proof of concept.
- 3.3 Stakeholders meetings/workshops lead by the industrial partners to build a model ABS agreement.
- 3.4 Workshops to present the model agreement to the broader indigenous groups to facilitate consensus and agreement on potential pathways to benefits.
- 3.5 Stakeholders' meetings to discuss examples of non-monetary benefits of interest to the communities involved or propose new ones.
- 4.1 Establish the baseline of access and availability of medicinal plants to the healers
- 4.2 Consensus meeting with AGERS Council elders to choose local options for assisted (artificial) reproduction of key species
- 4.3 Creation of medicinal plant gardens and seed repository (following technical assessment of the areas, suggested by AGERS, and adaptation needs for reproduction of selected species).
- 4.4 Planting of selected species in the gardens and disseminated via seed and seedling exchange (based on the assessment in 2)
- 4.5 Organization, training and supervision of women that will be tending/managing the garden.
- 4.6 Meetings for the identification of biodiversity-rich areas (including key medicinal plants) that could be targeted for protection (GIS mapping).
- 4.7 Discussion with government officials on the feasibility of the creation of protected areas with presentation of mapped areas.
- 5.1 Writing of lay publications regarding process (replication) and outcomes (communities' information process), dissemination in digital and printed forms.
- 5.2 Writing of academic papers.
- 5.3 Production of videos and dissemination in online-formats.
- 5.4 Conference presentations.

## 209. 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 Anticipated / achieved)	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
3	One Licenciatura (Bachelor) thesis from partner University in Guatemala (Anthropology)	1F	Guatemala	0/0	1		1	1
4A	Undergraduate students from anthropology and biology at UVG	9F, 1M Mixed	Guatemala	3/3	7/5	1	10	9
4B	Four weeks of in-depth training in the field. (suspended for covid in Y2)  b.5 days training in ethnobotanical collection of samples	F F Mixed group	Guatemala	4/4	0/5	2	4	11
7	Videos (2), Manuals (2), Training material (3): one booklet			1/1	3/2	3	4	6

	per TD workshop							
9	Proposal for conservation area in Peten			0/0	1/0	1	1	1
10	Guide for collection of medicinal plants in Peten region			0/0	0	1	0	1
11A	Papers to be published in peer reviewed journals			0/1	2/2	2	2	4
11B	Papers to be submitted in peer reviewed journals			0/1	2/2	2	2	4
12A	Database of medicinal plant species for selected areas, developed by Guatemalan partner.			0/0	1	0	1	1
13 A	Collection of medicinal plants in herbarium UVAL-UVG			0/0	1	0	1	1



14A	One seminar organized per year for each TD workshop, One overall final seminar to present all findings			0/0	1/1	2	1	3
14B	Conferences & seminars to attend			0	4/2	2	4	6
20	Computer, camera, GPS, small collection equipment			2/3	0	0	3	1900
22	One permanent medicinal plant plot			0/0	2/1	0	2	1
23	a) Interact health project Zurich  b) Private donation for medicinal garden			██████ ██████	███ ███	███ ███	█████	██████████

**Table 2      Publications**

**210.**

**211.**

2. 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)
Access and Benefit Sharing under the Nagoya Protocol – Quo vadis? Six Latin American case studies assessing opportunities and risk	Journal	Michael Heinrich* , Francesca Scotti, Adolfo Andrade-Cetto, Mónica Berger-Gonzalez, Javier Echeverria, Fabio Frisio, Felipe Garcia-Cardona, Alan Hesketh, Martin Hitziger, Caroline Maake, Matteo Politi, Rita Spadafora* and Carmenza Spadafora	M (5 women and 8 men as authors)	German	Frontiersin.org	<a href="https://www.frontiersin.org/journals/pharmacology/sections/ethnopharmacology#">https://www.frontiersin.org/journals/pharmacology/sections/ethnopharmacology#</a>
Green Health in Guatemala: how can we build mutual trust and partnerships for the developing herbal medicine's evidence-base?	Journal	Mónica Berger-Gonzalez, Francesca Scotti, Ana Isabella Garcia, Alan Hesketh, Martin Hitziger, Ian Thompson, Michael Heinrich*	M (3 women and 3 men authors)	German	Canada Science Publishing	Submitted on 30th March

## 246. Checklist for submission

	Check
<b>Is the report less than 10MB?</b> If so, please email to <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> putting the project number in the Subject line.	no
<b>Is your report more than 10MB?</b> If so, please discuss with <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> about the best way to deliver the report, putting the project number in the Subject line.	yes
<b>Have you included means of verification?</b> You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	yes
<b>Do you have hard copies of material you want to submit with the report?</b> 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.	no
Have you involved your partners in preparation of the report and named the main contributors	yes
Have you completed the Project Expenditure table fully?	yes
Do not include claim forms or other communications with this report.	