Department for Environment Food & Rural Affairs

DARWIN INITIATIVE

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Darwin Initiative Main Project Annual Report

Darwin Project Information

Project reference	23-008
Project title	Upgrading and broadening the new South Pacific International Coconut Genebank
Host country/ies	Papua New Guinea, Fiji, Samoa
Contract holder institution	Bioversity International
Partner institution(s)	Kokonas Indastri Koporesen (KIK-part of Papua New Guinea (PNG) Gvt; Gvt of Fiji; Govt of Samoa, the Asia Pacific Coconut Community (APCC), Centre Internationale pour la recherche agronomique pour le développement (CIRAD), Pacific Community (SPC), the Global Crop Diversity Trust, and the International Treaty for Plant Genetic resources for Food and Agriculture (ITPGRFA)
Darwin grant value	£317,884
Start/end dates of project	1st June 2016 - 31st March 2019
Reporting period (e.g., Apr 2016 – Mar 2017) and number (e.g., Annual Report 1, 2, 3)	June 2017-March 2018 Annual Report 2
Project Leader name	Vincent Johnson
Project website/blog/Twitter	project webpage (ongoing projects / news at http://www.cogentnetwork.org/
Report author(s) and date	Alexia Prades, Vincent Johnson, Luc Baudouin, Apaitia Macanawai, James Kaiulo, 13th June 2018

1 Project rationale

Although coconut provides significant nutrition and multi-million dollar income for more than 8 million Asia-Pacific households, there is scant support for conserving its endangered genetic diversity. In many Pacific islands, this diversity is seriously threatened by climate change, potential sea-level rise, soil salinization, and other challenges such as pests and diseases. Not all representative coconut diversity is adequately conserved in the International Coconut Genebank-South Pacific (ICG-SP) in Papua New Guinea (PNG). Moreover, the existing PNG genebank is currently threatened by a lethal disease[1]. It is currently being transferred to a safe site in PNG, with a duplication back-up planned in Fiji and Samoa (Figure 1). The proposed Darwin Initiative-supported work is complementing this transfer with **prospecting missions** in the three countries and **building capacity** for the three new Pacific genebanks. For the new ICG-SP sites, international and local experts are helping to **identify promising, un-conserved cultivars**. Most-endangered areas will be explored for collecting and conserving threatened new coconut germplasm. These will be characterised taking into account local uses, resistance to cyclones and diseases along with gender-disaggregated trait preferences. This project also aims to help in training young scientists in coconut breeding and GR conservation. All data will be accessible in the Coconut Genetic Resource Database[2] (CGRD). The selected cultivars will then be safely moved to one or more of new PNG, Fijian or Samoan genebank sites. The new multi-site ICG for the Pacific will be placed under the International Treaty for Plant Genetic resources for food and Agriculture (ITPGRFA) to benefit the regional and global community. COGENT's recently updated *Global Strategy for the Conservation and Use of Coconut Genetic Resources*[3] highlights the need to conserve Asia-Pacific diversity, following extensive feedback from country-members, and coconut industry stakeholders.

2 Project partnerships

Project partners include:

- The 3 Governments of Papua New Guinea (PNG-KIK)), Fiji and Samoa are the main partners tasked with implementing the project in the field
- Bioversity International, CIRAD, SPC, APCC, the Global Trust and the ITPGRFA (added end year 2) are tasked with bringing their expertise and knowledge from the global level

Changes in Partnership/ grant management:

In November 2017, project leadership was transferred from the CIRAD member of staff seconded to Bioversity (Dr Prades) to a full time Bioversity staff member (Mr Vincent Johnson) to allow tighter management of activities and partnerships. The change addressed key recommendations from the review of year one report, and aimed at improving the overall timeliness and quality of project implementation. Mr Johnson, the newly-assigned Project Leader, worked closely with Dr Prades in developing the proposal and supporting the implementation of this project, and has a decade of experience supporting COGENT activities. The project continues to be managed by a Steering Committee composed of one representative of each partner. The Steering Committee members hold meetings and can make decision through a remote consensus process by exchanging emails. During the second year, there was one SC meeting held in Samoa in November 2017 (see annex 4.1 for summary report).

One of the remaining challenges in the partnerships is to keep everybody involved in the project. The number of partners is rather high and they are from different types of organizations, working differently with varied rules. Also the 9-13 hour time-zone difference adds a logistical constraint, as finding a time to interact virtually is also challenging.

Depending on the roles of the partners in the projects, different letters of agreement (LoAs) were prepared for the partners who participated in the activities of year 2. For the second year, we again succeeded in signing LoAs with 2 out of the 3 Governments involved. APCC, SPC

[1] See http://www.cogentnetwork.org/bogia-syndrome-disease
[2] See http://www.cogentnetwork.org/cgrd-version-6-0-test-version
[3] See https://www.bioversityinternational.org/index.php?id=244&tx_news_pi1%5Bnews%5D=10009&cHash=004f28ad3f79cc85e52cdf29d184fcb4

and the Trust remain on board. Budget and activities have been rescheduled for all partners as per the recently submitted change request form (see annex 4.2) and grant extension request.

Specific Partner Changes

- Dr Luc Baudouin of **CIRAD** has now taken overall responsibility for CIRAD's overall technical liaison, with other participating CIRAD staff under his direct supervision, and remains the leader of the International team of experts (ITeX) that guides the germplasm prospecting missions (ITeX 1).
- The **SPC** has requested we provide separate LoAs for the coconut mapping work and the ITeX 2 Genebank legal work, as the two members of staff are working in different departments. Most of the scheduled SPC work has yet to begin.
- **KIK of PNG** have been active in their support for validating the draft prospecting guidelines developed earlier in year 2 and during the training session in Samoa (see section 3.12 and annex 4.3)
- **Samoa**'s government representative was changed from Misa Konelio to more pro-active David Tilafono Hunter, who strengthened project expertise by engaging Tolo Iosefa as coconut germplasm specialist. The government provided in-kind hospitality for the 2017 SC meeting which was inaugurated by the Samoan Prime Minister and Minister of Agriculture.
- The Government of **Fiji** did not sign LoAs for years 1 and 2, but remains engaged. It seems that the relatively low amount of allocated grant funding is below a floor-level that would trigger prompt interaction for LoA signature. However, they participated in all the SC meetings and interactions, were present and very active at the inception meeting, and have been active in preparing the Fijian genebank site and for germplasm prospecting.

Emerging Partnership Opportunities

- Towards the end of year 2, following interactions with the **ITPGRFA** for the SC meeting, Francisco Lopez of the Treaty has offered to co-lead the team of experts that will guide the legal framework and agreements development for the new Genebank (ITEx 2). This constitute in-kind co-funding. Project partners collaborated to develop a bid for the ITPGRFA benefit sharing call submitted in February, led by **SPC**. A successful bid would provide funds for follow-on work to transfer germplasm and further develop the Genebank sites
- Holding the 18th COGENT SC meeting and workshop in Fiji back-to-back with our Samoa SC meeting provided economies of scale and networking opportunities to develop synergies with a new SPC-led, EU-funded Asia Pacific coconut value-chain project entitled: *Coconut Industry Development for the Pacific* (**CIDP**)[4]. This could include joint capacity building and data-sharing. **ACIAR** funded the COGENT workshop and is very interested in the outcomes of the Darwin Initiative funded work
- We invited the private sector to attend the part of the Samoa project meeting, and one seednut exporting company have expressed interest in the outcomes of the Darwin Initiative funded work.
- Bioversity is investigating co-funding opportunities within its linked banana and cacao germplasm characterisation work to explore an option of sharing the digital data management services of **SMAP consulting**[5]

3 Project progress

3.1 Progress in carrying out project ACTIVITIES

3.1.1 Output 1 Coconut Mapping

Activity 1.2 *State of the art on climate change threats and GIS in the South Pacific countries*. Search for climate change and sea level rise forecast in the future 40 years. Search for mapping of current or past coconut palm plantings at any scale.

SPC has provided a workplan and outline budget drafted for all mapping work (see annex 4.4). The mapping work will be completed in year 3.

Activity 1.3 *Creation of a map of the coconut cultivation areas* in Fiji, PNG and Samoa

[4] See https://eeas.europa.eu/delegations/fiji_en/29646/Value%20chain%20workshop%20to%20propel%20growing%20coconut%20industry%20in%20the%20Pacific
[5] https://www.smap.com.au/

Initial review completed by SPC and workplan and outline budget drafted

To be completed in year 3

Activity 1.4 *Creation of maps of current & future endangered coconut cultivated areas in the Pacific.*

To be completed in year 3

3.1.2 Output 2: Coconut germplasm prospecting and genebank upgrade

Activity 2.1. *Establishment and validation of the ToRs of the 2 International teams of Experts (ITEx)* by the SC, aiming for best gender balance.

Completed in year one. The SC has reviewed the composition of ITEx 2 (the ICG governance team) for work in year 3. ITPGRFA Technical officer, Francisco Lopes[6] has agreed to co-lead with Bioversity, and will link to the three country focal points in Fiji (under review), PNG, (Birte Komalong) and Samoa (David Tilafono Hunter- who is also the new government representative for this project), the SPC and the APCC

Activity 2.3 ITEx n°1 builds a *protocol and write guidelines for the identification/characterization/collection and transport of the new accessions* (1 PhD). The team will also *make a list of the current and potentially interesting cultivars for the international collection*

A list of the cultivars currently held in the ICG-SP has already been made available, and this is being updated during the ongoing transfer process to the new site in Punipuni (see annex 4.5).

Prospecting Guidelines:

A key project objective is to characterize coconut germplasm *in situ* (i.e. in farmer's fields, old plantations, gardens etc.) and to characterize the population. Collecting data during prospecting is of paramount importance as coconut growth is slow and these data will be the only available information on the population for the next few years. During prospecting these data need to be collected in a standardized way, in order to compare results from site to site.

Previous COGENT meetings have contributed to defining standard coconut descriptors and methods and produced documents such as *the STANTECH manual*[7] and the "descriptor list for coconut". While these documents provide useful "all purpose" guidelines, they are not meant to define an observation protocol adapted to specific conditions. There was a need to produce a document adapted to the specific conditions of the project: data collection in situ.

During the reporting period ITEx 1 has developed *Guidelines for coconut germplasm data collection and characterisation during coconut genetic resources prospecting*, articulating a well-defined digital format. It was decided to use digital tablets to collect the data (see annex 4.3). ITEx 1 team members comprised the four CIRAD experts, the project leader from Bioversity and the appointed PhD student from Papua New Guinea. The first draft guidelines were used for the November 2017 training in Samoa and validated in PNG in December 2017. These characterisation and prospecting guidelines will be revised as an evolving document.

A balance between the number of coconut palms studied and the number of observations per palm had to be established. In fact, the time to be spent at a given site is limited (typically one day). We decided to privilege the number of observations per palm. In fact, the information is much richer and outstanding populations for a specific use (e.g. drinking nut, copra) will be easier to spot. Moreover, this option efficiently differentiates populations using multivariate analyses in spite of limited accuracy on individual traits.

For more effective data management, it was decided to use tablets to enter the data, based on Bioversity's comprehensive system to collect, store and analyse data for banana germplasm (Musatab[8], with MGIS). During the reporting period work has begun to adapt the data entry system for this coconut work.

[7] See http://www.cogentnetwork.org/images/publications/StantechManual.pdf

[8] https://www.crop-diversity.org/mgis/content/musatab

Testing the methodology and training: Hands on exercises were organized to: i) test whether the proposed protocols are practically usable and adequately described. This includes the order of the measurements; and ii) to enable the participants to do the observations in a consistent manner. The first session was held during the Samoa Darwin meeting in Samoa (November 2017). In addition, a 4-day training session was conducted by Dr Baudouin in PNG during a mission financed by the PNG government (December 2017). Two days were devoted to theoretical training and to purchasing small equipment; two days were spent in the field. The main objectives were developing technical knowledge to perform measurements and enter the data in the tablet (first day); then allow the self-organising team to apply the protocol efficiently. Similar training sessions are planned for Samoa and Fiji. The results are still being analysed. Only 5 palms could be observed per day. They show clear differences between populations located 100 km apart and make it possible to characterize the main features of the populations.

The accessions candidate list will be updated in years 3 and 4

Activity 2.4 *State of the art and revision of the status of the current ICG-SP* by the ITEx n°2 and *preparation of the documents for prospecting/ collecting missions and subsequent governance* (1 MSc)

An MSc is planned to be appointed in year 3. The team co-leader has been identified and accepted in ITPGRFA (see above).

The team will meet, plan and prepare governance structure and documents during year 3.

Activity 2.5 *Gender-sensitive workshop* (combined with *3rd SC Meeting*) to *communicate, discuss and endorse the results of mapping, the guidelines, finalize the list of cultivars and design a prospecting/ collection plan.*

The SC meeting was organised in Samoa as a back-to-back meeting with the 18th COGENT SC meeting in Fiji, and included a 2-day training workshop for germplasm prospecting stakeholders from the three countries in November 2017. (see programme and reports in annex 4.1) The draft guidelines were iteratively developed by ITEx 1 during Q1 and 2 in year 2, then used for training 12 delegates from the three countries at the Samoa workshop (see annex 4.3) This also provided an opportunity to further refine the guidelines.

Further training of others involved in prospecting will be completed ahead of the planned prospecting missions in years 3 and 4.

Activity 2.6 *Validation of the guidelines, protocols, list and plan of prospecting by the 3rd SC. Preparation of the workplan for year 3*.

The guidelines validation was completed in December 2017 in PNG after 3rd SC meeting (see annex 4.81 for report on validation mission) overseen by ITEx 1 leader Luc Baudouin, in two prospecting sites.

Prospecting missions to be planned in detail in Q2 Y3, for implementation in Fiji and Samoa, collecting in PNG (see annex 4.6 for revised workplan)

Activity 2.7a *Official presentation of the project at the 7th Governing Body Session of the Treaty*

Bioversity's legal team made a presentation at the governing body meeting with regard to the PNG genebank transfer, and the complementary Darwin-Initiative funded work (see annex 4.7)

Two ITPGRFA officers interacted virtually with delegates at the COGENT SC 2017 meeting. they had been invited in person, but were attending meetings elsewhere, so provided a video presentation.

The Project team drafted and submitted a complementary proposal in response to the ITPGRFA benefit sharing fund 4th call in March 2018, to support the transfer of accessions when prospecting work is complete.

Follow up meetings with ITPGRFA will be held in Year 3

Activity 2.7b Official *presentation of the project at the 8th Governing Body Session of the Treaty* This meeting will be in 2019, but it is likely there will be a preparatory meeting in 2018, at which Bioversity will provide a status update to ITPGRFA.

Activity 2.8 *Preparation of the 3 sites or quarantine areas* for the newly collected accessions (nurseries and sanitary issues)

All three governments are making progress, and have chosen sites that are as accessible as possible, avoiding the issue of isolation, whilst respecting phytosanitary/ hygiene requirements. Whilst attending the November 2017 project meeting, project stakeholders visited the site in Samoa[9]. And recommendations were made (see annex 4.8 for report on Samoa)

Activity 2.9 *Different missions* by the mixed teams junior/expert for *identification/ characterization/ collection of endangered cultivars* (2 MSc and 1 PhD)

Some preparatory prospecting work has been implemented in all three countries See annex 4.8 for more detailed reports):

Samoa: In Samoa, some time in December 2017 was devoted to preparatory field surveys, which were fruitful. Further to partner agreement, (MAF Samoa, Darwin, CIRAD, COGENT, Bioversity) their logos were added the website Coconut palms of Samoa[10] along with additional contributions from MAFs communication officer[11]. With more than 35,000 pages visited, the website "Coconut palms of Samoa" has become an important tool for public awareness on R&D coconut projects. Numerous sections of the website were created and updated in the framework of the Darwin project, especially those regarding some of the historical aspects of coconut cultivation in Samoa: i) About the first world coconut varietal contest organized in Samoa (1984); ii) Words related to coconut in Samoan; iii) The small coconut collection of Nuu research Station; iv) Site and design proposal for the new Samoan Coconut genebank; v) The Westec plantation and large previous replanting projects, vi) A short section on 'How to sample leaflets for molecular analysis' will be updated according to the project prospecting guidelines developed by Luc Baudouin, and vii) A section on Varieties and palms identified in 2017 was created and will be updated in year 3.

Fiji: Field surveys were mainly focused on rare varieties available in gardens, and especially Compact Dwarf and Semi-tall types, which needs special care and new methods to be characterized and collected, because of rarity and/or limited number of seednuts available. Recent surveys contributed to identifying six genotypes of special interest: i) Varieties of *Compact Dwarfs* that could be used as pure varieties and/or as parents for new hybrids made with varieties 100% of Fijian origin, ii) A new form of *Niu leka/compact Green Dwarf* having very special fruits with very long nipple, iii) Interesting *new Dwarfs* from Kioa Island; iv) a green coconut palm with rather slow growth (semi Tall?) bearing nuts with sweet husk characteristics; v) A Fijian Tall with special characteristics producing a large number of medium dark green coloured fruits, and vi) another Fijian tall population having "dwarf-like characteristics".
The Fiji mission was constrained by three factors: i) The LOA between Ministry of Agriculture and Bioversity for 2018 was never signed. All the work achieved was done informally, without a local budget, and at the whim of the country's researchers, ii) The weather conditions were appalling, with cyclonic warnings and floods causing deaths. They notably prevented the realization of a crucial visit on the island of Rotuma (ticket paid by CIRAD then cancelled), and iii) The researchers encountered health problems during part of the mission: the CIRAD researcher contracted infectious cellulitis; the Fijian researcher (Vijendra Kumar) was also off work due to bronchitis.

Methods for collecting Fijian seednuts
We started to test the method which included ordering seednuts or seedlings from gardeners and farmers. Seednuts were bought for 2 FJD (US$0.94) and seedlings 2.5 FJD (US$1.18). We paid the farmers FJD 20 or 25 (US$9.4 or 11.8) each corresponding to an order of 10 seednuts or seedlings selected on sprout colours. Receipts include the name and phone number of the palm. Once the planting material is ready, farmers will call the officer. This will be used to collect seednuts and assess the efficiency of the method (percentage of recovery).

[9] see https://coconutsamoa.blogspot.com/2017/11/site-and-design-proposal-for-new-samoan.html
[10] See https://coconutsamoa.blogspot.com/ that Dr Bourdeix created 10 years ago with Valerie Saena Tuia.
[11] Malua Solinuu

PNG: Whilst no prospecting was planned in PNG in the reporting period, the country is moving its own germplasm to the new genebank site, from the original source site. The collection is being rationalised at the same time to ensure only representative diversity is conserved.

Activity 2.10 *Preparing and recording the accessions in CGRD* (COGENT database) (1 MSc)

This can only be completed after candidate accessions have been selected and after prospecting missions are underway in Year 3. Preparations made as described in section 3.13, activity 3.6

Activity 2.11 *Movement of some of the cultivars to the designated 3 sites*

To be done in year 3 for PNG only

Activity 2.12 *Workshop with ITEX n°2 and project partners back to back the 4th SC meeting* of the project to discuss and present the documents to be endorsed by the SC Meeting of COGENT in 2018 (year 3, Q3) and the PAPGREN network meeting in 2019

To be done in Y3 towards end of project

Activity 2.13 *Signature of the MOAs and MOU* at the final meeting of the project or at the COGENT SC Meeting in 2019/20 (which could be held back to back in the same place in PNG). Official restitution to the Governments.

To be done in Y3 towards end of project

3.1.3 Capacity Building

Activity 3.1 *Training the ICG staff* (gender equitable)

Part of the technical training for the genebank staff on *germplasm characterisation* was organized back-to-back to the project SC meeting in Samoa. Also presentations on the *multilateral system* for germplasm exchange were delivered to delegates in the Samoa workshop (as well as other delegates in the COGENT SC meeting in Fiji).

Training in *controlled hand pollination* and some other aspects of genebank management will now be organised in Y3, and comprising some virtual training and some face to face training, also synergising with CIDP project.

Activity 3.2 *One PhD student to participate to the project and to be employed by the ICG, (preferably female)*

Even though we actively sought a female candidate, only a male candidate with the required competences was identified and recruited. As of 13 April 2018, Julius Maot's (from PNG) application for a PhD Plant-Breeding has been approved by the University of Los Baños, Philippines (ULBP), effective August 2018. As recorded in the recently submitted change-request form, the first attempt to apply for a PhD programme at ULBP early in 2017 had failed because: i) the support letter arrived too late; ii) , in the absence of response from the University, no follow-up action was taken at the time. In Year 2 Dr Baudouin: i) developed a draft thesis subject, which was further expanded by the student with his supervisor; contacted Dr Hayde Flandez-Galvez, Assistant Professor at the Institute of Crop Science (College of Agriculture and Food Science), ULBP to facilitate application and, at a later stage supervision, and iii) followed up the steps undertaken to ensure effective registration.

Activity 3.3 *1 MSc student to support the ITEX n°1 (*breeding and collection)

To be done in Year 3

Activity 3.4 *1 MSc student to support the ITEX n°2*

To be done in Year 3

Activity 3.5 *1 MSc student to support to mapping*

To be done in Year 3

Activity 3.6 1 MSc student to support database CGRD

Bioversity staff responsible for its *Musa* Germplasm Information System (MGIS[12]) have made preparations for the coconut germplasm data management protocol to be developed for the Coconut Genetic resources database (CGRD) in year 3, and for linking it to Genesys[13], the international genetic resources database. The terms of reference have been drafted for a BTec intern (see annex 4.9) to work on the protocol in year three, and Bioversity has already interviewed one candidate from SupAgro[14], Montpellier.

3.2 Progress towards project OUTPUTS

3.2.1 OUTPUT 1: Mapping

Maps and models of current and future threatened coconut cultivated areas in the Pacific have been made available on the COGENT and SPC Websites

From the recently submitted workplan and budget provided by SPC, and discussions with experts it seems that the available budget for this exercise is too modest. SPC has access to funds from the CIDP project which may support some of the costs of this work.

1.a Four Maps and models to predict the impact of future climate change on the target counties' "coconut ecosystem" accessible on the COGENT, CIRAD and SPC websites by the end of year 1.

A detailed workplan has been prepared in year 2 (see annex 4.4),

1b 2 to 3 journal publications of new methodology available to predict the evolution of coconut production areas in the future due to climate change by the end of year 2

Mapping work will be completed in year 3 in parallel with the germplasm prospecting mission work.

1.b. publications forthcoming thereafter

3.2.2 OUTPUT 2: germplasm management plan

An effective, gender-sensitive coconut germplasm management plan for the Asia Pacific developed

The management plan comprises four elements:

1. Compiling a comprehensive *list of all the cultivars* currently preserved and to be preserved (not only endangered) in the ICG-SP following the Global Strategy of COGENT.
2. An overall *prospecting plan* (3 country subsections) based on the results of the mapping, and applying a bespoke *prospecting Guidelines* developed by the project
3. *5 to 10 new accessions* across the three countries *identified for backup transfer* to a nursery at one or more of the 3 sites of the ICG-SP within three years of project end
4. An *MOU* articulating/ agreeing the *governance* within the 3 sites of the genebanks by the middle of year 3, with gendered considerations, and linking to the ITPGRFA for final launch. This will be finalised by a *signed MOA*

1. Accessions list. *2b. ITEx n°1 publishes one list of all the cultivars currently preserved and to be preserved (not only endangered) in the ICG-SP following the Global Strategy of COGENT.*

Partial lists compiled in Y1/ 2 The list of rationalised accessions to be moved from Madang to Punipuni is available (see annex 4.5). A single list is still to be compiled of all the cultivars currently preserved and to be preserved (not only endangered) in the ICG-SP.

2. Prospecting plan:

2c. By early year 2, one overall prospecting plan (3 country subsections) is designed by ITEX n°1 based on the results of the mapping.

[12] See https://www.crop-diversity.org/mgis/
[13] See https://www.genesys-pgr.org/content/about/about
[14] See https://www.montpellier-supagro.fr/

The prospecting plan has been discussed with partners during the November meeting. .The prospecting plan requires first developing the germplasm characterisation guidelines. It also requires information from the mapping work (OUTPUT 1), which is yet to be done. On top of the PNG earthquake climate change has caused abnormal weather patterns, which have prevented planned prospecting. The project implement prospecting in the drier season. The revised workplan submitted with the 2018 change request indicates the revised plan.

Prospecting Guidelines: During the reporting period, Dr Baudouin and the ITEX 1 group produced a near final draft of coconut germplasm prospecting guidelines. A key project objective is to characterize coconut germplasm *in situ* (i.e. in farmer's fields, old plantations, gardens etc.) and to characterize the local populations. The document produced by ITEx 1: *Guidelines for coconut germplasm data collection and characterisation during coconut genetic resources prospecting* (see annex 4.3), is based on the previously-mentioned STANTECH manual and Descriptor List (see section 3.1.2, activity 2.4) and articulates a detailed observation protocol including: i) the method of observation, with graphics when needed; ii) the measurement units and data format; iii) example of data entry; iv) how to take samples for further analyses; and v) additional technical annexes (see below). The Guidelines includes sections on: i) prospecting rationale; ii) mission checklist; iii) sample numbering convention; vi) descriptors (site data, single entry for each collected individual); v) Descriptors (vegetative/palm data: GPS position; Stem; Leaves; Inflorescence; Immature fruits; Mature fruits; and Sample collection), and vi) technical annexes (Guidelines for producing technical photos; Collecting leaf samples for DNA analysis; Collecting sawdust for DNA analysis; Sampling for biochemical analyses; Measuring palm height; Cultivar names; Soil texture assessment; List of equipment; Data collecting forms (as alternative to tablet option))

The early draft Guidelines was used for training in the capacity building workshop in Samoa meeting in November 2017, which also provided the opportunity to revise the Guidelines.

Data Digitization: For more effective data management, tablets have been deployed to collect, enter, upload and analyse the data, based on Bioversity's comprehensive system to manage banana germplasm data (Musatab[15], with MGIS). During the reporting period work has begun to adapt the data entry system for this coconut work. This system has the following useful features: i) Convenient interface; ii) Two data formats: text or multiple choice; iii) Text and visual help is available; iii) Notes can be entered for each observation; and iv) Photos can be taken. Our initial test results are positive, but the following points will be improved in year 3:

- The data format is not human readable- there is no coconut equivalent to the computer module of MusaNet[16]. A module had to be programmed (using "R") to produce a usable text file with EXCEL, but we are linking with SMAP consulting[17], to develop a more efficient system
- Some features, existing with other systems, are not available.
    - Multiple choice questions do not allow multiple entries,
    - all entries are at the individual plant level

Preliminary results from the PNG December validation and training indicate clear differences between populations located 100 km apart and make it possible to characterize the main features of the populations.

3. Identification of candidate accessions to be conserved: *2d.Between 5 and 10 accessions moved by genebank staff and/or prospecting/collecting teams to a nursery at one of the 3 sites of the ICG-SP by the end of the project*

As agreed in previous change request, the project will identify candidate germplasm for transfer after the end of the project. This will be selected after prospecting missions are complete.

4. Genebank Governance structure and documents

[15] https://www.crop-diversity.org/mgis/content/musatab
[16] MusaNet is a Bioversity coordinated Musa genetic Resources, similar to COGENT see https://sites.google.com/a/cgxchange.org/musanet/about-musanet/about-musanet
[17] https://www.smap.com.au/

2e. ITEX n°2 prepare the MOU to organize the governance within the 3 sites of the genebanks by the middle of year 3, with gendered considerations.

2f. ITEX n°2 prepare the MOAs to be signed between the different institutions (local research institutions or Government, Bioversity International/COGENT, SPC, and FAO/Treaty) by the end of year 2, MoAs to include gendered considerations where appropriate.

Planning meeting with ITPGRFA and ITEx 2 is scheduled for Year 3. The reformed ITEx 2 will commence in Y3, including preparations for the MOU to organize the governance within the 3 sites of the genebanks by the middle of year 3, with gendered considerations

3.2.3 OUTPUT 3: Training and Capacity Building

Training and capacity building provided to the staff of the 3 genebanks and to young scientists:

3a. *One PhD student, is recruited (if candidates comparable in all other respects will consider appointing a female candidate) and begins the thesis work during the first year of the project (preferably to become a coconut breeder working on one of the 3 sites)*

See section 3.13. A male candidate was recruited in year 1 in PNG. Delays articulated in the change request form meant that the University of Los Baños, registration will be effective in August 2018, although fieldwork and training were ongoing throughout year 2. The draft thesis was agreed.

3b. *At least 6 MSc students (2 for mapping, 1 for Policy, 2 for breeding and 1 for database) are trained in the coconut field by end of project, aiming for at least half of the students to be female if competence available.*

Due to budget restrictions, the MSc student in policy was not maintained (as reported in previous change request). One MSc student in tissue culture was also identified in Y1, replacing the MSc student in breeding (change also accepted by Darwin). The student for the database and the mapping will be identified in year 3. The MScs for climate change and mapping studies will be trained in year 3 instead. In the revised workplan we submitted with the change request we reduced the numbers of Masters students from 6 to 4: 1 MSc (down from 2) student to support the ITEX n°1 (breeding and collection in Samoa), 1 BSc student to support embryo culture in PNG, 1 MSc student to support to mapping in Fiji and Samoa, and 1 MSc student to support database CGRD in Montpellier. None of these have begun as they rely on data or accessions flowing from the prospecting missions which are yet to begin. In year 2 we established a terms of reference for database MSc, and interacted with students and staff at the relevant institution in Montpellier.

3c. At least 9 persons (30% female) of the future staff of the ICG-SP are trained by end of project

29 participants (17% female) were trained on the multilateral system of germplasm exchange during COGENT and Darwin SC meetings in Oct/Nov 2017. 10 participants (10% female) were trained in germplasm characterisation using the guidelines Further trainings are planned virtually/ in situ, during year 3, including a special training on controlled hand pollination, and further training in each country for how to prospect and characterise the at-risk germplasm.. This may include back-to-back training with CIDP project to generate economies of scale. During the prospecting guidelines validation in PNG in December 2017, 5 staff (0% female) were trained on germplasm characterisation.

3.3 Progress towards the project OUTCOME

Critical knowledge, capacities and approaches developed to conserve endangered, critical coconut germplasm from Fiji, Samoa, and PNG, ensuring a stable future for coconut breeding and production.

Overall, some progress has been made to enable the three countries to work together to conserve endangered critical coconut germplasm. However, the work is severely constrained by delays to implementation, and there is a danger that we may not be able to complete all that was planned by the end of the grant period. We have applied for carryover, and an 12 months grant extension.

3.3.1 Mapping work:

Indicator: One regional and three national maps of the most endangered zones for coconut cultivars in Fiji, Samoa and PNG regarding sea-level rise and climate change are available to women and men coconut scientists and policy makers by the end of year 1 of the project

The original CIRAD-based mapping team leader was not able to continue in the project, and had made no progress in year 1, so for year 2 we appointed a new SPC-based replacement. He has produced a draft workplan and much higher outline budget (see annex 4.4), and SPC has indicated that the extra cost may be covered by other means.

Mapping these scenarios is a more complex process than originally considered in the proposal, and constitutes gathering not just production, cultivated area and climate change modelling data, but needs to be overlain with other socio-economic/ ethnobotanical considerations.

Mapping work is yet to begin, but is scheduled to begin early in year 3

3.3.2 Germplasm Prospecting work:

Indicator: *There is an agreement by the project SC, on a standardized methodology to collect, identify, characterize and register new accessions for COGENT members (at a global level) at the beginning of year 2 of the project, with an awareness of gendered trait preferences*

A list of existing accessions for the new Pacific genebank is available. However it is too early for ITeX 1 to publish one list of all cultivars currently preserved and to be preserved (not only endangered) in the ICG-SP according to COGENT's Global Strategy.

ITeX 1 has developed a standardized germplasm characterisation methodology which has been formulated into germplasm prospecting guidelines (see annex 4.3), and validated in PNG, some PhD field work completed, and the PhD registered to commence Aug 2018

The PhD student and supervisor will finalise and implement the continuing work plan of the PhD student in year 3, and he will attend ULPB for formal PhD research commitments, as well as continuing with further PhD field work.

3.3.3 Work to boost conserved accessions

Indicator: *The number of conserved accessions in the Pacific Genebank has increased by 10% (between 5 to 10 new accessions have been identified and recorded in the CGRD database) by the end of the project*

3 new accessions have already been identified in Fiji and PNG, a workplan and ToR has been defined for CGRD intern (for Y3). An SPC-led proposal has been submitted to ITPGRFA to fund follow on work to transfer identified threatened new germplasm to one or more genebank site. The preproposal has been endorsed and the team will develop a full proposal. If successful we will receive sufficient funds to complete the work

In Year 3 the project will finalise and implement prospecting missions planned in Samoa and Fiji, implement a collecting mission planned in PNG, recruit the Montpellier-based CGRD intern, who will implement the CGRD updates/ data interface work, and link this work to new COGENT Secretariat (by Jan 2019), as well as developing links to ITeX 2 for registration of accessions/ permissions and so forth.

3.3.4 Genebank management training:

Indicator: *At least 9 Genebank staff (30% female) from Fiji, Samoa and PNG are trained to manage the genebank according to the rules of the multilateral system (MLS), supported by the ITPGRFA and according to the technical guidelines recommended by COGENT in year 3*

29 participants (17.2% female) were trained on the multilateral system of germplasm exchange during COGENT and Darwin SC meetings in Oct/Nov 2017. Further trainings are planned virtually/ in situ, during year 3 including a special training on controlled hand pollination. This may include back-to-back training with CIDP project to generate economies of scale

3.3.5 Multisite genebank MoA development

Indicator: *The creation of the multi-site genebank is ratified by the end of the project with signed MOAs between the 3 countries and Bioversity International/COGENT or SPC and FAO/ITPGRFA*

Genebank site preparation well underway in all three countries. ITPGRFA has agreed to co-lead ITEx 2 in this process. In year 3 the project will re-launch activities ITEx 2 to ensure genebank governance structures in place by end of project

3.4 Monitoring of assumptions

For the complete list of assumptions and comments see annex 4.10.

Assumption 1: *There will be no legal/diplomatic insurmountable constraints regarding the MOAs and MOU preparation and signat*ure

Comments: These constraints may prove insurmountable, at least in the relatively short grant implementation period and given subsequent ongoing delays. We have been and will continue to adapt the objectives of the project according to the reaction of the main partners, as an iterative process.

Assumption 2: *Any phytosanitary risk will be effectively addressed and not impact on germplasm transfer, from collection and distributi*on.

Comments: In last year's report we suggested that this will not be easy to achieve because there is no scientific evidence today that the disease is not transferred via the embryo. However a new diagnostic kit developed by the University of Queensland is capable of reliably and accurately detecting phytoplasmas, and can be safely deployed in coconut (and other crop species) germplasm transfer.

This also strengthens the certainty of Assumption 3: *The coconut biodiversity preserved in the 3 sites is secured by the signature of MOAs and the genebanks have a clear governance system at the regional level.*

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

It is too early to register any higher impact on biodiversity conservation and poverty alleviation. As reported previously, the work will strengthen biodiversity preservation. Through the consolidation of the South Pacific Genebank (ICG-SP) by moving the PNG collection to a safer place, and initiating duplication back-up in Fiji and Samoa, the project will preserve key Asia-Pacific coconut biodiversity. The ex-situ collections will be secured by staff with improved skills, and the staff of the 3 sub-genebanks will have a working relationship. By creating a community of practice across the project, and beyond, and by preparing the back-up sites, the ICG-SP's resilience will be greatly improved. The community spirit continues to grow.

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

The project aims to contribute to the 15th SDG *Life on land* by reducing coconut biodiversity losses in the Pacific. It also contributes to the 2nd SDG *Zero Hunger* by securing the genetic resources that will help in creating more sustainable and resilient agri-food systems for future generations.

5 Project support to the Conventions, Treaties or Agreements

Ensuring long-term coconut genetic diversity conservation contributes to **CBD** objective 1: *(Biological diversity conservation)*, especially implementing the CBD Agricultural Biodiversity programme and achieving Aichi Biodiversity target 13[18]. Making more and safer coconut genetic diversity available through the multilateral system (MLS) contributes to **ITPGRFA** objectives. The ICG-SP is part of the MLS via agreement between ITPGRFA's Governing Body, Bioversity International and the Government of PNG, whereby coconut stakeholders can better access genebank germplasm. Funds from their use partly flow back to the conservation

[18] By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity)

community, including farmers. The project also contributes to ITPGRFA articles 5 (conservation) and 6 (sustainable use).Bioversity International continues to interact with ITPGFRA staff in Rome to present the project and discuss the future of the 5 International Coconut Genebanks. This will garner extra support for the long-term outcomes of this work. Fiji and Samoa participate in the **Nagoya Protocol** (NP). Access to new coconut germplasm in the ICG-SP will be subject to NP provisions. Project partners aim to include this material in the MLS, simultaneously ensuring that original providers' interests and rights are addressed. This offers opportunities to support Samoan and Fijian organizations to implement the NP in line with the ITPGRFA. The project has already engaged with ITPGRFA focal points who are members of the project steering committee. In fact, SPC, as the ITPGFRA focal point for the Pacific region, is participating to the project and is liaising with the 3 different Governments for the project. We informed the CBD focal points for all three target countries, and invited them to support the proposed work as they see fit. We have applied for ITPGRFA support from the 2018 BSF 4th call.

6 Project support to poverty alleviation

In the short-term, the project cannot directly contribute to alleviating poverty. However, project outcomes could benefit millions Asia-Pacific coconut-dependent stakeholders in the longer term. Coconut is a culturally and economically important livelihood crop for hundreds of millions across the world.

7 Project support to gender equality issues

There are no notable achievements in year 2 regarding the gender equality. Trainings were offered with an element of positive discrimination for female participants this is not reflected in attendance figures. Further trainings are planned in year 3 and it is supposed that the training of the genebank staff and other scientific staff will welcome a good balance of women/men and/or junior/senior staff.

8 Monitoring and evaluation

Partner interactions remain constrained by time zone differences, and for reporting the annual leave of major partners remains a challenge. Regular Skype calls have proved difficult and emails often remain unanswered. Partners still struggle with reporting requirements, especially regarding the financial aspects and the reporting deadlines. Delays have meant that there is little progress to monitor.

9 Lessons learnt

Even the best laid plans can go awry. This project has been plagued by unexpectedly bad weather, including in normally dry periods, by illness, and by staff turnover, as well as by the low administrative capacity and responsiveness of some partners. We have improvised where possible and made staff alterations to minimise technical and administrative delays and weak communications. The project remains ambitious compared to the total grant budget with partners obliged to co-fund a big part of the activities. Convincing any developing-country to invest in an international coconut genebank when this may only pay off in the long term and when benefits are not clearly linked to increasing in national employment or social progress, remains a challenge for our some of our partners and for the project coordination team. However, the prime Minister of Samoa and his Minister of Agriculture inaugurated the November 2017 SC meeting and training workshop. ACIAR remains keen to support this work, and our pre-proposal for follow-up funding has been endorsed by the ITPGRFA. In an ongoing transfer of the COGENT Secretariat host from Bioversity to the APCC, moves continue for establishing a Pacific region coconut focal point, linked to relevant genetic resources networks. This coconut focal point could monitor the coconut genetic resources activities at the regional level.

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

We provide detailed responses to the year 1 report review which can be found in annex 4.11): 1) We detailed remedial actions overseen by the Steering Committee at the 2017 SC meeting and involvement in these actions: 2) We altered project management arrangements, and 3) We provided clarification regarding the project's original intent, stressing that this work is a part of a

larger initiative, and absolutely critical to lay the foundation for safeguarding threatened coconut diversity within the Pacific region. This project is establishing capacities, facilities and knowledge to ready the groundwork in order to move forward with conserving coconut diversity in a safer and more sustainable fashion in the South Pacific.

11 Other comments on progress not covered elsewhere

We have refined the germplasm guidelines, approached SPC to act as the eventual overseer of the work going forwards, including involving them as the lead organisation in bidding for ITPGRFA exit-strategy funding (stage 1 endorsed!). With the COGENT Secretariat transferring to Indonesia it can play a larger more present role in Asia Pacific coconut diversity conservation and use.

12 Sustainability and legacy

The project leader and partners have submitted a proposal to the ITPGRFA in response to its 4th Call on benefit Sharing Fund *Safeguarding threatened coconut diversity within the upgraded International Coconut Genebank for the South Pacific*. If successful this will provide support for transferring threatened diversity. The 3 involved countries have secured land for the future genebanks, and begun to clear the land. PNG invested in training and hiring new staff. Fiji recently engaged a coconut specialist for 1 year. Samoa prepared a concept note to ask for support in order to prepare the design of the new genebank. The project has already begun to build local scientific capacity, and more will follow in the coming year. There is evidence that the 3 countries are committed to coconut conservation and its associated legacy. SPC have expressed a willingness to take a more central role in the future and COGENT is considering posting an assistant coordinator with SPC, before the end of the project.

13 Darwin identity

The project is present on several websites and continues to promote the Darwin Initiative wherever it can, for example, when in Australia at a recent ACIAR-DFAT meeting the project leader highlighted the valuable support of Darwin Initiative. It's logo appeared in the Samoan SC meeting and COGENT SC meeting documents, press releases and banners in Fiji and Samoa, as well as in the Samoan website cited below, Bioversity[19], COGENT[20], CIRAD[21]and SPC[22] websites. The UK Government's contribution to the project's work was specifically recognised in the Bioversity 2016 Annual report funding partners section[23]. In this project the Darwin Initiative funding recognised as a distinct project, and is often referred to as 'the Darwin Coconut project'. At the SC meeting in Samoa, the Samoan Prime Minister made specific reference and vote of thanks to the Darwin Initiative. Special thanks to the MAF for allowing to add as principal its logo, and to add also the logos of other partners (DARWIN, CIRAD, COGENT, BIOVERSITY) on the website *Coconut palms of Samoa*[24]. Numerous sections of the website were created and updated in the framework of the Darwin project, especially those regarding some of the historical aspects of coconut cultivation in Samoa (see annex 4.8). Darwin support is also acknowledged in the germplasm characterisation guidelines (see annex 4.3)

It was presented at the ITPGRFA 7th Governing body session in Rwanda (see annex X), and the TREATY is very well aware of Darwin Initiative support for upgrading the ICG-SP. It was also presented in several conferences and meetings as reported for year 1

[19] https://www.bioversityinternational.org/news/detail/saving-the-pacifics-coconuts/
[20] See http://www.cogentnetwork.org/ ongoing project dedicated page, and also in news section
[21] http://umr-qualisud.cirad.fr/principaux-projets/darwin-upgrading-and-broadening-the-new-international-coconut-genebank-for-south-pacific
[22] http://www.spc.int/blog/un-nouveau-projet-vise-a-sauvegarder-la-diversite-des-varietes-de-cocotiers-dans-les-iles-du-pacifique/?lang=fr
[23] https://www.bioversityinternational.org/ar2016/funding-partners/
[24] https://coconutsamoa.blogspot.com/

14 Project expenditure

Please expand and complete Table 1.

Table 1: Project expenditure during the reporting period (1 April 2017 – 31 March 2018)

Commented [JV(1]: Brenda to help

Project spend (indicative) since last annual report	2017/18 Grant (£)	2017/18 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)				
Others (see below)				
TOTAL				

Highlight any agreed changes to the budget and **fully** explain any variation in expenditure where this is +/- 10% of the budget. Have these changes been discussed with and approved by Darwin?

15 Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2017-2018

Project summary	Measurable Indicators	Progress and Achievements April 2017 - March 2018	Actions required/planned for next period
Impact ⇒ Coconut stakeholders and scientists have used and have had better access to wider genetic diversity, facilitating new breeding outputs, ultimately benefitting at least 10 million people within the Asia-Pacific.		Nothing for the moment. In preparation. This will happen after the end of the project period, and will be part of the exit strategy	
Outcome Critical knowledge, capacities and approaches developed to conserve endangered, critical coconut germplasm from Fiji, Samoa, and PNG, ensuring a stable future for coconut breeding and production	0.1 One regional and three national maps of the most endangered zones for coconut cultivars in Fiji, Samoa and PNG regarding sea-level rise and climate change are available to women and men coconut scientists and policy makers by the end of year 1 of the project	***0.1 Mapping work:*** - Appointed new (SPC) mapping team leader - detailed workplan and outline budget drafted (see annex 4.4)	***0.1 Mapping Work*** - finalise available budget for mapping, including possible co-funding from CIDP - identify the students in mapping and climate change, in database analyses and in breeding - in progress - commence mapping work
	0.2 There is an agreement by the project SC, on a standardized methodology to collect, identify, characterize and register new accessions for COGENT members (at a global level) at the beginning of year 2 of the project, with an awareness of gendered trait preferences	***0.2 Germplasm Prospecting work:*** - A list of existing accessions for the new Pacific genebank is available. - ITeX 1 has developed a standardized germplasm characterisation methodology which has been formulated into germplasm prospecting guidelines (see annex 4.3), and validated in PNG - some PhD field work completed - PhD registered to commence Aug 2018	***0.2 Germplasm prospecting work:*** - detail the continuing work plan of the PhD student – in progress - PhD student to attend ULPB for formal PhD research commitments - further PhD field work - develop links to ITeX 2 for registration of accessions/ permissions etc - ITeX 1 to publish one list of all the cultivars currently preserved and to be preserved (not only endangered) in the ICG-SP following the Global Strategy of COGENT.
	0.3 The number of conserved accessions in the Pacific Genebank has increased by 10% (between 5 to 10 new accessions have been identified and recorded in the CGRD database) by the end of the project	***0.3 Work to boost conserved accessions*** - 3new accessions identified in Fiji and PNG - Workplan and ToR defined for CGRD intern (for Y3) (see annex 4.9) - SPC-led proposal submitted to ITPGRFA	***0.3 work to boost conserved accessions :*** - finalise and implement prospecting missions planned in Samoa and Fiji - implement collecting mission planned in PNG - recruit CGRD intern - intern/ Bioversity to implement CGRD

Project summary	Measurable Indicators	Progress and Achievements April 2017 - March 2018	Actions required/planned for next period
	0.4 At least 9 Genebank staff (30% female) from Fiji, Samoa and PNG are trained to manage the genebank according to the rules of the multilateral system (MLS), supported by the ITPGRFA and according to the technical guidelines recommended by COGENT in year 3 0.5 The creation of the multi-site genebank is ratified by the end of the project with signed MOAs between the 3 countries and Bioversity International/COGENT or SPC and FAO/ITPGRFA	***0.4 Genebank management training*** - 29 participants (17.2 female) trained on MLS during COGENT and Darwin SC meetings in Oct/Nov 2017 ***0.5 Multisite genebank MoA development*** - Site preparation well underway in all three countries - ITPGRFA engaged to co-lead this process	updates/ data interface work - link this work to new COGENT Secretariat (by Jan 2019) 0.4 ***Genebank management training:*** - further trainings planned virtually/ in situ, including a special training on controlled hand pollination. This may include back-to-back training with CIDP project to generate economies of scale ***0.5 Multisite genebank MoA development*** - re-launch activities of international team of legal experts (ITEX 2) under co-leadership of the ITPGRFA- in progress to ensure genebank governance structures in place by end of project
OUTPUT 1. Maps and models of current and future threatened coconut cultivated areas in the Pacific have been made available on the COGENT and SPC Websites	1.a Four Maps and models to predict the impact of future climate change on the target counties' "coconut ecosystem" accessible on the COGENT, CIRAD and SPC websites by the end of year 1 1b 2 to 3 journal publications of new methodology available to predict the evolution of coconut production areas in the future due to climate change by the end of year 2	1.a. A detailed workplan has been prepared in year 2 (see annex 4.4),	*1b* mapping work will be completed in year 3 in parallel with Fiji prospecting mission *1.b. publications forthcoming thereaft*er
Activity 1.1 Kick-off meeting with the partners, back to back to a first SC meeting, aiming for best gender balance		Completed year 1	
Activity 1.2 State of the art on the climate change threats and GIS in the South Pacific countries. Search for climate change and sea level rise forecast in the future 40 years. Search for mapping of current or past coconut palm plantings at any scale.		Initial review completed by SPC and workplan and outline budget drafted (see annex 4.4)	To be completed in year 3
Activity 1.3 If not available creation of a map of the coconut cultivation area in the countries targeted by the project		Initial review completed by SPC and workplan and outline budget drafted	To be completed in year 3
Activity 1.4 Creation of the maps of the current and future endangered coconut cultivated areas in the Pacific.		Planning completed	To be completed in year 3

Project summary	Measurable Indicators	Progress and Achievements April 2017 - March 2018	Actions required/planned for next period
OUTPUT 2. An effective, gender-sensitive coconut germplasm management plan for the Asia Pacific developed	2a: gender-balanced ITEx n°1 – one proposed guidelines for the choice of Pacific cultivars to be preserved by the end of the first year (also relevant to cultivar choice elsewhere)	The team of technical experts created and a list of all accessions conserved in the ICG-SP established in Year 1. A list of the accessions to be moved from Madang to Punipuni is also available.	Draft guidelines produced (see annex 4.3), used as training in capacity building workshop in Samoa meeting in Nov 2017
	2b. ITEx n°1 publishes one list of all the cultivars currently preserved and to be preserved (not only endangered) in the ICG-SP following the Global Strategy of COGENT.	Partial lists compiled	single list still to be compiled of all the cultivars currently preserved and to be preserved (not only endangered) in the ICG-SP following the Global Strategy of COGENT.
	2c. By early year 2, one overall prospecting plan (3 country subsections) is designed by ITEX n°1 based on the results of the mapping	Prospecting plan discussed with partners	Prospecting/Collection plan to be finalised with input from mapping team
	2d.Between 5 and 10 accessions moved by genebank staff and/or prospecting/collecting teams to a nursery at one of the 3 sites of the ICG-SP by the end of the project		
	2e. ITEX n°2 prepare the MOU to organize the governance within the 3 sites of the genebanks by the middle of year 3, with gendered considerations	Meeting with ITPGRFA to plan launch in Year 3	Preparations for the MOU to organize the governance within the 3 sites of the genebanks by the middle of year 3, with gendered considerations
	2f. ITEX n°2 prepare the MOAs to be signed between the different institutions (local research institutions or Government, Bioversity International/COGENT, SPC, and FAO/Treaty) by the end of year 2, MoAs to include gendered considerations where appropriate.	Nothing done yet	Preparations for the MOU to organize the governance within the 3 sites of the genebanks by the middle of year 3, with gendered considerations
Activity 2.1. Establishment and validation of the ToRs of the 2 International teams of Experts (ITEx) by the SC, aiming for best gender balance		Done. See report of the Bangkok meeting Y1 report	Review composition of ITEX 2
Activity 2.2. Constitution of the two gender-balanced ITEx and recruitment of the experts (contract's signature with the corresponding institutions (LoAs)		Done. 6 LoAs signed,	LoAs to be adjusted according to changed schedule and signed
Activity 2.3 ITEx n°1 builds a protocol and write guidelines for the identification/characterization/collection and transport of the new accessions (1 PhD). The team also make a list of the current and potentially interesting cultivars for the international collection		List of the current cultivars available Protocols and guidelines drafted , used for training and validated in PNG	Characterisation and prospecting guidelines to be revised as an evolving document Accessions candidate list to be updated Data protocol to be developed for CGRD

Project summary	Measurable Indicators	Progress and Achievements April 2017 - March 2018	Actions required/planned for next period
Activity 2.4 State of the art and revision of the status of the current ICG-SP by the ITEx n°2 and preparation of the documents for prospecting/ collecting missions and subsequent governance (1 MSc)		Team of legal experts leader identified and accepted in ITPGRFA.	Team to meet, plan and prepare governance structure and documents
Activity 2.5 Gender-sensitive workshop (combined to the 3rd SC Meeting) to communicate, discuss and endorse the results of the mapping, the guidelines, finalize the list of cultivars and design a prospecting/ collection plan.		Training workshop designed and then completed in November 2017, in Samoa. Tentative list of participants has been drafted and prop	Further training of others involved in prospecting to be completed ahead of missions.
Activity 2.6 Validation of the guidelines, protocols, list and plan of prospecting by the 3rd SC. Preparation of the workplan for year 2.		Validation completed in December 2017 in PNG after 3rd SC meeting	- Prospecting missions to be planned in detail in Q2 Y3 - Prospecting missions in Fiji and Samoa, collecting in PNG
Activity 2.7a Official presentation of the project at the 7th Governing Body Session of the Treaty		- Bioversity made a presentation at the governing body meeting with regard to the PNG genebank and the complementary Darwin-Initiative funded work. - ITPGRFA interacted virtually with delegates at the COGENT SC 2017 meeting - Submitted complementary ITPGRFA BSF proposal to support the transfer of accessions when prospecting work is complete	Follow up meetings with ITPGRFA
Activity 2.7a Official presentation of the project at the 8th Governing Body Session of the Treaty		Not held yet	Will provide a status update to ITPGRFA
Activity 2.8 Preparation of the 3 sites or quarantine areas for the newly collected accessions (nurseries and sanitary issues)		In progress,	Finalise 3 sites preparation by end project
Activity 2.9 Different missions by the mixed teams junior/expert for identification/characterization/collection of endangered cultivars (2 MSc and 1 PhD)		Training done, some work completed in Fiji and PNG	To be completed in year 3
Activity 2.10 Preparing and recording the accessions in CGRD (COGENT database) (1 MSc)		TOR drafted for MSc intern but too late for Y2	Intern to be recruited in Y3 and complete by end project
Activity 2.11 Movement of some of the cultivars to the designated 3 sites			To be done in year 3 for PNG only
Activity 2.12 Workshop with ITEX n°2 and project partners back to back the 4th SC meeting of the project to discuss and present the documents to be endorsed by the SC Meeting of COGENT in 2018 (year 3, Q3) and the PAPGREN network in??			To be done in Y3 and complete by end project
Activity 2.13 Signature of the MOAs and MOU at the final meeting of the project or at the COGENT SC Meeting in 2019/20 (which could be held back to back in the same place in			To be done in Y3 and complete by end project

Project summary	Measurable Indicators	Progress and Achievements April 2017 - March 2018	Actions required/planned for next period
PNG?). Official restitution to the Governments.			
OUTPUT 3. Training and capacity building provided to the staff of the 3 genebanks and to young scientists	3a. One PhD student, is recruited (if candidates comparable in all other respects will consider appointing a female candidate) and begins the thesis work during the first year of the project (preferably to become a coconut breeder working on one of the 3 sites) 3b. At least 6 MSc students (2 for mapping, 1 for Policy, 2 for breeding and 1 for database) are trained in the coconut field by end of project, aiming for at least half of the students to be female if competence available. 3c. At least 9 persons (30% female) of the future staff of the ICG-SP are trained by end of project	The PhD student has been recruited and the topic of the thesis is agreed He has already completed some field work in PNG and contributed to designing and validating the characterisation guidelines. His supervisor has been agreed for a start at the University of Los Banos the Philippines in Aug 2018 Due to budget restriction, the MSc student in policy was not maintained. One Master student in tissue culture is also identified, replacing the Master student in breeding (change accepted by Darwin). The student for the database and the mapping will be identified in the coming month. The MScs for climate change and mapping studies will be trained in year 3 instead of year 1 (see change request).	PhD student to attend formal research programme and use facilities at ULBP Aug 2018 The 4 MSc students still to be trained.
Activity 3.1 Training the ICG staff (gender equitable) Activity 3.2 One PhD student to participate to the project and to be employed by the ICG,(preferably female) Activity 3.3 1 MSc students to support the ITEX n°1 (breeding and collection) Activity 3.4 1 MSc student to support the ITEX n°2 Activity 3.5 2 MSc student to support to mapping Activity 3.6 1 MSc student to support database CGRD		Same as above for students. Part of the he training session for the genebank staff was organized back to back to the next workshop, possibly in Samoa.	Training in controlled hand pollination and some other aspects of genebank management to be organised in Y3, and comprising some virtual training and some face to face training, also synergising with CIDP project

16 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
Impact: Coconut stakeholders and scientists have used and have had better access to wider genetic diversity, facilitating new breeding outputs, ultimately benefitting at least 10 million people within the Asia-Pacific.			
Outcome: (Max 30 words) Critical knowledge, capacities and approaches developed to conserve endangered, critical coconut germplasm from Fiji, Samoa, and PNG, ensuring a stable future for coconut breeding and production	0.1 One regional and three national maps of the most endangered zones for coconut cultivars in Fiji, Samoa and PNG regarding sea-level rise and climate change are available to women and men coconut scientists and policy makers by the end of year 3 of the project 0.2 There is an agreement by the project SC, on a standardized methodology to collect, identify, characterize and register new accessions for COGENT members (at a global level) at the beginning of year 3 of the project, with an awareness of gendered trait preferences 0.3 The number of conserved accessions in the Pacific Genebank has increased by 10% (between 5 to 10 new accessions have been identified and recorded in the CGRD database) by the end of the project 0.4 At least 9 Genebank staff (30% female) from Fiji, Samoa and PNG are trained to manage the genebank according to the rules of the multilateral system, supported by the ITPGRFA and according to the technical guidelines recommended by COGENT in year 3 0.5 The creation of the multi-site genebank is ratified by the end of the project with	0.1. Maps published on the COGENT and SPC websites during third year of the project 0.2. Published guidelines for collecting new accessions on the COGENT Website 0.3. Genebank records (# Pacific accessions recorded in the Coconut Genetic Resources Database, (CGRD) before and after the project 0.4a Training certificates /records of women and men staff operating in genebanks (or nurseries to prepare the genebanks) are available online on the COGENT website (page of the regional genebank) 0.4b An MOU is signed within the 3 genebanks to define and agree their governance and collaboration 0.5. MOAs signed and registered at FAO and the Secretariat of the ITPGRFA 0.6 List of COGENT members on the Website before and after the project	• Policy makers, Ministries of Agriculture and private sector bodies have gender-equitable access to coconut production climate-change scenarios and the corresponding risks, so they can better manage/anticipate the protection/erosion of the biodiversity • The maps will help in rationalizing the 5 COGENT ICGs • COGENT member countries will share a methodology to increase the number of accessions in the genebanks network • Women and men trained staff aware of the multilateral system will help in improving the exchange between genebanks at regional and international levels • More comprehensive conservation will lead to wider use and improved coconut livelihoods • The Pacific Region will be more involved in the Global Conservation Effort for future generations • Assuming fully comprehensive gender-equitable partner engagement beyond the project life • There will be no legal/diplomatic insurmountable constraints regarding the MOAs and MOU preparation and signature • Any phytosanitary risk will be effectively addressed and not impact on germplasm transfer, from collection and distribution.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
	signed MOAs between the 3 countries and Bioversity International/COGENT or SPC and FAO/ITPGRFA		
Outputs: 1. Maps and models of current and future threatened coconut cultivated areas in the Pacific have been made available on the COGENT and SPC Websites	1.a Four Maps and models to predict the impact of future climate change on the target counties' "coconut ecosystem" accessible on the COGENT, CIRAD and SPC websites by the end of year 3 1b 2 to 3 journal publications of new methodology available to predict the evolution of coconut production areas in the future due to climate change by the end of project	1a: check COGENT and SPC Websites 1b: article(s) published online in open access	• Maps will be meaningful, accurate, understandable, compatible with local systems, accessible, usable and used • Uncollected diversity in less-endangered zones will not be wiped out before it has been conserved • That the prediction tool will be sufficiently accurate and simple to be used and implemented by a great number of gender-balanced stakeholders such as policy makers, NGOs, private sector
2.An effective, gender-sensitive coconut germplasm management plan for the Asia Pacific developed	2a: gender-balanced ITEx n°1 – one proposed guidelines for the choice of Pacific cultivars to be preserved by the end of the third year (also relevant to cultivar choice elsewhere) 2b. ITEx n°1 publishes one list of all the cultivars currently preserved and to be preserved (not only endangered) in the ICG-SP following the Global Strategy of COGENT. 2c. By mid-year 3, one overall prospecting/collection plan (3 country subsections) is designed by ITEX n°1 based on the results of the mapping 2d.Between 5 and 10 accessions moved by genebank staff and/or collecting teams to a nursery at one of the 3 sites of the ICG-SP by the end of the project 2e. ITEX n°2 prepare the MOU to organize the governance within the 3 sites of the	2a. Guidelines are published, available on COGENT website in several languages during year 3 2b. The cultivar lists for the 3 sites will be published in a scientific article and on the institutions' Websites (about 60 cultivars should be on the list) 2c. A report on the plan (strategy) of collect is published on the COGENT and SPC websites 2c. Mission report of the mixed teams junior/senior experts available on the COGENT and SPC Websites 2d. consultation of the CGRD: at least 5 new accessions are recorded and well documented 2e. MOU signed between the 3 managers of the genebanks	• COGENT member countries will have access to the guidelines, methodology and selection criteria and they apply it in their own countries • That as much as possible representative diversity has been identified and will be conserved • data are easily accessible to all and safeguarded • The coconut biodiversity preserved in the 3 sites is secured by the signature of MOAs and the genebanks have a clear governance system at the regional level • That the isolated nature of the genebank locations will not be a disincentive to staff remaining to work there.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
	genebanks by the end of year 3, with gendered considerations 2f. ITEX n°2 prepare the MOAs to be signed between the different institutions (local research institutions or Government, Bioversity International/COGENT, SPC, and FAO/Treaty) by the end of year 3, MoAs to include gendered considerations where appropriate.	2f. MOAs are signed by the end of the project and published on the COGENT and SPC Websites	
3. Training and capacity building provided to the staff of the 3 genebanks and to young scientists	3a. One PhD student, is recruited (if candidates comparable in all other respects will consider appointing a female candidate) and begins the thesis work during the second year of the project (preferably to become a coconut breeder working on one of the 3 sites) 3b. At least 6 MSc students (2 for mapping, 1 for Policy, 2 for breeding and 1 for database) are trained in the coconut field by end of project, aiming for at least half of students to be female if competence available. 3c. At least 9 persons (30% female) of the future staff of the ICG-SP are trained by end of project	3a. A document is describing the thesis topic and workplan + report of the SC of the first year of the PhD student. 3b. MSc reports published on COGENT Website (6) 3b. Scientific articles are published in open access journals (1 or 2) 3c. Certificate of training of staff (at least 9 persons, with declared gender balance)	• That young breeders will contribute expected breeding outputs • That the breeder will build the capacity of other men and women in the Pacific Region • Masters students will participate in future coconut GR projects and disseminate coconut GR knowledge • That capacity will be effectively built and harnessed, in a gender-equitable manner • The ICG will begin to put in place internal procedures to share germplasm internationally

Activities (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)

Output 1

1.1 Kick-off meeting with the partners, back to back to a first SC meeting, aiming for best gender balance

1.2 State of the art on the climate change threats and GIS in the South Pacific countries. Search for climate change and sea level rise forecast in the future 40 years. Search for mapping of current or past coconut palm plantings at any scale. (2 MSc)

1.3 If not available creation of a map of the coconut cultivation area in the countries targeted by the project

1.4 Creation of the maps of the current and future endangered coconut cultivated areas in the Pacific.

Output 2

2.1 Establishment and validation of the ToRs of the 2 International teams of Experts (ITEx) by the SC, aiming for best gender balance

2.2 Constitution of the two gender-balanced ITEx and recruitment of the experts (contract's signature with the corresponding institutions (LoAs))

2.3 ITEx n°1 builds a protocol and write guidelines for the identification/characterization/collection and transport of the new accessions (1 PhD). The team also make a list of the current and potentially interesting cultivars for the international collection

Project summary	Measurable Indicators	Means of verification	Important Assumptions
2.4 State of the art and revision of the status of the current ICG-SP by the ITEx n°2 and preparation of the documents for prospecting/collecting missions and subsequent governance (1 MSc) 2.5 Gender-sensitive workshop (combined to the 3rd SC Meeting) to communicate, discuss and endorse the results of the mapping, the guidelines, finalize the list of cultivars and design a prospecting/ collection plan. 2.6 Validation of the guidelines, protocols, list and plan of prospecting by the 3rd SC. Preparation of the workplan for year 3. 2.7 Official presentation of the project at the 7th Governing Body Session of the Treaty 2.9 Preparation of the 3 sites or quarantine areas for the newly collected accessions (nurseries and sanitary issues) 2.8 Different missions by the mixed teams junior/expert for identification/characterization/collection of endangered cultivars (2 MSc and 1 PhD) 2.10 Preparing and recording the accessions in CGRD (COGENT database) (1 MSc) 2.11 Movement of some of the cultivars to the designated 3 sites 2.12 Workshop with ITEX n°2 and project partners back to back the 4th SC meeting of the project to discuss and present the documents to be endorsed by the SC Meeting of COGENT in 2018 (year 3, Q3) and the PAPGREN network in?? 2.13 Signature of the MOAs and MOU at the final meeting of the project or at the COGENT SC Meeting in 2019 (which could be held back to back in the same place in PNG?). Official restitution to the Governments. Output 3 3.1 Training the ICG staff (gender equitable) 3.2 One PhD student to participate to the project and to be employed by the ICG,(preferably female) 3.3 1 MSc students to support the ITEX n°1 (breeding and collection) 3.4 1 MSc student to support the ITEX n°2 3.5 1 MSc student to support to mapping 3.6 1 MSc student to support database CGRD			

Annex 3: Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Gender of people (if relevant)	Nationality of people (if relevant)	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
1A	PhD student to be hired by the South Pacific genebank	M	PNG	0	1		1	1
2	MSc students		Fijian and Samoan	0	0		0	4
5	Genebank curators		PNG, Fiji, Samoa	0	3		3	3
6A	Genebank staff		PNG, Samoa, Fiji	0	29		29	9
6B	Training on characterization and data management and storage			0	10		10	9
7	Guidelines for collection, video to illustrate collecting method, maps of the coconut production area, posters on the 3 genebanks			0	1		1	4
14A	1 workshop and 1 seminar			1	3		0	6
14B	Presentation of the project in seminars/Conference…			3	2		5	8
20	Value of computers and material for collects (GPS, tablets…)			0	??			9000 GBP
21	COGENT sub-network and/or 1 group of curators of the 3 genebank will be formed.			0	0		0	1

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
Inception Meeting report	Report	Johnson V. and Prades A.	M & F	English and French	Bioversity International, Rome, Italy	Bioversity/COGENT
Short Meeting report in Bangkok, Thailand	Report	Prades A.	F	French	Bioversity International, Rome, Italy	Bioversity/COGENT
Priority accessions of the South Pacific Regional Coconut Genebank	Report	Ovasuru, T., based on a report of Baudouin, L.	M & M	Papua New Guinean and French	KIK, Port-Moresby	KIK and CIRAD
3rd SC Meeting report	Report	Johnson V. and Prades A.	M & F	English and French	Bioversity International, Rome, Italy	Bioversity/COGENT

Checklist for submission

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

Commented [JV(2]: Brenda