



ADAPTATION FUND

REQUEST FOR PROJECT/PROGRAMME FUNDING FROM THE ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

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PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category: *REGULAR PROJECT/PROGRAMME*

Country/ies: *Papua New Guinea (Enga, Milne Bay, and New Ireland)*

Title of Project/Programme: *Adaptation of Small-Scale Agriculture for improved food security of resilient communities in Papua New Guinea (ASSA)*

Type of Implementing Entity: *Regional Implementing Entity (RIE)*

Implementing Entity: *The Pacific Community (SPC)*

Executing Entity/ies: *Department of Agriculture and Livestock / SPC Land Resource Division*

Amount of Financing Requested: *9,998,879* (in U.S Dollars Equivalent)

Project / Programme Background and Context:

Provide brief information on the problem the proposed project/programme is aiming to solve. Outline relevant climate change scenarios according to best available scientific information. Outline the economic social, development and environmental context in which the project/programme would operate.

1.1. Context

The Independent State of Papua New Guinea (hereafter PNG) covers the eastern part of the island of New Guinea, four large provincial islands and over 600 smaller islands expanding over 800,000 km² of the south-western Pacific Ocean. PNG is largely mountainous, and much of its land surface is covered with tropical rainforest. It is ranked as the third-largest tropical forest area in the world after the Amazon and Congo basins. The country harbors 13,634 species (68% endemic), 1,742 genera, and 264 families, making New Guinea the most floristically diverse island in the world¹. Terrestrial habitats range from extensive lowlands with rainforest, savanna, grassland, and freshwater swamps to upland montane rainforests and alpine grassland². As well as its biological diversity, PNG is also a country of exceptional ethnic diversity. The

¹ Cámara-Leret et al. (2020) New Guinea has the world's richest island flora. *Nature* 584, 579–583.

² World Bank, GFDRR and Climate Investment Funds. 2011. "Climate risk and adaptation country profile for Papua New Guinea."

population speaks nearly 850 distinct languages³. The indigenous population of PNG is one of the most heterogeneous in the world, comprising several thousand separate communities and tribal groups. More than 80% of the population of 8 million people live a traditional rural subsistence lifestyle that is supported by the biological richness and diversity of the forests, inland waters and coastal seas⁴. The agriculture sector supplies 83% of food energy and 76% of protein to the population's nutritional needs⁵. An estimated 85% of the country's labor force is absorbed by the economically important agricultural sector, which accounted for 28% of GDP in 2018⁶.

1.2. Exposure of agriculture to climate risks in the project area

Of the 46.9 million hectares of total land area, only 30% is suitable for agriculture due to mountainous land with steep slopes, poor soils, low temperatures, high rainfall pattern, a prolonged dry season, and excessive cloud cover⁷. Nevertheless, the PNG economy is dominated by two sectors: the agricultural, forestry, and fishing sector and the minerals and energy extraction sector⁸. Most of the rural population is involved in producing staple foods (sweet potato, taro, cocoyam, swamp taro, coconut and other vegetables) as well as cash crops (coffee, cocoa, oil palm) and other forms of income-earning activities to purchase foods that they do not produce themselves.

Enga, Milne Bay and New Ireland are among the provinces with the highest population growth rate in PNG with 3.1%, 2.5%, and 3.5% per year, respectively⁹. With limited options for expanding crop areas to meet the food demand of the growing population, cultivated areas in the provinces are subject to high land-use intensity¹⁰¹¹¹². Increased soil nutrient deficiency due to the shortening of fallow periods, slash and burn practices and soil erosion constraint agricultural production in these provinces¹³¹⁴.

In Enga, the second most rugged province of the country, with an altitude up to 4,276 meters, the limit of cropping is at around 2,100 meters of altitude for coffee, which is the main cash crop of the province¹⁵¹⁶. In addition, sweet potato cropping using drainage, composting, and mounding practices dominates the valley, plateau, and mountain areas. Respectively located in the northeast and southeast of PNG, New Ireland, and Milne Bay have relatively diversified agriculture. There, coconut is an important crop. Sago with either sweet potato, yam, taro, or cassava are dominant staple crops, cultivated with moderate to low intensity combined with fallow periods. In New Ireland, limestone soils subjected to rapid fertility decline, steep slopes, and frequent cloud coverage are the main constraints to agricultural production, while flooding and steep slopes limit the land potential in Milne Bay province.

While 80–90% of households in Enga, Milne Bay, and New Ireland provinces remain dependent on subsistence agriculture¹⁷, continuous cropping practices diminish the resilience of cropping systems and rural communities to changing climate. The vulnerability index of PNG's food systems significantly increased

³ <https://www.economist.com/the-economist-explains/2017/07/20/papua-new-guineas-incredible-linguistic-diversity>

⁴ UNDP, 2018. National Adaptation Plan process in focus: Lessons from Papua New Guinea.

⁵ Bourke R, Harwood T (2009) Food and agriculture in Papua New Guinea

⁶ Department of Agriculture and Livestock (2020). Agriculture medium term development plan 2020 - 2022.

⁷ Government of Papua New Guinea (2018). Papua New Guinea's First Biennial Update Report to the UNFCCC.

⁸ World Bank (2018) The World Bank in Papua New Guinea. Available at <http://www.worldbank.org/en/country/png/overview>.

⁹ McMurray & Lavu (2020). Provincial estimates of key population groups 2018-2022.

¹⁰ Asian Development Bank (2016). Papua New Guinea: Rural Primary Health Services Delivery Project. Due Diligence Report. Enga Province.

¹¹ Saunders J.C. (1993). Agricultural Land Use of Papua New Guinea, Explanatory Notes to Map. PNGRIS Publication No.1, November 1993.

¹² World Bank (2019). Environmental and Social Baseline Report and Impact Assessment for the PNG Agriculture Commercialization and Diversification Project (PACD).

¹³ Bailey et al (2009). An evaluation of nutritional constraints on sweet potato (*Ipomoea batatas*) production in the central highlands of Papua New Guinea. *Plant Soil* 316, 97–105. <https://doi.org/10.1007/s11104-008-9762-6>

¹⁴ Hanson et al. (2001). Papua New Guinea Rural Development Handbook. The Australian National University, Canberra.

¹⁵ <https://en-us.topographic-map.com/maps/9ouf/Enga/>

¹⁶ Hanson, L.W., Allen, B.J., Bourke, R.M. and McCarthy, T.J. (2001). Papua New Guinea Rural Development Handbook.

¹⁷ NSO and ICF. (2019). Papua New Guinea Demographic and Health Survey 2016–18.

from 0.617 in the period 1995–2005 up to 0.666 between 2010–2019. Indeed, preliminary assessments show that Enga, Milne Bay, and New Ireland provinces are highly exposed to rising temperatures, changes in rainfall patterns, the occurrence of drought, and sea-level rise with potentially adverse implications for agriculture^{19,20,21}.

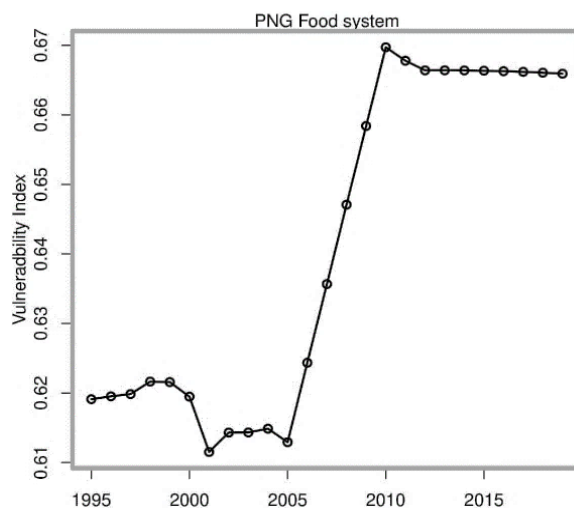


Figure 1: Vulnerability index of PNG' Food system from 2015 to 2019 (data from Notre Dame Global Adaptation Initiative)

1.2.1. Increasing temperature

Temperatures in PNG have increased during the 20th century, with minimum and maximum air temperatures increasing by an average of 0.2 °C per decade up to 1999²². Historical records for New Ireland show an increase in the annual temperature trend at the provincial capital Kavieng since 1962 with a more pronounced increase in minimum temperature (Figure 2)²³.

Average monthly temperatures in PNG are projected to increase by 0.9°C by 2030^{24,25}. Climate Research Unit (CRU) datasets from 1968–2018 show a significant increase in annual temperature, with up to 0.011°C/year observed in the Eastern Enga province²⁶ (Figure 2). Temperatures are projected to continue to increase, with warming of 0.4–1°C by 2030 and 1.1–1.9°C by 2050 under a business-as-usual scenario in New Ireland, Enga and Milne Bay^{27,28}. The projected rate of change in the maximum and minimum temperatures will be 0.2–1.4°C and 0.2–1.7°C in the western and eastern half of PNG per decade²⁹.

¹⁸ Notre Dame Global Adaptation Initiative. <https://gain.nd.edu/our-work/country-index/>

¹⁹ Global Green Growth Institute (2021). *Climate-Resilient Green Growth in Enga Province*

²⁰ Global Green Growth Institute (2021). *Climate-Resilient Green Growth in Milne Bay Province*

²¹ Global Green Growth Institute (2021). *Climate-Resilient Green Growth in New Ireland Province*

²² Bourke, R.M., Humphreys, G. and Hart, M. (2002). *Warming in Papua New Guinea: some implication for food productivity*. Unpublished paper.

²³ Allen, Bryant and R. Michael Bourke (2009) "People, Land and Environment." In *Food and Agriculture in Papua New Guinea*, edited by R. Michael Bourke and Tracy Harwood, 28–127. Canberra: Australian National University (ANU) E Press, The Australian National University.

²⁴ BoM and CSIRO. (2014). *Climate Variability, Extremes and Change in the Western Tropical Pacific: New Science and Updated Country Reports*. Chapter 11: Papua New Guinea. Melbourne, Australia: Pacific-Australia Climate Change Science and Adaptation Planning Program Technical Report, BoM and CSIRO.

²⁵ Allen, Bryant and R. Michael Bourke (2009). "People, Land and Environment." In *Food and Agriculture in Papua New Guinea*, edited by R. Michael Bourke and Tracy Harwood, 28–127. Canberra: ANU E Press, The Australian National University

²⁶ Sekac et al. (2020). *Temperature Variability and Trends Assessments parts of Highland and Momase region of Papua New Guinea*. *International Journal of Advanced Science and Technology* Vol. 29, No. 7, pp. 323-341

²⁷ D'Haeyer et al. (2017). *Climate Risk, Vulnerability and Risk Assessment in the New Ireland Province in Papua New Guinea—Province and District Profile*. Antwerp, Belgium.

²⁸ World Bank (2020). *Papua New Guinea. Climate Data—Projections*. Climate Change Knowledge Portal. World Bank Group.

²⁹ Michael P.S. (2019). *Current evidence and future projections: a comparative analysis of the impacts of climate change on critical climate-sensitive areas of Papua New Guinea*. *SAINS TANAH – Journal of Soil Science and Agroclimatology*, 16(2), 229-253.

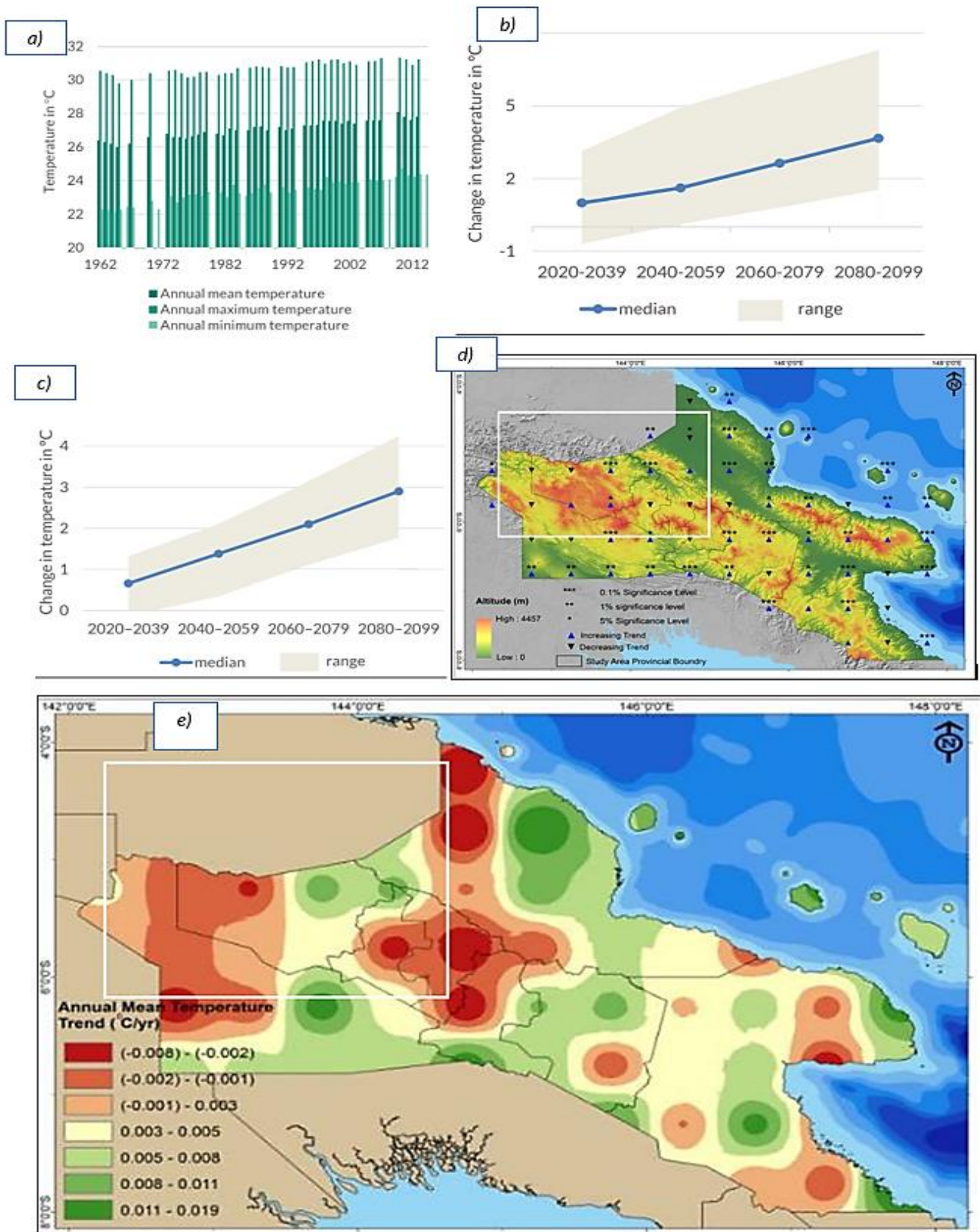


Figure 2: Historical annual temperatures in Kavieng, New Ireland Province (a); Projected change in maximum daily temperature in Enga Province (2020–2099) (b); Projected change in maximum daily temperature in Milne Bay Province (2020–2099) (c); Annual mean temperature trend (d) and spatial distribution of the magnitude of change in $^{\circ}\text{C}/\text{year}$ at PNG' Highland including Enga province from 1968 to 2018 (e) (Allen et al. 2009; Sekac et al., 2020)

1.2.2. Changes in rainfall

Changes in rainfall patterns in PNG over the past 30 years are less clear. Between 1988 and 2018, a survey on changing rainfall in rural communities of coastal and highland areas showed that villagers translate changes in rainfall patterns into less predictable seasonal rainfall, more intense rain events that divert rivers, break riverbanks and damage food gardens in the highlands, and an overall increase or decrease in rainfall in some locations³⁰. A significant decrease in annual rainfall of between -0.3 mm/year and -2.0 mm/year was observed in western Enga while a significant increasing trend was observed in the total rainfall between November and April (wet season) from 1968 to 2018³¹.

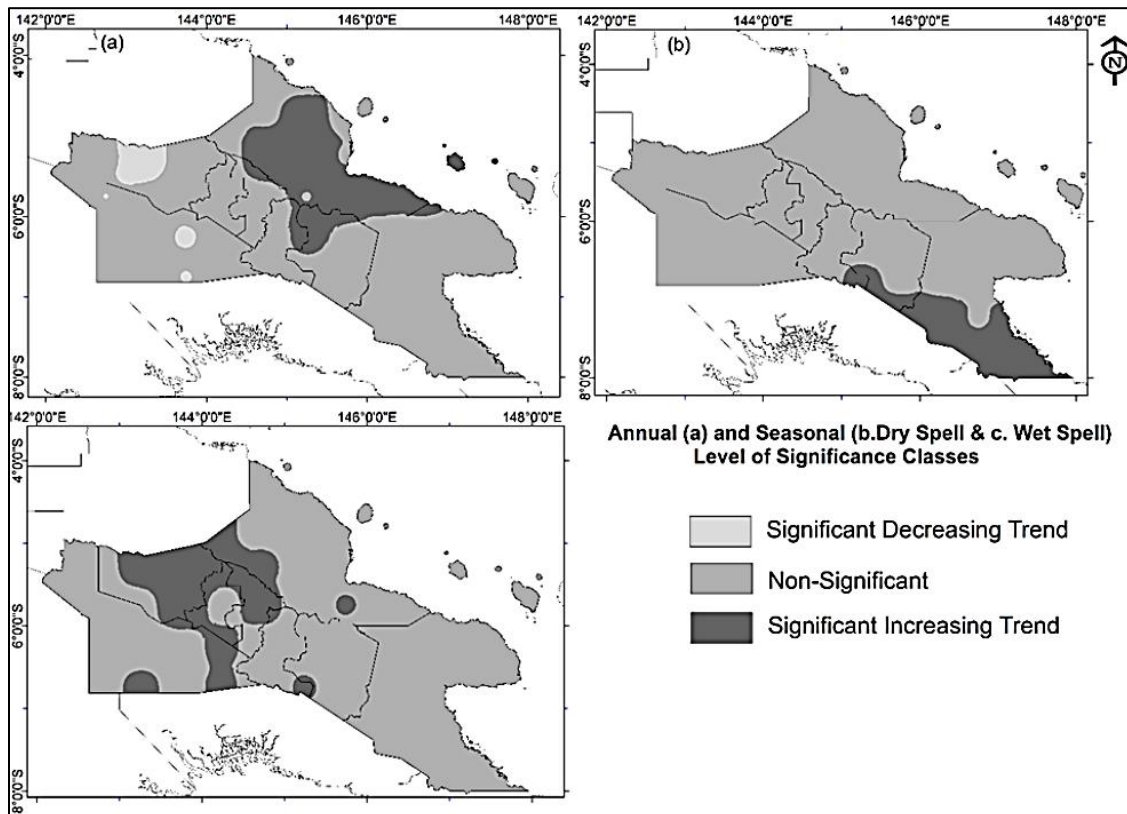


Figure 3: Spatial distribution of rainfall trend significance considering annual (January – December) (a), Dry season (November to Following year April) (b), Wet season (May – October) (Sekac et al. 2021).

PNG experienced five major flooding events in 1894, 1907, 1921, 1943 and 1998³². Future rainfall patterns are uncertain as the range of projections is large and the direction is not clear³³, but there is high confidence in increased frequency and intensity of extreme rainfall³⁴. Model ensembles project increases in both the intensity of high rainfall events and the frequency of wet days^{35,36}. There is medium confidence concerning projected increases of annual precipitation³⁷. Greater variation in rainfall is expected between

³⁰ Bourke R.M. (2018). *Impact of climate change on agriculture in Papua New Guinea*

³¹ Sekac et al. 2021. *Spatio-Temporal Assessments of Rainfall Variability and trends in the Highlands to Coastal Region of Papua New Guinea. International Journal of Geoinformatics, Volume 17, No. 3.* <https://doi.org/10.52939/ijg.v17i3.1893>

³² Cobon et al. (2016). *Food shortages are associated with droughts, floods, frosts, and ENSO in Papua New Guinea. Agricultural Systems 145 (2016) 150–164*

³³ Mimura et al. 2007. *Small Islands. In Climate Change 2007. Impacts adaptation and Vulnerability, M; Parry et al. (Eds). Cambridge University Press, 687-716.*

³⁴ Lafale et al. (2018). *Effects of climate change on extreme events relevant to the Pacific Islands. Science Review 2018: 50–73.*

³⁵ World Bank, (2016). *Climate and Disaster resilience*

³⁶ CCKP. (2021). *Climate Data: Projections.*

³⁷ Lafale et al. (2018). *Effects of climate change on extreme events relevant to the Pacific Islands. Science Review 2018: 50–73.*

wet and dry months with more intense rainfall in the wettest periods. This can be dramatic for provinces such as Milne Bay where soil water surplus is preponderant and coexists with soil water deficit (figure 4).

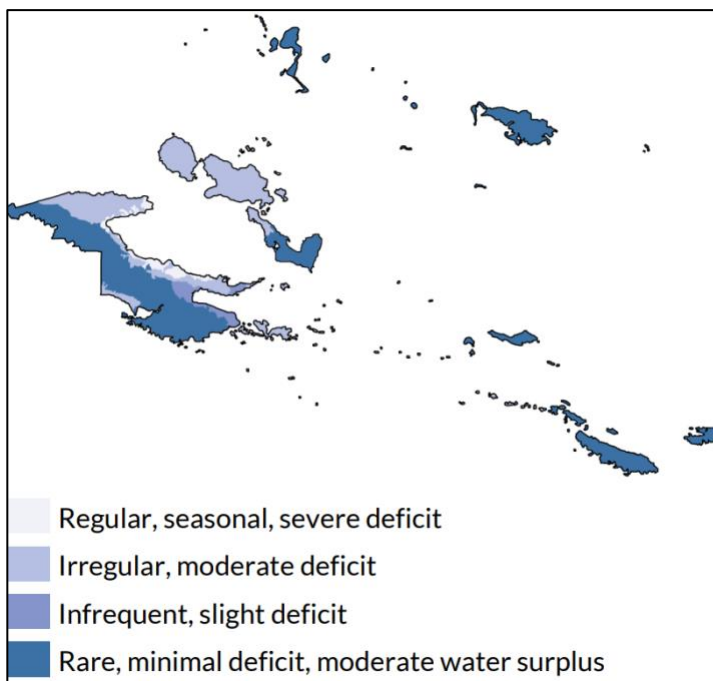


Figure 4: Soil water deficit and surplus in Milne Bay Province (Allen and Bourke, 200938; GGGI, 202139)

1.2.3. Occurrence of drought

Between 1890 and 2009, there were 15 widespread droughts in PNG with 13 of them associated with El Niño events⁴⁰. While there is uncertainty around the changes to the El Niño Southern Oscillation (ENSO) under future climate change scenarios, projections suggest an increase in the intensity of droughts (particularly above 1,700 meters) in years impacted by ENSO. From 1876 to 2015, five widespread droughts occurred in 1902, 1914, 1941, 1982, 1997, all with severe impacts. In 1997 and 1941, more than 80% of PNG received less than 10th percentile rainfall and were the worst droughts PNG has experienced since 1890 in terms of area affected. Two recent drought events in 1997 and 2015 (accompanied by frost at very high altitudes) also had significant impacts on agriculture⁴¹. The project area is prone to drought when considering historical and projected drought in New Ireland (Figure 5a) and drought severity in Enga during 2015 ENSO (figure 5 b).

1.2.4. Sea-level rise

Sea levels in PNG have risen by approximately 7 mm per year since 1993, which is higher than the global average of 2.8–3.6 mm per year⁴². Under all GHG emissions scenarios, sea levels in PNG are expected to

³⁸ Allen, Bryant and R. Michael Bourke (2009), "People, Land and Environment." In *Food and Agriculture in Papua New Guinea*, edited by R. Michael Bourke and Tracy Harwood, 28–127. Canberra: Australian National University (ANU) E Press, The Australian National University

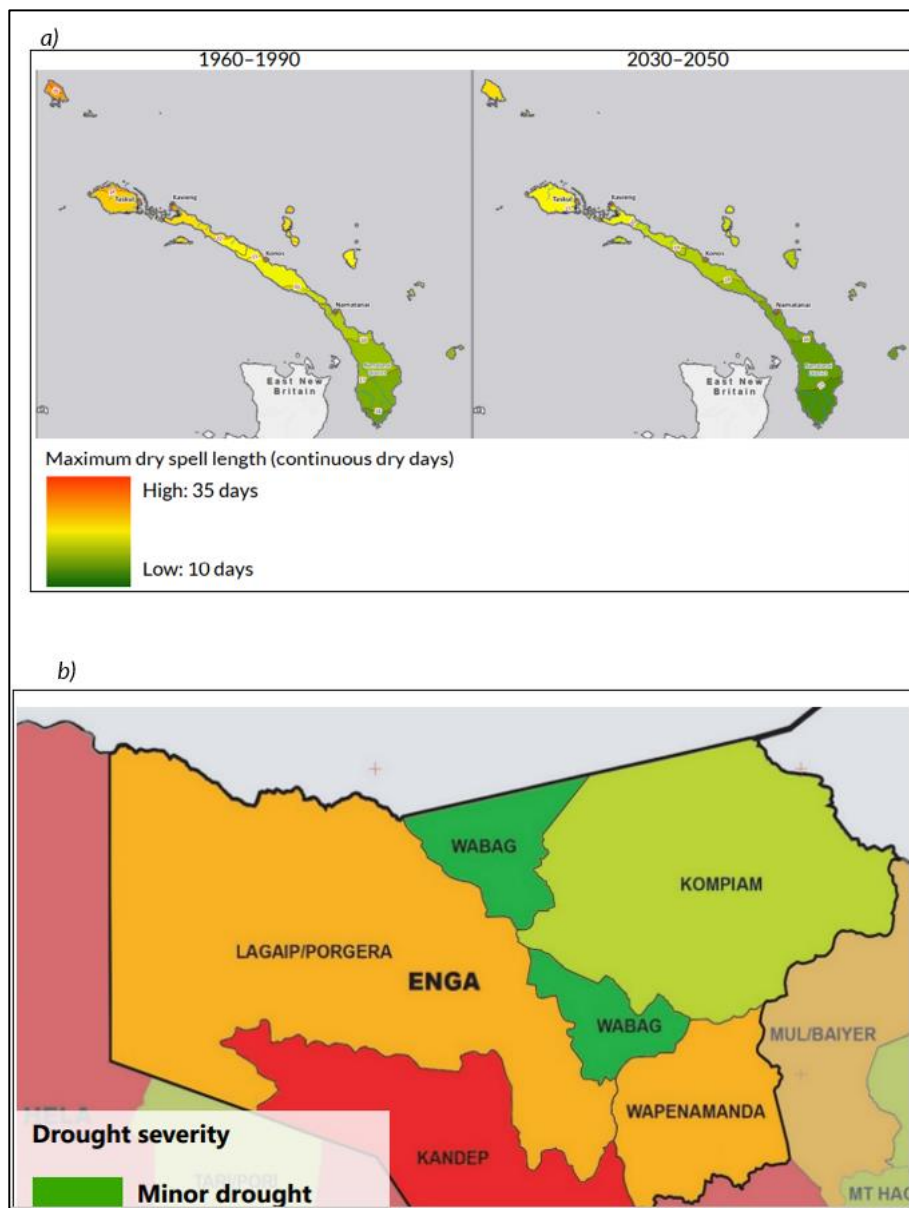
³⁹ Global Green Growth Institute (2021). *Climate-Resilient Green Growth in Milne Bay Province*

⁴⁰ Cobon et al. (2016). Food shortages are associated with droughts, floods, frosts, and ENSO in Papua New Guinea. *Agricultural Systems* 145 (2016) 150–164

⁴¹ Cobon et al. (2016). Food shortages are associated with droughts, floods, frosts, and ENSO in Papua New Guinea. *Agricultural Systems* 145 (2016) 150–164

⁴² Pacific Climate Change Science Program. (2013). *Current and Future Climate of Papua New Guinea*.

rise by 7–17 cm by 2030, 7–34 cm by 2050, and 41–87 cm by 2100^{43,44}, leading to coastal flooding, salinization, and land erosion. Under a business-as-usual scenario, the impacts associated with losses and damages induced by rising sea levels are estimated to cost USD 225 million by 2023 and USD 642 million by 2050⁴⁵, with Milne Bay and New Ireland being particularly affected^{46,47}. Communities depending on taro grown in pits dug in the freshwater lens are particularly vulnerable to intrusion by saltwater associated with sea-level rise. Some reports have indicated that this has already started to happen^{48-49,50}.



⁴³ BoM and CSIRO, "Chapter 11: Papua New Guinea." In *Climate Variability, Extremes and Change in the Western Tropical Pacific: New Science and Updated Country Reports*. Melbourne, Australia: Pacific Australia Climate Change Science and Adaptation Planning Program Technical Report, BoM and CSIRO, 2014.

⁴⁴ World Bank, *Papua New Guinea. Climate Data—Projections*. Climate Change Knowledge Portal. World Bank Group, 2020

⁴⁵ WRI. 2021. AQUEDUCT Global Flood Analyzer. <https://www.wri.org/data/aqueduct-global-flood-analyzer>.

⁴⁶ BoM. 2020. Southern Hemisphere Tropical Cyclone Data Portal.

⁴⁷ Tan, Chenyan and Weihua Fang. "Mapping the Wind Hazard of Global Tropical Cyclones with Parametric Wind Field Models by Considering the Effects of Local Factors." *International Journal of Disaster Risk Science*, 9 (2018): 86–99. <https://doi.org/10.1007/s13753-018-0161-1>

⁴⁸ Legra et al. (2008). Biodiversity consequences of sea level rise in New Guinea. *Pacific Conservation Biology* 14(3) 191 – 199.

⁴⁹ Sherif, M., & Singh, V. P. (1999). Effect of climate change on sea water intrusion in coastal aquifers. *Hydrological Processes*, 13(8), 1277–1287.

⁵⁰ Hussain, M. S., & Javadi, A. A. (2016). Assessing impacts of sea level rise on seawater intrusion in a coastal aquifer with sloped shoreline boundary. *Journal of HydroEnvironment Research*, 11, 29–41. <https://doi.org/10.1016/j.jher.2016.01.003>

Figure 5: Historical and projected drought in New Ireland Province (a), Drought-affected districts in Enga Province during the 2015 ENSO (b)^{51,52}

1.3. Sensitivity of agricultural commodities to new climate conditions

Sweet potato, sago, cassava, taro, yam, and coconut are the important staple food crop while cocoa and coffee are cash crops across Enga, Milne Bay, and New Ireland (Figure 6). Most of these crops are grown in combinations of two or more, typical of village mixed-farming systems, and among them, sweet potato, coffee, and cocoa are examples of climate-sensitive crops.

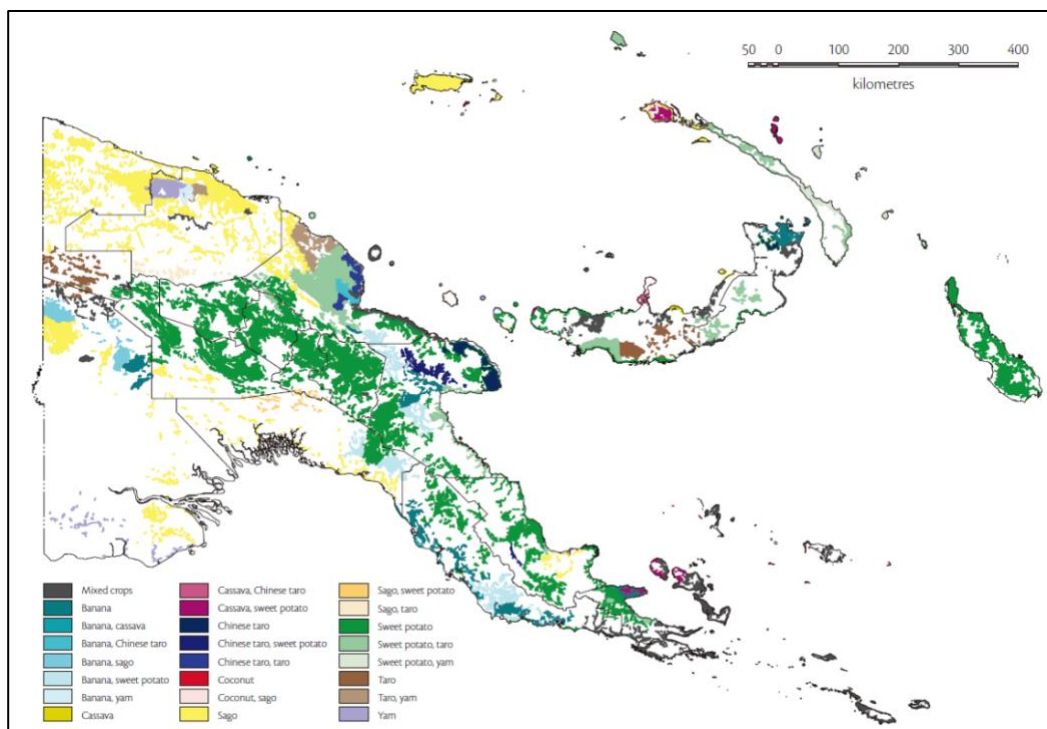


Figure 6: Staple food crop distribution in PNG (<https://tokpisin.info/common-staple-food-crops-papua-new-guinea/>)

As *Sweet potato (Ipomoea batatas L.)* is mainly cultivated by smallholders in the project area, the response of sweet potato to changes in climatic conditions is critically important. Increases in frequency and intensity of extreme rainfall will threaten sweet potato, which is sensitive to waterlogging⁵³. Increased rainfall between November and April is likely to result in yield reductions in the project area. Indeed, excessively high soil moisture reduces tuber yield and is a major cause of food shortages in the PNG highlands⁵⁴. In addition, the increase in intensity and frequency of heatwaves threaten sweet potato production worldwide as heatwaves cause tuberization. Indeed, heat and drought stresses are among the most important climatic events aggravated by climate change that affect sweet potato productivity⁵⁵. Under current and future climate conditions, adoption of cultivars better adapted to high soil moisture conditions, as well as further soil amelioration, including drainage is needed.

Sago (Metroxylon sagu Rottb.) is grown in PNG from sea level to 1,150 m, particularly in moist locations with moving or still water. Sago is a particularly hardy crop. Increases in predicted temperature or rainfall

⁵¹ D’Haeyer et al. (2017) *Climate Risk, Vulnerability and Risk Assessment in the New Ireland Province in Papua New Guinea—Province and District Profile*. Antwerp, Belgium.

⁵² IOM Papua New Guinea, Disaster Management Unit, 2016b. https://www.iom.int/sites/default/files/situation_reports/file/IOM-Sitrep-6-PNG-Drought-Jan25-final.pdf

⁵³ Bourke et al. 2006. *Solomon Islands Smallholder Agriculture Study*. Canberra: Australian Agency for International Development (AusAID).

⁵⁴ Bourke, R.M. (1988). *Taim hangre: variation in subsistence food supply in the Papua New Guinea highlands*. Unpublished PhD thesis.

⁵⁵ Heider et al. (2020). *Intraspecific diversity as a reservoir for heat-stress tolerance in sweet potato*. *Nature Climate Change*.

are unlikely to affect sago productivity⁵⁶. Its production, however, depends on moisture availability, and an increase in drought events is a threat to its sustainable production and thus food security⁵⁷.

Cassava (*Manihot esculenta* L.) is an important food crop in locations that experience a marked dry season each year. It is also an important crop in locations where rainfall is high most months of the year such as in Milne Bay province. Cassava is a particularly hardy crop. While neither an increase in temperature 1°C nor an increase in annual rainfall of 8% is likely to result in a significant reduction in tuber yield, an increase in annual rainfall of 25% may reduce yield⁵⁸.

While taro (*Colocasia esculenta* L.) has declined in importance over the past 80 years, it is well adapted to a wide range of growing conditions. A water-loving crop similar to sago, it is more vulnerable to drought than banana, yam or sweet potato, cassava, and Chinese taro. It is also susceptible to hot and wet conditions that trigger outbreaks of taro blight, caused by the fungus *Phytophthora colocasiae*⁵⁹, which is most severe near sea level. Therefore, an increase in temperature under wet conditions would reduce taro yields because of an increase in taro blight incidence. Taro is widely grown in PNG, but is the most important staple food crop for only 6% of the rural population⁶⁰. The overall impact of climate change on taro production is thus likely to be small given the low significance of taro in PNG.

Yams (*Dioscorea* spp.) are adapted to relatively low rainfall (1,000–2,500 mm/year) and require well-drained soil to produce tubers. Yam is thus highly susceptible to increased rainfall and extreme rainfall events. Therefore, an increase in annual rainfall or a reduction in the number of drier months may reduce tuber yield. Yam yield also declines depending on soil type. Ferruginous soil without concretions seems to be the most sensitive to climate change followed by ferralitic soils and raw mineral soils which accounted for a decline in yam yield of about 48%, 36% and 33%, respectively⁶¹.

Coconut (*Cocos nucifera*) is likely to experience the greatest impact of climate change from sea-level rise. Already palms growing in coastal areas are being destroyed by encroaching sea levels. Further rises in sea level are likely to exacerbate this. Palms were planted decades ago when returns on copra were high, with few nuts being currently harvested because of lower returns. Hence, losses are unlikely to have widespread impacts on coconut production and consumption. The exception is small islands and atolls where coconuts provide a significant proportion of food energy. Given the vulnerability of Milne Bay and New Ireland to sea-level rise, it is likely that loss of palms would negatively affect people’s diets in these provinces.

Projected impacts of climate change on production of staple food crops, export commodities, high-value horticultural crops and livestock in the tropical Pacific are summarized in Table 1.

Table 1: Summary of projected effects of climate change on crop production⁶²

Commodities	Short Term (2030)	Medium-term (2050)	Long term (2090)
Staple food crops			
Sweet potato	Moderate	Moderate	Moderate to high

⁵⁶ Spencer, J. E. (1963). The migration of rice from mainland Southeast Asia into Indonesia. In J. Barrau (Ed.), *Plants and the migrations of Pacific peoples; a symposium*. (pp. 83–89). Honolulu: Bishop Museum Press.

⁵⁷ Toyoda, Y. (2018). Life and livelihood in sago growing areas. In H. Ehara, Y. Toyoda, & D. V. Johnson (Eds.), *Sago Palm: Multiple Contributions to Food Security and Sustainable Livelihoods* (pp. 31–42). Singapore: Springer. https://doi.org/10.1007/978-981-10-5269-9_3

⁵⁸ Bourke, Richard Michael. (2018). Impact of climate change on agriculture in Papua New Guinea. In A. R. Quartermain (Ed.), *Climate Change: Our Environment, Livelihoods, and Sustainability* (pp. 35–50). Papua New Guinea: University of Goroka.

⁵⁹ Putter, C.A.J. (1976). The phenology and epidemiology of *Phytophthora colocasiae* on taro in the East New Britain Province, Papua New Guinea. Unpublished M Agric thesis, University of Papua New Guinea, Port Moresby.

⁶⁰ Allen, B.J. and Bourke, R.M. (2009). Part 1. People, land and environment. In *Food and Agriculture in Papua New Guinea*. R.M. Bourke and T. Harwood (eds). <http://press-files.anu.edu.au/downloads/press/p53311/pdf/part11.pdf>

⁶¹ Sivrastava et al. (2012). The impact of climate change on Yam (*Dioscorea alata*) yield in the savanna zone of West Africa. *Agriculture, Ecosystems and Environment*

⁶² Bell J and Taylor M. (2015). *Building climate-resilient food systems for Pacific Islands*. WorldFish. Program Report: 2015-15.

Cassava	Insignificant to low	Low to moderate	Low to moderate
Taro	Low to moderate	Moderate to high	High
Cocoyam	Insignificant to low	Low	Low to moderate
Swamp taro	Moderate to high	High	High
Giant taro	Insignificant to low	Low	Low
Domesticated yams	Moderate to high	High	High
Wild yams	Insignificant to high	Low	Low
Breadfruit	Insignificant to low	Low to moderate	Low to moderate
Cash crops			
Banana	Low	Low to moderate	Low to moderate
Bele (aibika)	Low	Low to moderate	Low to moderate
Coconut	Low	Low to moderate	Low to moderate
Coffee	Moderate	High	High
Cocoa	Low	Moderate	Moderate to high
Oil palm	Insignificant	Low	Low
Sugar	Low	Low to moderate	Moderate
High-value horticulture crops			
Papaya	Low to moderate	Moderate to high	High
Mango	Low to moderate	Moderate	Moderate to high
Citrus	Insignificant to low	Low	Low
Pineapple	Insignificant	Low to moderate	Low to moderate
Watermelon	Low to moderate	Low to moderate	Moderate
Tomato	Moderate	Moderate to high	Moderate to high
Vanilla	Insignificant	Low to moderate	Low to moderate
Ginger	Insignificant to low	Low to moderate	Low to moderate
Kava	Low	Moderate	Moderate
Betel nut	Insignificant to low	Low	Low

1.4. Vulnerability to climate change in agriculture

Agriculture is most vulnerable to extreme weather conditions including excessive rainfall, drought and frost associated with drought in areas higher than 1,800 meters above sea level⁶³. PNG experienced intense ENSO events in 1997/98 and 2015/16 that caused a prolonged drought that led to food insecurity for nearly 1 million people⁶⁴.

Projected changes in rainfall and temperature suggest that PNG will face hotter days and drier dry seasons in 2000–2050. Higher temperatures resulting will likely result in more heat stress with associated crop pests and post-harvest losses, significantly reducing yields of important staples and negatively impacting food security. For sugarcane, the decline in yield due to climate change is projected to be relatively small. Nevertheless, planting improved sugarcane varieties is projected to increase yields by 5.5%. For rainfed taro, projected yield losses due to climate change in 2050 are expected to be 13%, compared to yields recorded in 2000. In comparison, projected sweet potato losses are expected to be 11% under similar scenarios. However, adaptation through planting of optimal cultivars cuts the expected losses by nearly half

⁶³ Government of Papua New Guinea. 2014. PNG's Second National Communication submitted to the UNFCCC.

⁶⁴ Allen and Bourke. 2009. *The 1997-98 drought in Papua New Guinea failure of policy or triumph of the citizenry? Policy Making and Implementation. Studies from Papua New Guinea.* ANU Press. Australian National University.

under projected climate change scenarios. Other responses and mitigating actions include novel farming techniques such as mounding, terracing, mulching, ditching, draining, and irrigation systems.

While for most crops the addition of nitrogen results in substantial increases in yields under climate change conditions, the opposite is the case for rice. Increased nitrogen use in rice cultivation increases the sensitivity of rice to the impacts of climate change resulting in reduced yields. For example, comparing worst (pessimistic) and best (optimistic) climate change scenarios, rainfed rice yields increases by 5.0–11.7% with the application of nitrogen at low rates, while high rate of nitrogen application decreases corresponding projected yields by between -2.5% to -0.4%. Projected yield losses of staple crops such as sweet potatoes and taro are in the range of 6–13% as compared with 2000 (Table 2).

Table 2: Percentage change in crop yields projected in 2050 as compared with 2000 crop yields in PNG⁶⁵

Crop	Optimal cultivar and planting ⁶⁶			
	Low rate of nitrogen application ⁶⁷		High rate of nitrogen application ⁶⁸	
	Worst case	Best Case	Worst case	Best Case
Rice				
Irrigated	5.5	12.4	-1.1	0.9
Rainfed	5.0	11.7	-2.5	-0.4
Sweet potatoes				
Rainfed	-4.7	-1.2	-9.0	-5.6
Taro				
Irrigated	-0.5	4.5	-2.3	0.3
Rainfed	0.1	3.6	-4.5	-1.7
Sugarcane				
Rainfed	-2.1	3.4	-2.1	3.4

1.5. Barriers of the agricultural sector in PNG

The impacts of climate change are expected to exacerbate existing barriers currently hampering PNG's agricultural sector. Indeed, according to the Agriculture Medium Term Development Plan 2018–2022⁶⁹, the agriculture sector is facing several challenges and issues, most of which have existed since independence in 1975. This project will address challenges in the agricultural sector that are exacerbated under the changing climate and by doing so, create a favorable operating environment for increased productivity and income-generation within this sector.

1.5.1. Barriers related to food security

The existing mismatch between national food production and food demand may be worsened by the yield decline induced by climate change. At least 70% of smallholder farmers living in rural areas grow crops for personal consumption and sell surplus for income⁷⁰. Therefore, food security is vulnerable to climate shocks adversely affecting local food production. Between 800,000 to 1.2 million villagers suffered food shortage after droughts (combined with frost at high altitudes) that occurred in 1997 and 2015⁷¹.

⁶⁵ Rosegrant et al. (2015). Climate change, food security, and socioeconomic livelihood in pacific islands. ADB, IFPRI.

⁶⁶ Cultivars and planting months were those that gave the highest yields for the indicated year. Sugarcane, and sweet potato have similar yields in rainfed and irrigated fields, so results for the irrigated crops were excluded from this table

⁶⁷ Low fertilizer application rate = 10 kilograms of nitrogen per hectare (kg N/ha).

⁶⁸ High nitrogen application rate = 90 kg N/ha.

⁶⁹ Department of Agriculture and Livestock (2020). Agriculture Medium Term Development Plan 2020 - 2022

⁷⁰ Schmidt et al. (2019). Papua New Guinea survey report: Rural household survey on food systems. IFPRI.

⁷¹ Kanua et al. (2016). Assessing village food needs following a natural disaster in PNG. Australian National University.

Although people generally have access to sufficient food, there is widespread nutritional deficiencies due to constrained access to quality and diversified food for a nutritionally balanced diet. The global recommended intake is 2,250 calories and 58 grams of protein per person per day⁷², but poor households in PNG consume between 1,370 and 1,790 calories per person per day. Food crops, vegetables and fruits are available in reasonable quantities but rice, for instance, is imported and consumed by the non-poor household whose calorie intake is between 2,650 and 2,870⁷³. Local food production is not competitive with food imports due to supply issues such as poor quality, inconsistent supply, poor road connectivity and high marketing costs. There are also critical value chain challenges such as post-harvest management, food contamination, food loss and waste, and food storage. In 2012, post-harvest losses were estimated at 19%, 45%, 45% and 26% of the national production of grains, vegetables, fruits, roots and tubers, respectively⁷⁴. To date, these factors have not been addressed in the target regions due to insufficient financial resources for necessary infrastructural and technology updates and limited capacities to propagate and distribute crop varieties widely, implement climate sensitive practices and post-harvest techniques, or operate and maintain climate-resilient value chain technologies.

In this context, this project will support climate-resilient agricultural production with climate-resilient, high-performance and high-yielding crop varieties provided to farming households (Output 1.1). Combined with the dissemination of climate-resilient agriculture (CRA) practices through demonstrators, farmer field schools and extension services (Output 1.2), this will increase food security in vulnerable communities. Post-harvest management, constrained market access and access to market information will be addressed through eco-friendly and climate-smart processing and storage technologies (Output 2.3) combined with training on operating, maintaining and managing these technologies, upgrading farm roads to be more climate resilient for enhanced connectivity to markets under projected climate conditions (Output 2.2), while an integrated digital platform will foster exchange and collaboration among coffee and coconut smallholder farmers, small-scale processors, traders, and buyers (Output 2.1).

1.5.2. Lack of agricultural services

Agricultural training, information and extension services are drivers of agricultural development for rural poverty reduction. Analysis of sweet potato value chains in PNG identified the need for advanced farmer trainings for at least 20% of farmers, especially for improving harvesting techniques, sorting and grading, packing and transportation. However, there are limited services for agricultural training, extension, research, development, biosecurity and quarantine in PNG. An effective extension system coupled with irregular farmer trainings and engagements in the areas of production, postharvest and agribusiness is missing⁷⁵. Most farmer cooperatives have limited access to extension and related services, and public-sector agricultural extension in PNG has been declining. Farmer training and extension was the responsibility of the Department of Agriculture and Livestock (DAL) during pre-independence. After independence, the extension function was transferred to the provincial and district governments. However, agricultural training and extension centers have been neglected and in many provinces this function is ineffective due to poor management and lack of funding. In this context, the project will improve access to extension services in the project areas (Output 1.2) to showcase and train farmers on CRA practices, facilitate knowledge transfer, and initiate climate sensitive behavioral changes in agricultural systems.

1.5.3. Lack of agricultural statistics and Information

⁷² OECD / FAO. 2015. OECD-FAO Agricultural Outlook. OECD Agriculture statistics (database).

⁷³ Schmidt et al. (2019). Papua New Guinea survey report: Rural household survey on food systems. IFPRI Discussion Paper 1801.

⁷⁴ Gunasekera et al. (2017). Postharvest loss reduction in Asia-Pacific developing economies. *Journal of Agribusiness in Developing and Emerging Economies*,7(3)303-317

⁷⁵ Okrupa et al. (2019). Identifying Value Chain Constraints for Sweetpotato, Irish potato and Bulb onion in the Highlands of Papua New Guinea

Agricultural data and information are important tools for policy formulation, decision-making, coordination and tracking of progress for future planning. However, the PNG agriculture database is obsolete and agriculture sector planning is thus done on ad hoc bases with insufficient data and information provided by sub-sector agencies. The lack of statistics and information has resulted in reduced efficiency of sectorial adaptation planning, resulting in reduced performance in the agricultural sector. In this context, the project will improve the capacity of the actors involved in the agriculture sector on the monitoring, report and verification of the impacts of actions (Output 3.1).

1.5.4. Agricultural marketing issues and processing

PNG's diverse setting with a heavily rural population (85%), over 850 different languages, limited education, rugged terrain and poor infrastructure create constraints to developing marketing systems. Under projected climate scenarios, the increase in extreme rainfall events will exacerbate the degradation of road networks and further reduce market access. Ultimately, this directly reduces local populations' abilities to actively participate in the economy. Currently, more than 75% of roads (30,000 km) become impassable at some time during the year and 32% rural population live two kilometres or more from an all-season road⁷⁶. In addition, downstream processing in PNG is still in its infancy concerning agro-industries. Therefore, the government is encouraging primary and secondary processing of agricultural produce, in addition to the export of raw materials. The project will contribute to overcoming these barriers through the distribution of eco-friendly technologies for processing and/or storage (Output 2.3) and improving physical access to markets through climate-resilient farm road networks (Output 2.2).

1.5.5 Ecosystem degradation affecting agriculture productivity

Socio-economic growth has increased pressure on land and natural resources, contributing to PNG having the second highest rate of primary forest degradation over 2002–2020, with 777 kha (51%) of total forest loss. The main drivers for deforestation and degradation are logging, agriculture and mining, with the agriculture drivers mainly comprising land use shifts (63%) and palm oil production (30%). With the majority of forests under community control, degradation is caused by deforestation to enhance agricultural production to meet the demands of high population growth rates. Exacerbating these issues is poor agricultural management, with a transitional shift away from traditional practices. For example, in sweet potatoes cropping systems, the fallow periods decreased from 12.1 in 2005 to 6.3 years in 2014 and tree species traditionally used as fallow species (such as *Casuarina oligodon*) have been replaced by food legumes. Consequently, there is a decline in soil nutrients⁷⁷. Compared with the Amazon region (5.6 years of fallow⁷⁸), this reduction in PNG's fallow period is alarming in terms of soil fertility decline and worsening land degradation. This results in improper soil management, overgrazing and extensive forest extraction for household use. Encroachment of subsistence farming away from flat lands onto steep sloping areas with mounding practices has increased soil degradation and a loss of fertile soils. In coastal areas, saltwater intrusion driven by factors such as the frequency and magnitude of storms and tides, the frequency and duration of drought, the position of sea-level relative to the land and water table is exacerbated by the degradation of mangroves which are natural coastal barriers. This has cascading ecological consequences such as upland forest retreat, conversion of freshwater wetlands, nutrient mobilization, and declines in agricultural productivity. Very few crops can grow in sustained conditions of

⁷⁶ Office of Development Effectiveness (2018). Road Management in Papua New Guinea: An Evaluation of a Decade of Australian Support 2007–2017, Department of Foreign Affairs and Trade, Canberra, 2018.

⁷⁷ Fujinuma et al. (2018). Intensified sweetpotato production in Papua New Guinea drives plant nutrient decline over the last decade. *Agriculture, Ecosystems & Environment*, 254, 10–19. doi:10.1016/j.agee.2017.11.012

⁷⁸ Jakovac et al. (2016). Swiddens under transition: Consequences of agricultural intensification in the Amazon. *Agriculture, Ecosystems & Environment*, 218, 116–125. doi:10.1016/j.agee.2015.11.013

greater than 2 parts per thousand salinities⁷⁹, which is substantially below the salinity levels in many salt-intruded fields. For example, crops such as sweet potatoes and trice are highly sensitive to saltwater^{80,81}. In addition, salinized farmland, which has high nutrient levels, can be rapidly colonized by many agricultural weed species⁸².

Efforts to combat degradation are in place and driven by global pressures to combat biodiversity loss and environmental protection. The country is engaged in sustainable land management to address ecosystem degradation and build resilient communities with sustainable access to⁸³. However, efforts are scattered across sectors and disjointed, with little attention provided to small scale farming that make up a sizable portion of land use in PNG. A major barrier to combating degradation in the agriculture sector is a lack technical capacity or access to knowledge on the latest sustainable land management and climate smart agricultural techniques that aim to preserve soils and utilize sustainable techniques. This project will implement nature-based solutions (NbS) to enhance ecosystem services (Output 1.3) to sustain agricultural production.

1.6. Gender assessment

While PNG ranked 155 out of 189 countries and territories in the 2020 Human Development Index, it was ranked 161 out of 162 countries in the Gender Inequality Index (Table 1). Reducing gender inequality and violence against women and girls in PNG is necessary for the economic and social future of the country; with climate change impacts making this even more challenging. For example, achieving gender parity in formal labour force participation is estimated to result in a 14% increase in economic output⁸⁴.

Table 1: Aspects of PNG's Gender Inequality Index (GII value of 0.725, rank 161)⁸⁵

Component	Value
Maternal mortality ratio	145.0
Adolescent birth rate	52.7
Female seats in parliament (%)	0.0
Population with at least some secondary education (%)	Females: 10.0 Males: 15.2
Labour force participation rate (%)	Females: 46.3 Males: 48.0

Note: Data from UN databases is not necessarily consistent with national sources. Maternal mortality is expressed in number of deaths per 100,000 live births and adolescent birth rate is expressed in number of births per 1,000 women aged 15-19.

1.6.1 Context

PNG is extremely culturally diverse, with over 1,000 distinct ethnic groups and over 800 languages with a mix of patrilineal and matrilineal kinship social systems. Gender-based violence against women is recognised to be prevalent in PNG, 56% of women aged 15-49 have experienced physical violence since

⁷⁹ Tanji KK, Kielen NC. 2002. Agricultural drainage water management in arid and semi-arid areas. Pages 1–105. Allex 1. Crop Salt Tolerance Data. Food and Agriculture Organization of the United Nations.

⁸⁰ Paulino, Tristan and Marutani, PhD, Mari (2016) "Effects of Salinity on Plant Development of in vitro Sweet Potato (*Ipomoea batatas*) Explants and Growth of Pakchoi (*Brassica rapa* var. *chinensis*) Seedlings," *Journal of Health Disparities Research and Practice*: Vol. 9 : Iss. 5 , Article 51.

⁸¹ Nguyen et al, (2019) Impact of saline intrusion and adaptation options on rice-and fish- farming households in the Mekong Delta of Vietnam. *Kasetsart Journal of social sciences*. 40(2)

⁸² Voutsina et al. 2015. The facilitative role of *Kosteletzkya pentacarpos* in transitioning coastal agricultural land to wetland during sea level rise. *Estuaries and Coasts* 38: 35–44

⁸³ PNG Department of Lands and Physical Plannings (2021). National Sustainable Land use Policy for Papua New Guinea

⁸⁴ Pacific Women Shaping Pacific Development. (2021). What Works for Gender Transformative Approaches in Papua New Guinea.

⁸⁵ UNDP. (2020). Human Development Report.

age 15, and 38% had experienced physical violence in the prior 12 months⁸⁶. In addition, cultural practices in PNG are deemed to be harmful to women. This include practices, such as bride pricing, resulting in the perception of women as property, and sorcery-related violence against women resulting in social exclusions and harassment, these practices are traditionally more common in rural areas⁸⁷.

Constraints such as culturally embedded patriarchal norms prevent women from participating in political life and holding office. Women are significantly under-represented in decision-making bodies at all levels including community leadership and national politics. There are no women representatives in the national parliament and women hold less than 2% of local government positions⁸⁸. Other decision-making structures, including those in customary, religious and private spheres, are also male-dominated. To address this, PNG's Gender Equity and Social Inclusion policy includes targets to increase participation of women within the public sector and the number of women in public service leadership positions⁸⁹. Women are increasingly recognised as leaders and are developing skills to move into elected office and other formal positions of authority⁹⁰. Despite this progress, barriers such sociocultural attitudes of men (and women), low education attainment and limited access to financial resources continue to prevent women from playing a greater role in leadership and decision-making.⁹¹

1.6.2 Gender-specific climate risks in agriculture

PNG's 2020 SDG Voluntary National Review notes that between 75–80% of the population live in rural areas, and their livelihoods are dependent on farming and fishing in poorly serviced and difficult to access rural and remote areas where women do not routinely participate in agricultural extension training opportunities. Despite this largely agricultural rural population, food and nutrition security are serious concerns, with almost one-in-two children affected by stunting and 33% percent of hospital deaths of children under five being directly or indirectly caused by malnutrition.⁹²

Although participation rates in the labour force are relatively even, men are almost twice more likely than women to hold a wage job in the formal sector and women are three times more likely than men to work in the informal sector⁹³. Crops typically cultivated by women tend to be valued at only half as much as crops typically cultivated by men. Women usually cultivate food crops such as sweet potato, banana, taro, yam, edible greens, vegetables and fruits. Traditionally, men tend to focus on cash crops production, particularly cocoa or coffee. Men tend to work longer hours in economically profitable activities, (almost triple in cocoa- and coffee-related activities), whereas women are mainly responsible for domestic activities, restricting time allocation to working in the formal sector. Consequently, gender-differentiated domestic work burdens and societal norms directly affect the ability of women to allocate their labour to the cultivation, harvesting and processing of high value crops such as coffee and cocoa⁹⁴. This disproportionate burden of domestic work limits women in substantively engaging in more value-added agricultural activities.

PNG's agricultural production is sensitive to environmental hazards such as climate risks. For instance, impact assessments show that impact from hazards can directly result in food insecurity for rural households⁹⁵. The impacts of current and future climate trends are further likely to increase the burden falling on women who have caring responsibilities for children and ill family members. Before and during

86 Papua New Guinea. (2019). Demographic and Health Survey 2016–18.

87 Department of National Planning and Monitoring. (2020). Papua New Guinea's Voluntary National Review 2020.

88 Pacific Women Shaping Pacific Development. (2021). What Works for Gender Transformative Approaches in Papua New Guinea.

89 Department of Personnel Management, 2011, Gender Equity and Social Policy, PNG.

90 USAID, 2013, Women's Economic Participation in Papua New Guinea: Achieving APEC Priorities for Gender Equality.

91 SPC, 2012, Stock-take of the Gender Mainstreaming Capacity of Pacific Island Governments, PNG.

92 Department of National Planning and Monitoring. (2020), Papua New Guinea's Voluntary National Review 2020.

93 Asian Development Bank, 2016, Country Partnership Strategy: Papua New Guinea, 2016–2020. Gender Analysis Summary.

94 World Bank, 2012, Papua New Guinea Country Gender Assessment 2011–2012. New York.

95 Brun, Delphine (March 2018). CARE Rapid Gender Analysis, Papua New Guinea – Highlands earthquake.

climate disasters women are more likely to be responsible for the practical preparation of the household, informing family members, storing food and water, and protecting family belongings⁹⁶. By contrast, men are more likely to liaise with government officials, prepare buildings, make decisions about evacuation and timing, manage water resources, distribute emergency relief, and receive and disseminate early warnings to the community.

Consequently, women have less access to essential resources for disaster preparedness, mitigation and rehabilitation, while their workloads are comparatively higher than those of men. Exacerbated, as men are more likely to migrate out of rural areas to look for work and because there is limited access to energy sources, clean water, safe sanitation, and health impacts⁹⁷. Heavy workloads imposed on women often result in girls dropping out of school reducing ability to gain technical expertise/knowledge in relation to cash cropping, or climate resilient practices. It is demonstrated that in climate vulnerable areas, women are more likely than men to be food insecure and living in poverty^{98,99}.

Climate risks exacerbate persisting institutional and governance challenges to promoting and enhancing women's participation in food value chains. These challenges include persistent gender disparities in access to and control over productive resources in agriculture, energy, markets, forestry, fisheries and other sectors, yet women are the major contributors to the agricultural economy (on farms, at home and in the community). Women are systematically excluded from access to resources, essential services and decision making despite a conducive legal and policy framework.

The PNG National Food Security Policy outlines actions to support women empowerment in agriculture, highlighting challenges for gender and development with mitigation measures identified for both gender equality and climate change¹⁰⁰. Although women generally have access to land, they have limited control compared to men, through traditional governance and organizational systems that determine decisions pertaining to its use. In some areas, land ownership follows matrilineal principles, but even then, male relatives of female landowners influence decisions made in allocating land. Household decisions are family-based and may not always recognize the power of women within a matrilineal society¹⁰¹.

Women's access to knowledge and skills is limited, as gaps in education, literacy, skills, safety and security issues and participation in extension and training activities persist¹⁰². It is therefore important to ensure equal access for women to training, productive resources and to climate-resilient and labour-saving technologies and practices to build up the resilience of rural households and communities and enhance the climate resilience of PNG's staple crops.¹⁰³

⁹⁶ Lane R, McNaught R. *Building gendered approaches to adaptation in the Pacific*. *Gender Dev* 2009, 17:67–80 71–72.

⁹⁷ Dankelman I. *Introduction: exploring gender, environment and climate change*. In: Dankelman I, ed. *Gender and Climate Change: An Introduction*. London: Earthscan; 2010, 1–20

⁹⁸ Lambrou Y, Nelson S. *Farmers in a Changing Climate: Food Security in Andhra Pradesh, India*. Rome: FAO; 2010.

⁹⁹ Alber G. *Gender, cities and climate change: thematic report prepared for cities and climate change global report on human settlements*, 2011.

¹⁰⁰ Papua New Guinea National Food Security Policy 2016-2025 Development.

¹⁰¹ World Bank, 2012, *Papua New Guinea Country Gender Assessment 2011–2012*. New York.

¹⁰² World Bank, 2012, *Papua New Guinea Country Gender Assessment 2011–2012*. New York.

¹⁰³ FAO, 2019, *Country Gender Assessment of Agriculture and the Rural Sector in Papua New Guinea*

Project / Programme Objectives:

List the main objectives of the project/programme.

The project aims to enhance the sustainability of main agricultural value chains through the adoption of climate-smart practices, contributing to improving the produce's quality, increasing access to markets, and creating green jobs for women and youth in vulnerable communities. Specific objectives set are:

- to integrate climate-resilient agriculture practices into standard farming techniques in PNG for increasing productivity, resilience and food security of the most vulnerable smallholder farmers
- to boost the ability of vulnerable smallholder farming communities to access to postharvest processing, storage technologies, and profitable markets
- To foster the scale-up of climate-resilient cropping, processing, and storage practices through capacity building, and knowledge management.

The project will be implemented over a five-year period, considering the time required to implement the structural changes to be promoted in sweet potato, coffee, and coconut growing areas, the differences in the crop cycles, as well as institution-building needs in the sector.

Project / Programme Components and Financing:

Fill in the table presenting the relationships among project components, activities, expected concrete outputs, and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term. For the case of a programme, individual components are likely to refer to specific sub-sets of stakeholders, regions and/or sectors that can be addressed through a set of well defined interventions / projects.

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
Component 1: Climate-proofed small-scale agricultural production	1.1. Dissemination of climate-resilient crop varieties 1.2. Extension services for climate-resilient agriculture 1.3. Nature-based solutions to protect agro-ecological systems from landslides and coastal erosion induced by flooding and heavy rain events	1. Enhanced climate-resilience of agricultural production for vulnerable small-scale farmers	3,954,584
Component 2: Climate-resilient postharvest solutions and access to markets	2.1. Sustainable commercial relationships linking input suppliers, technology providers, vulnerable communities, small-scale processors, traders, and buyers.	2. Improved access to appropriate processing, storage technologies, and profitable markets	3,460,880

	<p>2.2. Improved connectivity between cooperatives and markets through climate-resilient farm road networks</p> <p>2.3. Distribution of eco-friendly technologies for processing, and storage in the project area for coffee, copra, and food crop processing</p>		
Component 3: Capacity building and knowledge management for scaling-up CRA practices	<p>3.1. Training-of-trainers to monitor, report and verify impacts of climate-resilient practices across agricultural value chains</p> <p>3.2. Capacity building programme on climate-resilient agricultural production for provincial authorities</p> <p>3.3. Knowledge management and dissemination to policy-makers, development partners, private sector including smallholder SMEs, and civil society organizations on scaling up climate-resilient agricultural practices</p>	3. Scale-up of climate-resilient agriculture practices, processing, and storage technologies, facilitated through capacity building, and knowledge management.	849,100
(A) Project activities cost			8,264,564
(B) Project execution cost			867,658
(A)+(B) Total Project cost			9,132,222
(C) Implementing Entity Fee (8.5%)			776,239
Amount of Funding Requested / Grant Amount			9,908,461

Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Milestones	Expected Dates
Start of Project Implementation	January 2025
Mid-term Review (if planned)	June 2027
Project Closing	December 2029
Terminal Evaluation	October 2029

PART II: PROJECT / PROGRAMME JUSTIFICATION

- A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

Climate change is already impacting on agricultural production – particularly for smallholder farmers – in PNG, and this is expected to increase in the coming decades. In this context, the overall objective of this project is to enhance the sustainability of the main agricultural value chains in the face of climate risks through the adoption of climate-smart practices, contributing to improving the quality of produce, increasing access to markets, and creating green jobs for women and youth in vulnerable communities. This will contribute to reducing the vulnerability of smallholder farmers to climate change impacts and increase their adaptive capacity, while protecting agro-ecological resources in rural areas.

The project will provide integrated solutions to key barriers preventing adaptation in the agricultural sector in three provinces (Enga, New Ireland, and Milne Bay) identified by the Government of PNG under its Climate Resilient Green Growth (CRGG) project. This will be achieved through the implementation of three components outlined below.

Component 1: Climate-proofed small-scale agricultural production

Outcome 1: *Enhanced climate-resilience of agricultural production for vulnerable small-scale farmers*

Output 1.1. Dissemination of climate-resilient crop varieties

- *Identify champion farmers (at least 30% women) in collaboration with research institutions and local authorities for seed multiplication sheds (Activity 1.1.1).*
- *Support construction of 30 multiplication sheds for improved and resilient varieties of crops (heat and excess water-tolerant sweet potato, heat-tolerant coffee, heat, and excess water-tolerant yams, and improved sugarcane and coconut) for distribution and sale (Activity 1.1.2).*
- *Provide technical training and support to selected champion farmers to run seed multiplication sheds including multiplication techniques, nucleus seeds, development of management and business plan (Activity 1.1.3).*
- *Distribute adapted rice seeds and replicate innovative planting techniques to 400 farm households in upland communities (Activity 1.1.4). The project will strengthen the Upland Rice Program initiative of Government and partners implemented since 2019, which promotes rice seed provision and adaptive techniques, and dissemination to selected farmers.*

Output 1.2. Extension services for climate-resilient agriculture

- *Identify and setup 30 demonstrators or climate field schools including recruitment of members (Activity 1.2.1).*
- *Design the training curriculum and manual on resilient agronomic packages for sweet potatoes, taro, coffee, and rice (e.g., potatoes cropping in irrigated systems, drainage systems) and translate into local languages as appropriate (Activity 1.2.2).*
- *Provide a series of technical training to member farmers of the field school on resilient agronomic packages. and input support to lead farmers to pilot and implement improved techniques (Activity 1.2.3).*
- *Identify and map potential (non-public) extension services providers including well-functioning*

cooperatives, grassroot organizations, intermediaries, smallholder SMEs, and input suppliers for each province (Activity 1.2.4.).

- Support for 50 contracts related to extension services provision between local service providers and farmers organizations (Activity 1.2.5).

Output 1.3. Nature-based solutions to protect agro-ecological systems from landslides and coastal erosion induced by flooding and heavy rain events

- Carry out ground survey and map degraded areas for reforestation in project area (Activity 1.3.1)
- Implement a reforestation program of 3000 ha around croplands, mangroves and degraded forest, vegetation planting along riverbanks or unstable lands (Activity 1.3.2). The activity will promote the protection and rehabilitation of agroforestry systems on cropland/degraded forest and mangrove systems. It will look into setting up nurseries and procuring native plant saplings, seedlings from locally available sources (DAL and National Agriculture Research Institute (NARI) research stations within each of the provinces).
- Conduct awareness raising events with local communities on the importance of ecosystem services to enhance their participation in the protection and maintenance of reforested areas (Activity 1.3.3)

Component 2: Climate-resilient postharvest solutions and access to markets

Outcome 2: Improved access to appropriate processing, storage technologies, and profitable markets

Output 2.1. Sustainable commercial relationships linking input suppliers, technology providers, vulnerable communities, small-scale processors, traders, and produce buyers

- Assess existing agricultural market information and flows in project areas to identify needs and gaps (Activity 2.1.1)
- Support the development of an integrated digital platform to link farmers, small-scale processors, traders, and buyers along the value chain (Activity 2.1.2). Information about the prices of commodities will also be available on this platform. Selection of operator(s) who will be responsible for development, support services provision, implementation, and operationalization of digital integrated platform will follow the Provincial Government Expression of Interest (EoI) process.

Output 2.2. Improved connectivity between cooperatives and markets through climate-resilient farm road networks

- Update Operation & Maintenance (O&M) Guidelines for farm roads to include climate-resilient road standards and codes (Activity 2.2.1). The Government is finalizing its Department of Works Climate Resilience Policy that promotes the mainstreaming of climate-resilient road and infrastructure standards and codes at the national level. The Policy is aligned to PNG's Enhanced NDC adaptation target on road and infrastructure. The project will look to review existing O&M guidelines of provincial governments to align with national climate-resilient road and infrastructure policy, standards, and codes. The project will target O&M Guidelines that focus on upgrading existing farm roads using low-tech, low-cost and low-impact techniques.
- Upgrade existing farm roads connecting farms to the main public market to climate resilient standards for farm roads and tracks of at least 45 km (in total), using appropriate resilient design standards and local construction materials in alignment with the updated O&M Guidelines (Activity 2.2.2).

Output 2.3. Distribution of eco-friendly technologies for processing and storage of coffee, copra, and food crops

- Undertake joint planning with women and youth farmers organizations to identify the specific needs and priorities of the beneficiaries (Activity 2.3.1).
- Procure and install processing and storage technologies (e.g., solar-powered dryers, solar-powered storage facilities) (Activity 2.3.2).
- Develop O&M guidelines in local languages and provide hand-on training sessions on the operation

and maintenance, and management of the technologies to the beneficiary farmer organizations (Activity 2.3.3).

Component 3: Capacity building and knowledge management for scaling-up CRA practices

Outcome 3: Scale-up of climate-resilient agriculture practices, processing, and storage technologies, facilitated through capacity building, and knowledge management.

Output 3.1. Training-of-trainers to monitor, report and verify impacts of climate-resilient practices across agricultural value chains

- Develop training curriculum and training manual on methods and tools to track changes in behaviors and environment and translate into local languages as appropriate (Activity 3.1.1).
- Conduct Training of Trainers (ToT) for the provincial stakeholders to establish Lead Trainer teams (at least 30% women) comprising of various actors involved in the agriculture value chain (Activity 3.1.2).
- Support Lead Trainers to conduct subsequent training sessions at the sub-provincial level (Activity 3.1.3).

Output 3.2. Capacity building programme on climate-resilient agricultural production for provincial authorities

- Develop gender-sensitive training programs on climate-resilient agriculture including curriculum and training materials, translated into local languages (Activity 3.2.1)
- Provide training sessions for national, provincial and local authorities involved in promoting climate-resilient agriculture in Milne Bay, Enga, and New Ireland (Activity 3.2.2)

Output 3.3. Knowledge management and dissemination to policy-makers, development partners, private sector including smallholder SMEs, and civil society organizations on scaling up climate-resilient agricultural practices

- Undertake participatory monitoring, evaluation and learning (MEL) of project activities to identify and document best practices and lessons learned as well as for adaptive management of the project results, milestones, and deliverables (Activity 3.3.1).
- Develop and publish knowledge products such as policy briefs, technical reports, social media posts, brief documentaries and news media mentions to highlight best practices and lessons learnt concerning CRA practices in each province and at the national level (Activity 3.3.2).
- Conduct targeted stakeholder awareness sessions for transparent communication of results in line with the stakeholder engagement plan (to be developed at full proposal elaboration) through MEL activities such as workshops, conferences and forums to share results, lessons and challenges (Activity 3.3.3).

- B.** Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

The project will deliver socioeconomic benefits (e.g. protection of lives, economic activities, livelihoods, and assets) and create an enabling environment for resilience and mitigating the impacts of climate change. Implementation of NbS (e.g. mangrove conservation, vegetation planting along riverbanks or unstable lands) to restore agro-ecological systems and enhance ecosystem services will support stabilization of essential croplands and forest assets, with positive co-benefits for livelihoods. Promoting resilient crops and improving the capacity of actors to monitor, report and verify impacts across agriculture value chains will enhance the effectiveness and benefits of other initiatives that target

improvement of livelihoods for vulnerable communities. Further, sustainable, and diversified crop production and improved connectivity between farmers and markets will also improve nutrition for the health of the rural population. The results will contribute to the NDC adaptation target on food security and health for PNG. The CRA measures to be introduced by the project are also designed to provide key environmental benefits that will further support livelihoods.

The restoration of forested areas around degraded croplands, mangroves, and forests will reduce soil erosion, saline intrusion and prevent siltation damage to existing infrastructure such as farm roads. This ecosystem-based approach offers social, economic and environmental co-benefits including carbon sequestration. The restored forest ecosystems will contain many native plant species that provide fiber, medicine, fruit, firewood, timber, and habitat for animal species, conserving PNG's great biodiversity assets and maintaining populations of migratory birds and fishes in the reforested areas.

Improvement of roads will facilitate timely flow of products from farms to public markets, maintaining quality of fresh produce and minimizing postharvest losses. Other benefits to vulnerable communities include creation of green jobs through processing of coffee, copra, and staple food crops. The project will also contribute to poverty reduction through reduced exposure to environmental and climatic risks such as flooding and landslides through NbS. In terms of gender benefits, at least 30% of farmers targeted by the project will be women and youth, who will be supported to engage in climate-resilient agricultural production. This includes support for post-harvest handling through eco-friendly processing and storage technologies, and market access via the integrated digital platform and climate-resilient roads. This will support economic empowerment of women and youths through income generation.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.

The project is designed to maximise the efficiency of the Adaptation Fund's investment. The proposed activities were identified through a participatory approach through stakeholder consultations undertaken in 2021 to assess interest in project interventions^{104,105,106}. This process identified priorities as well as proven mechanisms for community participation, field schools and other capacity-building opportunities (for farmers, women, youth, and public staff), government involvement, and technology transfer that will lead to adaptation benefits for local communities. The partnerships established during the project design and implementation will boost the cost-effectiveness of the project interventions. In addition, the project activities are designed to provide tangible results that are viable to replicate for scaling up.

In terms of project management, improved coordination and communication, the application of common (streamlined) procurement and supervision procedures, the implementation of complementary project interventions in the project districts will generate cost savings. The project will work with existing community structures and will contribute to strengthening them.

The activities of the project are designed to obtain optimum results that are of benefit to direct and indirect project beneficiaries in tangible ways. These activities are based on past interventions implemented in similar contexts and adapted to achieve the expected benefits for the local communities. The project is cost-effective for smallholder farmers to improve their income-generation potential through providing them knowledge, access to inputs and extension services, post-harvest handling and access to market to increase the efficiency of economic activities. Indeed, the project's total investment of USD

¹⁰⁴ Global Green Growth Institute (GGGI), 2021. Climate-Resilient Green Growth in New Ireland Province

¹⁰⁵ Global Green Growth Institute (GGGI), 2021. Climate-Resilient Green Growth in Enga Province

¹⁰⁶ Global Green Growth Institute (GGGI), 2021. Climate-Resilient Green Growth in Milne Bay Province

9,998,879 will benefit 18,240 direct beneficiaries and 83,600 indirect beneficiaries¹⁰⁷, at a cost of USD 548 per direct beneficiary. For comparison, the adaptation projects PNG Productive Partnerships in Agriculture Project funded by the World Bank and Smallholder Support Services Pilot Project co-funded by the Asia Development Bank cost USD 1,243 and USD 970 per beneficiary, respectively^{108,109}.

- D.** Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

The project is well aligned with the national policies, legislation, strategies, priorities and objectives of the Government of PNG in relation to climate change and agriculture, resulting in the Climate Change and Development Authority issuing of a letter of endorsement for this project (see Annex 2).

- Medium Term Development Plan III (2018 – 2022): A major development challenge in PNG is insufficient internal revenue to fund the needs of the large population which is projected to grow at 3.1% per annum during 2018-2022. To meet the needs of an expanding population while addressing environmental considerations, sustainable economic growth needs to occur. The outcomes of Key Result Area 1 'Increased Revenue and Wealth Creation' will be supported through seven Economic Growth Goals such as: reduce imports of major food items like rice, dairy, fresh produce, and meat; create wealth by promoting SME growth and attracting direct investments; women's economic empowerment; and create more employment and economic opportunities for youth and build the capacity of productive workforce.
- PNG Vision 2050: Vision 2050 will ensure that Papua New Guinea has a strong, dynamic and competitive economy by 2050. Goal 2 Wealth Creation is focused on developing manufacturing, agriculture, forestry, fisheries, and tourism ventures to generate 70% of GDP.
- PNG Development Strategic Plan 2010-2030: Part 6 (Sections 6.2-6.8), clearly articulates the strengthening of cross-sectoral policies on youth, gender, HIV/AIDS, Vulnerable and Disadvantaged, Environment, Climate Change and Natural Disaster Management as priority. The project will support this through building climate change resilience in communities and fostering development for more secure livelihoods. It is also aligned with policies such as the National Food Security Policy.
- PNG Enhanced NDC 2020-2030: The NDC has four key adaptation targets including investment in agriculture, health, transport, and infrastructure. The project will contribute to the NDC target of 10% of the population (25% female) with increased resilience of food and water security, health, and wellbeing in PNG. In terms of mitigation commitments, the enhanced NDC also sets a target of 25% of reduction in both the area of annual deforestation and annual degradation against 2015 levels.

- E.** Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

The project will be implemented in rural areas of Enga, Milne Bay, and New Ireland provinces of PNG, where staple food crops and cash crops are part of smallholder farming systems. The project will promote

¹⁰⁷ Based on the number of persons per household in 2022 in the project area and percentage of the populations engaged in agricultural sector. McMurray and Lavu (2021). Provincial estimates of key populations group 2018-2022. The National Research Institute. Papua New Guinea. For indirect beneficiaries, 5.6 persons per menage were considered based on Mc Murray and Lavu (2011)

¹⁰⁸ <https://projects.worldbank.org/en/projects-operations/project-detail/P110959>

¹⁰⁹ <https://www.oecd.org/derec/adb/Papua-New-Guinea-Smallholder-Support-Project.pdf>

the adoption of resilient farming practices through: deployment of resilient crop varieties, improved extension services and enhanced ecosystem services (Component 1); improved post-harvest technologies and access to markets through integrated digital platform and upgraded farm roads including rehabilitation of existing infrastructure (Component 2); and increased capacity of stakeholders and greater knowledge sharing (under Component 3).

Potential adverse impacts associated with these activities are foreseen to be low in intensity, minor and site-specific, and lend themselves to readily available and already widely used mitigation measures. For these reasons, the ASSA project has been assigned an Environmental and Social Safeguards Category B (medium risk), consistent with the requirements and standards of the Pacific Community (SPC) Social and Environmental Responsibility Policy. The project is consistent with relevant national legal frameworks and standards, such as: Lands and Physical Planning Act, Environment Act, Organic Law of Provincial and Local Level Government (provisions for District and local level approvals), and Disaster Management Act.

F. Describe if there is duplication of project / programme with other funding sources, if any.

This project will be implemented to create synergy and complementarity with initiatives outlined in the following table with some already completed. Further, these initiatives will serve as resources for valuable lessons learnt and, at the same time, be part of the audience for the knowledge management and dissemination activities under Component 3 of the proposed project. The National Project Management Unit (PMU) attend any externally hosted workshops on request and will coordinate annual reflection workshops with the below mentioned projects. Inviting project coordinators and monitoring, evaluation and learning (MEL) experts/officers, to discuss project progress, lessons learned on implementation efficacy, and areas for enhanced complementarity between projects to maximise impact. In addition to this, online community of practices (CoP) will be established between PMU's at the national-level and between provincial implementation teams at provisional-levels. Enhanced coordination will streamline inputs to national workshops hosted by the Climate Change and Development Authority (CCDA) and the at the provincial level into Provincial Climate Change Committee meetings to facilitate greater coordination of climate action. This will enable real time updates and coordination between projects to ensure duplication is avoided and synergy maximised. At the national-level, the CoP will engage and encourage participation from stakeholders of projects operating outside of the target area, especially i) GEF ID -10239 Establishing System for Sustainable Integrated Land-use Planning Across New Britain Island in Papua New Guinea, and ii) GEF Project ID 10580- Integrated land management, restoration of degraded landscapes and natural capital assessment in the mountains of Papua New Guinea

The relevant projects or initiatives in the target area are summarized in the following table.

Initiative/Institution	Status	Complementarity
<i>Programs in the Provincial DAL in Enga Province</i>		
<i>Enga Provincial Government, New Zealand Ministry of Foreign Affairs and Trade (NZMFAT), National Agriculture Research Institute (NARI), European Union (EU)</i>	<i>Following the 2015 droughts that affected the highlands regions and caused significant loss of food crops, the NZMFAT partnered with NARI and the EU on a disaster relief project for drought and climate change adaptation, where experts assessed damage and possible solutions in Enga and Simbu Provinces. Key issues identified in the investigation are limited to the highland provinces that were affected by drought</i>	<i>The proposed project aims to promote a drought tolerant variety, thus could use results produced under this project.</i>

	<i>and frost. This project produced some valuable resources (some translated into pidgin) on best agriculture practices to cope with drought and frosts.</i>	
Upland Rice Program		
<i>Enga Provincial Government</i>	<i>This program has been underway for three years. The trials have proven to be successful in the warmer districts of Enga, showing that rice could yield up to 2-4 tonnes per hectare. This project only provides supplies of rice seeds from NARI, but no other technical support. Given the success of the trials, the Enga Provincial DAL wishes to commence training and awareness programs to encourage farmers to grow upland rice. However, they lack the resources and technical knowledge to develop further from the trial stage.</i>	<i>Rice farming is promoted in the proposed project to increase farmer resilience.</i>
SMART Family Business Project		
<i>Division of Community Development with Enga Provincial Government, Enga Provincial DAL, Provincial Division for Commerce, Culture & Tourism (DCCT), NARI, UNFPA, National Youth Development Authority, Enga Provincial Youth Council, Churches (Lutheran, Catholic, Seventh Day Adventist, and Pentecostal) and Innovative Agro Industries Ltd.</i>	<i>Since 2011, the SMART Family Business Project has developed strategies for inclusive growth targeting family units at the household level, focused on building resilience and economic growth for the entire community. The aim is to improve law and order in communities, ensure food security for households, improve farming methods, encourage healthy living and family nutrition and protect environmental and cultural values.</i>	<i>The proposed project is improving the resilience of the farmers and food security by enhancing food accessibility, production, and processing</i>
Community Capacity Adaption to Flood (CCAF)		
<i>Milne Bay Provincial Government: Environmental and Climate Change Unit in partnership with UNDP/CCDA</i>	<i>CCAF was a joint initiative of UNDP and CCDA to enhance the adaptive capacity of communities to cope with flooding. Project outcomes: Adaptation to coastal flooding-related risks and hazards; Adaptation to inland flooding-related risks and hazards for river communities; Institutional strengthening to support climate and disaster-resilient policy frameworks; Awareness raising and knowledge management</i>	<i>NbS will be promoted by the proposed project for the coastal agricultural system protection against saltwater intrusion</i>
Coping with Climate Change in the Pacific Island Region (CCCPIR)		
<i>Provincial Department of Agriculture and Livestock and Milne Bay Provincial Government in partnership with GIZ/CCCPIR (Fiji) & CCDA (Adaptation and Projects Division)</i>	<i>CCCPIR is implemented by GIZ in partnership with CCDA. It is a food and water security project, implemented in two vulnerable communities in MBP. The project objectives are: 1) improved food security through maintenance of traditional irrigation systems and sustainable agricultural development; and 2) increased resilience of vulnerable communities through improved land-use planning.</i>	<i>Innovative irrigation system will be promoted by the proposed project</i>

	<p><i>Project outcomes: Traditional irrigation systems are upgraded and functioning effectively; Increased diversity of crops, appropriate for site conditions, produced by communities for subsistence and semi-commercial use; Farmers are using new skills and knowledge on appropriate farming techniques and food processing technologies; Increased economic and entrepreneurial activities by women; Suitable crop varieties and farming technologies identified for hot, dry landscape types; Village land-use planning endorsed by the local community and district and provincial offices; Improved water security; Lessons learnt and experiences documented and disseminated; Increased awareness and understanding of climate change issues and adaptation responses amongst local communities and district officers.</i></p>	
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G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

Project monitoring, evaluation and learning will be under the oversight of the PMU and led by the M&E officer, working closely with the provincial implementation coordination teams and implementing partners. The MEL system will: (i) produce, organize and disseminate information for strategic management of the project, (ii) document results and lessons learned for internal use and public dissemination on project achievements (policy brief), and (iii) respond to information needs for reporting on activities, progress and impact to the Adaptation Fund (AF), SPC and Government representatives.

An M&E manual will outline a simple and effective system for collecting, processing, analyzing, and disseminating data, to be prepared in the first year of the Project. As part of the CoPs mentioned above a centralised and open access repository will be established, in an appropriate online address, where project evaluation documentation can be stored across the afore mentioned projects in Section F. This will enhance transparency and learning by and between projects. In conjunction with annual reflection workshops, relevant lessons learned across the projects can be captured and incorporated to the project in a timely manner. A computerized database will be developed to enable generation of project dashboards for rapid data analysis. The system will be fed data collected from the field by implementing partners, provincial implementation coordination teams as well as studies carried out as part of project implementation. The MEL system will be coupled with a geo-localized information system to allow mapping and spatial-temporal analyses of impacts. The computerized database will also be included into the online repository, accompanied by guidance on data formats and parameters to allow for aggregation and standardisation of data between projects. A function will be included to allow for segregation by project to enable functional project specific analysis and reporting but allow for more comprehensive streamlining data collection across the projects. The database will then feed into Pacific Data Hub and other regional platforms to further aggregate the data. Operability and functionality of this system will be further defined at the full design stage and inception. Information and knowledge from this repository will filter into the annual reflection workshops. Further, ad hoc workshops or presentations can be organised through the CoPs on request and organised between relevant stakeholders based on specific

project findings of interest. Awareness raising on the use and application of the repository will widely disseminated through the PMUs to encourage widespread input.

Training will strengthen the capacities of various stakeholders on methods and tools to track changes in behavior and environmental conditions at community level. Project M&E activities will be guided by some key considerations: (i) data will be disaggregated by poverty, livelihood group and gender; (ii) implementing partners will have clear M&E responsibilities with specific reporting deadlines and a forum for presenting findings; and (iii) MEL will be linked to the project rationale, logical frame, annual work plans and budgets. M&E findings will inform corrective or enhancing measures for improved project management. Stakeholder awareness sessions and publication of policy briefs, reports and press releases on social media will facilitate the communication of results and consistent stakeholder engagement.

- H.** Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

The project idea was identified in October 2020 as a priority and investment case for the three provinces under the Government of PNG Climate Resilient Green Growth (CRGG) project (2019-2022), funded by Australia's the Department of Foreign Affairs & Trade (DFAT), executed by the Global Green Growth Institute (GGGI) and implemented by GGGI, CCDA, DPLGA, and DNPM. Provincial stakeholders consulted to identify the priorities include members from various sectors, communities and the private sector, in areas such as agriculture, construction, community development, disaster management, energy, fisheries, forestry, information and communication, landowner associations, lands and physical planning, mining, provincial government administration and tourism. Vulnerable and gender groups were represented by faith-based organizations, women in agriculture associations, and small medium enterprises. Consultations were held in Enga, Milne Bay and New Ireland (see Annex 3-5 for the list of stakeholders consulted).

During May-December 2021, the CRGG project conducted provincial administration- and provincial sector-level consultations and assessments in the three provinces to compare it to other investment cases^{110,111,112}. This led to a formal letter of support being issued by DAL, requesting that GGGI move ahead in the development of an Adaptation Fund concept note (see Annex 6 for the letter from DAL). Consequently, GGGI and CCDA transferred the project idea to the AF Concept Note template in December 2021, which was validated by the NDA in January 2022. The NDA confirmed that the proposed AF project responds to PNG national needs and priorities for climate change adaptation and mitigation. Following consultations with potential implementing entities, the NDA approached SPC in January 2022 to request that it act as the regional implementing entity (RIE) for this project (see Annex 7 for the letter to this effect from PNG's NDA). SPC reviewed the concept note and ensured the project complied with environment and social policies, including gender policies of both SPC and AF, before finalizing and submitting it to the AF.

Indigenous peoples were represented across the women in agriculture groups, NGOs, CBOs, Faith based Organisations, SMEs, political associations and locally lead governments and councils (see Annex 10 for list of positions and organisations consulted). The key findings of these consultations were:

Milne Bay.

Society is largely matrilineal and land is owned by women. However decisions on land use are usually made by men (e.g. husband or brother). This leads to men controlling benefits and may result in food security and

¹¹⁰ GGGI (2021). Climate-Resilient Green Growth in New Ireland Province

¹¹¹ GGGI (2021). Climate-Resilient Green Growth in New Ireland Province

¹¹² GGGI (2021). Climate-Resilient Green Growth in Milne Bay province

increased poverty in communities. Land mediation and consultation is thus key to agricultural development. Indigenous communities called for local customary land processes to be followed and respected. Eco-tourism requires agriculture supply and value chains and resilience of small-holder farmers to sustain the sector.

Enga

Use of land is best achieved through consultation with representatives of vulnerable groups such as registered women-owned agri-business groups and faith-based organizations. There is lack of communication between women farm groups due to poor communication and transport infrastructure.

New Ireland

Transportation of goods and services from farm to market, via land and sea is a key challenge. Lack of road and transport infrastructure (jetties and functioning roads) to enable market accessibility hampers income generation. On the other hand, downstream processing of agricultural products has potential for improving incomes.

Shared observations across target areas

Integrated farming was identified as a priority, including diversified farming such as livestock and vegetable farming. This was identified by indigenous groups as preferable over labour intensive copra production that generates little income for the indigenous communities. Solar solutions (e.g., solar dried copra) was suggested to help reduce labour intensity and increase quality of the copra (white copra, A-grade), which pays premium market price.

Through close consultations with landowners during implementation, in tandem with users and user groups, the project will address the issues of land tenure rights and increase implementation of relevant customary land practices at farm level. The project will develop and enhance communication and knowledge management functions and directly implement climate resilient infrastructure works to improve market access. Further through direct inclusion of renewable processing equipment and implementation of agroforestry and integrated climate resilient agriculture practices the project will diversify agricultural systems and increase livelihoods. These approaches and those fully detailed in the activities section will address the key concerns voiced by indigenous representatives.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

Due to the risks posed by climate change to the PNG agricultural sector, strengthening the resilience of smallholder farmers is needed. This AF project includes activities with clear potential to improve the resilience of agriculture in PNG. But the expected results, outcomes and impact of this project will not be achieved without funding from the Adaptation Fund. Indeed, the contribution of the Adaptation Fund is crucial for the implementation of the project, as the country is not able to mobilize the required financial resources. According to World Bank, PNG is a low middle-income country with a GDP per capita estimated at USD 4,285 in 2020. Despite efforts between 2002 and 2011 to reduce the country's debts, PNG's public debt increased from 19% of GDP in 2012 to 404% of GDP in 2019. This increasing debt is due to optimistic revenue expectations expected from tax credits and benefits granted under Project Development Agreements, which led to a threefold increase in credit and debt underwritten by domestic banks, which are now exposed to sovereign risk. To address this, the country is trying to increase the share of its external financing to reduce exposure of domestic players and to attract foreign currency. The failure to reach the forecasts expected by domestic actors is explained by (i) the fluctuation of international prices, (ii) the country's sensitivity to natural disasters, and (iii) the reduction in external demand from Australia and China. The country's economy is still dominated by two sectors: agriculture, forestry, and fishing, which employs the majority of the working population; and minerals and energy, which provides the bulk of export earnings

and GDP. The agricultural, forestry and fishing sectors are influenced by natural disasters, while the minerals and energy sector is influenced by international price levels. Additional challenges were posed by the COVID-19 crisis. Subsidies thus represent the best means of protecting the agricultural sector from the impacts of climate change without compromising the country's financial capacity to address other issues.

Therefore, PNG seeks maximum grants from the AF for urgent adaptation actions. Without AF funding, maladaptive coping strategies instead of resilient adaptations actions will continue to increase the vulnerability of PNG's rural communities (Figure 1). As a result, ecosystem degradation will persist, reducing agricultural production and increasing exposure to food insecurity.

The paradigm shift promoted by this project is to move from a vulnerable to a climate-resilient agricultural sector. Three possible scenarios are presented, with and without Adaptation Fund support:

- Alternative without any project: The current situation is marked by adverse effects of climate change. Without any project, damage and losses caused by climate change will increase and will lock farmers in extreme vulnerability and poverty. Agricultural production will decline and exacerbate the risks and impacts associated with food insecurity, climate migration, environmental degradation, and high unemployment.
- Alternative with a development project (i.e. no resilience-building actions): With a traditional development project that doesn't include resilience-building actions, current maladaptive and coping agricultural practices (e.g. slash and burn, rainfed agriculture, deforestation, logging) will be exacerbated by climatic stresses. This will lead to food insecurity, malnutrition, conflicts over natural resources, greater unemployment, climate migration and ongoing vulnerability to climate change.
- Alternative with an adaptation project: A climate change adaptation project focused on the sustainability of agricultural value chains (adoption of climate-smart practices, green jobs creation for vulnerable women and youth) will lead to food security, improved nutrition, and protection for natural resources, a high employment rate and job opportunities, and resilience to climate shocks.

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project / programme.

Preliminary technical and financial analyses show that the project is financially sustainable. Indeed, the sustainability strategy for the overall project is based on the integrated value-chain approach to be adopted. It considers interlinked interventions to reshape the way staple and cash crops are produced, processed, and sold at the market in the project provinces, taking into consideration climate issues. The integrated approach will create enabling conditions to allow local farmers to derive increased and lasting economic benefit from resilient agriculture. Increased income generation from resilient practices and increased market access will enhance beneficiary incomes and livelihoods. With the improved economic outcomes at farm and community levels, in conjunction with increased awareness and knowledge of climate related issues and resilient approaches and benefits, a behavioural shift towards conserving natural resources for enhanced livelihoods will be fostered.

Further, lessons learned and successful demonstration of the project climate resilient practices will create a knowledge base for further replication and scaling up project interventions across the country. Increased evidence related to the successful interventions will build a business case and enhanced climate rationale for engagement with multilateral and bilateral donors such as the Green Climate Fund (GCF), who have a specific remit for impact at scale and paradigm shift.

Beyond the financial and economic sustainability of the project, implemented activities will take on participatory and inclusive approaches at beneficiary levels. This will boost community buy in to interventions and increase likelihood of sustained adoption of implemented practices in the long term. Nature based solutions under output 1.3 that include regenerative and rehabilitation process for local

ecosystems will be coordinated through community based participatory approaches, fostering a greater sense of ownership in project interventions. Gender equality, indigenous representation and youth engagement will be ensured in participatory decision-making processes to encompass full resource user representation and ensure wider community buy in. The same participatory approaches will be used for the identification and selection of the most suitable sites for multiplication sheds under output 1.1, climate field schools under output 1.2, improved access connectivity under output 2.2 and processing facilities under output 2.3. Ultimately, social inclusivity in decision-making processes at community levels will increase beneficiary ownership of interventions, maintaining engagement in activities beyond the lifespan of the project.

Supporting this, operations manuals and guidance documentation for maintenance of physical assets, as well as guidance on how to utilise cheap and locally accessible resources to maintain these assets will be established to ensure longevity of introduced assets beyond project completion. In the case of assets within value chain operations, increased productivity and profitability will provide financial resources for maintenance post project and will be built into guidance documentation. In the case of community assets, such as climate resilient roads and infrastructure or community-based processing facilities, project specific agreements will be developed prior to implementation that spell out (i) ownership arrangements; (ii) management arrangements; and (iii) monitoring and maintenance action plans, to ensure operationality in the long term. In the case of digital platform maintenance under output 2.1, operationalization and maintenance will follow the Provincial Government Expression process, selectin suitable operator(s) who will be responsible for platform development, support services provision, implementation, and maintenance of the platform.

At the institutional level, establishment of extension services through the development of climate field schools, training of trainer's programmes and incorporation of training on climate resilient approaches within local authority offices will greatly enhance capacity across implementation structures. Development of policy briefs and enhanced engagement with CSOs, local, regional and national authorities will create enabling conditions for policy and regulatory shifts that will entrench climate resilient practices as normative and ensure that gained technical capacities are retained and utilised beyond project completion.

Overall, the sustainability of the projects climate adaptation outcomes will be ensured by: i) the increased financial and economic profitability of proposed climate resilient production methods; (ii) socially inclusive and participatory decision making; (iii) increased community sense of ownership; (iv) clear operation and maintenance arrangements and capacities; (v) strengthened public institutions and technical capacity in extension; and (vi) an enhanced enabling environment for policy and regulatory shifts.

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.

The project will strengthen the resilience of vulnerable populations to the adverse effects of climate change. The project will not involve the conversion of natural habitats to other uses and, in fact, activities such as small-scale climate-resilient agricultural production will enable farmers to improve productivity and resilience of food systems on existing agricultural land, which is expected to reduce rates of deforestation and forest degradation through decreased conversion of forest to agriculture. NbS such as restoration of degraded areas to protect croplands, mangroves and forests from landslides induced by floods and heavy rains will improve soil conservation and fertility, reduce erosion, and soil nutrient depletion, and improve carbon sequestration. Such restoration will enhance biodiversity in agricultural systems as a means to improve the resilience of agro-ecosystems to climate change and climate variability.

Despite the positive impacts that may improve project outcomes, the project may generate limited negative

impacts and potential risks, in particular the rehabilitation and development of 45 km of farm road linking farms to public markets. Thus, the environmental and social principles and policy of SPC and PNG will be triggered to limit negative impacts and environmental and social risks. Specific risks and mitigation measures for these have been outlined in Table 3.

Table 3. Specific risks and mitigation measures for negative impacts of project activities

Project activity	Risks and impacts	Mitigation measures
Construction of climate-resilient roads	Extraction of raw materials for road building damages environment	Construction materials will be acquired sustainably from sources that are in line with government environmental laws and standards
	Poor design results in negative environmental impacts (e.g. erosion)	All roads will be designed within a framework of environmental and social safeguards (ESS) that will include consideration of the specific site where construction is to take place and mitigation of potential environmental impacts to that area
	Pollution of waterways and land during construction	Where a risk of pollution is identified, construction activities will take place within an ESS framework, with environmental impact assessments and management plans to reduce pollution risks, as needed.
Agricultural production using climate-resilient varieties and technologies	Extraction of surface or groundwater leads to depletion of local water supplies	Most activities proposed would lead to a reduction in water extraction. Nonetheless, extraction of water for agricultural production will use sustainable pumping rates considering demand and the recharge rates of water sources.
	Low productivity owing to poor engagement of farmers and insufficient knowledge of innovative techniques and varieties introduced by the project	Community surveys, sensitisation and farmer training will ensure that participating farmers understand and are able to implement the project activities.
Nature-based solutions	Restoration locations, techniques and species used are inappropriate for local environmental conditions, reducing survival of re-planted vegetation and disrupting ecosystem integrity	The type, approach, techniques and species used in ecological restoration will ensure that net positive benefits to the local ecosystems result, in turn providing climate-resilient ecosystem goods and services. Only non-invasive species will be used.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	All components of the project are aligned with the texts, laws and decrees currently applied in PNG. The project complies with the legal framework for agriculture, water and environmental protection	Minor. Once project sites are selected, an environmental and social impact assessment will be developed in line with the AF's ESP principles

<p><i>Access and Equity</i></p>	<p><i>The project intervention logic is to provide beneficiaries in the target area with fair and equitable access to project activities and facilities throughout the planning and implementation phases.</i></p> <p><i>Criteria will be provided to ensure the effective participation of less empowered groups, including women, minorities and highly vulnerable groups.</i></p> <p><i>The people-centred approach adopted by SPC for all its activities ensures that peoples' and communities' rights are always protected.</i></p>	<p><i>Minor.</i></p> <p><i>The project from its design phase has provided access and equity for women and youth groups. The activities are designed to engage and benefit vulnerable people. In addition, the Environmental and Social Management Plan provides guidance on implementation of this measure</i></p>
<p><i>Marginalized and Vulnerable Groups</i></p>	<p><i>The project respects the fundamental rights of people in the areas of intervention and will not infringe on their freedom. The project does not have any activities that are unacceptable to the habits and customs of the beneficiaries</i></p> <p><i>Further, the project will maintain strictly non-discriminatory approaches for all activities and is not expected to result in any risks to people with disabilities, or children and vulnerable adults.</i></p>	<p><i>Minor.</i></p> <p><i>All parties will be consulted to avoid human rights risks</i></p>
<p><i>Human Rights</i></p>	<p><i>The project respects the fundamental rights of people in the areas of intervention and therefore does not infringe on their freedom.</i></p> <p><i>Project activities are not expected to have any negative human rights impacts, but rather enhance rights to water and health.</i></p>	<p><i>Minor.</i></p> <p><i>All parties will be consulted to avoid human rights risks</i></p>
<p><i>Gender Equality and Women's Empowerment</i></p>	<p><i>The project pays special attention to women and youth and United Nation Women is part of the implementing partners.</i></p> <p><i>The project will specifically ensure that gender-sensitivity is mainstreamed throughout project activities.</i></p>	<p><i>Minor.</i></p> <p><i>Women and youth will be the biggest beneficiaries of the project. Gender-sensitive indicators and activities will ensure that the priorities of women and other vulnerable groups are included.</i></p>
<p><i>Core Labour Rights</i></p>	<p><i>The project will ensure that minors do not work on the sites and that national health and safety legislation is applied.</i></p> <p><i>There are no activities planned</i></p>	<p><i>Minor.</i></p> <p><i>The monitoring of the basic labor rights will be carried out throughout the project</i></p>

	<i>under the project that would entail unsafe, indecent or unhealthy working conditions.</i>	
<i>Indigenous Peoples</i>	<p><i>There is a potential for Indigenous people to be affected.</i></p> <p><i>The people-centred approach adopted by SPC for all of its activities ensures that peoples' and communities' rights are always protected.</i></p>	<p><i>Medium.</i></p> <p><i>The project will comply with (i) all adaptation fund requirements, and (ii) national laws.</i></p> <p><i>Broad community support will be obtained. Serious documentation of stakeholder engagement will be done</i></p>
<i>Involuntary Resettlement</i>	<i>None of the project activities are envisaged to lead to relocation or displacement.</i>	<p><i>Minor.</i></p> <p><i>No expropriation, relocation of farmers or disruption of producers' livelihood activities will be undertaken. However, if this occurs, a provision will be made for compensation.</i></p>
<i>Protection of Natural Habitats</i>	<i>The project includes a capacity building component for farmers to equip them with good agricultural practices that will reduce the risk of deforestation and slash and burn practices. However, the project may have negative impacts on the biophysical environment, including natural habitats, if project activities are not properly monitored.</i>	<p><i>Medium.</i></p> <p><i>Measures will be proposed in the environmental and social management plan and will ensure that there is no large-scale deforestation or forest degradation.</i></p>
<i>Conservation of Biological Diversity</i>	<p><i>The project includes reforestation action in various ecosystems to boost biodiversity.</i></p> <p><i>Project activities will be undertaken outside of protected areas. No invasive alien species are likely to be introduced by project activities.</i></p> <p><i>However, there is a possibility that some activities may lead to minor and localised impacts on biodiversity or natural habitat in agricultural settings and on road margins.</i></p>	<p><i>Medium.</i></p> <p><i>The ESIA will demonstrate that the risks and impacts of road and runway development on biodiversity will be avoided, mitigated or compensated for in accordance with the Adaptation Fund's environmental and social policies and national environmental and social regulations</i></p>
<i>Climate Change</i>	<p><i>The project includes adaptation and mitigation actions and is inherently designed to enhance resilience to climate change.</i></p> <p><i>Small GHG emissions may arise from agricultural activities, e.g., use of vehicles running on fossil fuels. However, these are likely to be negligible.</i></p>	<p><i>Minor.</i></p> <p><i>The project design will ensure that there is no large-scale deforestation or forest degradation, and that all GHG emissions are minimised.</i></p>

<p><i>Pollution Prevention and Resource Efficiency</i></p>	<p><i>Water resources are currently exposed to various forms of pollution from the use of fertilizers, pesticides and manure.</i></p> <p><i>The project is only expected to lead to minor and negligible release of pollutants, largely from emissions from agricultural and processing equipment. Some pesticides may be used during the project for agricultural activities.</i></p>	<p><i>Medium.</i></p> <p><i>Measures will be proposed in the ESIA to avoid the risks and impacts of water and soil pollution. All pollution and use of chemicals will be strictly monitored and managed to ensure that it remains within relevant regulations and in compliance with environmental and social safeguard standards.</i></p>
<p><i>Public Health</i></p>	<p><i>The project is not envisioned to have any negative impacts on public health.</i></p>	<p><i>Minor.</i></p> <p><i>Measures will be proposed in the ESIA to avoid contamination with COVID19</i></p>
<p><i>Physical and Cultural Heritage</i></p>	<p><i>No impacts on cultural heritage are anticipated.</i></p>	<p><i>Minor.</i></p> <p><i>Sites to be selected will not be located in a known or suspected cultural heritage area</i></p>
<p><i>Lands and Soil Conservation</i></p>	<p><i>The project will have positive effects on the landscape of the intervention areas and on conservation agriculture. Soil conservation and fertility restoration are key activities of the project through the planned smart agriculture</i></p>	<p><i>Minor.</i></p> <p><i>Project actions will improve soil fertility and sustainable land management</i></p>

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme implementation.

The arrangement for project implementation will revolve around the following units:

Project Board: *The Project Board (PB) will provide strategic direction and guidance to the project; provide high-level quality assurance for results; oversee project implementation and monitor progressive achievement of project objectives; approve work plans, progress reports, and other deliverables submitted by the Project Manager; resolve issues and policy decisions; approve scope changes and ensure that the project responds to national priorities. The national PMU will be the secretariat for the PB and will convene meetings at least twice a year, or as decided by the PB. The PB will comprise high-level representatives from the implementing entity (SPC's Climate Change and Environmental Sustainability (CCES) programme), the executing entities (SPC Land Resources Division (SPC LRD) and Government of Papua New Guinea's Department of Agriculture and Livestock (DAL)) and key stakeholders from government agencies, civil society organizations and other development partners. The PB will be co-chaired by the Head of DAL and SPC. In addition, membership of the PB will include stakeholders such as the National Disaster Centre, CCDA, Conservation & Environment Protection Authority, Department of Land and Physical Planning, Department of National Planning and Monitoring (DNPM), Department of Provincial and Local level Government Authority (DPLGA) and representatives of the Provincial Administrations of Enga, Milne Bay and New Ireland Provinces. NGOs and CSOs representatives will have observer status. The composition of the PB will be refined further at the inception stage of the project.*

AF Implementing Entity

SPC, through the Climate Finance Unit (CFU) within its CCES programme, is the regional implementing entity (RIE) for the project. The CFU will be responsible for oversight and supervisory support on financial management and reporting for the project, as well as the implementation, monitoring and evaluation of project interventions.

SPC serves as the principal scientific and technical organization supporting development in the Pacific region. It was established in 1947 and is owned and governed by its 27 members, including 22 Pacific Island countries and territories (of which PNG is one). SPC works on sustainable economic development, empowered and resilient Pacific communities and enhanced health and livelihoods of Pacific people with a view to achieving its members' development goals. This role as a leading development organization in the region led to the request from PNG's NDA for SPC to act as the RIE for this project (see Annex 7).

Executing Entities

SPC LRD will be a key Executing Entity (EE) for the project, and will be responsible for the implementation of project activities in close coordination with DAL as the National Executing Partner. SPC LRD will ensure that all project activities are implemented in accordance with AF and SPC policies and standards, as well as in line with the policies and priorities of the Government of PNG. This includes the use of the SPC grievance redress mechanism and anti-money laundering/counter-terrorism financing (AML/CTF) provisions, as well as adhering to procedures for efficient use of resources, financial management and procurement. SPC LRD will contract and manage staff under the PMU, who will report to the Director of SPC LRD. The PMU will be housed within DAL to enable closer coordination and communication with the National Executing Partner to ensure effective implementation of the project. SPC LRD will report to SPC CCES, the RIE for the Adaptation Fund.

DAL will lead the EE team in implementing on-the ground interventions across the target project areas. DAL will lead engagement with the DPLGA, the Department for Community Development and Religion, and the Provincial Government administrations to ensure ownership of project activities on the ground with select Districts, Local level Government, Wards, and communities in the project areas. DAL will also engage the project with agriculture extension and research stations operating in the provinces under the National Agriculture Research Institute (NARI), and the Fresh Produce Development Agency (FPDA).

Project Management Unit

The national PMU consists of three (3) core staff: a National Project Manager (NPM), Finance & Procurement Manager (FPM) and Finance & Administration Associate (FAA), along with a Gender and Youth Specialist (GYS). The PMU will be further supported by provincial project officers, i.e. an Enga Project Officer (EPO), Milne Bay Project Officer (MBPO), and New Ireland Project Officer (NIPO). Additional specialists supporting implementation of project activities include a Communications and Media Specialist (CMS) for Component 3 and an Agriculture & Environment specialist (AES) for Component 1. The three core staff of the PMU (NPM, FPM, FAA) will be based in the DAL office in Waigani, Port Moresby, PNG. The three specialists (CMS, AES, GYS) will primarily provide support to the PMU, while the provincial project officers (EPO, MBPO, NIPO) will be based in the Provincial Government Administration or DAL offices in each of the respective provinces but can travel to Port Moresby for supporting the implementation in project. The NPM will report to the Director of SPC LRD. Further details of the roles and responsibilities of the respective positions will be detailed at the full proposal stage.

Provincial Implementation Coordination

At the provincial level, the primary role of the project officers based in each of the three provinces (EPO for Enga, MBPO for Milne Bay and NIPO for New Ireland province) is to lead the coordination and implementation of the project activities, including monitoring and reporting on a timely basis. The project officers will also represent the AF project at Provincial Climate Change Committee (PCCC) meetings. The PCCCs are an established coordinating body of the Provincial Government within each province and are chaired by the Provincial Administrator. The PCCC oversees integration and coordination of climate change activities in provinces, including monitoring progress of mitigation and adaptation projects. Another key function is to ensure that coordination and cooperation within and among provincial agencies and communities are maximized to deliver climate change projects effectively and efficiently. Provincial project officers will promote and update the progress of the project and seek assistance for effective coordination of project activities with the PCCC, and local stakeholders.

Collaborating Partners

- UN Women Papua New Guinea works for the elimination of discrimination against women and girls; the empowerment of women; and the achievement of equality between women and men as partners and beneficiaries of development, human rights, humanitarian action and peace and security, enshrined in the Charter of the United Nations. UN Women supports a 'Markets for Change' program through two projects (PNG Markets, Economic Recovery and Inclusion and Safe and Prosperous Districts Program) funded by the Australian Government and New Zealand's Ministry of Foreign Affairs and Trade respectively. This program empowers women to pursue entrepreneurial activities and improve their livelihoods in market environments that also promote safety and productivity. The program covers 11 provinces including Enga and Milne Bay and benefits market management and over 10,000 market vendors in the targeted markets as well as family members of these vendors. Improved market conditions also benefit the local users of the markets and improve circulation of income and revenue within the local economy. The alignment of this project with UN Women's work led to a letter being issued by the Country Representative in PNG expressing interest in being involved in the implementation of the project (see Annex 8).
- The Department of Works (DoW) is the PNG Government's implementing agency for infrastructure in the country. It is the biggest and one of the oldest government organizations in the country,

responsible for maintaining over 8,700 kms of roads through the country. Of this total, 5,755 km are graveled, 2,779 km are sealed and the remaining 523 km are inaccessible due to factors such as weather conditions.

- National Agriculture Research Institute (NARI) is a research organization set up by the PNG Government to foster applied and adaptive research in agriculture. NARI has regional research extension centers in provinces around PNG to provide technical, analytical, diagnostic and advisory services and up-to-date information to the agricultural sector. NARI, SPC LRD and DAL have worked closely in previous projects to promote climate-resilient agricultural research programs. The project will engage with NARI to source technical advisory support and resource materials (e.g. seedlings and saplings for resilient crops varieties for Component 1, post-harvest activities for Component 2).
- The Fresh Produce Development Agency (FPDA) is a national government agency responsible for the development of the horticulture and fresh produce industry in PNG. From production to marketing, FPDA's primary function relates to commercial horticultural activities across the country. The project aims to work with FPDA to support the implementation of its activities under Components 1 and 2.
- The PNG Forest Authority (PNGFA) is the government body responsible for monitoring and controlling the wood- and forest-based industries and the management of PNG's Forest resources. The project will engage PNGFA's advisory support in implementing NbS under Component 1.

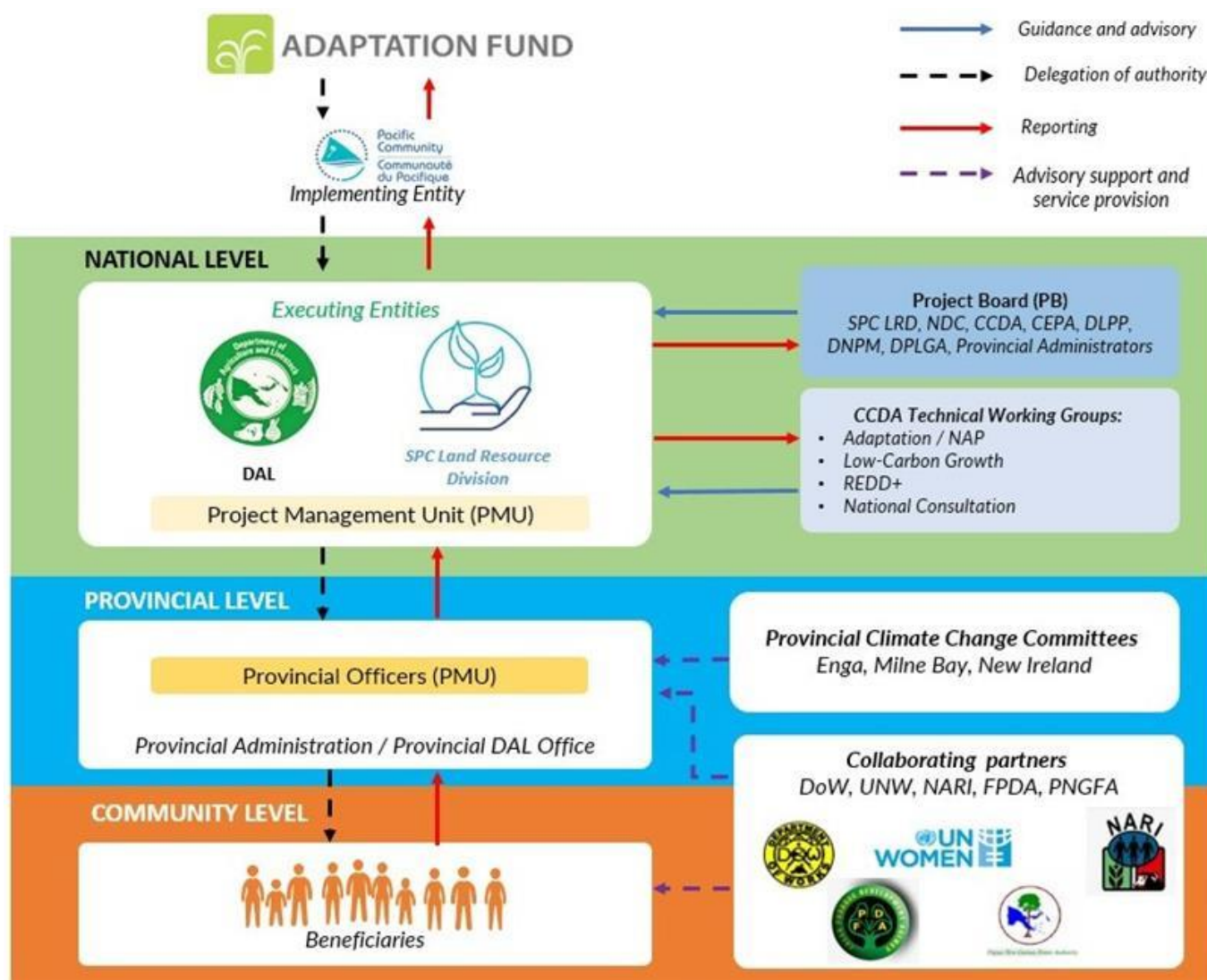


Figure 7: Implementation arrangement scheme

B. Describe the measures for financial and project / programme risk management.

Risk	Initial risk assessment (H = high, M = moderate, L = low)	Proposed mitigation measure	Final risk assessment (H = high, M = moderate, L = low)
<p><i>Inadequate capacities to appropriately manage the day-to-day implementation of the project</i></p>	<p>M</p>	<ul style="list-style-type: none"> -Project Board including National Entity DAL with administrative and financial management autonomy that assumes the fiduciary management functions of the project - Recruitment of experts with specific experiences in development project management and financial management procedures and mastery of project resources planning software - The Pacific Community will be involved in all stages of the recruitment process based on their procurement policies - The staff of the PMU will be linked to the project by renewable annual contracts based on a performance evaluation, - Start-up support considers training in financial management 	<p>L</p>
<p><i>The budgetary process does not follow the appropriate procedures, thus does not allow for a good implementation of project activities</i></p>	<p>M</p>	<ul style="list-style-type: none"> - The budget preparation process will be carried out by the PMU staff which will then be submitted to the Project Board for approval. The Budget will include details of activities, their unit and overall costs, expected outputs and monitoring indicators, and their implementation modalities including procurement procedures - The budgeting process will be defined in the project procedures manual - The approved Budget must be entered into the accounting and financial management software to monitor its implementation - Quarterly financial reports including information on budget monitoring should be submitted to the Project Board 	<p>L</p>
<p><i>Project financial flows and disbursement processes are not timely and compromise the implementation of activities on the ground</i></p>	<p>M</p>	<ul style="list-style-type: none"> - Availability of funds will be made through the standard circuit planned. This includes replenishment of the designated account, direct payment and reimbursement - The use of Certified Statement of Expenditures in support of expenses incurred by the Project is also planned - As regards the implementing partners and public services, the resources will be transferred in accordance with the signed agreements and service contracts, which will have to provide mechanisms for the provision of funds based on the work plan and budget of the convention/contract, and disbursements based on a quarterly and semi-annual report of 	<p>L</p>

Risk	Initial risk assessment (H = high, M = moderate, L = low)	Proposed mitigation measure	Final risk assessment (H = high, M = moderate, L = low)
		the activities carried out by the provider/partner	
Project implementation and financial management procedures do not guarantee sufficient transparency and accountability	H	<ul style="list-style-type: none"> - Three (3) levels of security ensure transparency and control of operations and also mitigate the risk of distortion and dysfunction related to management: (i) The fact that only one person cannot conduct an operation in its entirety (from beginning to end, from execution to final control); (ii) the implementation of accounting self-audits by the PMU; (iii) Audit performed by an independent auditor procured by the PB to ensure true and fair view of the project activities 	L
The project accounting system and financial procedures are not sufficiently formalized	H	<ul style="list-style-type: none"> - The Project will be equipped with management software covering all financial aspects: accounting, commitment, financial statements, budget monitoring, contracts, etc. The staff will have to master the software in order to be able to correctly structure it to meet the needs of management - The monitoring of financial commitments and financial achievements will be based on the use of accounting and financial management software as well as the production of financial dashboards for use by the Project Board and the Pacific Community -The financial statements of the Project will be drafted according to the applicable standards & principles required -The annual financial statements of the Project for the year N will be established no later than the end of February of the year N + 1. The unaudited annual financial statements will be submitted to the Pacific Community and the Project Steering Community for review -The Procedures Manual will provide a detailed phasing of all the stages leading to the closing of the accounts (monthly / quarterly / annual) and the preparation of the financial statements - The accounting system used in the framework of the Project should allow the registration of tax exemptions obtained from the government 	L
The project financial procedures do not allow for proper and regular monitoring	M	<p>Financial monitoring based on:</p> <ul style="list-style-type: none"> a) regular preparation of withdrawal requests, based on rolling quarterly cash plans, and bank monitoring of the designated account and the account of operations 	L

Risk	Initial risk assessment (H = high, M = moderate, L = low)	Proposed mitigation measure	Final risk assessment (H = high, M = moderate, L = low)
		Budget monitoring; accounting monitoring; technical and economic monitoring provided by the PAFA b) The PAFA will prepare quarterly financial and accounting reports (interim financial reports) which will be submitted to the NPD for signature and sent for review to the Pacific Community and the Project Board	
Fluctuations in foreign exchange rates result in unpredictability in the availability of funds for project interventions	L	Financial monitoring and adaptive management of the project budget will be undertaken to re-programme funds as necessary to ensure that any fluctuation in foreign exchange rates has a minimal impact on project activities	L
Beneficiaries and other stakeholders are not satisfied with or raise concerns and complaints about project implementation	L	All project stakeholders, beneficiaries and interested parties will have access to a grievance redress mechanism through which they can lodge grievances and complaints. This will be addressed by SPC in its role a RIE for the project	L

C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

Based on a review of any potential adverse impacts of project activities and in alignment with the principles of the Adaptation Fund, the project is classified into Category B. This was determined through a screening of the project activities using SPC’s Social and Environmental risk assessment questionnaire (see Annex 9). Potential adverse impacts resulting from this project are small-scale in scope, limited to the project area, reversible, and can be avoided, minimized or addressed using recognized good environmental and social management practices. To ensure that the project minimizes the risk of adverse environmental and social impacts from the project, an environmental impact assessment will be conducted, and an environmental and social risk management plan will be developed at the outset of the project to ensure that risks are avoided and, where they are not, detected in a timely manner and mitigated properly.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan, in compliance with the ESP and the Gender Policy of the Adaptation Fund.

The monitoring, evaluation and learning (MEL) system of the proposed project will follow guidance from the AF and will be undertaken in line with the MEL approaches outlined in SPC’s Planning, Evaluation, Accountability, Reflection and Learning Policy. Consistent with national procedures and international good practice, the MEL system comprises six components: (1) strategy and objectives, (2) performance indicators, (3) monitoring & reporting, (4) evaluation, (5) roles and responsibilities and (6) maintaining the MEL system. This MEL system generates information to: assist with planning of project activities at various levels of operations; assess the relevance, effectiveness, efficiency, sustainability and likely impact of interventions funded by the project; identify improvements to the relevance, effectiveness, efficiency, sustainability and likely impact of interventions; communicate to decision makers, the public and other

stakeholders; contribute to sectoral reporting for policy-makers and planners; and contribute to global learning to support climate-resilient green growth of the project areas and the country.

- E. Include a results framework for the project proposal, including milestones, targets and indicators, including one or more core outcome indicators of the Adaptation Fund Results Framework, and in compliance with the Gender Policy of the Adaptation Fund.

(to be added at full proposal elaboration)

- F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

A preliminary mapping of the project level objectives and outcomes against [the AF strategic results framework](#) has been provided below. This is based on consultations and analysis to date and may be revised at full proposal stage dependent on more in depth consultation and analysis.

Project Objective(s)	Project Objective Indicator(s)*	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)**
<i>Integrate climate-resilient agriculture practices into standard farming techniques in PNG for increasing productivity, resilience and food security of the most vulnerable smallholder farmers</i>		Outcome 5: Increased ecosystem resilience in response to climate change and variability induced stress	5. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress	3,954,584
		Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.1 Percentage of households and communities having more secure access to livelihood assets	
<i>Boost the ability of vulnerable smallholder farming communities to access to postharvest processing, storage technologies, and profitable markets</i>		Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets	4.1. Responsiveness of development sector services to evolving needs from changing and variable climate	3,460,880
			4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	
<i>Foster the scale-up of climate-resilient cropping, processing, and storage practices through capacity building, and knowledge</i>		Outcome 8: Support the development and diffusion of innovative adaptation practices, tools and technologies	8. Innovative adaptation practices are rolled out, scaled up, encouraged and/or accelerated at regional, national and/or subnational level.	849,100

<i>management.</i>				
Project Outcome(s)	Project Outcome Indicator(s)*	Fund Output	Fund Output Indicator	Grant Amount (USD)**
<i>Enhanced climate-resilience of agricultural production for vulnerable small-scale farmers</i>		Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	6.1.1.No. and type of adaptation assets (tangible and intangible) created or strengthened in support of individual or community livelihood strategies	
			6.2.1. Type of income sources for households generated under climate change scenario	
		Output 5: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability	5.1. No. of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type and scale)	
<i>Improved access to appropriate processing, storage technologies, and profitable markets</i>		Output 4: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	4.1.1. No. and type of development sector services modified to respond to new conditions resulting from climate variability and change (by sector and scale)	
			4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale)	
<i>Scale-up of climate-resilient agriculture practices, processing, and storage technologies, facilitated through capacity building, and knowledge management.</i>		Output 8: Viable innovations are rolled out, scaled up, encouraged and/or accelerated.	8.1. No. of innovative adaptation practices, tools and technologies accelerated, scaled-up and/or replicated	
			8.2. No. of key findings on effective, efficient adaptation practices, products and technologies generated	

* Please note that project specific indicators will be developed at full proposal stage after further analysis and project level consultations have taken place.

** Budget allocations per outcome/output will be further refined at full proposal stage.

- G.** Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

See Annex 10.

- H.** Include a disbursement schedule with time-bound milestones.

(to be added at full proposal elaboration)

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an Appendix to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

<i>William Lakain</i> Acting Managing Director Climate Change & Development Authority, Papua New Guinea	Date: 10 January 2022
---	-----------------------

B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans, the PNG Vision 2050, the PNG Development Strategic Plan 2010 - 2030, the Medium-Term Development Plan III 2018-2022, the National Strategy for Responsible Sustainable Development (StaRS), PNG's Enhanced National Determined Contributions, and the PNG Sustainable Development Goal Roadmap of 30 Actions by 2030, the Climate Change (Management) Act 2015 and relevant regulations, and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
<i>Stuart Minchin</i> Director General SPC Implementing Entity Coordinator	
Date: 10 January 2022	Tel. and email: +687 262000; spc@spc.int
Project Contact Person: Dirk Snyman	
Tel. and Email: +687 262000, dirks@spc.int	

(Signed and scanned version included as Annex 1)

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government²⁴ *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an Appendix to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

<p><i>William Lakain</i> Acting Managing Director Climate Change & Development Authority, Papua New Guinea</p>	<p>Date: 10 January 2022</p>
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B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

<p>I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans, the PNG Vision 2050, the PNG Development Strategic Plan 2010 - 2030, the Medium-Term Development Plan III 2018-2022, the National Strategy for Responsible Sustainable Development (StaRS), PNG's Enhanced National Determined Contributions, and the PNG Sustainable Development Goal Roadmap of 30 Actions by 2030, the Climate Change (Management) Act 2015 and relevant regulations, and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.</p>

<p><i>Stuart Minchin</i> Director General SPC Implementing Entity Coordinator</p>	
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<p>Date: 10 January, 2022</p>	<p>Tel. and email: +687 262000; spc@spc.int</p>
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<p>Project Contact Person: Dirk Snyman</p>
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<p>Tel. and Email: +687262000, dirks@spc.int</p>

²⁴ Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

CLIMATE CHANGE AND DEVELOPMENT AUTHORITY



OFFICE OF THE MANAGING DIRECTOR

3rd Floor, Dynasty Tower, Savannah Heights,
Waigani Drive, WAIGANI, Port Moresby

P O Box 4017, Boroko 111, NCD.
Papua New Guinea



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Letter of Endorsement by Government

10 January 2022

Adaptation Fund Board Secretariat
1818 H Street, NW
MSN P4-400
Washington, DC 20433
USA

Email: afbsec@adaptation-fund.org

Dear Adaptation Fund Board,

Subject: Endorsement for “Adaptation of Small-Scale Agriculture for improved food security of communities in Papua New Guinea (ASSA)” project proposal.

In my capacity as designated authority for the Adaptation Fund in Papua New Guinea, I confirm that the above-mentioned project proposal that is in accordance with the Government’s national priorities in implementing national adaptation activities to reduce adverse impacts and risks, posed by climate change in Papua New Guinea.

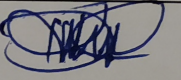
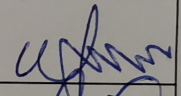
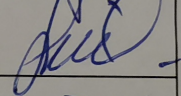

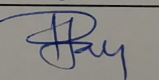
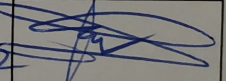
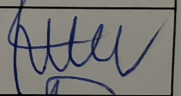
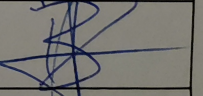
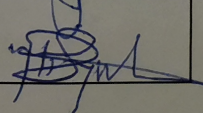
Accordingly, I am pleased to endorse the above project concept note proposal with support from the Adaptation Fund. If approved, the project will be implemented by the Pacific Community (SPC) and executed collectively by the Department of Agriculture & Livestock of the Government of Papua New Guinea, and the Lands and Resources Division of the Pacific Community.

Yours sincerely,

.....
William Lakain
Acting Managing Director

Climate resilient green growth in Enga consultation workshop

21 September 2020, Wabag, Enga Province, Papua New Guinea

No.	Name	Ministry / Department	Position	Email	Telephone	Signature
1	Dorothy Kukum	Enga Provincial Administration	Director Comm Dept	dkukum@gmail.com	73062165	
2	MATTHEW TALASONE	FOREST AUTHORITY	Prov Forest Manager		71432091	
3	Simon Yopo	Natural Resources B.	Director - MLC	Simonykoy@gmail.com	73750486	
4	Melepa Yakili	Enga / Lands	Director	melepayakili@gmail.com	72033591	
5	Peam Yakali	Education Sirunki H.S.	Head teacher	peamyakali2@gmail.com	72625844	
6	FRANK KAME	Health Wabag Hospital	Pharmacy Technician	N/A	73574742	
7	RONNIE TILGHE	DAL	Director	ronnietilghe@gmail.com	72533605	
8	BEN SARETT	Policy + Planning	Senior Planner	bensarett@gmail.com	73052383	
9	ELIZAH LITA	FOREST AUTHORITY	NURSERY OFFICER	diwainang@gmail.com	7022281	

Climate resilient green growth in Enga consultation workshop

1 September 2020, Wabag, Enga Province, Papua New Guinea

No.	Name	Ministry / Department	Position	Email	Telephone	Signature
10	BUSA KEENE	ACACIA HOUSINGS LTD	MB	busak23@gmail.com	71638537	Busakan
11	Philip Kepson	Enga Provincial Administration	Director Medic	pkepson08@gmail.com	73232539	Philip
12	Ronnie Tirone	EPA - Wabag	Director	ronnietirone@gmail.com	72633609	Ronnie
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14	Timothy Lawton	EPA	Environment	timilawton@gmail.com	73009150	Timothy
15	KEITH YAIN	EPA	Director Director	Keithyain@gmail.com	73693068	Keith
16						
17						
18						

30 November 2021

Mr. Peniamina Leavai
Deputy Country Representative
Global Green Growth Institute
Dynasty Tower
Savannah Heights, Waigani, NCD 121
Port Moresby

Dear Mr. Leavai,

Subject: UN Women’s support to the potential project on ‘Adaptation of Small-Scale Agriculture for Improved Food Security resilient communities in Papua New Guinea’

This letter serves to inform you of our highest regard to the Global Green Growth Institute for the unconditional commitment and support to the people of Papua New Guinea to bring transformative socio-economic benefits in their lives through impactful climate resilient and green growth interventions at scale.

With this letter, I am pleased to confirm United Nations Entity for Gender Equality and Women’s Empowerment (UN Women)’s full support to the proposed project on ***Adaptation of Small-Scale Agriculture for Improved Food Security and Resilient Communities in Papua New Guinea***. Such a project is welcomed as the impacts of climate change, and a fast-growing rural population, with women and young girls being the most vulnerable to impacts, are major impediments to the sustainability of natural resources and food security in Papua New Guinea. With the onslaught of the Covid-19 pandemic on PNG’s economy and people, it is timely that such project focus on championing the role of women and young girls in climate smart small-scale agriculture and is deployed to help PNG economy and communities recover, build back better, greener, and eradicate poverty.

UN Women expresses interest to support GGGI and Climate Change and Development Authority as an implementing partner that will lead integration of gender and women’s empowerment in the design, implementation, monitoring and evaluation of the project including ensuring that adequate budgets are allocated towards results on gender equality and women’s empowerment in the project. As an implementing partner, UN Women will access part of the budget and manage the implementation of specific outputs that target women. UN Women has a wide range of partnerships with PNG provincial authorities, development partners, and knowledge networks that can be leveraged to support this project.

Do not hesitate to contact me should you need further information.

I look forward to bringing our collaborative initiative to fruition.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Themba Kalua', enclosed in a light gray rectangular border.

Themba Kalua
UN Women Country Representative

Meeting of the Provincial Climate Change Advisory Committee to select Provincial CRGG Priorities - PCCAC meeting Day # 3

Provincial CRGG Priorities Selection Meeting - 1st October 2020 | Alotau, Milne Bay Province

Name	M/F	Organization/Division	Designation	Initial	OC	Email/Phone
1) Angela Nelson	F	Women's Representative Provincial Assembly	Women's Rep			70195875 angela.nelson74@gmail.com
2) Irene Ioban	F	PNGLMWA	President			72670597
3) Roslynn Y Dalele	F	Provincial Assembly - PIGA	Assembly Clerk			roslynn.dalele@milnebay.gov.pg 70245009
4) William Vincent	M	Words Supervision Unit - WEPG	Project Eval.			william.vincent.mbusu@gmail.com 79112950
5) Ivan Maraka	M	ALOTAU URBAN LOCAL LEVEL GOVT	SENIOR ENVIRONMENTAL HEALTH OFFICER			ivan.maraka@gmail.com 72757617
6) MISA LIONEL	M	ADMINISTRATION	ADVISOR PLANNING			misa.lionel@milnebay.gov.pg 641112/132, 703585262
7) David K. Mitchell	M	Ecotopian Advocates	Director			dmitche11.eca@gmail.com 72003300
8) Sioni Sioni	M	WBTRB	Manager			sioni@milnebay.travel 70671731
9) Lulu Osembo	F	MILNE BAY ADMINISTRATION	ENVIRONMENT & CONSERVATION OFFICER			l.osembo@gmail.com/ lulu.osembo@milnebay.gov.pg
10) Anthony Yeagi	M	NBPOL WBE	ENVIRONMENT OFFICER			teyagis@gmail.com
11) Michael Tounokon	M	NBPWA - Public Health	Provincial EHO			tounokon@gmail.com
12) Jonkh Anka	M	CDA - A day later & projects	Manager. Projects			jonkhanka@gmail.com
13) Nathan	M	Relief team Milne Bay	Adviser for houses			natnathana@gmail.com

**CLIMATE RESILIENT
GREEN GROWTH PROJECT**



Name	M/F	Organization/Division	Designation	Initial	OC	Email/Phone
14)						
15) Jonathan Koppala M		MBA-DAL	PA	JK		jkoppala@gmail.com 6411037 / 73088954
16) BILLY KANGU M		CCDA	ASSISTANT MANAGER	WK		billykangu@gmail.com
17) SENITA UMEHA F		TNC	CONSERVATION PRACTITIONER	SW		swuavia@tnc.org
18)						
19)						
20)						
21)						
22)						
23)						
24)						
25)						
26)						
27)						

Meeting of the Provincial Climate Change Committee to select Provincial CRGG Priorities

Provincial Priorities Selection Meeting - 1st October 2020 8th PCCC 2nd Day w/Shop

Name	M/F	Organization/Division	Designation	Initial	OC	Email/Phone
1) WETTE OWEN	F	NIPA / COMMUNITY DEPT	ADMINISTRATIVE OFFICER	OW	34.4	owen160@gmail.com
2) MISBIL NELSON	F	NIPB	REG REP - DOMAINS REP. CH/UKAN. HOUTH	NS	35.2	79222607.misbilnelson287@gmail.com
3) NIGEL TAHIRA	M	NIPA	MANAGER - PLANNING	TA	35.1	ntahira@hotmail.com / 71350249
4) FRANCIS SABADI	M	NEWCREST	MR - KJG OFFICE	SA	34.9	Francis.Sabadi@newcrest.com.au / 72380920
5) JONNY ARUA	M	CDK	MANAGER - ADP	AR	34.1	jonnyarua@gmail.com
6) TREVOR GAUGH	M	GGGI	PROJECT OFFICER	GA	35.7	
7) STUBBS	F	GGGI	"	ST	35.58	
8) CHARLES IHA	M	GGGI	SENIOR PROJ OFFICER	CH	35.5	CHARLES.IHA@GGGI.ORG
9) SILVIA TAGGAW	F	GGGI	PROJECT OFFICER	TA	34.6	Silvia.Taggaw@GGGI.org
10) SHIRLEY-ANNE GERTS	F	CCDA	PA & Comms	GA	35.2	shirleyannegetts37@gmail.com
11) JENNIFER NILA	F	GGGI	Associate: Finance Admin	NI	34.5	jennifer.nila@GGGI.org
12) GIDEON BERGIA	M	NIPA	DIRECTOR DPI	GB	34.4	gideon.bergia@gmail.com
13) STANLEY PAULUS	M	Climate Change NIPA	MANAGER	PA	36.7	stnlpaulus@gmail.com
14) JAMES BIRAO	M	NIPA	ESD. MKNKAGAR	BA	34.6	James@nipadivi.gov
15) Matthew Both	M	W&S	Marine Technical Advisor	BO	35.4	78778857



OFFICE OF THE SECRETARY



Department of Agriculture and Livestock

P.O. Box 2033, PORT MORESBY, NCD, PAPUA NEW GUINEA

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30th November 2021

MR. PENIAMINA LEAVAI

Deputy Country Representative

Global Green Growth Institute

Dynasty Tower

Savannah Heights, Waigani, NCD 121

Port Moresby

Dear Mr. Leavai,

SUBJECT: DAL PARTNERSHIP AND SUPPORT TO THE POTENTIAL PROJECT ON ADAPTATION OF SMALL-SCALE AGRICULTURE FOR IMPROVED FOOD SECURITY AND RESILIENT COMMUNITIES IN PAPUA NEW GUINEA.

This letter serves to inform you of our highest regard to your good self and the Global Green Growth Institute for the unconditional commitment and support to the people of Papua New Guinea in realizing its climate resilient and green growth potential.

With this letter, I am pleased to confirm DAL's support to the proposed project on Adaptation of Small-Scale Agriculture for Improved Food Security and Resilient Communities in Papua New Guinea. It is indeed welcoming to have such support at a time when we need it the most. The impacts of climate change, and a fast-growing rural population, is having a major impediment to sustainability of natural resources and food security in Papua New Guinea. With the onslaught of the covid19 pandemic on our people, it is only convenient that such a project that focuses on small-scale agriculture can be deployed to help alleviate the impact, eradicate poverty and bring our people into recovery now and the near future.

As the lead government agency in the agriculture sector in PNG, DAL is interested in being a lead implementing partner with GGGI and CCDA to coordinate with all stakeholders involved in the project, including the public service, the private sector, professional organizations, NGOs and associations, etc.

As an implementing partner, DAL can provide in-kind contribution to the project, through making available its Waigani and provincial office spaces, human resources, and assets including transport and other to support the design, implementation, and monitoring and evaluation of the project.

Please do have your team to liaise with our team Mr. Max Pumina – Chief Project Planner, Mrs. Daisy Lepon – Senior Policy Advisor, led by Mr. Brown Gende to develop the proposal.

Sincerely,

STEPHEN MOMBI

Acting Secretary

CLIMATE CHANGE & DEVELOPMENT AUTHORITY



OFFICE OF THE MANAGING DIRECTOR

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05th January 2022

Adaptation Fund Board Secretariat
1818 H Street, NW
MSN P4-400
Washington, DC 20433
USA

Email: afbsec@adaptation-fund.org

Dear Adaptation Fund Board,

Re: The National Designated Authority support for Pacific Community as Regional Implementing Entity for the "Adaptation of Small-scale Agriculture for improved Food Security of Resilient communities in Papua New Guinea." (ASSA) Proposal.

Dear Sir/Madam:

As the National Designated Authority (NDA) for the Adaptation Fund, I would like to inform you that the Climate Change and Development Authority of Papua New Guinea, is fully supportive of the Concept Note proposal and the role of the Pacific Community (SPC) as Regional Implementing Entity for the project and we are willing to work in close collaboration with SPC to take this proposal further, with the support of the Global Green Growth Institute (GGGI), should it be accepted for funding to the formal detailed full proposal stage.

We remain at your disposal for any information you may require.

Sincerely,

.....
William Lakain
Acting Managing Director

Social and Environmental Risks and Impacts Assessment

The social and environmental assessment is a process that aims at reviewing a project to identify whether it is likely to cause adverse social and environmental risks and/or impacts.

What for? Make an initial assessment of risks and/or impacts based on criteria allowing to categorize them according to their significance (low – medium or high- risk project).

When? It is a desk assessment undertaken at the stage of project design, before project proposal approval, to determine if further assessment of the identified risks/impacts is necessary and if prevention or mitigation measures can be integrated within the project activities.

How? It is based on information made available for the project design and should be conducted in using the Social and Environmental assessment Questionnaire. It is the assessment Report that determines the risk category for each project on the basis of the identification and ranking of risks/potential impacts, in taking account of available information as well as comments from consulted stakeholders including affected populations.

By Whom? The Project Manager in charge of the Project Concept Note is responsible for filling in the SER Questionnaire and make recommendations for the next steps.

Next Steps:

- if the project is ranked as “**low risk**” from the screening process, no further assessment is needed and the project can be approved after technical appraisal.
- if the project is ranked as “medium” or “**high risk**”, further assessment may be needed in order to determine if it can be implemented while not triggering the social and environmental safeguards of SPC SER Policy, and under what conditions or adjustments, including mitigation measures.

SER Screening Questionnaire		Risk Description		Risk assessment	Score
		Yes, No, n/a, TBD	If no answer, please shortly justify If Yes answer, describe potential issues, specify activities causing the risk identified. characterise the identified risk or impacts (likelihood, intensity, duration, reversibility) Indicate the risk localization (local/national/global)	to be completed only if the answer is "Yes" under the risk description column	Characterize the risk level: Low (L), Medium (M) high (H)
1. Labour and Working Conditions	Will the project present unsafe, indecent or unhealthy working conditions for stakeholders involved?	No	There are no activities planned under the project that would entail unsafe, indecent or unhealthy working conditions.		L
	Is there potential for the project to apply adverse discriminatory practices based on religious, racial, gender, disability or political considerations?		The project will maintain strictly non-discriminatory approaches for all activities.		L
2. Climate change	Could the project adversely contribute to climate change by generating greenhouse gas emissions including through deforestation or forest degradation?	Yes	Small GHG emissions may arise from agricultural activities, e.g. use of vehicles running on fossil fuels. However, these are likely to be negligible.	The project design will ensure that there is no large-scale deforestation or forest degradation, and that all GHG emissions are minimised.	L
	Could the project negatively affect the resilience to climate change?	No	The project is inherently designed to enhance resilience to climate change.		L

3. Resource Efficiency and Pollution Prevention	Will the project generate hazardous waste? Is the project likely to lead to environmental damages due to an uncontrolled management of waste?	No	The project is unlikely to generate large amounts of waste, and no waste generated is expected to be hazardous.		L
	Is the project likely to lead to pollutants release? Are chemicals (including pesticides) likely to be used during the project?	Yes	The project is only expected to lead to minor and negligible release of pollutants, largely from emissions from agricultural and processing equipment. Some pesticides may be used during the project for agricultural activities.	All pollution and use of chemicals will be strictly monitored and managed to ensure that it remains within relevant regulations.	M
4. Human Rights	Is the project likely to negatively impact on the human rights of the affected populations? (e.g. their rights to water, work, health, to a healthy environment, etc.)?	No	Project activities are not expected to have any negative human rights impacts, but rather enhance rights to water and health.		L
	Is the project likely to create less favourable treatment of, or discrimination against, any person or group?	No	The project management will be undertaken in such a way as to ensure that there is no discrimination.		L
	Is the project likely to increase the risk to people with disability (physical, hearing, visual, intellectual and sensory impairments)?	No	The project is not expected to result in any risks to people with disabilities.		L
	Is the project likely to increase risks to children or vulnerable adults through interaction with SPC staff and non-staff?	No	The project is not expected to result in any risks to children or vulnerable adults.		L
5. Impacts on Affected communities	Any risk that populations perceive they did not receive enough opportunities to raise their concerns regarding the project?	Yes	It will not be possible to consult with all potential beneficiaries during the project design. Thus it is possible that some populations may feel that they were not afforded the opportunity to raise their concerns.	Project consultations will – to the greatest extent possible – attempt to engage with as many interested parties as possible. Parties feeling aggrieved will be able to use a Grievance Redress Mechanism to have their concerns heard.	L

	Is there a risk that the project would create or exacerbate conflicts with or within affected populations?	No	None of the project activities are judged to be likely to create or exacerbate any forms of conflict.		L
	Is the project likely to increase community exposure to disease (water-borne, water-based, water-related and vector-borne diseases as well as communicable diseases)?	No	Project activities are not expected to have any impacts on exposure to diseases of any sort.		L
6. Gender	Is there a likelihood that the project would have adverse impacts on gender equality, and/or the situation of women and girls?	No	The project will specifically ensure that gender-sensitivity is mainstreamed throughout project activities.	Gender-sensitive indicators and activities will ensure that the priorities of women and other vulnerable groups are included.	L
	Have community groups/leaders raised gender equality concerns regarding the project during the stakeholder engagement process?	No	To date, no such concerns have been raised.	During on-going stakeholder engagement, project proponents will ensure that gender equity is included as a core aspect of consultations.	L
	Would the project potentially limit women's ability to access or use natural resources upon which they depend for a livelihood?	No	On the contrary, the project will enhance the ability of women to access natural resources for their livelihoods.		L
	Is the project likely to increase risks of sexual harassment or sexual exploitation?	No	All project activities will be strictly monitored to ensure no risk of sexual harassment or exploitation occurs.		L
7. Resettlement	Could the project involve the physical relocation of people (encompassing displacement as well as planned relocation)?	No	None of the project activities are envisaged to lead to relocation or displacement.		L
8. Use of natural resources	Could the project lead to adverse impacts on biodiversity or natural habitat?	Yes	There is a possibility that some activities may lead to minor and localised impacts on biodiversity or natural habitat.	All project activities will be strictly monitored and managed to ensure that they remain within relevant regulations.	M

	Is the project likely to negatively impact a protected area?	No	Project activities will be undertaken outside of protected areas.		L
	Is the project likely to introduce invasive alien species to the project area?	No	No invasive alien species are likely to be introduced by project activities.		L
	Is the project likely to restrict people's access to natural resources and their means of livelihoods?	No	Project activities are designed to enhance people's access to natural resources and livelihoods.		L
	Is the project likely to favour unsustainable exploitation of a renewable resource	No	While use of renewable resources (especially water) is likely to take place, it will be ensured that this is done sustainably.		L
9. Peoples right and tenure	Is the project likely to negatively affect peoples' or communities' rights: rights of affected populations, including procedural rights such as the right to be consulted or to have access to information, or substantive rights (real or personal) such as the right of access to natural resources or benefit-sharing related to these natural resources (carbon rights, benefits from access to genetic resources...).	No	The people-centred approach adopted by SPC for all of its activities ensures that peoples' and communities' rights are always protected.		L
	Could the project require the relocation of people from their homes or lands subject to traditional ownership or customary use?	No	Project activities do not entail any relocation or displacement of people or communities.		L
10. Cultural heritage	Is the project likely to negatively affect cultural heritage?	No	No impacts on cultural heritage are anticipated.		L
	Is the project likely to negatively affect a legally protected cultural heritage area?	No	No impacts on cultural heritage are anticipated.		L

Risk categorization process	<ul style="list-style-type: none"> • If only L on the right-hand column, then the project is Low risk > no further assessment is required • If one or more M then the project is Medium risk > further assessment is required to formulate alternatives • If one of more H, > topic assessment is compulsory, including for the assessment of credible alternatives (NB: the project may have to be categorized as Medium or High risk depending on the outcome of the ESIA) 	
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Conclusion:

- Risk Categorization (tick the relevant answer in the right-hand box): - Low - Medium - High

Recommendations for next steps:

- Is further assessment needed (Please specify if it is a topic or full Environmental and Social Impact Assessment, as well as in which areas or on which topic(s) any such further assessment should be conducted):

Topics/areas to be further assessed	Type of Assessment
All topics/areas	Further environmental and social impact screening and/or assessment to be undertaken during formulation of the project proposal, as per Adaptation Fund and SPC requirements.

I, undersigned, Mr Dirk Snyman, hereby certify that I have answered this Questionnaire truthfully and to the best of my knowledge.

Signature:



10 January 2022

Annex 10. Indicative budget

Component	Output	Activity	Budget Account Description	Notes and Assumptions	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)	
Component 1: Small-Scale Climate-proofed agricultural production	Output 1.1. Deploying climate-resilient varieties	Activity 1.1.1: Identify Champion farmers for seed multiplication sheds	workshop	In collaboration with research institutions and local authorities, conduct the identification process and will organize three workshops with Champions farmers selected to present the project (1st WS) and organize the collaboration for seed multiplication sheds (2nd and 3rd WS) @ US\$ 5000 per workshop	15,000					15,000	
		Activity 1.1.2: construct 30 multiplication sheds for improved and resilient varieties of crops	construction	Construction of 30 multiplication sheds @ US\$ 10000 per shed / 15 sheds per year	150,000	150,000					300,000
			equipment	Agricultural production equipment and irrigation systems in the multiplication shed @ lump sum of US \$5000 / 15 sheds per year	75,000	75,000					150,000
			crops	Annual lump sum to purchase the improved and resilient crops / US\$1000 per shed	15,000	30,000	30,000	30,000	30,000		135,000
		Activity 1.1.3: support Champion farmers with technical trainings	training	annual trainings (x2) and recycling of champions farmers @ US\$ 3000 / 30 participants per training - The PMU will lead the training in collaboration with research institutions		6,000	6,000	6,000			18,000
		Activity 1.1.4: distribute adapted rice seeds and replicate innovative planting techniques to 400 farm households in upland communities	training	The PMU in collaboration with research institutions and the Upland Rice Program initiative of Government will elaborate the distribution action plan and train 400 farm households on replicate innovative planting techniques Training @ US\$ 3000 / 10 trainings of 40 participants per year (Y1, to Y4)	30,000	30,000	30,000	30,000			120,000
			crops	Annual lump sum to purchase the improved and	50,000	50,000	50,000	50,000			200,000

			resilient crops / US\$500 per farm household								
	Total output 1.1			335,000	341,000	116,000	116,000	30,000	938,000		
	Output 1.2. Support agriculture extension services	Activity 1.2.1: Identify and setup 30 demonstrators or climate field schools	workshop	organize two workshops to setup 30 demonstrators or climate field schools / one WS @ US\$ 3000 will serve to conduct reflection, setup and organize 15 demonstrators or climate field schools	6,000					6,000	
		Activity 1.2.2: Design the training curriculum and manual on resilient agronomic packages for sweet potatoes, taro, coffee, and rice (e.g., potatoes cropping in irrigated systems, drainage systems) and translate into local languages as appropriate	national consultant	specialist in Agronomy and Climate change to develop the curriculum and manual during 40 days @ US\$ 400	16,000					16,000	
			translation	Translations of curriculum and manual in 2 local languages (Tok Pisin, Hiri Motu) @ US\$ 0.1 per word for a document of max 20000 words	4,000						4,000
			Activity 1.2.3: Provide a series of technical training to member farmers of the field school on resilient agronomic packages and input support to lead farmers to pilot and implement improved techniques	training	each demonstrator or climate field school will organize quarterly training sessions to exchange, share knowledge, strength skills and do cross-visits to other field schools / each session will cost a lumpsum of US\$ 500	60,000	60,000	60,000	60,000	60,000	300,000
			Activity 1.2.4: Identify and map potential (non-public) extension services providers including well-functioning cooperatives, grassroots organizations, intermediaries, smallholder SMEs, and input suppliers for each province	n/a	This activity will be conducted by Provincial Officers and cost under the Project Executive Cost	-	-	-	-	-	-
			Activity 1.2.5: support for 50 contracts related to extension services provision between local service providers and farmers organizations	grant	Annual technical support - @lump so USD 1500 per contract	75,000	75,000	75,000	75,000	75,000	375,000

	Total output 1.2				161,000	135,000	135,000	135,000	135,000	701,000	
	Output 1.3. Enhancement of ecosystem services through nature-based solutions to protect croplands, grasslands, mangroves and forests from landslides and coastal erosion induced by flooding and heavy rain events	Activity 1.3.1: carry out ground survey and map degraded areas for reforestation in project area	professional firm	A firm to conduct the survey and map degraded area for reforestation @ US\$ 25000		25,000				25,000	
		Activity 1.3.2: implement a reforestation program of 3000 ha around croplands, grasslands, mangroves and degraded forest, vegetation planting along riverbanks or unstable lands	setup	Implementation 3000 ha of reforested areas @ US\$ 650 per ha (including procurement and transport of saplings)		650,000	650,000	650,000		1,950,000	
		Activity 1.3.3: conduct awareness raising events with local communities on the importance of ecosystem services to get their participation in the protection and maintenance of reforested areas	workshop	Annual awareness workshops @ US\$ 5000 per province with local authorities in each province and local communities where reforestation program will take place		15,000	15,000	15,000	15,000	60,000	
			media	communication local radio and TV @ a lumpsum of 10000 per year (from Y2)		10,000	10,000	10,000	10,000	40,000	
			Support to the implementation of project	personnel cost	Provincial Officers (1/3 of the time) for project implementation, coordination, and day to day management at provincial level (Enga, Milne Bay, and New Ireland) @ US\$ 2500 per month/person considering annual inflation of 4.9%	30,000	31,470	33,012	34,630	36,326	165,438
				personnel cost	Agriculture and Environment Specialist @USD2500 per month considering annual inflation of 4.9% - 1/3 part time	10,000	10,490	11,004	11,543	12,109	55,146
		Local travel	travel	Lumpsum of US\$ 4000 per year for project coordination travel and field visit	4,000	4,000	4,000	4,000	4,000	20,000	
	Total output 1.3				44,000	745,960	723,016	725,173	77,435	2,315,584	
	Total Component 1				540,000	1,221,960	974,016	976,173	242,435	3,954,584	
Component 2: Climate-resilient postharvest solutions and	Output 2.1: Establish sustainable commercial relationships linking input	Activity 2.1.1: Assess existing agricultural market information and flows in project areas to identify needs and gaps	professional firm	Agricultural market specialized firm to conduct the assessment @ USD 25000	25,000					25,000	

access to market	suppliers, technology providers, vulnerable communities, small-scale processors, traders, and produce buyers										
		Activity 2.1.2: Support the development of an integrated digital platform to link farmers, small-scale processors, traders, and buyers along the value chain	professional firm	Setup of digital integrated platform (@ US\$ 50000: Y1) and annual maintenance support to update data (@ US\$ 8000) - considering annual inflation of 4.9%		50,000	8,000	8,392	8,803	75,195	
	Total output 2.				25,000	50,000	8,000	8,392	8,803	100,195	
	Output 2.2. Improving connectivity between cooperatives and markets through climate-resilient farm road networks	Activity 2.2.1: update Operation & Maintenance (O&M) Guidelines for farm roads to include climate-resilient road standards and codes	professional firm	A firm specialized in O&M for road to update the Guidelines for farm roads @ US\$ 20000	20,000					20,000	
		Activity 2.2.2: upgrade farm roads connecting farms to the main public market to climate resilience farm roads and tracks at least 45 km	rehabilitation	Rehabilitation of at least 45 km farm roads @ US\$ 20000 the km - considering annual inflation of 4.9%		400,000	314,700	220,080		934,780	
	Total output 2.				20,000	400,000	314,700	220,080	-	954,780	
	Output 2.3. Distribution of eco-friendly technologies for processing, and storage in the project area for coffee, copra, and food crop processing	Activity 2.3.1: identify women and youth farmers organizations that will be the beneficiaries and their specific need	n/a	To be conducted by Provincial Officers whose times have already been costed						-	
		Activity 2.3.2: procure and install the processing and storage technologies	equipment	solar-powered dryers, solar powered storage facilities @ lump sum of USD 210000 per organization (x10) - including procurement, transport, taxes and installation		2,100,000					2,100,000
		Activity 2.3.3: develop O & M guidelines in local languages and provide hand-on training sessions on the operation and maintenance, and management of the technologies to the beneficiary farmer organizations	International consultant	International consultant specialized in solar equipment to develop O&M guidelines and provide hand-on training session to beneficiaries @ US\$ 650 for 50 days		32,500					32,500
			national consultant	National consultant specialized in solar equipment to support in the development of O&M guidelines and provide hand-on training session to		24,000					24,000

				beneficiaries @ US\$ 400 for 60 days							
			international travel	International travel of the international consultant @ US\$ 3820 (e-ticket @ US\$2000 and DSA @ US\$ 182) (x 10days)		3,820					3,820
			training	Training of organization members @ US\$ 5000		5,000					5,000
		Support to the implementation of project	personnel cost	Provincial Officers (1/3 of the time) for project implementation, coordination, and day to day management at provincial level (Enga, Milne Bay, and New Ireland) @ US\$ 2500 per month/person considering annual inflation of 4.9%	30,000	31,470	33,012	34,630	36,326		165,438
			personnel cost	Agriculture and Environment Specialist @USD2500 per month considering annual inflation of 4.9% - 1/3 part time	10,000	10,490	11,004	11,543	12,109		55,146
		Local travel	travel	Lumpsum of US\$ 4000 per year for project coordination travel and field visit	4,000	4,000	4,000	4,000	4,000		20,000
		Total output 2.3			44,000	2,211,280	48,016	50,173	52,435		2,405,904
		Total Component 2			89,000	2,661,280	370,716	278,645	61,239		3,460,880
Component 3: Capacity building and knowledge management for scaling-up CRA practices	Output 3.1. Training of actors to monitor, report and verify impacts across agriculture value chains	Activity 3.1.1: develop training curriculum and training manual on methods and tools to track changes in behaviors and environment and translate into local languages as appropriate	national consultant	national consultant specialized in methods and tools to track changes in the behavior and environment of local communities to develop the training curriculum and manual @ US\$ 400 per day during 60 days			16,000				16,000
			translation	Translations of curriculum and manual in 2 local languages (Tok Pisin, Hiri Motu) @ US\$ 0.1 per word for a document of max 20000 words			4,000				4,000
		Activity 3.1.2: conduct Training of Trainers (ToT) for the provincial stakeholders to establish Lead Trainer teams	national consultant	national consultant specialized in methods and tools to track changes in the behavior and environment of local communities to conduct the training @ US\$ 400 per day during 5 days			2,000				2,000

		training	Training of trainers @ US\$ 7000			7,000			7,000
		training	Three subsequent trainings per province @ US\$ 5000			45,000			45,000
		Total output 3.1				-	-	-	74,000
Output 3.2. Technical assistance for implementing climate resilient capacity building program in agricultural sector at provincial level	Activity 3.2.1: develop climate and gender-sensitized curriculum and training manual and translate into local languages as appropriate for CRA training programs	national consultant	national consultant specialized in climate and gender-sensitized to develop curriculum and training manual @ US\$ 400 per day (x 40 days)				16,000		16,000
		translation	Translations of curriculum and manual in 2 local languages (Tok Pisin, Hiri Motu) @ US\$ 0.1 per word for a document of max 20000 words				4,000		4,000
	Activity 3.2.2: provide training sessions for national and provincial authorities involved in promoting climate resilient agriculture in Milne Bay, Enga, and New Ireland	national consultant	national consultant specialized in climate and gender-sensitized to training @ US\$ 400 per day (x 15 days)				6,000		6,000
		training	training session for national and provincial authorities @ US\$ 5000 per province				15,000		15,000
		Total output 3.2				-	-	-	41,000
Output 3.3. Knowledge management and sharing with policymakers, development partners, private sector including smallholder SMEs, and civil society organizations to enable scaling up of CRA practices in Papua New Guinea	Activity 3.3.1: monitor, evaluate and learn the project in a participatory manner with input from all relevant stakeholders and communicate to showcase outputs and outcomes	national consultant	M&E specialist to recruit under the project @ US\$ 2500 per month	30,000	31,470	33,012	34,630	36,326	165,438
		evaluation	Conduct mid-term and terminal evaluation for the project (end of Y3 and Y5)			24,000		36,000	60,000
		travel	Travel for international consultant for evaluation (@ US\$ 3820 (e-ticket @ US\$2000 and DSA @ US\$ 182) (x 10days)			3,820		3,820	7,640
	Activity 3.3.1: develop and publish knowledge products such as policy briefs, technical and experience series of reports, social media, brief documentaries, and news media mentions	national consultant	Climate policy analyst for development of policy briefs, report and press release and stakeholder awareness session (activity 3.3.2) @ US\$ 400 per day (x100 days per year during the last 3 years)			40,000		40,000	80,000
		personnel cost	Communications and Media Specialist @US\$ 2500 per	30,000	31,470	33,012	34,630	36,326	165,438

			month considering annual inflation of 4.9%							
	Activity 3.3.2: organize targeted stakeholder awareness sessions through transparent communication of results and consistent stakeholders' engagement plan	workshop	3-day session per year to aware stakeholders on result and engage them @ US\$ 15000 in year 3 - broader stakeholders to this event (including stakeholders from the neighboring provinces)						15,000	15,000
	Support to the implementation of project	personnel cost	Provincial Officers (1/3 of the time) for project implementation, coordination, and day to day management at provincial level (Enga, Milne Bay, and New Ireland) @ US\$ 2500 per month/person considering annual inflation of 4.9%	30,000	31,470	33,012	34,630	36,326		165,438
		personnel cost	Agriculture and Environment Specialist @USD2500 per month considering annual inflation of 4.9% - 1/3 part time	10,000	10,490	11,004	11,543	12,109		55,146
	Local travel	travel	Lumpsum of US\$ 4000 per year for project coordination travel and field visit	4,000	4,000	4,000	4,000	4,000		20,000
	Total output 3.3			104,000	108,900	181,860	119,432	219,908		734,100
	Total Component 3			104,000	108,900	255,860	160,432	219,908		849,100
(A) Project activities cost				733,000	3,992,140	1,600,592	1,415,250	523,582		8,264,564
Project Executive Costs	National Project Manager (NPM)	personnel cost	National Project Manager to coordinate the project implementation @ US\$ 3500 per month - considering annual inflation of 4.9%	42,000	44,058	46,217	48,481	50,857		231,613
	Gender and Youth Specialist (GYS)	personnel cost	Gender and Youth Specialist @USD2500 per month considering annual inflation of 4.9%	30,000	31,470	33,012	34,630	36,326		165,438
	Finance & Procurement Manager (FPM)	personnel cost	Project Finance and Procurement Manager @ US\$ 2500 per month - considering annual inflation of 4.9%	30,000	31,470	33,012	34,630	36,326		165,438

	Finance & Administration Associate (FAA)	personnel cost	Project Administrative & Finance Assistant @ US\$ 1500 per month - considering annual inflation of 4.9%	18,000	18,882	19,807	20,778	21,796	99,263
	Office supplies	supplies cost	Lumpsum of US\$ 500 per month - considering annual inflation of 4.9%	6,000	6,294	6,602	6,926	7,265	33,088
	Office equipment	Furniture cost	Office Equipment (laptops @ US\$ 1500 per unit, desks and chair @ US\$ 800 per unit, and other equipment @ lumpsum of US\$ 500) (x8)	22,400					22,400
	Communication costs	communications	Lump-sum of US\$2000 per month for data, voice and internet)	2,000	2,000	2,000	2,000	2,000	10,000
	Security	security costs	Lumpsum of US\$ 5000 per year for security escorts	5,000	5,000	5,000	5,000	5,000	25,000
	Annual Financial Audit	financial audit	Conduct annual financial audit	5,000	5,000	5,000	5,000	5,000	25,000
	Contingency (1%)	contingency	Miscellaneous (bank fees, mail couriers, etc)	8,934	41,363	17,512	15,727	6,882	90,418
(B) Project Execution Cost				169,334	185,537	168,163	173,171	171,453	867,658
(A)+(B) Total Project Cost				902,334	4,177,677	1,768,755	1,588,421	695,035	9,132,222
(C) Implementing Entity Fee (8,5%)									776,239
AMOUNT OF FUNDING REQUESTED / GRANT AMOUNT									9,908,461
<p>* Notes: Inflation based on the most recent data of the Worldbank in PNG for 2020 (https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?locations=PG) Audit cost based on proposed cost by GCF with is min US\$4000 per year Workshop cost will cover venue, catering, participants per diem and local transport, kit of participant The Provincial Officers under different component will lead the implementation of project in Province. Each Provincial Officer will lead activities in one of the three provinces (Enga, Milne Bay, and New Ireland) Personnel cost based on UN National Officer Categories - Annual salaries and allowances in PNG (https://www.un.org/Depts/OHRM/salaries_allowances/salaries/png.htm)</p>									