

## Application Form

### PCCC-JICA Mentoring Service for the Public and Private Collaboration for Climate-Resilient Pacific

Note for applicants
<ul style="list-style-type: none"> <li>Applicants must include information about a project under development by filling each item on the application form.</li> <li>The total number of pages for the application <b>should be minimum 5 pages and maximum 10 pages</b> (excluding supplemental materials).</li> <li>An application for the Mentoring Service must be sent to the PCCC-ISPCCR (<a href="mailto:agnesw.ext@sprep.org">agnesw.ext@sprep.org</a> and <a href="mailto:taiji.ext@sprep.org">taiji.ext@sprep.org</a>) by 06 August 2025.</li> </ul>

#### 1. Information of applicant

Date of submission	30/07/2025
Country	Papua New Guinea
Organization	Macxs Designers
Department/ Division	
Name of contact person	Paul Mwapua
Position in organization	Manager - Projects
Contact information	E-mail: <a href="mailto:gregorymwapua@gmail.com">gregorymwapua@gmail.com</a> Phone: (675) 7909 3445, (675) 7750 4138
PCCC training programs or capacity building programs which you attended	<input type="checkbox"/> Hazard and Risk Assessment for Coastal Area Management by Using Remote Sensing Technology (Nov 2019) <input type="checkbox"/> Climate Science – Observed Climate Change and Future Climate Projections (Sep 2020) <input type="checkbox"/> Understanding Access to Climate Finance, Part 1: Essential Aspects for Access to Climate Finance (Nov 2020) <input type="checkbox"/> Understanding Access to Climate Finance, Part 2: Gender, Social Inclusion and Safeguards (Nov – Dec 2020) <input type="checkbox"/> Climate Change Adaptation and Disaster Risk Reduction through Structural Approaches (Mar 2021) <input type="checkbox"/> Ecosystem-Based Adaptation and Mitigation (Jun – Jul 2021) <input type="checkbox"/> Climate Resilience and Food Production Systems – Agriculture and Coastal Fisheries (Sep – Oct 2021) <input type="checkbox"/> Enhancing Climate Resilience in Tourism in The Pacific (Jan – Feb 2022) <input type="checkbox"/> Enhancing Climate Resilience and Safe Water Access in Rural Areas in the Pacific (May 2022) <input type="checkbox"/> Health Systems and Climate Change: Enhancing Resilient and Low-carbon Development in the Pacific (Sep – Oct 2022) <input type="checkbox"/> Climate change impacts and innovative solutions in the Pacific (Sep 2024) <input checked="" type="checkbox"/> Others (please specify the name of the PCCC training course or capacity building program)

Climate Resilience for Business Sustainability – UN in collaboration with University of South Pacific (2023)

2. Information of a project under development

1. Project Title	Solar Induction Dryer Transition Project
2. Themes	<input checked="" type="checkbox"/> Energy <input checked="" type="checkbox"/> Agriculture and fishery <input type="checkbox"/> Tourism <input type="checkbox"/> Water <input type="checkbox"/> Urban resilience
3. Country(ies)	Papua New Guinea & Pacific
4. Project objectives and project components	<ol style="list-style-type: none"> <li>1) Establish requirements Testing with Coffee Industry Cooperation, Cocoa Board, Kokonas Indastri Koporesen or related bodies within each Pacific Island Countries.</li> <li>2) Institute Carbon Free Certificate or Stamps for cash crop producers using the Carbon free Drier to label on their product upon sale.</li> <li>3) Institute Carbon Free Pricing for Certified Producers.</li> <li>4) Establish working relations with DPI &amp; Agricultural Sector and related Authorities for all Pacific Islands Cocoa &amp; Copra, Coffee producing Countries to set a target date to retire all Old wood burning Driers and transition to new Solar Induction Dryer or other Carbon Free Driers that may have been developed.</li> <li>5) Take Stock &amp; identifying old wood burning dryer for Cocoa, Coffee &amp; Coconut Fermentries within PNG &amp; Pacific and Facilitate Awareness for the changes towards carbon free driers.</li> <li>6) Implement Drier Conversion – Supervise and provide Training and Manuals for the new driers.</li> </ol>
5. Alignment with national and sectoral policies and strategies	<ol style="list-style-type: none"> <li>1) PNG - MTDP IV _ SPA 01 DIP 1.1.2 Coffee – <a href="#">Coffee Strategic Business Plan 2020-2024 &amp; Agriculture Sector MTDP 2022-2027</a> <ol style="list-style-type: none"> <li>a) Strategy 2 - Provide extension and training business support services to cooperative society and smallholder farmers (MSMEs, youth and women)</li> <li>b) Strategy 4 - Establish internationally certified coffee mills for cooperative societies to attract premium prices and ensure quality as downstream processing).</li> <li>c) Strategy 5 - Promote productive public private partnership for extension, research and industry operations.</li> <li>d) Strategy 6 - Promote value-adding products, access to coffee market and domestic consumption of coffee.</li> <li>e) Strategy 7 - Support integrated farming, food security and sustainable livelihood.</li> <li>f) Strategy 10 - Coffee adaptability and risk management to climate change.</li> </ol> </li> <li>2) PNG – MTDP IV _ SPA 01 DIP 1.1.3 Cocoa – <a href="#">Cocoa Industry Strategic Plan 2016-2025</a></li> </ol>

- a) Strategy 4 - Cocoa quality improvement and assurance
- b) Strategy 10 - Improved Cocoa Quality – roll-out distribution of Combination Driers
- c) Strategy 12 - Facilitate, identify and advise on priority areas for market access infrastructure
- d) Strategy 13 - Support and fund Cocoa Research & Development programs
- 3) **PNG – MTDP IV \_ SPA 01 DIP 1.1.4 Coconut – [Coconut Industry Strategic Plan 2016-2025](#)**
  - a) Strategy 6 - Improve Product Diversification (improve exportable products for DSP/Exports).
  - b) Strategy 7 - Improve productivity and product quality.
  - c) Strategy 8 - Promote coconut industry R & D, and support extension services.
- 4) **PNG – MTDP IV \_ SPA 02 DIP 2.5 Connect PNG – National Electrification Roll-out \_ [National Energy Policy/NEROP](#)**
  - a) Strategy 6 - Accelerate Rural Electrification Roll-out, including strengthen partnership.
  - b) Strategy 7 - Develop, expand and strengthen partnership on the roll-out of the electrification program.
- 5) **PNG MTDP IV \_ SPA 10 DIP 10.1 Climate Change Mitigation & Adaptation - [PNG Enhanced National Determined Contribution 2020-2030 and Reducing Emission from Deforestation and Degradation \(REDD+\) 2017-2027](#).**
  - a) Strategy 2 (Mitigation) - Effective framework mechanisms for climate governance, monitoring and reporting.
  - b) Strategy 6 (Adaptation) - Promote Climate Change Resilient Infrastructure.
- 6) **PNG MTDP IV \_ SPA 10 DIP 10.2 Environmental Protection - [Climate Change and Environment Act](#)**
  - a) Strategy 3 - Develop payment of ecosystem services guidelines.
- 7) **PNG MTDP IV – SPA 12 DIP 12.1 Foreign Relations - [DFAIT Corporate Plan](#)**
  - a) Strategy 3 - Strengthen key strategic partnerships with regional organisations including PIF, ASEAN, ACP-EU and others to enhance trade and economic relations
- 8) **PNG MTDP IV – SPA 12 DIP 12.2 Development & Economic Partnership - [PNG Development Cooperation Policy \(PNG DCP\)](#).**
  - a) Strategy 5 - Ensure Development Partner programs are aligned to the development priorities of government.
  - b) Strategy 6 - Ensure government leadership in the coordination and management of development partner program.
  - c) Strategy 7 - Increase mobilisation of DP resources towards economic enabling infrastructure.
  - d) Strategy 8 - Increase mobilisation and allocation of DP resources towards activities focusing on trade and investment.
  - e) Strategy 10 - Mobilise private sector resources towards energy infrastructure and development.
  - f) Strategy 11 - Strengthen relationship and coordination with all development partners.
  - g) Strategy 12 - Strengthen relationship and coordination with NGOs, civil society, philanthropic organisations.
  - h) Strategy 14 - Ensure counterpart funding is allocated to loan financed programs.

9) PNG MTDP IV – SPA 12 DIP 12.3 Private Sector - PNG Development Cooperation Policy (PNG DCP).

- a) Strategy 15 - Create awareness on the Public Private Partnership modality.
- b) Strategy 17 - Undertake reforms to create a conducive environment for private sector to operate.
- c) Strategy 18 - Dialogue with the private sector on an annual basis consistent with DCP.

6. Justification of climate rationale (mitigation and/ or adaptation)

The Project – Cash Crop Drying Process incorporates the use of Solar Powered Induction Dryer for the purpose of Cash crop Drying (Cocoa, Coffee and Coconut). The Projects Goal is to retire all carbon producing dryers and replacing it with the Solar Powered Induction Drier (Carbon Free Dryer)

**Adaptation**

- a) The Project will guide cash crop producers to adapt to the carbon free process of producing their cash crop.
- b) The Producers/Owners will adapt Sustainable Energy Usage for Household consumption from excess energy produced from the Dryer and/or during the dryer down-time.

**Mitigation**

- a) Implementation of the Project will mitigate Environmental Protection in terms of reduced tree harvesting for (Fuel) firewood for the Dryers.
- b) Implementation of the Project will contribute towards mitigation of Carbon Waste Reduction from combined gross cash crop produced annually.
- c) Contribute towards Saving Trees indirectly mitigates Water from drying up and Keeps the Community cooler.
- d) Contribute saving trees towards mitigates Soil erosion and Strong Wind Disaster.
- e) Mitigation of Sustainable Energy Production and Consumption thus contribute towards Isolated/Remote Electrification.
- f) Mitigate Carbon Free Cash Crop Processing and Markets.

7. Draft theory of change [OPTIONAL]

Theory – Changing from traditional wood burning cash-crop driers which produces carbon when burned to the new Carbon free drying process facilitates:

- 1) Quality Produces – Quality production = Higher Prices
- 2) Sustainable Produces – Higher Market Prices
- 3) Reduces Waste – Higher Production Output = More Profit
- 4) Reduced Down-time – Less Time spent of Monitoring and Controlling Heating
- 5) Household Energy – Dryer Down-time and Excess Power produced will be used to power the Household.

These shall mitigate and boost changes to transition to the Solar Induction Dryer thus facilitate and justify climate change rationale.

8. Describe how the project promotes collaboration between public and private sector, and describe the name of the private company/ state-owned enterprise or another private sector actor that are/ can be involved in project financing or implementation.

**PCCC**

- 1) SPREP through the PCCC shall assist with the project through/with:
  - a) Mentorship support and advice
  - b) Evaluate Project Proposal Development before Macxs can submit.
  - c) Facilitate Project implementation within other Pacific Island Producing Countries (Cocoa, Coffee and Copra).
  - d) Facilitate/Solicit Climate funding for the Project.
- 2) JICA through the PCCC shall assist with the project through/with:
  - a) Mentorship Support and Technical Advice
  - b) Monitor & Evaluation on the Project Proposal before submission
  - c) Facilitate Project Implementation through PCCC and SPREP to other Cocoa, Coffee and Coconut producing Pacific Island Countries.
  - d) Assist Facilitate or Solicit Climate Funding for the Project.

**Public Sector**

- 1) Government Ministry/Department (DPI, Agriculture, CCDA) – Will be Administering the Policy & Regulations and Counter Funding relating to the implementation of the Project;
  - a) Project/program Policy Development Collaboration with Macxs,
  - b) Allocate funding through MTDP IV for Project/Program Implementation.
  - c) Solicit GoPNG funding to implement project under Sectoral Programs
- 2) State Owner Enterprises/Bodies (Cocoa Board, Coffee Industry Cooperation, Kokonas Industri Koporesen) will be;
  - a) Monitoring and Regulating the New Carbon Free cash-crop production,
  - b) Introducing new Carbon Free Market pricing regulation,
  - c) Introducing & Issuing Carbon Free Certification to Producers,
  - d) Monitoring of Cash Crop Production Quality & Testing.

**Private Sector – MACXS Designers**

- 1) Develop Related Policies to be approved by the Government;
  - a) Dryer Transition - Carbon Free Cash-Crop Policy
  - b) Carbon Free Certification – Producer Policy
- 2) Develop & Manufacture the Solar Induction Dryer and Supply to Producers
- 3) Provide Awareness and Information Sessions to Producers and Growers
- 4) Provide Training and Manuals for the Equipment.
- 5) Provide Supervision and Monitoring for the transition.
- 6) Review policy.

**Private Sector – Buyers & Exporters**

- 1) Agmark, Outspan, CPL and Cooperatives or Private Buyers will enforce new pricing adjustment for certified cash-crops produces under the Carbon Free Cash-crop Certification.
- 2) Certified Carbon Free or Sustainable Produce will be exported and marketed as such that it reflects the price adjustments it pays to producers.



9. History of stakeholder consultation and communication with the relevant ministries including climate change focal point agency

**Very High RISK –**

We have experienced some of our proposal being copied and implemented without being compensation or acknowledgement and it is quite a challenge as a private sector since our source of income depends on producing such documentation and proposals.

We have Advised and provided technical assistance on some projects including BRCC and REDD+, IEIP (National Rural Electrification Roll-out Program) TEIP (Town Electrification/Energy Improvement Project) with Design, Planning and Implementation.

10. Targeted climate financial sources if any (e.g. GCF, Adaptation Fund, bilateral donors, multilateral development banks)

- 1) GCF – Policy and Regulation Component.
- 2) AF – Counter Fund \_ Implementation.
- 3) WB – Through PPAP to PACD Program \_ Implementation.
- 4) DFAT – Through ESIP Program – Solar Component of the Project.

11. Human or financial support currently receiving for project formulation and implementation

Nil

12. Description of institutional set-up for project formation

**Phase 1a)** Macxs Designers has Policy Formulation and Research consultants/specialists to undertake and develop policy for the project including facilitation and implementation Research, Project Awareness alongside relevant agencies (Cocoa Board, CIC & KIK) Policy consultation with relevant agency for approval and gazette. JICA and SPREP shall be mentoring, advising and overseeing policy formulation alongside CCDA to comply with Climate Changes policy regulations & guidelines.

**Phase 2a)** Macxs from its Design Specification will manufacture/Build the Solar Induction Dryer and proceed to testing with relevant agencies (Cocoa Board, CIC & KIK). Shall also provide design & specification to transform usable wood burning dryers to Solar Induction Dryers. Test Model shall be introduced to selected provinces for each industry for Training and awareness. For other Pacific Island Countries, the units will be kitted (Modular) shipped and installed on site.

**Phase 2b)** With all necessary Policies in place and Testing passed, a phase out date of wood fired driers shall be set, Departments to allocate funding through GoPNG SPA's or other funding sources to finance Macxs to roll out supply & Install and Training of the Equipment and its Infrastructure alongside relevant agencies.

**Phase 2c)** Macxs will provide technical assistance and support to producers transforming from wood fired dryer to Solar Induction Dryers.

**Phase 3a)** Macxs alongside relevant agencies shall monitor and supervise producer usage of the

equipment, provide additional training and awareness where necessary on site with the Test/Training Model onsite.

**Phase 3b)** Macxs alongside relevant Agencies shall provide regulation awareness for implementation to cash-crop buyers and exporters for the increased pricing adjustment for the carbon free production.

**Phase 4)** Macxs with relevant Agencies, JICA and SPREP will Review all Policies with stakeholder consultation and submit final Policies for Gazette.

### 13. Expected schedule for project formulation and implementation

Phase 0 – Completion and Submission of Project Proposal – 6 months

Phase 1 – 3-6 months per Country

Phase 2a) – 3 months

Phase 2b) – 24-36 months

Phase 2c) – aligned with phase 2b

Phase 3a) – Aligned with 2b & 2c and extended for another 6 months

Phase 3b) – 3 months (begins 12 months after beginning of phase 2b)

Phase 4) – 1 month (after phase 3b ends.)

### 14. References for existing feasibility studies, and projects/experience on which the proposal is based, etc.

We have built wood burning dryers for Open Bay farmers under Open Members initiative after we've supplied cocoa seedlings to growers thus supplied before ready-for-harvest.

We have experience supplying and Installing Solar Hybrid Systems to rural Households and Government Installations.

Combined all (Electrical, Dryer Construction and Policy Formulation) with our technical know-how we've come up with the solution to substitute the energy component from wood burning to electrical heating and drying process through induction heating from solar since most of the setups will be remote and out of reach for a permanent power grid connection, even within reach of grid connection, the system is hybrid and can connect to the power grid.

There are no formal studies undertaken for wood consumption for cash crop production but there are reasons for us to come up with the project:

- 1) Wood sources for firewood is rapidly depleting due to deforestation for cash crop plantations and small holder blocks, the deforested trees are finished and now we are sourcing and transporting wood for firewood inland.
- 2) Small Island Districts/Provinces or Countries have very limited forest for Cash Crop drying therefore uses sun dry.

We can average 1x bag of Cocoa will take 2day max. to dry with approx. 0.25 cubic meter of wood to burn therefore for 1ton (16bags) of cocoa to be dried ( $16 \times 0.25 = 4m^3$ ) we should burn 4m<sup>3</sup> of wood to process 1ton of Cocoa.

For PNG alone to produce 60 000tons of Cocoa Annually – it will use around an average of 240 000m<sup>3</sup> (60 000ton/4m<sup>3</sup> = 240 000m<sup>3</sup>) of wood burned to process such volume of cocoa which equates to approx. 30 000 matured trees (avg. 8m<sup>3</sup>/tree) burned annually for Cocoa production alone in PNG. These numbers can be further converted to carbon gases released and Oxygen production reduction every year. *(The figures are approximate, actual figures will be slightly lower due to sun drying and other drying methods)* The extent of the wood drying process for Cash crop and Timber can be calculated for the data below.

If we combine all cash crop produced annually through wood burning driers: *(Papua New Guinea)*

- 1) Cocoa – 36 000 – 60 000 ton
- 2) Coconut – 47 000 – 160 000 ton
- 3) Copra – 70 000 – 133 000 ton
- 4) Timber – 112 558 – 200 000m<sup>3</sup> (Processed timber)
- 5) Timber (Balsa wood alone) – 280 000 – 300 000m<sup>3</sup>

The numbers estimated above will drastically increased further with regards to annual volume of wood burned for cash-crop/timber klin drying process.

All the system used in this project are certified systems on their own:

- 1) The Induction Heating
- 2) The Solar Hybrid System
- 3) The Fermentry Dryer

We are combining all the above systems to work as one unit to achieve one purpose which is drying of cash crops produce, the alternative purpose is to use excess power during downtime for household uses.

The simple combination of the above will contribute towards Climate Change Mitigation and thus Adaptation practice and lifestyle.

15. Other related projects being implemented, under formulation, or under the approval process, if any.

Motor Oil & Lubrication Carbon Tax Policy – [Under Formulation through this initiative](#) \_ for all motor vehicles, motor boats, planes, Generators. Which will cover:

- 1) Waste oil and Lubrication Policy and Regulations
- 2) Motor Fuel Oil Tax Policy and Regulation