

**PROJECT PROPOSAL**  
2022 DOST-GIA FUNDING

**I. PROJECT PROFILE**

<b>(1) Project Title: Solar Powered Water Pumping System for Sustainable Water Supply in Sta. Cruz, Marinduque</b>				
<b>(2) Project Leader/Sex: Hon. Marisa R. Martinez (Mayor)/ F</b> <b>Agency: Municipality of Sta. Cruz</b> <b>Address/Telephone/Fax/Email:</b>				
<b>(3) Cooperating Agency/ies: DOST-MIMAROPA / LGU-STA. CRUZ</b>				
<b>(4) Site/s of Implementation</b> (Municipality / District / Province / Region) <b>Base Station:</b> Baliis, Sta. Cruz, Marinduque, MIMAROPA Region <b>Other Implementation Site (s):</b> _____				
<b>(5) Project Duration:</b> 12 months				
<b>(6) Total Project Cost:</b> (indicate Counterpart Funds; use Form A for the Line-Item Budget)				
<b>Source of Fund / Site(s) of Implementation</b>	<b>PS</b>	<b>MOOE</b>	<b>EO</b>	<b>Total</b>
LGU STA. CRUZ	435,600.00	300,000.00	1,190,000.00	<b>1,925,600.00</b>
DOST-MIMAROPA		200,000.00	P1,679,000.00	<b>1,879,000.00</b>
<b>TOTAL</b>	<b>435,600.00</b>	<b>500,000.00</b>	<b>2,869,000.00</b>	<b>3,804,600.00</b>

**II. PROJECT SUMMARY**

<p><b>(7) Rationale</b> (Not to exceed one page)</p> <p>In the Municipality of Sta.Cruz, Marinduque there is a water scarcity in Barangay Banahaw, Lipa, and Pag-asa, which together have a combined population of 689 households or 2,756 individuals. One of the major problems of Sta. Cruz Municipal Waterworks Section is the increasing cost of electricity and frequent power interruption which leads to water pump shutdown or cutoff of water supply at Baliis Water source. Moreover, business establishments operation like water refilling stations, carwash, restaurants, bakeries, etc. in the area are also affected.</p> <p>Municipal Waterworks pays monthly electric bill ranges from P13,500.00 to P 22,5000.00 for using 10 hp submersible water pump and a 15 hp booster pump. To provide technology solutions to problems in the identified priority areas through collaboration with LGU-Sta. Cruz and address this long-term issue, a 12.4 kW Hybrid Solar Powered Water Pumping System is being proposed.</p>
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Active Connection on Baliis Tank	Brgy. Banahaw (85%)	Brgy. Lipa (50%)	Brgy. Pagasa (30%)	TOTAL
Total No. of Household	557	116	523	1,196
Total No. of Household (Active Connection)	474	58	157	689
Population	1896	232	628	<b>2,756</b>

### **(8) Project Description** (Not to exceed 15 pages)

#### **OBJECTIVES** (General and Specific)

The general objective of the project is to improve access to tap water (domestic uses) for 689 households and/or 2756 individuals including business establishments through water pumping system powered with solar energy system in Sta. Cruz, Marinduque.

#### **SPECIFIC OBJECTIVES:**

- Installation of 12.4 kW Hybrid Solar Powered Water Pumping System and another 10 kW Grid Tied Solar Energy System (SES) for 15 hp booster pump.
- Provide sustainable water supply.
- Promote the use of renewable energy (solar energy).

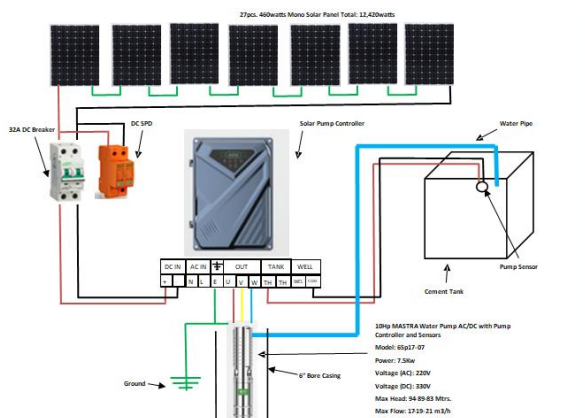
#### **METHODOLOGY**

- The DOST-MIMAROPA will provide technical assistance; 12.4 kW Hybrid Solar Powered Water Pumping System.
- The LGU- Sta. Cruz will provide counterpart funds for the following:
  1. 10 kW (three phase) Grid Tied Solar Energy System for 15 hp booster pump.
  2. Personnel Services for assigned operator/maintenance of Municipal Waterworks.
  3. Repair and maintenance of all the equipment.
- LGU-Sta. Cruz through the Municipal Waterworks Section will manage the operation and maintenance of the solar-powered water pumping system to ensure the sustainability of the project.
- PSTO-Marinduque will closely monitor the progress of the project thru its Work Plan to ensure that the project is implemented based on the scheduled activities.

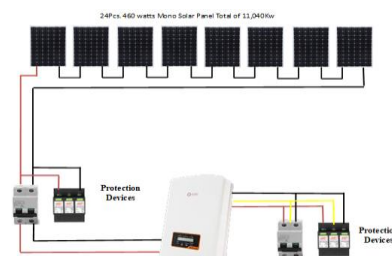
## Conceptual Framework

### DOST-MIMAROPA Proposed Intervention

#### 12.4 Kw Hybrid Solar Powered Water Pumping System



LGU Sta. Cruz will provide counterpart funds in its corresponding repair and maintenance expenses and 10 KW Grid tied solar energy system for 15 hp booster. Water tank and pipeline are already existing.



#### Baliis Water Source

Sustainable water supply for Brgy. Banahaw, Brgy. Lipa and Brgy. Pag-asa

Year-round supply of water for domestic use

## EXPECTED OUTPUTS

### Publication

- At least one (1) write-up of the project output and outcomes

### Product

- 1 set of 12.4 kW Hybrid Solar Powered Water Pumping System and 10 kW Grid Tied Solar Energy System for 15 hp booster pump.

### Place and Partnership

- Memorandum of Agreement with DOST-MIMAROPA and LGU-Sta. Cruz

**EXPECTED OUTCOMES**

- Ensured the availability of domestic water for the constituents of Brgy. Banahaw, Brgy. Pag-asa and Brgy. Lipa.
- Provided the community better knowledge on the use of Renewable Energy.
- Significant reduction on the electric bill of Municipal Waterworks.

**PERCEIVED IMPACT****Social Impact**

- Improved sanitation in the area.
- Increased people's awareness and appreciation on solar energy system.
- More resilient barangays.

**Economic impact**

- Saved at least 50% of current electric bill per month.

**SUSTAINABILITY**

The PSTO Marinduque will monitor the project on a regular basis to ensure that objectives are met. Baseline data about the target beneficiaries would be collected.

Training on proper care and maintenance of the system will be conducted. Solar panel will be designed to be removable for safe keeping in times of typhoon.

LGU-Sta. Cruz will allot counterpart funds for the personal services and maintenance of the system.

<b>Total population :</b>	<b>2756</b>
<b>Number of households :</b>	<b>689</b>
<b>Average household size:</b>	<b>4</b>
<b>Daily water requirement for domestic use:</b>	<b>110,240 liters</b>
<b>(40L/person/day)</b>	
<b>Water pump capacity:</b>	<b>17,000 liters per hour</b>
	<b>136,000 liters / 8-hr operation</b>
<b>Cost of equipment:</b>	<b>P1,679,000.00</b>

	<b>1 set of 12.4 KW Hybrid Solar Powered Water Pumping System (DOST-MIMAROPA counterpart)</b>		
	<b>Investment per capita</b>	<b>P609.21</b>	
	<b>Average gross per month</b> <b>Residential</b> <b>-Less than 10cubic meter - ₱100.00 / Household</b>	<b>689 Households x</b> <b>P100.00=</b> <b>P68,900.00/Month</b>	
	<b>ROI =P1,679,000/P68,900.00</b>	<b>24 Months or 2 years</b>	

**Current Water source from Brgy. Baliis using 10 hp submersible pump:**



- Booster pump going to households and Tanks



### Technical Specification of Proposed Intervention

1. 12.4 Kw Hybrid Solar Powered Water Pumping System (DOST-MIMAROPA counterpart) with the following inclusions/specifications:

- Submersible Water Pump AC/DC 10hp (1pc), 94meters max Head, 17000 Liters/hr max flow including controllers and sensors

- 460 W mono solar panel (27pcs)
- including delivery, installation, testing and commissioning

2. 10KW Grid Tied Solar Energy System for 15 hp booster pump (LGU-Sta. Cruz counterpart) with the following inclusions/specifications

- 10 kW dual MPPT On-Grid Inverter 3 Phase w/ Wi-Fi & Ct clamp
- 460 W mono solar panel (24pcs)
- including delivery, installation, testing and commissioning

**(9) Workplan** (See Form B)

**(10) Project Management** (not to exceed one page)

- PSTO Marinduque would monitor the project on a regular basis to ensure that objectives are met. Baseline data about the target beneficiaries would be collected.
- Training on proper care and maintenance of the system will be conducted. Solar panel will be designed to be removable for safe keeping in times of typhoon.
- LGU-Sta. Cruz through Municipal Waterworks Section will assign regular worker/operator for the management of solar powered water pumping system.
- LGU-Sta. Cruz through the Municipal Health Office will conduct water analysis at least twice a year to ensure the safety of the consumers.
- LGU-Sta. Cruz to submit report to PSTO Marinduque every 30<sup>th</sup> day of the month.

**III. ATTACHMENTS** (Please refer to the DOST-GIA Guidelines for the necessary documents.)

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PSTD  
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**Approved by:**

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*Regional Director*  
*DOST-MIMAROPA*