

**APPLICATION FOR TECHNOLOGY NEEDS ASSESSMENT**

Name of Enterprise: Solar Powered Water Pumping System for Sustainable Water Supply in Sta. Cruz, Marinduque		
Contact Person: : Hon. Marisa R. Martinez	Position in the Enterprise: Mayor	
Office Address: Mabini St., Brgy. Pagasa , Sta. Cruz, Marinduque	Tel. No.	Fax No.
	E-mail Address: <a href="mailto:municipalityofsantacruz.mo@yahoo.com">municipalityofsantacruz.mo@yahoo.com</a> <a href="mailto:municipality.santacruz@yahoo.com.ph">municipality.santacruz@yahoo.com.ph</a>	
Factory Address: Baliis, Sta. Cruz, Marinduque, MIMAROPA Region	Tel. No.	Fax No.
	E-mail Address:	
Website:		

**GENERAL AGREEMENTS:**

1. The applicant shall, at the earliest opportunity, make available to the DOST Regional Office MIMAROPA (DOST-MIMAROPA) all information (manuals, procedures, etc.) required to establish the technology status of the selected core business functions and management systems;
2. If DOST-MIMAROPA is not satisfied that all the requirements for business registration are complied with, it shall inform the applicant of the observed deficiencies before starting the assessment;
3. When the required inputs to the assessment are already supplied by the applicant, including Attachment A, the DOST-MIMAROPA will assess the firm through the core business functions and management systems, whichever is applicable, to identify technology needs and verify compliance to standards vis-à-vis existing practices;
4. When the DOST-MIMAROPA has completed the technology assessment, a report will be prepared on the results of the assessment with accompanying recommendations and opportunities for improvement. The report prepared will define the scope of activities, functions, management practices and locations assessed. The applicant shall not claim or

otherwise imply that the report applies to other locations, product or activities not covered by the report;

5. The applicant agrees that the report will not be used until permission has been granted by the DOST-MIMAROPA;
6. The applicant agrees that the receipt or acknowledgment of the report ends the assessment stage; any technical assistance ensuing from the recommendations of the report will be viewed as a separate project.

#### UNDERTAKING

I agree to undertake and observe the above General Agreements as stipulated by the Department of Science and Technology Regional Office MIMAROPA



MARISA R. MARTINEZ  
Signature over Printed Name

MAYOR

Position in the Enterprise

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Date

## Enterprise Profile

Name of Enterprise Local Government Unit of Sta. CruzProduction Site/Location Baliis, Sta. Cruz, Marinduque

Business Permit No. \_\_\_\_\_ Year Registered \_\_\_\_\_

Brief Enterprise Background \_\_\_\_\_

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 problem 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.

Municipal Waterworks pays monthly electric bill ranges from P13,500.00 to P22,500.00 for using 10hp submersible water pump and a 15hp booster pump.

Year enterprise was established: \_\_\_\_\_ Initial capitalization: \_\_\_\_\_

Type of Organization: ☐ Single proprietorship☐ Cooperative☐ Partnership☐ Corporation☐ Profit☐ Non-profit☐ / LGU

Enterprise Registration No. \_\_\_\_\_ Year Registered \_\_\_\_\_

Classification according to capital (PhP) Present capitalization \_\_\_\_\_

☐ Micro (less than 1.5 M)☐ Small (1.5 – 15 M)☐ Medium (15 – 100 M)

Classification according to employment (number of employees)

☐ Micro (1 – 9)☐ Small (10 – 99)☐ Medium (100 – 199)

Number of Employees:

Direct Workers M:\_\_\_ F:\_\_\_

Production M:\_\_\_ F:\_\_\_

Non-production	M:___	F:___
Indirect/Contract Workers	M:___	F:___
Total	M:___	F:___

Business Activity:

- ☐ Food processing (please specify commodity) \_\_\_\_\_
- ☐ Furniture (please specify commodity) \_\_\_\_\_
- ☐ Gifts, decors, handicrafts (please specify commodity) \_\_\_\_\_
- ☐ Metals and engineering (please specify commodity) \_\_\_\_\_
- ☐ Agriculture/Marine/Aquaculture (please specify commodity) \_\_\_\_\_
- ☐ Health products and pharmaceuticals (please specify commodity) \_\_\_\_\_
- ☐ Information and Communications Technology (ICT) products (please specify commodity) \_\_\_\_\_
- ☐ / Others, please specify \_\_\_\_\_ Public Service

1. Specific product or service the enterprise offers its customers:

Public Service / Domestic Water

2. Reasons why assistance is being sought:

The LGU-Sta. Cruz sought the assistance of DOST-MIMAROPA to resolve the problem on increasing cost of electricity and frequent power interruption which leads to water pump shutdown or cutoff of water supply at Baliis Water source.

To utilize the Solar energy from the sun that is converted into thermal or electrical energy.

3. Have you consulted any other individual/organization for any assistance?

☐ / If Yes, which company/ agency?

Please specify the type of assistance sought

Yes, see attached certificate of previously liquidated projects with other government agencies.

☐ If No, why not?

#### Organizational Structure

- *See attached LGU. Profile*

4. Enterprise's plan for the next 5 years?

Improve access to tap water (domestic uses).

Sustainable water supply ( Tap Water) for Barangay Banahaw, Lipa, and Pag-asa.

Next 10 years?

To further promote the Solar Pumping technology in other barangays in the region of MIMAROPA.

5. Current agreements and alliances undertaken

None

## BENCHMARK INFORMATION

### ■ Production and Supply Chain

#### ➤ Raw Material

Raw Material	Source	Unit Cost (₱)	Electric Consumption per month
Utility Grid (MARELCO)	MARELCO an electric service Cooperative catering for the electricity needs of the people of Marinduque.	₱9.00 / Kwh	1500KWH to 2500KWH per Month

#### ➤ Production

Product	Volume of Production/Month	Unit Cost of Per Cubic Meter(₱)	Annual Gross per Month (₱)
Tap Water	3307.2 cubic meter	<b>Residential</b> -First 10cubic meter - ₱100.00 / cubic meter <b>Commercial</b> -First 10cubic meter - ₱120.00	₱33,072.00

#### ➤ Existing Functional Production Equipment

Type of Equipment	Specifications	Capacity	No. of Units	Year Acquired
Submersible Pump	10Hp, 230VAC, 3Phase	17m3/h	1	2018
Booster Pump	15Hp, 230VAC, 3Phase	10-29m3/h	1	2018

#### ➤ Production Problems and Concerns

Increasing cost of electricity and frequent power interruption.

Need to have a reliable source of tap water that can supply the Barangay Banahaw, Lipa, and Pag-asa.

#### ➤ Production Waste Management System

None

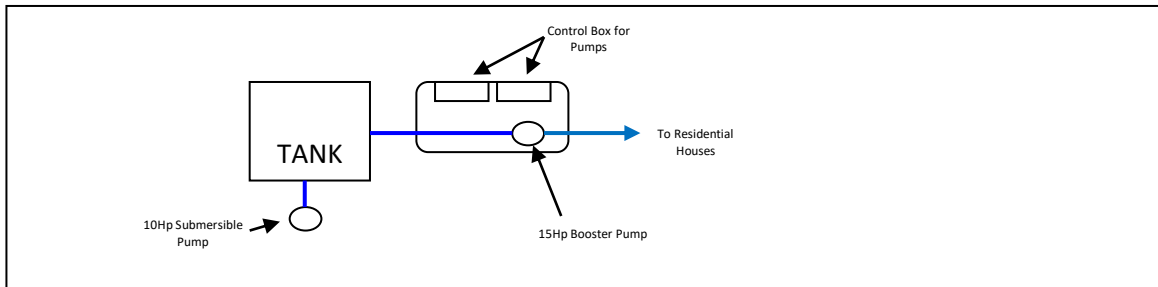
➤ Production Plan

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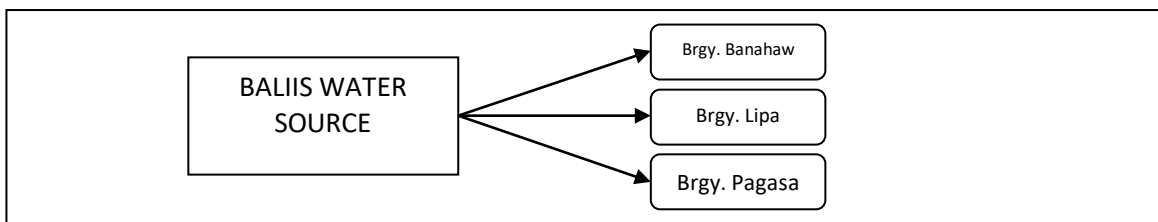
The LGU-Sta. Cruz will assign operator for the operation and maintenance through the Municipal Waterworks.

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➤ Plant Lay-Out



➤ Process Flow



➤ Inventory System

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None

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➤ Maintenance Program

Existing equipment (Submersible Pump and Booster Pump) is regularly maintained by the Municipal Water Works. The proposed technology (Solar Powered Water Pumping System) will be regularly maintained following the preventive maintenance and calibration program to be set by the supplier.

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➤ cGMP/HACCP Activities

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None

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➤ Supplies/Purchasing System

\_\_\_\_\_  
No existing supplies/materials to be purchased  
\_\_\_\_\_

▪ **Marketing**

➤ Marketing Plan

The target market of the project will be the communities of Barangay Barangay Banahaw, Lipa, and Pag-asa.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

➤ Market Outlets and Number

\_\_\_\_\_  
NONE  
\_\_\_\_\_

➤ Promotional Strategies

\_\_\_\_\_  
No existing promotional strategies  
\_\_\_\_\_

➤ Market Competitors

\_\_\_\_\_  
NONE  
\_\_\_\_\_  
\_\_\_\_\_

➤ Packaging

○ Nutrition Evaluation	_____ N/A
○ Bar Code	_____ N/A
○ Product Label	_____ N/A
○ Expiry Date	_____ N/A



▪ **Finance**

➤ Cash Flow or other related documents

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The LGU Sta. Cruz has accounting division that could handle the cash flow and other related documents for the target project.

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➤ Source(s) of capital/credit

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The LGU Sta. Cruz depends on IRA, revenues, tax fees and charges, and other savings as the main source of their capital.

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➤ Accounting System

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The accounting division handles the financials of the LGU-Sta. Cruz Municipal Waterworks has a separate account that is use in all the transactions of the project /enterprise and have a revolving funds to ensure continuous operations of the project.

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▪ **Human Resources**

➤ Hiring and Criteria

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LGU Sta. Cruz follows the Civil Service Commission (CSC) rules for hiring their employees.

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➤ Incentives to Employees

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LGU Sta. Cruz provides incentives to their regular, contractual and job orders.

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➤ Training and Development

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The target workers have not yet attended any training and development thus, they will be trained by the supplier for technical aspect and PSTO Marinduque for monitoring and maintenance of Solar Energy System (SES).

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➤ Safety Measures Practiced

Workers will be trained for Safety Measures Procedures

➤ Other Employee Welfare

None

▪ Other Concerns

None

Prepared by:

  
**MARISA R. MARTINEZ**

Printed Name and Signature of  
Owner/Chair/Representative

Date

Validated by:



  
**BERNARDO T. CARINGAL**

Printed Name and Signature of  
PSTD/Cluster Manager

Date

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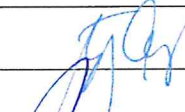

TECHNOLOGY NEEDS ASSESSMENT (TNA) REPORT	
<b>COMPANY:</b>	Local Government Unit of Sta. Cruz
<b>ADDRESS:</b>	Mabini St., Brgy. Pagasa , Sta. Cruz, Marinduque
SCOPE OF ASSESSMENT*	
<p>The TNA covered the following areas:</p> <ol style="list-style-type: none"> <li>1. Strategic Direction               <ol style="list-style-type: none"> <li>a. Vision and mission</li> <li>b. Plans and Objectives</li> <li>c. Strategic alliances and current agreement</li> </ol> </li> <li>2. Management Aspect               <ol style="list-style-type: none"> <li>a. Human resource management</li> <li>b. Purchasing</li> <li>c. Work environment</li> <li>d. Corporate social responsibility</li> <li>e. Occupational health and safety management</li> </ol> </li> <li>3. Technical Aspect               <ol style="list-style-type: none"> <li>a. Operational and outsourcing practices                   <ul style="list-style-type: none"> <li>-production system</li> <li>-production planning and control</li> <li>-production lay-out</li> <li>-work improvement</li> <li>-equipment management and maintenance</li> <li>-quality assurance system</li> <li>-outsourcing practices</li> </ul> </li> <li>b. Product and Process Performance and Improvement                   <ul style="list-style-type: none"> <li>-reengineering and Research and Development</li> <li>-Procedures for continuous improvement</li> <li>-Product Quality standards</li> </ul> </li> <li>c. Environmental Management System                   <ul style="list-style-type: none"> <li>-Waste management</li> </ul> </li> </ol> </li> <li>4. Marketing Aspect               <ol style="list-style-type: none"> <li>a. Marketing plan</li> <li>b. Market outlets and number</li> <li>c. Promotional strategies</li> </ol> </li> </ol>	

Reported by <u>BERNARDO T. CARINGAL</u>	Signature 	Date <u>October 6, 2022</u>
Name of TNA Team Leader		
Attested by <u>JERRY MERCADO</u>	Signature 	Date <u>10/8/22</u>
Name of ARD		

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- d. Market competitors
- e. Packaging
  
- 5. Finance
  - a. Cash flow and other related documents
  - b. Sources of capital
  - c. Accounting system

**\* Scope of TNA is based on Technology Assessment Plan (TAP)**

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Attested by	<u>JERRY MERCADO</u>	Signature		Date	<u>10/8/22</u>
	Name of ARD				

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## Summary of Assessment

### Background

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 problem 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.

Municipal Waterworks pays monthly electric bill ranges from P13,500.00 to P 22,5000.00 for using 10hp submersible water pump and a 15hp booster pump.

### Methodology

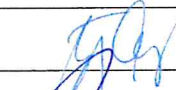

The technology needs assessment (TNA) was conducted through an interview with the mayor of LGU Sta. Cruz, Hon. Marisa R. Martinez and Sta. Cruz Municipal Waterworks Section Superintendent Engr. Rowell A. Peñaflor.

## Summary of Findings

### 1. Strategic Direction

#### a. Vision and mission

The municipal Government of Sta. Cruz, Marinduque shall ensure the effective and efficient delivery of basic services to tis people thru the bale stewardship of its development oriented leaders, and unqualified support and active participation of its law-abiding constituents in an environment of peace, harmony and unity.

Reported by <u>BERNARDO T. CARINGAL</u> Name of TNA Team Leader	Signature 	Date <u>October 6, 2022</u>
Attested by <u>JERRY MERCADO</u> Name of ARD	Signature 	Date <u>10/13/22</u>

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The premiere tourist hub of the province where God-loving and empowered people are living in a safe community with globally-competitive economy governed by competent and righteous leaders.

*b. Plans and Objectives*

The Local Government of Sta. Cruz tends to provide public service to it's constituents thru connecting other government agencies that can provide technical support for further and continuous improvement.

*c. Strategic alliances and current agreements*

The Local Government of Sta. Cruz just like other LGU is currently connected to different government agencies which provides them different kinds of assistance.

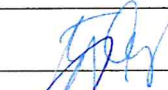

## 2. Management Aspect

*a. Human resources*

- The LGU-Sta. Cruz has an existing operator for the operation and maintenance of the Municipal Waterworks station at Baliis, Sta.Cruz.

*b. Purchasing*

The LGU Sta. Cruz follows the **R.A. 9184**, entitled "An **Act** Providing for the Modernization, Standardization and Regulation of the **Procurement** Activities of the **Government** and for other Purposes," otherwise known as the **Government Procurement Reform Act**.

Reported by <u>BERNARDO T. CARINGAL</u> Name of TNA Team Leader	Signature 	Date <u>October 6, 2022</u>
Attested by <u>JERRY MERCADO</u> Name of ARD	Signature 	Date <u>10/13/22</u>



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*c. Business Ethics and Social Responsibility*

As the Local Government, they are the ones in-charge to support the community of Sta. Cruz and ensure the public safety at all times. Thru tapping DOST-MIMAROPA's technical assistance on GIA program the LGU plans to provide sustainable water supply for Barangay Banahaw, Lipa, and Pag-asa,.

### 3. Technical Aspect

*a. Operational and Outsourcing Practices*

Production system

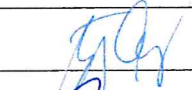

The target project will be established within the Barangay of Ballis. Complete package of technical assistance would be given such as training, provision of equipment and other programs needed by the LGU to ensure that the project will become successful.

Production Planning and Control

The LGU Sta. Cruz will handle the overall operation of the project and the Municipal Water Works will ensure the safety, monitoring and maintenance of the Solar Powered Water Pumping System.

Production Layout

Existing waterworks facility will be use and upgraded through the installation of Solar Powered Water Pumping System.

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	Name of ARD				

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Work Study/Improvement

The workers will attend the training that will be facilitated by the PSTO-Marinduque and the supplier of equipment for technical operations and maintenance.

Equipment Management and Maintenance

Existing equipment (Submersible Pump and Booster Pump) is regularly maintained by the Municipal Water Works. The proposed technology (Solar Powered Water Pumping System) will be regularly maintained following the preventive maintenance and calibration program to be set by the supplier.

Quality Assurance System

Thru the government procurement system the quality of the procured equipment will be assured.

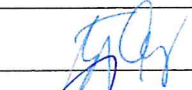

Scheduled treatment of water is being done to ensure that the tap water being provided to the community is safe for daily use.

*b. Product and Process Performance and Improvement*Performance Measures and Results – Process

Municipal Health Office conducts scheduled testing to selected waterworks facility within the municipality.

Performance Measures and Results – Product

Municipal Health Office provides the municipal waterworks results of the testing being conducted.

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Attested by <u>JERRY MERCADO</u> Name of ARD	Signature 	Date <u>10/13/22</u>



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c. *Environmental Management System*

Waste Management

None.

**4. Marketing Aspect**

a. *Marketing Plan*

The target market of the project will be the communities of Barangay Barangay Banahaw, Lipa, and Pag-asa.

b. *Market Outlets*

No market outlet

c. *Promotional Activities*

The Municipal Waterworks of LGU-Sta. Cruz will promote the target product thru Quad Media.

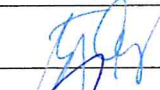

d. *Market Competitors*

NONE

**5. Finance**

a. *Source of capital/credit*

DOST-MIMAROPA will provide the technical assistance in form of Solar Powered Water Pumping System and LGU Sta. Cruz will provide its counter-part funds.

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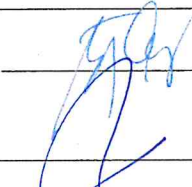

*b. Accounting System*

The accounting division handles the financials of the LGU Sta. Cruz. A separate account will be provided to record all the transactions of the project /enterprise and have a revolving funds to ensure continuous operations of the project.

**CONCLUSIONS:**

Based on the interview and ocular inspection the TNA team concludes the following;

1. *There is a problem on the* increasing cost of electricity and frequent power interruption which leads to water pump shutdown or cutoff of water supply at Baliis Water source.
2. There is a need for the provision of technical assistance in form of Solar Powered Water Pumping System that will address the issue on the problems of Baliis Water source (Tap Water) and provide the LGU Sta. Cruz an income generating project.
3. There is also need for the conduct of seminar/training on safety, technical operations and maintenance of the equipment.
4. The needed technical assistance is timely and would enable the LGU Sta. Cruz to meet their vision and mission.

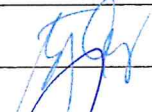
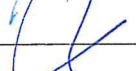
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**RECOMMENDATIONS:**

The following are recommended by the TNA team:

1. The DOST-MIMAROPA should extend assistance to the LGU Sta. Cruz thru GIA program to address the needs of reliable source of Tap Water.
2. DOST-PSTO- Marinduque to provide necessary trainings.

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