

DOST TNA Form 01**APPLICATION FOR TECHNOLOGY NEEDS ASSESSMENT**

Name of Enterprise: OCCIDENTAL MINDORO STATE COLLEGE		
Contact Person: DR. RONALDO G. ORPIANO	Position: VICE PRESIDENT FOR RESEARCH, DEVELOPMENT, AND EXTENSION	
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	E-mail Address: omsc_9747@yahoo.com	
Website: https://www.omsc.edu.ph		

GENERAL AGREEMENTS:

1. The applicant shall, at the earliest opportunity, make available to the DOST Regional Office No. IVB-MIMAROPA all information (manuals, procedures, etc.) required to establish the technology status of the selected core business functions and management systems;
2. If DOST IVB-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 IVB-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 IVB-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 IVB-MIMAROPA;
6. The applicant agrees that the receipt and acceptance 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 No. IV-B-MIMAROPA.



DR. RONALDO G. ORPIANO
VP for Research, Development,
and Extension
February 10, 2023

Enterprise Profile

Name of Enterprise: Occidental Mindoro State College

Production of Site/ Location: Main Campus, Labangan Poblacion, San Jose, Occidental Mindoro

CDA Registration: NA Year Registered NA

Brief Background:

The Occidental Mindoro State College (OMSC) also generates plastic and residual wastes. With its student population of about 11,000 and workforce of about 500 in its campuses in San Jose, bulk of wastes can be generated in every office and classroom. It is estimated that 30 kgs of plastic wastes and 10 kg used styrofoam can be collected weekly from its three campuses. These wastes will add up to the garbage collections that pile up in the Material Recovery Facility (MRF) of each campus before being hauled by the LGU. In addition, used cooking oils are also wastes in the school canteens, households, food stalls, and restaurant. It clogs up the drainpipes, pollute water and food sources, and develop into materials that linger in the environment. Plastic wastes, used styrofoam, and used cooking oils are unwanted materials in the school environment but these can be recycled and transformed into useful materials.

Cognizant of this, the OMSC intends to recycle the plastic wastes, used styrofoam, and used cooking that are collected from the three OMSC campuses in San Jose, Occidental Mindoro. This 3-year project has the following specific objectives:

1. collect plastic wastes, used styrofoam, and used cooking oil;
2. produce bricks and other products (traffic cones, plant box, etc) out of plastic wastes, styrofoam, and used cooking oil; and
3. generate income from bricks and other products.

Using equipment for shredding and melting/densifying, as well as good segregation practices and recycling, the wastes may be converted into products with economic value. Plastic and styrofoam shredder and melter/densifier that can process plastic wastes, styrofoam, and used cooking oils into bricks will generate cash. These are requested from the DOST through its Grant-in-Aid (GIA) program. Pavement bricks, traffic cones, and plant boxes may be produced. The products will be processed in OMSC Main Campus and will be marketed through the Enhanced Food and Income Production Program (EFIPP). The target markets are the OMSC faculty and employees. Products will also be offered to others when the volume of production had increased.

Waste plastics and styrofoam will be segregated and collected from the offices, classrooms, and canteens. Used cooking oils will be collected from the OMSC canteens and from the faculty and staff. If the supply of wastes is not sufficient, the OMSC will collaborate with other schools and colleges, food stalls and restaurants, as well as the LGU-MENRO.

The production of other eco-products, such as traffic cones and plant boxes, will be done after the bricks had established its market. Income will be used to sustain the project after three years.

Year enterprise was established: 1966

Initial capitalization: NA

- Type of Organization:
- Single Proprietorship
 - Cooperative/Association
 - Partnership
 - LGU/SUC
 - Profit
 - Non-Profit

Enterprise Registration No: NA

Year Registered: NA

Classification according to capital

Present Capitalization NA

- 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 NA
Production _____
Non-production _____
Indirect/Contract Workers _____

Total _____

Business Activity:

- Food processing (please specify specific sector) _____
- Furniture (please specify specific sector) _____
- Natural fibers, gifts and home decors and fashion accessories (please specify specific sector) _____
- Metal and engineering (please specify specific sector) _____
- Aquatic and marine resources (please specify specific sector) _____
- Horticulture/Agriculture (please specify specific sector) _____
- Others, please specify Eco-bricks

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

Pavement bricks

2. Reason why assistance is being sought:

OMSC intends to recycle plastic wastes, used styrofoam, and used cooking oil produced by the three OMSC campuses and convert these to eco-bricks. This is to reduce, if not eliminate, the volume of waste materials in the campus and make its surroundings conducive to teaching and learning. Shredder and plastic densifier are needed in the production of eco-bricks, and DOST had developed the said equipment. Hence, technical and financial assistance to the project are sought.

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

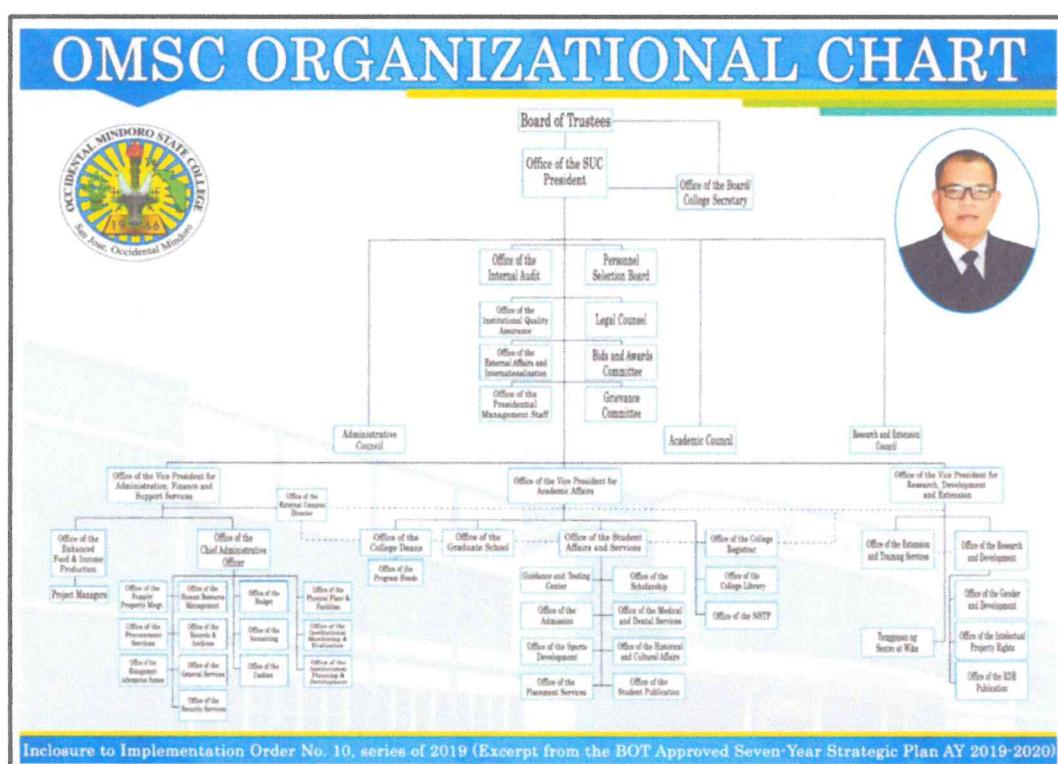
Yes, from what company/ agency

Please specify the type of assistance sought.

No, why not

There is no available grant/funding from other organizations to finance the requested equipment and other assistance for the project. Furthermore, recycling is not in the list of the priorities of other funding agencies. Assistance from DOST through its Grant-in-Aid (GIA) program was requested, and it was approved.

Organizational Structure



4. The Agency plan for the next 5 years?

For the next 5 years, the OMSC will recycle waste plastics, used styrofoam, and used cooking oil and convert these into bricks. While the primary purpose is to minimize waste and maintain a clean school environment, the products will also be sold at fair price to generate cash. The project will become an income-generating project of the College. Other products will also be developed, such as traffic cones

and plant boxes, as well as some souvenir items that can be developed using the waste materials. The products will be promoted using social media and ICT materials. In its fifth year, the OMSC would have established the market of its products.

Likewise, partnership with Fast-food chains and other local restaurants will be forged for the supplies of plastic wastes, used styrofoam, and used cooking oil. Students will also be involved in the collection of these waste materials for fee/incentives. These are in the offing when the demand for the products and the volume of production have increased.

5. Next 10 years?

In the next 10 years, the OMSC will also conduct R&D activities on the improvement of the physical characteristics of eco-bricks that would make its quality compete with the standard construction materials. In this period, other construction materials would have been developed by the OMSC using waste materials through its Research, Development, and Extension (RDE) Unit. The project is envisioned to engage in the production of materials that may be used in the housing projects of different organizations.

BENCHMARK INFORMATION

▪ Production and Supply Chain

➤ Raw Material

Operating Cost Components	Source	Unit Cost	Value Used/Year
N/A			

➤ Production/services

Product	Annual Production Volume	Unit Selling Price (PhP)	Annual Cost of Production (PhP)
N/A			

➤ Production/Service Equipment

Type of Equipment	Specification	Capacity
None		

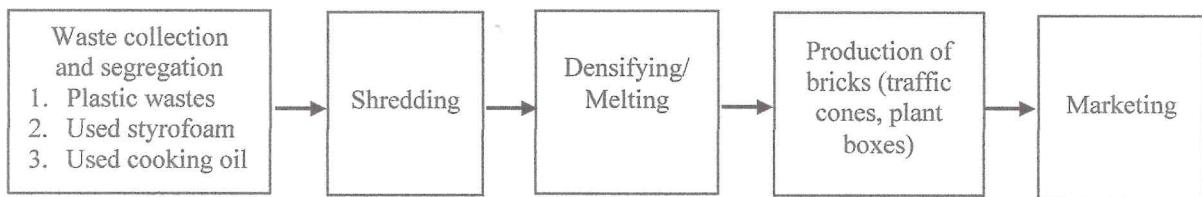
➤ Problems and Concerns

The OMSC has bulk of wastes generated in its three campuses. Plastic wastes and used styrofoam are common sight in the trash cans, dumping sites, and in material recovery facility (MRF). These are collected weekly by the LGU-MENRO and add up to the bulk in municipal dumping site. However, the waste materials are eye sores in the campus as this pile up before the weekly collection. This makes the campus untidy and not conducive in teaching and learning.

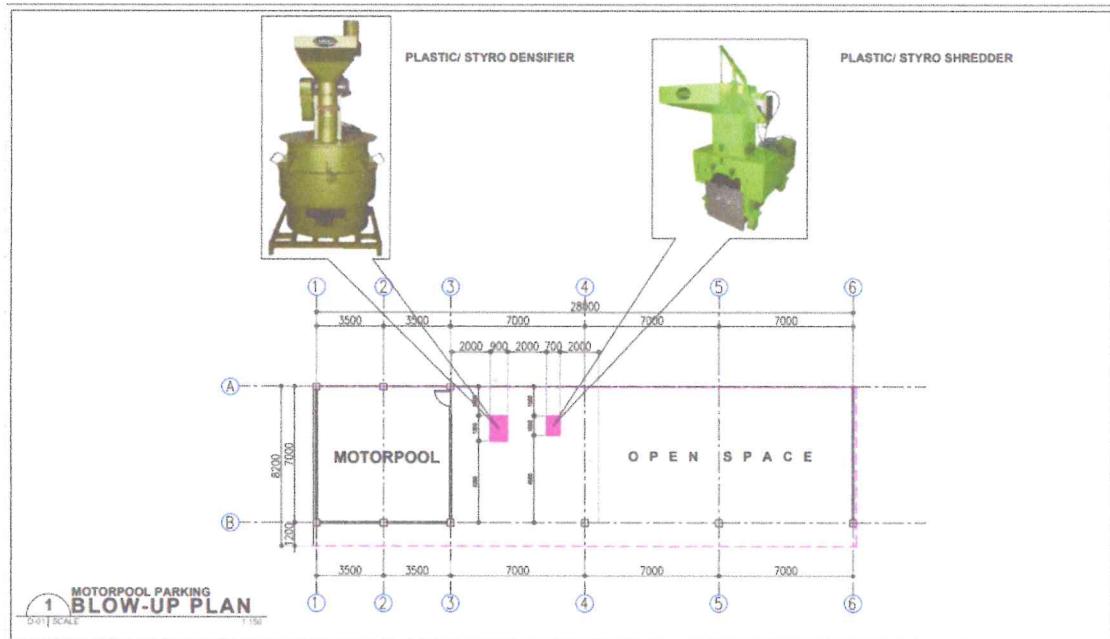
➤ Production Waste Management System

Waste materials will be properly segregated, collected, and then recycled. Other wastes will be properly collected and disposed. LGU-MENRO regularly collect wastes from the three campuses.

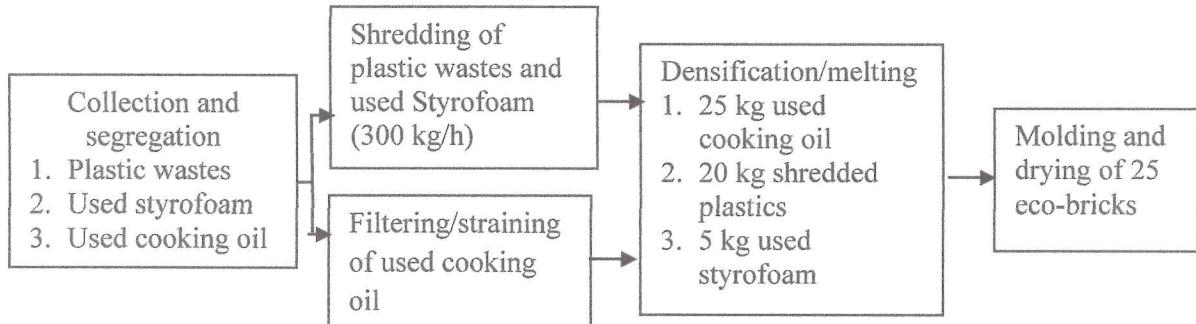
➤ Production Plan



➤ Production Lay-Out



➤ Process Flow



➤ Inventory System

OMSC conducts annual inventory.

➤ Maintenance Program

Schedule of maintenance will be based on the requirements of the equipment. But the MRF as well as the production site will be manned by the Job Order employee who will also maintain the equipment and facilities.

➤ CGMP/HACCP Activities

None

➤ Supplies/Purchasing System

A Project Procurement Management Program (PPMP) will be prepared. Based on these, the materials and supplies will be requested. Purchase will be done by the Supply Office.

➤ Marketing Plan

The marketing of eco-bricks and other products will be done by the Enhanced Food and Income Production Program (EFIPP) of OMSC. The products will be initially offered to the faculty and employees, and later to others in the community who are interested in the products.

➤ Market Outlets and Number

The EFIPP (Marketing Center) will be the initial market outlet. Later, the products will be made available in the OMSC Multipurpose Cooperative (OMSC MPC). A Pasalubong Center in OMSC will likewise be established where the eco-bricks and other products, as well as other items (processed food, souvenir items, etc) produced by OMSC will be made available.

➤ Promotional Strategies

Initially, the products will be promoted to the OMSC Community through announcements and social media. In the next years to come, ICT materials (flyers, brochures) will be prepared and distributed. The OMSC will also participate in the local and national trade fairs, and Science and Technology Week, where the products will be exhibited.

➤ Market Competition

Eco-bricks are not regularly produced in the province. The LGU MENRO San Jose production was halted because of the expensive operation as the production site is in a remote area that is not powered by electricity. The use of petroleum products to run the equipment makes the operation cost ineffective.

It is also expected that the products will compete with the concrete bricks (made of clay) and hollow blocks, among others, which are most preferred by the buyers. Hence, promotion of the products giving emphasis to the materials used will be done. Research will likewise be done to develop products with qualities that compare with those already available in the market.

Packaging

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

▪ Finance

➤ Cash Flow or other related documents

EFIPP and OMSC Accounting System

➤ Source(s) of capital/credit

OMSC Counterpart

➤ Accounting System

OMSC Accounting System

▪ Human Resources

➤ Hiring and Criteria

The Job Order (JO) employee must be residing near the OMSC Main for easy monitoring of the equipment. JO must be healthy and strong as the work is tedious. Both male and female workers may apply for the position.

➤ Incentives to Employees

As mandated by the government.

➤ Training and Development

The supplier of equipment will hold training on the use of shredder and densifier in the production of eco-bricks, traffic cones, and plant boxes. Related training will also be given in the production of new products out of waste materials, as well as on occupational safety and health standards, and gender and development.

➤ Safety Measures Practiced

Workers are required to wear safety gears while using the shredder and densifier. Masks, gloves, boots, and proper clothes must be worn during the handling of waste materials. Wearing of facemask for all employees is also strictly required. Fire extinguisher, alcohol, safety kit, soap, and water must always be available in the production area,

➤ Other Employee Welfare

None

➤ Other Concerns

The production area will be temporarily located in the proposed site at the back of OMSC Gymnasium. This will be transferred when a separate area, preferably near the Material Recovery Facilities, is already available.

The production will be regularly done in OMSC Main Campus in Labangan, San Jose, Occidental Mindoro. Operation will stop during power outage, inclement weather, and other disasters.

Prepared by:



DR. RONALDO G. ORPIANO
Vice President for Research, Development,
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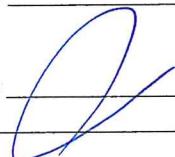
Validated by:



VINCENT S. LABINDAO
SRS II

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TECHNOLOGY NEEDS ASSESSMENT (TNA) REPORT		
AGENCY NAME:	Occidental Mindoro State College	
ADDRESS:	Brgy. Labangan, San Jose, Occidental Mindoro	
SCOPE OF ASSESSMENT*		
The TNA covered the following areas:		
1.	Strategic Direction	
	a.	Vision and mission
	b.	Plans and Objectives
	c.	Strategic alliances and current agreement
2.	Management Aspect	
	a.	Human resource management
	b.	Purchasing
	c.	Work environment
	d.	Corporate social responsibility
	e.	Occupational health and safety management
3.	Technical Aspect	
	a.	Operational and outsourcing practices
		-production system
		-production planning and control
		-production lay-out
		-work improvement
		-equipment management and maintenance
		-quality assurance system
		-outsourcing practices
	b.	Product and Process Performance and Improvement
		-reengineering and Research and Development
		-Procedures for continuous improvement
		-Product Quality standards
	c.	Environmental Management System
		-Waste management
4.	Marketing Aspect	
	a.	Marketing plan
	b.	Market outlets and number

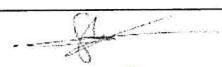
Reported by	<u>Vincent Labindao</u>	Signature		Date	<u>Feb 10, 2023</u>
Name of TNA Team Leader					
Attested by	<u>Jerry B. Mercado</u>	Signature		Date	<u>Feb 17, 2023</u>
Name of ARD					

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- c. Promotional strategies
 - 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)

Reported by	<u>Vincent Labindao</u>	Signature		Date	<u>Feb 10, 2023</u>
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Attested by	<u>Jerry B. Mercado</u>	Signature		Date	<u>Feb 17, 2023</u>
Name of ARD					

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SUMMARY OF ASSESSMENT

BACKGROUND

The OMSC produces plastic and residual wastes. With its student population of about 11,000 and workforce of about 500 in its campuses in San Jose, bulk of wastes are generated in every office and classroom. It is estimated that 30 kgs of plastic wastes and 10 kg used styrofoam can be collected weekly from its three campuses. These wastes will add up to the garbage collections that pile up in the Material Recovery Facility (MRF) of each campus before being hauled by the LGU. In addition, used cooking oils are also wastes in the school canteens, households, food stalls, and restaurant. It clogs up the drainpipes, pollute water and food sources, and develop into materials that linger in the environment. Plastic wastes, used styrofoam, and used cooking oils are unwanted materials in the school environment but these can be recycled and transformed into useful materials.

Cognizant of this, the OMSC intends to recycle the plastic wastes, used styrofoam, and used cooking oil collected from its campuses in San Jose, Occidental Mindoro. This 3-year project has the following specific objectives:

1. collect plastic wastes, used styrofoam, and used cooking oil;
2. produce bricks and other products (traffic cones, plant box, etc) out of plastic wastes, styrofoam, and used cooking oil; and
3. generate income from bricks and other products.

Using equipment for shredding and melting/densifying, as well as good segregation practices and recycling, the wastes may be converted into products with economic value. Plastic and styrofoam shredder and melter/densifier that can process plastic wastes, styrofoam, and used cooking oils into bricks will generate cash. These are requested from the DOST through its Grant-in-Aid (GIA) program. Pavement bricks, traffic cones, and plant boxes may be produced. The products will be processed in OMSC Main Campus and will be marketed through the Enhanced Food and Income Production Program (EFIPP). The target markets are the OMSC faculty and employees. Products will also be offered to others when the volume of production had increased.

Waste plastics and styrofoam will be segregated and collected from the offices, classrooms, and canteens. Used cooking oils will be collected from the OMSC canteens and from the faculty and staff. If the supply of wastes is not sufficient, the OMSC will collaborate with other schools and colleges, food stalls and restaurants, as well as the LGU-MENRO.

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Name of TNA Team Leader					
Attested by	Jerry B. Mercado	Signature		Date	Feb 17, 2023
Name of ARD					

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d. Market Competitors

None for eco-bricks

5. Finance**a. Cash Flow and other related documents.**

NA (none yet)

b. Source of capital/credit

Occidental Mindoro State College

c. Accounting System

Occidental Mindoro State College Accounting System

CONCLUSIONS

Based on the interview and ocular inspection, the TNA team concludes the following:

1. In the regular hauling of garbage by the LGU-MENRO, many plastics and used styrofoam are collected. If properly segregated, cleaned, and shredded, these solid wastes may be recycled. Used cooking oil is also produced in the school canteen, restaurants, household, and boarding houses. These may be collected and used in the recycling of plastic wastes and used styrofoam.
2. The OMSC has Material Recovery Facility (MRF) where collected wastes may be segregated and piled.
3. Shredder and densifier are needed to recycle plastic wastes and used styrofoam hence needed by the OMSC.
4. There is an available space near the MRF where the shredder and densifier will be installed and will be the production site of bricks and other products.
5. There will be personnel to be assigned in the production and marketing of the products.
6. Training on the use of shredder and densifier, as well as in the production of eco-bricks, is needed by the OMSC.

Reported by	Vincent Labindao	Signature	Date
Name of TNA Team Leader		Feb 10, 2023	
Attested by	Jerry B. Mercado	Signature	Date
Name of ARD		Feb 17, 2023	

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The production of other eco-products, such as traffic cones and plant boxes, will be done after the bricks had established its market. Income will be used to sustain the project after three years.

METHODOLOGY

The proposed area was inspected ocularly as part of the technology needs assessment (TNA). To learn more about the operation's expected course of action as well as the plans and demands of the OMSC, an interview with the project's designated Project Leader was conducted. The TNA leader also provided his evaluation and observations of the problems and potential course of the proposed project.

Summary of Findings

1. Strategic Direction

a. Vision and mission

The OMSC envisions to be a premier higher education institution that develops globally competitive, locally responsive, innovative professionals and life-long learners. It is committed to produce intellectual and human capital by developing excellent graduates through outcomes-based instructions, relevant research, responsive technical advisory services, community engagement and sustainable production. To attain its vision and mission, the OMSC must provide an environment that is favorable to the teaching and learning process. A waste-free campus is conducive to learning.

b. Plans and Objectives

DOST-MIMAROPA thru the PSTC Occidental Mindoro aims to provide technology intervention through Plastic Densifier and Shredder. Partner in the project, OMSC will provide counterparts for the lot and Production Area. The OMSC will also assign a staff to help in monitoring and implementation of the project and also assign an operator who will handle the day-to-day operation of the equipment. The project will provide recycled bricks.

Once the proposed assistance is acquired, assessment will be made for the impact and effectiveness of recycling waste material.

Reported by	Vincent Labindao	Signature	Date
Name of TNA Team Leader		Feb 10, 2023	
Attested by	Jerry B. Mercado	Signature	Date
Name of ARD		Feb 17, 2023	

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c. Strategic alliances and current agreements

OMSC has no specific strategic alliances or agreements related to this project.

2. Management Aspect

a. Human resources

To assist the project leader, the OMSC will designate a focal person who will be accountable for the operation of the project. The Janitorial Services are assigned in the collection and segregation of waste materials. Job Order employees will be hired to work on the shredding and production of bricks. The EFIPP will be in-charge of the marketing of products.

b. Purchasing

DOST MIMAROPA facilitate the procurement processes for the requested shredder and densifier. The OMSC will procure other supplies and materials as per PPMP, and the Supply Office will do the procurement.

c. Work Environment

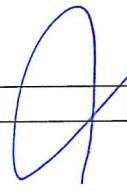
The equipment has adequate area for installation, and the production site is not close to offices, classroom, and student laboratories. The site is in proximity to the Material Recovery Facility (MRF).

d. Business Ethics and Social Responsibility

All employees and officers must respect, obey and comply with the laws, rules and regulations applicable to their duties and responsibilities.

e. Occupational Health and Safety Management

Wearing of all safety gears are required in all employees exposed in hazardous jobs and wearing of face mask will be strictly required.

Reported by	Vincent Labindao	Signature		Date	16/07/2023
Name of TNA Team Leader					
Attested by	Jerry B. Mercado	Signature		Date	16/07/2023
Name of ARD					

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3. Technical Aspect

a. Operational and Outsourcing Practices

Production system

No existing production system in relation the recycled production.

Production Planning and Control

None

Production Layout

Proposed production layout will be applied on the implementation of the project.

Work Study/Improvement

Not yet practiced/ implemented.

Equipment Management and Maintenance

Scheduled equipment maintenance will be practiced once the project has been operationalized.

Quality Assurance System

The OMSC implements procedures to ensure quality of services and products.

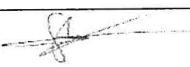
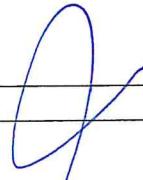
Outsourcing Practices

This practice will be done once necessity has been determined.

b. Product and Process Performance and Improvement

Re-engineering and Research and Development

None yet, but research and development are included in the plan.

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Performance Measures and Results – Process

None yet.

Performance Measures and Results – Product

None yet, but product performance monitoring will be done.

Procedures for Continuous Improvement

None yet, but continuous improvement will be done.

Product Quality Standards

None yet.

c. Environmental Management System**Waste Management**

NA

4. Marketing Aspect**a. Marketing Plan**

The target beneficiaries of this project are the faculty, employees, and students of OMSC in San Jose, Occidental Mindoro. Aside from the clean and conducive environment for working, teaching, and learning, the school community may benefit from the use of cheap and environment-friendly eco-bricks in their offices/buildings and households

b. Market Outlets

The EFIPP will be the market outlets.

c. Promotional Activities

Promotional activities will be done once the technology is optimized and the products are already produced.

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RECOMMENDATIONS

The following are recommended by the TNA team:

1. The DOST MIMAROPA though PSTC Occidental Mindoro should extend assistance to OMSC for the environment-friendly eco-bricks production.
2. DOST MIMAROPA should assist OMSC in conducting trainings and orientation on the said technology for proper implementation.
3. Training on eco-bricks production and operation and maintenance will also be conducted as needed in project implementation.

Reported by Name of TNA Team Leader	Vincent Labindao	Signature	Date
Attested by Name of ARD	Jerry B. Mercado	Signature	Date