



## CAPSULE PROPOSAL FORM

Date Submitted: Jan 24, 2022	Semester: 2nd	Duration of the Project: 6 months
Project Leader: Marlon D. Hernandez. Deng.		
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College/Campus: Sarmiento Campus	Department: Information and Industrial Technology Department	
Project Title: SSARE: Self Sustaining Aquaponics using Renewable Energy		
Funding Source: BulSU	Total Project Amount: Php.	
Project Members: Van Ribot.	College/Department/Agency: Sarmiento Campus – IIT Department	
Research Agenda/Program Component: Emerging Technology and Applications to Inclusive Nation Building, Climate Change and adaptation, Biodiversity and the management of the Natural Environment and Food Safety and Security		
<p>Rationale:</p> <p>Urban Planting had been a trend not only in the Philippines but for the rest of the world which is supported by the World Health Organization to minimize the effect of Climate Change. In line with this, rooftop planting had been an effective way for most people to grow their plant and even vegetables.</p> <p>However, the challenges still remain in watering the plants. To resolve this issue, aquaponics was introduced to the market with having plant grow in submerge roots. This will help the plants to grow with minimum supervision. But still a problem arise because of the plot capacity of urban gardening and stagnant water which reduces the oxygen level and increases the algae of the water.</p> <p>To resolve this issue, a vertical elevated structure was designed to accommodate more plants and to still share the shade of sunlight. Also with the use of electric pump, the water could travel in circulation to provide oxidized water and with level of filtration.</p> <p>Applying this method, the consumption of energy may go up and with power interruption, the aquaponics structure may have a problem.</p> <p>To address this issue, the proponents came up with a unique structure of a combined renewable energy to sustain the need of the electric current of the mechanism. The use of solar panel and wind turbines to supply the initial power needed by the mechanism. A water turbine will also be used to regenerate energy to sustain the needed power of the mechanism to continuously pump the water. The first two power source will be use to ignite the mechanism, while the third will help to sustain the power once it starts.</p> <p>The study aims to develop a self sustainable aquaponic using different renewable energies to sustain the flow of the system/</p> <ol style="list-style-type: none"><li>1. To calculate the power needed to sustain the power needed by the mechanism.</li><li>2. To sustain the water flow as required per plant by using sensors.</li><li>3. To evaluate the project by using ISO 25010</li></ol>		
Earlier results within the research area by applicants; related works already in progress:		



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A study by Suarez-Caceres of 2017, aquaponics is the combination of plant production and fish cultivation which are the aquaculture and hydroponics. Where as the combination of different renewable energy was discussed in the study of Chong of 2012 was applied inwater harvester in high rise application. This separate studies may be combined to produce a self sustaining aquaponics design.

Preliminaries

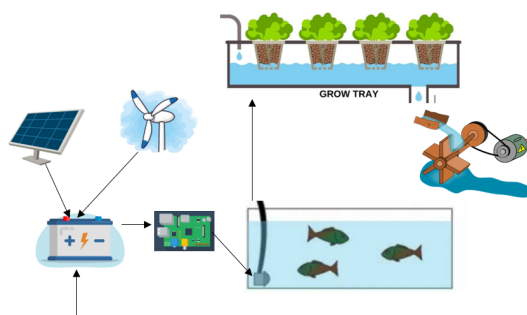
Scope:

The study will cover investors residing in Bulacan. Specifically those under the following qualifications:

Research Method:

The aproach of the methodology for prototyping and industrial applicagion for patent may vary from the components added or technology implied in each phase of development. The aproach that will be used in the study is still experimental yet verified by jonathan (Trevor, 2020) as it was used to compare prototypes and industrial applications.

1. Design with alternatives – the application of portability vs embeded system will be used as preliminary stage.
2. Varied Situation – this includes presentation of research to the community, brain storming with technical people with specialization of mobile programming, welding, farming, fisheries and others.
3. Deployment and observation – the study will focus on a large scale prototype that would contain solar panel, wind turbine and water turbine as a source of energy. This will be tested and under actual condition. For sustainability of the power generation, the solar panel may be a variable and it depends on the location.



This shows the schematic representation of the mechanism without the sensors to show the principal components and how the power will be used in each cycle.

Expected Output of Research Project:

- Inputs on modern Investment Portfolio
- Publication
- Extension Project

*Note: The project deliverable must qualify under any of the following: publication, patent, product, people services, partnerships, policies or profit*

### Summary of Budgetary Requirements

Personal Services Honoraria and Personnel

Details: Marlon Hernandez and Van Ribot's Honoraria

**Estimated Cost: 81,600**



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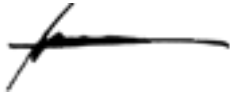
Maintenance and other Operating Expenses Details: Bond Papers, Bookbinding, materials for the aquaphonics is still on canvas as well as the experts. We will follow up on the details  Estimated Cost: 200,000.00
Grand Total:          Php 281,600.00

Work Plan / Gantt Chart														
Objectives	Expected Output	Activities / Work plan	MONTH											
			1	2	3	4	5	6	7	8	9	10	11	12
Stablish connection with the local aquaphonics users. Collect informative data and streghten the claim of the research.	1.A communicati on with the City Agriculture of CSJDM and stablish MOA	Data Gathering												
Project Development, consultaion with experts such as electricial, welder, farmer and fisherman	2.The developed renewable energy aquaphonic s prototype	Prototype building												
Deploy and test the prototype	3.Complete d Research Paper, Extension Proposal for CESU	Identify journals where we can have the paper submitted for publication. Propose to different barangays as part of the extension project of the department												

**Prepared and Submitted by:**



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<b>Signature:</b>	
<b>Name of Project Leader:</b>	Marlon D. Hernandez