



Republic of the Philippines  
**BATANGAS STATE UNIVERSITY**  
Batangas City

Tel Nos.: (+63 43) 980-0385; 980-0387; 980-0392 to 94; 425-7158 to 62 loc. 1546/1822

Website Address: <http://www.sustainability.batstate-u.edu.ph>

Center for Sustainable Development

**PACKAGED TECHNOLOGIES TO SUPPORT  
RESPONSIBLE CONSUMPTION AND PRODUCTION**

**Solar Isotropic Generator of Acoustic Wave (SIGAW)**



SIGAW is an Early Warning System (EWS) for different disaster scenarios. The first implementation is for tsunami early warning. SIGAW is mainly comprised of a GSM communication and control module attached to sirens that can be triggered remotely during tsunami scenarios. Remote triggering the system is being conducted through a Decision Support System. The team has units in Batangas and Quezon Provinces.





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Enterprise Development and Organization of Professional Management Team



This project aims to contribute to the development/enhancement of climate change resiliency of farmers in the identified vulnerable communities in Batangas province. This project enables the selected communities to develop an enterprise and organize a professional management team. Through the established enterprises, farmers convert their crops into value-added products which will help them to lengthen the shelf lives of their farm products and prevent wastage of farm harvest during typhoons, floods, or other climate change hazards. Besides, the enterprises generate profits and employment and serve as an alternative source of income specifically for women which will improve their resilience to Climate Change.



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### Balayeños Automated Bagoong Machine

The study aimed to design and develop a fish bagoong processing machine. The grinded fresh fish are processed to produce a product such as fermented fish with salt or bagoong which is one of the renowned Filipino condiments. The existing fish grinders used by small-scale bagoong producers were examined by the researchers to find out its process and determine the areas to be improved in these existing machines. They collected information and data that would aid the researchers in conceptualization of the design of the proposed machine. The output was tested for efficiency and effectiveness through a series of observations and testing to which the developed fish bagoong processing machine successfully passed.

Development and Installation of Solar powered Chili Dryer



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The Solar-powered Chili Dryer relates to an innovative drying method of Chili using a renewable source of energy. Along with this objective is the aim to provide quality food products with consistent drying time with precise process control of temperature and humidity using a microprocessor. The apparatus is equipped with a data logging unit for monitoring and recording of operation.

Design and Development of a Portable Biodiesel Reactor using Aeration-Assisted Alkali-Catalyzed Transesterification of Waste Cooking Oil



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The 21st century is an era where the world's transportation is powered by fossil fuels. Due to the said fact, the emission from using these fuels is a huge factor in contributing to the pollution of the world and climate change. This research aims to produce a greener and more eco-friendly fuel that can be utilized as an alternative for today's fuel.

The study aims to present a design which introduced aeration technology, a heating element and air-atomized spraying of catalyst for the continuous production of biodiesel from waste cooking oil.

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Recycle On-demand BIN (ROBIN)

This study aims to address the important issue of systematizing the collection of recyclable materials by designing and developing a sustainable reverse vendo bin. SuRe Bin is a reverse vending machine that accepts selected recyclable beverage containers as input. Every recyclable that the bin will take is equivalent to a certain point which will be stored in a unique account made through the bin. As the accumulated points go higher, it will let users



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redeem e-services, such as mobile phone charging time, mobile data ,and prepaid load. To validate the acceptability and functionality of SuRe Bin, the researchers conducted testing and multiple validations. It was also tested by different students and faculty members at Batangas State University. The feedback and suggestions of every respondent and users were recorded and taken into consideration for the betterment of this study. The researchers developed a sustainability plan and a business model for SuRe Bin's potential on being a start-up product. All of this underwent validation to different possible adaptors of SuRe Bin to substantiate the Business aspect of this study. Also, this research shall discuss how SuRe BIN scaled to become a registered startup, ROBIN, intended to be used in a Smart City setup.