Economic Empowerment of Community Groups of Sei Beliung Urban Village Through Organic Vegetable Plant Cultivation with Hydroponics System

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- Economic Empowerment
- Organic Vegetables
- Hydroponics Systems
- Cultivation of Plants

**ABSTRACT**
Sei Beliung is one of the urban villages in Pontianak city, with 80% of high school graduates and main livelihood is 60% of workers. Men work as laborers, while their mothers help their husbands to support their family’s economy. Based on field data most of the homes in Sungai Beliung have large yard. To optimize the efforts of mothers to help their husbands in supporting the economy, the Community Service (PPM) activity aims to empower the community’s economy by fostering mothers using the yard through organic vegetable cultivation of hydroponics system. This activity has the main objective is to provide farming skills with hydroponic system for the community of RT 02 and RT 04 of Sui Beliung Subdistrict so that it can produce organic vegetables to be utilized as their life support.

**INTRODUCTION**

Sei Beliung urban village is an urban village located in West Pontianak District, Pontianak City, West Kalimantan Province. The distance between Sui Beliung and Pontianak State Polytechnic is approximately 10 Km. Sui Beliung has an area of 264 ha or 2.64 Km² with RW 33 and RT 179. Based on data from BPS Pontianak 2014, Sui Beliung has a population of 47,327 consisting of 24,134 men and 23,193 women.

The average formal education of productive age residents consists of 80% high school educated, 10% graduate and 10% did not finish high school. The livelihood of Sui Beliung urban village consists of 60% workers, 15% civil servants, honorarium and others 25% (Staff of Kelurahan Sui Beliung). They choose to work as laborers at ports and warehouses because their lack of knowledge and work as laborers is considered the easiest way to earn money. The income is certainly very far from the local UMR.

The male population works as a laborer, while the mother-mother helps the husband by being a laundry worker, selling cakes and some who are not working and who are still working girls to help her mother or work as a shopkeeper to support her family’s economy. And based on BPS 2014 data of the poor population of Sui Beliung 1,423 people, it shows that Sui Beliung still needs attention and improvement in the economic field.

Locals have a number of potentials that if they are managed as well as possible will greatly benefit. Seeing the total population of the female sex in Sui Beliung almost 50% of the population and the number of women of reproductive age is so large that proportionally can play a big role that will
provide representation in various areas of life. Increasing the active role of women in an effort to enable all family members to be involved.

Every resident of Sui Beliung Urban area generally has a yard which is still not utilized maximally. The mothers in this field have the potential to grow crops, visible from the pots planted with flowers in front of their homes. However, the condition of the land in Sui Beliung is peat soil, marshland and even most of the people's land has been walled. So there must be other ways to get around the condition, one of them is by planting hydroponically.

Hydroponics is the cultivation of planting crops by using water, without using soil and emphasizing the fulfillment of nutritional needs for plants. The water requirement on hydroponics is less than the water requirement for cultivation with soil. Hydroponics use water more efficiently, so it is suitable to apply to areas with limited water supply. (http://id.wikipedia.org). Based on Henik's research (2009) hydroponic techniques tend to be able to conserve the volume of water used in total, increase the volume contained in plants, and minimize the volume of water that evapotranspiration. Water use savings in hydroponics techniques can occur because water is given to plants by closed circulation method. Water in the hydroponics system is kept out of direct exposure to air by means of a styrofoam closure, thus minimizing the evapotranspiration process.

Seeing the reality of the village community Sui Beliung the number of women of productive age is quite large and not working (outdoors), very potential to do business (entrepreneurship) farming with hydroponics system. Therefore, the PPM team will educate some residents in Sui Beliung by providing information on appropriate technology in the form of information delivery, training and implementation in the field of Hydroponics system farming method using the existing human resources in the environment. This activity is expected to increase public knowledge which automatically can increase people's income and improve the level of prosperity of Sui Beliung urban village.

This community activity is certainly to provide solutions to the problems faced by partners so that must have a clear and detailed problem formulation in order to achieve the success of the program has been planned. Output target generated from this activity is in the form of publications and skills of planting with hydroponic system for people of RT 02 and RT 04 of Sui Beliung Subdistrict so as to produce organic vegetables.

The main purpose of this community activity is to provide farming skills with hydroponics system for RT 02 and RT 04 community of Sui Beliung Subdistrict so that it can produce organic vegetables to be utilized as their life support. By him, detailed the purpose of this activity to produce maximum output.

Specific objectives are as follows: (1) Provide an understanding of the importance of maintaining the cleanliness of the environment to create a green environment, and maintain the survival and the environment around us; (2) Providing an understanding or knowledge of hydroponic farming techniques; (3) Adding skills to process used goods into hydroponic planting medium; (4) Provide planting skills on soilless media; (5) Adding the ability to develop creativity and mindset in capturing promising organic vegetable business opportunities; (6) Provide information pioneering new marketing networks; and (7) Opening job creation opportunities for self and others especially people in Sui Beliung urban area.

Growing entrepreneurial spirit of society in Sui Beliung urban area so that it is expected that this community service activity can form productive society, self-reliant, high performing, have strong economic strength and improvement of the welfare of living standard.

Some Important Factors to Look For

The nutritional solution should pay attention to the amount and element of pH as appropriate. UnsurpH ranges from 5.5 to 7.5. This nutrient solution contains large amounts of N, P, K, Ca, Mg, S, and Fe, Mn, Zn, Cu, B, Mo, and Cl elements in small amounts. The nutrient solution is prepared by dissolving the salts of the fertilizer in water. Various salt types of fertilizers can be used for nutrient solution, the usual choice is the price and solubility of the salt of the fertilizer. Media Tanam, among others, consists of bricks, sand, gravel, charcoal husk, sponge, pumice, and others.

Water, it should be noted that water quality is used, salinity level does not exceed 2500 ppm and EC value is not more than 6.0 mmhos / cm. Water should not contain too many heavy metal elements.

Oxygen plays an important role in hydroponics. Lack of oxygen will cause the cell wall difficult to penetrate, so the plant will lack water. Thus the plant will quickly wither because the solution does
not contain oxygen. Giving oxygen to the solution can be through air bubbles such as aquarium bubble water pumps, routine nutrient replacement, cleaning or removing plant roots that are too long, and providing ventilation holes at the planting site.

**Business Prospect of Hydroponics Plant**

Speaking of business in the field of hydroponics cannot be separated from the services of Bob Sadino who can be considered as the first to introduce the system of vegetable cultivation of hydroponics in Indonesia. Hydroponic vegetables began to be introduced by Bob Sadino in Kem Chick supermarkets in the late 90s. Now, hydroponic vegetables can be bought at some famous supermarkets. Hydroponic vegetable prices are installed 4 to 5 times more expensive than regular vegetable prices in traditional markets. However, because hydroponic vegetables are free from the use of pesticides, the process of planting to harvest a higher-density, more fresh, and better packaging, so that hydroponic vegetables sold in some supermarkets are always quickly sold out.

With the growing public awareness of the vegan / vegetarian movement in addressing global warming issues, surely the demand for vegetables and fruits coming from an environmentally friendly process will be a major demand in their consumption list.

Due to the limited supply, and the increasing demand for this type of hydroponic vegetable, this environmentally friendly business opportunity is good enough for large-scale entrepreneurs, including export opportunities to neighboring markets where demand is high, such as Singapore and Malaysia.

From some of the references obtained, the investment cost for commercial hydroponic cultivation on a small scale for a land area of approximately 100 m² is about Rp150 million for the manufacture of tubs, water reservoirs, water pipes, media, solution liquids, and plant seeds. The investment return is around Rp500 million to Rp750 million per year. An appropriate business opportunity to be cultivated.

### METHOD

**Activity Implementation Method**

Methods of conducting activities are carried out by approach to the community, providing training and skills on farming and marketing management.

Individual or informal approaches to the local community as partners that aim to convey information related to hydroponic cultivation technology with used goods to utilize the most unutilized plastic waste. This approach is done to the partner community by conducting various activities such as:

- a. Provide an overview of the two partner leaders on how to farm hydroponically.
- b. Provide an overview to both partners on how to care for hydroponic plants.
- c. Providing education on the importance of maintaining environmental hygiene to each of the partner households (KK) built by partners to create a clean, healthy and green environment.
- d. Provide education to partners on how to utilize used goods for hydroponic cultivation by wicks method.
- e. Provide counseling to each partner of the partner (KK) on the results obtained from farming with hydroponic system, and what plants are possible to be planted with hydroponics system.
- f. Provide counseling to each partner of the partner (KK) partner on the usefulness and benefits of farming with hydroponic systems.
- g. Evaluate how much their interest in how to farm with this hydroponics system by distributing questionnaires.

Provide training and skills on how to farm with hydroponic system in the hope that participants can understand and have the skills to grow crops with hydroponic systems that use secondhand as a planting medium, so later after practice in the yard of their respective homes they are not awkward anymore. To support this step, support activities such as:

- a. Collect used items to be used as a medium for planting and buying materials used as plant nutrients.
- b. Provide training on farming techniques with wick hydroponics system
- c. Shows plant samples were grown with hydroponics techniques with used goods.
- d. In addition to the PPM team’s used items will also provide instant partner kits to plant hydroponics.
- e. As an evaluation they have had farming skills with hydroponic methods by demonstrating the
initiation of planting media they have made and the seeding they have done and the germination of the plants they have acquired.

Provide training and farming skills with hydroponic methods in the hope that after farming they can use them and enjoy the produce of their plantations for personal consumption even for sale. As a step application of appropriate technology with hydroponics techniques, it will be given how to apply the farming methods on each page with the following activities:

a. Provide education about the benefits of farming hydroponics
b. Provides an explanation of suitable plants grown with hydroponics techniques
c. Provide training on planting procedures with hydroponics system
d. Evaluate the understanding of cultivation techniques with the hydroponic system with examples of the results that have been done.

Provide training on marketing management such as how to conduct market research and pioneer new marketing networks with the aim of developing creativity and mindset in capturing promising business opportunities and creating job creation opportunities. Business and marketing management training is conducted to provide knowledge about how to start a business and sell the organic vegetables produced, then the following activities are carried out:

a. Providing seminars on market research covering what is market research, the importance of market research, data to be collected during market research and how to analyze data and how decision-making actions.
b. Provide seminars on new marketing pioneering based on market research results. The seminar contains how the concept of production, product concept, sales concept, marketing concept and promotion concept.
c. Evaluate the understanding of business management and marketing by providing questionnaires and frequently asked questions.

RESULTS AND DISCUSSIONS

Description of Activities and Results of Community Service

Based on the survey in the field, there are some problems that occur in the community RT 02 and RT 04 Sui Beliung Village. In addition, there are several potentials that can be utilized to solve the problems in the community by adding appropriate information technology. By that, the PPM team chose partners (target audience) community RT 02 and RT 04 Sui Beliung Village.

First, the economic condition of the densely populated population is low because 34 families from 62 families of KK RT 02 are working as laborers who receive a weekly wage which is certainly below the minimum wage. His moms helped by being a laundry worker and housekeeper as well as some small traders who certainly did not need any special skills. The same condition is also experienced by RT 04 which consists of 55 families, where most of the heads of households work in odd jobs and the sustainability of their life is supported by mothers by becoming laborers (tailors, cooks, etc.) and some small-scale businesses.

Second, the awareness of the partner community to dispose of waste properly is still very low, inorganic waste such as plastic bottles and plastic bags are thrown away carelessly. This over time will make pollution on the ground because the garbage cannot be broken down by bacteria.

Third, Partners in RT 02 and RT 04 also have potential in farming in their yard. Some people in these two neighborhoods are planting vegetables and fruits pickup in the yard of his house. This potential is very feasible to be developed and supported while educating the public about the importance of maintaining the cleanliness of the environment and the importance of greening the environment.

Fourthly, the lack of business interest among women is due to the relatively low level of education and knowledge and very simple business skills. This is evident from the many people who have never entrepreneurship and some who had entrepreneurship but failed. This situation is experienced by residents of RT 02 and RT 04 Sui Beliung Urban Village.

Information on hydroponic cultivation techniques, especially in low-income communities is still minimal, lack of understanding and lack of planting skills makes the community becomes lazy and tend to consumptive. People have not used their yards to the fullest. In addition awareness of local communities in maintaining the environment is minimal, a lot of plastic waste that is economical and
can be used as a place to plant is thrown away. The community also does not have the knowledge and
tools in business and the lack of support from the parties of educational institutions that in fact have
the ability to develop the technology.

Judging from the various problems experienced by the community, especially the community of
the village of Sui Beliung as a partner so that the PKM team perform various approaches to solve
problems faced by partners.

Approach methods include the individual or group approach either formal or informal
(integrated approach) to the local community as a partner that aims to convey information related to
hydroponic cultivation technology with used goods to utilize plastic waste that has not been used
optimally. This approach is done to the partner community by conducting various activities such as:

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and frequently asked questions.

**CONCLUSION AND SUGGESTION**

**A. Conclusion**

After the implementation of Community Service Program of Hydroponics System in Sungai Beliung Village, West Pontianak Sub-District, the Implementing Team can draw some conclusions: Firstly, the community in neighborhood of RT 02 and RT 04 Sungai Sungaiung Village have been able to receive understanding about the importance of maintaining environmental hygiene to create an environment green, and maintain the survival and nature around us.

Second. People in RT 02 and RT 04 Sungai Sungaiung neighborhoods have received understanding and knowledge about hydroponic farming techniques.

Third. People in neighborhood RT 02 and RT 04 Sungai Sungai Sungai village can utilize the process of used goods into hydroponic planting medium.

Fourth. People in neighborhood RT 02 and RT 04 Sungai Sungai Sungai village can accept and develop cultivation techniques with hydroponic methods in the surrounding environment.

**B. Suggestion**

In enhancing Community Service activities, the PPM team can provide some suggestions and include: first, the establishment of a business group to support PPM activities within RT 02 and RT 04 Sungai Sungai Sungai riverside; and second, In the development of cultivation techniques with hydroponic methods in the neighborhood of RT 02 and RT 04 Sungai Sungai Sungai village can involve various circles from the community.

**REFERENCES**


