# COMMUNITY DEVELOPMENT THROUGH THE USE OF PLASTIC WASTE MANAGEMENT AS HYDROPONIC

**Rukun Santoso[1*], Alfan Bachtiar[2], Nurhayati[3], Ita Erliyani[4], Afif Alfiyanto[5]**
[*1]Universitas Islam Jakarta, [2]Institut Bisnis dan Informatika Kosgoro 1957, [3]Universitas Indraprasta PGRI Jakarta, [4]Universitas Raharja, [5]Universitas Islam Negeri Raden Fatah Palembang
*e-mail: rukunsantoso1859@gmail.com

**Abstrak**
Kegiatan pengabdian kepada masyarakat merupakan kegiatan pengabdian kepada masyarakat di daerah tertentu sebagai implementasi dari perguruan tinggi. Kegiatan pengabdian bertujuan untuk memberikan pengalaman lapangan kepada peneliti tentang kondisi masyarakat secara langsung dan juga untuk membentuk sikap mandiri dan tanggung jawab dalam melaksanakan kegiatan pengabdian. Pelaksanaan pengabdian di saat Pandemi Covid-19 ini dimulai dari tanggal 15 Juni sampai dengan 24 Juli 2020 di Kelurahan Delapan Ulu Kecamatan Jakabaring Palembang. Kegiatan pengabdian yaitu melakukan pemberdayaan dan pengolahan limbah sampah plastik untuk pembuatan hidroponik, guna mempercantik halaman rumah dan meningkatkan perekonomian masyarakat sekitar dengan cara menjual hasil menanam sayur pada hidroponik. Secara umum kegiatan pengabdian kepada masyarakat yang dilaksanakan di Kelurahan Delapan Ulu Kecamatan Jakabaring Palembang berjalan dengan baik karena respon masyarakat juga baik. Pelaksanaan pengabdian tersebut diharapkan dapat bermanfaat bagi masyarakat, khususnya di Kelurahan Delapan Ulu Palembang.
**Kata kunci**: Pengembangan Masyarakat, Sampah Plastik, Hidroponik

**Abstract**
Community service activities are community service activities in certain areas as an implementation of higher education. Service activities aim to provide field experience to researchers about community conditions and form an independent attitude and responsibility in carrying out service activities. The service implementation during the Covid-19 Pandemic starts from June 15 to July 24, 2020, in Eight Ulu Village, Jakabaring District, Palembang. Service activities are empowering and processing plastic waste for hydroponic manufacturing, beautifying the home page and improving the surrounding community's economy by selling the results of growing vegetables on Hydroponics. Community service activities in Kelurahan Delapan Ulu, Jakabaring District, Palembang, went well because the community response was also good. The implementation of this service is expected to benefit the community, especially in Kelurahan Delapan Ulu Palembang.
**Keywords**: Community Development, Plastic Waste, Hydroponics

## INTRODUCTION

Higher education has the mandate of providing education to the community, in addition to students, to become citizens of society who can carry out scientific values and practice them based on morals, critical attitude, objective, openness and honesty in improving the quality of people's lives. In this case, universities organize activities in the fields of education and teaching and community service through the Tri Darma of Higher Education.

Community service is one of the main activities in the tri dharma process of higher education. Community service is a step of religious skills education carried out through community service through educational activities, field experiences, social and religious studies and empowering the community with particular designs and carried out within a certain period to achieve predetermined goals. Community service is the interdisciplinary application of knowledge that every lecturer must carry out in addition to teaching in class. Implementation. This community service is in Kelurahan 8 Ulu, Jakabaring district, Palembang City, South Sumatra Province. The main targets of the performance of this service are the community and social, religious, educational and economic institutions.

Lam resources are environmental elements consisting of biological, non-biological and artificial natural resources, which are assets that can be utilized to meet the needs of human life. As an extensive capital development of natural resources must be used fully. Still, in ways that are not destructive,

materials on the unorthodox methods used must be chosen to maintain and develop so that the primary capital is more beneficial for further development in the future (Yasin &; Maskoeri, 1986).

Plastic waste is waste goods in the form of plastic produced from a production process, both industrial and domestic (Household, better known as waste), whose presence at a particular time and place is not desired by the environment because it has no economic value (Apriadji, 1991). Garbage is inseparable from human life. Increasing an item's population or consumption level will also increase the volume, type and characteristics of waste produced. Law No. 18 of 2008 concerning waste management states that waste is the rest of daily human activities and natural processes in solid form. This waste management function includes waste reduction and handling.

In Eight Ulu Village, in particular, the waste problem still requires public awareness of the importance of protecting the environment to avoid environmental pollution. Therefore, Eight Ulu Village has its way of handling plastic waste by managing it as Hydroponics. With this service activity, researchers help manage plastic waste by educating the community. One of the objectives of this activity is to make people enthusiastic about managing waste that will be collected and can make money. Based on this background, the researchers took the theme of community service activities, namely community development through plastic waste management, as Hydroponics.

## METHOD

The method used in this service is the qualitative descriptive method. Descriptive research is research that aims to describe (explain) urgent events that are happening during this Pandemic. The population in this study is the community in Kelurahan Delapan Ulu. The goal to be achieved from the development of the Eight Ulu community through plastic waste management as Hydroponics is to improve the economy of residents affected by Covid-19 and the use of vegetables as daily food.

The benefits obtained from the development of the Eight Ulu community through the use of natural resources and plastic waste management are a) Theoretically, this research will be helpful as a contribution to the development of insight into the thinking, scientific treasures and adding knowledge and skills for residents; b) In practical terms, This research provides information on how to use natural resources and manage plastic Waste as Hydroponics.

## RESULTS AND DISCUSSION

According to the Law of the Republic of Indonesia number 18 of 2002 Development, a science and technology activity that aims to utilize the rules and theories of science that have been proven to improve the function, benefits, and applications of existing science and technology or produce new technology. Development is an effort to improve technical, theoretical, conceptual and moral capabilities according to needs or a process to make existing potential better and more practical (Majid, 2005).

In essence, development is an educational effort, both formal and non-formal, that is carried out consciously, planned, directed, organized, and responsible for introducing, growing, guiding, and developing a balanced, intact, pleasant personality basis, knowledge, skills by talents, desires and abilities as provisions on their initiative to add, improve, develop themselves towards achieving dignity, optimal human qualities and skills and independent individuals (Wiriyokusumo, 2014).

According to the Regulation of the Minister of Health of the Republic of Indonesia Number 3 of 2014 concerning Community-Based Total Sanitation (STBM), waste management is included in the 5 Pillars of STBM, namely stopping open defecation, washing hands with soap, drinking water or food management, waste management, and liquid waste management. Waste management is essential in maintaining the environment's carrying capacity and avoiding waste as a medium for developing vectors and disturbing animals that can transmit diseases.

Waste is a material or object that is solid, which is no longer used, or must be disposed of, as a result of human activities, which is not biological, has no economic value and is solid (solid waste).

Plastic is an artificial inorganic material composed of chemicals that harm the environment. Waste from this plastic is tough to break down naturally. To decompose plastic waste itself takes approximately 80 years to be thoroughly degraded.

Plastic waste is one household waste with a significant role in environmental destruction. The plastic waste we throw away will eventually accumulate in landfills or be buried in the ground. As a result, the structure and fertility of the soil will be disrupted significantly if it pollutes the river. According to Buntoro, "the development of the plastic industry in Indonesia began around 1963. This development is due to the wide use of plastics for households, industry, and other tools.

The use of plastic waste by recycling is generally carried out by industry. In general, there are four requirements for plastic waste to be processed by an enterprise, including garbage that must be in a particular form as needed (seeds, pellets, powders, fragments). Debris must be homogeneous, not contaminated, and strived not to oxidize. To overcome this problem, before being used, plastic waste is processed through simple stages, namely separation, cutting, washing, and removal of substances such as iron and so on.

The utilization of recycled plastics in the remanufacturing of plastic items has increased. Almost all plastic waste types (80%) can be reprocessed into original goods, although mixing must be done with new raw materials to improve quality. Plastic waste will continue to pollute the environment because it is not easily destroyed. However, plastic trash can still be recycled. The plastics are taken to factories to be smelted and reprocessed into valuable goods. Plastic recycling products include plastic bags, children's toys, household appliances, and other equipment.

Hydroponics is a method of growing crops without soil. Not only with water as a growth medium, such as the linguistic meaning of the word hydro which means water, but also can use planting media other than soil, such as gravel, sand, coconut husk, silicate substances, broken coral or brick, pieces of wood, and foam. According to Raffar (1993), hydroponic systems are a very effective way of crop production. The system was developed because if plants are provided with optimal growing conditions, the maximum production potential can be achieved. This is related to the growth of the plant root system, where optimal plant root growth will result in the very high growth of shoots or tops. In the hydroponic system, the nutrient solution provided contains a balanced composition of organic salts to grow roots with ideal root environmental conditions.

**Figure 1.** Utilization of Plastic Waste in Hydroponics

In cultivating hydroponic plants, one that is very important is the solution in nutrients. The nutrient solution is an essential factor for the growth and quality of hydroponic plant yields, so it must be correct in terms of the amount of nutrient ion content continuously accessible tool costs, and facilitate maintenance because it does not require watering and does not depend on electricity, nutrients are given in the form of liquids that contain micro and macro elements in the form of liquid solutions had micro and macro factors in the solution. Each type of plant differs in the amount of its electrical conductivity or EC (Electrical Conductivity).

**Figure 2.** Hydroponic plant seeding

## CONCLUSION

Community service activities are community service activities in certain areas as an implementation of higher education. Community service activities aim to provide field experience to researchers about community conditions directly and also to form an independent and responsible attitude in carrying out community service activities. The implementation of community service during the Covid-19 Pandemic began from June 15 to July 24, 2020 in Kelurahan Delapan Ulu, Jakabaring District Palembang. The community service activity is to empower and process plastic waste for making hydroponics, in order to beautify the home page and improve the economy of the surrounding community by selling the results of growing vegetables in hydroponics. In general, the community service activities carried out in Kelurahan Delapan Ulu, Jakabaring Subdistrict Palembang went well because the community response was also good. The implementation of this service is expected to be useful for the community, especially in Kelurahan Delapan Ulu Palembang.

## BIBLIOGRAPHY

Guruh Permadi, Menyulap Sampah Jadi Rupiah, Surabaya, Mumtaz Media, 2001.

Ahmad Serudji Hadi, Daur Ulang Barang Bekas Sebagai Penopang Sumber Kehidupan,Laporan Penelitian Pada Universitas Indonesia Program Bidang Ilmu Hukum, Jakarta, 2001.

Apriadji, W, Memproses Sampah. Jakarta Pusat: PT Penebar Swadaya, 1991.

Etrizal Suar, Pengaruh Sampah Plastik Terhadap Pengelolaan Lingkungan Hidup Di DKI Jakarta, Laporan Penelitian Pada Universitas Indonesia Program Bidang Ilmu Hukum, Jakarta, 1996.

Heru Primantoro dan Yovuta hesty indriani, hidroponik Sayuran Semusim untuk Bisnis dan Hobi, Bogor, PT.Penebar Swadaya, 1999.

Majid. A, Perencanaan Pembelajaran. Bandung: Remaja Rosdakarya, 2005.

Mien R. Uno dan Siti Gretiani, Buku Pintar Etiket Hijau, Jakarta, PT. Gramedia, 2001.

M.Suparmoko, Ekonomi Sumber Daya Alam Edisi 4. Yogyakarta: BFFE, 2008.

Rommy Andhika Laksono Sugiono, Karakteristik Agronomis Tanaman Kalian (BarassicaoleraceaL.var.acephalaDC.) Kultivar Full White 921 Akibat Jenis Media Tanaman Organikdan Nilai EC (Electrical Conductivity) pada Hidroponik Sistem WICK, Program Studi Agroteknolog, Fakultas Pertanian, Universitas Singabangsa Karawang, Karawang, 2017.

Trim Serudji, Daur Ulang sampah, Bumi Aksara, 2001.

Wiriyokusumo. I, Teori Pengembangan. Jakarta: PT Bumi Aksara, 2014.

Yasin, & Maskoeri, IlmuAlamiahDasar.Jakarta: PT Raja Grafindo Persada, 1986.