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The Impact of Indonesia Green Economy in Masterplan for Future Urban Farming Indonesia

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Abstract: Indonesia is an agrarian country with 38.70 million people working in the agriculture, forestry, and fisheries sectors, accounting for 28.61% of the total workforce. With a contribution of 12.98 percent to the GDP, agriculture is one of the crucial economic sectors in Indonesia. However, rapid urban development has reduced the vegetable supply, and urban farming in cities can be a solution by utilizing community yards to meet food needs, reduce household expenses, and increase farmer income. Utilizing community yards to meet food needs, reduce household expenses, and increase farmer income, urban farming in cities can be a solution. The research method employs a normative juridical approach, examining elements in positive law and making comparisons with other countries. Based on this approach, the study indicates that amid food issues and a declining interest in farming, Indonesia needs an urban farming program, but the current implementation of the program is not optimal. Therefore, the Indonesia Masterplan for Future Urban Farming (IM-for-FUF) is introduced as an innovation expected to better support the implementation of the green economy within the framework of positive law for sustainable economics in Indonesia. One effort to enhance food availability and environmental quality is the IM-for-FUF. Additionally, the farming concept is unique as it utilizes existing areas, eliminating the need for extensive space. By supporting IM-for-FUF, communities can acquire new skills and knowledge about farming, positively impacting the environment by utilizing the surrounding areas.

Keywords: Green Economy; Farming; Sustainable Agriculture.

INTRODUCTION

Indonesia is an agrarian country with the number of workers in the agriculture, forestry and fisheries sector reaching 38.70 million people. This figure represents 28.61% of Indonesia's 135.29 million workers, making the sector the main employment sector at the national level. In terms of the economy, agriculture is also the third largest contributor to Gross Domestic Product (GDP) after the mining and industrial sectors. Notably, agriculture has supported Indonesia's GDP with a substantial contribution of 12.98%.[1]

Regrettably, the Central Statistics Agency notes a decline in the number of farmers by 1.92 million individuals. This decline is influenced by factors such as the prevailing stigma that farming lacks career development and economic fulfillment opportunities, coupled with a trend of converting agricultural land into industrial areas. Indonesia's food security is threatened by the decreasing interest of the younger generation in the

[1] Jane G Payumo and others, 'An Entrepreneurial, Research-Based University Model Focused on Intellectual Property Management for Economic Development in Emerging Economies: The Case of Bogor Agricultural University, Indonesia', *World Patent Information*, 36 (2014), 22–31 https://doi.org/https://doi.org/10.1016/j.wpi.2013.11.009

agricultural sector. Because even at this time, Indonesia's food security index is below average.[2]

This is evidenced by the Global Food Security Index (GFSI), which records Indonesia's food security index at only 60.2, while the global average is 62.2. With the diminishing production capacity of farmers against the backdrop of increasing food demand, Indonesia, as an agrarian nation, should not rely heavily on imports but rather focus on independently meeting the national food needs. National food security is a government priority and a target for welfare and equal distribution, aiming to provide nutritious food throughout Indonesia. This emphasis on food security is crucial to addressing potential global crises.[3]

Unfortunately, the fulfillment of aspects of food security at the national level is currently hindered by the limited agricultural land, especially in urban areas, as land conversion is widely implemented in the fields of industry, infrastructure, and settlement. Consequently, an agricultural mechanism capable of utilizing narrow land, commonly known as urban farming, is needed. Urban farming is a form of agriculture that can be undertaken by anyone, especially those residing in urban areas. The extent of agricultural land in urban areas is limited due to the rapid development that impacts the reduction of land use for agriculture.[4] The limitation of agricultural land results in a decrease in vegetable supplies. On the other hand, meeting the nutritional needs of the local community requires the fulfillment of vegetable needs. Until now, urban farming lacks a definite legal foundation, relying solely on Law Number 22 of 2019, which, even then, has not optimally accommodated the entire mechanism. This is evident in the law, which only includes mechanisms for land use for agricultural cultivation, breeding, and seed planting, along with its spatial arrangements.[5]

The law lacks in-depth explanations regarding agricultural mechanisms to be carried out in urban areas by utilizing agricultural land, which is decreasing due to land use conversion. The solution to addressing the nutritional needs lies in maximizing urban areas to implement IM-for-FUF. Residential areas also have the potential to organize IM-for-FUF, which will assist the community in independently fulfilling their food needs, reducing household food expenses, and increasing farmers' income.[6]

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[2] George C Schoneveld and others, 'Certification, Good Agricultural Practice and Smallholder Heterogeneity: Differentiated Pathways for Resolving Compliance Gaps in the Indonesian Oil Palm Sector', *Global Environmental Change*, 57 (2019), 101933 https://doi.org/https://doi.org/10.1016/j.gloenvcha.2019.101933

[3] Rendra Kurniawan, Aji Dedi Mulawarman, and Ari Kamayanti, 'Biological Assets Valuation Reconstruction: A Critical Study of IAS 41 on Agricultural Accounting in Indonesian Farmers', *Procedia - Social and Behavioral Sciences*, 164 (2014), 68–75 https://doi.org/https://doi.org/10.1016/j.sbspro.2014.11.052

[4] Setyardi Pratika Mulya, Heru Purboyo Hidayat Putro, and Delik Hudalah, 'Review of Peri-Urban Agriculture as a Regional Ecosystem Service', *Geography and Sustainability*, 4.3 (2023), 244–54 https://doi.org/https://doi.org/10.1016/j.geosus.2023.06.001

[5] Erika Valerio, Nurul Hilmiati, Julian Prior, and Dahlan Dahlanuddin, 'Analysis of the Agricultural Innovation System in Indonesia: A Case Study of the Beef Sector in Nusa Tenggara Barat', *Agricultural Systems*, 203 (2022), 103529 https://doi.org/https://doi.org/10.1016/j.agsy.2022.103529

[6] Robertoes Koekoeh K Wibowo and Peeyush Soni, 'Farmers'Injuries, Discomfort and Its Use in Design of Agricultural Hand Tools: A Case Study from East Java, Indonesia', *Agriculture and Agricultural Science Procedia*, 9 (2016), 323–27 https://doi.org/https://doi.org/10.1016/j.aaspro.2016.02.142

The need for competent regulations can support the implementation of urban farming. This is exemplified in Semarang, supported by Mayor Regulation of Semarang Number 24 of 2021 regarding the Urban Agriculture Cultivation Movement in the city. The regulation explains that Semarang has an urban agriculture cultivation movement. The success of urban farming in Semarang is evident from the growth of cabbage using hydroponic and polybag methods, which typically only grows in highland areas.[7] Therefore, Semarang's success needs to be disseminated to other cities by introducing national regulations to achieve a more even distribution in the implementation of the Urban Farming program.[8]

The success of implementing urban farming can be observed in Thailand. In March 2020, Thailand began urban farming, providing workshops to train people who wanted to become farming teams and plan how to manage them. The harvest results became an efficient and affordable way to ensure people have better access to nutritious fruits and vegetables, especially in areas at risk of experiencing hunger. This significantly aided Thailand's food security, considering a substantial increase of approximately 82 percent in global hunger issues during the 2020 pandemic.[9]

The promotion of urban farming at the national level is needed through mechanisms that utilize potential land resources and residential areas around homes in the IM-for-FUF program. Urban farming is considered one of the efforts to address food availability while simultaneously improving the environment. The unique concept of this farming involves utilizing existing areas without the need for extensive land. Empowerment through urban farming programs can assist communities in acquiring new skills and insights into agriculture while having an impact on the environment.

METHOD

The study used a normative juridical approach method by analyzing the elements contained in positive law. In this context, law as a system has the right to exist, develop, and function within the framework of its own legal system. Data collection in normative legal research is carried out through literature studies, which involve the use of secondary data. This approach involves searching and analyzing relevant regulations and literature as a basis for research, and is often referred to as legal literature research.

RESULT AND DISCUSSION

Sustainable development is supported by the constitution, as stated in Law Number 32 of 2009 concerning Environmental Protection and Management. The law states that sustainable development is a deliberate and planned effort that incorporates environmental, social, and economic aspects in development strategies with the aim

[7] Peter Warr, 'Agricultural Liberalization, Poverty and Inequality: Indonesia and Thailand', *Journal of Asian Economics*, 35 (2014), 92–106 https://doi.org/https://doi.org/10.1016/j.asieco.2014.10.003

[8] Fikri Zul Fahmi and Martha Jesica S Mendrofa, 'Rural Transformation and the Development of Information and Communication Technologies: Evidence from Indonesia', *Technology in Society*, 75 (2023), 102349 https://doi.org/https://doi.org/10.1016/j.techsoc.2023.102349

[9] Endah Saptutyningsih, Diswandi Diswandi, and Wanggi Jaung, 'Does Social Capital Matter in Climate Change Adaptation? A Lesson from Agricultural Sector in Yogyakarta, Indonesia', *Land Use Policy*, 95 (2020), 104189 https://doi.org/https://doi.org/10.1016/j.landusepol.2019.104189

of ensuring environmental integrity, safety, capability, well-being, and quality of life. Despite efforts to realize this, Indonesia still needs real programs that are able to accommodate the realization of sustainable development.[10]

Sustainable development has been most emphasized in recent years. Even though it has made efforts to realize this, Indonesia still needs real programs that are able to accommodate the realization of sustainable development. Because, until now environmental aspects are increasingly eroded every year due to the conversion of land into industrial land. The textile industry contributes 1.2 billion tons of greenhouse gas emissions. One example, based on data obtained from the Ellen MacArthur Foundation. The damaged environment is also in line with the depletion of natural resources needed for mankind to survive.[11]

Urban farming or urban farming is a farming business carried out on land, usually around large urban areas or small towns. This is done to obtain food or other basic needs, as well as other income, including processing of crops, marketing, and distributing the results of these activities. Urban farming must be immediately socialized and accommodated by the government, because when referring to data obtained from the Central Statistics Agency (BPS), 56.7% of Indonesia's population lives in urban areas. This percentage is expected to continue to increase to 66.6% by 2035.[12]

Therefore, it is important to consider food security to ensure that people's right to food in Indonesia is not violated. Food security is defined as the condition in which food needs from the national to individual levels are met. This includes the availability of sufficient food both in terms of quantity and quality, food safety, food variety, adequate nutritional intake, equitable distribution, and affordable prices, and does not conflict with the religious values, beliefs, and culture of the community. The goal is to enable individuals to live healthily, actively, and productively over a sustainable period of time. The explanation illustrates the meaning of food security as stipulated in Article 1 paragraph (4) of Law No. 18/2012 on Food.[13]

By paying attention to green economy aspects in order to create an environmentally friendly era, this masterplan is here to improve the economy and community welfare through agriculture by optimizing minimal land in dense cities while increasing Indonesia's food security. This master plan is also a step to minimize carbon emissions, urban farmers can also contribute to reducing carbon emissions by

[10] Felicia H M Liu, Vignaa Ganesan, and Thomas E L Smith, 'Contrasting Communications of Sustainability Science in the Media Coverage of Palm Oil Agriculture on Tropical Peatlands in Indonesia, Malaysia and Singapore', *Environmental Science & Policy*, 114 (2020), 162–69 https://doi.org/https://doi.org/10.1016/j.envsci.2020.07.004

[11] Rebecca Meckelburg and Agung Wardana, 'The Political Economy of Land Acquisition for Development in the Public Interest: The Case of Indonesia', *Land Use Policy*, 137 (2024), 107017 https://doi.org/https://doi.org/10.1016/j.landusepol.2023.107017

[12] Leah Beaulac and others, 'Natural Disaster and Migration Trends in Flood Prone Agricultural Areas of Indonesia', *Current Developments in Nutrition*, 6 (2022), 72 https://doi.org/https://doi.org/10.1093/cdn/nzac050.002

[13] Yuki Yamamoto and others, 'Forest Change and Agricultural Productivity: Evidence from Indonesia', *World Development*, 114 (2019), 196–207 https://doi.org/https://doi.org/10.1016/j.worlddev.2018.10.001

bringing food sources closer to cities in the IM-for-FUF masterplan. By reducing mileage and transportation from field to table, IM-for-FUF helps mitigate the effects of climate change. After harvesting, these urban agricultural products will become a very valuable resource. The harvest can be various types of vegetables, fruits, or other cultivated plants. The harvest will be sold as part of the green economy.[14]

IM-for-FUF is an effort towards sustainable development and green economy in Indonesia. This masterplan is not only about local food production but also about environmental protection, job creation, and improving the quality of life of urban communities. Governments need to ensure that such programs contribute to the broader sustainable development goals. This IM-for-FUF Master plan must be continuously improved and monitored to ensure that its impact is positive on the green economy, environment, job creation, and improvement of the quality of life of urban communities. IM-for-FUF has a strong focus on environmental protection. By making optimal use of limited urban land, IM-for-FUF seeks to reduce pressure on agricultural land in rural areas. By involving the community in urban farming activities, IM-for-FUF can provide new job opportunities, especially in the urban agriculture sector. IM-for-FUF also strives to improve the quality of life of urban communities. By enabling easier access to local crops, the masterplan can support food security, improve public health, and provide quality food.[15]

IM-for-FUF is open to everyone, but there will be re-selection of prospective participants by region. The selection depends on a number of factors, such as land availability, local needs, and other environmental factors. The IM-for-FUF team will conduct a survey visit to the area where the selected candidates live. The purpose of the survey is to assess living conditions and the local environment. The survey will help determine the most suitable location to install urban farming and agricultural systems that are suitable for local conditions After prospective participants pass the initial survey and verification stage, participants will attend training to prepare participants to run urban farming systems, including the use of modern technology, sustainability practices, and urban farming management needed to become successful urban farmers. Prospective participants who successfully complete the training will then be given a certificate or official recognition as a trained urban farmer. After the participants undergo the survey, the IM-for-FUF team of agricultural experts will decide how to implement the IM-for-FUF by considering regional suitability. Thus, the use of urban farming methods will be adapted to the specific characteristics of the region.[16]

[14] Shuang Song and others, 'Comparison of Vegetable Production, Resource-Use Efficiency and Environmental Performance of High-Technology and Conventional Farming Systems for Urban Agriculture in the Tropical City of Singapore', *Science of The Total Environment*, 807 (2022), 150621 https://doi.org/https://doi.org/10.1016/j.scitotenv.2021.150621

[15] Lukman Adam, Jia Jin, and Anwar Khan, 'Does the Indonesian Farmer Empowerment Policy Enhance the Professional Farmer? Empirical Evidence Based on the Difference-in-Difference Approach', *Technology in Society*, 68 (2022), 101924 https://doi.org/https://doi.org/10.1016/j.techsoc.2022.101924

[16] Gunawan Prayitno and others, 'Place Attachment and Agricultural Land Conversion for Sustainable Agriculture in Indonesia', *Heliyon*, 7.7 (2021), e07546 https://doi.org/https://doi.org/10.1016/j.heliyon.2021.e07546

In order to create an optimal and successful IM-for-FUF, this masterplan has two teams to support and ensure that IM-for-FUF has been carried out properly. Clearly, the roles of the two teams that contributed to the success of IM-for-FUF, team inspection and team responsible. The Inspection Team is responsible for conducting routine surveillance once a month on urban farming activities carried out by IM-for-FUF. The main purpose of the supervision is to check the progress of IM-for-FUF activities, ensure that participants do not suffer losses, and if there are problems, reports will be given to the team in charge. The inspection team also plays a role in ensuring that all IM-for-FUF processes move properly and in accordance with established standards. Meanwhile, the Responsible Team has an important role in upholding social and environmental responsibility in IM-for-FUF. The team in charge is tasked with taking the necessary actions if there are problems with the participants' activities, such as crop failure or environmental pollution due to urban farming activities. The IM-for-FUF Master Plan will not directly provide material compensation, but will first go directly to the participant's location to seek direct improvement and handle the root cause of the problems that arise.[17]

Simultaneously with the implementation of the survey to determine suitable crops or vegetables for cultivation, IM-for-FUF needs to collaborate with BMKG in projecting the upcoming weather. This collaboration is carried out to avoid crop failure due to unforeseen weather conditions. Furthermore, weather forecasts are also necessary for continuously adjusting agricultural seeds to suit the prevailing climate. This can optimize crop success and enhance the variety of crops and vegetables. The collaboration with BMKG is motivated by climate change, resulting in environmental conditions that affect the growth and development of plants becoming less than ideal. In such less-than-ideal situations, plant growth is hindered, ultimately leading to a decrease in production and product quality.[18]

Each type of plant requires different climatic conditions to achieve optimal results, so climate change can have varied impacts on each plant. For example, in perennial fruit plants such as mangosteen, durian, mango, and avocado, rainfall plays a crucial role in the production process, and its impact can vary depending on the growth phase of the plant. Heavy rain during flowering and fruiting, for instance, can lead to fruit and flower drop. During the fruit ripening process, high rainfall can accelerate fruit decay, ultimately reducing the quality of the fruit. The Meteorology, Climatology, and Geophysics Agency (BMKG) will be part of the IM-for-FUF team responsible for monitoring the weather, and they have an extensive weather observation network. Weather observations also serve as a monitoring tool for

[17] Muhammad Sofiyuddin and others, 'Sustainable Land Preparation for Farmer-Managed Lowland Agriculture in Indonesia', *Forest Policy and Economics*, 130.September 2020 (2021), 102534 https://doi.org/10.1016/j.forpol.2021.102534

[18] Serge Andréfouët, Mégane Paul, and A Riza Farhan, 'Indonesia's 13558 Islands: A New Census from Space and a First Step towards a One Map for Small Islands Policy', *Marine Policy*, 135 (2022), 104848 https://doi.org/https://doi.org/10.1016/j.marpol.2021.104848

changes in natural events by monitoring temperature, humidity, and air conditions in a specific region over a certain period.[19]

In accordance with the concept of legal development expressed, the law plays a crucial role in maintaining order in society. Law can be used as a tool to design social changes or as a tool for social engineering, and that the law must be dynamic and future-oriented to support the process of renewal. In this context, the law encompasses not only principles and norms that regulate human behavior in society but also involves institutions and processes that ensure the implementation of these norms in community life. Although Indonesia has abundant natural resources, the country should have the ability to achieve higher levels of progress. This is where the role of the law must stand upright as a pillar of renewal and justice in supporting the transition towards a "green" society. This is reflected in Article 28H, Paragraph (1), and Article 33, Paragraph (4) of the 1945 Constitution, which emphasize the citizens' right to a good and healthy environment, as well as the protection of the environment from the negative impacts of the economy. In the context of the implementation of the principles of green economy and a green constitution in Indonesia, the law plays a crucial role as the foundation for renewal and justice.[20]

Furthermore, the idea of sustainable economy is also emphasized in Article 28H, Paragraph (1) of the 1945 Constitution, which highlights the basic human right related to a healthy and good environment. A similar principle is elaborated in Article 33, Paragraph (4) of the 1945 Constitution, which stipulates that "the state's economy is organized based on economic democracy with the principles of unity, efficiency, justice, sustainability, environmental care, self-reliance, as well as maintaining the balance of development and the unity of the national economy." Although Indonesia does not yet have regulations explicitly governing urban farming programs, the country has laws supporting the implementation of urban farming, as evidenced by the existence of Law No. 22 of 2019 on Sustainable Agricultural Cultivation Systems and Law No. 18 of 2012 on Food. Law Number 22 of 2019 on Sustainable Agricultural Cultivation Systems considers the need for the development of sustainable agricultural systems to achieve food sovereignty while preserving the environment. One way to implement better and sustainable agriculture is by considering its impact on the environment and climate change.[21]

Article 2 mandates that Sustainable agriculture is organized by referring to principles such as benefit, sustainability, sovereignty, integration, togetherness, self-reliance, openness, efficiency with justice, local wisdom, the sustainability of environmental functions, and environmental protection. Based on these principles, it can help improve various agricultural products to meet food needs while still

[19] Didit Okta Pribadi and others, 'Multifunctional Adaption of Farmers as Response to Urban Growth in the Jabodetabek Metropolitan Area, Indonesia', *Journal of Rural Studies*, 55 (2017), 100–111 https://doi.org/https://doi.org/10.1016/j.jrurstud.2017.08.001

[20] Erika Valerio, Nurul Hilmiati, Julian Prior, and Tanda Panjaitan, 'Steering the Herd or Missing the Mark? Navigating the Role of Research for Development Projects as Innovation Intermediaries in the Indonesian Cattle Sector', *Agricultural Systems*, 214 (2024), 103843 https://doi.org/https://doi.org/10.1016/j.agsy.2023.103843

[21] Michael Grimm and Nathalie Luck, 'Experimenting with a Green "Green Revolution". Evidence from a Randomised Controlled Trial in Indonesia', *Ecological Economics*, 205 (2023), 107727 https://doi.org/https://doi.org/10.1016/j.ecolecon.2022.107727

considering the health and sustainability of the environment. In line with this, Article 3 discusses the objectives of sustainable agriculture, including increasing the diversity of agricultural products, meeting food needs, improving public health, and supporting export activities. In addition, sustainable agricultural cultivation systems also have the potential to increase farmers' income, improve their living standards, and create job and business opportunities. Therefore, the development and sustainability of agricultural cultivation systems are crucial in achieving the goals of Indonesia's national development.[22]

Law No. 18 of 2012 on Food is the foundation for implementing urban farming. Food is a basic human need derived from agricultural products, plantations, forestry, animal husbandry, fisheries, waters, and water. The purpose of the law is to improve the ability to meet and produce food independently that is fair, equitable, and sustainable, based on the principles of food sovereignty, food independence, and food security. Through the implementation of the food system, efforts are made to provide various types of food and increase public awareness about the importance of safe, quality, and nutritious food for consumption. Green investment is a very vital element in protecting the environment from damage due to economic activities that do not pay attention to the environment, including unsustainable investment. In an effort to find new and environmentally friendly economic sources, green investment can be an alternative solution to get significant financial support in supporting development projects. Green investment, also known as green investment, is an investment practice focused on companies or potential investments that are committed to safeguarding natural resources, developing renewable energy sources, implementing projects that contribute to water and air cleanliness, and supporting investment activities that support the sustainability of the surrounding environment.[23]

It is important to realize that investment has a major role and contributes significantly to the continuity of national development. Investment has the ability to turn economic potential into a real economy, increase production, create job opportunities, increase income, and ultimately improve people's welfare.[24] It can be explained that in investments that do not focus on the green path, the investor's main goal is to earn financial gains. On the other hand, green investment, apart from being a means to generate financial returns, also aims to create a sustainable positive impact on social and environmental aspects. During the implementation of IM-for-FUF, cooperation with the private sector has great potential to increase private sector investment in the environment. To support the local economy and facilitate the sale of agricultural products, the private sector can act as the main buyer of crops from urban farmers participating in the master plan. In addition, they can participate in the

[22] Amanda Jennifer Chandra and Jessica Ann Diehl, 'Urban Agriculture, Food Security, and Development Policies in Jakarta: A Case Study of Farming Communities at Kalideres – Cengkareng District, West Jakarta', *Land Use Policy*, 89 (2019), 104211 https://doi.org/https://doi.org/10.1016/j.landusepol.2019.104211

[23] Atrida Hadianti and Bondan Galih Dewanto, 'The Simulation of Urban Development with the Consideration of Ground Deformation Threats in Sidoarjo Regency, East Java Province of Indonesia', *Remote Sensing Applications: Society and Environment*, 32 (2023), 101019 https://doi.org/https://doi.org/10.1016/j.rsase.2023.101019

[24] Faizal Rahmanto Moeis and others, 'A Longitudinal Study of Agriculture Households in Indonesia: The Effect of Land and Labor Mobility on Welfare and Poverty Dynamics', *World Development Perspectives*, 20.September (2020), 100261 https://doi.org/10.1016/j.wdp.2020.100261

processing of crops into value-added products, such as processed foods or organic agricultural products, which will increase farmers' incomes. In addition, cooperation with the IM-for-FUF program increases the company's visibility in the community. Companies can build a positive image and set a good example in corporate social responsibility (CSR) by supporting the green economy and local food security. Through close collaboration with the private sector, IM-for-FUF has the potential to increase green investment in the private sector.[25]

The National Development Planning Agency, *Badan Perencanaan Pembangunan Nasional* (Bappenas) defines green economy as an economic activity that is responsible for the use of natural resources, pollution prevention and reduction efforts, and creates the potential to improve social welfare and achieve sustainable development goals. Green economy comes with the aim of reducing negative impacts on the environment. As an effort to support the green economy, Indonesia has introduced the Green Economy Index (GEI) which consists of 15 indicators involving three main aspects, namely economic, social, and environmental. In relation to the green economy, the term green financing includes financial investment in environmental projects, products, and policies that support sustainable economic development.[26]

Despite the fact that Indonesia has implemented a green economy policy, it certainly does not function optimally without synergy with the community. Public awareness and participation in the green economy is still relatively low. Based on a survey conducted by *Katadata* Insight Center (KIC) on 3,105 respondents, there are only about 20-27% of respondents who claim to already know the meaning of green economy, green finance, green banking or sustainable finance. Therefore, the government needs to take action to socialize or make policies so that the public and the business sector can be more aware of the green economy. Fundamentally, the government has tried to implement urban farming programs in several regions. But unfortunately, the government does not have legal certainty in order to support the implementation of urban farming throughout Indonesia. Even the government's lack of success in the millennial farmer program in West Java presents doubts in the community to participate to follow the urban farming planning framework in the IM-for-FUF master plan.[27]

For the sake of creating an equitable IM-for-FUF, it is necessary to revitalize the legal system in Indonesia. The renewal of the legal system can be done by adding special regulations regarding the implementation of urban farming in Indonesia. The existence of the regulation will provide legal certainty to urban farmers and support the implementation of IM-for-FUF. With this regulation, Indonesia can have a real

[25] Ambarsari Dwi Cahyani and others, 'Between Insufficiency and Efficiency: Unraveling Households' Electricity Usage Characteristics of Urban and Rural Indonesia', *Energy for Sustainable Development*, 69 (2022), 103–17 https://doi.org/https://doi.org/10.1016/j.esd.2022.06.005

[26] Y N Muflikh and others, 'Analysing Price Volatility in Agricultural Value Chains Using Systems Thinking: A Case Study of the Indonesian Chilli Value Chain', *Agricultural Systems*, 192 (2021), 103179 https://doi.org/https://doi.org/10.1016/j.agsy.2021.103179

[27] Zainal Arifin and others, 'Indonesian Policy and Researches toward 70% Reduction of Marine Plastic Pollution by 2025', *Marine Policy*, 155 (2023), 105692 https://doi.org/https://doi.org/10.1016/j.marpol.2023.105692

master plan for the realization of predetermined regulations. Of course, this will have a positive impact, in line with the realization of an inclusive green economy and sustainable development. The government needs to actively develop legal certainty related to urban farming throughout Indonesia. The regulation should cover all aspects, from site selection to the agricultural techniques used. With strong legal certainty, urban farmers will feel safer and more secure in carrying out agricultural activities in urban areas. The government is also expected to support and participate thoroughly in the master plan so that IM-for-FUF can be created properly and optimally. The government needs to provide full support and commitment in the implementation of IM-for-FUF. This includes adequate budget allocation, necessary facilities, training, and promotional campaigns so that people are more familiar with and understand the benefits of IM-for-FUF. Government support must be sustainable and inclusive to ensure the long-term success of the program.[28]

In the implementation of IM-for-FUF, the private sector also plays an equally significant role. IM-for-FUF requires collaboration with the private sector to assist in achieving a green economy framework. The private sector can act as the primary purchaser of harvests from participating urban farmers in the IM-for-FUF initiative. Thus, they support the local economy and help urban farmers sell their products more easily. The private sector can also participate in processing harvested goods into value-added products, such as processed foods or organic agricultural products. This creates added value that can enhance the income of the farmers. Likewise, IM-for-FUF requires community participation. After the regulation discusses urban farming in detail, this master plan needs to be socialized so that people know the existence of IM-for-FUF. Before starting IM-for-FUF, prospective urban farmers need to receive adequate training. The training covers the use of modern technology in agriculture, sustainability practices, urban farming management, as well as other aspects needed to become a competent and successful urban farmer. The training helps prepare participants so that they can manage agricultural businesses well.[29]

IM-for-FUF can provide financial benefits to society. The government will provide subsidies in the form of seeds and agricultural inventory so that program participants do not have to worry about high initial costs. This makes the masterplan more inclusive and allows participation from all walks of life. By running IM-for-FUF, communities will have direct access to the crops they grow.[30] The harvest can be used for personal needs, improve household food security, and can be sold for additional income. The program can help reduce dependence on external food supplies and increase community food independence. Crops from IM-for-FUF can also be an additional source of income. Successful harvests can be sold in local markets, increasing the income of urban farmers. This can help reduce economic disparities

[28] Nadjia Mehraban and Amy Ickowitz, 'Dietary Diversity of Rural Indonesian Households Declines over Time with Agricultural Production Diversity Even as Incomes Rise', *Global Food Security*, 28 (2021), 100502 https://doi.org/https://doi.org/10.1016/j.gfs.2021.100502

[29] Tonni Agustiono Kurniawan and others, 'Reforming MSWM in Sukunan (Yogjakarta, Indonesia): A Case-Study of Applying a Zero-Waste Approach Based on Circular Economy Paradigm', *Journal of Cleaner Production*, 284 (2021), 124775 https://doi.org/https://doi.org/10.1016/j.jclepro.2020.124775

[30] Nasikh and others, 'Agricultural Land Resource Allocation to Develop Food Crop Commodities: Lesson from Indonesia', *Heliyon*, 7.7 (2021), e07520 https://doi.org/https://doi.org/10.1016/j.heliyon.2021.e07520

among urban communities. With active community participation, adequate training, and incentives provided by the government, IM-for-FUF can be an important step in advancing sustainable urban agriculture and improving the quality of life of Indonesians. Overall, the IM-for-FUF is a well-conceived plan that has the potential to make a significant contribution to the development of a sustainable green economy in Indonesia.[31]

CONCLUSION

The mechanism for implementing the Indonesia Masterplan for Future Urban Farming (IM-for-FUF) in supporting a sustainable green economy in Indonesia has several important steps. One of them is the provision of subsidies from the government in the form of seeds and agricultural inventory, reducing the initial cost of planning and allowing participation from various levels of society. IM-for-FUF also provides direct access to crops to the community, which can be used for personal consumption, improving food security, and earning additional income. Through the IM-for-FUF mechanism, it can reduce dependence on external food supplies and increase food independence. Crops from IM-for-FUF can also be sold in local markets, increasing the incomes of urban farmers and reducing economic disparities among urban communities. In this master plan, cooperation will be established with the private sector which will be the main buyer of crops and process value-added products, so as to help increase farmers' incomes and stimulate green investment in the private sector. By optimizing urban land use for urban farming, IM-for-FUF helps address the problem of limited land use and helps maintain the sustainability of natural resources. Thus, the implementation of IM-for-FUF has a significant impact in supporting progress towards a green economy and sustainable economy in Indonesia. In addition, the masterplan aims to reduce dependence on food imports through increasing local food production in cities, increasing national food security, and reducing vulnerability to changes in food prices around the world. Green investment in the private sector is driven by IM-for-FUF, which results in environmentally friendly economic growth with the cooperation of the private sector. In addition, IM-for-FUF involves the community in the

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