

Population Growth and Environmental Damage Issues (A Review of Environmental Damage on Land Conversion Perspective in North Jakarta)

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Article History: Received on 4 January 2023, Revised on 20 February 2023,
Published on 6 July 2023

Abstract: Population and environmental issues are two things that are not being separated from one another. Humans along with other living creatures are a component of life that always interact with the environment. The ecosystem itself is the order of the ecological elements. This study will describe how the impact of population density on social, economic and ecological aspects of changes in an area undergoing conversion in Jakarta Bay. Literature and comparative studies of results from various sources in journal articles are primary data used as main data in the analysis of population and environmental damage studies. The results of this study describe how the total area of mangrove forest and changes in coastline experienced by shifting caused by the increase in residential areas due to population density in the Jakarta Bay North Jakarta. The study related to changes in the area of mangrove forests and coastlines, especially connected due to residential development from land consumption due to population density in Jakarta Bay.

Keywords: Environmental Damage, Land Conversion, Population Growth

A. Introduction

In the ecosystem, where human life is a part that can't be separated with other elements. Therefore human survival depends on the preservation of its ecosystem. To preserve the ecosystem, humans must maintain harmony with the environment. The alarming and supportive phenomenon of environmental imbalances is population growth; population growth will lead to adverse effects on natural resources, such as the narrowing of the agricultural land surface due to poor shelter, buildings, roads and land management, the narrowness of forest areas and others (Sampono et al., 2012). The problem of population growth is a social problem that is closely related to changes in environmental conditions both biotic and abiotic. The most urgent in developing countries and underdeveloped countries. Where, generally these countries have high population growth rates. High population growth rates can lead to other follow-up problems. The rapid growth of the population will have implications, namely the greater the number of people who have to fulfil their needs for food, clothing, boards, job opportunities, entertainment needs and so on. There

are three main characteristics that characterize the development and problems of population in Indonesia today:

1. Rapid population growth: Indonesia has a high population growth rate, which is a major concern as it can lead to various socio-economic problems, such as poverty, unemployment, and environmental degradation. According to the World Bank, Indonesia's population is projected to reach 309 million by 2045, making it the world's fourth most populous country.
2. Unequal population distribution: Indonesia's population is unevenly distributed across its islands, with the majority living on the island of Java, which has a population density of over 1,100 people per square kilometre. This has led to overcrowding, urbanization, and pressure on natural resources in certain areas.
3. Young population: Indonesia has a relatively young population, with around half of its population under the age of 30. While this can be a demographic advantage, it also means that there is a high demand for education, healthcare, and job opportunities to meet the needs of the growing youth population.

To address these challenges, Indonesia has implemented various policies and programs aimed at promoting sustainable development, such as family planning, education, and poverty reduction initiatives. However, there is still a need for further efforts to ensure that population growth is managed sustainably and that the benefits of economic growth are distributed fairly across all segments of society.

Indonesia is one country that has a relatively large population growth rate. Based on the results of the 2020 Population Census, the total population of Indonesia was 356.6 million. This number increased by about 32.5 million from the previous population recorded in 2010. The large population growth rate was not accompanied by large income levels, and still very low level of capital cultivation. It is predicted that a low level of capital availability will be directly related to the low capability of the state to sustain population growth. According to condition if there is an increase in out-put as a result of technological improvements and capital cultivation, then the increase will not give a big effect, because the increase of out-put will soon be lost in the swelling of a large population growth. Due to the large population growth rate (especially the birth rate) is going to happen the composition of the young population becomes larger. This will result in the rapid increase in the number of workers (Ciccullo et al., 2018).

However, it is true that Indonesia has a relatively young population, with a median age of around 30 years old, which can lead to a larger workforce. This demographic advantage can potentially contribute to economic growth and development if there are adequate job opportunities and investments in human capital development. It is also important to note that sustainable population growth depends not only on capital availability but also on various other factors, such as access to education, healthcare, family planning, and gender equality. Policies and programs aimed at addressing these factors can help ensure that population growth is managed sustainably and that the benefits of economic growth are distributed fairly across all segments of society (Sutianto et al., 2023).

Ideally employment should be accompanied by adequate employment. In addition, various other necessities of life should also be available. The following issues will arise if the various needs of the population including the availability of unemployment fulfilled well. Various social problems are certainly inevitable. Indonesia's per capita consumption of rice reaches 139 kilograms per capita per year (Azevedo et al., 2019). The population of Indonesia is 237.6 million. Mean annual requirement of rice is 33,026,400,000 kilograms (33,026 million tons) per year. (Kusuma, 2020) revealed that rice production in 2010 of 66.41 million tons of dry milled grain (GKG) increased by 2.01 million tons (3.13 per cent) compared to 2019. With that production, there was a rice surplus of 3.5 - 4 million tons.

It is true that employment opportunities and access to basic necessities such as food, shelter, and healthcare are important for the well-being of the population. However, it is important to ensure that economic growth is sustainable and that the benefits are distributed fairly across all segments of society. Regarding rice production in Indonesia, it is positive that the country has a surplus of rice, which can potentially help to ensure food security for the population (Wartono et al., 2023a). However, it is important to note that food security is not just about production levels, but also about access and distribution. Many people in Indonesia still struggle with food insecurity and malnutrition, especially in remote and underdeveloped areas. Addressing these issues requires a comprehensive approach that involves investments in infrastructure, education, healthcare, and social protection programs, among others. Furthermore, agriculture is not the only sector that can contribute to economic growth and job creation. Diversification of the economy and investments in other sectors such as manufacturing, services, and innovation can also help to create employment opportunities and increase productivity. It is important to pursue sustainable and inclusive economic growth that benefits all members of society, including the most vulnerable and marginalized populations (Wartono et al., 2023b).

That is, currently Indonesia's rice production increase is still able to meet the needs of the population, even there is still a surplus. The emerging problems are related to the high population growth rate. Whether rice production will always be able to sustain the continued growth of the population in the foreseeable future. (Rahmawati & Firman, 2018) reveals the fact that as many as 110 thousand hectares of farmland threatened to be converted into non-agricultural land every year. If this continues, it is feared that irrigated agricultural land will shrink from 7.3 million hectares currently to 4.3 million hectares. "In rural areas, land conversion from irrigated agriculture to non-agricultural land can reach 110 thousand hectares per year; otherwise, it will only be 4.3 million hectares, whereas 80% of the regions in Indonesia are rural areas. 56 per cent of Indonesians live in rural areas, and agricultural sector in rural areas absorbs unemployment as labor, diversion of agricultural land, it will narrow job opportunities in the agricultural sector (Wicaksana, 2016) Population growth has consequences for urban and urban growth and growth, industrial and tourism growth (Hamzah et al., 2021).

Indeed, population growth has various consequences on different aspects of development, including urbanization, industrial growth, and tourism growth. As the population grows, there is an increasing demand for housing, infrastructure, and services in urban areas, leading to urbanization and the expansion of cities. This can also result in the growth of industrial sectors and the increase in demand for labor in urban areas. However, rapid urbanization can also lead to various challenges such as urban sprawl, congestion, and environmental degradation. Furthermore, population growth can also have implications for the tourism industry. A larger population can mean more domestic tourists, leading to increased demand for tourism services and facilities. However, if the growth is not sustainable, it can lead to the depletion of natural resources and environmental degradation, which can negatively impact the tourism industry. Overall, population growth can have significant consequences for various sectors of development, and it is essential to take a holistic approach in addressing population growth while promoting sustainable development.

B. Methods

The method used in this study is a qualitative research method. Where the research procedure that produces descriptive data in the form of written words by arguing on the results of the literature and case studies. Descriptive method is a method in examining the status of a group of people, an object, a set of conditions, a system of thought or a system of thought or a class of events at the present time in this case in the context of population density and the perspective of environmental damage from the aspect of water resources. The purpose of descriptive research is to make a systematic, factual, accurate description, picture or painting of the facts, characteristics and relationships between the phenomena studied.

That sounds like a well-defined research method qualitative research is often used to gain a deep understanding of complex phenomena that cannot be easily quantified or measured. This method is particularly useful in exploring people's attitudes, beliefs, and experiences related to a particular phenomenon. In your case, the research is focused on population density and environmental damage from the aspect of water resources. By using a descriptive research method, you aim to provide a systematic, factual, and accurate description of the relationship between these phenomena. The data collected through this method can be used to generate new hypotheses, develop theories, or guide future research.

C. Results and Discussion

Increasing Need for Clean Water and Land Water

This section discusses the importance of water and soil resources and their various uses for human life. It sheds light on the natural cycle of water movement and how water is distributed unequally across the earth, causing droughts and floods in different areas. The section also mentions Indonesia's right to utilize the Exclusive Economic Zone (EEZ) for exploration and management of natural resources. The importance of land as a multi-functional resource is also highlighted,

including its use for various human activities such as agriculture, industry and transportation. This section notes that land has become a valuable and economically important resource due to its limited availability, especially in the face of increasing population growth. In addition to useful for the immediate needs in everyday life also serves to help various businesses in order to improve the welfare of the community, such as for agricultural activities, hydro power, industry, transportation and others. Water also serves as a place to live various types of animals that are useful to humans. In addition, in the water and the oceans contained the potential of other natural resources both biological and 4 non-living useful for human life. Naturally, water always moves along the cycle. Water leaves the soil surface and body in the form of water vapor. The amount of water that a leaf the soil into the atmosphere and which comes down from the atmosphere in the form of precipitation at a given time is almost the same. Rainwater that falls on the surface of the ground partially flows on the ground (run off) to the river, lake and ocean. Some of them seep into the soil (infiltration) through the pores of the soil (Hamzah et al., 2020). Water that seeps into the soil is called ground water. This groundwater moves (percolation) into the deeper layers of the soil and then converges into ground water. The flow of groundwater (interflow) moves towards the river, lake and ocean. Not all water or rain can reach land, rivers, lakes and oceans. Because water travels to rivers, lakes and oceans some water evaporates through the surface of the soil, through the surface of plants, through humans and animals. Evaporation of water is strongly influenced by the temperature conditions in which the water is located. Water circulation every time is not evenly distributed on the surface of the earth. This result in the amount of water contained in each region and every time is not the same. It could be in an area flooded, but vice versa in other areas occur drought. The amount of water contained in the earth is estimated to be about 1.3 - 1.4 billion km³ (Sandro et al., 2018). Approximately 97 per cent of the amount of water is in the ocean (salt water), 3 per cent in fresh water. Of the total fresh water is present in various forms there is many perspectives: 75 per cent in the form of snow and ice, 4 per cent in the form of groundwater, 1 per cent of surface water.

As the world's largest archipelagic country with a total of 17,508 islands, 81,000 km of coastline, 3.1 million km² of sea area. Based on UNCLOS (United Nations Convention on the Law of the Sea) in 2018 (Anugrah et al., 2022) Indonesia was granted the right to utilize the 2.7 km² Exclusive Economic Zone (EEZ) covering the exploration, exploitation, management of biological and non-biological natural resources, research and jurisdiction established an installation or an artificial island. This outer ZEE boundary is 200 miles from the coastline at the lowest ebb or base line. Most marine natural resources have not been optimally utilized, such as oil and gas, tin, ore iron, bauxite, quartz sand and others. In addition, most of our marine fisheries and fishery resource capacity has not been fully utilized. Among the vital natural resources for a region is the land. Almost all types of human needs in the form of food, clothing and shelves directly or indirectly depend on soil. Land is the main infrastructure as a place of various human activities as well as provider of various basic materials needs of mankind. Land is one of the natural resources that

are multi-functional. Among the soil functions area. Land serves as an infrastructure where human activities take place, including: 1. where to build a house; 2. where to set up factory; 3. place to establish school; 4. place for farming; 5. place of raising livestock; 6. place of traffic; 7. and others. Land serves as a provider of various basic human needs, including various natural materials contained in the earth and useful for the fulfilment of human needs, among others: 1. petroleum, natural gas, minerals (gold, copper, tin, aluminum and others); 2. Groundwater. and surface water for human consumption, agriculture and industry; 3. Forest products such as timber, bamboo, rattan, and various other non-timber forest products; 4. Food crops such as rice, corn, and other grains, vegetables, fruits, and others. However, the rapid development and population growth in Indonesia have led to increasing pressure on land use, resulting in various environmental problems such as deforestation, soil degradation, and water pollution. The conversion of forest and agricultural land into urban areas, industrial estates, and mining sites has also caused loss of biodiversity and ecological function, as well as social conflicts over land ownership and use. Therefore, there is a need for sustainable land management practices that can balance economic development and environmental protection. This includes promoting land use planning, conservation of natural resources, and rehabilitation of degraded land. It also requires the involvement of various stakeholders, including government, private sector, civil society, and local communities, in developing and implementing sustainable land management policies and practices.

The land itself can directly act as a raw material that can be processed into various goods human needs, such as land as raw material for cement industry, red brick factory, tile factory and so on; and others. At first before the land is widely exploited and needed as a productive place of business, farmers (cattle, buffaloes, sheep, etc.) can let their animals loose freely to search for food on the vast surface of the earth. After humans recognize the system of farming, so the land is needed as a place to grow crops. Livestock cattle began to be restricted freedom to seek food freely. The land began to be privately controlled by the individuals of society (Nurwanti, 2021). Agriculture is one of the human activities that exploit the land resources in an effort to fulfil their life needs. In exploiting the land for agricultural activities, humans apply a variety of technologies ranging from simple to traditional technology to sophisticated technology. All make the land an object for productive agricultural activities. In its development, the land becomes something valuable and has economic value. As a natural resource, land is a very important and strategic production factor. But in the ownership or control of the land as a factor of production area depreciated, which is increasingly smaller day than the population in the earth. This phenomenon arises because the land area on the surface of the earth does not increase, while the number of residents increasingly multiplies (Hamzah et al., 2020). This causes the areas of land controlled by members of the community to become increasingly limited in breadth and location dispersed. In rural agrarian societies, this condition causes the areas of land that make up farming is not always in one region. One farming business with another farming business is separated (scattered) with a level of fertility that is not necessarily the same. The

scattered farming efforts caused the farming to be ineffective and inefficient. Farmers in rural agrarian areas, especially in Java or densely populated areas, are generally very small, about 0.25 ha or less than 0.5 Ha. Agriculture is thus known as smallholder farmers. Even some of the farmers in the countryside do not own their own land, but are the status of peasants or peasants (land tenants). This phenomenon has been increasingly widespread in agrarian countryside in densely populated area (Francisca & Roberto, 2017). The limited availability of land in densely populated areas and the increasing population have resulted in small landholding sizes for farmers in these areas. In rural agrarian societies, farming activities are often scattered and not always in one region, causing inefficiency and ineffectiveness in farming. Smallholder farmers in densely populated areas, especially in Java, typically own less than 0.5 hectares of land. Some farmers may not even own their own land and have the status of peasants or land tenants. This phenomenon is becoming increasingly common in agrarian countryside areas with high population density. The ownership and control of land as a production factor have been depreciating, which is a concerning issue as land is a crucial and strategic natural resource.

(Royandi & Keiya, 2019) that the land area of Indonesia is approximately 200 million ha. Approximately 168 million Ha spread over four large islands outside Java, namely Sumatera, Kalimantan, Sulawesi, and Irian Jaya. Of the 168 million ha, 123 million ha are dry land and the remaining 39 million ha are wetlands in the form of tidal swamps and swamps. Mainland land owned by Indonesia is very potential as agricultural land and other production land. For rural and urban community the land is a vital basic capital. No wonder for us, at people in both urban and rural areas are found by a group of people called land owners. General people who control most of the land have a strategic position in the social strata of society. This condition indicates that the land is one of the natural resources that have strategic economic and political value in society. In mobilizing rural community development, the presence of land as a natural resource must be a point of concern. Where rural communities are dominated by agricultural societies. Here the land is a factor of production and a major supporter of community life activities. Due to the limited availability of land as potential natural resources, it is necessary to manage existing land management and utilization. Land management covering the management of agricultural land (cultivated land, forestry, livestock, and fishery), as well as land management for housing and industry. In addition, it is necessary to manage / manage by utilizing science and technology, in order to get the right strategy in land tenure and management aimed at improving the maximum possible and sustainable results. That efforts to maximize the results, including: 1. Obtain maximum yield or production from each unit of land. 2. Selecting land management procedures that provide maximum benefits. 3. Suppressing as little as possible the uncertainty of the condition land potential so as to increase maximum yield. 4. Preventing potential land degradation Conversion of mangrove forest in Angke Kapuk conducted by the government, private sector and community has decreased the quality of mangrove forest environment. Therefore, the purpose of this study is

to 1) calculate the total economic value of mangrove forests, and analyse the social and economic aspects of the community around Angke Kapuk; 2) calculate and analyses the willingness to pay from Indah Kapuk beach community and willingness to receive from the community of pond owners; 3) to analyse factors influencing the willingness to pay from Indah Kapuk beach community and willingness to receive from the community of fishpond owners (Azevedo et al., 2019).

The passage highlights the importance of land as a natural resource for human activities, particularly in agriculture. The land is necessary to grow crops and raise livestock, and its value increases as it becomes more productive. However, the limited availability of land as a resource, particularly in densely populated areas, poses a challenge for rural communities who rely on agriculture. Land management is essential to ensure that the land is used in the most efficient and sustainable way possible, with strategies aimed at maximizing production and preventing land degradation. The passage also mentions the specific case of mangrove forest conversion in Angke Kapuk, which has had negative effects on the environment and community. The study mentioned aims to calculate the economic value of mangrove forests, analyze the social and economic aspects of the community around Angke Kapuk, and identify factors influencing the willingness to pay and receive compensation for the loss of mangrove forest. This case illustrates the importance of considering the value of natural resources and their impact on local communities in land management decisions.

The results showed that the total economic value of Angke Kapuk mangrove is Rp. 4.184.566.038, - per year or Rp. 73,418,378, - per hectare per year. The total economic value of Angke Kapuk forest, which covers 1154.88 hectares before being converted by PT. Mandara Permai, Rp. 84,789,416,385, - per year. The amount of money paid voluntarily by the people of Indah Kapuk beach is Rp. 165,440,880, - per year and the amount of money willing to be received by the community of pond owners is Rp. 1.329.745.043, -. The willingness to pay from the Indah Kapuk beach community for improving the quality of the environment is affected by employment, education, income, and household size. The amount of money paid by the people of Indah Kapuk beach is influenced by their age, education, income, and size of household. The willingness to receive from fishpond owner communities for environmental improvement is influenced by the education, income, and size of their households. The amount of money willing to be received by pond owners is influenced by their income, education, expenditure, and size of household. Measures and efforts taken to improve the environment and manage Angke Kapuk forest area include: 1) replanting of mangrove plants; 2) construction of dikes as breakwaters; 3) handling of plastic and household waste; and 3) handling of illegal fishing ponds within forest areas. Keywords total economic value of mangrove, willingness to pay, willingness to receive. Environmental improvement, Angke Kapuk forest, land management. The study mentioned in the passage provides an analysis of the total economic value of the Angke Kapuk mangrove forest and the social and economic aspects of the communities around it. The results show that the total economic value

of the forest before it was converted was much higher than the current value after conversion. The study also analyzed the willingness of the Indah Kapuk beach community to pay for improving the environment and the willingness of the community of pond owners to receive payment for the same. The factors that influenced these decisions were also analyzed. The passage mentions some measures and efforts that can be taken to improve the environment and manage the forest area.

D. Conclusion

This research can be conclusion that method increased income couldn't again only through the economic route, but through social and environmental channels. This means that the environmental cost factor and must go into production costs, because the environmental costs and borne by the people. This is the shape new economic development that is in called the sustainable economy. With reference to that above it is expected that the movement environment made easy enter values environmentalism for replaces the basic values that be the cause of the damage environment, especially in the management of bay cases such as in North Jakarta Bay. The passage you provided suggests that increasing income is not only achievable through economic means but also through social and environmental channels. This means that the costs of environmental damage must be factored into production costs as they are borne by people. This approach is referred to as the sustainable economy. The passage also implies that the environmental movement has a role to play in promoting the adoption of environmental values that can replace the basic values that have contributed to environmental damage. This is particularly relevant in the context of managing bay cases, such as in North Jakarta Bay. In practical terms, this approach to economic development would involve businesses and governments taking into account the environmental costs of their activities, and seeking to reduce these costs through more sustainable practices. This might include reducing waste and pollution, using renewable energy sources, and protecting natural habitats and biodiversity. Overall, the goal of the sustainable economy is to achieve economic growth and development while minimizing environmental damage and promoting social well-being. This requires a shift in values and priorities, as well as a commitment to long-term planning and collaboration among stakeholders.

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