

PAPER • OPEN ACCESS

Economic growth poverty and degradation of environmental in Balai Gadang Village, Koto Tengah District, Padang City

To cite this article: Supriyadi *et al* 2019 *IOP Conf. Ser.: Earth Environ. Sci.* **314** 012059

View the [article online](#) for updates and enhancements.

Economic growth poverty and degradation of environmental in Balai Gadang Village, Koto Tengah District, Padang City

Supriyadi*, Bustari Muchtar and Abdul Razak

Environmental Science Study Program, Postgraduate Program, Padang State University, Indonesia

*supriyadi@parca.sp@gmail.com

Abstract. This study aims to a). Analyze the impact of economic growth and poverty on the carrying capacity of the environment. in Balai Gadang Village, Koto Tengah District, Padang City. b). m analyzing land conversion resulted in environmental degradation in Balai Gadang Village, Koto Tengah District, Padang City. This research method is a descriptive type of research with a qualitative approach. The research location is in lurahan Into Hall Tower to Koto Tengah sub-district, Padang City. Informants in this study came from community leaders, village officials, sub-district officials, and related officials. Data collection techniques in this study, namely interviews, observation and documentation. The analysis technique is in use in this study is inductive data analysis. From the research findings concluded: a). The impact of economic growth on the carrying capacity of the environment is the integration of the environment due to infrastructure that supports facilities and infrastructure to support economic activities built on land that was originally used as agricultural land: b) The impact of poverty on environmental carrying capacity is the business of river dredging for fulfill the demand for sirtukil mining goods as household income. c). There has been an increase in land conversion in Balai Gadang Village. The land converted is paddy fields for residential land and trade d). Land conversion factors in Balai Gadang Village, Koto Tengah District, Padang City are government policies, natural factors, population growth and economic problems. E). The magnitude of settlement and trade expansion in Balai Gadang Village has resulted in environmental degradation, namely 1) environmental degradation to soil productivity; 2) soil degradation; 3). environmental degradation of river widening and shallowness; 4). environmental degradation of air pollution; 5) environmental degradation in the form of air pollution other than sourced from waste also sourced from motor vehicles; 6). environmental degradation of biodiversity.

1. Introduction

The development always raises paradox. One of them is more reduction in the quality and capacity of the environment. Because, all human needs cannot be fulfilled by utilizing resources owned by nature. Therefore, in this case there is an inverse relationship between human needs and natural or environmental resources. That is, the more and varied human needs, the more natural ability to provide them. In on the other hand, in order to carry out their needs, humans carry out economic and industrial efforts that inevitably bring about the side effects of environmental pollution or contamination. In this case, there is a perpendicular relationship between human needs and pollution. The more and varied human needs are met through industrial business, the higher the level of environmental pollution can



Content from this work may be used under the terms of the [Creative Commons Attribution 3.0 licence](https://creativecommons.org/licenses/by/3.0/). Any further distribution of this work must maintain attribution to the author(s) and the title of the work, journal citation and DOI.

be ensured. If the trend continues, one day there will be a situation where economic growth cannot be increased again, while the ability and quality of the environment is difficult to be repaired again [1].

According to [2] economies that derive a large portion of their income from natural resources cannot preserve growth by replacing capital accumulation for increasingly bad natural capital. This means that the quality of natural resources (including the environment in it) has a considerable influence. Because the longer the carrying capacity decreases, so that environmental exploitation based on economic interests alone, at one time will cause disruption of ecological balance. This condition is referred to as an "environmental crisis" which is a symptom due to errors in the pattern and method of managing the sources of human life's needs. These symptoms are considered a crisis pressure that endangers human life such as threats to the clarity of air and water sources. Therefore, the growth approach that pays attention to the quality of the environment and the efficient use of natural resources will contribute to the accumulation, investment, economic growth and human welfare. Because, high quality natural capital contributes indirectly to well-being as an essential part of the products of goods and services and a sustainable economy.

According to [3] the concept of carrying capacity of the environment is most easily applied to an agrarian system that is still simple. In the system the human population lives on the agricultural sector in the broadest sense. Basically, the carrying capacity depends on the percentage of land that can be used for agriculture and the number of agricultural products per unit area and time. So, the greater the percentage of land that can be used for agriculture, the greater the carrying capacity of the area. The percentage is determined by the suitability of the land for agriculture, the need for land for other purposes at outside the agricultural sector.

A very important factor in environmental problems is the size of the human population, with rapid population growth, the need for food, fuel, settlements, and other needs and domestic waste also increases rapidly [3]. The more population, the more needs that must be met from nature or the environment. If population growth far exceeds the growth in the availability of natural resources, there will be a massive depletion of natural resources to meet the needs of human life and will lead to higher environmental pollution due to production and consumption processes.

Continued population growth and technological advancements have demanded an increase in the supply of food and energy raw materials. The reality is now, the carrying capacity of the source power or environment is increasingly labile due to the increasingly exploiting of locytes without regard to ecological rules. Excessive use of natural resources without being followed by businesses - businesses that adhere to ecological principles will add the complexity of environmental problems [4].

Land has become one of the elements supporting the continuity of human life. The first activity carried out was the use of land for farming. Land in a broader sense includes those that have been influenced by various fauna and human activities. Every human activity either directly or indirectly is always related to land, such as for agriculture, settlements, transportation, industry or for recreation, so that it can be said that land is a natural resource that is very important for human survival. Land is a physical environment that includes land, climate, relief, hydrology and vegetation, where these factors influence the potential for use [5].

Land conversion is a change in the function of part or all of the land area from its original function (as planned) to another function that has a negative impact on the environment and the potential of the land. Transfer of land functions in terms of changes or adjustments to use is caused by factors that broadly include the need to meet the increasing needs of the population and increasing demands for better quality of life [6]. According to [7] there are seven types of land use changes in carbon stock changes, namely the conversion of natural ecosystems into fields, conversion of natural ecosystems into agricultural land, abandoned fields, abandoned farms, timber production forests, and greening areas.

According to [8] land conversion is the conversion of agricultural land to non-agricultural use or from non-agricultural land to agricultural land. Land conversion is influenced by two main factors, namely:

1. Macro-level factors include industrial change, settlement growth, population growth, government intervention, and economic poverty.
2. Factors in micro level include household income patterns (household economic structure), household welfare (household economic value orientation), and household survival strategies.

Land conversion is closely related to increasing population density. According to [9] with increasing population, the ratio between people and land is getting bigger, even though the utilization of every inch of land is greatly influenced by the level of development of a society's culture. Population growth causes a smaller supply of land.

Economic growth and poverty in Balai Gadang Subdistrict, Koto Tangah District, Padang City have an influence on the carrying capacity of the environment. The transition of productive land to residential land has resulted in low carrying capacity of the environment. Judging from the increase in population and the developments that have taken place, the economic structure of Koto Tangah Subdistrict continues to shift, the role of the agricultural sector continues to decline and is replaced by roles in the housing, trade and services sectors. This condition also occurs in Balai Gadang, the transition of agricultural land to non-agricultural land has resulted in a decline in the area of agricultural land followed by farmers desire to grow crops, and shifting eyes, changes in the distribution of economic output are not followed by changes in labor structure work proportionally. There is a tendency for the proportion of workers absorbed in the agricultural sector to decline, the conversion of agricultural land is quite large, is expected to have an impact on changes in welfare of farmers and the environment. The gap between the dominance of output and labor explicitly shows a striking difference in productivity between these two economic sectors.

Besides the problem of income inequality and poverty, along with the stages of development that occur in Balai Gadang is faced with increasingly serious environmental problems. Based on data from the City of [10] there was a change in the use of land where there were increasing uses such as housing, trade, industry, services, mixed gardens, along-along bushes, and more. Conversely there are those who experience reductions such as rice fields, vacant land, swamps, forests and rivers. Changes in land use in Balai Gadang Village have various impacts on the environment, both changes in the physical, socio-economic and cultural environment.

Settlement development is carried out horizontally so that more land is spent. In addition, a portion of the community covers the entire surface of the land, either by building a high-rise or covering with cast or giving paving blocks. Community behavior that covers the entire surface of the land will disturb and reduce the infiltration of water into the soil and increase *run-off*. As a result of the increase in run-off, it can result in flooding in lower areas.

Environmental changes from infiltration land into uncontrolled dense land can result in the loss of one of the ecological functions of the soil as absorbent of rainwater. If the land is diminishing infiltration can be increased flow of runoff water (*run off*) that can cause flooding in the rainy USIM. Conversely in the dry season can lead to reduced supply of ground water and an increase in micro air temperature [11].

Degradation environment was due to land conversion, that is fertile for agriculture land many converted to non-agricultural land. The land conversion is carried out to meet the needs of residential land, shops and other developments because population growth is increasing and requires residential land. Displacement of population also leads to land conversion because they need shelter and place of business so that they buy the farm to build houses, shops and others as a place. Thus, the land that was originally intended as an agricultural activity shifted functions as residential land, shops and so on in the form of non-agriculture, so that the quality of land decreased due to environmental degradation [12].

2. Research Method

This research method is a descriptive type of research with a qualitative approach. Bogdan and Taylor [13] define qualitative research as a research procedure that produces descriptive data in the form of written or oral words from people and observable behavior. Meanwhile Moleong defines qualitative

research as research that intends to understand the phenomenon of what is experienced by the subject of research such as my behavior, perceptions, motivations, actions, etc. Holistically and by means of descriptions in the form of words and language in a specific context natural and by utilizing various natural methods (2007: 99).

The research location is in district Into Hall Tower to Koto Tangah sub-district, Padang City. Location election based on the consideration that district Into Hall Tower is the largest district of 13 village in the district of Koto Tangah district Padang and Into Hall Tower areas that have large enough land to transfer land functions. Geographically, to Balai Gadang village is at an altitude of $\pm 0 - 1600$ m above sea level.

The addition of the sample is stopped, when the data is saturated. From various informants, both old and new, did not provide new data anymore. If the selection of a candidate or an infoman really falls on a subject who truly masters the social situation under study (object), then it is an advantage for the researcher because it does not require many more samples, so the researcher is finished quickly. So, the concern for qualitative research is "completion" of information acquisition with a variety of variations that exist, not the number of samples of data sources [14].

Informants in this study came from community leaders, village officials, sub-district officials, and related officials. While secondary data is additional data that is used to perfect primary data [14].

Data collection techniques in this study, namely interviews, observation and documentation. Interviews are meetings of two people to exchange information and ideas through answers, so that meaning can be constructed in a particular topic [14].

According to [14] states that through observation, researchers learn about behavior, and the meaning of the behavior, while [14] states that observation is the basis of science. Observation is systematic observation and recording of the symptoms experienced. Observation is intended to directly see the factual object of research. Observations were carried out at the research location, namely in Balai Gadang Village, Koto Tangah District, Padang City. In the observation the researcher made observations, took pictures, recorded and felt what was in the research location.

According to [15] the documentation method is a way to obtain data or information about various things that have to do with research by looking back at written reports in the form of numbers or information (writing or boards, places and people). In this study, the method used to determine the documentation, land conversion, economic growth rates, the rate of population growth and poverty in district Into Hall Tower in 2006 to 2016.

Mechanical analysis conducted data is descriptive method qualitative analysis, the analysis carefully observes a particular through the collection of facts without doing trial hypothesis [13]. In this analysis method, the results of the exploration from interviews, documentation, observations were concluded to answer the problem formulation that was present in the study. Descriptive analysis is the analysis carefully observe a particular phenomenon through a phenomenon that occurs in the field.

3.Result and Discussion

The impact of economic growth on the carrying capacity of the environment in Balai Gadang Village, Koto Tangah District, Padang City is inseparable from the supporting factors for the ongoing economic activity. The supporting factors are infrastructure, namely shop buildings and transportation means. In addition, the existence of trade facilities was none other than the growing number of settlements that were increasing in the district. With another meaning, where there are settlements there must be found economic activity. So, between settlements, transportation and trade road facilities are interrelated with each other. The existence of these three components of economic activity requires land. The land needed for the existence of these three components in Balai Gadang Village is agricultural land.

Land use for settlements and trade continues to increase. The increase in the rate of increase in settlements and trade was inseparable from economic growth. With the establishment of settlements, trade will also accompany the road of transportation and other infrastructure facilities. In addition,

migrants who came to the Balai Gadang Village opened a trading business field instead of an agricultural business field. Likewise, local residents who have capital from the sale of agricultural land also open trade businesses, or shop contracts. Thus, stretching economic activity in Balai Gadang Village is quite dynamic. However, the construction of trade infrastructure and settlements as facilities and infrastructure to support economic growth has an impact on the carrying capacity of the environment. Land used as settlements and trade into hard land cannot absorb water. Likewise, the road that is filled with asphalt affects the quality of the environment. Building waste, such as cement, also affects the quality of the surrounding environment because it can reduce soil productivity. Decreased soil productivity because there is no more water uptake. So, the impact of economic growth on the carrying capacity of the suppressing environment is more on the aspect of infrastructure that supports the facilities and infrastructure to support these economic activities. Facilities and infrastructure that support economic activities are built on land that was originally used as agricultural land and then uses the function as non-agricultural land, so that the environmental carrying capacity becomes damaged or integrated.

While the impact of poverty the carrying capacity of the environment is closely related to the low income and productive resources which ensure sustainable livelihoods. The source of opinion of the residents of the district is generally from the labor market. In the beginning the business fields of the local people were farming. Because, the agricultural land has shifted its function to non-agricultural use, the local population has switched professions as laborers. The transition of agricultural land use to non-agricultural land occurs due to factors of poverty and population growth. The population migration that came in Balai Gadang Village had the consequence of providing land to accommodate the migration. Thus, poverty and population growth are like a welcome dip in land conversion. Thus, the conversion of agricultural land to non-agriculture thus has an impact on changes in people's livelihoods in Balai Gadang Village.

Thus, economic factors encourage the conversion of agricultural land into non-agricultural land. Local people as agricultural land owners sell their land to developers. The reason they sell agricultural land varies, including economic factors, such as for the cost of education and business development itself. In addition, they also set up new buildings for rented houses and shops and kiosks to be rented or used by themselves.

As a result of the agricultural land being sold, the agricultural business field fell. With the decline in the agricultural business field as a source of household income in the Balai Gadang Village, it shows that agricultural land that will be processed by the community is no longer there because its use has shifted its function to non-agricultural use. To fulfill their daily needs, the farmers switch professions. The business field that he entered as a source of household opinion was as a laborer. In Balai Gadang Village there was an increase in the labor sector, because they did not have professionalism because of the low level of education they had, to work in other informal sectors such as trading, they had no capital and to become motorcycle taxi drivers, they did not have a motorbike.

Poverty affects river flows. Many poor people are mining sirturkil goods. Dredging can lead to silting and widening occur stream flow, water quality declined, and landslides on the cliffs of the river, it can even damage the bridge. Thus, the impact of poverty on environmental carrying capacity is the business activities carried out in the form of river dredging to meet the demand for sirturkil mining goods as household income.

There has been an increase in land conversion at Balai Gadang village. The converted land is rice fields. The land that was originally used for agricultural activities, as a source of household income and can absorb labor, shift functions to non-agricultural use, namely settlement and trade.

Land conversion factors in Balai Gadang Village, Koto Tengah District, Padang City are government policies, natural factors, population growth and economic problems. Policy government Padang expanding residential areas to the Eastern region of Padang in an effort to improve the opinion of the area through the Building Permit (IMB). This is a form of regional autonomy in order to prepare as much regional income as possible for regional development. In addition, natural factors such as earthquakes or tsunami issues encourage population migration to Balai Gadang Village. Land

conversion is not inevitable because population growth is increasing, so land is needed for the construction of settlements. Economic problems are also a factor in land conversion in Balai Gadang Village. Because of economic pressure, agricultural landowners are forced to sell their fields to developers or to individuals to be used as residential buildings or shops. The land conversion causes the quality of the carrying capacity of the environment to be low. Therefore, land conversion results in environmental degradation. This is related to the narrowing of rice fields.

The narrowing of the area of rice fields was due to the construction of settlements and trade. Agricultural activities are no longer the primary business sector for household income. The rice field itself is temporarily replaced by a housing complex. Even if there is still paddy fields in the neighborhood. That is, rice fields in Balai Gadang Sub-District of Koto Tangah Subdistrict have become increasingly narrow and on the contrary land of settlements and trade is increasingly widespread. Comparison of settlement and trade expansion in Koto Tangah Subdistrict, Padang City was found that the Balai Gadang Sub-District is the village with the most extensive land as a settlement and trade,

The magnitude of settlement and trade expansion in Balai Gadang Village compared to other district in Kota Tangah Subdistrict, Padang City resulted in environmental degradation. Environmental degradation was found as a result of conversion of agricultural land to residential and trading land in Balai Gadang Village.

Environmental degradation to soil productivity. Environmental pollution due to building activities (such as cement water) has an impact on soil productivity due to reduced absorption of water into the soil, resulting in a decrease in crop yields of farmers. Production rice decreases the more years. Thus, the construction of settlements and trade around rice fields is a factor in decreasing rice production. The land around the rice fields has been polluted because of building waste so that it cannot absorb water, resulting in reduced water supply to the soil.

Environmental degradation of soil. The increase in land that cannot penetrate water will affect the infiltration of ground water, if the infiltration decreases, the volume of groundwater will decrease which will result in drought in the dry season, especially at elevation areas. In addition to the drought, another impact is flooding, because the increase in dense land will cause runoff to *run* high. So that during the rainy season the volume of river water increases to exceed its capacity which ultimately results in flooding. Thus, reducing the flow of river water cannot be separated from the decreasing absorption area which functions as a settlement as a result of the conversion of agricultural land to non-agriculture.

Environmental degradation of river widening and shallowness. The development of settlements and trade which is increasing in the Balai Gadang Village has triggered an increase in sirtukil mining goods. That is, with so much settlement and trade development, the demand for sirtukil mining goods also increased. Thus, dredging can lead to silting and widening occur stream flow, water quality declined, and landslides on the cliffs of the river, it can even damage the bridge.

Environmental degradation of air pollution. The presence of Final Disposal Sites (TPA) of Cold-Water waste has polluted the air environment especially when it rains. The establishment of TPA is a logical consequence of population growth and settlements. The more growing population and settlements, the more the amount of household waste is disposed of into Cold Water Landfill. This causes environmental degradation in the form of air pollution.

Environmental degradation in the form of air pollution other than sourced from waste is also sourced from motor vehicles. Motor vehicles will emit exhaust gas that can pollute the air. vehicle motorized eject some of the gas that can damage the layer of the atmosphere just as carbon dioxide (CO₂), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO₂), hydrocarbon (HC) and particulate matter (dust, aerosols and tin black (Pb)). Polluted air can cause disruption to human, animal and plant life.

In addition, the narrowing of the area of paddy fields results in environmental degradation of biodiversity. In this case can feed undisturbed habitat of living creatures. Due to the disruption of their habitat, many of them are extinct or migrate to other places.

4. Conclusion

The impact of economic growth on the carrying capacity of the environment is infrastructure that supports facilities and infrastructure to support economic activities that are built on land that was originally used as agricultural land and then shifts its function as non-agricultural land, resulting in damaged or integrated environmental carrying capacity. The impact of poverty on environmental carrying capacity is the business activities carried out in the form of river dredging to meet the demand for sirtukil mining goods as household income.

There has been an increase in land conversion in Balai Gadang Village. Converted land is rice fields for residential land and trade. Land conversion factors in Balai Gadang Village, Koto Tengah Subdistrict, Padang City are government policies, natural factors, population growth and economic problems. The magnitude of settlement and trade expansion in Balai Gadang Village has resulted in environmental degradation, namely 1) environmental degradation to soil productivity; 2) soil degradation; 3) environmental degradation of river widening and shallowness; 4) environmental degradation of air pollution; 5) environmental degradation in the form of air pollution other than sourced from waste also sourced from motor vehicles; 6) environmental degradation of biodiversity.

References

- [1] Widodo T 2009 *Ecology Basics* (Yogyakarta: Gadjah Mada University Press)
- [2] Vinod 2002 *Environment Resource Nature and Population in Development* (Jakarta: University of Indonesia)
- [3] Soemarwoto O 1997 *Analysis of Environmental Impacts* (Yogyakarta: Gadjah Mada University Press)
- [4] Jumin H B 2002 *Agroecology Something Physiological Approach* (Jakarta: RajawaliPers)
- [5] Sarwono 2007 *Evaluation and Land Use Planning* (Yogyakarta: Gajah Mada University Press)
- [6] Utomo S 1992 Development and Control of Land Transfer Functions *Thesis* (Lampung: University of Lampung)
- [7] Houghton R A 1991 Tropical Deforestation and Atmospheric Carbon dioxide *Climate Change Journal* **19**(3) p 99-118
- [8] Sihaloho M 2004 Agricultural Land Conversion and Changes in Agrarian Structure in Mulyoharjo Sub-District, South Bogor District *Thesis* (Bogor: Bogor Agricultural Institute)
- [9] Rusli S 2005 *Introduction to Population Sciences* (Jakarta: LP3ES Library)
- [10] Padang City BPS 2014 Koto Tengah in Numbers
- [11] Salim E 1993 *Development of Environmental Insight* (Jakarta: LP3ES)
- [12] Firmansyah 2003 *Cities and Environments: A New Approach to Ecological Insights* (Jakarta: LP3ES)
- [13] Moleong L J 2007 *Qualitative Methodology for Research* (Bandung: PT. Teenagers Rosdakarya)
- [14] Sugiyono 2008 *Understanding Research Qualitative* (Bandung: CV. Alfabeta)
- [15] Arikunto 2000 *Leather Research Methods* (Bandung: CV. Alfabeta)