

Externalities on Waste Management in Kampung Tempe Surabaya from Islamic Perspective

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Abstract---This study examines how the externalities of tempe's industrial waste management in Kampung Tempe Surabaya are reviewed from Economics of Natural Resources and Environment in Islamic Perspective. This research is conducted by using qualitative approach with case study method. Data collection conducted in this study by in-depth interviews and direct observation to the object of research. Technical analysis used in this research is by data reduction, data presentation, as well as withdrawal conclusions and verification from in-depth interviews and direct observation. The results show that there are externalities of tempe's industrial waste management in Kampung Tempe Surabaya which is indicated by absence of unpleasant odor from waste, makes environment of Kampung Tempe more cleaner, provide jobs, increase incomes, and get a facilities and infrastructure.

Keywords---*Externalities, Urban Traditional Industry, Kampung Tempe Surabaya, Waste Management.*

I. INTRODUCTION

One of the consequences of population growth is environmental pollution. Environmental pollution is any form of activity carried out by humans in releasing pollutants, either solid, gas, liquid or suspended particles in a certain level such that polluting the environment. While the definition of environmental pollution according to the Law of the Republic of Indonesia No. 4 of 1982 is the inclusion of energy or components that damaging the environment, or changes to all forms of environmental condition, both as the results of human activities or natural processes that threaten the quality of the environment.

Allah has created the earth and everything on earth with a balanced structure. Human beings should protect the nature from all damages that will lead to natural imbalances. Do not act arbitrarily which causes damage to the environment and destroys the lives of other creatures. Establishing an industrial business as a means of income for the community to be able to fulfill their daily needs and survival, as well as being used as a tourist spot or icon of a city, apparently has positive and negative impacts on the surrounding environment. The positive impact of the establishment of an industry is the emergence of tourist attractions and the opening of jobs for people around the industrial area, while one of the negative impacts that results from industrial business is the emergence of waste.

Environmental pollution is an important aspect and proper management is needed because it relates to the existence of negative economic externalities (external diseconomies), namely economic activities that affect human welfare [1]. In general, it can be said that externalities are the effects of the actions of a person or party on the welfare or condition of another person / party [2]. Externalities arise because the act of consumption or production from one party has an influence on the other party and no compensation is paid by the party that causes or compensation received by the affected party.

Kampung Tempe is an area in the Tenggilis area of Surabaya that produces tempe and other foods made from soybeans, fostered by Bank Indonesia with supervision from the Office of Industry and Trade of Surabaya. Tempe village was established in 1970 and received assistance from the Ministry of Industry and Trade in 1975 and has been fostered by

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Bank Indonesia since 2010. Not only tempe is produced, but there are other products but based on tempe. Such as tempe chips, tempe nuggets, tempe brownies, and soybean milk. Tempe craftsmen produce tempe every day which is then sold around various places and markets. There are also people who buy in large quantities for re-selling.

Tempe craftsmen in Kampung Tempe use the river water to wash soybeans. But over time, the river in the Tenggilis area is no longer clean. At present, the river has been polluted with local households' waste. With the assistance carried out by the Surabaya's Office of Trade and Industry, tempe producers have switched to use clean water. They received guidance, starting from the process of making good and healthy tempeh, and also getting support for equipments.

The activities that took place in Kampung Tempe Surabaya produced waste, both hazardous and non-hazardous waste. The geographical location of Surabaya Tempe Village which is located around residential areas can also cause similar problems if the waste produced is not in accordance with the established waste management standards. The impact of proper and standardized waste management results in long-term benefits, not only for the industry and craftsmen, but also for the community around the industrial area and can also be felt by other parties such as livestock farmers.

Based on the problem of waste management described, the title of this study is the externality of Surabaya Tempe Kampung waste management on externalities from Islamic perspective, with following problem statement: "How is the externality of waste management in Kampung Tempe Surabaya from Islamic perspective?"

This study contributes to the body of literature by providing study case on waste on small-scale industry at local level in Indonesia. In particular, traditional tempe industry in Surabaya. In addition, the implementation of Islamic principles on waste management is revisited based on the observation.

II. LITERATURE REVIEW

Environmental Management

Discussion on environmental management should be started from the worldviews related to the perception towards the environment. There are two dominant and extreme environmental worldviews. First, 'planetary management worldview', which stated that human beings as the most important species on Earth and believes that the Earth has unlimited amount of resources to be utilized by human beings through science and technology to support their livelihood. On the extreme side, there is a worldview called 'environmental wisdom worldview', which argued that human beings are merely part of the nature and the nature does not exist to merely satisfy human beings' wants. Earth resources are limited and should be managed in efficient, sustainable and not causing any waste of resources, with also concern on other species, not only human beings [3].

From a more practical point of view, according to [4], there are three important key aspects in environmental management. *First*, sustainability. This aspect is based on the concept of sustainable development that enables humans to manage natural resources but does not damage the function of natural resources themselves. This is done with the aim of efficient natural resources so that they can be used for a long time. *Second*, comprehensive. This aspect recognizes that natural resources are not something separate from each other so that an activity will affect other activities as well. *Third*, concern to the future generations' welfare. This aspect is developed from the concept of sustainable development where the above aspects serve to maintain a balance between aspects of management and conservation.

Islamic Principles on Environmental Management

Managing the environment is an obligation and form of our human responsibility as vicegerent (*khalifa*) of Allah on earth. Islam has several principles on environmental management. The principles of environmental management can also

be applied in waste management. There several principles of environmental management that can be applied in the management of industrial waste.

First, caliph. The *caliph* is defined as the qualities possessed by humans to protect and preserve nature and its contents. This is because Allah has created humans as creatures endowed with abilities not possessed by other beings. The nature of the *caliph* focuses on the application of the attitude of responsibility that must be carried out in every activity carried out by humans, especially in waste management.

Second, istislah (general benefit). General benefit in this context is interpreted as one of the main pillars which is used as the ultimate goal in Islam. The application of *istislah* principle in environmental management, especially waste management can be done by selecting waste management which not only has an impact on waste management, but also on the environment and society. The application of *istislah* is expected to be the ultimate goal of implementing activities related to the general public matters.

Third, amanah (trust). Trust is an Islamic principle in managing the environment. Humans are trusted by Allah to maintain and manage nature and the surrounding environment should have clung to this principle. The waste manager who is trusted as the person responsible for the waste management must conduct it seriously to prevent new problems. Kampung Tempe Surabaya as a producer of waste is expected to be responsible by applying this principle in its operational activities.

Fourth, ecological balance. An ecological or environmental balance consisting of a balance of earth, water, air, plants, animals and other creatures since they are created proportionally. If one of these elements does not exist, the ecological balance will be disrupted.

Fifth, sustainability. The objective of environmental management is for the interests of various parties, not only the current generation but also the interests of future generations. Waste management that does not heed the principle of sustainability will affect the environment around the project and future generation will not get benefit from it.

Basic Concept of Externality

[5] states that externalities occur when an economic actor's activities (both production and consumption) affect the welfare of other economic actors and the events that occur outside the market mechanism. Externalities can be either positive or negative. Positive externalities occur when activities carried out by a person or group provide benefits to other individuals or groups [6].

Externality can also be seen as a situation when there are costs/benefits from certain activity that are imposed on someone without compensation. It can occur in the production activity (such as air pollution from factories) or consumption activity (eating a fish that decrease the fish stocks in the ocean). In other words, externality will happen for the entity outside the economic transactions, that initially does not engage with the transactions [7].

III. RESEARCH METHOD

The research method used to examine the analysis of the impact of waste management in Kampung Tempe Surabaya on externalities in terms of natural resource and environmental economics is a qualitative research approach. Based on the objectives and formulation of the problems contained in this study, the method used in this study is a case study method, in which case studies will focus on the specification of cases in an event that includes individuals, groups, or an organization.

Types and Data Sources

In data collection conducted by researchers, the data used in this study consisted of two sources of data types. One type is primary data. It is a source of research data obtained through in-depth interviews. Interviews were carried out to the tempe artisans and some residents around Tempe village as the researcher informants. Interview the researcher with the informant by giving questions about the impact of Kampung Tempe waste management and around him. The pri

mary data needed in this study is about the population's response to the impact of waste management on Tempe Surabaya. In this study, there are two types of informants, one from the Tempe craftsmen group of 6 people and another from the group around 5 people in Kampung Tempe Surabaya.

Another type of data is secondary data. It is data that is obtained indirectly through literature studies on library materials and existing data. Secondary data is obtained by reading literature such as literature books, internet websites, lecture dictates, magazines, journal journals related to research subjects, newspapers, and studying the archives or documents contained in the relevant agencies.

Data Analysis

There are three steps to analyze qualitative data. *First*, data reduction. At this stage the researcher conducts data selection, and concentrates attention for simplification, abstraction, and transformation of the raw data obtained. *Second*, data presentation. The researcher develops a structured description of information to draw conclusions and take action. Data presentation commonly used in this step is in the form of narrative text. *Third*, generate conclusions and verification. At this stage, the researcher tries to draw conclusions and verify by looking for the meaning of each symptom he gets from the field, noting the regularities and configurations that may exist, the flow of causality from phenomena, and propositions.

After a series of data analysis processes are carried out, then the data is interpreted. This interpretation is done by comparing and understanding the analysis of the impact of waste management on Kampung Tempe Surabaya with the results of other studies that also discuss the impact of waste management on an industry. Also, there is a process of understanding and explaining whether Kampung Tempe Surabaya has implemented waste management in accordance with the standards, the stages of risk management that are generally applicable, and in accordance with Islamic sharia.

IV. RESULTS AND DISCUSSION

Kampung Tempe Surabaya is an industry in the Tenggilis area of Surabaya that produces tempe and other foods made from soybeans which are fostered by Bank Indonesia under supervision from Surabaya's Office of Industry and Trade. Kampung Tempe Surabaya is located on Jalan Raya Tenggilis Kauman Gang Buntu 27 RT 04 RW 03.

Waste Management

In an effort to reduce and mitigate the negative impact arising from the production of tempe in Kampung Tempe Surabaya, the wastewater management is conducted by dumping directly the waste into the river. The waste produced from the production of tempe is disposed into the flowing river to avoid accumulation and cause air pollution (strong odor). If the river does not flow, the production waste will accumulate and cause air pollution. Kampung Tempe produces liquid waste every day as residual of daily tempe production. So, the waste is immediately disposed of into the river adjacent to Kampung Tempe. Meanwhile, the solid waste of Kampung Tempe is given voluntarily to cattle farmers as cattle feed.

Externalities of Waste Management to Society

There are some examples of positive externalities. *First*, employment. Labor force a factor production that realed with humans who are able to work to produce goods or services and have economic value that can be useful for people's needs. *Second*, increased revenue. Several factors influence a person's income level, namely the number of factors of production, the price per unit of each factor of production, the construction of public facilities or facilities, infrastructure, and worship. *Third*, construction of public facilities and infrastructure. Construction of public facilities such as prayer rooms/mosques, road repairs, ditch renovations, provision of production operational aids, and other facilities that facilitate workers and communities in an industrial environment in carrying out activities and operations. *Fourth*, worship. [8] states that working for every Muslim is a manifestation of faith that is related to the purpose of his life, namely worshipping Allah, in order to obtain the pleasure of Allah. Working not only aims to glorify oneself, but also as a manifestation of good deed. Appreciation of the work in Islam is more or less equivalent to 'faith' that grows in the heart, even work can be a guarantee of forgiveness of sins if intended in order to worship Allah.

Meanwhile, there are also some examples of negative externalities. *First*, environmental pollution. The waste produced by Kampung Tempe Surabaya industry can pollute the environment so that it can disrupt the ecological balance. *Second*, decline in public health. Health problems always occur with the increasing number of industries whose waste has a negative impact on the health of the surrounding population. Waste or industrial activities in Kampung Tempe Surabaya can disrupt health, both for employees and the surrounding community. *Fifth*, water pollution. Waste generated from the production process of tempe which is disposed of into the river potentially causing water pollution and damaging the ecosystem in the river if the method of disposal of waste into the river is not in accordance with specified standard.

Implementation of Islamic Principles

The implementation of Islamic principles in waste management in Kampung Tempe Surabaya can be observed from each principle. *First*, the forefront of the *caliph* principle in Kampung Tempe Surabaya is reflected in standardized waste management activities so as not to disturb and cause negative impacts. Waste management in Kampung Tempe Surabaya is actually beneficial for some parties, especially cattle farmers. *Second*, the application of the *istislah* principle in the Kampung Tempe Village Surabaya is reflected in the way tempe craftsmen in Kampung Tempe Surabaya immediately deal with waste problems when there are complaints or conflicts regarding the waste from the communities around Kampung Tempe Surabaya, such as the manufacture of sewerage pipes and the construction of closed ditches.

Third, the application of the trust principle in the Kampung Tempe Surabaya is reflected in the trust given by the Government Office to tempe producers in managing tempe industrial waste independently. In addition, the trust principle is also reflected in all the opinions of informants who are in the surrounding community of Kampung Tempe Surabaya where they have not felt the negative impact of tempe industrial waste. *Fourth*, the principle of ecological balance in Kampung Tempe Surabaya is reflected by the tempe craftsmen who dispose the liquid waste from tempe production directly into the river so that it is in accordance with the standards set by the Office of Public Health. This is in accordance with the standard of waste management, but in fact in the long term it can paralyze the river ecosystem. *Lastly*, on sustainability principle, the balanced economy meant combination of personal interests and the benefit of the community. The establishment of Kampung Tempe Surabaya is not only for the sake of tempe craftsmen but also for the interests of the community around the Kampung Tempe Surabaya, especially for employment.

V. CONCLUSION

The existence of Kampung Tempe Surabaya industry has caused externalities to the environment and surrounding communities in the Tenggilis Mejoyo area of Surabaya. One of these externalities is river pollution. This externality is

caused by waste produced by the Kampung Tempe Village such as wastewater and soybean waste. Meanwhile, externalities are also found to affect society, such as the opening of jobs, an increase in community opinion, and no strong odor. Also, cattle farmers gained benefit from Kampung Tempe's solid waste that they use as animal feed for cattle, chickens, and ducks. While waste management in Kampung Tempe Surabaya is in accordance with most Islamic principles, it does not comply with the principle of ecological balance because liquid waste is directly released into the river so that it makes the river polluted and the river ecosystem is disrupted. Efforts to cope with the externalities of liquid waste have been carried out in the form of biogas production but failed due to lack of sufficient land to place biogas-making equipment. Kampung Tempe management is expected to conduct better waste processing, including improvement of waste management, regular river cleansing with supervision from the Government Office

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