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INTERNALIZATION OF THE EXTERNAL COSTS TO REACH THE RATES OF OUTPUT THAT ARE SOCIALLY EFFICIENT

Idris*

Abstrak: Manusia tidak mungkin dapat bertahan hidup tanpa lingkungan yang mampu memenuhi kebutuhannya. Untuk memenuhi kebutuhan hidup dan meningkatkan kesejahteraannya, manusia melakukan kegiatan ekonomi dengan memanfaatkan sumberdaya baik sumberdaya buatan manusia (*man-made*) maupun sumberdaya alam. Salah satu kegiatan ekonomi yang dilakukan adalah produksi guna mengahasilkan barang dan jasa. Dalam memproduksi barang dan jasa akan muncul biaya internal dan biaya eksternal. Biaya internal adalah biaya bahan baku, biaya tenaga kerja dan biaya produksi tidak langsung (*factory overhead cost*), sedangkan biaya eksternal adalah biaya pengolahan limbah atau residu untuk menghindari agar tidak terjadi polusi. Selama ini semua biaya internal telah dialokasikan ke dalam harga pokok produksi sehingga sudah tercermin dalam harga pasar barang dan jasa tersebut, sedangkan biaya eksternal dipikul oleh masyarakat. Suatu kondisi di mana, masyarakat tidak ikut mengambil manfaat dari produk tersebut, tapi hanya ikut memikul biaya saja disebut sebagai eksternalitas disekonomis. Bila kondisi ini dibiarkan berlangsung terus, maka kualitas lingkungan alam akan mengalami penurunan (degradasi), yang pada gilirannya akan mengganggu keberlanjutan kegiatan ekonomi pada periode berikutnya. Selain itu juga akan terjadi suatu ketidakadilan ekonomi atau ketidakefisienan ekonomi secara sosial. Ada beberapa faktor yang menyebabkan terjadinya eksternalitas, yaitu *public goods, Sumberdaya milik bersama bersama, Ketidaksempurnaan pasar (imperfect market), dan Kegagalan Pemerintah (Government Failure)*. Dalam rangka mewujudkan paradigma *sustainable development*, maka pemerintah dapat membuat suatu regulasi untuk menginternalisasikan biaya eksternal. Salah satu pendekatan yang dapat diterapkan adalah pembebanan pajak pada pihak yang menyebabkan terjadinya eksternalitas. Pendekatan ini memberikan insentif ekonomi dalam penerapannya. Agar jangan memikul pajak, maka agen ekonomi dapat ekonomi dapai mengolah limbah sebelum dibuang ke lingkungan. Bila biaya pengolahan limbah lebih rendah dari pada pajak yang harus dibayar seandainya limbah tidak diolah, maka agen ekonomi pasti akan memilih mengolah limbah terlebih dahulu sebelum dibuang ke lingkungan, dan begitu sebaliknya.

Kata kunci: *Sustainable development, internal cost, external cost, internalizing external cost, society marketing, socially efficient.*

The occurrence of environmental problem is an effect that cannot be avoided and even unpredicted because of interaction between economic activities (production, distribution, or consumption) and the existence of environment and natural resources. The interaction that causes the environmental problem is an imbalance and a disharmony interaction of the two things above. When the interactions happen more, it will cause higher and more complicated effects toward degradation of environmental and natural resources. In the space dimension, the environmental problem can cause local, national, international and even global effect, while in the time dimension, the environmental problem can cause short, medium and long periods of effect and it causes temporary or sustainable effect.

Men do economic activities to fulfil their needs and to improve their welfare by using man-made resources or natural resources. They need goods and services for their lives. To produce goods and services in economic system the raw materials are needed. These materials will be exploited from natural system and then they will be processed in economic system in accordance with economic rule. The rest of the raw material and other products that are not used in economic system

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will be sent back to the environment as the waste. When the waste is wasted to the nature, it will degrade the quality of environment. The degradation of the environmental quality will influence its capacity to provide environmental materials and services for the next economic activities in the future. If this condition happens continuously, in turn it will damage the economic system itself.

Based on the ideas above, it is clear that there are many problems can be discussed, such as (1) How is the interaction between the economic activities and the environment, (2) How is the relationship between the external cost and the socially efficient level, (3) What factors cause the occurrence of externality, (4) What kind of approach can be done to reach socially efficient result.

THE INTERACTION OF ECONOMIC ACTIVITIES AND ENVIRONMENT

It has been stated in the introduction that men do economic activities to fulfil their needs and wants. The way how the men do the economic activities in a country will be determined by the economic system of the country. In the system of market economy there will be an interaction between *demand and supply* and the price will be the indicator of the balance between the demand and supply. That kind of economic system just focuses on studying circular flow but ignores the stock and the environmental problems.

The environmental problems are caused by the interaction between economic activities and the existence of natural resources which are not balance and harmony. One of the economic activities is natural resources exploitation. If the natural resources is exploited more, so its effect to the environmental degradation will also be worse. It is known that the environment is the main asset which provides the needs for human being. When the environment degraded, the fulfilment of human needs are also disturbed, because the environment also provides other life supporting system to keep the existence of human being.

There are two main activities in economy namely producing and consuming goods and services. Producing is the activities of producing goods and services, while consuming is the activities of using good and services. Both activities happen in natural environment. The environment has three main functions; providing the resources, the place for returning the waste and the place for pleasure, (Field 1997). The environment provides the resources in the form of raw material that will be transformed through economic activities to produce goods and services in order to

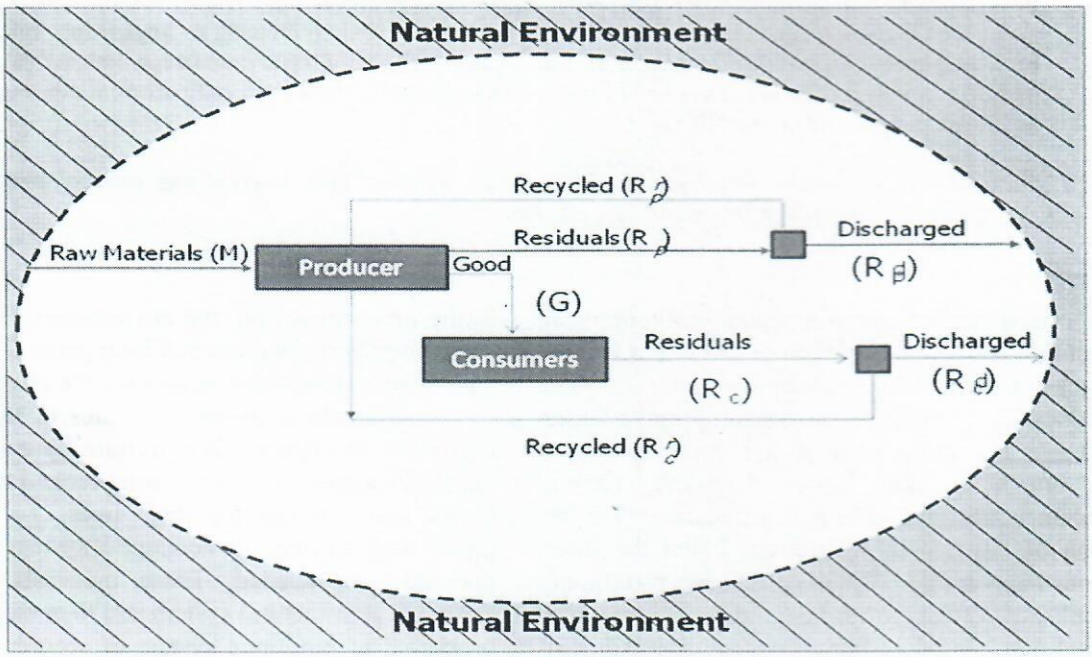

Figure 1: A Circular Flow Relationship for the Environment and Economy
Source : Field (1997)

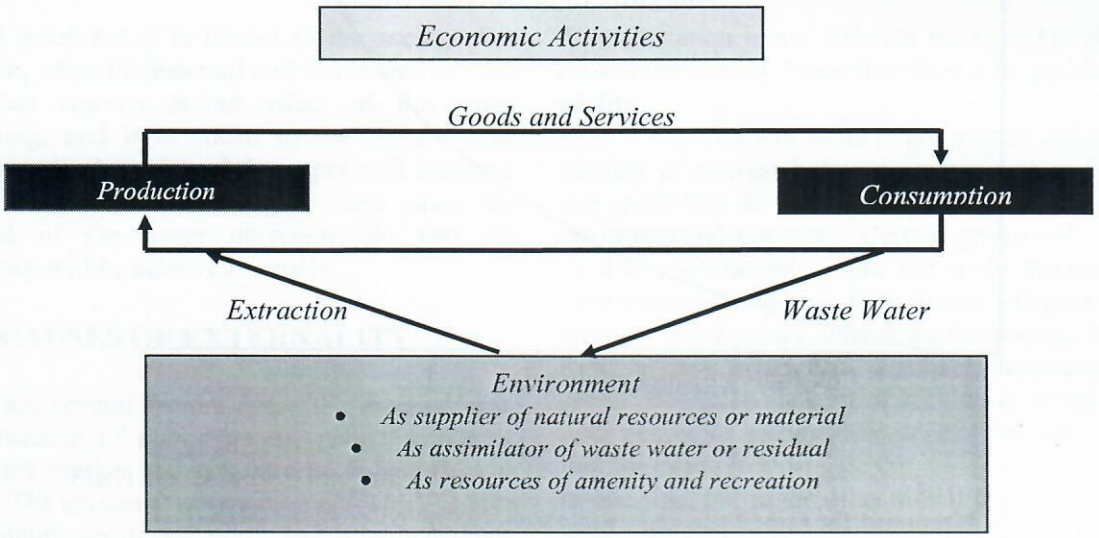

Figure 2: The Interaction between economic activities and environment

fulfill the needs of the society. These activities will create waste such as waste or residual (solid, liquid and gas) which at the end of the economic process will be emitted to the environment. The other function of environment is to provide the sources of pleasure like services that can be consumed directly such as unlimited fresh air, substances contained in the food and drink that are needed by the human body. The interaction between economic activities and natural environment will be shown in the figure 1.

Figure 1 shows that the three functions of environment relate to the economic activities. If the exploitation of natural resources is over exploited and its use is disorganized, the environmental support will be degraded in the future. In addition the waste of waste to the environment without good treatment will cause degradation toward environmental function or disturbance of all natural ecosystem.

Based on the analysis above it can be said that economy will never exist without natural resources and environment. Every economic activity will touch each or both of them. Unfortunately in its development, economic analysis has ever ignored natural resources moreover after pessimism of Malthus and Club of Rome was not proved and the world population was booming. Neo-classical economists thought that they have been able to overcome the scarcity of natural resources by applying technology continuously (Stiglitz, 1974; Agnani et all, 2005 in Soedomo 2010). The facts show that economic system will never get out from the ecosystem. The regulation that organizes the dynamic of ecosystem, where the human activities happen in it, constitutes the function of biological law, and it is not the function of economic system made by men (Gowdy and McDaniel, 1996).

Generally, economic literature focuses and analyzes the activities of productions and consumption and their connections as well. Meanwhile the connections among economic activities, nature and environment, which have the important roles are not included in economic analysis. Economic system does not only care about the optimum production and consumption (based on the available resources) but also has to care the impact of economic activities toward the sustainability and the quality of natural resources. When the importance of sustainability and quality of environment are considered in the system of the economic analysis, the economic system should be described as figure 2.

According to Disgust in Yakin (1997) the connection analysis between economy and environment cannot be avoided because of the confession that says: (1) the environmental resources is often approved as public's possession, (2) the resolution of environmental problem usually involves the changes in the allocation of property right, (3) the use of resources probably cannot be changed or irreversible, (4) the resource stock sometime directly influence the social welfare of the society, (5) the impact of the environment from certain kinds of activities is cumulative and it will be

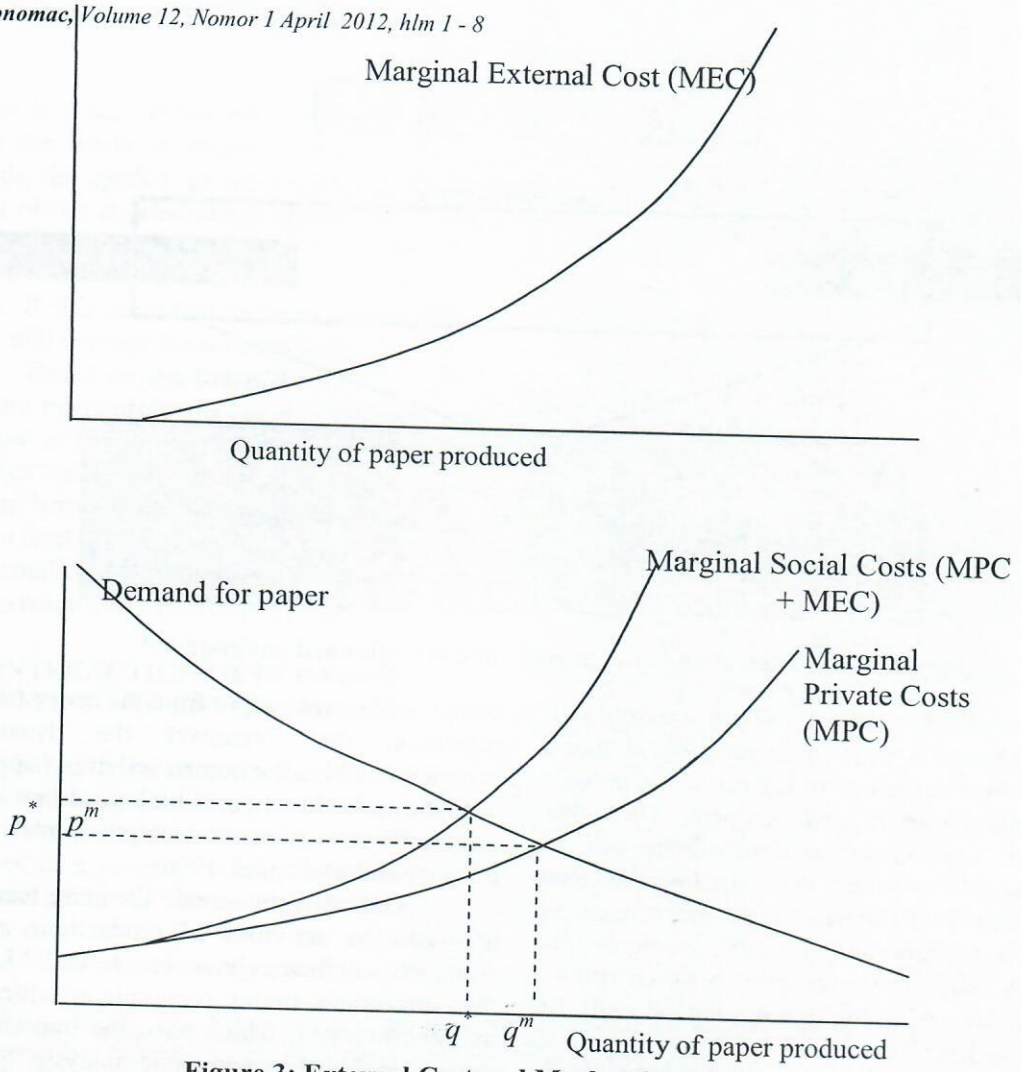

Figure 3: External Cost and Market Outcomes

known in the future, and (6) the environmental consequences of the economy activities are unidentified.

EXTERNAL COST

When the entrepreneurship –in market economy- make the decision about what will be produced and how to produce something, they just think about the cost for the labour, raw material, machine, energy and other indirect costs. All of these expenses are considered in the basic production cost, called as private cost. Private cost is determined in the market cost of the product. Since the goals of all companies are to maximize the profit, so they always keep the production cost as low as possible.

On figure 3 top panels shows the relationship between the level of production and external production cost. It means that the improvement of marginal external cost is in line with the improvement of paper product. While bottom panel shows the curve of paper demand and marginal private cost of paper product which intersect at the level of *pm* price and quantity at *am*. It shows the price and quantity happen in a competitive market, where the producers did not pay the external cost. It can also be seen that marginal social cost has more impact, as it is shown by two kinds of costs; they are marginal private cost and marginal external cost. The level of efficiency is socially achieved at the output of q^*, and the price of p^*. When it is compared between two outputs and two prices, it can be seen that the output of the market is higher than the efficient output level socially. It is also seen that the market price is lower than the efficient price socially. The low price in output level in competitive market is caused by the real cost that occurs as the effect of the degradation of environmental function. It is not counted in the

market price, but it is loaded to the society. For example, when the external cost is counted as the cost that appears as an effect of the paper producing, and it is added to the private cost, consequently the price of the paper will increase. The increase of the paper price will cause the demand of the paper decreases, so that the efficiency will be achieved socially.

THE CAUSES OF EXTERNALITY

There are several factors cause the external cost; the existence of public goods, public resources, imperfect market and government failure (Yakin: 1997). The existence of environment which is seen as the public goods will push free rider behaviour. When the quality of environment is still good, then all people will use the environment for their needs, yet when the condition of the environment is worse there will be no one who wants to repair it. This is caused by their thought that when the environment becomes better other people will make used of it unlimitedly.

Environment is the resource for all people. It means that it cannot be possessed personally or by a certain economic agent, furthermore the access toward the resources is unlimited. This condition will push over exploitation that in turn will contribute to the negative impact of the environment. For example the watery environment around lake Maninjau, in Agam Regency, West Sumatera is benefited by the people around it to raise fish, known as *Karambah Jaring Apung* (KJA). Since the lake belongs to all people, so that *'fish farmers'* have access to maximize their profit which make the marginal cost exactly the same with marginal revenue without considering its carrying capacity. Everyone will do the same thing, because she/he thinks that once she/ he leaves the chance other person will take it and in turn it will be over exploited and finally ended with tragedy like the tragedy of commons which introduced by Hardin (1977).

The environment occurs when one of the participants involves in exchanging the property right, and they are able to influence the output. This condition will happen in imperfect market like monopoly. In the monopoly market the producer will produce in the level where marginal acceptance is the same with marginal cost. In this condition surplus of the producer is maximum. This allocation is not efficient because this choice causes the society loose the chance to get the net profit.

Government failures are mostly caused by conflict of interest between government and interest group that do not support the efficiency or the environmental concept. Certain group will make used of government to take the profit through the intervention and policy formulation. Government with its fiscal policy subsidizes the society in the form of low price fuel, fertilizer, insecticide at cetera. Basically the aim of subsidy is to help the poor people in getting their needs. The subsidy of fuel for example has made the price of fuel cheaper in one side, but in the other side it creates the over used. Related to the environment, the use of fuel has caused the air pollution which comes from the rest of imperfect burn. The more people use fuel, the more pollution the air has. As a result the subsidy which is aimed to help poor people change to enlarging the pollution. In another word, government has failed in helping poor people but it subsidizes the economic doer polluting the air.

INTERNALIZATION OF EXTERNAL COST TO REACH SOCIAL EFFICIENCY

Economic activity and environment interacts each other, and they are mutual determination. Economic activities need stable economic growth to fulfil human needs. If the economic growth increase, the exploitation of natural resources increase too, as a result the amount of the waste that will be sent back to the nature also increase. The improvement of resources exploitation from time to time will run out the natural resources provided, and one day the economic system will collapse. Production improvement will be followed by the improvement of the waste that will reduce the quality of the environment itself. It is known that economically, environment is seen as a combined asset which provides various services to human being.

In simple way it seems that the importance of economy growth and environment conservation is contradictive. On the other hand there must be something that should be sacrificed. In order not to sacrifice something, the policy of reaching the economic growth should be integrated with the efforts of natural conservation by applying the conceptual development of the environment. In applying the paradigm of sustainable development,

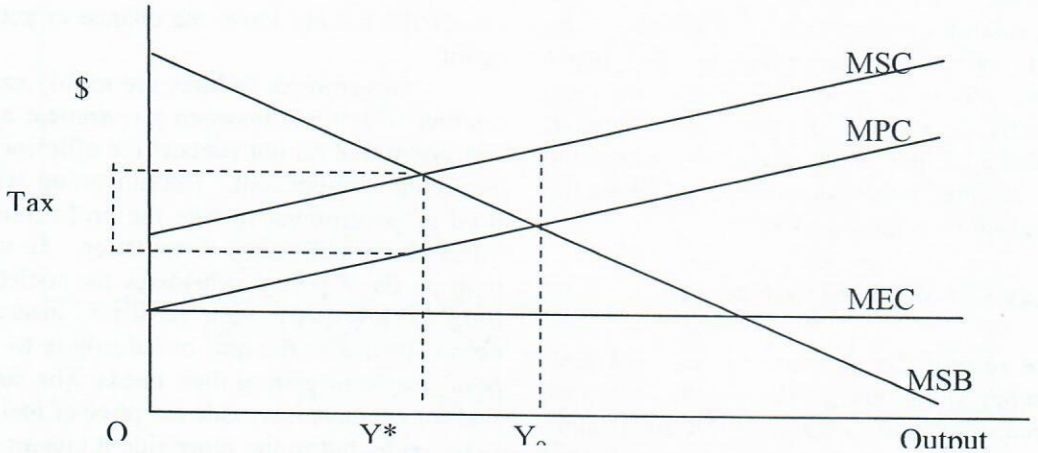

Figure 4: Tax and efficiency allocation of resources

one of the policies that can be done by the government, is by internalization the external cost. One of the approaches that can be done by the government in internalization the external cost is applying tax policy. Tax loaded for every polluter is an effort to prevent the degradation of the environment done by the polluter. This approach was firstly introduced by Pigou in Yakin (1997) as an alternative policy to overcome the market failure which related to externality.

Conceptually Pigou in Yakin (1997) describes the relation between tax level and the efficiency of resources allocation, as it is shown on figure 4. Figure 4 shows the situation where producer does not guarantee all cost (include environment and social cost) for each unit produced, which in this analysis is considered constant. When producer does not consider the damage of the environment, it means that producer will produce in the level of Y_o, where it is bigger than Y^*. Paying tax by the producer who made pollution, causes the production decreased on the optimal level (Y^*) that is on the level of MSB= MSC.

This tax will improve the production cost and push the company to reduce its product; in turn it will make the environment cleaner. The tax collected will be used to prevent or to reconstruct the damage of the environment. It is aimed that the external cost guaranteed by the society who did not take the benefit from the economic activities, was guaranteed by producer. Finally the producer will consider the tax he paid in the cost of goods sold. As a result it will increase the market price of that product. When this condition happens, it can be said that the internalization of the external cost has already happen.

The main problem in applying the policy is in determining the tax tariff that will be loaded to the production activity. When the tax tariff determined is too low, the effect is the environment tends to be damaged, yet if the tax tariff is too high it will decrease the economic growth. The relation between tax tariff and industrial process will be shown on figure 5.

Figure 5 shows that point '*X*' shows the optimum level of pollution, while '*t*' is the optimum tariff of tax in the intersection of *MDC* curve (marginal damage cost) and *MAC* (marginal abatement cost). When an industry pollute environment, it has to pay '*OtEX* ' that consists of environment damage cost as much as '*OEX*', the cost of pollution abatement as much as '*EXX*', tax as much as *Ot'E*.

When the marginal cost of pollution reduction (waste processing) is in point t1, the industry will choose to pay tax and pollute environment because marginal benefit less than marginal cost of polluted environment (it moves from X_1 to X'). If the marginal cost of pollution reduction is in point t_2, the company will choose to process the waste, because the limited cost of tackling pollution is bigger than the limited cost of polluted environment. It makes polluter strives to reduce the pollution (it moves from X_2 to X').

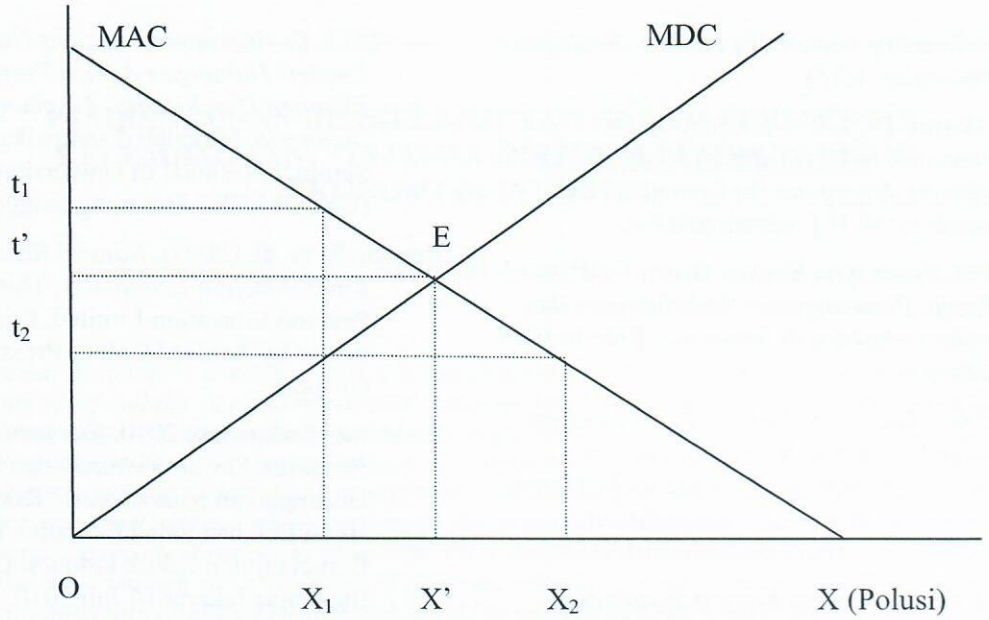

Figure 5: Tax tariff and the process of industrial pollution

By applying this tax system the entrepreneur has incentive to clean environment, whether by paying the tax or processing the waste. Any decision chosen by the entrepreneurs, basically they have considered the external cost in the production sold price, whether in the form of tax or the cost of waste processing to avoid tax payment.

CONCLUSION

One of the economic activities done by the men is producing goods and services. In producing goods and services there will be external and internal costs. Internal cost has been allocated into the product price, and it is determined in the market price of those goods and services, while the external cost is loaded to the society. Although the society is loaded with the cost, it does not take the benefit from the economic activities which cause the cost itself. If this situation is let as it is, it will make the economically inefficient or unfairness, socially unjust, environmentally damaging, and p-logically unsustainable. This condition is one of the market failures in allocating resources efficiently.

To overcome economic inefficient socially, the government has to make a regulation to internalize the external cost. One of the approaches that can be applied is tax loaded to the party that waste the waste more than environment *quality solid*. This approach gives economic incentive in its application. In order not to pay the tax the economic agent can process the waste before wasting it to the environment. When the cost of processing the waste is lower than tax paid, if it is not processed, the economic agent will choose to process the waste before wasting it to the environment and vise versa.

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