

UDC 332

## ARE PLASTICS AND VEHICLE EMISSIONS SUBJECT TO EXCISE? A STUDY IN MALANG CITY, INDONESIA

Anjarwi Astri Warih

Faculty of Administrative Science, University of Brawijaya, Indonesia

E-mail: [astrics19@ub.ac.id](mailto:astrics19@ub.ac.id)

### ABSTRACT

From 2002 to 2016, there was an increase in the composition of plastic waste by 16% in Indonesia. The increasing use of plastics for food packaging and textile products will bring destruction to the earth habitats and ecosystems as well as land, water, and air pollution. Plastic waste is non-biodegradable which means that it takes around 100-500 years to decompose completely. Another environmental pollution that needs to be considered is pollution caused by motor vehicle emissions. The use of motor vehicles in Indonesia continues to increase from year to year. It is recorded that from 2014 to 2016, there has been an increase in the use of motor vehicles by 13%. As a result, incomplete combustion of fuel oil will trigger global warming, interfere human's respiratory function, and cause death. This study aims to examine the feasibility of imposing excise to plastics and motor vehicle emissions in Malang City as the location of the research. The results show that excise extensification needs to be done considering the amount of plastic waste with the use of motor vehicles with environmental and air pollution.

### KEY WORDS

Plastics, vehicle emissions, excise extensification.

Unconsciously, the level of human dependence on the use of plastics for food and textile packaging keeps on getting higher. In a year, it is estimated that there are 500 million to 1 billion plastic bags used by the world population. This means that, in one minute, there are around 1 million plastic bags where the manufacturing process requires  $\pm$  12 million barrels of oil per year and 14 million trees to cut down. The properties of plastics are non-biodegradable, it is difficult to degrade. The estimated length of time for the plastic to decompose completely is around 100 to 500 years. This plastic waste can damage the environment, destroy the habitat and ecosystems, pollute the soil, water, and even air. The dependence of the people around the world, especially Indonesian people, on the functions and uses of plastic makes this product cannot be completely eliminated from everyday life.

Still, in regard to environmental pollution, the level of motor vehicle emissions in Indonesia also needs to be taken into account. Emissions are the residual fuel combustion inside the internal combustion engine, the outdoor combustion engine, and a jet engine that is released through the engine exhaust system. The gases from that emission have a negative impact on the health and the environment. Carbon dioxide gas (CO<sub>2</sub>) is a greenhouse gas that contributes to the occurrence of global warming. Meanwhile, carbon monoxide gas is associated with hemoglobin. The gas can disturb the function of hemoglobin in binding the oxygen which then will lead to death. There also soot which is a small particle of carbon which can disrupt the respiratory function.

The use of motor vehicles in Indonesia always increase from year to year. If this is not addressed, there will be a long and destructive impact on the environment or the health of Indonesian people. One effective step is the control of the Government that is done through regulations that are expected to be carried out and obeyed by the community.

The possible regulation to control the use of both products is excised extensification. By looking at the structure of excise receipts, Indonesia only has three subjects of excise which are cigarettes, ethyl alcohol, and beverages containing ethyl alcohol (*minuman mengandung etil alcohol*, abbreviated as MMEA). In some countries, the number of excise objects or excise goods (*Barang Kena Cukai*, abbreviated as BKC) can be more than three

types and some even reach 20 types. Therefore, there is a chance that the government can extend taxes through new subjects such as plastics and motor vehicle emissions.

The increase in the amount of plastic waste and the use of motor vehicles also occurred in Malang City. In August 2018, the Department of Environment of Malang City noted that the amount of waste produced in Malang City reached 664,62 tons per day. Based on these data, the composition of waste production consists of 70% organic waste and 30% inorganic waste. It can be estimated that the amount of plastic waste reaches 200 tons. The data also pointed out that every citizen of Malang City produces an average of 900 grams of waste a day.

This will have an impact on the environment if there is no proper treatment, especially because there is no waste management place in Malang City. Compared to Madura, the waste products in Malang City is higher. Madura produces only 500 tons of garbage every day with a bigger population ratio of around 4 million. Malang City itself has a population ratio of 800 thousand million.

This also applies to the increase in the number of motor vehicles in Malang City. The number of vehicles with black license plate and red license plate from 2015 to 2016 experienced an increase while the vehicles with yellow license plate experienced a decrease that is not too significant. The data in 2016 only showed 6,373 which means that there was a decrease of around 48 vehicles.

Based on the background above, the researchers of this study are interested to raise this topic in a journal that is to find out the feasibility of plastics and motor vehicles emissions as new excise subjects.

## **LITERATURE REVIEW**

### **Plastics**

Plastic is a form of goods produced from a polymer material that is cooled and used for packaging (Apriyanto 2007 and Aryanti 2013 in Agustina Putri Serly, 2014). Plastic is made from chemical material like carbon, silicon, hydrogen, nitrogen, oxygen, and chloride. A different combination of chemical material will produce a variety of different types of plastic.

Various products wrapped in plastics can be found almost on all items around us. Ranging from drinking bottles, food utensils, bags, pipes, children's toys, machinery, military tools, and even pesticides. One of the reasons for using this product is because of its function and usefulness. Plastic is lightweight and easily formed but is not rusty and not easily broken. Those reasons make plastic more practical than traditional materials that require special care. Market Food Technology Expert from Bogor Agricultural Institute (*Institut Pertanian Bogor* or IPB), Arif Hartoyo, revealed that plastic is a non-biodegradable product, a product that is difficult to decompose. This material is estimated to only decompose within a period of 100 to 500 years. In comparison, waste paper only takes a month to decompose because it is biodegradable.

### **The Impact of Using Plastics on the Environment**

The Executive Director of the Indonesian Packaging Federation, Hengky Wibowo, said that the use of plastics is inseparable from the needs of the people's practical lifestyles. However, behind that practical nature, there is so much negative impact behind the use of plastics. Plastics contain dangerous chemicals, namely Bisphenol-A (BPA). These chemicals can embrace the growth of cancer cells and increase the chances of miscarriage for pregnant women.

In short, the negative effects produced by plastic or plastic waste not only harm the environment but also threaten the health of the people. Some of these things might make some countries begin to limit or even prohibit the use of plastic in daily lives. Various programs have been implemented in various countries in an effort to reduce the amount of plastic, but there has not been a significant amount of reduction.

### **Motor Vehicle Emissions**

The combustion of gas emissions generated by burning motor vehicles generally has a negative impact on the environment. It is necessary to take a number of steps to be able to control the gas emissions. One of the ways is to periodically check or do emit tests to determine the exhaust gas content of a vehicle that has the potential to pollute the environment. The biggest content of harmful gases produced from gasoline gas exhaust is carbon monoxide (CO) and hydrocarbon (HC).

### **The Impact of Motor Vehicle Emissions**

The substances generated from the motor vehicle emissions consist of CO<sub>2</sub>, CO, NO<sub>x</sub>, HC, SO<sub>x</sub>, PM<sub>10</sub>, and Pb (from lead-containing fuel). JICA (1997) and ADB (2002) concluded that the transportation sector contributed significantly to urban air pollution (Suhadi, 2005). The results of substances released by motor vehicles have a negative impact on people's welfare, health, and the environment. This source of pollution also caused adverse effects on the environment, especially on the atmosphere, such as acid rain, stratospheric ozone layer damage, and global climate change.

### **Excise**

Excise is a state levy imposed on certain goods which have specified properties and characteristics called Excise Goods (*Barang Kena Cukai* or BKC). Excise is regulated in Law number 11 of 1995 concerning Excise in conjunction with Law number 39 of 2007 concerning Amendment to Law number 11 of 1995 concerning Excise. The items, in this case, are goods whose consumption needs to be controlled, whose circulation needs to be monitored, whose utilization can have negative impacts for society or the environment, and whose use needs state levies for justice and balance.

### **Excise Characteristics**

The characteristics of excise according to Cnossen (1977) are selectivity in coverage, discrimination in intent, and some form of quantitative measurement in determining the tax liability. The description of each character is as follows:

a. Selectivity in Coverage

Excise is not imposed on all goods and services, it is imposed only on certain goods and services that are considered to have negative externalities or for reasons of vertical justice.

b. Discrimination in Intent

The aspect that distinguishes excise from sales tax is the purpose of collection. Excise is collected not only as a source of state revenue but also to achieve certain goals set by the state.

c. Quantitative Measurement

A distinctive feature that distinguishes excise from other taxes is that excise taxation generally has implications for physical supervision or measurement from the officials to determine tax obligations and to ensure that the excise regulations are adhered to. Although excise is only applied to tobacco and alcohol in general, physical supervision can also be applied to other excise objects.

According to the Law, excise has the following characteristics:

a) Its consumption needs to be controlled;

b) Its circulation needs to be monitored;

c) Its use can cause negative impacts on society or the environment; or

d) Its use needs state levies for justice and balance.

What is meant by "its use needs state levies for justice and balance" is that excise levies can be imposed on the goods that are categorized as luxury goods and/or high value. The goods are not basic necessities so that there is a balance in between the levies for high-income consumers and low-income consumers.

### **Excise Extensification**

The awareness that tax collection is used to increase state revenues does not necessarily eliminate the possibility of social impacts that will occur to the community, especially for goods whose level of demand elasticity is very high. This means that any increase in the price of goods will affect the level of demand from the community. The purpose of this regulation is to limit or control goods that are considered to have a negative impact on the community or the environment, it could be a priority in selecting a subject to new excise.

Based on the mandate of Excise Law regarding the Extensification of Excise Goods, it must be realized that there are still many items in the community that meet the requirements to be subjected to excise. Compared to other countries in the world, Indonesia is included in a country that only has a few excise objects. The excise goods in Indonesia are tobacco, ethyl alcohol, and beverages containing ethyl alcohol. It is known that other countries have more types of goods that are subjected to excise. As for examples, India has 28 types of goods, Singapore has 10 types of goods, and Japan has 24 types of goods such as tea, sugar, coffee, textiles, cement, metals, plastics, soap, carbonated drinks, and so on.

## **METHODS OF RESEARCH**

### **Type of Research**

The type of research used in this study is qualitative research. According to Moleong (2012) qualitative research is “a research that aims to understand the phenomenon experienced by the research subject such as the behavior, perception, motivation, action, and others in a holistic manner and by way of description in the form of words and language, in a special natural context and by utilizing various scientific methods”. The phenomenon raised in this study is the potential for plastic and motor vehicle emissions as new excise objects. The researchers also tried to find the solutions to the problems.

In qualitative research, the researchers used deductive theorization where this theory is used as the initial answer to the research questions which then will produce a hypothesis. Deductive theorization has outputs in the form of a discussion of acceptable theory, supporting and strengthening, doubting and criticizing, or revising and rejecting the research results. The theories that can be used as tools in answering these research questions include the theory of excise, excise taxation, plastic waste, and motor vehicle emissions.

#### **1. Research Sites**

In accordance with the focus of the research, the writer must determine where the research will be conducted. The study was conducted in Malang City, Indonesia because it deals with a phenomenon described above. These are the research sites chosen by the researchers:

- a) Partnership and Environmental Cooperation Department of East Java Directorate General of Customs and Excise II Regional Office in Malang City
- b) Partnership and Environmental Cooperation Department of Environment Agency of Malang City

#### **2. Research Focus**

In qualitative research, the focus of research becomes the basis for problem formulation. Moleong (2012) explained that the focus of the research is the center of a study to answer the existing problem formulation. A research focus eases the researchers to select the data that is used in the study. The research focus of this study includes:

1. Handling plastic waste and motor vehicle emissions in Malang City.
  - a) The condition of plastic waste and motor vehicle emissions in Malang City.
  - b) The impact on the condition of plastic waste and motor vehicle emissions in Malang City.
  - c) Handling the impact of plastic waste and motor vehicle emissions.
2. The prediction of excise regulations on plastic waste and motor vehicle emissions.
  - a) Excise functions and definitions.
  - b) The characteristics of excise objects according to the Law and Crossen.
  - c) The efforts to extend the excise objects.

d) Following up the extensification of excise objects.

### 3. Data Source

The data sources used by the researchers in conducting this research are:

#### a) Primary Data

The data were obtained and collected by the researchers directly from the informant. The determination of informants was conducted using purposive procedures (relevant to research problems). The informants in this study were:

- 1) Ivita Aryani, The Head of Data Receipt and Management of East Java Directorate General of Customs and Excise II Regional Office
- 2) Jetty Silviani, S.KM, MM, and Riris, The Head of the Partnership and Environmental Cooperation, Environment Agency of Malang City

#### b) Secondary Data

The secondary data was obtained indirectly from the source but has been collected and has been processed by other parties. This secondary data is obtained from the data related to plastic and motor vehicle emissions as new excise objects such as:

- 1) Organizational structure and agency profile.
- 2) The data on the amount of plastic waste in Malang City.
- 3) The data on pollution/air pollution levels in Malang City.
- 4) The data on motor vehicle users (per type of fuel).

### 4. Data Collection Technique

The data collection technique is a way to get the data that will be used in research. The data collection techniques used in this study were:

#### a) In-depth Interviews

In-depth interview is the technique of collecting data through direct answers and questions section to informants and stakeholders who can be used as respondents. The interviews were conducted with Malang Customs officers, employees of Environment Agency of Malang City, plastic consumers in Malang City, and motor vehicle users in Malang City

#### b) Documentary

The documentary method is a technique of collecting data by tracing historical data such as documents, records, and data from a number of archives related to the problem of the research so that the nature of these data is not limited by space and time. This is very helpful for researchers to know the things that happened in the past. The data obtained using documentation technique is classified as secondary data.

#### c) Online Data Tracking Method

The development of information through the internet to date has been able to answer a variety of community needs. As for academicians, the internet also contributes a lot in tracing various information both theoretical information, primary data, and secondary data that are relevant to the research.

## RESULTS AND DISCUSSION

### 1. Handling plastic waste and motor vehicle emissions in Malang City

#### a) The condition of plastic waste and motor vehicle emissions in Malang City

The high utilization of motor vehicles based on the data from the Central Statistics Agency (*Badan Pusat Statistik*, abbreviated as BPS) of Malang in July 2017 showed that there were 441,123 units of motorcycles in 2015 and rose to 456,693 units in 2016. Meanwhile, there were 106,432 units of four-wheeled vehicles and other large vehicles in 2015 and increased to 111,026 units in 2016. According to Mrs. Riris as an employee in Environment Agency of Malang City, the increase in the use of motor vehicles also has an impact on the high emissions which is quite dangerous for the community in Malang city.

The positive correlation between the increase in the number of motor vehicles and the level of pollution from motor vehicle emissions is clearly explained by Mrs. Riris. Based on its

sources, the cause of emission pollution in Malang City is divided into two, namely pollution caused by movable and immovable emissions. In the last two to three years, pollution originating from movable emissions tends to increase in public places such as markets, malls, terminals, stations, and campuses.

In addition to emissions, quite alarming environmental pollution also comes from plastic waste. The handling of plastic waste has been done by the government by making regulations related to the parties responsible for collecting plastic waste. According to Jetty Silviani, S.KM, MM, as the Head of the Partnership and Environmental Cooperation of Environment Agency of Malang City, there were reforms related to officials and agencies in 2017-2018. Initially, the agency was known as *Badan Lingkungan Hidup* (abbreviated as BLH) or Environment Board where the agency did not have the authority to administer plastic waste. However, since 2018, BLH has changed to become the *Dinas Lingkungan Hidup* (abbreviated as DLH) or Environment Agency which has broader authority regarding data collection and technical implementation of plastic waste management in Malang City. By that, until 2018, DLH has not been able to provide real data on the level of plastic waste use in Malang City.

The high use of plastics in Malang City will cause environmental pollution. This pollution occurs because many people easily obtain and use a plastic bag (in Indonesian term is known as *kresek*) without thinking about the impacts that will occur in the community such as pollution and health problems. Indonesia is ranked second as sea water polluting country so that the government must be serious in dealing with these environmental problems. According to Jetty Silviani, the local government of Malang City has been attempted to control the use of plastics, especially plastic bags by issuing Mayor Regulation related to the reduction of plastic waste in shopping centers and supermarkets. The provincial bureaucracy rejected it to be a Mayor Regulation and said that it must be included in the Regional Regulation. Until now, the regional government and the central government continue to try to establish the most appropriate regulation with the Regional People's Representative Assembly regarding the Regional Regulation draft which focuses on the efforts to reduce plastic waste. The government also expects support from the community and households to reduce the amount of plastic waste including organic waste as much as possible.

b) The impact on the condition of plastic waste and motor vehicle emissions in Malang City.

The level of motor vehicles users and environmental pollution from motor vehicle emissions in Malang City is so alarming. The impacts that appear are very complex and if not addressed immediately, it will endanger the public health. Based on the statement from Mrs. Riris, the air condition in Malang City, particularly in two areas, has exceeded the quality standard. This shows that the air condition in Malang City (at these 2 points) did not pass the emissions test and could endanger public health.

The level of plastic use and the condition of plastic pollution in Malang City is also high, especially the use of plastic bags from markets and supermarkets where this type of plastic cannot be reprocessed (there are no collectors). Mrs. Jetty said that the high condition of plastic waste can cause flooding because the sewer will be clogged with plastic waste. In addition, plastic waste can be a nest of bacteria that can threaten public health. Therefore, the regional government implemented a cleaning activity in the river to reduce the blockage of drainage so that there is no flooding.

c) Handling the impact of plastic waste and motor vehicle emissions in Malang City

The impact of the high motor vehicle emissions on public health needs to be concerned by the government and the public so that the cool, healthy, and pollution-free air of Malang City can be restored. According to Mrs. Riris, the effort taken by Environment Agency of Malang City in controlling the environmental pollution caused by motor vehicle emissions is by conducting operational feasibility tests on the vehicles in a sustainable manner.

The high use of plastics in Malang City will lead to flooding and various diseases. This is a concern for the government, particularly the regional government, to control the use of plastics especially those from markets and supermarkets.

Mrs. Jetty revealed that the Environment Agency has carried out several activities in an effort to reduce the use of plastics in the community such as paid plastic in supermarkets, the use of organic plastic bags, the invitation to carry shopping bags, zero waste competition at the level of Citizens Association (*Rukun Warga*, abbreviated as *RW*), plastic waste management training, and the formation of environmental cadres where the cadres are tasked to do a socialization concerning waste management and sorting of organic and inorganic waste.

2. The prediction of excise regulations on plastic waste and motor vehicle emissions.

a) Excise functions and definitions

Excise is a mandatory levy determined by the government for the consumption of excise goods. Excise goods have certain characteristics that its use can have an external impact on the environment and society. This is in accordance with the explanation from Mrs. Ivita Aryani, the Head of Data Receipt and Management of East Java Directorate General of Customs and Excise II Regional Office. Excise is a high source of state income. Only with three excise objects, the number of excise tax in 2017 reached 11.4% of total state revenues. With that number, Mrs. Ivita emphasized that excise receipts are already good because it exceeded the targets.

The main purpose of excise is not revenue but the control of goods subject to excise in the community. Revenue is only the effect of the excise. According to Mrs. Ivita, excise objects in Indonesia have been able to cover the supervision of basic materials consumption, disease, and environmental sustainability. This is supported by strict supervision from the factory to its circulation.

Based on the data on cigarette production, excise tax has not succeeded in reducing public consumption of cigarettes or tobacco. Mrs. Ivita pointed out that this can be seen from the increase in the number of cigarette production from year to year that one of the factors is due to the growth of the population.

b) The characteristics of excise objects according to the Law and Crossen.

Theoretically, excise goods have several characteristics. Mrs. Ivita explained that the characteristics of excise are selectivity in coverage. This means that the determined excise objects have a bad health impact. Mrs. Ivita also mentioned the discrimination in intent as excise characteristic. This indicates that excise objects are only consumed by certain people or in other words, are not the basic necessity of the entire community. Last but not least, the characteristic of excise is the quantitative measurement. This implies that the supervision of excise payment can be seen physically like the excise tape attached to cigarettes.

c) The efforts to extend the excise objects

Indonesia still has the opportunity to add other excise objects. Mrs. Ivita believed that the House of Representatives has received a study from the central Directorate General of Customs and Excise regarding the addition of a new excise object, namely plastic. Furthermore, according to Mrs. Ivita, the excise extensification mechanism in Indonesia today is quite good. The flow of the mechanism involves the Directorate General of Customs and Excise, Fiscal Policy Agency, and the House of Representatives. There are 2 possibilities for the extensification discourse, whether the House of Representatives approves or rejects the proposal.

Related to the discourse regarding plastics and motor vehicle emissions which will become new subject to excise, Mrs. Ivita confirmed that plastic and motor vehicle emissions are feasible to be used as new excise objects because these 2 objects give a negative impact to the community.

d) Following up the extensification of excise objects.

In regards to plastic feasibility and vehicle emissions as new excise objects, Mrs. Ivita addressed that the regulation on plastic excise is carried out during production like in cigarette excise taxation that is when the factory produces cigarettes.

### **CONCLUSION**

a) The handling of plastic waste and motor vehicle emissions in Malang City.

The high use of plastics and the use of motor vehicles in Malang City has become a concern for the central and regional governments. The efforts to increase environmental awareness for the community have been carried out by the government, small community groups, and the community at large. Therefore, the public are expected to be more aware to maintain and preserve the surrounding environment.

b) The prediction of excise regulations on plastic waste and motor vehicle emissions.

The negative effects caused by plastics and motor vehicle emissions indicate that both of which are feasible to be subjected to new excise. Excise extensification efforts have been carried out by the government but the progress still in the process of ratifying the regulations at the central government level. It is expected that the imposition of excise on plastics and motor vehicle emissions will be able to control the use of plastics and motor vehicles and later will give a good impact on the environment.

For further researchers, it is necessary to expand the object of research such as at the provincial and national levels. Besides that, it is recommended to have interviewees from central policymakers such as the Fiscal Policy Agency and central Directorate General of Customs and Excise.

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