



PROCEEDINGS

The 4th International Conference on Sustainable Innovation (ICoSI) 2020

Cutting Edge Innovations for Sustainable Development Goals

Universitas Muhammadiyah Yogyakarta (Indonesia)

October 13 - 14 2020

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Focal Conferences



- ✔ (ICPU) The 2nd International Conference on Pharmaceutical Updates
- ✔ (ICOMS) The 6th International Conference on Management Sciences
- ✔ (ICLAS) The 9th International Conference on Law and Society
- ✔ (ICMHS) The 4th International Conference Medical and Health Sciences
- ✔ (ICAF) The 6th International Conference for Accounting and Finance
- ✔ (ILEC) The 2nd International Language and Education Conference
- ✔ (ICONURS) The 2nd International Conference on Nursing
- ✔ (ICITAMEE) The 1st International Conference on Information Technology, Advanced Mechanical and Electrical Engineering
- ✔ (IConARD) International Conference on Agribusiness and Rural Development
- ✔ (ISHERSS) The 2nd International Symposium on Social Humanities Education and Religious Sciences
- ✔ (ICONPO) The 10th International Conference on Public Organization
- ✔ (DREAM) The 5th Dental Research and Exhibition Meeting
- ✔ (ICHA) The 5th International Conference on Hospital Administration
- ✔ (ICOSA) The 3rd International Conference on Sustainable Agriculture





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Preface by the Chairperson of the 4th ICoSI 2020



Dr. Yeni Rosilawati, S.IP. S.E., MM.

Assalamu'alaikum Wr. Wb.

All praise is due to Allah, the Almighty, on whom we depend for sustenance and guidance. Prayers and peace be upon our Prophet, Muhammad SAW, his family and all of his companions.

On behalf of the organizing committee, it is my pleasure and privilege to welcome the honourable guests, distinguished keynote & invited speakers, and all the participants.

With the main theme of “Cutting-Edge Innovations on Sustainable Development Goals (SDGs)”, the 4th International Conference on Sustainable Innovation (ICoSI) 2020 serves as a forum to facilitate scholars, policy makers, practitioners, and other interested parties at all levels from Indonesia and abroad to present their novel ideas, promote cutting-edge research, and to expand collaboration network. The conference has about 1373 participants participating from more than 8 countries 4 continents all over the world, making this conference a truly international conference in spirit.

This multidisciplinary conference was first held in 2012 and has undertaken various changes and adopted to the current technological trends of our education system. From having this conference with just 175 participants back in 2012 we have come a long way in making the conference a huge success with more than 1373 participants participating in this two-day conference.

Formerly, this conference consisted of only 9 (nine) focal conferences. This year, there are 14 focal conferences from various disciplines, namely: 1) The 2nd International Conference on Pharmaceutical Updates (ICPU), 2) The 6th International Conference on Management Sciences

(ICoMS), 3) The 9th International Conference on Law and Society (ICLAS), 4) The 4th International Conference Medical and Health Sciences (ICMHS), 5) The 6th International Conference for Accounting and Finance (ICAF), 6) The 2nd International Language and Education Conference (ILEC), 7) The 2nd International Conference on Nursing (ICONURS), 8) The International Conference on Information Technology, Advanced Mechanical and Electrical Engineering (ICITAMEE), 9) The 2nd International Conference of Agribusiness and Rural Development (IConARD), 10) The 10th International Conference on Public Organization (ICONPO), 11) The 2nd International Symposium on Social Humanities Education and Religious Sciences (ISHERSS), 12) The 5th Dental Research and Exhibition Meeting (DREAM), 13) The International Conference on Hospital Administration (ICHA), and 14) The 3rd International Conference on Sustainable Agriculture (ICoSA).

Accordingly, We are proud to announce that this year, the 4th ICoSI 2020 breaks the Museum Rekor-Dunia Indonesia (MURI) record as the Virtual Multidisciplinary Conference with the Largest Number of Area of Fields in Indonesia

In addition, this year, this conference holds special value since this is the first conference in the history of our university where the entire conference is taking place remotely on a digital platform through the use of advance technologies due to the Covid-19 Pandemic.

I would take this opportunity to express my highest respect to the Rector of Universitas Muhammadiyah Yogyakarta, Dr. Gunawan Budiyanto who gave approval and ensured the maximal support from all the faculty members of Universitas Muhammadiyah Yogyakarta (UMY) that made this event a big success. In addition, my appreciation goes to all the support teams who have provided their valuable support and advice from planning, designing and executing the program.

Let me conclude my speech by encouraging the delegates to participate with an increasing number in all the activities and discussions through the digital platforms for the next two days. I wish everyone a successful, safe, and fruitful conference.

Thank you!

Wassalamu'alaikum Wr. Wb.

Yogyakarta, Indonesia, 14 October 2020



Welcoming Remarks by the Rector of Universitas Muhammadiyah Yogyakarta



Assoc. Prof. Dr. Gunawan Budiyanto

Innovation is the beginning of the development of technology, and technology is a development machine that is expected to provide benefits to humans and provide the smallest possible impact on environmental quality. In the concept of sustainable development, development must improve the quality of human life without causing ecological damage and maintain the carrying capacity of natural resources.

International Conference on Sustainable Innovation (ICoSI) is an international conference which is an annual conference held by the University of Muhammadiyah Yogyakarta (UMY), Indonesia. In 2020 this raises the issue of "Cutting-Edge Innovations on Sustainable Development Goals." Therefore, on behalf of all UMY academics, I would like to congratulate you on joining the conference, hoping that during the Covid-19 Pandemic, we can still provide suggestions and frameworks for achieving sustainable development goals.

About The 4th International Conference on Sustainable Innovation (ICoSI) 2020

Cutting Edge Innovations for Sustainable Development Goals

The 2030 Agenda for Sustainable Development is enacted by the United Nations as a shared blueprint for peace and prosperity for people and the planet, now and into the future. It consists of strategies to improve health and education, reduce inequality, and spur economic growth while also conserving natures by 2030.

This year, however, at the first one-third of its timeline, the SDG Reports shows that the outbreak of COVID-19 did hinder the achievement, or at least decelerate the progress of achieving the 17 goals. In fact, according to the report, “some number of people suffering from food insecurity was on the rise and dramatic levels of inequality persisted in all regions. Change was still not happening at the speed or scale required”, accordingly.

Therefore, in this event of pandemic, the quantity and quality of research, innovation, and more importantly multi-disciplinary collaboration are indispensable. Furthermore, there needs to be clear ends of those works. That is how those research are applicable and benefits directly to the society. That is how those research is incorporated as the drivers of policy making, and used practically in the society. Hence, the stakeholders especially the triple helix of higher education institution, government, and industry must be re-comprehended and supported to reach the common goal of the SGD.

International Conference on Sustainable Innovation (ICoSI) has been essentially attempting to strengthen this regard since its first establishment. One of the goals of ICoSI is to provide primarily a platform where scholars, practitioners, and government could grasp the development and trends of research. Hopefully, meeting these actors altogether would result in stronger collaboration, sophisticated and advantageous research, and brighter ideas for further research. Based on these reasoning, this year, the 4th ICoSI 2020 UMY is themed ‘Cutting-edge Innovations for Sustainable Development Goals’.

Improving from last year conference which brought nine focal conference, this year ICoSI 2020 UMY brings 14 disciplines, from social sciences, natural sciences, and humanities. ICoSI 2020 received as much as 1005 papers. The paper works submitted in ICoSI 2020 UMY will be published in Atlantis Proceedings, IOP Proceedings, National/International Journals, and ICoSI ISBN-indexed Proceedings.

Nevertheless, ICoSI believes that publication is only the beginning of research dissemination. The publications will enhance the chance of the research known by wider audience, and then used, applied, and incorporated at either system, institutional, or personal level of human lives.





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TRACK ECONOMICS, LAW, EDUCATION, SOCIAL, AND HUMANITIES



Ambiguity of Environmental Economic Instruments between Ecological or Economic Interests, in Controlling Environmental Damage in Special Region of Yogyakarta

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ABSTRACT

The turbulence between economic and ecological interests is a classic problem in the issue of implementing the principles of sustainable development. It is very important that the nation's wisdom and affirmation to the future of the nation and its people to be tested for its accuracy. It is very urgent also to apply a legal framework for environmental economic instruments in strengthening the resilience of disaster areas. There are two issues discussed in this article, first is how the role of environmental economic instruments in controlling strengthens the resilience of disaster-prone areas in Yogyakarta, and second is how the environmental economic instruments compare between Indonesia and Canada. These two problems are solved using normative legal research through legal studies, journals, books and trusted internet sites. The results of the discussion show that environmental economic instruments have a role to strengthen the resilience of disaster areas in D.I. Yogyakarta, for example, by applying one of the environmental economic instruments in the form of environmental taxes as revenue from a special government budget only for sustainable development and overcoming environmental damage. This is based on the Law on Environmental Protection and Management which states that there are economic instruments for the environment and one of them is to apply taxes. That is why environmental economic instruments are designed as an effort to manage and overcome environmental problems. Environmental economic instruments can be applied by the government with the suggestions that have been mentioned by the authors in this article. Environmental economic instruments, especially environmental taxes, must also be applied by the Central Government, especially the D.I. Yogyakarta Government as a role that must be carried out in tax reform in Indonesia.

Keyword: *Environmental Economic Instruments, Environmental Taxes, Environmental Damage.*

1. INTRODUCTION

The environment is one of the natural resources that has a very strategic role in the existence of God's creatures, including humans¹. However, unfortunately, in today's environment the environment in which we live has suffered damage. Environmental damage is an environmental decline marked by loss of land, water, air resources, extinction of wild fauna and damage to ecosystems. Massive exploitation of nature by irresponsible parties, pollution and company waste are some examples of sources of environmental damage². If environmental damage continues, it will have a negative impact on humans and various types of living things on earth, so that several efforts have been made to prevent this, including: reforestation, land rehabilitation, selective cutting systems, making waste management and others. One of the Government's ideas that can reduce the rate of environmental destruction and pollution is the plan to implement environmental economic instruments. One example is environmental tax.

Environmental tax is the imposition of taxes on certain sectors that have the potential to damage the environment as a consequence of their business activities that have an impact on environmental damage. Basically, environmental policy is aimed at preventing, controlling, and overcoming pollution and its destruction. It can be said that the plan to implement environmental tax in Indonesia does not conflict with Article 10 letter e of Law Number 23 Year 1997 concerning Environmental Management. Even in Law Number 4 of 1982 concerning the Environment, tax law is one of the environmental economic instruments that can be used to control environmental destruction and pollution, in addition to other legal instruments such as administrative law, civil law and criminal law. From an economic point of view it is said that the application of taxes the environment is a levy that is a permanent incentive aimed at reducing pollution and reducing the cost of overcoming it.

The authority to implement environmental economic instruments in Indonesia can be delegated to local

governments. Therefore, environmental economic instruments must be regulated in a Government Regulation or Regional Regulation as a means of legalizing the actions of the Regional Government in exercising said authority. Seeing the role of environmental economic instruments that can have a good effect in controlling environmental damage as well as so many environmental problems in the form of pollution caused by the economic behavior of entrepreneurs, there is still little awareness of the importance of protecting the surrounding natural resources, especially in D.I. Yogyakarta. Seeing the problems described above, the title "The Role of Environmental Economic Instruments in Controlling Environmental Damage in the Special Region of Yogyakarta.

2. PROBLEM

From the above background, several problems can be raised which can be studied more deeply, namely as follows: 1) What is the role of environmental economic instruments in controlling environmental damage in D.I.Yogyakarta; 2) How to compare environmental economic instruments between Indonesia and Canada in brief.

3. LITERATURE REVIEW

3.1. Instrumen Ekonomi Lingkungan

The environmental economic instrument is a control effort to preserve environmental functions which is carried out with an economic approach. The purpose of using environmental economic instruments is as a control instrument that ensures accountability and legal governance; change the mindset and behavior of stakeholders; as well as striving for accountable, measurable, and trusted funding by the public and the international community. Environmental economic instruments serve as an umbrella for the issuance of other sectoral provisions within the relevant ministries and agencies. There are three major things regulated in the Government Regulation regarding this environmental economic instrument, namely development planning and environmental economic activities; Environmental funding; as well as incentives and disincentives that will be obtained.

3.2. Environmental Tax

Environmental tax, or which is known internationally as Green Tax, is a fiscal policy with regard to the environment that must be able to reflect not only policies in the environment, but also be able to be applied and cover widely all existing fiscal policies⁴. . Environmental tax from an economic point of view, it is said that the application of environmental taxes is a levy that is permanent incentives aimed at reducing pollution

and reducing the cost of overcoming it⁵. This is what is then said to be sustainable development that takes into account the environment as a legal protection effort carried out by the government in preventing and / or overcoming environmental damage caused by a person or legal entity.

3.3. Environment

The environment as a resource is an asset needed for the welfare of the community. This is in accordance with the constitutional order of Article 33 paragraph (3) of the 1945 Constitution which states that "Earth, water and the wealth contained therein are used for the greatest prosperity of the people". Based on Article 1 number 1 UUPPLH, the environment is a spatial unit with all objects, forces, conditions, and living things, including humans and their behavior, which affect nature itself, the continuity of life, and the welfare of humans and other living creatures.

From the definition of the environment above, it can be seen that the term environment has a broad meaning, which does not only consist of elements or components of living things (biotic), such as humans, plants, animals or animals as well as other living microorganisms, but also includes or constitutes a unity with non-living (abiotic) creatures, such as land, water, air, and the resources contained therein, where humans and other living things are. In essence, all living things (biotic), and non-living things (abiotic) have a mutual relationship, the hooks are related to one another. These relationships work reciprocally and influence one another.

3.4. Environmental Damage

Environmental damage is based on Article 1 number 17 UUPPLH which states that "Environmental damage is a direct and / or indirect change to the physical, chemical and / or biological characteristics of the environment that exceeds the quality standard criteria for environmental damage⁶." environment is carried out by the actions of people who cause direct and / or indirect changes so as to exceed the quality standard criteria for environmental damage. This damage generally affects the lives of living things that depend on the environment, both living and non-living.

4. RESEACH METHODE

This research uses a normative legal research⁷ that covers a combination of comparative and statutory approaches⁸ in analyzing the problem of implementing environmental taxes in Indonesia based on existing regulations. In this research, the writer uses the exploratory method which aims to identify or get new views about a phenomenon that can often formulate research problems more precisely or to formulate research hypotheses.

In this case, the research will be carried out by surveying existing data, literature and environmental studies, environmental economic instruments, and regulations in Indonesia by looking at their efficiency and making comparisons with other regulatory environmental economic instruments abroad. Doctrinal methods were also used in this study which focused on reading and analyzing primary materials (such as laws) and secondary materials (such as legal dictionaries, textbooks, journal articles, case digesters and legal encyclopedias).

5. RESULT AND ANALYSYS

5.1. The Role of Environmental Economic Instruments in Controlling Environmental Damage in D.I.Yogyakarta

The environmental economic instrument is actually one of the government's concrete steps in responding to the issue of environmental damage. For example, one of them is environmental tax. The concept of tax, as is well known by many parties, has four main functions that can play a role in maintaining environmental sustainability, namely: 1) The function of budgeting, (collecting funds from the public for state activities); 2) regulatory function (function for the government to achieve certain goals); 3) The stability function (related to the government's objective to stabilize prices under certain conditions, for example, during inflation, etc.); 4) Income equalization function (taxes are used as a means of increasing employment opportunities which in turn can increase community income).

Furthermore, for example, environmental tax has two concepts of application discourse, namely the concept of implementing environmental taxes and granting tax credits. With environmental tax, this means that every company that worsens environmental conditions will be subject to mandatory levies (the polluter pays principle). This concept is of course reaping a lot of controversy, especially from among entrepreneurs. Moreover, the tax calculation imposed comes from the total production costs. This will be a new expenditure item in addition to environmental costs such as AMDAL inspection fees that have been applied previously. The effect is, production costs will increase, profits will decrease, and other multiplier effects.

In the United States, public awareness of the amount of tax payments is better, so the provision of tax credits and additional deductible expenses is very effective. For example, if a businessman buys a hybrid car or a vehicle that uses electric power, he will be given an extra tax credit, for example 30% of the price of the car with a maximum reduction of 10 million. In addition, full amortization is given for the car. Likewise, solar cell users will be given full amortization and acceleration in order to increase existing deductible expenses. Non-CFC air conditioner (AC) consumers are given a tax reduction of 10% from the AC price, and so on. Even in

the use of tax returns, in the United States e-SPT is used to reduce paper capacity.

In Indonesia, especially D.I. Yogyakarta, the application of environmental economic instruments, especially environmental taxes, has not been able to be implemented properly by the Central Government and Regional Governments due to constant rejection from the business community and the lack of seriousness of the government in its implementation plan. If it is examined more deeply, some forms of environmental economic instruments such as environmental taxes will place more burdens on entrepreneurs, however, when examined further, environmental economic instruments also provide many benefits to the government, people and nature in Indonesia. This is because environmental economic instruments have a significant role in maintaining the sustainability of nature in Indonesia, especially D.I. Yogyakarta and all support the principles of sustainable development. The following are some of the roles of environmental economic instruments as well as the benefits that can be obtained if the implementation of environmental economic instruments in Indonesia, especially

D.I. Yogyakarta is implemented, namely:

1. As a means of financing efforts for the development and preservation of the environment (Natural Resources) in Indonesia, especially D.I.Yogyakarta. So far, the government has often dodged the excuse that there were minimal funds to conserve its nature, if this policy was implemented it would be a good source of financing;
2. As a means of regulating and supervising policies on exploitation of natural resources by companies or industries, so that exploitation of natural resources can be limited according to reasonable limits and reduce damage to the natural environment by industry;
3. As a means to save (saving) national energy. By applying environmental economic instruments appropriately, national energy can be saved as efficiently as possible. With the enactment of this environmental economic instrument, it indirectly requires the industry to innovate in the field of energy use (changing the use of non-renewable natural resources such as fuel to use renewable natural resources such as heat (solar) or wind power (wind));
4. Reducing pollution by industrial exhaust gas (CO₂) emissions which have caused drastic climate change (global warming) can also reduce water pollution and surrounding land;
5. Protect from scarcity of water sources due to excessive energy exploitation by Industry.

Looking further, based on the research conducted by the author, there are still several roles of environmental

economic instruments in controlling environmental damage in D.I. Yogyakarta. Some of these roles are:

1. Environmental Economic Instruments Serve As Environmental Protection From Damage in D.I.Yogyakarta

It has been realized that the level of environmental problems is increasingly becoming a concern¹¹. This paper departs from the anxiety felt towards environmental problems that are so complex. Meanwhile, the current policy is like a blunt knife that cannot do anything about it. Therefore environmental economic instruments need to be applied, for example through environmental taxes in order to be implemented optimally and effectively. Environmental economic instruments of various forms have the potential to support environmental management and protection against damage.

If it is realized, to realize sustainable and environmentally sound development such as the principle of national economic development,¹² environmental studies cannot be separated from the economic aspect, so that to improve and manage the environment an environmental economic instrument is needed. These reasons are the background of the need to apply environmental economic instruments, and they are designed according to the needs of the Province of D.I. Yogyakarta.

Environmental economic instruments, especially environmental taxes, are not new in Indonesia, for example the plan to implement environmental taxes has been discussed since 2006, but unfortunately Indonesia itself does not have a clear regulatory basis regarding the implementation of environmental taxes as an environmental economic instrument. As a rule of law¹³, all state activities must be based on existing regulations or legal bases¹⁴. Without a legal basis that covers environmental taxes, especially environmental economic instruments, the central and local governments will not be able to implement environmental economic instruments. So there must be a law that regulates it before its implementation.

2. Environmental economic instruments play a complementary role in the implementation of ISO 14000

The International Standards Organization (ISO) is a global association consisting of national standardization bodies whose members are not less than 140 countries.¹⁵ The main activity of ISO is to produce international agreements which are then published as international standards. ISO's goal is to develop and promote standards for the public that apply internationally.¹⁶

ISO has several series that are tailored to the fields managed by an organization, of which there is a series

related to environmental management¹⁷. The ISO series related to environmental management is the ISO 14000 series. ISO 14000 is a set of international standards in the field of environmental management which are intended to assist organizations around the world in increasing the effectiveness of their environmental management activities. ISO 14000 series includes several groups of environmental management tools, including Environmental Management Systems, Environmental Audits, Environmental Performance Evaluations, Ecolabels, and Product Life Cycle Studies. In Indonesia itself, there have been rules regarding environmental management that must be implemented by industries in Indonesia, namely ISO 14000.

Then where is the location of environmental economic instruments if it is said to complement each other with ISO 14000? The location of the relationship between these two policies is that if ISO 14000 is more about the technical application of environmentally friendly technology by industry, then environmental economic instruments contain more about the technical calculation of incentives or funds that must be deposited (paid) by the industry for their use of natural resources and on disposal of industrial exhaust emissions due to the production process. In environmental economic instruments, especially environmental taxes, it will be more inclined to how much tariffs must be paid by industries as a result of their exploitation of natural resources or more inclined on the financial side.

3. Environmental Economic Instruments Serve as Government Representatives in Carrying Out the Obligation to Protect the Environment

In Islamic law, environmental conservation law is a *farḍlu kifayah*, everyone, both individuals and groups, has a responsibility for environmental conservation¹⁸. However, the government has a big role to play in realizing environmental preservation. This is where environmental economic instruments represent the government in this regard. In line with efforts to achieve the ideals of the nation, namely:¹⁹

"To protect the entire Indonesian nation and all the blood of Indonesia and to advance public welfare, to educate the nation's life, and to participate in implementing world order based on independence, eternal peace and social justice."

The role of the state is very important to protect human rights as a form of protection for the entire Indonesian nation and all Indonesian bloodshed. A clean and healthy living environment is also part of human rights that must be fulfilled²⁰. The environment is also one of the drivers of the national economy for the welfare of the community by utilizing all of its natural resources. Industrial activity is an option for processing natural resource wealth. It has been proven that the industry makes a major contribution to the nation's economy, as stated by Moestikahadi Soedomo that²¹ the



contribution of industry to national economic growth is very significant, because as a whole the industrial and manufacturing sectors contribute 40% to 60% of the national gross income.

However, on the other hand, it raises concerns about the decline in environmental quality²². In recent years, in any part of the world there have been disasters due to environmental damage and pollution caused by industrial activities. As a result, it causes material and immaterial losses experienced by society²³. In line with what Drupsteen stated²⁴, environmental problems are deterioration of environmental quality. Environmental problems that reduce the quality or quality of the environment also have an impact on the social symptoms of life, such as social, economic, health, welfare and human peace. Therefore, the role of government is very important, because the government is the party that carries the mandate to take care of people's affairs²⁵.

Reflecting on the above, it is necessary to have a national legal system that is structured and has social values, in accordance with the minds of the people based on the collectivity concept²⁶. Therefore, environmental economic instruments policy is the right thing to implement, in several countries environmental economic instruments are applied aimed at improving the environment in order to protect the main components in life.

4. Comparison on the Environmental Economic Instrument Between Indonesia and Canada

Environmental economic instruments are not new in the world of environmental management and protection. Indonesia itself has launched the implementation of one of the environmental economic instruments, namely environmental taxes since 2006 and many other countries have implemented this environmental tax, such as Canada, the Netherlands, the United States and many others. Environmental taxes are also applied in different forms in each country. As in Canada, the application of an environmental tax is applied in the form of a carbon tax. It is also different from the United States, which implements an environmental tax in the form of taxes on the use of plastic bags and vehicle exhaust emissions.

Environmental taxes are defined as taxes that are regulated by the government on activities or products that have a negative impact on the environment. In Canada, environmental taxes are levied on energy, transportation, pollution, and natural resources. Examples of environmental taxes in Canada include gas taxes, or provincial taxes on mineral use or waste management. Carbon pricing in Canada is applied either as a regulatory fee or a tax levied on the carbon content of fuels at the Canadian provincial, territorial or federal level. Canadian provinces and territories are allowed to create their own carbon pricing systems based on their

own jurisdictional needs and requirements. In the absence of a provincial system, or in provinces and territories where carbon pricing systems do not meet federal requirements, regulatory fees will be imposed by the federal Greenhouse Gas Pollution Pricing Act (GHGPPA), which was passed in December 2018. of the income returned to the taxpayer²⁷. Carbon taxes are levied because of the need to combat climate change, which resulted in Federal commitments to the Paris Agreement. According to NASA's Jet Propulsion Laboratory (JPL), today's air contains 400 ppm of CO₂ while the average CO₂ level over the past 400,000 years has been between 200 ppm and 280 ppm.²⁸²⁹

In 2018, Canada issued a GHGPPA implementing a revenue-neutral carbon tax starting in 2019, which only applies to provinces whose carbon pricing system was established for their jurisdiction that does not meet federal requirements. Revenue from carbon taxes will be redistributed to the provinces. The federal government has stated that the carbon pricing system will be revenue neutral; any income generated under the system will be returned to the province or region where they were generated. Households will receive 90 percent of the increased income. The remaining 10 percent will be used to support particularly affected sectors, including small businesses, schools and hospitals. Based on this assumption, 80% of households will receive a higher transfer than the amount paid in direct and indirect costs. group: low-income households will receive a larger net transfer than high-income households.

In essence, environmental economic instruments in Canada are applied in several forms such as carbon taxes, energy taxes and so on. However, here the author only emphasizes the carbon tax as an example of its application. Then in the application of environmental economic instruments in this case the carbon tax, the application is left to each province in Canada. The central government issued a Law on the Price of Greenhouse Gas Pollution to regulate the amount of the tax rate, then the decision to implement it is still left to each province. Environmental economic instruments in Canada have been well implemented and structured. This is evidenced by the lack of conflicts or problems that have occurred so that they can continue to this day. In addition, it is also proven by the successful application of environmental economic instruments in reducing the number of carbon levels in this country.

In Indonesia, the environmental economic instruments exist, but they exist only on the law, namely Law Number 32 of 2009 concerning Environmental Protection and Management. Law 32/2009 only states that environmental protection and management can be carried out using environmental economic instruments. Law No. 32/2009 does not explain in detail the application of environmental economic instruments. This is one of the factors affecting the not yet properly implemented environmental economic instruments.



However, in November 2017, President Joko Widodo signed Government Regulation (PP) No.

46 of 2017 concerning Environmental Economic Instruments (PP IELH). PP which is the mandate of Article 43 of Law no. 32 of 2009 concerning Protection and Management of the Environment. Environmental economic instruments are an effort to control to preserve environmental functions, there are three major things that are regulated in this PP IELH, namely development planning and environmental economic activities; environmental funding; as well as incentives and disincentives that will be obtained.

These following 17 Economic Instruments are regulated in a Government Regulation on Environmental Economic Instruments:

No	Types of Environmental Economic Instruments	Illustration
1	Balance Sheet (Neraca SDA)	Description of reserves or asset of Living Environment or Natural Resource and their changes.
2	PDB/PDRB (Gross Domestic (Regional) Product)	Alternative calculation of GDP and GRDP that takes into account the depreciation of natural resources and environmental damage.
3	PDB/PDRB (Gross Domestic (Regional) Product)	Alternative calculation of GDP and GRDP that takes into account the depreciation of natural resources and environmental damage.
4	Internalization of Environmental Cost	Include the cost of pollution and / or environmental damage in the calculation of production costs or costs of a business and / or activity.
5	Dana Jaminan Pemulihan (Recovery Guarantee Fund)	Funds prepared by a business and / or activity to restore the quality of environmentally damaged and / or polluted environment due to its activities.
6	Dana Penanggulangan (countermeasures fund)	Funds prepared by the Government / local governments to tackle and restore environmental pollution and or damage.
7	Dana Amanah (Trust Fund)	Funds originating from sources of grants and donations are for the benefit of conservation of natural resources and preservation of environmental functions.
8	Pengadaan Barang dan Jasa Ramah LH (Environmentally and Friendly Goods and Services Procurement)	Procurement of goods and services that prioritize goods and services labeled by Environmentally friendly.
9	Label Ramah LH (Environmental Label)	Labeling of environmentally friendly products.
10	Penghargaan Kinerja di Bidang PPLH (Environmental Reward)	Activities to reward the performance of environmental protection and management.
11	Asuransi LH (Environmental Insurance)	Insurance products that provide protection when there is pollution or environmental damage

12	Lembaga Jasa Keuangan (Institution for Financial Service)	Institutions that carry out activities in the banking sector, capital market, insurance, pension funds, financing institutions and other financial service institutions.
13	Perdagangan Izin Pembuangan Limbah dan/atau Emisi (The sale and purchase of waste and emission)	The sale and purchase of waste and / or emission quotas that are permitted to be disposed of in the Environmental media between people in charge of the business and / or activity.
14	Pembayaran Jasa Lingkungan (payment for Environmental Service)	Transfer of an amount of money and / or something that can be valued in money between people or groups of people as users of environmental services and providers of environmental services through a performance-based binding agreement to improve environmental services
15	Pajak LH (Environmental Tax)	The imposition of central / regional tax rates on everyone who utilizes natural resources based on the criteria for environmental impact.
16	Retribusi LH (Environmental Retribution).	The levy charges for regional public services are based on the calculation of the cost of providing facilities and infrastructure that prevent pollution and / or LH damage
17	Subsidi LH (Environmental Subsidy)	The application of subsidies to everyone whose production activities have an impact on improving the function of the environment.

Above, the author has briefly explained the environmental economic instruments in Indonesia. The 17 environmental economic instruments include a large number in terms of various environmental instruments. But unfortunately the classic problem still occurs, namely the lack of practice in the application of these environmental economic instruments. For example, the authors took data from the Environment and Forestry Service of the Special Region of Yogyakarta. The data is related to how the application of environmental economic instruments in D.I.Yogyakarta, where the data shows that there are still few environmental economic instruments applied in D.I.Yogyakarta. Of the 17 environmental economic instruments, D.I.Yogyakarta has only implemented one type of environmental economic instrument, namely the PPLH Performance Award. The Department of Environment and Forestry of D.I.Yogyakarta applies it by carrying out activities in the form of assessments of Adiwiyata, Kalpataru, Proklim and Properda.

All these problems only need the seriousness of the government, especially the Central Government, which can give a firm mandate or order to enforce this environmental economic instrument. As well as Canada which is serious in fighting climate change and environmental damage by applying environmental economic instruments properly, for example, namely



carbon tax. It is evident that this policy is still ongoing today and is effective in reducing environmental damage by excess carbon production. In essence, the application of environmental economic instruments in each country will be adjusted to the capabilities, needs and conditions of the country. What is implemented in Canada is not necessarily applicable and suitable in Indonesia.

6. CONCLUSION AND FUTURE DIRECTION

Based on the description presented by the author in the previous discussion, it can be concluded that environmental economic instruments have a big role in controlling environmental damage, especially in the area of D.I. Yogyakarta. Where the Environmental Protection and Management Law also states that environmental economic instruments can be used to manage and maintain the environment. Especially with the Government Regulation (PP) No. 46 of 2017 concerning Environmental Economic Instruments (PP IELH) which regulates in more detail the types of environmental economic instruments. Therefore, environmental economic instruments are an obligation that must be carried out by policy makers in an effort to combat environmental damage and ensure the availability of environmental funds for sustainable development. The process of implementing this environmental economic instrument can really affect the control of environmental damage, especially in the D.I. Yogyakarta area if it is implemented thoroughly and firmly.

It takes seriousness on the part of policy makers, in this case the Central and Local Governments in implementing environmental economic instruments. Like Canada which is serious in implementing the carbon tax in its country. Even though it differs in the type of environmental economic instruments that are applied, Indonesia, especially the Provincial Government of D.I. Yogyakarta, can imitate the seriousness and implementation system that is carried out in Canada. The Central Government can form a ministerial expert staff under the Ministry of Environment and Forestry who specifically deals with the implementation of environmental economic instruments in Indonesia. So that environmental economic instruments can really play a role in controlling and protecting against environmental damage.

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