

Forum:	General Assembly 2
Issue:	Implementing carbon taxes to reduce greenhouse gas emissions
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Introduction

Currently, there are more emissions of greenhouse gases than there ever were before. Emitting those gases have environmental consequences, such as global warming, climate change, and health consequences to people. However, carbon taxes are levied on emissions of these greenhouse gases and incentivizes stakeholders to switch to alternatives whose production involves less carbon emission. However, due to this novel concept as well as disadvantages the carbon tax has, not a lot of countries have this implemented. This report will guide delegates to propose methods that can increase the implementation of carbon taxes in order to more effectively reduce greenhouse gas emissions.

Definition of Key Terms

Carbon Taxes

A tax per unit of carbon emissions of fossil fuels. It is considered by many countries as a policy to deal with climate change (Tragakes)

Greenhouse gases (GHGs)

Gases that can absorb infrared radiation/heat, that was emitted from the Earth's surface and can radiate it back to Earth's surface (Mann). Examples of GHGs include water vapor, carbon dioxide, methane, nitrous oxide, ozone, etc. (Rouse).

Greenhouse Effect

The exchange of incoming and outgoing radiation that relies on GHGs to trap heat in the Earth's atmosphere. It is the natural global warming. Without the greenhouse effect, the temperature of Earth would be at a temperature where it is too cold for humans to live in (Lallanila). However,

Global Warming

Previously referred to as "enhanced global warming" or "enhanced greenhouse effect", it is the phenomenon of increasing global temperature near the surface of the Earth (Selin). Global warming is caused by greenhouse gases trapping heat in Earth and increasing Earth's temperature. It is often used interchangeably with "climate change". However, they are separate phenomena with a cause-and-effect relationship ("Difference Between"). Throughout this report, this term will be used as "global warming" instead of the previous two names.

Climate Change

A change in the typical weather of a region or a change in the Earth's overall climate. It can occur naturally due to changes in the Earth's orbit and/or amount of energy transferred from the sun. However, it can be caused by human activity such as artificially-caused global warming (May).

Background Information

The Beginning of GHG Emissions

GHG emissions began during the industrial revolution. In the 1760s, James Watt and Matthew Boulton used Thomas Newcomen's model and invented the steam engine, which relied on coal, a cheap resource to power ("Industrial Revolution"). This engine releases steam - i.e. water vapor but at a higher temperature - and when the steam cools down it can become water vapor - a type of GHG.

As time passed and technology advanced, more machines required emitting GHGs. Turbines burned fossil fuels such as coal and natural gas to produce electricity and emitted carbon dioxide (Harvey). Transportation from locomotives back then to airplanes now emits water vapor ("Industrial Revolution") and carbon dioxide (Pearce) respectively.

Discovery of the Relationship Between the Greenhouse Effect, GHGs, and Global Warming

Svante Arrhenius claimed in 1896 that there is a relation between changes in atmospheric carbon dioxide pressures and temperatures. He found that increasing concentrations of gaseous compounds such as carbon dioxide and water vapor could lead to a rise in temperatures, which is GHGs leading to the greenhouse effect.

In 1955, Gilbert Plass concluded that adding carbon dioxide into the air increases the global temperature.

However, these studies were not brought into attention until the 1980s, when the global temperature started to rise rapidly, even though it has been predicted by scientists such as Stephen Schneider. Global warming theories spread, environmental non-governmental organizations (NGOs) were supporting measures to prevent the worsening of global warming (Enzler).

Carbon Taxes

In 1973, OPEC's oil embargo caused an increase in the quantity of car gas demanded, which caused a shortage of car gas. David G. Wilson proposed to tax on spending on fossil fuel (Berdik).

However, Finland first implemented carbon taxes in 1990. Countries such as Sweden and Norway soon followed (Kagan). Currently, there are 40 countries that have carbon taxes implemented ("Pricing Carbon.")

To expand the term carbon taxes in the Definition of Key Terms section of this report, these taxes, depending on the type, are paid by either businesses or product-consumers to the government. Businesses pay taxes based on the quantity of GHG emitted to provide goods and/or services. Consumers pay taxes based on the quantity goods, such as car gasoline, and/or services purchased.

Carbon taxes have the benefits of providing incentives for businesses and consumers to switch to producing/purchasing goods and/or services that are involved with emitting less GHGs, i.e. the government did not use regulations to force those stakeholders to produce/buy goods that with less carbon emission, but instead it is their choice to switch (Tragakes).

However, carbon taxes also do have disadvantages, which will be discussed in the Key Issues section.

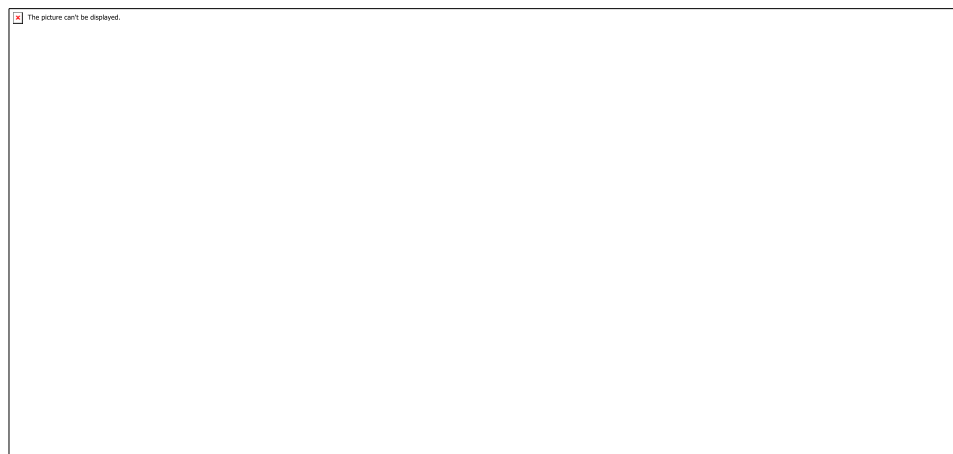
Key Issues

Emission of GHGs

As stated in the Introduction section, in addition to the environmental consequences caused by GHG emissions, there are also health consequences. This section looks at those consequences but focuses more on the health risk GHGs could bring since the environmental consequences were partially explained in the background information section. This section also contains visual evidence presented in the research report for the first topic.

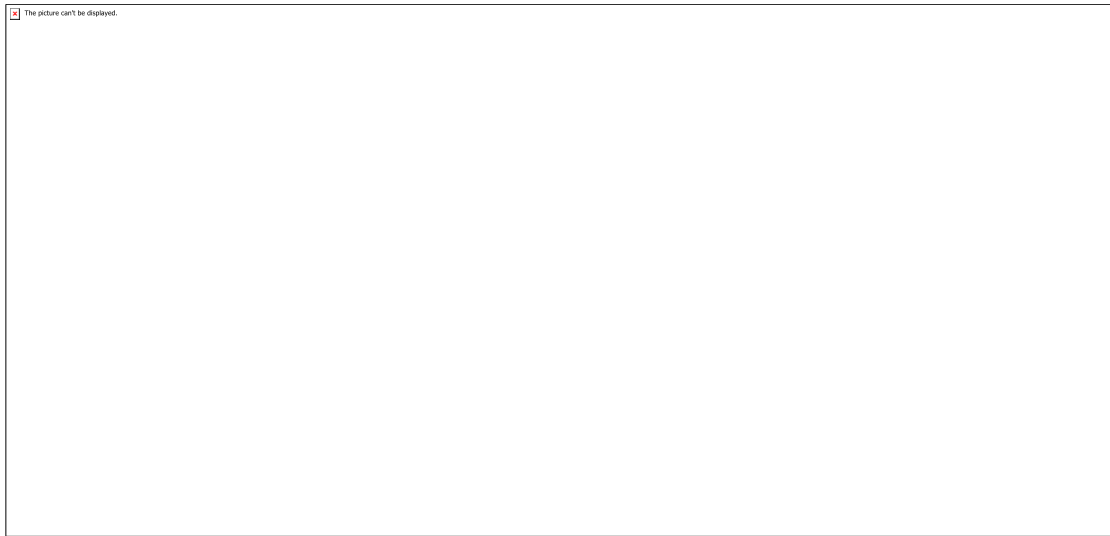
Environmental Consequences

As explained in the Background Information section, emitting GHGs causes those gases to trap heat inside the Earth which would cause global warming and climate change. However, in addition to that, it would also lead to the destruction of natural habitats and rising sea levels (“Global Warming Effects.”). As shown in caption 1, carbon dioxide has been emitted at an exponential rate, and it is likely that this will increase in the next decade as well.



Caption 1: Carbon dioxide emission from 1850-2030 (“Global Emissions”)

The increase in carbon dioxide has a high positive correlation with the increase in global temperatures, shown in caption 2. The correlation can be shown by increasing at a faster rate after the 20th century began compared to the rate before.



Caption 2: Temperature anomaly from 1880-present (“Global Temperature.”)

A temperature anomaly is a difference from a baseline temperature (“Anomalies vs. Temperature.”).

Health Consequences

This section is aimed at delegates and countries who are skeptical of the existence of global warming and climate change as well as countries who are hesitant in implementing carbon taxes because emitting GHGs has other harms as well that are indisputable.

Rain is naturally acidic because carbon dioxide reacts with water to produce a weak acid. However, the more carbon dioxide there is in the atmosphere, the more acidic rain will be produced. This could have consequences such as acidifying the ocean - killing wildlife - and the soil - slowing crop growth because the acid drains away the nutrient plants need (“Effects of Increased”). These could affect the quality and quantity of the food negatively, affecting people’s health.

Additionally, the emission of GHGs also causes air pollution (“Effects of Increased”). Pollution could cause eye and nose irritation, respiratory infections, nausea, along with other short-term effects. Long-term effects include chronic respiratory disease, lung cancer, and heart disease, all of which could shorten one’s life span.

Therefore, as shown, emission of GHGs is harmful regardless, and using methods, such as carbon taxes, to reduce the detrimental consequences is necessary. However, there are disadvantages of carbon taxes that either can make governments think twice on implementing carbon taxes or make the taxes ineffective.

Disadvantages of Carbon Tax

In addition to the benefits of carbon taxes discussed in Background Information, carbon taxes also have disadvantages.

It is difficult to estimate the appropriate amount of tax to levy. If it is too less, then the tax cannot incentivize stakeholders to switch to cleaner technology; if it is too much, people might be unhappy with the increase in money and can decrease political popularity (Tragakes). An example of this is France's Yellow Vest protests. French citizens, at the end of 2018, protested against the increase in gasoline prices due to a rise in carbon taxes (Rubin).

In addition, emission of GHGs is a result of generating electricity and taking transportation and taxes, regardless how much levied, increase the price of electricity, oil, and other products which consumers need to pay the carbon tax for. If the price of those needs increase, then there will be more people with a lower income who are unable to purchase those goods or to purchase other goods made with cleaner technology. This is one of the reasons why Australia abolished its carbon tax in 2014 and was the first country to do so ("Repealing the Carbon").

The carbon tax might also not decrease the amount of carbon emitted after all. If stakeholders are willing to pay more money, the emission will not decrease, unlike using tradable permits. This also questions the effectiveness of carbon taxes.

Major Parties Involved and their Views

Australia

As mentioned in the Key Issues section, one major issue that caused Australia to abolish their carbon tax was because it made consumers with low income worse off since carbon tax is a regressive tax ("Repealing the Carbon") - a type of tax when as one's income increases, his/her proportion of income paid as tax decreases (Tragakes) - because it is the same amount of tax per unit of emission for everyone. This benefits the rich and hurts the poor.

Climate Leadership Council

Climate Leadership Council (CLC) is an international policy institute that aims to find "the most cost-effective, equitable, and politically-viable climate solution" ("Mission."). A policy

that this organization is carbon dividend, which, in simple terms, is after stakeholders pay carbon taxes, some of the money is given back to them later on. They will tax more and give back less to those with more income, and the opposite to those with less income. This might be able to solve some of the issues carbon taxes have, such as gaining political popularity and enabling low-income consumers to purchase goods produced from cleaner technology.

However, if money is collected by the government, then given back, how does it incentivize consumers to switch to cleaner alternatives? Carbon dividend assumes that when taxes are still implemented on carbon-related goods, and the money is given back to consumers, they will choose to purchase goods with less carbon to save money.

In conclusion, CLC is a supporter of the carbon tax but has put forward a version of the tax policy that can cover up some of the tax's disadvantages.

Timeline of Relevant Resolutions, Treaties, and Events

Date MM/DD/YY	Description of Event
Jan, 1990	Finland was the first country to implement carbon taxes (Kagan).
Oct, 2018	A UN Special Climate Report stated that in order to limit the global temperature increase to 1.5°C as stated in the Paris Agreement, a carbon tax of \$27,000 per metric ton of carbon dioxide needs to be implemented by 2100 - an unbelievably high amount of tax that shows that this issue is urgent (Bastasch).
Present	Around 40 countries have carbon taxes implemented ("Pricing Carbon.").

Evaluation of Previous Attempts to Resolve the Issue

Implementing carbon taxes are attempts to resolve the issue.

As a summary, the advantages of carbon taxes are that they provide incentives for stakeholders to switch to cleaner technology. However, the appropriate amount of tax is difficult to estimate, it could make the distribution of after-tax income worse because it is a regressive tax, and it might not even incentivize the stakeholders at all.

Possible Solutions

Possible solutions to this issue contain having better communication between the government and the public.

The government can make the public aware that emitting GHGs is a serious issue that governments need to act on. They can also report which actions they will take to deal with the issue, one of them being a carbon tax.

However, one of the reasons the difficulty of estimating the appropriate amount of tax is because the government does not know the amount that is acceptable for citizens. If the tax is too high, it can cause outrage similar to the Yellow Vest Protest. The government can set a survey asking citizens how much tax or even what other measures they can accept to switch to cleaner technologies.

Solutions can also improve on the disadvantages of carbon taxes, similar to carbon dividend.

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