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Global Warming: Impacts on Society and Alternative Solutions Taken

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Abstract

This article discusses the impact of global warming on society and the alternative solutions taken. The warming of the Earth's surface occurs due to the increase in greenhouse gases in the atmosphere which traps heat, not only that, there are many other causes of global warming. Global Warming itself has not found a bright spot in its response. Earth's surface warming occurs due to the increase in greenhouse gases in the atmosphere which traps heat, not only that, there are many other causes of global warming. Everyone must protect our earth in order to reduce global warming. Even in a simple way, we have actually helped reduce global warming. For example, choosing to ride a bicycle to a shop that is close to the house, turning off unused electricity & planting trees.

Keywords: Global Warming, Society, Impact

Introduction

The background of this paper is to fulfill the basic competency tasks of physics on Global Warming. This paper discusses Global Warming. According to various studies, at this time the temperature on the earth's surface has shown a very drastic increase of around 0.6 ° C which has occurred in the last century. The increase is small and looks small, but the impact of global warming is very large for Earth and life on Earth. We can observe and feel the symptoms or signs of global warming. Symptoms of global warming are the changing of seasons that are difficult for us to predict, frequent whirlwinds, bleached coral reefs and floods and drought in areas that are not used to it (Munday et al., 2008).

Many experts express opinions about the causes or factors of global warming. According to experts, Earth's surface warming occurs due to increased greenhouse gases in the atmosphere which trap heat, not only that, there are many more causes of global warming. Ramanathan & Feng (2009) explained that global warming itself has not found a bright spot in its response Here the writer tries to explain the material needed as a reference to complete the topic being discussed.

Global warming is the increase in the average temperature of the earth's atmosphere which affects the climate on earth. Examples of the effect of increasing Earth's atmospheric temperature on climate include, among others, the reduction in the amount of ice at the poles due to melting, rising sea levels, changes in seasonal wind direction, shifting of seasons, and so on (Barnett et al., 2005).

Global warming begins with sunlight shining on the earth, the heat produced by sunlight will be absorbed by the earth but only partially, while what is not absorbed will be returned to

the free space (atmosphere). but because in the atmosphere there are many greenhouse gas-causing gases such as sulfur dioxide gas SO2, carbon dioxide gas (CO2), and methane, water vapor and many more, causing the sun's heat to not come out of the earth's surface and trapped so that the sun's heat will bounce off the earth. again. It happens continuously every day. The more solar heat that enters the earth, the more gas that cannot be returned to the atmosphere causing the earth to get warmer. this is what is called global warming.

Causes of Global Warming

The real definition of a greenhouse is a tent-like building made of a type of glass to create a warm environment for certain plants, even in winter. The way it works is to make solar heat that enters the greenhouse trapped in the greenhouse. The greenhouse effect on planet Earth is a warming effect of the Earth's atmosphere similar to how greenhouses work on these plants (Lee et al., 2007).

About 30% of the sun's heat energy reaches the earth and is reflected back into the atmosphere. From this amount a small portion is reflected back to earth. In the atmosphere there are certain gases that have the property of absorbing and reflecting the sun's heat energy in the form of infrared rays. If the levels of these gases increase, the reflection of heat energy to the earth also increases, increasing the temperature of the earth's atmosphere.

The definition of the greenhouse effect is an event of increasing the temperature of the earth's atmosphere because the sun's heat that is reflected by the earth is trapped by certain gases in the atmosphere. The gases that trap the sun's heat which is reflected by the earth are called greenhouse gases.

The greenhouse effect is the process by which the atmosphere warms the planet. the greenhouse effect occurs due to the heat reflected to the earth's surface trapped by the gases in the atmosphere, so that it cannot be transmitted to outer space, but is reflected back to the Earth's surface. The greenhouse effect has benefits for living things on Earth, but if it is excessive, it is dangerous for life on Earth because it can affect and disrupt the climate.

Increased Greenhouse Gases

Gases have heat trapping properties, so that the heat that is reflected from the earth's surface cannot be transmitted to the light as a result of these gases, these gases are greenhouse gases. The most important gas is carbon dioxide (CO2). the cause of the increase in carbon dioxide is burning coal fuel, burning petroleum, burning natural gas.

Gas molecules in the earth's atmosphere that consist of three or more atoms are called greenhouse gases because they can capture the infrared energy of sunlight that is reflected by the earth, thereby increasing the temperature of the earth's atmosphere. Greenhouse gases include water (H2O), ozone (O3), carbon dioxide (CO2), and methane (CH4). Also to a small degree, chloro-fluoro-carbon (CFC) affects the greenhouse effect (Lacis, 1981; Ramanathan, 1989).

CFC or Cloro Flour Carbon is a chemical that is combined into a material to produce equipment, especially for household appliances. CFC is in the refrigerator and air conditioner.

Vehicles provide the biggest cause of global warming. Pollution produced by petrol-fueled vehicles such as motorbikes, cars and other vehicles where the emission results in excess carbon dioxide gas. Carbon dioxide gas is the main cause of global warming because carbon dioxide is a gas that traps heat so that it cannot go out into space.

Methane gas ranks second as the main cause of global warming. Methane gas can come from organic materials that lack oxygen from the breakdown of bacteria such as in rice fields, while in livestock, such as livestock intestines, increased production of livestock results in increased methane gas released to the earth's surface.

Forests function to absorb carbon dioxide and emit oxygen, if forests are damaged as a result of logging and burning, what happens is the amount of carbon dioxide is absorbed by the forest is less, and more carbon accumulates in the atmosphere which causes global warming.

Electric Energy Waste

Most of the electrical energy we use is the result of combustion from burning oil and coal, where the combustion products produce carbon dioxide. With the increase in the number of vehicles, the carbon dioxide produced from these vehicles will increase and of course cause global warming. Excessive burning of waste that is carried out en masse will cause global warming because the result of burning the waste is methane gas, which can trap heat.

Impact of Global Warming

The increasing temperature of the Earth's surface in the last century has changed the weather and climate in various regions of the Earth, especially in the North Polar region. The impacts of Global Warming on climate change are as follows: (1) The icebergs will melt, and there will be less ice floating in the sea; (2) In subtropical areas, the snow-covered part of the mountains will be less and the snow will melt faster.

Global warming has an impact on agriculture. Many agricultural products, especially in developing countries like Indonesia, depend on seasons and climate. The impact of climate change due to global warming on food security. In addition, humans, animals and plants become living things that will be affected by global warming. Animals and plants that cannot adapt will become extinct. Extinction of species of organisms will reduce biodiversity. If many organisms become extinct, the ecosystem becomes unstable. Effect on Human Health is the impact of global warming causing climate change. Climate change can affect human health. The impact of global warming on human health is increasing cases of allergies and respiratory diseases because warmer air generates pollutants, such as mold spores and plant pollen (Reid & Gamble, 2009).

Widespread spread of disease. For example, DHF and malaria are tropical diseases that have now spread to subtropical areas. The cause is the temperature in the subtropical air which is currently warmer so that pathogens can breed in subtropical areas. The increase in infectious diseases, which initially infected animals can then infect humans. Examples are bird flu and swine flu. Increased cases of people dying from diseases triggered by hot weather, such as stress, stroke, dehydration, heart and kidney problems.

The result of the international agreement on Global Warming

The IPCC (Intergovermental Panel on Climate Change) is an intergovernmental panel of scientists and experts from various disciplines around the world. Its task is to provide comprehensive, impartial and transparent up-to-date scientific data regarding technical, social and economic information relating to climate change issues. Includes information on the sources of climate change, its impacts and strategies that need to be implemented in terms of reducing emissions, prevention and adaptation. The IPCC has a secretariat in Geneva (Switzerland) and meets annually at a plenary meeting which discusses 3 main issues: (1)

Scientific information on climate change; (2) Impact, adaptation and vulnerability; (3) Climate change mitigation (efforts).

In 1990, the IPCC published its first research results (First Assessment Report). The report states that climate change is certainly a threat to human life. IPCC calls for the importance of a global agreement to tackle the problem of climate change, considering that this is a global process that impacts the whole world (Gardiner, 2006).

The IPCC officially forms an intergovernmental negotiating body, namely the intergovermental negotiating committee (INC) to negotiate a conversion on climate change. The last IPCC 2007 report consisted mainly of a working group 1 report outlined in February 2007 emphasizing that humans are the main cause of the increase in greenhouse gases (GHG) in the air layer. The working group 2 report on the impacts and adaptation of climate change issued in early April 2007 outlined the estimated threat of disaster in many countries if no immediate efforts were made to reduce activities that could cause global warming. Working group 3 report released in May 2007 analyzes the process of reducing carbon emissions already and must be done, and adaptation strategies to withstand the inevitable impacts of climate change.

The Kyoto Protocol is a protocol to the United Nations framework convention on climate change (UNFCCC adopted at the Earth Summit in Rio de Janeiro in 1992), all parties to the UNFCCC can sign or ratify the Kyoto protocol, while outsiders are not allowed. The Kyoto protocol was aborted at the third session of the 1997 UNFCCC convention party conference in Kyoto, Japan. Asia-Pacific Partnership on Clean Development and Climate (APPCDC) Asia-Pacific Partnership on Clean Development and Climate, known as APP, is a voluntary international cooperation between Australia, Canada, India, Japan, RCC, South Korea which announced its formation on the date July 28, 2005. Ministers for foreign affairs, environment and energy from participating countries agreed to cooperate in the development and transfer of technology that allows reduction of GHG emissions in accordance with the UNFCCC and other international instruments such as the Kyoto protocol. (Protocol, 1997).

Alternative solutions to Global Warming

Energy issue is one of the important issues that is currently being discussed. The decreasing energy sources, the discovery of new energy sources, the development of alternative energies, and the impact of using petroleum energy on the environment are interesting and widely discussed themes. Global warming, which is believed to be happening and will enter an alarming stage, is also said to be the impact of the use of petroleum energy, which is the main source of energy today.

The environmental impact and the diminishing source of petroleum energy forces us to seek and develop new energy sources. One of the alternative sources of potential new energy comes from nuclear energy. Although the impacts and dangers caused are very large, it cannot be denied that nuclear energy is an alternative energy source that deserves to be taken into account. In fact, the wise, responsible and controlled use of nuclear energy can increase the standard of living as well as provide a solution to the problem of energy scarcity.

In general, nuclear energy can be produced through two kinds of mechanisms, namely nuclear fission or fission and the joining of several nuclei through fusion reactions. Here we will discuss one of the mechanisms for producing nuclear energy, namely the nuclear fission reaction. A heavy nucleus pounded by a particle (such as a neutron) can split into two lighter

nuclei and several other particles. Such a mechanism is called nuclear fission or nuclear fission. An example of a fission reaction is uranium pounded (or absorbs) slow neutrons.

The fission reaction of uranium as above produces a neutron in addition to the two lighter nuclei. These neutrons can be pounded (reabsorbed) by the uranium nucleus to form the next fission reaction. This mechanism continues to occur at a very fast time to form an uncontrolled chain reaction. As a result, there is a large release of energy in a short time. This mechanism that occurs in a nuclear bomb produces a powerful explosion. So, fission reactions can form uncontrolled chain reactions that have a tremendous explosive potential and can be made in the form of a nuclear bomb.

Rather than being formed in the form of a nuclear bomb, the release of energy produced through fission can be used for more useful things. For that, the chain reactions that occur in fission must be made more controlled. This effort can be done in a nuclear reactor. A controlled chain reaction can be endeavored to take place in a safe reactor and the energy produced can be utilized for more useful purposes, for example for research and for generating electricity.

In a controlled fission reaction, the number of neutrons is limited so that only one neutron is absorbed for the next nuclear division. With this mechanism, a controlled chain reaction is obtained, the energy of which can be used for useful purposes.

The energy generated in nuclear fission reactions can be utilized for useful purposes. For that, the fission reaction must take place in a controlled manner in a nuclear reactor. A nuclear reactor has at least four basic components, namely the fuel element, the neutron moderator, the control rod, and the concrete shield. The fuel element provides the source of the nuclei that will undergo nuclear fusion. The material commonly used as fuel is uranium U. The fuel element can be in the form of a rod which is placed in the reactor core.

The neutrons produced by fission of uranium are at a fairly high rate. Meanwhile, the neutrons that make nuclear fission possible are slow neutrons, so we need materials that can slow down the speed of these neutrons. This function is carried out by a neutron moderator, which is generally water. So, in the reactor core there is water as a moderator which slows down the speed of the neutrons because the neutrons will lose some of their energy when they collide with water molecules.

The function of controlling the number of neutrons that can produce nuclear fission in a chain reaction is carried out by control rods. In order to control the chain reaction in which only one neutron is absorbed to trigger the next nuclear fission, a material that can absorb the neutrons in the reactor core is used. Materials such as boron or cadmium are often used as control rods because they are effective at absorbing neutrons.

The control rod is designed in such a way as to automatically get in and out of the reactor core. If the number of neutrons in the reactor core exceeds the allowable number (critical condition), then the control rod is inserted into the reactor core to absorb some of the neutrons in order to achieve a critical condition. The control rod will be removed from the reactor core if the number of neutrons is below a critical condition or neutron deficiency, to return the condition to the critical condition allowed.

Radiation generated in the process of nuclear fission or nuclear fission can harm the environment around the reactor. A protection is needed around the nuclear reactor so that radiation from radioactive substances in the reactor does not spread to the environment

around the reactor. This function is carried out by the concrete shield that is made around the reactor core. Concrete is known to be very effective in absorbing radioactive radiation, so it is used as a shielding material.

The energy generated from controlled nuclear fission reactions in nuclear reactors can be used to generate electricity. This kind of electrical energy generation installation is known as a nuclear power plant. One form of a nuclear reactor is a pressurized water reactor (PWR) whose scheme is shown in the picture. The energy produced in a nuclear reactor is in the form of heat or heat produced by fuel rods. Heat or heat is flowed out of the reactor core with water to a heat exchanger. Here the hot steam is separated from the water and flowed to the turbine to drive the turbine to generate electricity, while the water is cooled and pumped back into the reactor. The cold water vapor that flows out after passing through the turbine is pumped back into the reactor.

Conclusion

Global Warming has become a problem that has become a major human spotlight. This phenomenon is caused by human actions themselves and its impact is also felt by humans. Therefore, to overcome this global warming requires very hard efforts because it is almost impossible to solve at this time. Global Warming is difficult to overcome, but we can reduce its effects. The responsibility for this is starting from ourselves with the life of the earth in the future. We must protect our earth in order to reduce global warming. Even in a simple way, we have actually helped reduce global warming.

References

Barnett, T. P., Adam, J. C., & Lettenmaier, D. P. (2005). Potential impacts of a warming climate on water availability in snow-dominated regions. *Nature*, *438*(7066), 303-309.

Gardiner, S. M. (2006). A perfect moral storm: Climate change, intergenerational ethics and the problem of moral corruption. *Environmental values*, *15*(3), 397-413.

Lacis, A., Hansen, J., Lee, P., Mitchell, T., & Lebedeff, S. (1981). Greenhouse effect of trace gases, 1970-1980. *Geophysical Research Letters*, *8*(10), 1035-1038.

Lee, O., Lester, B. T., Ma, L., Lambert, J., & Jean-Baptiste, M. (2007). Conceptions of the greenhouse effect and global warming among elementary students from diverse languages and cultures. *Journal of Geoscience Education*, *55*(2), 117-125.

Munday, P. L., Jones, G. P., Pratchett, M. S., & Williams, A. J. (2008). Climate change and the future for coral reef fishes. *Fish and Fisheries*, *9*(3), 261-285.

Protocol, K. (1997). United Nations framework convention on climate change. *Kyoto Protocol, Kyoto*, *19*, 497.

Ramanathan, V. (1989). Observed increases in greenhouse gases and predicted climatic changes. In *The challenge of global warming* (pp. 239-247). Island Press Washington, DC.

Ramanathan, V., & Feng, Y. (2009). Air pollution, greenhouse gases and climate change: Global and regional perspectives. *Atmospheric environment*, *43*(1), 37-50.

Reid, C. E., & Gamble, J. L. (2009). Aeroallergens, allergic disease, and climate change: impacts and adaptation. *Ecohealth*, *6*, 458-470.