

The Effectiveness of Paris Agreement Regime in Control Global Warming in the Field of Food Security in Indonesia

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Keywords: Food Security, Global Warming, Paris Agreement.

Abstract: Dynamic commitment of International Community in the issue of control upon global warming has been developed since 1919. As seen from some number of International Treaties, Paris Agreement, for instance, showed the strength of International Commitment to solve global-warming-related issues as well as environmental-related one. When the majority of International States agree to be bound, in contrast, the USA new President, Donald Trump has ammended the former president involvement by pulling out the ratification. Despite of the situation, however, the rest of the world are still firmly standing together in fighting global warming in Indonesia. This paper will further discuss in brief about the progress of regulations regarding global warming solutions and its implications both in national and international scale. Furthermore, specifically, this paper highlight the effectivity of Paris Agreement regime enforcement in reducing the negative impacts of global warming. Food security will the main highlighted concern and also become the indicator of comparative studies applied in this research.

1 INTRODUCTION

Global warming has been a serious international discussion since 1919. The economic power generated from the global crisis due to the global climate growth. Reducing the effects of greenhouse gases (GHG) or "greenhouse gases" (GHGs) must be taken to overcome this problem (Otto Soemarwoto, 1993). The global warming produced by the climate with its various environmental impacts. Article 1 point 2 UN FCCC defines:

"Climate change" means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time period.

United Nations through The United Nations Environment Programme (UNEP) on February 5-9, 2001 in Nairobi, Kenya, issued and developed early warnings about natural disasters caused by climate change. The IPCC reports that climate change could lead to floods across the planet, declining

agricultural yields and rising the sea level from 9-88 cm (Surabaya Post, 2001).

UNEP scientists predict that climate change is the biggest environmental problem for the next hundred years (Kompas, 2002). Climate change is the collective responsibility of the human community of all nations (Lavanya Rajamani, 2000). A large number of international initiatives are organized to overcome the climate change. In 1979, the first World Climate Conference was held in response to the potential impact of global temperature rise by establishing The World Climate Program (WCP) under the auspices of The World Meteorological Organization (WMO), UNEP, The United Nations Educational, Scientific and Cultural Organization (UNESCO) and The International Council of Scientific Union (ICSU).

The existence of international environmental law instruments comprising the Vienna Convention (1985), the Montreal Protocol (1987), the UN FCCC (1992), the Kyoto Protocol (1997), and the Paris Agreement (2015) constitute a juridical recognition of global warming as a serious problem in the

constellation atmospheric protection. The entire legal documents make it possible to establish an international system for all countries to report annually on GHG emission change and to focus on developing information on climate change threats (Lester R. Brown, 2001).

An Inventory of "international environmental legal instruments" finds more than 500 international agreements on the environment (Daud Silalahi, 1996). The International agreements in the field of atmospheric protection are qualified in terms of soft law and hard law documents have grown rapidly since 1919 to the present (Edith Brown Weiss, 1992). From the inventorized international treaties, it is known how much the commitment of the world community to the problem of atmospheric protection. However, the existing treaties are considered too fragmental and difficult to implement as well as international environmental law instruments in general.

The international agreement on the environment has not been effectively implemented. The WSSD in Johannesburg in 2002 found it necessary to find ways to optimize the implementation of international environmental agreements in the "Plan of Implementation", especially in the "Means of Implementation" section to address two major challenges: a better life of all people and protecting the environment which sustains the life of the Earth (Maria Hartiningsih, 2002). In the national context, climate change control is a constitutional mandate that every person has the right to live a prosperous life and inhabit, to live, and to get a good and healthy environment and be entitled to health services. The state should give a proper direction and ensure the running development for the people welfare still in line with the protection of environmental and social aspects. As the rise of climate change awareness, controlling as well as handling of climate change is no longer considered as a burden to the State, but it becomes a necessity. Thus, the State's commitment to address climate change should become a priority of national agenda.

The Paris Agreement is one of the international treaties on climate change that has been ratified by the Government of Indonesia through Law no. 16 of 2016 on the Ratification of the Paris Agreement to the United Nations Framework Convention on Climate Change.

In order to achieve the purpose of paris consent, the national contribution to the global effort set forth in the National Defined Contribution, all States Parties undertake and communicate their ambitious efforts and demonstrate progress from time to time

relating to the National Defined Contributions (mitigation), adaptation, and funding support, technology and capacity building for developing countries by developed countries. Indonesia's National Defined Contributions (NDC) includes aspects of mitigation and adaptation. In line with the terms of the Paris Agreement, the NDC of Indonesia shall be established periodically. In the first period, the target of NDC Indonesia was to reduce emissions by 29% by own effort and to 41% if there was international cooperation on the condition of business as usual in 2030 to be achieved, among others through the forestry sector, energy including transportation, waste, industrial processes and product use, and agriculture. The NDC Indonesia's commitment to the next period is set based on performance reviews and should show improvement over the next period.

To achieve these targets, practical and implementation efforts are required. The approach used in global warming control has been more emphasis on practitioner approach, but weak on the level of regulation when the regulation becomes an important benchmark in the implementation of a government policy. Therefore, with the model formulation of regulations in accordance with the principles contained in the Paris Agreement, all matters related to the impact of global warming can be minimized as possible.

2 RESEARCH PROBLEM

Based on the background of the problem, It can be Based on the background of the problem, It can be formulated as follows:

1. Design the development of regulation of global warming control within the scope of food security and its implementation
2. Comparison of global warming control within the scope of food security in Indonesia.

3 PURPOSE AND BENEFIT

The purpose of this research is (1) to identify and analyze the development of regulation of global warming control in the field of food security and its implementation; and (2) to identify comparisons of global warming control within the scope of food security in Indonesia.

Practically, this research is expected to give input to the government in the effort to reform the

regulation in the environmental field especially related to the effort of fulfilling the target of Government of Indonesia in reducing the impact of global warming based on Paris Agreement as stated in the General Explanation of Law no. 16 of 2016.

3.1 Global Warming: Definition and Effect

Global warming is an event caused by: (1) increasing average temperature in the atmosphere layer; (2) rising temperatures in seawater, and (3) rising temperatures on land. Symptoms of global warming can be observed and felt in the presence of: 1) unpredictable seasons change; 2) thunderstorms are common everywhere; 3) frequent tornadoes; 4) floods and droughts occur at the same time; 5) epidemic disease in many places; and 5) white coral reefs (Gatut Susanta and Hari Sujtahjo, 2007).

Many experts argue that the main cause of global warming is human activity although there are other causes that are natural. Causes of global warming by human activities include: 1) burning of coal fuel, for example for power generation; 2) petroleum burning, for example for motor vehicles; and 3) combustion of natural gas, for example for cooking purposes.

As a result of the combustion process, carbon dioxide and other gases are released into the atmosphere. These gases are called greenhouse gases. The more greenhouse gases meet the atmosphere the stronger they become an insulator that blocks heat from sunlight emitted to the surface of the earth. It is estimated that the process of warming and cooling the earth has changed each other and more or less occurred for 4 billion years.

Global warming occurs when carbon dioxide (CO₂) and other air pollutants and greenhouse gases collect in the atmosphere and absorb sunlight and solar radiation that have bounced off the earth's surface.

Global warming due to the greenhouse effect that reduces the area of icing on the earth can affect the active volcanic plate areas, this is like what happened in Iceland (Michael Hangga Wismabrata, 2018). According to Amanda MacMillan, The effects of global warming: 1) Melting glaciers, early snowmelt, and severe droughts will cause more dramatic water shortages and increase the risk of wildfires in the American West; 2) Rising sea levels will lead to coastal flooding on the Eastern Seaboard, especially in Florida, and in other areas such as the Gulf of Mexico; 3) Forests, farms, and cities will face troublesome new pests, heat waves,

heavy downpours, and increased flooding. All those factors will damage or destroy agriculture and fisheries; 4) Disruption of habitats such as coral reefs and Alpine meadows could drive many plant and animal species to extinction; dan 5) Allergies, asthma, and infectious disease outbreaks will become more common due to increased growth of pollen-producing ragweed, higher levels of air pollution, and the spread of conditions favorable to pathogens and mosquitoes (Amanda MacMillan, 2018).

Meanwhile, according to Melissa Denchak, the effects of global warming: 1) More frequent and severe weather, higher temperatures are worsening many types of disasters, including storms, heat waves, floods, and droughts. A warmer climate creates an atmosphere that can collect, retain, and drop more water, changing weather patterns in such a way that wet areas become wetter and dry areas drier; 2) Higher death rates, In the United States, hundreds of heat-related deaths occur each year due to direct impacts and the indirect effects of heat-exacerbated, life-threatening illnesses, such as heat exhaustion, heatstroke, and cardiovascular and kidney diseases. Indeed, extreme heat kills more Americans each year, on average, than hurricanes, tornadoes, floods, and lightning combined; 3) Dirtier air, rising temperatures also worsen air pollution by increasing ground level ozone, which is created when pollution from cars, factories, and other sources react to sunlight and heat; 4) Higher wildlife extinction rates, According to the Intergovernmental Panel on Climate Change's 2014 assessment, many land, freshwater, and ocean species are shifting their geographic ranges to cooler climates or higher altitudes, in an attempt to escape warming (Melissa Denchak, 2018). Indeed, a 2015 study showed that vertebrate species—animals with backbones, like fish, birds, mammals, amphibians, and reptiles—are disappearing 114 times faster than they should be, a phenomenon that has been linked to climate change, pollution, and deforestation; 5) More acidic oceans, The earth's marine ecosystems are under pressure as a result of climate change. Oceans are becoming more acidic, due in large part to their absorption of some of our excess emissions. As this acidification accelerates, it poses a serious threat to underwater life, particularly creatures with calcium carbonate shells or skeletons, including mollusks, crabs, and corals. This can have a huge impact on shellfisheries; 6) Higher sea levels, the polar regions are particularly vulnerable to a warming atmosphere. Average temperatures in the Arctic are rising twice as fast as they are elsewhere on earth,

and the world's ice sheets are melting fast. This not only has grave consequences for the region's people, wildlife, and plants; its most serious impact may be on rising sea levels.

According to the National Oceanic and Atmospheric Administration, in 2015 there were 10 weather and climate disaster events in the United States—including severe storms, floods, drought, and wildfires—that caused at least \$1 billion in losses. The world in which we live, which climate experts project will be at least eight degrees warmer by 2100 should global emissions continue on their current path, this small rise will have grave consequences, ones that are already becoming apparent, for every ecosystem and living thing—including us.

3.2 The Implementation of Paris Agreement on Legal Positive in Indonesia

Indonesia itself has signed the Paris Agreement in New York, United States on April 22, 2016 which was conducted by the Minister of Environment and Forestry, Mrs. Siti Nurbaya. The implementation of the Paris Agreement in the positive law in Indonesia is ratified in Law No. 16 of 2016 on the Ratification of the Paris Agreement to the United Nations Framework Convention on Climate Change (Paris Accord to the United Nations Framework Convention on Climate Change). The implementation of the Paris Agreement was undertaken on the basis of the NDC made by each country participating in the UNFCCC, Indonesia itself has had an Intended Nationally Determined Contribution (INDC) before COP 21. World leaders agreed on COP 22 discussing the implementation of the Paris Agreement and improving its implementation capacity.

The discussion was primarily worked on in the trial of Ad hoc working group on the Paris Agreement (APA) with six main agenda namely mitigation implementation guideline, adaptation communication guidance, modalities, procedures and guideline transparency framework, global implementation of stocktake, modalities and procedures for the compliance committee and other matters of immune-related engagement from the Paris Treaty.

Indonesia on all agenda items contribute in accordance with the national interest, such as the promulgation of the Treaty of Paris, the NDC has been subsequently submitted and the establishment of the National Registration System, as well as the

development of the "*Kampung Iklim* (Climate Kampung)" program.

Climate Kampung Program (ProKlim) is a nationwide scheme developed by the Ministry of Environment (MOE) to encourage the active participation of communities and all parties in carrying out local actions to improve resilience to climate change impacts and reducing GHG emissions through the implementation of ProKlim. The Government rewards communities in certain locations that have been implementing climate change adaptation and mitigation efforts in a sustainable way.

The implementation of ProKlim refers to the Regulation of the Minister of Environment Number 19 Year 2012 on "Climate Village" Program. Climate change adaptation and mitigation measures at ProKlim sites can be: P Drought, flood, and landslide controls; Increased food security; Climate-related disease control; Handling or anticipating sea level rise, rob, sea water intrusion, abrasion, ablation or erosion due to wind, high waves; Waste processing, solid and liquid waste; Wastewater treatment and utilization; Use of new renewable energy, conservation and energy savings; Agricultural cultivation; Increased vegetation cover; and Prevention and control of forest and land fires. The evidence of Paris Agreement implementation can be seen from the implementation of the NDC.

According to Rida Mulyana as Director General of New Energy, Renewable Energy and Conservation, to support the achievement of NDC targets, the ESDM ministry has prepared various policy tools, strategic programs and action plans to reduce emissions by 11% or 314 million tonnes of CO₂e achieved in 2030 (IESR Institute for Essential Services Reform, 2017). If Indonesia is not able to achieve its emission reduction target of 29-41% by 2030, it will be even harder to reach the Paris Agreement target with a 1.5°C scenario.

4 METHODS

This type of research is normative legal research with conceptual approach and comparative approach. The conceptual approach is an approach that evolves from the views and doctrines developed in law science. Comparative approach is an approach by studying and analyzing the application of global warming control in the field of food security under the Paris Agreement on the state of Indonesia.

5 RESULT AND DISCUSSION

5.1 The Progress Of Regulations Regarding Global Warming Solutions And Its Implications Both In National And International Scale.

The Paris Agreement entered into force on 4 November 2015 and thereafter many countries ratified the Paris Agreement with a total emission of 51.89% of the required 55%. For example, the United States as a country that has ratified the Paris Agreement with emissions represented by the country amounted to 17.89% (Henriette Imelda and Fabby Tumiwa, 2016). It is unfortunate that the United States withdrew itself from the Paris Treaty after the post of president was replaced by Donald Trump (Michael D. Shear, 2017).

In addition, internationally, the United Nations Climate Change Secretariat makes a Progress Tracker of work programs generated from relevant requests in decision 1 / CP.21 to which this information is updated on April 20, 2018. Almost all work programs are in ongoing and negotiating stages, but there are already some that are done.

Within the national scope, the Paris Agreement has become a reference to the solution of global warming that affects climate change. Indonesia itself has signed the Paris Agreement in New York, USA on April 22, 2016 conducted by the Minister of Environment and Forestry, Mrs. Siti Nurbaya. This is shown as one of Indonesia's concern for the environment especially in global warming issue. The form of implementation of the Paris Agreement in Indonesia is by ratifying the Paris Agreement into Law No. 16 of 2016 on the Ratification of the Paris Agreement to the United Nations Framework Convention On Climate Change. The existence of this law can be a reference of Indonesia in carrying out activities to support the achievement of the objectives of the Paris Agreement.

Previously Indonesia itself has had a program in dealing with climate change namely Kampung Climate Program or abbreviated as ProKlim. ProKlim is a nationwide scheme developed by the Ministry of Environment to encourage the active participation of communities and all parties to implement local actions to improve resilience to climate change impacts and reductions in greenhouse gas emissions. Through the implementation of ProKlim, the Government rewards communities in certain locations that have

been implementing climate change adaptation and mitigation efforts in a sustainable way. This shows that Indonesia is very supportive in responding to global warming issues that affect climate change that can threaten the world that is by implementing ProKlim.

5.2 The Effectivity Of Paris Agreement Regime Enforcement In Reducing The Negative Impacts Of Global Warming And Increasing Of Food Security

The effectiveness of the Paris Agreement in reducing the negative impact of global warming on a national scale can only be done if the Paris Agreement has been ratified by that country. Indonesia which ratifies the Paris Agreement can only implement the provisions of the agreement. Big businessmen like Exxon Mobil as the world's largest oil and gas company say that "The Paris agreement is an effective framework for addressing the risks of climate change" when Trump decided to withdraw from the Paris Agreement.

World Food Programme or abbreviated as WFP sees climate change as a trigger of risk to food security, threatening to undermine efforts to eradicate food insecurity and poverty. This will affect the livelihood of people who are vulnerable to food insecurity (food insecure people). Climate change leads to climate-related natural disasters that affect the dimensions of food security, including malnutrition.

Given that the impact of global warming such as melting glaciers, early snowmelt, rising sea levels, disruption of habitats such as coral reefs, also the forests, farms, and cities will face troublesome new pests, heat waves, heavy downpours, and increased flooding. All these factors can disrupt and destroy agriculture and fishery which will have an effect on food security, especially Indonesia which is famous for its people who are farming livelihood and fishermen will feel the impact of climate change directly on their food security.

For people living in marginal areas, they are more likely to feel the impact of climate change because they generally rely on nature in cultivating or going fishing. Not only as income, even the food they consume is also the result of suitable planting and fishing itself and climate change that resulted in a lot of natural damage will impact strongly on their dietary needs and nutrients that will later impact on their survival.

With this, it is imperative that combined actions on climate change adaptation and mitigation are supported by technology research and development that can reduce threats to food and nutrition security. Five food solutions to address the impacts of climate change are: 1) Direct nutrition interventions to build resilience to climate change impacts; 2) Sustainable agricultural development, climate-resistant and nutritive sensitive; 3) Easy access to maternal and child health care, safe water and sanitation systems and adequate, safe food; 4) Social protection schemes proven effective in dealing with malnutrition; and 5) Empowerment and social participation in community-based communities that are resistant to climate change and nutrition. This aims to keep people from relying on an uncertain natural climate.

5.3 Food Security in Indonesia

As rice has become a staple food for most Indonesian people, the rice consumption is in line with the increasing population of Indonesia every year. The very high dependence of the Indonesian people on rice will be a problem if the availability of rice is not sufficient. It can disrupt national food security (National Bureau of Statistics, 2009). Indonesia's ability to meet the rice needs was put forward by economic observers from IRRI (International Rice Research Institute) estimating that Indonesia will still depend on imported rice until 2025 (Sombilla, M.A., M.W. Rosegrant and S. Meijer. 2002).

In the P2BN (Bakti Nusantara Profession Education) program, intense IPT technology implementation in irrigated rice fields, rainfed lowland and tidal swamp land will raise the production rate high but this will take a long time (Pearson, S., W. Falcon, P. Heytens, E. Monke and R. Naylor. 1991).

The food crisis is the impact of a multi-dimensional crisis. It appears that food security is interconnected with the environment. This should be watched because the mainstay of efforts to increase food production. One of them is wet land (wetland) and dry (upland rice) that are vulnerable to environmental changes.

While the biophysical constraints of development and sustainability of food production, one of which is influenced by climate. The characteristics of the optimal climate for rice plant growth are relatively high temperatures, moderate to long growing seasonal season, sufficient sunlight, adequate water availability and distributed evenly

throughout the planting season, dry humidity with cool temperatures in the filling period until maturity of grain.

6 CONCLUSION

To overcome the problem of food security, it should be implemented effectively in Indonesia prolink program. Besides that, Indonesia can follow plausible scenario, one of them is IMPACT Model to know the state of food security in the future (future envisioning, future pathways and accounting for critical uncertainties). As results of the research, they can do anticipation, for example, if Indonesia cannot meet the national food needs, Indonesia is endeavored to open international trade to stable maintain supply and crop breeding in agriculture to produce innovation varieties.

ACKNOWLEDGEMENTS

The researcher always grateful thanks to Allah SWT Almighty God because of His bless we can do and finish this reseach obviously and relevantly. Muhammad SAW as a guide of truth, shalawat and greetings are always poured out on him. We would like to express our gratitude to Directur of Postgraduate School UNAIR and Dean of Law Faculty UNAIR for giving us the funds and easy access to finish this research.

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