

IMPLEMENTATION OF THE PARIS AGREEMENT IN HANDLING CLIMATE CHANGE DUE TO FOREST FIRES IN INDONESIA 2015-2019**Kinanthi Ahimsaning Gandhi¹, Roberto Octavianus Cornelis Seba², Suryo Sakti Hadiwijoyo³**

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Forest fires in Indonesia have become an annual recurring event, considering that Indonesia is a member of the Paris Agreement and ratified the agreement. Thus, Indonesia must be able to commit to the contents of the contract. This research uses a qualitative method and will then be analyzed using the concepts that have been selected. The author uses secondary data with search techniques and data collection through written sources. It is understood that the Government has successfully developed various plans to reduce forest fires by the Paris Agreement commitments. However, there is hesitation in developing effective climate action, and shortcomings emerge, thus reinforcing that the lack of seriousness of this effort can affect Indonesia's Contribution to global efforts. The Government needs to be more serious in carrying out the commitments that have been made in a structured manner and hopes that it can resolve this case as well and as wisely as possible.

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**INTRODUCTION**

The increasing age of the earth means the quality of natural resources is decreasing. The forest fires in Indonesia, of course, affect the quality of life of humans, whose lives still depend on existing natural resources. As much as 50 percent of human life depends on the natural resources the earth provides. The planet needs approximately 1.5 years to produce and replenish depleted resources, while human activities from natural resources will, of course, always increase day by day. In this way, nature will increasingly come under pressure, the consequences of which will be on human life (Nisa & Suharno, 2020).

Forests spread throughout the world, of course, have a role in reducing 25 percent of carbon dioxide emissions; tropical rainforests are one of the forests that have quite an important function in protecting and cooling the earth's temperature (Wahana et al., 2018). Along the way, the quality and quantity of forests continue to decline, so the existence of forests must be maintained so that they last forever and are handled with character and responsibility (Manurung, 2014). The function of forests, in general, is to become the lungs of the world and is supported by other functions such as being a habitat for various kinds of flora and fauna, maintaining soil fertility, and becoming a tool to prevent global warming (DLH Semarang, 2020). Forests have a very important role in society.

In Article 46 of Law Number 41 of 1999, concerning forestry, it is stated that the implementation of forest protection and nature conservation has the aim of protecting forests, forest areas, and their environment so that the protection function, conservation function, and production function are achieved optimally and sustainably (Kemenkeu, 2004). As time increases, problems regarding the environment become a shared responsibility because they concern the quality of life in the future. The emergence of natural damage is a warning to the community that the quality of forests is decreasing. Biological damage, namely forest fires, can have a big impact on Indonesia, and this problem almost every year becomes a big problem for Indonesia. (Nisa & Suharno, 2020). Two factors cause forest fires that occur in Indonesia: natural factors are caused by forest fires caused by the

dry season and El-Nino, while human factors are caused by uncontrolled land clearing, deforestation, and land burning, which is carried out intentionally, causing hotspots. Fire can cause large-scale forest fires (A Rasyid, 2014).

The slow pace of real action from developed and developing countries in reducing greenhouse emissions has increased temperatures on Earth earth. In 2015, temperatures reached a global record with an average temperature increase of 0.85 degrees Celsius (Christine, 2015). It is estimated that the temperature on earth also has the potential to increase by 4 degrees Celsius if every country does not take responsibility for dealing with climate change. The Paris Agreement is an environmental action with four signs that have followed: establishing a clear pathway for future emissions, recognizing the risk impact of climate impacts, shifting funding towards low carbon, and sustainable development with a strong foundation. (Morgan, 2015). As many as 195 out of 196 countries UNFCCC members have agreed to the Paris Agreement as a new protocol to replace the Kyoto Protocol as a joint agreement to deal with climate change by committing to making changes to low-emission development (IESR, 2015).

Indonesia is one of the parties signing and ratifying the Paris Agreement in national law through Law Number 16 of 2016 (WALHI, 2020). Indonesia also realizes that forestry and land use are the most significant sectors in controlling climate change, so this happens because forest areas in Indonesia have a fairly large area, namely 65% of the total area of Indonesia, which is 187 million km², so that from This large area stores various kinds of abundant natural resources (Kementrian et al., 2016).

Three previous studies were used as comparisons in writing this research. First, Ni Putu Rai Yulianti and Davira Syifa Rifdah Suwatno have investigated the Paris Agreement in research entitled "Implementation of Ratification of the Paris Agreement Treaty as a Form of Indonesia's Commitment in Efforts to Mitigation and Adaptation to Climate Change" (Putu et al., 2022). The similarity with this research lies in the main focus on the ratified Paris Agreement. However, differences include the emphasis on increasing more effective and efficient bilateral and multilateral cooperation to better implement climate change mitigation and adaptation actions in previous research.

Second, as a basis for previous research, it also refers to research conducted by Devi Pratiwi titled "Responsibility of States for the Consequences of Forest Fires on Other Countries According to International Law. (Pratiwi, 2018)" international issues. As a result, Indonesia is facing pressure to overcome this problem through a global legal approach as a means of resolution.

Third, research conducted by Dina Manurung entitled "International Legal Regulations regarding Responsibility for Cross-Border Air Pollution (Case Study: Smoke Haze from Forest Fires in Riau Province and its Impact on Malaysia and Singapore)" (Manurung, 2014) This research focuses on the problem of smoke haze in Riau, which has become an international issue, has resulted in air pollution in neighboring countries. Indonesia's inability to overcome this situation creates new problems, with affected countries demanding responsibility, and these fires cause negative impacts. Therefore, international law intervenes to handle the case.

Fourth, in the research conducted by Adinda Noura Ayuningsih and her colleagues entitled "Ratification of the Paris Agreement and the Implementation of Indonesia's National Determined Contribution (NDC)," the (Noura Ayuningsih et al., 2023) main focus was aimed at Indonesia which has ratified the Paris Agreement and the efforts made by Indonesia in implementing its Contribution. Nationally Determined (NDC). This research focuses more on the steps taken by Indonesia in implementing the NDC by the provisions established in the Paris Agreement.

Meanwhile, this research focuses on the role of the Government in handling forest fire cases in Indonesia by implementing the Paris Agreement. This research was conducted because forest fires and the ratification of the Paris Agreement were the basis of the problem in this research. Forest fires in Indonesia always occur every year, and this research will focus on the Government's role in handling this case using the Paris Agreement, which the Indonesian Government has ratified. The results of this research will provide a clear picture

of the Government's role in handling forest fire cases in implementing the Paris Agreement and whether progress is being made or not.

RESEARCH METHODS

This study uses a qualitative method. As a method in research, qualitative methods can facilitate attitudes, behavior, and experiences. Qualitative methods are very relevant because they can explore the phenomenon of forest fires and smoke pollution in Indonesia to produce new knowledge about these experiences. When using qualitative methods, data can be collected through observation, visual analysis, library research, and interviews (individual or group). In collecting and analyzing the data, this research uses library research techniques, where books, journals, and relevant and credible sources are used to analyze cases and answer the research questions. To do this, this research examines the literature mentioned above. Then, it connects it with the role of the Indonesian Government in implementing the Paris Agreement, especially in the context of forest fires. Identifying research and knowledge gaps on a particular topic can be done using literature review techniques. It also aims to engage in theory development in research.

RESULTS AND DISCUSSION

Dynamics of Forest Fire Cases in Indonesia

In recent years, deforestation, forest degradation, and climate change caused by forest fires have become environmental problems of concern to many parties. This is projected to continue to be a subject of discussion because the problem is complex. According to data from the Ministry of Environment and Forestry of the Republic of Indonesia (KLHK RI), forest and land fires in Indonesia have reached 5,600,534.19 ha from 2015 to 2019 (Figure 1). The last fire area was 2,611,411.44 ha in 2015, 438,363.19 ha in 2016, and 165,483.92 ha in 2017. After this downward trend, an increase occurred again in 2018, covering an area of 529,266.64 ha, and in 2019, covering an area of 1,649,258.00 ha (Syam & Nanda, 2023). Of the total area affected by the fire, 672,708 hectares were mineral land, and another 269,777 hectares were peat land. Central Kalimantan Province experienced the widest impact due to fires, with a total affected area reaching 161,298 hectares. West Kalimantan follows this with 131,654 hectares, East Nusa Tenggara with 120,143 hectares, South Kalimantan with 115,317 hectares, and South Sumatra with 92,635 hectares (Prabowo & Galih, 2019).

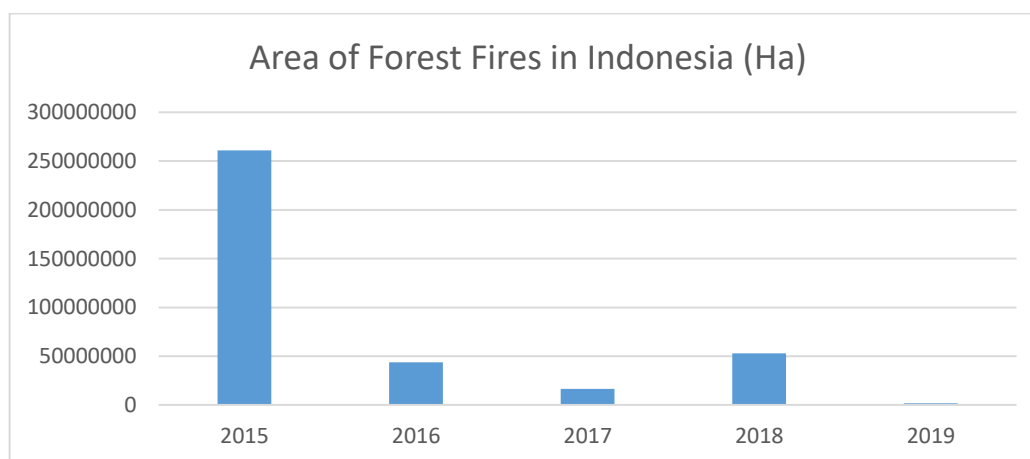


Figure 1. Area of Forest Fires in Indonesia 2015-2019
Source: KLHK, 2019.

Compared to previous years, the increase in fire activity, especially in Kalimantan, exceeds the average from 2003 to 2018, indicating more severe conditions. Additionally, data from the CAMS Global Fire Assimilation System shows that air quality in areas affected as badly as the 2015 forest fires has declined. From August 1 to September 18, 2019, CO₂ emissions equivalent to about 360 megatons are estimated to have occurred, almost the same as the 2015 mega-fire. However, this is slightly lower than the 2015 mega fire

(Christinawaty, 2019). Poor air quality not only has the potential to harm the health of local communities directly but also has a significant contribution to climate change and long-term impacts on global ecosystems.

This phenomenon places Indonesia as the fifth largest contributor to CO₂ emissions after Russia (Khusna, 2020). With an increase of 2% per year, Indonesia's GHG emissions are expected to reach 2.5 billion tons in 2020 and will reach 3.3 billion tons in 2030. The current growth rate, caused by deforestation and peatland destruction, is estimated at 41% (Sari & Multazam, 2021). Indonesia also ranks third as the world's largest carbon dioxide (CO₂) producing country. Land conversion and deforestation contribute 60% to 70% of GHG emissions in Indonesia (Sari & Multazam, 2021). Air quality in areas affected by the 2015 fires was very poor, which makes these findings even more important. Besides threatening public health, poor air quality, including deforestation and decreasing biodiversity, hurts the environment. The increasing frequency and intensity of fires show that this situation has the potential to endanger the global ecosystem and climate.

The Role of the Indonesian Government in Fulfilling the 2015 Paris Agreement in the Context of Forest Fires

Paris Agreement is a joint commitment to hold the rate of increase in global average temperature below two °C above the temperature in the pre-industrialization period, and efforts are made to limit the temperature increase to 1.5 °C above the temperature in the pre-industrialization period. (BPHN, n.d.). Actions taken by Indonesia By carrying out ratification, it is also caused by the Government wanting to play an active role so that Indonesia can become a key actor in the Paris Agreement and Indonesia's interests can be realized. The Indonesian Government also carried out ratification to emphasize various programs from the carbon market mechanism. The program takes the form of mitigation and adaptation as the main instruments regarding climate change (Marbun, n.d.).

From this agreement, a commitment was born in the form of Nationally Determined Contribution (NDC), an important tool used by the Government to carry out communication on an international scale to overcome climate change in the country independently (Syahrir, 2015). The Paris Agreement exists and simultaneously gives responsibility to all member countries to prepare NDCs, which is an obligation for governments to prepare specific emission reduction plans regarding mitigation, adaptation, support, funding, technology, and capacity building for developed countries. (Putu et al., 2022). Indonesia, as a member of the agreement, of course, submitted the NDC document in 2015, which was then updated to become the First NDC in 2016 with a validity period until 2030, so that in 2020 Indonesia only needs to communicate the updated NDC (Komitmen Iklim, 2020).

In the course of implementing the NDC document, it turns out that Indonesia has not succeeded in dealing with climate change independently in Indonesia, giving rise to various kinds of criticism, namely the process of updating the NDC, which is less inclusive, and the substance of the NDC update which does not contain increased ambitions for reducing emissions. The Government insists it has conducted public consultations with organizations and civil society. However, these consultations are limited both in terms of the number of organizations and civil society involved and the number of consultations held. The Government also needs to release the draft updated NDC in the final version to get input from the public (Komitmen Iklim, 2020).

According to Indonesia's NDC records, changes in land use and forest and land fires contribute around 63% to total emissions, with an additional 19% coming from oil fuel activities. Indonesia's NDC document also highlights that the LUCF (Land et al.) sector, including peatland fires, is the largest source of emissions, contributing 47.8% of total emissions, followed by the energy sector with 34.9%. Therefore, through the NDC document, the Indonesian Government set an ambitious goal to reduce emissions from land use change and forest and peatland fires by 91% (Tacconi & Muttaqin, 2019).

Given the enormous challenges faced in reducing projected emissions in this sector by 91%, it is clear that a comprehensive plan needs to be developed, rigorously implemented, monitored, and ultimately revised. The plan is being developed (Kementerian et al., 2017). The final design and implementation must learn from past experiences, such as those

produced by the National Action Plan for Reducing Greenhouse Gas Emissions (RAN-GRK). This plan was implemented between 2010 and 2014 following a commitment made by the President of Indonesia at the G20 meeting in 2009 to reduce emissions by 26% unconditionally by 2020 and further by 15% depending on international financial support (Pemerintah Republik Indonesia, 2011).

The Indonesian Government has established various law enforcement agencies in the forestry sector to support this goal. One of the important initiatives at the Ministry of Environment and Forestry (KLHK) is the establishment of the Directorate General of Environmental and Forestry Law Enforcement. This directorate is responsible for formulating and implementing policies designed to reduce damage and threats to forests, as well as violations of environmental and forestry laws. This directorate also combines field personnel, including forestry police and civil servant investigators, in law enforcement efforts. The last one is a civil servant with the authority to investigate a criminal case (Manik et al., 2017). Their duties are: i) informing the public prosecutor about the start of the investigation and submitting the results to them, ii) requesting information from the communications implementing agency, and iii) requesting information from banks regarding the suspect's financial condition. The Directorate General has also established a Forest Police Rapid Response Unit, consisting of highly qualified forest police. Forestry law enforcement carried out by the Ministry of Environment and Forestry is often hampered by limited budgets and limited field personnel. Between 2015 and 2017, the annual budget of the Directorate General of Environmental and Forestry Law Enforcement amounted to approximately USD 13.7 million, equivalent to around 13 cents per hectare of forest (Nurbaya, 2020). Likewise, the number of forestry personnel still needs to be adequate. In the Java-Bali-Nusa Tenggara region, the ratio of personnel to forest is only one policeman for every 60,000 hectares. In comparison, in Papua, the ratio is even more extreme: one policeman for around half a million hectares of forest.

The Indonesian Government has also attempted to develop a national REDD+ framework since the formation of the Indonesian Forest Climate Alliance, namely the Indonesian Forestry Certification Cooperation (IFCA) in 2007, which supported preparations before hosting COP 13 Bali in 2007. In May 2010, the Indonesian and Norwegian Governments signed a Letter of Intent (LOI) under which Norway would provide up to US\$1 billion to significantly reduce greenhouse gas emissions from deforestation, forest degradation, and peatland conversion. Following the LOI, in May 2011, the Indonesian Government announced a two-year moratorium on the allocation of new logging concessions in areas where production forests do not yet have permits through Presidential Instruction (Inpres) No. 10 of 2011 concerning delays in granting new licenses and improving governance of primary natural forests and peatlands. This instruction has been extended three times with the latest Presidential Instruction No. 6 of 2017.

The Letter of Intent agreed upon by Indonesia and Norway aims to improve forests and land through a moratorium policy and peatland restoration. The moratorium policy delays the issuance of new permits in primary natural forests and peatlands. Extending the moratorium period reduces deforestation. On the other hand, this has given rise to complaints from industrial plantation companies because they have to follow land exchange policies, which are considered economically detrimental. Rural communities have a culture of burning land to prepare agricultural land. Therefore, it is also difficult for the community to implement to prevent land clearing through burning. However, after several years of the moratorium, Sloan (2014) states that Indonesia still needs help with problems related to spatial data for the one map policy process and decision-making in implementing the moratorium policy. Currently, there is a one-map policy. However, Suwarno et al. (2018) stated that in Central Kalimantan, the moratorium policy needed to be more effective in reducing forest conversion and carbon emissions. Therefore, building a strong monitoring and evaluation system is necessary to implement the one-map policy.

Although the targets have been adjusted, Yuyun Indradi, forest campaigner from Greenpeace Southeast Asia, expressed doubts about Indonesia's commitment to developing an effective climate action plan and highlighted shortcomings in the Government's actions

against forest fire perpetrators, most of whom are corporations, as revealed by (Sari & Multazam, 2021). Indradi emphasized that a lack of seriousness in these efforts could affect Indonesia's Contribution to global efforts to limit temperature rise to below 2°C, or ideally no more than 1.5 degrees above pre-industrial levels.

Efforts to Reduce Forest Fires Based on the Paris Agreement on Human Security

The concept of human security answers the weaknesses of realism because it can be used to explain forest fires and smoke pollution in Indonesia and can analyze threats to humans, while realism focuses only on threats to the state researchers. In the research, several indications regarding forest fires and air pollution threaten human survival. According to researchers, the state-centered approach is challenged by human security because the main reference object for security is humans. Forest fires and smoke pollution do not threaten the country directly, but they do risk human lives. Forest fires and smoke pollution cause casualties (injuries and deaths) and ignore traditional assumptions in security, which believe that security only concerns the state.

According to Global Environmental Change and Human Security (GECHS): “ Human security is achieved when and where individuals and communities have the choices necessary to end, mitigate, or adapt to threats to their human, environmental, and social rights; have the capacity and freedom to exercise these choices; and actively participate in achieving these choices” (Brauch, ed., 2009). Based on the GECHS definition, society can achieve human security if they have the choice to escape from threats that arise in their lives. In the case of Indonesia, individuals and communities have no choice but to escape the danger of forest fires and smoke pollution because they cannot stop disasters that always affect the lives of people living in Indonesia in terms of environment, health, education, and economy. And other threats. One proof of this is their inability to protect infant deaths in Pekanbaru. It was recorded that in 2015 when there was a haze in the city of Pekanbaru, infant mortality cases reached 87.6%, and these cases decreased by 50.16%. This case shows that individuals and communities have no choice but to protect themselves from the threat of forest fires and smoke pollution.

Indonesia's forest fires and smoke pollution affect people's ability to carry out economic activities during the outbreak. The World Bank states that many low-income families have the potential to become poor families because of their inability to run a business and study at school (Fachrie, 2020).

Besides the economic aspect, Varkkey (2016) reported that pollution has impacted people's health in Southeast Asia because 75 million people experience health problems. Additionally, studies conducted by medical researchers state that smoke pollution is the greatest environmental health threat because smoke pollution and respiratory and cardiovascular diseases are interrelated (Cheong et al., 2019). Smoke haze pollution affects not only the population of Indonesia but also residents of neighboring countries such as Malaysia because research reports that many victims experienced health problems due to the disaster. The Indonesian National Disaster Management Agency also said that nearly one million (919,516) people suffered from Upper Respiratory Tract Infections (ARI) due to forest fires in Indonesia (Fachrie, 2020). These data prove that society is threatened by smoke pollution in terms of health.

Apart from that, there is also political security if smoke pollution occurs in Indonesia. In 2019, the National Human Rights Commission of the Republic of Indonesia (KOMNAS et al.) categorized smoke pollution as a violation of human rights because everyone has the right to a clean and healthy living environment as regulated in the 1945 Constitution of the Republic of Indonesia. Based on the political security aspect, protecting human rights and freedoms is important. This means there is vulnerability and threat to humans due to smoke pollution.

Finally, the environment is also an aspect of human security that can be used to explain the impact of forest fires and smoke pollution on people living in Indonesia (Fachrie, 2020). In 2019, forest fires and smoke pollution caused poor air quality, as seen in Palangkaraya, Central Kalimantan, where Greenpeace reported that air quality had reached

2000 in the Air Quality Index (AQI), which is worse than the numbers indicating dangerous levels (301-500) (BBC, 2019). The environment in Riau Province was also very unhealthy during forest fires and smoke pollution in 2019 (Fachrie, 2020). As a result, people become vulnerable and cannot freely access clean air in Indonesia because smoke haze pollution threatens their environment.

Smoke pollution can also be understood in the personal aspect of human security. Haze pollution affects personal safety when individuals are threatened. Threats to the economy, food, health, and the environment create threatening conditions in personal life because they become obstacles to achieving a better life. This aspect is a logical consequence of other aspects of human security. From a cultural security aspect, smoke pollution also causes society to lose artistic integrity. Several articles argue that customary law is an important tool to protect forests from forest fires. In South Sumatra, the Indonesian Government has issued a Ministerial Decree recognizing forest management by the Basemah tribe using customary law. One of the tribe's representatives stated that this customary law can protect their forests (Fachrie, 2020). Customary law is believed to be a more effective tool for safeguarding forests than formal law in several provinces (Fachrie, 2020).

In contrast, the Dayak Tribe in Kotabaru uses the Bera System as their customary law to protect forests by imposing fines (Ifrani et al., 2019). However, forest fires and smoke pollution still occur yearly on the islands of Sumatra and Kalimantan. They threaten the cultural integrity of local communities in Sumatra and Kalimantan, which are preserved by tribal communities.

Considering the various threats posed by forest fires and smoke pollution in Indonesia, especially in human security aspects such as health, economy, culture, and the environment, the Paris Agreement offers a comprehensive framework to overcome these challenges. This global agreement, dedicated to mitigating climate change and supporting sustainable development, provides a strategic approach to managing the complex factors contributing to forest fires, thereby ensuring the protection and well-being of individuals and communities.

First, the Paris Agreement's commitment to limit global warming plays an important role in addressing the root causes of forest fires. The agreement's emphasis on reducing greenhouse gas emissions is consistent with efforts to mitigate climate change, which exacerbates the conditions that cause forest fires. By adhering to these commitments, Indonesia can implement strategies that reduce the incidence and severity of these natural disasters. This aligns with the broader concept of human security, which emphasizes individual protection from environmental threats.

In addition, this agreement also encourages sustainable land use and forest management practices. Sustainable development, as promoted in the Paris Agreement, is essential in managing forest ecosystems and reducing the area's vulnerability to fire. Implementing controlled burning, reforestation, and sustainable agriculture can maintain ecological balance and prevent the spread of large-scale fires. This approach not only preserves the environment but also guarantees the protection of the economic and cultural livelihoods of communities that depend on forest resources, thereby covering various aspects of human security.

Financial support and technology transfer mechanisms in the Paris Agreement also play an important role in increasing Indonesia's capacity to manage forest fires. Based on the agreement, developed countries are obliged to support developing countries in climate change mitigation and adaptation efforts. This provision can help Indonesia obtain advanced technology and infrastructure for effective forest management, fire risk monitoring, and emergency response. Improving these capabilities directly contributes to maintaining human health, ensuring economic stability, and protecting environmental integrity.

Building adaptation and resilience, a core component of the Paris Agreement, is critical in preparing Indonesia to deal effectively with the impacts of climate change. Developing strong adaptation strategies, such as early warning systems, public health initiatives, and economic diversification plans, can significantly increase community resilience, especially in fire-prone areas. This proactive approach aligns with the human security framework by minimizing individual vulnerability to environmental hazards and their negative impacts.

Additionally, the collaborative ethos fostered by the Paris Agreement is essential for shared learning and cooperative action. Indonesia can benefit from the experiences and practices of other countries in dealing with forest fires. This collaborative approach encourages the exchange of knowledge and best practices in forest management, fire prevention, and emergency response, resulting in more effective and efficient policymaking and governance.

The Paris Agreement also recognizes the importance of human rights and environmental protection. By emphasizing respect for human rights, including the right to health and the rights of indigenous peoples, the agreement strengthens policies that protect the cultural and social integrity of communities affected by forest fires. This aspect is very important to ensure that environmental policies do not ignore human security's social and cultural aspects.

Finally, monitoring and reporting requirements mandated by the Paris Agreement increase transparency and accountability. Routine assessment and communication regarding forest fire management efforts can produce more informed and effective governance, benefiting human security in Indonesia.

CONCLUSION

From the results of research with the data obtained, it can be concluded that the Government's role in handling forest fire cases is the implementation of the Paris Agreement. It cannot be said to be successful because the data presented shows that Indonesia already has various kinds of quite structured commitments, but from these multiple kinds of commitments, there is still doubt in developing plans that have been prepared in a structured manner. On the other hand, the Government still shows shortcomings, such as the lack of action against the perpetrators of forest burning. Looking at the results described, the Indonesian Government appears to be less serious. It seriously influences the commitments made by the Government and the commitments resulting from the Paris Agreement. This incident, Indonesia is on the verge of danger, with a climate crisis that will threaten and, of course, all laws and clearing parties irresponsibly continue to burn forests without looking at the impact that will occur in the future on Indonesia and the earth we live on. We hope that the Indonesian Government will resolve this problem as soon as possible and immediately implement the commitment that the Government has made to reduce cases of forest fires so that the Paris Agreement commitments can run smoothly.

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