Research Articles

The Impact of the Covid-19 Pandemic on the Environment: Environmental Diplomacy on Handling Covid-19 Medical Waste in Indonesia

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Abstract

The Covid-19 pandemic has had a significant impact on the environment. The enormous need for personal protective equipment (PPE) masks (both medical and non-medical masks), protective clothing, face shields, gloves to hand sanitizers and disinfectants has resulted in the accumulation of medical waste in some regions in Indonesia. This paper aims to describe the environmental diplomacy and international cooperation efforts undertaken by the Indonesian government to address these problems. The author finds that Indonesia's environmental diplomacy was carried out before the pandemic occurred, but not much has focused on medical waste management. International cooperation to overcome the problem of medical waste accumulation has been carried out with some countries such as Japan, ASEAN and also WHO. Of course, considering that this pandemic is still ongoing, it is hoped that this paper can be the start of research and can be used as a stepping stone for further research.

Keywords: Covid-19 Pandemic, Environment Diplomacy, Medical Waste, International Cooperation, Indonesia

I. Introduction

The coronavirus pandemic is not over. This virus has spread to all continents of the world. The virus originated from Wuhan, China, started on 16 December 2019, where a patient experienced a disease similar to the SARS-Cov2 virus (Shalihah, 2020). Then 30 December 2019, Ai Fen Hospital China posted a photo of a laboratory report on social media that spread to doctors. The Chinese government found dozens of cases of similar diseases in Wuhan later. On 3 January 2020, Singapore, Hong Kong, and Taiwan also experienced this SARS-like outbreak. Checks for people with fever began to be implemented at the airport for passengers' arrival from Wuhan (Shalihah, 2020).

On 11 January 2020, Shanghai scientists sequenced and published the Coronavirus's complete genome in an online discussion forum for epidemiologists. (Gusman, 2020) On 13 January 2020, Thailand confirmed the first cases, followed by Japan, Beijing and Southern Guangdong on 20 January 2020. After the incident, Chinese infectious disease expert Zhong Nanshan confirmed that the virus had spread among humans on state television. 23 January 2020, the Chinese Government lockdown Wuhan and Hubei Province to control the Coronavirus spread (Gusman, 2020). After the incident, Chinese infectious disease expert Zhong Nanshan confirmed that the virus had spread among humans on state television.

On 30 January 2020, the WHO finally declared the pandemic a global emergency (Gusman, 2020). After the virus spread to Asia, countries made various travel restriction policies. An example of a case in Asia is Japan, with more than 3600 passengers on the Diamond Princess Cruise ship quarantined for two weeks on board since 5 February. The result is that the virus has infected 600 passengers, and six died. In South Korea, the virus spreads very fast. However, it can be handled quickly because of the Rapid Test

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carried out massively and promptly, even without quarantine, lockdown, or business closure.

The spread of the Coronavirus in Europe began when France reported its first death on 14 February 2019. In Europe, Italy, the epicenter of the outbreak, implemented a national lockdown on 9 March 2002. Spain followed this as the country with the second-highest number of deaths in the world at that time. In the US, the outbreak started on 29 February 2020; however, because testing rates are still low, detection rates are still low. The United States declared the corona outbreak a national emergency on 13 March 2020. After massive testing, the United States is currently among the top countries in this pandemic (Gusman, 2020).

The Covid-19 pandemic has resulted in many countries implementing lockdown policies. Governments in major countries such as Spain and the United States are taking action and taking lockdown measures to reduce Coronavirus expansion. Things that were done during the lockdown period included limiting international travel, restricting the people's movement, and limiting people on a large scale in the general public. This lockdown policy was taken because other countries saw China's condition slowly improving after implementing this policy (BBC, 2020).

However, over time, the lockdown policy turned out to have a positive effect on the environment. The amount of carbon emissions in the air has dropped dramatically. This is a result of many industries, transportation and companies that have closed down. According to news from the BBC, this year alone, the air pollution level in New York has decreased by almost 50%. (Anwar, 2020) In other countries such as China, emission levels reduced by 25% at the beginning of 2020 when the pandemic began to spread in China. Many factories closed, and coal use in China's six largest power plants fell by 40%. In the end, good air quality rose to 11.4% in China. According to the BBC, satellites show nitrogen dioxide (NO2) emissions disappearing over Northern Italy, Spain, and the UK. In the transportation sector, for example, it accounts for 23% of total global carbon emissions. Transport-related carbon emissions are seen to fall in countries that restrict the movement of citizens as a policy. Driving and flying are the main contributors to emissions from transportation, namely 72% and 11% of greenhouse gas emissions (Anwar, 2020; Aqil, A., Muh. Ibnu Aqil and Arya Dipa, 2020).

In Indonesia, air quality improvement is also seen in Jakarta and surrounding areas. The Large-Scale Social Restrictions (PSBB) imposed by the Provincial Government starting early April 2020 also plays a role in improving the area's air quality. Based on aerial monitoring, through satellite photos, nitrogen dioxide (NO2) levels in the air in Jakarta and its surroundings have decreased by 40% compared to the previous year (Climate Tracker, 2020). The environmental group, the Commission for the Elimination of Lead Gasoline (KPBB), monitors data from AirNow, stating that the PM2.5 concentration in Central Jakarta in 2019 was 40.10 mcg / cbm (Aqil, A. dan Muh. Ibnu, 2020). Daily average March 16-25, 2020 is 30.13 mcg / cbm and 15.48 mcg / cbm on March 26 to April 4, 2020 (Aqil, A. dan Muh. Ibnu, 2020). Particulates (PM2.5) are airborne particles smaller than 2.5 micron (micrometer). (BMKG, 2020) The particulate is a measure of air quality.

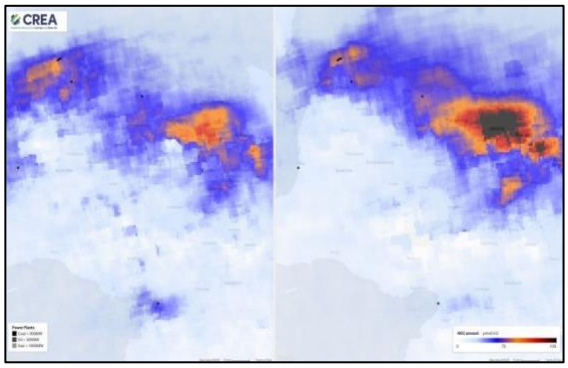

Fig. 1. Satellite Photo of Jakarta and Banten Region: Comparison of NO2 Levels in the Air from 12 March 2020, to 5 May 2020 (Left) and 2019 (Right)
Source: (Climate Tracker, 2020)

Despite improving air quality, the Covid-19 pandemic has also negatively impacted the environment, namely an increase in waste, especially medical waste, and the increasing need for Personal Protection Equipment (PPE) to deal with the Covid-19 pandemic. Almost all countries affected by the Covid-19 pandemic require the use of masks for everyone leaving the house and also require the use of hand sanitizers, which usually use plastic bottles as storage containers. Also, handling Covid-19 in the hospital by medical personnel requires gloves, hazmat suits, masks, face shields, most of which are only disposable goods. This, of course, creates a large amount of medical waste.

The Asian Development Bank (ADB) report on medical waste management during the Covid-19 pandemic stated that big cities in Southeast Asia, such as Manila (Philippines), Jakarta (Indonesia), Bangkok (Thailand), Ha Noi (Vietnam), and Kuala Lumpur (Malaysia) produced more than 60,000 tons of medical waste for 60 days collectively. (Fernandez, 2020) In comparison, for the Jakarta area alone, with a population of 10.6 million people, before the Covid-19 pandemic has produced 35 tons of medical waste per day. When the pandemic occurred, there was an additional 212 tons of medical waste per day, so it is estimated that within 60 days, the total medical waste in Jakarta could reach 12,720 tons (Fernandez, 2020).

City	Population (*World Population Review*)	Medical waste generated (tonnes per day before Covid-19)	Additional medical waste (tonnes per day)	Total possible production over 60 Days
Manila	14 million	47	280	16,800
Jakarta	10.6 million	35	212	12,720
Bangkok	10.5 million	35	210	12,600
Ha Noi	8 million	27	160	9,600
Kuala Lumpur	7.7 million	26	154	9,240
Total			1,016	60,960

Tab. 1. ADB Report on Medical Waste Management During the Covid-19 Pandemic in the Capitals of Southeast Asian Countries
Source: (Fernandez, 2020)

This research is a descriptive study that discusses the impact of the Covid-19 pandemic on the environment, especially regarding medical waste in Indonesia and the Indonesian government's efforts in overcoming it. This research focuses on environmental diplomacy carried out by the Indonesian government to address medical waste in Indonesia, especially during the Covid-19 pandemic. Environmental diplomacy is a variety of diplomatic actions in bilateral and multilateral forums between one country and another, directly or indirectly discussing the protection, use and management of the environment, land, water and atmosphere, and related ecosystems and the broad biosphere (Scoullos, M. and A. Roniotes, 2013, p. 13). In practice, environmental diplomacy aims to fight for a country's national interests and get generous support from other countries. Environmental diplomacy is diplomacy that combines ecological problems involving other countries and uses negotiation as a solution.

Based on research conducted by the American Institute for Contemporary German Studies (1998), environmental diplomacy has contributed to environmental improvements in countries worldwide. Environmental diplomacy can be defined as a combination of tools and approaches to help solve problems through cooperation, build trust, and resolve related conflicts on environmental issues and natural resources. Several literature studies also discuss environmental diplomacy as one of Indonesia's efforts to overcome environmental problems due to increasing public awareness regarding environmental issues (Kurniaty, 2020). Starting from environmental diplomacy, Indonesia's Government carries out bilateral and multilateral cooperation to address environmental problems in Indonesia.

The first part of this paper describes the problem of medical waste during the Covid-19 pandemic in Indonesia. The next section describes the efforts to tackle Covid-19 medical waste that has been carried out by the central and regional governments. Then regarding international relations, the author discusses environmental diplomacy and international cooperation carried out by the Indonesian government to deal with medical waste.

II. The Problem of Medical Waste in Indonesia during the Covid-19 Pandemic

Before the Covid-19 pandemic, Indonesia had experienced problems with the imported plastic waste throughout 2019. Data recorded by the Ministry of Environment and Forestry (KLHK) of the Republic of Indonesia stated that 882 containers contained plastic scrap and paper scraps imported into Indonesia within the five months from April to August 2019 (ANTARA, 2019). Three hundred eighteen containers contained the remaining plastic material mixed with toxic and Dangerous (B3) waste materials, including medical waste. Some plastic waste mixed with B3 waste has been re-exported to Australia's country of origin by the Indonesian government (ANTARA, 2019). The problem of importing plastic waste has not been resolved until 2020, and Indonesia has been faced with a new problem related to the Covid-19 pandemic, namely medical waste.

Medical waste is the result of residue from a medical activity that can include infectious, pathological, chemical, pharmaceutical or radioactive waste. China, the first country to experience the Covid-19 outbreak, has experienced an increase in medical waste from 4,902.8 tons per day to 6,066 tons per day (Violetta, 2020). Indonesia has also experienced a growth in medical waste since the entry of the Covid-19 outbreak in March 2020. Secretary-General of the Indonesian Environmental Scientist Association (IESA) Dr. Lina Tri Mugi Astuti, as reported by Antara news, stated that each Covid-19 patient could contribute 14.3 kg of medical waste per day (Violetta, 2020). Patients and medical personnel handling this pandemic also contributed to medical waste because the PPE used is all disposable, such as masks, gloves, clothes, including face shields. This increase in medical waste volume has occurred since March 2020 at RSPI Sulianti Saroso, a Covid-19 referral hospital. The hospital processed 2,750 kg of medical waste in January 2020, and in March, 4,500 kg of medical waste entered their incinerator (Violetta, 2020).

Data from the Ministry of Health in March 2020 stated that 2,820 hospitals and 9,884 Puskesmas in Indonesia produce up to 290 tons of medical waste every day (Aqil, A., Muh. Ibnu Aqil and Arya Dipa, 2020). There are ten licensed medical waste treatment plants in Indonesia with a combined total capacity of 170 ton of waste per day. Simultaneously, only 87 hospitals have incinerators to process waste on-site, with a combined daily capacity of up to 60 tons (Aqil, A., Muh. Ibnu Aqil and Arya Dipa, 2020). Medical waste processing facilities' daily capacity is not comparable to the medical waste generated every day, resulting in an accumulation of medical waste waiting to be processed.

In May 2020, the Ministry of Environment and Forestry (KLHK) stated that the volume of B3 waste (hazardous and toxic materials) from the Covid-19 pandemic increased by 30%. (Yulianto, Agus and Dedy Darmawan Nasution, 2020) As of 8 June 2020, Indonesia's medical waste reached more than 1,100 tons from 30 provinces in Indonesia (ANTARA, 2020). This figure was mentioned by the Minister of Environment and Forestry of the Republic of Indonesia Siti Nurbaya, at the Work Meeting of Commission IV of the House of Representatives in Jakarta on 24 June 2020. The enormous medical waste came from Java, namely 478.18 tons, followed by Bali and Nusa Tenggara as much as 200.36 tonnes, Kalimantan 168.76 tons, Sumatra 147.62 tons, Sulawesi 94.89 tons, and Maluku Papua 18.73 tons (Majni, 2020).

Fig. 2. Amount of Medical Waste during the Covid-19 Pandemic in Indonesia
Source: (Majni, 2020)

The PPE used to handle the Covid-19 pandemic in Indonesia is local PPE and dominated by imported PPE. During January-May 2020, the Central Statistics Agency (BPS) recorded 2,993 tons of PPE imports, equivalent to US$ 43.47 million (Thomas, 2020). The import of PPE, around 82%, was carried out during March-May, which is part of the program to accelerate the handling of Covid-19. Before the Covid-19 pandemic, in January-February, PPE imports only reached US$ 7.66 million. In March, the Covid-19 pandemic started in Indonesia, the volume increased to US$ 3.31 million, rising to US$ 10.98 million in April and US$ 21.52 million in May (Thomas, 2020). Most of these PPE imports came from China, namely US$ 31.98 million, followed by Hong Kong with US$ 5.42 million; Vietnam US$ 1,46 million; South Korea US$ 1.39 million; Japan, US$ 679 thousand; and other countries amounting to US$ 2.53 million. The Indonesian government also imported 62,817 tons of PPE raw materials for protective clothing until May 2020 (Thomas, 2020).

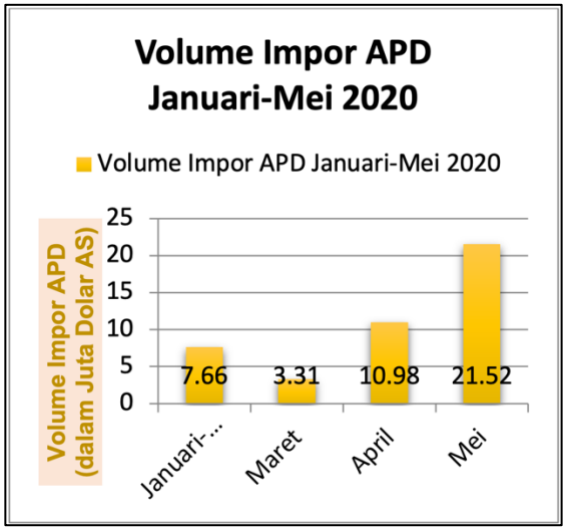

Fig. 4. Indonesia's PPE Import Volume, January-May 2020
Source: Thomas (2020)

Regarding the import of PPE, the Indonesian Textile Association (API) had expressed a protest to the government because domestic PPE was considered sufficient to meet domestic needs. However, because the PPE import tap opened, the domestic PPE experienced a surplus, so it was export abroad (Thomas, 2020). This means that most of the medical waste generated during the Covid-19 pandemic comes from imported PPE from China and other countries.

III. Handling Covid-19 Medical Waste in Indonesia

Since the beginning of the Covid-19 pandemic in Indonesia, the Ministry of Environment and Forestry has issued circular containing regulations to manage Covid-19 medical waste. Circular Number: SE.02/PSLB3/PLB.3/3/2020 concerning Management of Infective Waste (B3) and Household Waste from Handling Corona Virus Disease signed by the Minister of Environment and Forestry on 24 March 2020 states that infectious medical waste is necessary managed as B3 waste at the same time to control and stop the transmission of Covid-19 (KLHK, 2020). Health care facilities must store infectious medical waste in closed containers for two days after being generated.

The medical waste must then burned in an incinerator with a minimum temperature of 800 degrees Celsius. The remainder of the processing must be packed in a particular container, and then given the symbol "toxic," then handed over to the B3 waste manager (Violetta, 2020). For household waste that contains ODP (a person under monitoring) Covid-19, the family concerned must collect masks, gloves and protective clothing in a closed container and then dispose of them in a waste management facility. After wearing masks, healthy people have to cut the masks and pack them neatly before throwing them in the trash (Violetta, 2020).

Although the government has issued a regulation on medical waste management, the fact is that not all health care facilities have adequate incinerators to deal with infectious medical waste. Facilities for infectious medical waste management are only available in Riau Islands, Tim Kalimantan, Banten, South Sulawesi, West Java, Central Java and East Java (Majni, 2020). Meanwhile, West Sumatra, Bengkulu, North Kalimantan, Gorontalo, North Maluku, Maluku, West Papua and Papua do not have B3 waste treatment facilities with operational permits (Majni, 2020)

Siti Nurbaya, Minister of Environment and Forestry, at the Work Meeting of Commission IV of the House of Representatives in Jakarta on 24 June 2020, said that the Director-General of Waste Management and Toxic and Hazardous Waste (PSLB3) asked to implement a systemized medical waste management guide and plan (ANTARA, 2020). Previously, the Director-General of Waste, Waste and B3 Management of the Ministry of Environment and Forestry, Rosa Vivien Ratnawati, had also stated that her party had made a quick response to handling the Covid-19 pandemic waste. He said he invited local governments to prepare facilities and infrastructure such as dropboxes and ensure medical waste from health care facilities adequately managed (Yulianto, Agus and Dedy Darmawan Nasution, 2020).

Sinta Saptarina Soemiarni (the Director for Performance Assessment of Hazardous and Non-B3 Waste Management, Ministry of Environment and Forestry) also stated that the government would build 32 medical, hazardous waste disposal facilities in 2020-2024 with the Ministry of Environment's State Budget and Forestry. Those facilities will be handed over and managed by the respective local governments (KLHK, 2020). These areas include West Sumatra, Aceh, South Kalimantan, East Nusa Tenggara (NTT) and West Nusa Tenggara (NTB) in 2020 (ANTARA, 2020). From 2021 to 2024, the government will develop medical waste management facilities in Jambi, West Papua, West Kalimantan, North Sulawesi, Gorontalo, Southeast Sulawesi, Papua, Maluku, South Sumatra and North Kalimantan (ANTARA, 2020). This facility's existence aims to support health facilities to focus on improving medical services for the community. The facility performance monitoring system is also a priority for monitoring the Ministry of Environment and Forestry. Furthermore, local governments are expected to meet four requirements: availability of land according to spatial planning, the commitment of Regional Leaders, management units and environmental documents (KLHK, 2020).

The construction of medical waste processing facilities is still in the process, while the amount of medical waste increases every day. Therefore, the Ministry of Environment and Forestry also involved a cement factory dealing with Covid-19 medical waste (Rikin, 2020). Cement kilns can destroy medical waste, with temperatures reaching 1,000 degrees Celsius. Medical waste must be destroyed with a minimum temperature of 800 degrees Celsius to be safe for the environment.

In addition to efforts to tackle the Covid-19 medical waste problem by the central government, local governments are also trying to tackle medical waste by inviting Regional-Owned Enterprises (BUMD) to collaborate in processing medical waste. The West Java government has collaborated with PT Java Medivest to anticipate an increase in Covid-19 medical waste. PT Java Medivest is a subsidiary of Jasa Sarana BUMD, which focuses on medical waste management. This company is located in the Dawsan area,

Karawang Regency. According to Olivia Allan, Director of Services for PT Java Medivest, the company is capable of handling 24 tons of B3 waste per day (Prabawanti, 2020).

IV. Indonesian Environmental Diplomacy and International Cooperation on Handling Covid-19 Medical Waste

Apart from domestic efforts, the Indonesian government has also carried out environmental diplomacy to address environmental problems related to waste management. Environmental diplomacy has become an instrument of foreign policy that is increasingly central to Indonesian diplomacy. The Ministry of Foreign Affairs continues to oversee various environmental issues that directly intersect with Indonesia.

These issues are manifested in environmental diplomacy carried out by the Indonesian government both in international forums and in bilateral relations. In 2007, Indonesia was active in the UNFCCC, including hosting the 13th COP which gave birth to the Bali 117 Action Plan. Indonesia also signed a moratorium on forest conversion, implemented a REDD+ cooperation agreement with Norway and ratified the AATHP. The ASEAN Agreement on Transboundary Haze Pollution (AATHP) is the ASEAN Agreement on Transboundary Air Pollution which was ratified by Indonesia in 2014. REDD+ (Reduction of Emission from Forest Degradation and Deforestation) is a mechanism for assistance and cooperation between countries and companies in developing various activities to reduce emissions globally. REDD+ is essential for Indonesia, considering Indonesia's vast forest ownership. (Sinaga, Obsatar, Yayan Mochamad Yani & Verdinand Robertua Siahaan, 2018, p. 30) The REDD+ Agreement between Indonesia and Norway has resulted in several programs such as law enforcement, fire management, and Green Village (Ningsih, 2019). In addition, there is another environmental diplomacy carried out by Indonesia during the last decade. However, not much of this environmental diplomacy focuses on B3 waste management, including medical waste.

The Indonesian government carries out environmental diplomacy which includes a discussion of B3 waste management through its participation in the United Nations Environmental Assembly (UNEA) which is the highest decision-making mechanism in the environmental sector at the global level.

The UNEA meeting is held every two years to agree on various priorities for global environmental policy and become a reference for the development of international environmental law. UNEA-4 was held March 11-15, 2019, in Nairobi, Kenya, involving 4,700 delegates from 198 countries and dozens of observers from NGOs, UN agencies and other groups. The UNEA-4 meeting had the theme of "Innovative solutions for environmental challenges and sustainable consumption and production." It focused on three main points, namely: environmental challenges related to issues of poverty and natural resource management including sustainable food systems, food security and halting biodiversity loss; resource efficiency, energy, chemicals and waste management through life-cycle approaches; and innovative and sustainable business development following technological developments (Kementerian Luar Negeri, 2019)

In the plenary session, Indonesia delivered a national statement that put forward two main things. First, the importance of international cooperation and Indonesia's commitment to continuously strive to advance development, without neglecting efforts to overcome environmental problems. Second, various breakthroughs in Indonesia, such as preserving mangrove, peat and coral reef ecosystems, set targets for reducing marine plastic waste, and declared an independent regional capacity center on marine protection from land-based activities in Bali and the International Tropical Peatlands Center (ITPC) at Bogor (Kementerian Luar Negeri, 2019)

The Indonesian government's international collaboration with other countries related to medical waste processing was also carried out before the Covid-19

pandemic. At the multilateral level, Indonesia is one of the countries that have ratified the Basel Convention. The convention includes the Basel Ban Amendment, namely the preamble to the Basel Convention, which does not allow participating states to send B3 waste (including medical waste), both for final disposal and recycling purposes. Return to a country that does not have an environmentally friendly waste management capacity. However, the Basel Ban Amendment has not been enforced due to rejection from several countries such as Canada, Australia, Britain, and Germany. Many member countries still need ratification so that the amendments can take effect (Khairunnisa, 2017)

Indonesia's bilateral cooperation regarding medical waste has also been carried out with Japan. Bilateral cooperation between Indonesia and Japan was carried out in 2018. At that time, The Ministry of Environment and Forestry (KLHK) held a meeting with the Japanese Ministry of Environment to discuss cooperation in improving Citarum river water quality, handling medical waste, managing mercury, and handling marine debris (Setiawan, 2018). The Indonesia-Japan cooperation was proposed because, at that time, Indonesian medical waste had accumulated. The amount of medical waste was estimated at around 300-340 tons per day from 2,781 hospitals. This buildup is caused by the limited number of medical waste processing services and the limited number of hospitals with licensed incinerators (Setiawan, 2018).

The scope of cooperation between the two countries regarding medical waste includes the transfer of knowledge in hospital policies that focus on medical services and do not produce medical waste. Another policy knowledge transfer that is also needed is the mechanism for treating medical waste from the hospital to a zone-based destruction service. Head of Public Relations Bureau, Ministry of Environment and Forestry, Djati Witjaksono Hadi, stated that in addition to policy matters, Indonesia also hopes that Japan will help with methods and technology for managing non-incinerator medical waste. Transfer of knowledge about local government and private sector involvement in non-assisted medical waste management activities (KLHK, 2018).

After the Covid-19 outbreak entered Indonesia, international cooperation to tackle the problem of medical waste continued. At the ASEAN regional level, on 13 July 2020, the ASEAN Inter-Parliamentary Assembly (AIPA) and the Institute for Economic Research for ASEAN (ERIA) held a virtual meeting of the "Online Joint Dialogue on Waste Management in the Context of the COVID-19 Pandemic" to implement the General Assembly resolution. AIPA 40 on waste management in ASEAN countries to achieve sustainable development goals. During the meeting, Indonesia was represented by the Deputy Chair of the Committee for Inter-Parliamentary Cooperation (BKSAP) of the Indonesian House of Representatives, Putu Supadma Rudana, and BKSAP Member Dyah Roro Esti. The meeting was also attended by legislators from Brunei Darussalam, Cambodia, Laos, Malaysia, Myanmar, Philippines, Thailand and Vietnam. The legislators held a thorough discussion on urban waste management and increasing medical waste amid the COVID-19 pandemic (B.K.S.A.P., 2020).

The meeting opened up data showing that the call to stay at home has increased household plastic waste. This is due to the increasing shopping behavior of people who are shifting to online shopping. Besides, protective equipment for medical workers in hospitals and medical waste from COVID-19 patients also contributed to the increased medical waste volume (B.K.S.A.P., 2020).

The dialogue between the ASEAN Inter-Parliamentary Assembly (AIPA) and the Economic Research Institute for ASEAN (ERIA) also discussed the most common problems faced by ASEAN countries in waste management, namely related to limit resources a financial and technological perspective. Dyah Roro Esti (Committee Member for Inter-Parliamentary Cooperation) shared his observation. She said that all energy and efforts had been devoted to health and socio-economic issues amid the current COVID-19 pandemic. Environmental

problems such as waste production, particularly waste medical, received relatively little attention. Therefore, Commission VII DPR Indonesia members invited all the panelists to think of solutions to ensure informal workers' safety who make a living from collecting garbage because the increasing amount of medical waste will undoubtedly harm their health. AIPA and ERIA drafted a resolution due to the Joint Dialogue for submission to the 41st AIPA General Assembly, held September 8-10, 2020, in Hanoi, Vietnam (B.K.S.A.P., 2020).

The international cooperation carried out by the Indonesian government regarding medical waste, most importantly, in partnership with the World Health Organization (WHO). WHO has supported the Ministry of Health to provide education about medical waste management in Indonesia during the COVID-19 pandemic. Throughout June and early July 2020, WHO, KLHK and the Ministry of Health have organized a series of web seminars to inform the latest policies and national protocols on water, sanitation and hygiene (WASH) and medical waste management in health facilities. They also share about the use of safe incinerators and autoclaves to avoid transmission of COVID-19. The web seminar was attended by more than ten thousand participants from 34 provinces throughout Indonesia. WHO introduced the WASH for Facility Improvement Tools (WASH FIT) for use in facilities that are preparing for, or responding to, cases of COVID-19. WHO recommends using the WASH FIT to assess WASH in health facilities, make necessary improvements, and maintain quality WASH infrastructure services during this pandemic (WHO, 2020).

In the series of webinars, several challenges in waste management were highlighted by the Ministry of Health and were discussed by the participants, including the availability and use of waste processing facilities in health facilities. Although some hospitals have incinerators to dispose of the resulting medical waste, they do not have the necessary permits to operate them. Out of a total of 2,889 hospitals, only 82 have licensed incinerators in their area. Hospitals that do not have their own incinerators contract with private health service waste management providers, 92% of which are located on the island of Java. The long-distance from the hospital to the final medical waste disposal site can increase the risk of illegal disposal, cross-contamination and disease transmission due to the increased likelihood of accidents or human error during the extended transport time (WHO, 2020).

In addition to increasing local capacity, WHO continues to support the Ministry of Health by providing information, education and communication (IEC) materials on waste management. WHO also helps the process of procuring four autoclaves. Furthermore, four incinerators to reduce the buildup of medical waste from COVID-19 health care activities (WHO, 2020).

V. Conclusion

The Covid-19 pandemic has a positive and negative impact on the country's environment globally, including Indonesia. The positive impact is in the form of improving air quality which is the result of the lockdown policy implemented by most countries in the world. Air quality improved as the government restricted the movement of people to minimal social and economic activities. On the other hand, the Covid-19 pandemic has also harmed increasing medical waste because preventing the transmission of this disease requires disposable PPE, such as masks, personal protective clothing, gloves and face shields. Most of the medical waste in Indonesia is the result of imported PPE carried out by the Indonesian government since the beginning of the Covid-19 pandemic.

Indonesia has experienced a massive increase in medical waste, demanding the Indonesian government to handle Covid-19 medical waste during the pandemic. Countermeasures carried out by the Indonesian government are carried out internally and externally through environmental diplomacy. Indonesia carried out environmental diplomacy related to medical waste management before the

pandemic, one of which was through UNTEA in 2019. The Indonesian government has also held several international collaborations with Japan, ASEAN and WHO to address the problem of medical waste accumulation due to the Covid-19 pandemic.

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