THE INTEREST OF JAPAN IN INDONESIA'S FOREST CONSERVATION PROGRAMS ON 2008-2015

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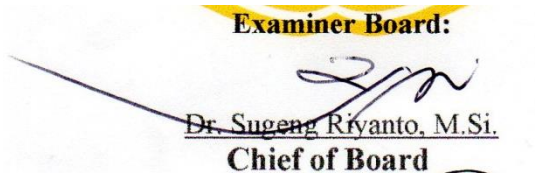


Abstract

The main purpose of this research is to find out what national interest of Japan was made in forest conservation in Indonesia in 2008 until 2015. One of the countries that have long committed to cooperate with the Indonesia is Japan, a country that once occupied Indonesia in the period 1942 - 1945. Through Japan ODA in Indonesia, Japan also contribute significantly to the field of human resource development and development of social infrastructure of Indonesia economy. Bilateral relations between Indonesia and Japan in the field of forestry have been conducted since the late 1960s, through the project "Mountain Logging Practice in Java". The research method used qualitative with descriptive analysis. This research use theory of National Interest, theory of foreign policy, and theory of International Cooperation which explains about the interest of Japan cooperation in Indonesia's forestry sector. Therefore, there was interest in the cooperation with Indonesia Based on the evidence collected, the interest are Japan wants to protect their citizens from the threat of global warming and Japan wants to prosper their industry by trading Carbon.

Keywords: Japan, Indonesia, Cooperation, Forest, Global Warming.

Introduction

One of the countries that have long committed to cooperate with the Government of Indonesia is Japan, a country that once occupied Indonesia in the period 1942 - 1945. Through Japan ODA in Indonesia, Japan also contribute significantly to the field of human resource development and development of social infrastructure of Indonesia economy. For example, during the economic crisis of Asia in 1997-1998, Japan assisted Indonesia in trying to get out of the crisis in the form of individual loans, an extension of payment obligations, support on government strategies, and so on. Similarly, when a significant earthquake and tsunami from the

Indian Ocean strucked Sumatra island in December 2004, Japan provided reconstruction and rehabilitation funds for disaster victims of $ 640 million.Bilateral relations between Indonesia and Japan in the field of forestry have been conducted since the late 1960s, only 15 years since Indonesia gained independence from Japanese occupation. Cooperation through the project "Mountain Logging Practice in Java," in addition to project cooperation also carried out cooperation in the field of education and job training, technical assistance, forest management, and trade in forest products (Sinaga, 2015).

On 18 June 2008, there is was event in celebrating 50 years of friendship between Indonesia and Japan. Since the start of diplomatic relations between Japan and Indonesia, Workshop Studies Joint Japan-Indonesia on the Prevention of Forest Fires in Jakarta, which was held by the Embassy of Japan together with the Ministry of Forestry of Indonesia have been implemented and JICA (Japan International Cooperation Agency) office in Indonesia. One of JICA program in the field of forestry is a Workshop. It is the result of coordination between the two countries based on the agreement reached on the occasion of meeting between Japanese Prime Minister Yasuo Fukuda and Vice President Jusuf Kalla to cooperate also in the environmental field. On September 2012 there are some agreement from JICA, and the government of Bengkalis which is cooperation with the provision of technical assistance by JICA to Bengkalis District that is by sending eight representatives from Bengkalis District to follow the workshop of environmental ecosystem arrangement course in Japan. The cooperation aims to provide training on the environmental arrangement in Japan to be implemented in Bengkalis district. On February 3, 2013, Japan and Indonesia agreed to sign a project "Indonesia-Japan Project for the Development of the REDD + Implementation Mechanism (IJ-REDD+)." The duration of this corporation is 3years until June 2016. Targets areas of the IJ-REDD+ project

is the province of West Kalimantan (4districts), Central Kalimantan Province and Mountain Trench National Park (6villages). There are five outputs of activities that will be carried out by the IJ-REDD + project, which will be continuously targeted to contribute to the development of REDD + in Indonesia, which are:

1. Level of REDD+ Province of West Kalimantan; Monitoring activities (Remote Sensing, Field Survey, GIS) have been carried out, Training and put into REDD+ MRV (Monitoring, Reporting, and Validation), and RAD-GRK,
2. REDD+ model in the National Park; Facilitation Training, Capacity Building of National Park Staff (Workshop Collaborative Management), Socio-economic Survey, Survey on FPIC, Survey and Training on Biodiversity Survey,
3. REDD + model for HP / HL / APL is developed at pilot site (s),
4. Provincial level MRV in Central Kalimantan; Meeting with JICA-JST Project (Hokkaido University) in collaboration with IJ-REDD +, attending the Peat Carbon Measurement Workshop organized by BSN and JICA-JST Project, 4th International Workshop on Wild Fire and Carbon Management in Peat-Forest in Indonesia, and held a Joint Workshop on REL and MRV of Peat Land and Peat Forest in Central Kalimantan,
5. Support the National REDD + Level by contributing actively in presentations at various meetings; COP 19 in Warsaw, REDD + Partnership Workshop and Meeting. Some activities related to the Joint Credit Mechanism are Interactive Dialogue with Private Sector in Japan and supporting REDD + sessions at the JCM Capacity Building Workshop. Besides, there are activities related to Capacity

Building, namely the Satoyama Training Course in Japan and the Visiting Program to Japan (Direktorat Pemanfaatan Jasa Lingkungan, 2013).

Japan and other developed countries cooperate on forestry because over one million hectares of forests, most of them are tropical forests destroyed every month in the world, equivalent to one football field destroyed every two seconds. In addition to supporting biodiversity and forest-dependent communities, forests and soils store enormous amounts of carbon - nearly three hundred billion tons of carbon or about 40 times the amount of emissions released into the atmosphere. Indonesia has the third largest tropical rainforest in the world after Brazil and Congo with a forest area of 109 million hectares divided into three islands namely Sumatra, Borneo, and Papua in 2003. However, in 2009 it is estimated that the remaining forest area in Indonesia is only left 28%. Even in 2012, the destruction of forests in Indonesia increased significantly that is 982,000 hectares (Wijaya, Juliane, Firmansyah, & Payne, 2017). Indonesia is one of the countries with the broadest extent of tropical forest in the world that needs international funding support to protect the remaining tropical forests. Indonesia is currently in the first position as a country with the fastest rate of deforestation[1] In the world, and the biggest country number three that produced gas emission(Greenpeace, 2010). Indonesia is the third most abundant greenhouse gas emitter after the United States and China (Koran Sindo, 2015).The following data on forest destruction in Indonesia from 2001 to 2012:

[1] Deforestation is the removal of a forest or stands of trees where the land isafter that converted to non-forest use.

Picture 1.1: The development of forest cover loss in Indonesia between 2001 and 2015

Sumber: http://www.wri-indonesia.org/id/blog/6-tahun-sejak-moratorium-data-satelit-menunjukkan-hutan-tropis-indonesia-tetap-terancam

The issue of global warming has become a significant concern since the last few decades, mainly because the impact caused by global warming has significantly affected the existence of the environment and human life. As an illustration, every year humans dump 20 billion tons of carbon dioxide (CO2) emissions into the earth's atmosphere, while trees produce no less than 700 billion tons of carbon dioxide per year. Although it emits carbon dioxide gas but the trees also absorb the gas and produce the oxygen needed as a living substance. The steps to overcome or reduce the impact of global warming include:

1. Through the efficiency of energy utilization, among others by reducing the use of motorized vehicles, making savings in electricity consumption, and so on,

2. By utilizing resources that can be updated or environmentally friendly energy, such as wind energy, biogas, etc.,
3. Reforestation, forest destruction prevention, and forest fire management.

Method of Research

1. Foreign policy theory

"Foreign policy is a strategy or planned action developed by a decision maker from a country against another country or international units used to achieve certain goals based on national interests" (Plano & Olton, 1980)." Foreign Policy theory is a theory that explains the behavior patterns manifested by a country when fighting for its interests" (Masoed, 1990). In relation to other countries, foreign policy is related to the decision-making process that follows a series of specific actions. In studying foreign policy, "there is a universally applicable dictum that says foreign policy is always based on national interests in order to achieve the national goals of its nations. The national goal is actually an elaboration of the national interests of the nation state" (Morgenthau H. J., 1997). This universal proposition shows the inseparable relationship between foreign policy as a tool / instrument of interaction between nation states in international politics always driven and controlled by motivation to achieve certain national interests. This relationship applies at the conceptual and empirical level (Wicaksana, 2007).

Japan concern about global warming problems, as evidenced by foreign policy issued by Japan. as an example "The Cool Earth Partnership," which was published at a global economic forum in September 2009 by providing funding support of 10 billion USD as a developing country financial assistance mechanism, including Indonesia, for environmental adaptation and mitigation projects. Besides that, Japan also conducted program for training Environmental Leaders in Asia and African countries pioneered by the Ministry of Education, Science, and

Technology. This program was implemented from 2008-2013. One of the breakthroughs was to print environmental leaders around the world by providing scholarships for students in developing countries to study undergraduate and postgraduate programs at the most advanced universities in Japan.

2. National Interest theory

Every foreign policy decision of a country is always based on the national interests of the country who involved. National interests are often used as a tool to analyze a country's foreign policy goals. According to Morgenthau “The national interest is the minimum ability of the state to protect and preserve the physical, political, and cultural identity from the interference of other countries. From this review, the leaders of the state lowered the specific policies against other co-operative or conflicting countries” (Morgenthau H. J., 1951).

Morgenthau also said that the concept of national interest is similar to the general concept of the United States Constitution in two ways: general welfare and legal protection rights. The concept contains the inherent minimum meaning in the concept, which is to protect its physical, political, and cultural identity from the disruption of other nations.

National Interest is the goal to be achieved concerning the needs of the state or in connection with the aspired aspect. In this case, the relatively fixed and equal national interests of all countries are security (covering the survival of their people and the needs of the region) and welfare. These two main points are the security of welfare. The national interest is identified with the "national goal." For example, the interests of economic development, the interests of development and improvement of the quality of Human Resources or the interest of inviting foreign investment to accelerate the pace of industrialization.

3. International Cooperation theory

Today international cooperation has become commonplace in international relations. International co-operation becomes a way for actors to make a 'relationship' of interest fulfillment desired by the actor. One of them is the state as the leading actor in international relations. The State carries out international cooperation because the state wants to sufficient for the needs of all the people in the country, prevent/avoid possible conflicts, acquired recognition as an independent state, strengthen the relationship between countries.

”Cooperation is an effort to help each other, cooperate, and unite in implementing a particular activity/event” (Haas, 2013). “Relations and cooperation between countries arise due to the existence of natural wealth and uneven industrial progress, thus forcing the state to form an international collaboration in various sectors” (Kusumaatmadja & Agoes, 2003). There are several reasons why countries cooperate with other countries, Which are:

1. In order to improve the economic welfare of many countries that cooperate with other countries to reduce the cost to be borne by the country in producing a product of necessity for its people because of the limitations of the country,
2. To improve efficiency related to cost reduction,
3. Due to the problems that threaten the collective security,
4. In order to reduce negative losses caused by individual actions of the state that impact on other countries (Holsti, 1995)

The purpose of International Cooperation is to fulfill the interests of individual countries and to combine existing competencies so that the desired goals can e achieved. “The cooperation was formulated into a container called the International Organization. International Organization is a

tool that allows each member to establish cooperation in the field of politics, economic, social and others"(Plano & Olton, 1982).

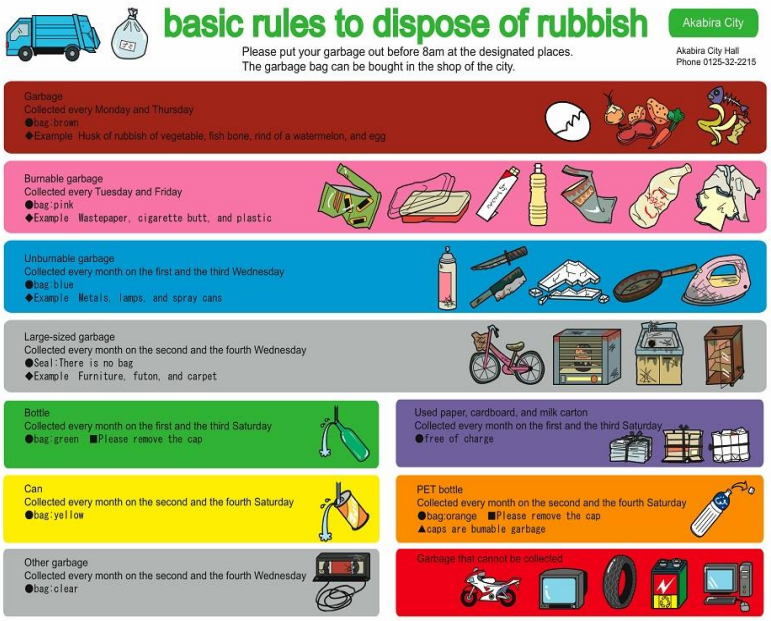
Moreover, this research also has certain of methodology. Basically, this research uses qualitative method analysis with secondary data. In terms of get the data, the writer uses library research method as the data collecting method. In addition, this research uses the data from books, journals, and articles that relevant with the interest of Japan in Indonesia's forest conservation on 2008-2015.

Japan wants to protect its people from the threat of global warming

Global warming is a real threat to the inhabitants of the earth. The evidenced by the increase in the surface temperature of the earth from year to year which caused several problems of natural disasters. Such as melting ice at the north and south poles which caused rising sea levels, sweltering temperatures in some regions of the earth, erratic seasons, hurricanes, extinction of animal and plant species on earth, and so on. According to the IPCC, starting from 1990 in 2100 the earth's temperature will increase up to 5,8◦C. The global warming impact has been felt in Japan. Even in August 2010, the temperature in Japan reached 37 degrees Celsius which caused 132 people to die at that time (WWF Indonesia, 2010). Then also in August 2015, the temperature in Japan reached 38 degrees Celsius, and even the temperature at Ginza reached 50 degrees Celsius. Cause 25 people died, and 11,672 people were hospitalized because of heat (Tribun News, 2015). However, previously in 2013, the temperature in Japan reached 41 degrees Celsius. At least 21 people died due to extreme temperatures at that time. Global warming in Japan also caused the destruction of coral reefs in the waters of Ishigaki Island, Okinawa, which was caused by rising sea surface temperatures.

Because of this, Japan is very concerned about the problem of global warming, as evidenced by various efforts by Japan to organize many programs related to reducing the effects of global warming. Since 2001 the law in Japan requires that all new and old buildings be renovated so that space is given for planting plants. At least 20% of the plants are displayed on the roofs of buildings (Liputan 6, 2005). It is done to maintain air temperature because plants can absorb heat. Japan also launched a satellite to monitor global warming in 2009. With this satellite, Japanese scientists were able to calculate carbon dioxide and methane from 56,000 points on earth. Japanese people have a unique tradition called "Uchimizu Daisakusen," which they do is watering groundwater to reduce the temperature of the soil, keep the soil dust, and make the temperature feel cold. Usually, this tradition is carried out on August 18-25. Also, Japanese society is also always orderly to recycle waste and be regulated by law so that it can be structured and systematic. Japanese people have their schedules to dispose of garbage divided into types as explained in the picture below:

Picture 4.1: basic rules to dispose of rubbish in Akabira city



Source: https://jic.co.id/main/wp-content/uploads/2018/02/budaya-buang-sampah-di-jepang-002-destriyana.jpg

Each region has different rules and schedules but broadly the same. The picture above is an example of a recycling system in Akabira city. It makes Japan the best country in the waste recycling system. The question of environmentally friendly transportation in Japan is the leading country for that. Through its automotive industry, Japan creates electric and solar power cars that are environmentally friendly. Even today, the electric car charging more than the gas station. Not only that, for the electricity problem, Japan will have the largest hydropower and solar power plant in the world, located in the middle of the sea. For solar power plant this project will be completed in 2018 and for the new hydropower plant will be completed in 2020.

Japan also collaborates with other countries to tackle the global warming problem. One of them is the program for training Environmental Leaders in Asia and African countries pioneered by the Ministry of Education, Science, and Technology. This program was implemented from 2008-2013. The aim of this program was to produce environmental leaders around the world by providing scholarships for students in developing countries to study undergraduate and postgraduate programs at the most advanced universities in Japan. Then Japan also provided funding of US $ 10 billion from 2008-2013 to address the problem of global warming in Indonesia. In the forestry sector, Japan also cooperates with developing countries through JICA. Japan also approves the REDD + program, then Japan also agrees on the Kyoto Protocol and Paris Agreement[2]. In fact, for Kyoto protocol, they also lobbied countries that have not become state parties to join the Kyoto Protocol, and Japan also tried to invite developed countries to

[2] "The Paris Agreement central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius".

assist developing countries in overcoming environmental problems in their countries (Andini, 2017). For the JICA forestry program, they had committed since 1991 when JICA collaborated with Malaysia. The project is named the Multi-storied forest management project. Even the JICA project in the forestry sector has almost every continent like in Oceania (Samoa, Papua New Guinea, Palau), Latin America (Costa Rica, Dominica Republic, Nicaragua, Panama, Mexico, Argentina, Uruguay, Ecuador, Columbia, Brazil), Africa (Ethiopia, Ghana, Kenya, Senegal, Tanzania, Burkina Faso, Madagascar), and Asia (Indonesia, Timor-Leste, Philippines, Vietnam, Malaysia, Myanmar, Lao PDR, China, Mongolia, Nepal, Iran).

There are two Japan projects for forests in Indonesia, namely JICA forestry program and IJ-REDD+. For JICA forestry program, Japan focuses on improving the forest on strengthen the relevant stakeholders' capacity for restoration of degraded ecosystems in conservation areas, specifically National Parks.For example, the program is planting 8,000 Jelutung plant seeds in Bengkalis.The program conducted by JICA with Riau Provincial Government represented by "BBKSDA" and also from "Sinar Mas Forestry Group". Then JICA in Halimun Salak Mountain National Park Program. One of the program is Conservation Village Model. The Program includes three activities, Such as reforestation, participatory observation, and increased community income. The conservation village program is one program that combines the improvement of community welfare and environmental sustainability by involving various parties to assist the continuity of this program. Then program JICA in Bromo Tengger Semeru National Park. In there, JICA collaborate with a Japanese company, Sumitomo Forestry Co.Ltd, concerning training in forest fire control. The purpose of this activity is training and counseling on forest fire control in Bromo Tengger Semeru National Park. The training was held by four institutions, namely the Bromo Tengger Semeru National Park, JICA, Sumitomo Forestry

Co.Ltd, and PT. Kutai Timber Indonesia.For IJ-REDD+ Japan implemented it in two provinces in Indonesia, namely Central Kalimantan and West Kalimantan. In West Kalimantan the focus city areKetapang District, Pontianak Regency, Kubu Raya Regency, North Kayong Regency, and Palung Mountain National Park. The projects include technical assistance for community empowerment in the Kalimantan region such as GPNP Officer Training, Workshop on Wood Product Utilization for Climate Change Mitigation, Peat Area Fire Control Community Development Program (FCP), and foreign loans. For Central Kalimantan one of the program called “Wild Fire and Carbon Management in Peat-Forest in Indonesia". The project has been carried out since 2008 but later in 2013 was included in the IJ-REDD + agenda. This collaboration is carried out in order to develop a research project on forest fires and carbon management in peat forests in Indonesia. The aim is to develop a system of mechanisms for managing peat forests.

Many eco-friendly programs issued by Japan, this proves that Japan is very concerned about the problems of global warming where global funding has had an impact on the lives of living things in Japan directly so that Japan wants to immediately overcome this problem so the impact does not spread to various aspects. Japan chose Indonesia because forest in Indonesia is the third largest forest in the world with tropical forests and donations from the rainforests of Kalimantan and Papua. However, Indonesia includes in one of the countries with the broadest extent of tropical forest in the world that needs international funding support to protect the remaining tropical forests. Indonesia is currently in the first position as a country with the fastest rate of deforestation in the world, and the most significant country number 3 that produced gas emission (Greenpeace, 2010). Indonesia is the third most abundant greenhouse gas emitter after the United States and China (Koran Sindo, 2015).

Japan Wants to Prosper their Industry by Trading Carbon

Based on the Kyoto Protocol, which was carried out on December 11, 1997, industrial countries were required to reduce their greenhouse gas emissions collectively by 5.2% compared to 1990. The Kyoto Protocol was also approved to determine the emission reduction target and the reduction target time for developed countries. It is more important that the Kyoto Protocol is an institution designed to implement the Convention. Several mechanisms in the Kyoto Protocol that regulate the problem of reducing GHG emissions, as explained below:

4. Joint Implementation (JI), a mechanism that allows developed countries to build joint projects that can generate credit for reducing or absorbing GHG emissions,
5. Emission Trading (ET), a mechanism that allows a developed country to sell credit for GHG emission reduction to other developed countries. ET can be possible when developed countries that sell GHG emission reduction credits have a GHG emission reduction credit exceeding their country's target,
6. Clean Development Mechanism (CDM), a mechanism that allows non-ANNEX I countries (developing countries) to play an active role in helping to reduce GHG emissions through projects implemented by a developed country. Later the credit for the reduction of GHG emissions resulting from the project can be owned by the developed countries. The CDM also aims for developing countries to support sustainable development, besides that CDM is the only mechanism by which developing countries can participate in the Kyoto Protocol (WWF, 2008).

Clean Development Mechanism (CDM) is one type of market mechanism in the Kyoto Protocol which falls into the category of credit. Following what has been explained above, developed countries/industries in the Kyoto Protocol are required to reduce their average GHG

emissions in the period 2008-2012 (first commitment period) by 5,2% below the emission level in 1990. In this case, the CDM is a mechanism for providing carbon credits that can be used to fulfill these obligations by involving low greenhouse gas emissions projects in developing countries. CDM is also intended to help developing countries get clean technology investments in their efforts towards sustainable low-carbon development in their respective countries. The output of the CDM scheme is carbon credit called CER (Certified Emission Reduction) where each CER represents GHG emission reductions equivalent to one ton of verified carbon dioxide, as well as carbon credits in other schemes. CDM can be implemented by two ways which are REDD+ and Joint Crediting Mechanism (JCM)

1. REDD+ (Reducing Emissions from Deforestation and Forest Degradation)

The REDD mechanism is a mechanism in environmental mitigation efforts that discusses how to reduce carbon emissions through the cessation of deforestation in developing countries so that it can be used as an area of carbon absorption in order to deal with the issue of global warming. For implementation through REDD +, Japan and Indonesia have collaborated with the name IJ-REDD + in West Kalimantan and Central Kalimantan.Officially the collaboration document or IJ-REDD + Project RoD (Record of Discussion) was signed on February 4, 2013, in Jakarta with a duration of 3 years (June 2013-June 2016)(Sosialisasi Proyek IJ REDD+ di Kabupaten Ketapang, 2013).There are five outputs of activities that will be carried out by the IJ-REDD + project, which will be continuously targeted to contribute to the development of REDD + in Indonesia, which are:

1. Level of REDD+ Province of West Kalimantan; Monitoring activities (Remote Sensing, Field Survey, GIS) have been carried out, Training and put into REDD+ MRV(Monitoring, Reporting, and Validation), and RAD-GRK,

2. REDD+ model in the National Park; Facilitation Training, Capacity Building of National Park Staff (Workshop Collaborative Management), Socio-economic Survey, Survey on FPIC, Survey and Training on Biodiversity Survey,
3. REDD + model for HP / HL / APL is developed at pilot site (s),
4. Provincial level MRV in Central Kalimantan; Meeting with JICA-JST Project (Hokkaido University) in collaboration with IJ-REDD +, attending the Peat Carbon Measurement Workshop organized by BSN and JICA-JST Project, 4th International Workshop on Wild Fire and Carbon Management in Peat-Forest in Indonesia, and held a Joint Workshop on REL and MRV of Peat Land and Peat Forest in Central Kalimantan,
5. Support the National REDD + Level by contributing actively in presentations at various meetings; COP 19 in Warsaw, REDD + Partnership Workshop and Meeting. Some activities related to the Joint Credit Mechanism are Interactive Dialogue with Privat Sector in Japan and supporting REDD + sessions at the JCM Capacity Building Workshop. Also, there are activities related to Capacity Building, namely the Satoyama Training Course in Japan and the Visiting Program to Japan(IJ-REDD+ PROJECT).

Japan also conducts REDD + cooperation in Dien Bien, Vietnam. Within the province, MuongPhang Commune, DienBie District, and MuongMuon Commune, Muong Cha, District were set as the pilot. This project started on March 2012 – December 2013. The goal of the project is Findings and experiences obtained through Dien Bien REDD+ Pilot Project implementation will be reflected into National REDD+ Program (NRAP) and other related policies, and applied to REDD+ implementation in other provinces. Not only in Vietnam but

REDD+ project also in other ASEAN countries which are Lao PDR. Project REDD+ in Lao PDR start in November 2015 – October 2020. Vientiane Capital and Luang Prabang Province become the place that project held. The objective of the project is to strengthen the goal for sustainable forest management by incorporating REDD + into the sector strategy and improvement of forest resource information. There are four outputs of this project: 1. Support the forestry sector at the central level, 2. Support the measurement of emission reductions and/or removals as a result of REDD+ implementation, 3. Support to the national REDD+, 4. Support REDD+ Readiness in Luan Prabang Province. After that in Cambodia, the project takes place in Prey Long area[3]. The project goal is to reduce emissions from deforestation in Prey Long by promoting forest conservation through community-level conservation agreement and the management activities of the forest offices in Prey Long. Then for Oceania, Japan also collaborated with Papua New Guinea. This REDD+ project has been started since August 2014 - August 2019. It aims to fully operational the NFRIMS, including capacities to update and manage forest coverage and stocks on GIS, efficient forest monitoring system, improvement of coordination and technical capacity inter-agency for REDD + reporting, and development of appropriate training programs (JICA, 2014).

For the African continent, Japan collaborates with seven countries which are Botswana, Mozambique, Democratic Republic of Congo (DRC), Gabon, Cameroon, Kenya, and Ethiopia. For the African continent, this REDD+ project runs from 2016 – 2018. Many things that will be done by Japan which are represented by JICA are such as Readiness support, Demonstration, Implementation, Research, and development.

[3] includes mainly evergreen lowlands that are spread across provinces in the north-central parts of Cambodia and the west bank of the Mekong River.

2. JCM (Joint Crediting Mechanism)

Implementation CDM through Joint Crediting Mechanism, It is different from REDD + which focuses on reducing emissions through forest conservation. The projects carried out in this collaboration include renewable energy systems to improve hydropower plants, a more efficient cement transportation system and solar and wind power energy installations. Reduction of greenhouse gases in the host country will be exchanged with developed countries that want to reduce greenhouse gases with non-tradable carbon credits. Carbon credit shows the amount of carbon dioxide that can be emitted by developed countries. The JCM is a bilateral collaboration that focuses on environmentally sound investments to support low-carbon development. This mechanism will be an incentive for Japanese companies to increase investment in low-carbon activities in developing countries. However, for now, the Japanese government benefits because some of the proceeds from GHG emission reductions in Indonesian investment projects can be claimed as the country's emission reduction. In this case, the two parties working together get a great benefit, both economic and environmental benefits, from the JCM collaboration.

In Indonesia in the 2013-2014 period, 13 projects have been implemented. From 13 projects, they consist of studies in the fields of renewable energy (from geothermal, hydro and biomass), energy efficiency, low-carbon transportation, carbon captured and storage (CCs), low-carbon agriculture, and forest-based activities. Here's an overview of the Japan-Indonesia JCM feasibility study and model project **(On Attachment page 26 Table 4.1).**

There is one JCM Project Planning Study conducted to make a concrete project plan for developing the JCM Model Project in the next fiscal year, including financial plans, construction plans, operational plans, implementation, and MRV structures. Then there are 3 Feasibility Studies for the JCM Project. The purpose of the JCM Feasibility Study is to look for potential

projects/activities that can be part of the JCM, thus helping the development of the JCM, by pursuing targets such as developing MRV methodologies that are relevant to the Project / related activities; Assessing the possibility of implementing each Project / activity within the JCM; Gather knowledge and experience gained during the process mentioned above.

International measurement, Report, and Verification (MRV) standard approved by the two countries will be used to calculate the reduction in emissions generated by low-carbon projects from the JCM project. The results will be recorded and can be used to meet Indonesia's and Japan emission reduction targets according to previous compliance. “Every year there are developments from the implementation of JCM projects conducted by Indonesia and Japan. In 2016 there were 108 feasibility studies conducted, and the total funds were almost Rp. 2 trillion. The projects cover a variety of industries, such as the cement industry, forestry, and technology”(Daud, 2016).

Besides in Indonesia, Japan also cooperates with Myanmar for this JCM. This collaboration was signed on September 16, 2016, at Nay Pyi Taw, Myanmar. However, the first project was only conducted on June 25, 2018. This project was named Power generation and avoidance of landfill gas emissions through combustion of municipal solid waste (MSW) yang Methodology Proponent by JFE Engineering Corporation. Then in the continent of Africa, Japan in collaboration with Mongolia. On the 8th of January 2013, this collaboration was signed in Ulaanbaatar. The first project was carried out on 28 January 2015 in the field of Energy Industries which was named Replacement and Installation of High-Efficiency Heat Only Boilers (HOBs) for Hot Water Supply Systems. Methodology Proponent by Suuri-Keikaku CO., LTD., And Climate Experts LTD. Costa Rica in Latin America also has a partnership with Japan for this JCM. on 19 December 2013 the signing of the JCM was conducted in Tokyo, Japan. The

result was on September 8, 2017, Costa Rica and Japan agreed to carry out projects in the field of Energy Industries (renewable-/non renewable sources) which is Installation of Solar PV System which is conducted by Institute for Global Environmental Strategies. In the Middle East, Japan collaborated with Saudi Arabia on May 13, 2015. Their first collaboration in the energy demand field was namely Introduction of High Electrolyzer in Chlor-Alkali Processing Plant who conducted on 18 October 2017. Since 2011 a total of Japan has collaborated with 17 developing countries regarding the JCM namely Mongolia, Bangladesh, Ethiopia, Kenya, Maldives, Viet Nam, Lao PDR, Indonesia, Costa Rica, Palau, Cambodia, Mexico, Saudi Arabia, Chile, Myanmar, Thailand, and the Philippines.

Japan and its industry are indeed inseparable. Since 1948 Japan began to develop the industry on a large scale such as in the manufacturing sector: ship industry, iron industry, and steel, industrial machinery and cement and glass industry (Haryanti, 2013). Then in 2006 as many as 326 Japanese companies entered the Forbes Global 2000 list. This figure reached 16.3% of the 2000 world public companies. The manufacturing industry is one of the Japanese forces, especially in the fields of electronics and automobiles. “In 2012, the industry was responsible for 27.5 percent of Japan's GDP. Significant industries in Japan include motor vehicles, electronic equipment, machine tools, steel and nonferrous metals, ships, chemicals, textiles, and processed foods. Japan is home to six of the top twenty largest vehicle manufacturers in the world – Toyota (1st), Renault-Nissan (4th), Honda (8th), Suzuki (10th), Mazda (14th), Mitsubishi (16th). The automobile industry also managed to register a massive 10.5 percent growth in 2009, despite the global financial crisis”. (EW ECONOMY TEAM, 2013). However, industry sector is the most significant contributor of GHG in Japan. In 2015 it reached 44.9% compared to transport sector,

residential sector, and commercial and other[4]. It proves that Japan does not want to significantly reduce GHG in the industrial sector because it will affect production which will have an impact on their GDP and industrial welfare. So, Japan chooses another way to fulfill the Kyoto protocol where industrial countries are required to reduce their greenhouse gas emissions collectively by 5.2% compared to 1990 by buying carbon credits from Indonesia implemented through REDD + and JCM. In the REDD + scheme, Japan chose Indonesia because Japan was partially responsible for the destruction of Indonesia's forests during the world war for the needs of war and besides because Indonesia is the third largest tropical forest owner in the world but the deforestation rate is high. For the JCM scheme, Japan chose Indonesia because according to them, Indonesia is a market for them, proven by the number of Japanese companies in Indonesia, which are 1500 companies in 2018 (Lumanauw & Suhartadi, 2018). Also, the JCM mechanism is funded by the private sector and the government which is an advantage for Japan because of a large number of their companies in Indonesia. Then this collaboration is also based on investment and trade interests between Indonesia and Japan to carry out low-carbon projects (Purnomo, 2013).

[4]https://www.env.go.jp/press/files/en/750.pdf

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ATTACHMENT

Table 4.1: JCM Model Project and Feasibility Study

Implementation Project Model	Implementing Party	Emission Reduction	Location
JCM Model Project			
1. Energy Saving in a minimarket	Japan: LAWSON, INC. Indonesia: PT Midi Utama Indonesia Tbk	33tCO2/store/year	Jakarta
2. Energy Savings for Air Conditioning and Refrigeration Processes in Textile Factories	Japan: Ebara Refrigeration Equipment & System and Nippon Koei Co., Ltd. Indonesia: PT. Primatexco and PT. Ebara Indonesia	Proyek 1: 117tCO2/year Proyek 2: 117tCO2/year	Batang, Middle Java
3. Refrigerant Efficient in the Cold Chain Industry	Japan: Mayekawa Manufacturing Co., Ltd. Indonesia: PT. Adib Global Food Supplies, PT. Mayekawa Indonesia	213tCO2/year	Bekasi, West Java, and Karawang
4. Energy Saving through Double Bundle Type Heat Pump Installation	Japan: Toyota Tsusho Corporation Indonesia: PT.TTL Residences	170tCO2/year	Bekasi, West Java
5. Power Plants with the Utilization of Hot Waste in the Cement Industry	Japan: JFE Engineering Corporation Indonesia: PT. Semen Indonesia (Persero) Tbk	122.000 tCO2/year	Tuban, East Java
6. Installation of Solar-Diesel Mixed Power Plant System at BTS (Base Transceiver Station)	Japan: ITOCHU Corporation Indonesia: PT. Telekomunikasi Selular	4.644tCO2/year	Kalimantan Island and Sulawesi Island
7. Palm Oil Waste Biomass Power Plant	Japan: Shimizu Corporation Indonesia: PTPN III (Persero)	28.128tCO2/year	North Sumatra
8. Energy Saving for Refrigeration of Textile Factory Facilities with High-Efficiency Centrifugal Coolers	Japan: Ebara Refrigeration Equipment & System Co., LTD. Indonesia: PT. Nikawa Textile Industry PT. Ebara Indonesia	118tCO2/year	Karawang, West Java
9. Energy Savings by Installing Regenerative Burners on Aluminum Heat-Resistant Stoves in Automotive Component Manufacturing Plants	Japan: TOYOTSU MACHINERY CORPORATION, HOKURIKU TECHNO CO., LTD. Indonesia: PT. Toyota	855tCO2/year	Karawang, West Java

Implementation Project Model	Implementing Party	Emission Reduction	Location
	TSUSHO INDONESIA, PT. YAMAHA MOTOR PARTS		
JCM Project Planning Study			
10. Installation of Heat and Power Combination Systems in Hotels	Fuji Electric Co., Ltd.	4.166tCO2/year	Surabaya, East Java
Feasibility Study of the JCM Project			
11. Use of High Efficiency Used Wave Cardboard Processes at Paper Mill	Nomura Research Institute, Ltd &Aikawa Iron Works Co., Ltd	8.000tCO2/year	Bekasi, West Java
12. Utilization of Waste Heat and Power Plants in Flat Glass Production Plants	Mitsubishi UFJ Morgan Stanley Securities Co., Ltd	2.768tCO2/year	Jakarta, Indonesia
13. River Water Flow Power Plant 3.7 MegaWatt	Japan NUS Co., Ltd	12.661tCO2/year	TanaToraja, South Sulawesi

Source: https://www.jcm.go.jp/