JCM
JOINT CREDITING MECHANISM
INDONESIA SECRETARIAT

# Four Years Implementation *Joint Crediting Mechanism Scheme* in Indonesia

# FOREWORD

Dear Readers,

The Government of Indonesia has stated its commitment in carbon emission reduction by ratifying their Paris Agreement Commitment in 2016. Through the commitment, Indonesia has a role to contribute in total global effort in carbon emission reduction and global climate change mitigation action. In the commitment, Indonesia stated that nationally Indonesia will reduce 29% of Greenhouse Gases (GHG) emission with their own effort and 41% Of GHG using the international support.

In 2013, The Government of Indonesia and The Government of Japan have established cooperation in the implementation of low carbon development in Indonesia through Joint Crediting Mechanism (JCM). Through this cooperation, The Government of Japan supported the implementation by giving a financial support for the implementation of low carbon technology, capacity building, as well as knowledge and technology transfer. Since its establishment, this cooperation has been able to attract several stakeholders including various Indonesian business entities to implement a low carbon technology within their area. Such activities are a solid proof that JCM is able to capture various contributions from several sectors and stakeholders to get involved in climate change mitigation action in Indonesia.

This book summarizes every aspects related to the implementation of JCM in Indonesia, starting with the background story of how the cooperation is established, the know-how of the JCM implementation, and also the entire summary of the JCM projects implementation in Indonesia. The information given in this book hopefully can trigger further low carbon development actions in Indonesia. The experiences and the financing scheme established within this cooperation can also be used as a blueprint for future sustainable financing scheme which will support the national target on emission carbon reduction and later establish a sustainable low carbon society in Indonesia.

The government of Indonesia and Japan are committed to continue the cooperation and also improve total investment and the development of the technical instrument, and the involvement of private sectors participation. Through the cooperation under the JCM scheme, Indonesia is expected to be able to contribute in achieving carbon emission reduction target both at the national level and globally.

Finally, I hope that this book will inspire the reader to continue and support low carbon activity in Indonesia.

Jakarta, February 2018

Deputy Minister for International Economic Cooperation

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# Chapter I

# Introduction

## 1.1 National and Global Commitment Facing Climate Change

Indonesia and 194 other countries in the world currently have agreed on global emission reduction in through the *Paris Agreement* (PA). This Paris Agreement (PA) is binding every country to make global emissions reductions through voluntary but binding contributions. The number of commitment is voluntarily, but the target of the commitment is binding because of any proposal of commitment submitted will be regarded as the official document of the country.

The Paris Agreement is also an agreement that requiring commitment from each country that agreed to sign it, whether develop or developing country, or least developed countries, without exception. To fulfil this commitment, Indonesia has submitted its proposal in the form of NDC (Nationally Determined Contribution) which was submitted during the climate change negotiations in Marrakech in November 2016. Indonesia has a target for unconditional emission reduction that has been delivered in NDC for 29% by the year of 2030 and 41% subject to availability of international support, based on 2010 baseyear projection. The targets are as below.

*"Indonesia has committed to reduce unconditionally 29% of its greenhouse gasses emissions against the business as usual scenario by the year of 2030. THE BAU scenario is projected approximately 2.869 GtCO2e in 2030 which is updated from the BAU scenario on the INDC due to current condition on energy policy development in particular in coal fired power plant" [1]).*

As for the conditional targets are as follows:

*"Indonesia can increase its contribution up to 41% reduction of emissions by 2030, subject to availability of international support for finance, technology transfer and development and capacity building" [1]).*

This target considered very ambitious due to the 35,000 MW power plant program from the government which is 80% (in addition to 29% of coal sector) will be conducted independently through the Indonesian budget and the participation of local government, the private sector, and SOEs (State-Owned Enterprises) without the availability of international support for financing. The implementation plan for this emission reduction activity should be sharpened and analysed, especially for funding.

| No | Sector | GHG Emission Level 2010* | GHG Emission Level 2030 (MTon $CO_2e$) | | | GHG Emission Reduction (MTon $CO_2e$) | | GHG Emission Reduction % of Total BaU | | Annual Average Growth BAU (2010-2030) | Average Growth 2000-2012* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MTon $CO_2e$ | BaU | CM1 | CM2 | CM1 | CM2 | CM1 | CM2 | | |
| 1 | Energy* | 453.2 | 1,669 | 1,355 | 1,271 | 314 | 398 | 11% | 14% | 6.7% | 4.50% |
| 2 | Waste | 88 | 296 | 285 | 270 | 11 | 26 | 0.38% | 1% | 6.3% | 4.00% |
| 3 | IPPU | 36 | 69.6 | 66.85 | 66.35 | 2.75 | 3.25 | 0.10% | 0.11% | 3.4% | 0.10% |
| 4 | Agriculture | 110.5 | 119.66 | 110.39 | 115.86 | 9 | 4 | 0.32% | 0.13% | 0.4% | 1.30% |
| 5 | Forestry** | 647 | 714 | 217 | 64 | 497 | 650 | 17.2% | 23% | 0.5% | 2.70% |
| | **TOTAL** | **1,334** | **2,869** | **2,034** | **1,787** | **834** | **1,081** | **29%** | **38%** | 3.9% | 3.20% |

* Including fugitive **Including peat fire

Notes: **CM1** = Counter Measure (*unconditional mitigation scenario*)
**CM2** = Counter Measure (*conditional mitigation scenario*)

**Table 1.1** Targets per sector for emission reductions in Indonesia [1])
Source: *First Nationally Determined Contribution - Republic of Indonesia*, 2016

Target and NDC Indonesia has been approved by the president and the House of Representatives, meaning that it is legally valid to be implemented. Compared to other countries, Indonesia's target is also very ambitious, especially since there is no market-based financing mechanism that can be used.

In contrast to INDC documents submitted by Indonesia in November 2015, one of significant difference is in INDC there is still a market word, while in NDC the phrase is no longer [2]).

- **International Market Mechanisms**

Indonesia will meet its unconditional commitments regardless of the existence of international market mechanisms. Indonesia welcomes bilateral, regional and international market mechanisms that facilitate and expedite technology development and transfer, payment for performance, technical cooperation, and access to financial resources to support Indonesia's climate mitigation and adaptation efforts towards a climate resilient future.

**Figure 1.1** Understanding International Market Mechanisms

Source: *Intended Nationally Determined Contribution - Republic of Indonesia*, 2015

In climate change policy, the absence of phrase use of market mechanism will be very different from its implementation in achieving emission reduction target with country which is plan to use market mechanism, both domestic and international.

Indonesia includes 1 of 97 countries that are *"market friendly"* or countries that have plans to implement market-based mechanisms in achieve national emission reduction targets at the time of the INDC delivery in 2015. Currently there are more countries, although there are countries such as Venezuela and Bolivia, who clearly do not want to use market mechanisms to implement their national emissions reductions.

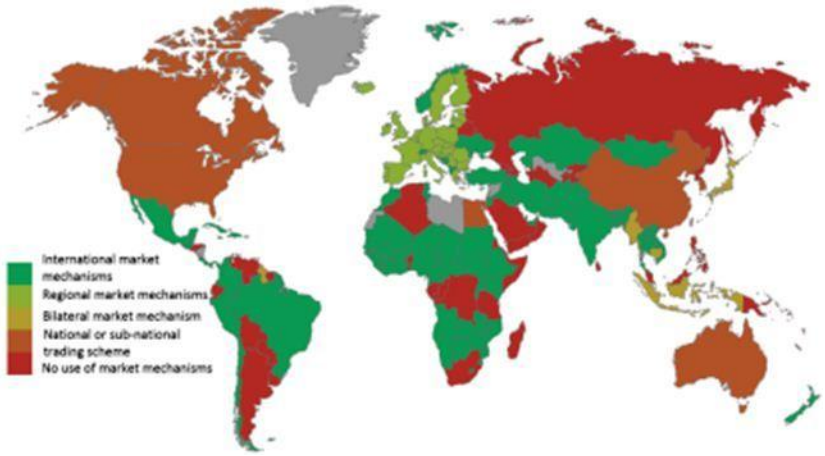


**Figure 1.2** Map of INDC and NDC globally; see which countries is "*market friendly*" [3])

Source: IGES INDC & NDC Database, 2017 (https://pub.iges.or.jp/pub/iges-indc-ndc-database)

The illustration above describes that the countries within the INDC and the NDC has submitted will use international market mechanisms or consider using international, regional, and bilateral market mechanisms. In addition, countries that use emissions trading mechanisms at national and sub-national levels, such as the United States, Australia, Canada and China are also seen. For most European countries, though they do not use the market in their emissions reduction implementation plan in their NDCs, they use regional emissions trading such as the EU-ETS (*European Union Emissions Trading Scheme*) as their emissions reduction policy tool.

The total number of countries that claim to use market-based mechanisms is 97 countries and will be 133 countries if the countries that are considering using market-based mechanisms are taken into account. The number of countries that will use the market will be even greater in the coming years, given that market mechanism has proven to be one of the most *cost-effective* mechanisms of conventional mitigation financing.

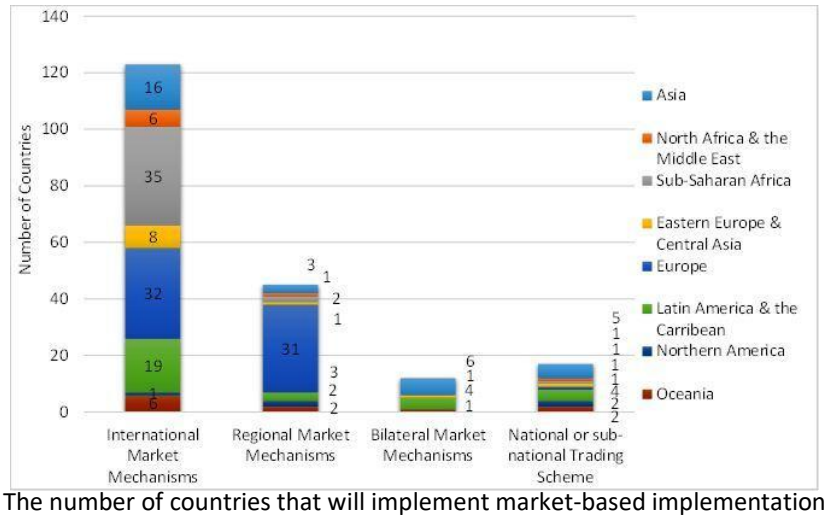


**Figure 1.3** The number of countries that will implement market-based implementation for its NDC [3]).

Figure above seen that the number of countries whose planning to make market-based efforts in its NDC implementation is varied and highly dependent on its domestic policies. The implementation of market-based mechanisms is also depending on funding mechanism that will be made by each country in conducting activities to reduce emissions.

### 1.2. International Agreement on Climate Change

As mentioned above, Indonesia is one of the countries that subsequently agreed to the climate change agreement at the Climate Change Summit in Paris 2015. This agreement categorized into a multilateral agreement on climate change.

Indonesia was also joined to another multilateral treaty besides Paris Agreement, which is Kyoto Agreement or Kyoto Protocol that was signed in 1997. The Kyoto Protocol is the first multilateral treaty on climate change that binds many countries, especially developed countries, to reduce emissions.

The implementation of this agreement include the first establishment of a carbon trading mechanism model in the world through the CDM *(Clean Development Mechanism),* among the developed countries to developing countries and the poor countries. In addition, *Joint Implementation* (JI) is also established, which is a cooperation that allows developed countries to reduce emissions together.

Regional agreements on climate change are also widely recognized by many. One of the most notorious regional treaties that still exist until today is cooperation between countries in the European Union (EU) to reduce their emissions. This regional agreement subsequently binds the region to better safeguard the earth by jointly reducing emissions and adapting to climate change.

The bilateral agreement is the last type of agreement that is then commonly used in the world to handle climate change. Although only followed by two countries, host countries and its partner, this bilateral cooperation and agreement are usually very effective and implemented. Indonesia has several cooperation agreements with several countries related to climate change. Cooperation agreements with Norway, Japan, South Korea, and several other countries are examples of this bilateral agreement.

Then, how about the implementation? Usually, an implementing team will be formed to implement the agreement. The implementing team is tasked not only with monitoring but also make some coordinating activities occasionally.

One of the most advanced bilateral cooperation agreements is the cooperation between Indonesia and Japan in emission reduction activities, namely scheme of JCM or *Joint Crediting Mechanism*. This mechanism allows Indonesian business and private parties to carry out the implement together with the assistance of grants provided by the Japanese government.

# Chapter 2
# JCM Bilateral Cooperation Agreement

## 2.1 The Signing of Bilateral Agreement between Two Countries

### 2.1.1 Japanese Cooperation Proposal to Indonesia

Japan has made an approach to Indonesia for the implementation of bilateral cooperation in reducing emissions since 2010. When the first proposal was submitted, the forms of its cooperation were the start-up cooperation and just basic idea and technology transfer only.

The bilateral cooperation subsequently becomes strengthened after the National Council for Climate Change officially took the initiative to become the focal point of the Indonesian government in this negotiation. Then, the negotiation also involves related ministries such as the Coordinating Ministry for Economic Affairs, the Ministry of Environment, the Ministry of Forestry, the Ministry of Energy and Mineral Resources, the Ministry of Foreign Affairs, the Ministry of Industry and the DNPI itself as the coordinator.

The proposal name of this bilateral cooperation has also changed from BOM (Bilateral Offset Mechanism) to BOCM (Bilateral Offset Crediting Mechanism) during period 2010-2013 and the end of the year 2013 was agreed that the name changed became JCM (Joint Crediting Mechanism).

The Government of Japan (MOE) and the Ministry of Economy, Trade, and Industry (METI) had proposed to the government of Indonesia to undertake a feasibility study for bilateral cooperation plan initiated since 2010. The feasibility studies were conducted by Indonesia and Japan consultants, universities, and various institutions in Indonesia, as well as Japanese companies that financed by the Government of Japan itself.

Negotiations between two countries had concluded the result after the Japanese government proposed a draft agreement that had been discussed for the last two years between the two countries. The draft agreement has evolved from a very general document into a very specific bilateral cooperation document for JCM implementation in Indonesia.

### 2.1.2 Signing MOU of Cooperation between Indonesia and Japan

The cooperation agreement for the implementation of low carbon development was finally signed separately by the Minister of Foreign Affairs of Japan and the Coordinating Minister for Economic Affairs of Indonesia on 26th August 2017.

The signing of this agreement has an implication to bind both countries for the implementation of low-carbon development in Indonesia with Japan-based finance and technology assistance. Japan has also pioneered a pattern of cooperation similar to some other developing countries in besides Indonesia. Therefore Indonesia is the fifth country that signed the bilateral agreement with Japan related to JCM implementation.

After the signing of bilateral cooperation between the two countries, Indonesia and Japan formally have their respective obligations in the implementation of low-carbon development in Indonesia. There are also obligations from each country besides that was written in the agreement documents in JCM technical documents, such as *Rules of Implementation* and various *guidelines.*

## 2.2 Subject Matter of JCM Agreement

### 2.2.1 Agreement Document

This Agreement was signed in duplicate three languages, English, Japanese, and Indonesian, and legally as a state document. Here are the documents as originally.

**Bilateral Cooperation on the Joint Crediting Mechanism for the Low Carbon Growth Partnership between Japan and the Republic of Indonesia**

1. The Japanese side and the Indonesian side (hereinafter referred to as "both sides"), in pursuit of the ultimate objective of the United Nations Framework Convention on Climate Change (hereinafter referred to as the "Convention") as stated in its Article 2 and of achieving sustainable development, and in order to continue to address climate change in cooperation beyond 2012, promote the Low Carbon Growth Partnership as follows.
2. Both sides hold close policy consultations at various levels for cooperation toward low carbon growth under the United Nations, at the regional and bilateral frameworks, including the East Asia Low Carbon Growth Partnership.
3. Both sides, in order to promote investment and deployment of low carbon technologies, products, systems, services and infrastructure to achieve low carbon growth in Indonesia, establish a Joint Crediting Mechanism (hereinafter referred to as the "JCM") and implement it in accordance with the relevant domestic laws and regulations in force in respective countries.
4. Both sides establish the Joint Committee to operate the JCM, which consists of representatives from both sides.
5. The Joint Committee receives an appropriate guidance on the implementation of the JCM from the relevant ministries and ministers.

6. The Joint Committee decides rules and guidelines for the JCM.
7. Both sides mutually recognize that verified reductions or removals from the mitigation projects under the JCM can be used as a part of their own internationally pledged greenhouse gases mitigation efforts.
8. Both sides ensure the robust methodologies, transparency and the environmental integrity of the JCM and maintain the JCM simple and practical, to promote concrete actions for global greenhouse gases emissions reductions or removals.
9. Both sides ensure the avoidance of double counting on greenhouse gases emission reductions or removals by not using mitigation projects registered under the JCM for the purpose of other international climate mitigation mechanisms.
10. Both sides work in close cooperation to facilitate financial, technological and capacity building support necessary for the implementation of the JCM.
11. The JCM starts its operation as the non-tradable credit type mechanism. Both sides continue consultation for the transition to the tradable credit type mechanism and reach a conclusion of such consultation at the earliest possible timing.
12. Both sides aim for concrete contributions to assisting adaptation efforts of developing countries through the JCM upon the operationalization of its tradable credit type mechanism.

13. This partnership covers the period from the signing of this document until the operationalization of a new international framework under the Convention. Both sides consider possible extension of this partnership and reach a conclusion before its termination, taking into account, inter alia, the progress of negotiations under the Convention.
14. Any content of this document may be modified upon written mutual consent of both sides.

Signed in duplicate in Tokyo on 26 Agustus 2013 by the Japanese side and in Jakarta on 7 Agustus 2013 by the Indonesian side, in the Japanese, Indonesian and English languages. All texts have equal values. In case of any divergence of interpretation of the texts, the English text will be referred to.

| For the Indonesian side | For the Japan side |
|---|---|
| *[Signed]* | *[Signed]* |
| **M. Hatta Rajasa** | **Fumio Kishida** |
| Coordinating Minister for Economic Affairs | Minister for Foreign Affairs |

**Figure 2.1** the Document of JCM Bilateral Cooperation Agreement

This Agreement hereinafter referred to as "Bilateral Cooperation on Joint Crediting Mechanism for the Low Carbon Growth Partnership between the Republic of Indonesia and

Japan" consists of 14 articles resulting from simultaneous discussions for nearly two years between two countries.

This agreement has a strong permanent legal force due to two ministerial-level officials have signed it.

### 2.2.2 The contents of Agreement Document

The following is an explanation of the 14 articles of chapters that were approved in the treaty.

- Article 1. The main purpose of this agreement is article number 2 from UNFCCC convention in 1992, which is to carry out GHG actions in the atmosphere. It is also mentioned that the objective of the agreement is to achieve sustainable development and continue climate change mitigation efforts, especially since the end the first period of Kyoto Protocol in 2012.
- Article 2. Establishment of a Low Carbon Growth Partnership between the Republic of Indonesia and Japan and its implementation that is done by a policy consultation method between the two governments.
- Article 3. JCM or Joint Crediting Mechanism is further developed to increase investment and utilization of low carbon technologies, products, systems, services and infrastructure to achieve the objectives of low-carbon development in Indonesia. To implement this objective, both Indonesia and Japan will apply it in accordance with the applicable legal and regulatory framework in each country.
- Article 4. Joint Committee which is the representative of each country to operate the JCM is then must be formed.
- Article 5. The Joint Committee consists of the officials who will get direction from ministries and ministers who have positions related to JCM.
- Article 6. One of the tasks of the Joint Committee is to establish the rules and guidelines for JCM implementation.
- Article 7. The final outcome of JCM implementation is GHG emission reduction, and GHG emissions obtained will serve as fulfillment of commitments from each country.
- Article 8. A transparent, credible, and high integrity methodology will be made to implement emission reduction activities. However, the methodology is also flexible to be implemented by both countries.
- Article 9. Double counting of emissions reductions are the most prohibited thing, therefore, JCM will avoid them by not using the JCM project to be acknowledged in other activities.
- Article 10. The keys to the sustainability of climate change activities lie in financial support, technology, and capacity building, therefore both countries will work together in the implementation of JCM.
- Article 11. GHG emission reductions that subsequently will be certified under the JCM scheme are not for trading unless the two countries agree to give some price to the carbon-reduction credits and trades them.

- Article 12. If the JCM carbon credits agree to be traded, the two countries will use some of the proceeds to make some adaptations in developing countries, including Indonesia itself.
- Article 13. The expiry of this low-carbon partnership agreement comes after the entry into force of the new agreement under the full convention, and for that matter, the new agreement is the Paris Agreement which will begin in 2020. This partnership agreement will be renewable before the term of the agreement expires.
- Article 14. This partnership agreement may be amended by agreement between the two countries.

Based on the 14 treaty provisions above, it is subsequently broken down into the various infrastructure of JCM scheme and some decisions regarding the implementation of JCM issued by the Coordinating Ministry for Economic Affairs.

There are many interesting and new things for Indonesia after the signing of this cooperation agreement, those are:

1. This bilateral cooperation agreement is the first bilateral agreement for Indonesia which clearly states the technical GHG emission reduction should be done transparently, reliably, and using a clear methodology.
2. A statement stating that implementation of the agreement will use applicable laws and regulations in Indonesia is of great benefit to Indonesia because of the regulations, standards, and if there is a common practice already common undertaken in Indonesia, the scheme of JCM activities must comply with and implement them.
3. JCM is the first bilateral carbon emission reduction scheme that was implemented after the end of the first phase of the Kyoto Protocol. Unlike the carbon trading scheme under the Kyoto Protocol, namely CDM and JI, the scheme of JCM is more flexible and easier to be implemented.
4. The final result of the implementation of the JCM scheme is the carbon credits which under this agreement cannot be traded and only used to meet the emission reduction targets of both countries, but in the future development, if both countries agreed, carbon credits could be traded and have value prices.

The scheme of JCM is the first bilateral agreement model that conducted in Indonesia. This model is also expected for being applicable in bilateral agreements with other countries, so there is a guarantee for technology transfer and knowledge, improved environmental quality, the inclusion of investment, and subsidies from partner countries to Indonesia.

In climate change activities, this thing is a new breakthrough because it uses a transparent, measurable, and accountable scheme to be accounted for and reported.

## 2.3 2.3 Objectives and Scope of JCM Implementation

### 2.3.1 Objective of JCM Implementation

As mentioned in the previous chapters, JCM is a bilateral cooperation between the Indonesian Government and Japan Government. The implementation of that cooperation involves 4 main parties, those are Indonesia Government, Japan Government, Indonesian private sector, and Japan private sector as shown in **Figure 2.3.**

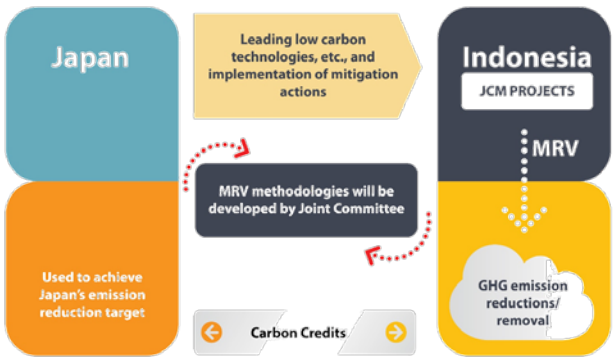


**Figure 2.3** The JCM scheme between Japan and host country

As mentioned in the rules of JCM implementation, this cooperation aims:

1. Japan will be facilitating diffusion of leading low carbon technologies, products, systems, services, and infrastructure as well as the implementation of mitigation actions, and contributing to sustainable development of developing countries; in this case in Indonesia.
2. Evaluate appropriately the entire contribution to the reduction or removals of GHG emissions (GHG) from the host country (in this case, Indonesia) quantitatively, through mitigation measures that are implemented in the host country and using the reduction or removals of these emissions to achieve emission reduction targets from host countries
3. Contributing to the ultimate objectives of the UNFCCC by facilitating global measures for reducing or removals emissions.

Briefly, this joint credit mechanism or JCM pronounce that the Japanese government will provide aid by facilitating the diffusion of technology, products, systems, services, and infrastructure, through incentives or project funding for participatory projects that were approved for funding through the JCM scheme. The financing mechanisms under the JCM scheme will be discussed in Chapter 5

### 2.3.2 Scope of JCM Implementation

The scope of JCM implementation is related to the distribution of carbon credits which is one of the outputs of JCM activities. The carbon credits referred to here are the amount of

carbon successfully reduced through the application of technology implemented in the JCM project. Carbon credits generated under the JCM agreement at the beginning of its implementation are non-tradable carbon, but the Indonesian Government and the Japan Government can discuss in the future to be able to use carbon trading mechanisms for carbon credits generated.

The carbon credits made as a result of this JCM activity are the reduction of greenhouse gases (GHG) emitted from the implementation of JCM projects. The types of GHG measured are CO2 (Carbon dioxide), CH4 (Methane), N2O (Nitrous oxide), HFCs (Hydrofluorocarbons), PFCs (perfluorocarbons), SF6 (Sulfur hexafluoride), and NF3 (nitrogen trifluoride).

The illustration of JCM credit distribution can be shown in Figure 2.4 as follows:

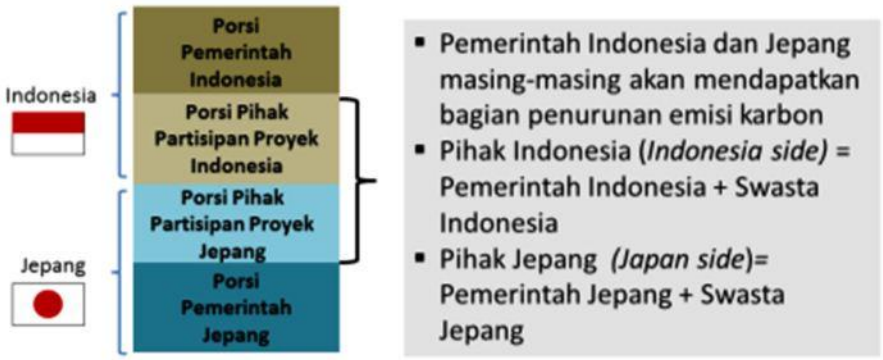


**Figure 2.4** the illustration of JCM credit distribution

As mentioned before, the cooperation between the Japan Government and Indonesia Government parties can be explained more by the scheme as shown in Figure 2.4 below:

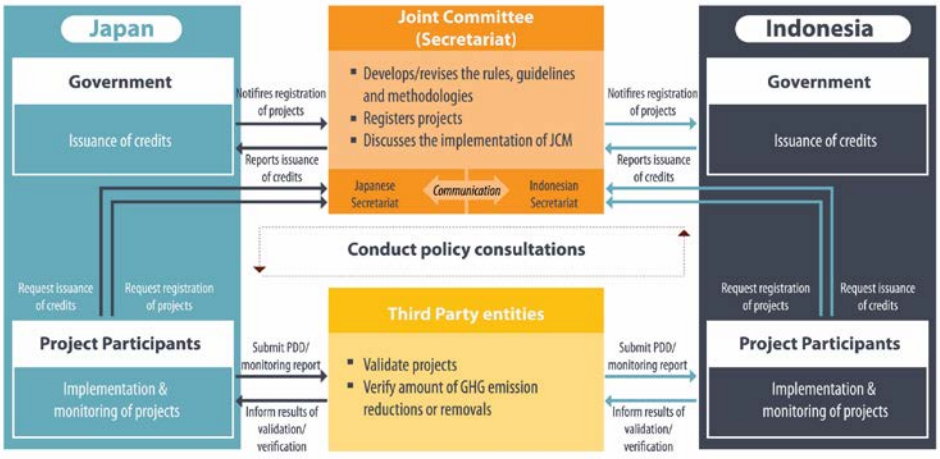


**Figure 2.5** JCM Implementation Cooperation Scheme

Based on **Figure 2.5**, it can be seen that in JCM cooperation there are 7 (seven) elements involved in the bilateral cooperation those are the Indonesian government and project participants Indonesia (hereinafter referred to as the Indonesian side), the Japanese government and the project participants of Japan (hereinafter referred to as the Japanese),

Joint Committee which includes in the secretariat of JCM Indonesia and Japan, the technical team for the needs of Indonesian joint committees and third-party entities.

Each entity involved in JCM cooperation has its respective roles regulated in accordance with the explanation of JCM implementation rules as mentioned in the Standard Procedure Manual (SOP) or JCM project implementation manuals in Indonesia.

# Chapter III
# Organization and Institutional JCM in Indonesia

## 3.1 Coordination Team for Interstate Carbon Trade

### 3.1.1 Duties of Coordination Team for Interstate Carbon Trade

As the coordinator of JCM scheme, The Coordinating Ministry for Economic Affairs has initiated to form a steering committee for JCM implementation called the Implementation team for International Negotiations of Trade Carbon (TKPPKA).

TKPPKA was formed based on the Decree of Coordinating Minister for the Economy. For the initial establishment of TKPPKA, the Decree of the Coordinating Minister for Economic Affairs number 63 of 2017 became the basis of its formation.

The Decree declares that TKPPA divides into 2 teams, those are Implementation team for International Negotiations of Trade Carbon (The Steering Team of PPKA) and Implementation team for International Negotiations of Trade Carbon (The Implementing Team of PPKA).

The tasks of the PPKA Steering Committee are as follows:

> *"Providing guidance in the implementation of negotiations and follow-up on the results of the International Carbon Trade Scheme with partner countries interested to cooperate with Indonesia."*

The tasks of the PPKA Implementing Team are as follows:

1. Conducting negotiations on the International Carbon Trade Scheme with partner countries interested to cooperate with Indonesia.
2. Taking steps to resolve the problems and obstacles in the implementation of negotiations on the International Carbon Trade Scheme.
3. Preparing and submitting the necessary policy recommendations in the implementation of negotiations on the International Carbon Trade Scheme.
4. Coordinating the implementation of the results of carbon trade between countries.
5. Carrying out any other related tasks assigned by the Steering Committee.

The two PPKA teams are interconnected through meetings and reporting conducted by the PPKA Implementing Team.

### 3.1.2 Member of Coordination Team for Interstate Carbon Trading is based on the ministerial decree of Coordinating Minister of Economic Affairs number 6 of 2016.

The members of Coordination Team for Interstate Carbon Trading are ministerial level officials. In full, the members are follows:

1. Chairman: Coordinating Minister for Economic Affairs.
2. Member: Minister of Foreign Affairs
3. Members: State Minister for Chairperson of the National Development Planning Agency / Head of Bappenas
4. Member: Minister of Trade
5. Members: Minister of Finance
6. Member: Minister of Environment and Forestry
7. Member: Minister of Energy and Mineral Resources
8. Member: Minister of Industry
9. Member: President's Special Envoy on Climate Change

Meanwhile, the members of the Implementing Team are more than the Steering Team due to in line with the nature of the task that is more technical. Members of this team are as follows:

1. Chairman: Deputy for Co-ordination of International Economic Cooperation
2. Chair of Alternate: Special Staff of President of Climate Change Sector
3. Members: Head of Fiscal Policy Office, Ministry of Finance
4. Members: Deputy Minister for Natural Resources and Environment, BAPPENAS
5. Members: Director General of International Trade Cooperation, Ministry of Trade
6. Members: Director General Multilateral, Ministry of Foreign Affairs
7. Member: Director General of Law and International Agreement, Ministry of Foreign Affairs
8. Member: Expert Staff Minister for Environment and Climate Change, Ministry of Forestry
9. Member: Deputy for Environmental Damage Control and Climate Change, Ministry of Environment
10. Member: Director General of Oil and Gas, Ministry of Energy and Mineral Resources
11. Members: Director General of New Renewable Energy and Conservation Energy, Ministry of Energy and Mineral Resources
12. Members: Head of the Agency for Climate Policy and Industrial Quality Assessment, Ministry of Industry.

This Coordinating Minister for Economic Affairs Decree has several times been renewed due to the extension of the term of the decree. In addition, there are also some revisions of this decree which is due to some changes in organizational structure of ministries such as the removal of the National Council on Climate Change and the merger of the Ministry of Forestry and the Ministry of Environment.

## 3.2 The Joint Committee

### 3.2.1 Basis of Establishment and Task of the Joint Committee

The Joint Committee is established by a decree from the Deputy for Coordination of International Economic Cooperation based on a decree forming the previous TKPPKA. The Joint Committee is also required in the Rules of Implementation document for the implementation of the JCM project.

This Joint Committee was formed based on a decree from the Deputy for Coordination of International Economic Cooperation based on the previous TKPPKA decree. The Joint Committee is also required in the Rules of Implementation document for the implementation of the JCM project. In the Decree of Deputy for the Coordination of International Economic Cooperation, Coordinating Ministry of Economic Affairs No. 2 the year 2016 mentioned that the Joint Committee Team has a series of tasks are as follows:

a. Representing the Indonesian Government in realization the implementation of the Joint Credit Mechanism with the Japan Government and related parties;
b. Conducting regular meetings at least once a year or at a later time that agreed with the Joint Committee Team of Japan to discuss the implementation of the Joint Credit Mechanism;
c. Receiving information from interested parties in the development of the Joint Credit Mechanism project;
d. Develop and modify the documents, guidelines, and rules that will be used for the implementation of the Joint Credit Mechanism in accordance with the Implementation Rules document of the Joint Credit Mechanism;
e. Establishing a third-party institution to validate and verify project activities of the Joint Credit Mechanism;
f. Registering a Joint Credit Mechanism project that has been validated by a third party
g. Determining the number of carbon credits that have been obtained by the Joint Credit Mechanism project and make notification and announcement of the number of carbon credits according to the verification results by third parties;
h. Discussing the proposed Credit Mechanism project;
i. Making an implementation status report of the Collective Credit Mechanism periodically and reporting it to the Chief Executive of the TKPPKA Team if required;
j. Making a necessary analysis and proposals policy for the implementation of the Joint Credit Mechanism in Indonesia if required.

## 3.3 JCM Secretariat

### 3.3.1 Basis for Establishment and Task of the JCM Secretariat

The JCM Secretariat was formed based on the decree of the deputy after the formation of the Joint Committee Team. The Secretariat serves to assist the Joint

Committee Team in performing its duties. The Secretariat is in charge of running operational activities that support the Joint Committee Team for decision making. Based on its organizational structure, secretariat is headed by a Head of Secretariat who is appointed by the Chairman of the Team of the Coordinating Team for International Trade Negotiations (TKPPKA) with the assistance at least two staffs appointed by the Head of the Secretariat.

In the documents of the decree of the deputy and the Rules of Implementation for the Joint Crediting Mechanism, the duties of JCM secretariat include:

1. Together with Japan's Joint Credit Mechanism Secretariat:

   b. Prepare the design of the Joint Credit Mechanism methodology, rules and guidelines, and submit it to the Joint Committee if necessary;
   c. Receive and undertake a review of new initiatives from prospective project developers;
   d. Monitor the development of activities and programs related to the Joint Credit Mechanism, including the implementation of sustainable development criteria and environmental integrity criteria agreed upon in Indonesia;
   e. Avoid the existence of double counting by prioritizing transparency and information disclosure in the execution of implementation.

2. Independently or together with the Secretariat of Japan's Joint Credit Mechanism:

   a. Develop communication and information strategies and capacity building, including developing websites to communicate the implementation of the Joint Credit Mechanism;
   b. Develop criteria's for sustainable development and environmental integrity as well as identify capacity building needs, and submit them to the Joint Committee.
   c. Monitoring the development of feasibility studies conducted by relevant parties;
   d. Facilitating project developers in capacity building
   e. Developing, creating and running the project registry system and carbon credits generated from the activities of the Joint Credit Mechanism;
   f. Establish and allocate the amount of carbon credits in accordance with the decision of the Joint Committee, as well as record it in the registry system;
   g. Accept and review the methodology, project design document (PDD), verification and validation results, plans and reports on sustainable development criteria, and submit the results to the Joint Committee;
   h. Conducting meetings and facilitation with related parties on the implementation of Joint Credit Mechanism;
   i. Assist in the regular meeting of the Joint Committee; and
   j. Assist the Joint Committee in disseminating information and dissemination to stakeholders, ministries, and related institutions.
   k. Appoint a third party entity to validate and / or verify the implementation of the JCM project.

l. Prepare reports on the status of the project implementation if needed.

## 3.4 Technical Team

### 3.4.1 Basis for Establishment and Task of the JCM Secretariat

The Technical Team has a function as an institution that provides recommendations and reports to the Joint Committee of Indonesia. The Technical Team is representatives of ministries and/or institutions directly involved in the implementation of JCM. In performing its functions, the Technical Team can be assisted by the JCM Secretariat of Indonesia. Generally, the relationship between the Technical Team and the Joint Committee and the JCM Secretariat of Indonesia can be explained in accordance with Figure 3.1.

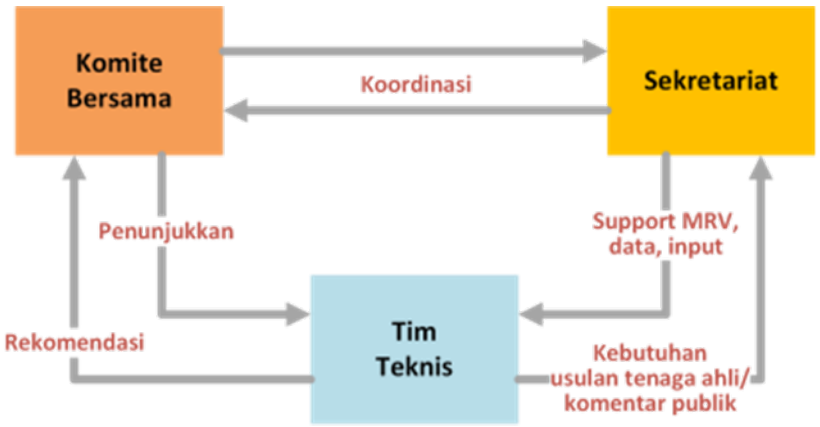


**Figure 3.1** Relationship of Technical Team with organ of JCM Indonesia

**Figure 3.1** shown that the positions and members of the Technical Team are appointed and approved by the Joint Committee. The work of the Technical Team is a list of recommendations that can be used by the Joint Committee in carrying out its functions and roles in making decisions. In general, the main function of the Technical Team can be formulated as follows:

- Provide recommendations to the JCM methodology proposal.
- Provide recommendations to decide whether or not JCM project candidates will be implemented in Indonesia.
- Provide feedback and suggestions on implementation of sustainable development reports.
- Provide recommendations for credit issuance decisions on projects shown positive evaluation results.

In performing its functions the Technical Team has the role that can be formulated as follows:

- Recommendations on proposed methodologies
  - Reviewing the proposed methodology

- Provide assessment and preparation of recommendations for conclusions on proposed methodology

- Recommendations on project registration
  - Reviewing the Project Design Document (PDD), modalities, communications, validation documents and supporting documents
  - Provide recommendations on whether a project can be registered as a JCM project
- Recommendations on implementation reports
  - Evaluating SDIR (Sustainable Development Implementation Report)
  - Delivering evaluation results
- Recommended credit issuance
  - Conducting discussions on credit distribution with PP
  - Conduct analysis and provide advice related to credit issuance

### 3.5 Third Party Entities

A Third Party Entity selected by the project participant to validate the PDD and verify the emission reduction activities already performed. The validation process is intended to determine whether a project has formulated an emission reduction measurement methodology formulated in the PDD (Project Design Document) correctly and determines whether the values of the parameters mentioned in the monitoring plan template are appropriate and can be used ex-ante. For the verification process, a third party entity determines whether the project has complied with the requirements listed on the submitted methodology, guidelines and decisions submitted by the Joint Committee and provides an assessment of its implementation.

To become a TPE, a Validation and Verification Agency must meet the following criteria:

- Candidate candidates are:
  (a) Accredited to ISO 14065; or
  (b) Designated Operational Entities (DOEs) for Clean Development Mechanism (CDM) under the UNFCCC

- Candidates have sufficient knowledge of JCM cooperation between the Government of the Republic of Indonesia and Japan by reading and understanding JCM rules and guidelines.

The Government of Indonesia in cooperation with the Institute for Global Environmental Strategies (IGES) has organized several ISO 14065 training sessions for third party institutions which interested in obtaining accreditation, enabling them to enroll as Third Party JCM.

Candidates who have not been eligible to become TPE of JCM may be appointed temporarily by the Joint Committee if the candidate has made an official registration for accreditation to the Accreditation Agency and the Accreditation Agency has initiated the candidacy accreditation process as outlined in Paragraph 41 (a) and ( b) from the Guidelines

for TPE. The Joint Committee can only make temporary appointments to 2 candidates from Indonesia and 2 candidates from Japan each year.

### 3.6 Role of Project Participant in JCM Activities

As shown in Figure 3.2, in the implementation of JCM there is a role mandated by the project participants. In the implementation of JCM, project participants consist of Indonesian project participants (business actors with head offices in Indonesia) and Japanese project participants (business actors headquartered in Japan), both project participants then work together and have a role as defined in the following:

- Prepare the draft methodology and submit the draft to the JCM secretariat for further review before being approved by the Joint Committee.
- Prepare the SDIP (Sustainable Development Implementation Plan) by completing the SDIP form and reporting the SDIP proposal to the JCM secretariat.
- Prepare a draft of the PDD (Project Design Document) and submit the draft to a third party entity for validation and notify the process to the JCM secretariat in order to be informed to the Joint Committee.
- Submit a PDD document that has been validated by a third party entity to the Joint Committee to be able to register.
- Implement JCM projects for monitoring emissions reductions in accordance with the methodology and project steps mentioned in the PDD.
- Prepare SDIR (Sustainable Development Implementation Report) by filling out the SDIR form for each monitoring period and submit the SDIR to the JCM Secretariat.
- Prepare a monitoring report for each monitoring period for subsequent submission to a third party entity for verification of the number of carbon credits being reduced.
- Submit verification reports prepared by a third-party entity to the Joint Committee, and requests a notification for the issuance of a reduced carbon emissions credit on the project.

Basically, the role of the participant project is a description of what will be done in implementing the JCM project within the JCM project cycle as shown in Figure 3.2.

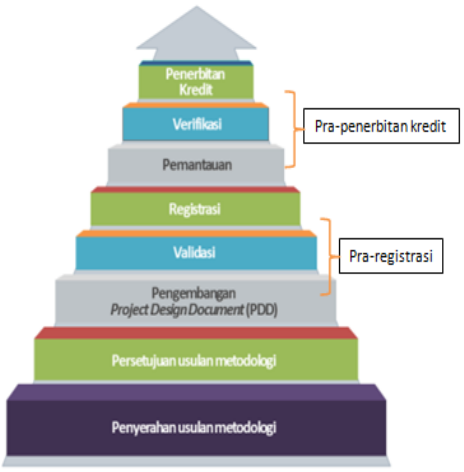


**Figure 3.2** JCM Project Cycle

# CHAPTER 4
# Feasibility Study for JCM Project Implementation

## 4.1 Reasons Required a Feasibility Study

There have been 115 feasibility studies under the JCM scheme since 2010. This feasibility study is facilitated and funded by the Japanese government with financing through the Ministry of Environment, Ministry of Economy, Trade and Industry, and Japan Forestry Agency.

The feasibility study that has been done in Indonesia until now is a form of cooperation not only between the consultant from Japan with its ministry but also more with Indonesian side, from ministry, local government, university, to private and NGO.

The objective of the feasibility study initially was to calculate and analyze the feasibility of an appropriate emission reduction opportunity to become a JCM project. Emissions reduction opportunities have been identified first then through this feasibility study will be analyzed feasibility of implementation.

In the process, the feasibility study in the JCM scheme is not only for technical and economic analysis but also a means to convince Indonesian partners to do projects with their partners, especially Indonesian partners from local government or ministries. This development is in line with the increasing number of feasibility studies conducted by the consultants from Japan in cooperation with the Indonesian government.

## 4.2 The Party Involved in the Feasibility Study

Feasibility studies which amounts about 111 undertaken in Indonesia were mostly financed by the Japanese government through its ministries and agencies. Costs that have been incurred in this feasibility study vary widely depending on the type of project, but in total approximately USD 10 million which are all grants from the Government of Japan.

There are several feasibility studies conducted by private Japanese independently without involving government budget. There are also feasibility studies conducted in cooperation with other parties and other countries.

The examples feasibility studies undertaken independently are feasibility studies conducted by parties who are later involved and related to the feasibility study activities include the following:

The Japanese consultant:

- Mitsubishi Research Industries
- Mitsubishi Heavy Industries
- Itochu Corporation
- Yokogawa Co. LTD.

- NTT Facilities
- JFE Engineering

Indonesian government agencies:

- Ministry of Energy and Mineral Resources
- Ministry of Environment and Forestry
- Ministry of Industry
- Local Government of Jambi Province
- Provincial Government of Gorontalo Province
- Central Kalimantan Provincial Government
- The Government of the Capital Region of Jakarta
- Municipality of Surabaya

Private parties, associations, and Indonesian state-owned enterprises

- PT. Adib
- PT. Fajar Surya Wisesa
- Asosiasi ESCO Indonesia
- PT. PLN (Persero)
- PT. Pertamina (Persero)

Universities in Indonesia involved in the feasibility study include:

- Universitas Lampung
- Institut Teknologi Bandung
- Universitas Lambung Mangkurat
- Universitas Jambi
- Universitas Sriwijaya

### 4.3 Types of JCM Feasibility Studies

Based on the agreement between Indonesia and Japan, feasibility studies conducted by stakeholders involved in Indonesia include 13 sub-sectors, namely:

1. Energy industry (renewable / non-renewable sources);
2. Energy distribution;
3. Energy demand;
4. Manufacturing industry;
5. Chemical industry;
6. Construction;
7. Transportation;
8. Mining / mineral production;
9. Metal production;
10. Fuel emissions from fuels (solid, oil and gas);
11. Fugitive emissions from production and consumption of halocarbon and sulfur hexafluoride;

12. Use of solvent;
13. Handling and disposal of waste;
14. Reducing emissions from deforestation and forest degradation in developing countries, as well as the role of conservation, sustainable forest management and enhancement of forest carbon stocks in developing countries (REDD-plus);
15. Agriculture.

Not all of sub-sector types are then conducted feasibility studies, some more than others, including energy industry and emissions reduction from deforestation and degradation. The feasibility studies undertaken for these two sectors have been each performed over twenty times.

Sub-sectors that have never conducted feasibility studies include leakage emissions from fuel and leakage emissions from production and consumption of halocarbons and sulfur hexafluoride.

All feasibility studies were undertaken subsequently reported and presented to the Government of Indonesia through annual reporting activities. Each year since 2011 this activity is conducted with the consideration of all stakeholders involved and not involved.

### 4.4 Some examples of interesting feasibility studies

The feasibility study undertaken in Indonesia under the JCM scheme has much more uniqueness than any other activities it has done. Its uniqueness among others is:

- The type of technology used. Although JCM requires technology to be proposed it must be technically proven technically and economically, or technology that has been implemented commercially. But compared to the type of technology that exists in Indonesia, the technology implemented through JCM is still the latest technology.
- Type of study object. The type of feasibility study object is very diverse, from coal power plant, forest, hydropower, building, industry, waste, to the transportation system.
- Results and processes from feasibility studies. Whether or not a feasibility study is feasible depends on technical, financial, emission and social factors. From several feasibility studies conducted in Indonesia, there are some that cannot be implemented with various causes, but at a more conducive environment will be implemented.

Examples of feasibility studies that are interesting and beneficial are as follow:

**Avoidance of Peat Aerobic Degradation by Peat land Rewetting and Rice Husk-based Power Generation Associated with Rice Production Increase in Jambi Province**

This feasibility study has been done by the Shimizu Corp, University of Jambi, and Jambi Civil Works Unit at Jambi Province. Based on the FS results there are some significant potencies to reduce the emission and paddy crop harvesting enhancement by repairing and remote controlling the water canal in peat land area.

Based on the FS, approximately 160.000 ton CO2 equivalent per year will not be emiited to the atmosphere if this project will be done.


**Figure 4.1.** The feasibility study conducted by Shimitzu and Jambi University in Tanjung Jabung Timur.

This feasibility study takes place over 2 years and receives significant support from the community and local government. However, because of the need for funds and investment is large enough for the implementation, then the study is not financially feasible.

**Leveraging Bilateral Offset Credit Mechanism to Improve Efficiency of PLN's Hydro Power Plants Through Rehabilitation**

This feasibility study is very interesting because of the activities can give immediate result and high benefits to the project participants, especially PT. PLN. By conducting audits and special surveys on several large PLN power plants, there are some opportunities to reduce emissions through only minor maintenance and repair programs. This activity is carried out by Toshiba-company.

Based on the 6 hydroelectric surveys, energy efficiency improvements can be made with an investment IRR of 11.8%, equivalent to approximately 113,000 tons of CO2 per year.


Figure 4.2. Conditions before and after rehabilitation.

This activity produces excellent information for PT. PLN then they finally follow up the results of this study by using financing from PLN without any support from JCM financing scheme.

## Indonesia Sumatra Substitute Natural Gas Project

The idea to conduct this feasibility study is from the difficulty of PLN to obtain sufficient gas supply. This project is done by Mitsubishi Heavy Industries in cooperation with the Directorate General of Oil and Gas.

This feasibility study examines the relationship between the availability of low-quality coal, the need for gas for the PLN power plant, and the need to increase the production of petroleum. Low-quality coal is converted to gas which is then used for PLN power plants, while CO2 or processed carbon dioxide is then injected into the gas or oil wells to increase the pressure so that it will produce greater production.

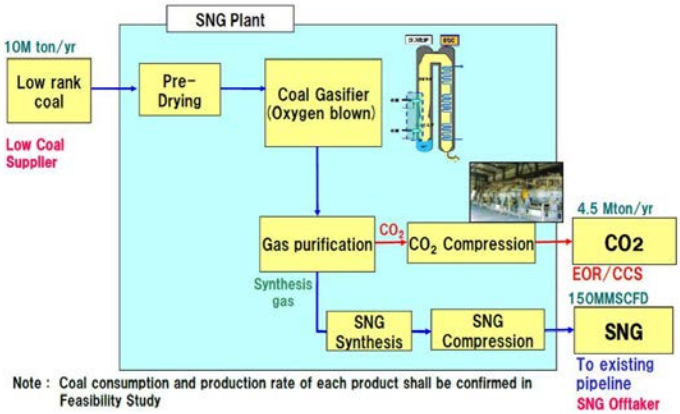


**Figure 4.3.** Schematic diagram of substitute natural gas project.

This study was conducted in detail and comprehensive for 2 years but ultimately the implementation was less feasible financially due to the decline of world oil price.

## Project Development of Mass Rapid Transit (MRT) System in Jakarta

This feasibility study is related to the construction of MRT in Jakarta using Japanese loan funds through JICA cooperation. In this feasibility study, the methodology for calculating emission reduction is done through MRT development from south to north of Jakarta.

Survey activities are then carried out, especially for transportation of highway, motorcycle, and car transport modes, which will be sub-disaggregated by MRT. The calculations performed are then based on scenarios built on the methodology.

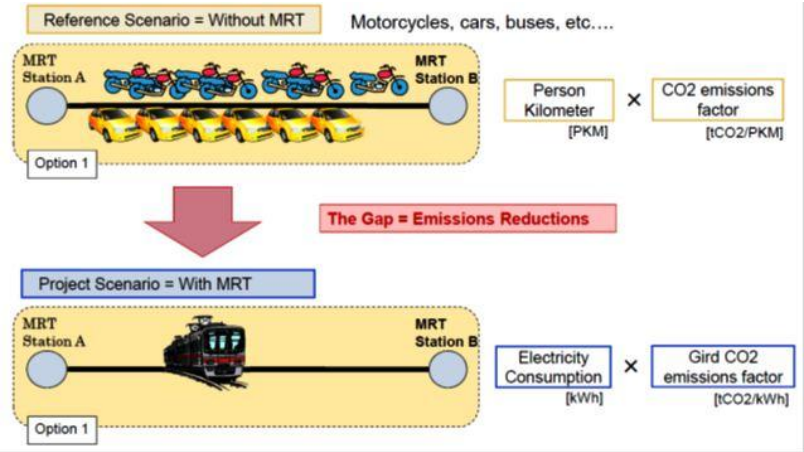


**Figure 4.4.** Scenarios and constraints are developed within the methodology.

This feasibility study was finally conducted for 2 years, the methodology still not feasible to be used as the basis for calculation of emission reduction due to too many assumptions used.

## Feasibility study of GHG Reduction Project through Forest Conservation in Peat land in Central Kalimantan

This feasibility study was conducted for two years in the concession area of ecosystem restoration owned by PT. Rimba Makmur Utama in Katingan area, Central Kalimantan. The parties from Japan involved include Marubeni Corp., while from Indonesia werePT. Rimba Makmur Utama, Ministry of Forestry, Central Kalimantan Local Government, and several other related parties.

This feasibility study aimed at designing a REDD + emission reduction measurement methodology is conducted over 3 years with the final outcome of a detailed methodology and calculation of emissions reductions for the Katingan project.

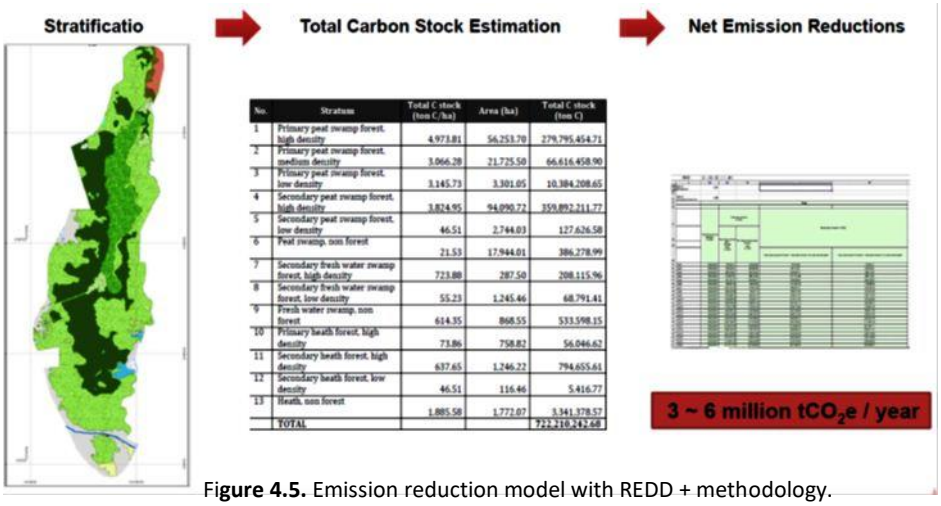


Figure 4.5. Emission reduction model with REDD + methodology.

The Katingan feasibility study is not only a methodology but also produces a detailed safeguard and implementation plan. This is one of the most detailed feasibility study projects ever undertaken under the JCM scheme.

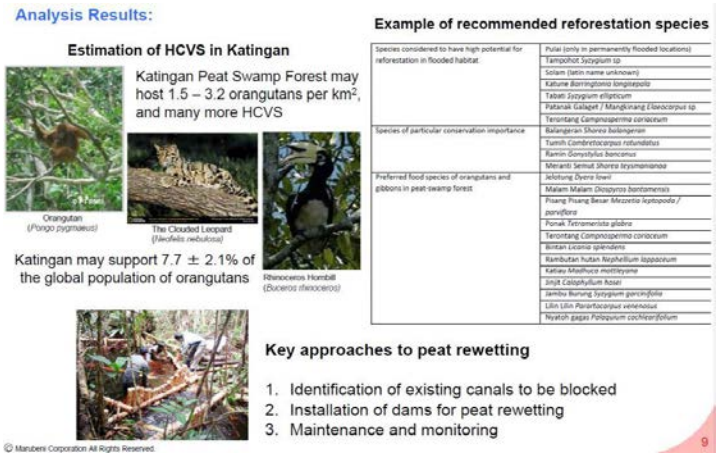


**Figure 4.6.** Safeguards plan from Katingan project implementation.

Due to political and policy changes, especially with the incorporation of the Ministry of the Environment with the Ministry of Forestry, as well as the unclear issue of REDD + issues in UNFCCC and global negotiations, the Indonesian government is unwilling to adopt REDD + as an emission reduction instrument under the JCM scheme.

Methodologies and safeguards and other plans and documents that have been developed are finally used by project participants to register this project under the Voluntary Carbon Standard (VCS) scheme. Already millions of tons of VER credit has been generated by this project until now.

**Feasibility Study on Financing Scheme Development Project for Promoting Energy Saving in Indonesia**

The Mitsubishi Research Institute in collaboration with ESCO (Energy Services Company) association conducted a feasibility study to improve energy efficiency by energy users in Indonesia. The target of this study is creating a scheme of financing and cooperation with ESCO while offering technological products to the intended energy users, in this case, are malls and shops.

Technologies that are subsequently offered to energy users include energy management, solar rooftop, replacement chiller with a high efficiency, utilization of exhaust generator set, LED, and several other technologies.

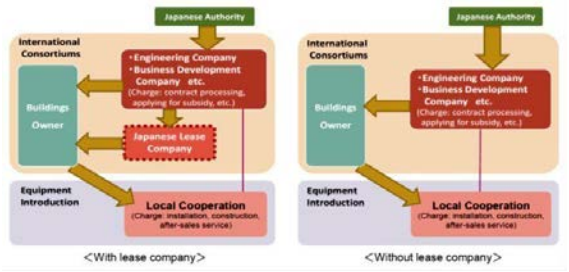


**Figure 4.7.** Financing model offered by feasibility study result.

This feasibility study was unsuccessful to be implemented into a project due to the reluctance of the facility owners to use the offered ESCO financing scheme.

**Pilot Study on for Carbon Sequestration and Monitoring Gundih Area, Central Java, Indonesia**

This study is the most complex study of all feasibility studies undertaken in Indonesia under the JCM scheme, at most parties involved, and one of the longest-running and time-span. The parties involved in the feasibility study are as follows.

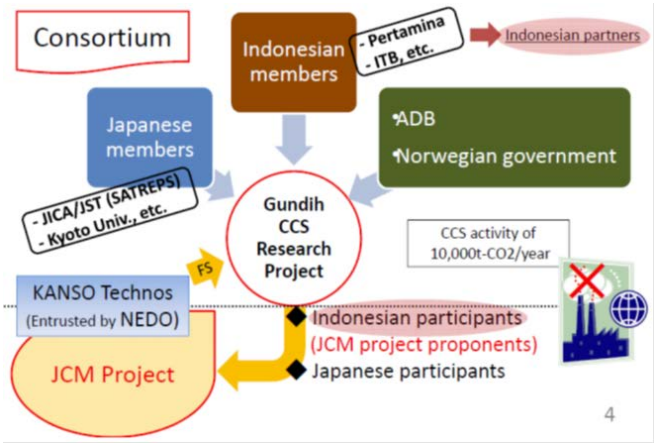


**Figure 4.8.** Parties involved in financing and study work The financing model offered by the results of a feasibility study.

In a project based and in comparison with other feasibility studies, these actively involved parties are quite numerous, even at most compared to other feasibility studies. In the feasibility study for CCS Gundih, the involved parties are Kanso Technos, JICA, ITB, Directorate General of Oil and Gas, Pertamina, ADB, UKCCU (from the British embassy), and the Norwegian government. Many parties are directly involved in this activity because of the complexity of the activities and the wide scope of the area, technical, and political.

This Feasibility Study gives more detail knowledge about carbon captured and storage (CCS) which is planned to be implemented in Exxon Mobil's oil and gas mining concession in Gundih field, Cepu area. The high CO2 content in mined natural gas causes the effectiveness of this implementation is expected to be achieved through increased oil and gas production due to increased pressure from oil and gas wells.

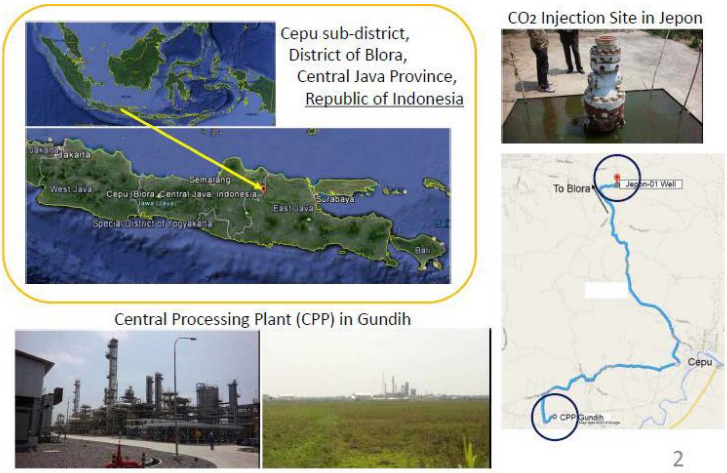


**Figure 4.9.** Location and condition of Gundih Field now.

Technically, the feasibility study conducted by CCS is feasible to be implemented in order to increase the production of oil and gas wells. It was agreed to build dwell test or test well in 2016 with financing from a consortium of companies in Japan. This activity was then postponed due to the decline in world oil prices so that it became financially less attractive and less feasible to implement.

# CHAPTER 5
# JCM Financing Model

To implement the JCM project, previous candidate participants must be registered as recipients of Japanese government assistance for JCM schemes. There are 3 financing schemes offered by the Japanese government that can be followed by the Indonesian side to date, namely: Model Project, Demonstration Project, and Japan Fund for JCM - ADB.

## 5.1 JCM Model Project

The Model Project scheme is a financing scheme of the Ministry of Environment Japan (MoEJ) that finances part of the capital cost of a low carbon project in the form of subsidies. Projects financed by the Model Project must be able to complete the project for a maximum of 3 years from the subsidy. In return, the Government of Japan expects at least half of the emission reductions credited to JCM credit.

In implementing the Model Project scheme, the MOEJ appoints the Global Environment Centre Foundation (GEC) as the organization responsible for managing subsidy funds, running call-for-proposal processes, and conducting monitoring and evaluation of subsidized projects.
One of the conditions for obtaining a Model Project subsidy is that both entities from Indonesia and Japan must establish an international consortium or joint venture under a business to a business agreement. Generally, the representative of this consortium is the Japanese entity due to some administrative requirements in Japanese. Therefore, the consortium's representatives are recognized as Japanese entities if they are:

i. private companies;
ii. independent institutions;
iii. association;
iv. organizations established under Japanese regulations; or
v. an organization deemed appropriate by the GEC in accordance with the direction of the MOEJ.

The maximum subsidy given by the Model Project scheme is 50%, and the percentage will decrease if the proposed project uses technology that has been subsidized by Model Project. The large percentage of subsidies obtained can be seen in Table 1.

**Table 5.1.** Large subsidy of the Model Project scheme.

| Number of Model Projects that have used the same technology in host country | Percentage of subsidies |
|---|---|
| None (0) | Up to 50% |
| 1-3 projects | Up to 40% |
| More than 3 (>3) | Up to 30% |

### *5.2 Japan Fund for JCM (JFJCM)*

The JFJCM scheme is a trust fund of MOEJ managed by ADB and in 2014-2016, the amount of funds granted to ADB is $ 42.6 million. This scheme provides funding incentives from adoption of cutting-edge carbon technologies on ADB-financed projects (see Figure 1).

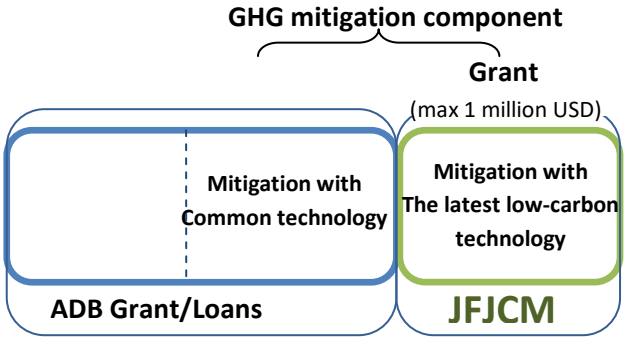


**Figure 5.1.** JFJCM financing scheme.

Funding support through JFJCM can be provided to sovereign projects or non-sovereign projects with different financing schemes:

*i.* *Sovereign project*

The sovereign funding assistance project is provided in the form of a grant of additional costs for cutting-edge low carbon technologies (see Figure 2). Parties that can get this funding are government entities and SOEs. Grants granted are 1) 10% of project cost (maximum cost 10 million USD); or 2) for five (5) million USD if the project cost is less than 50 million USD.

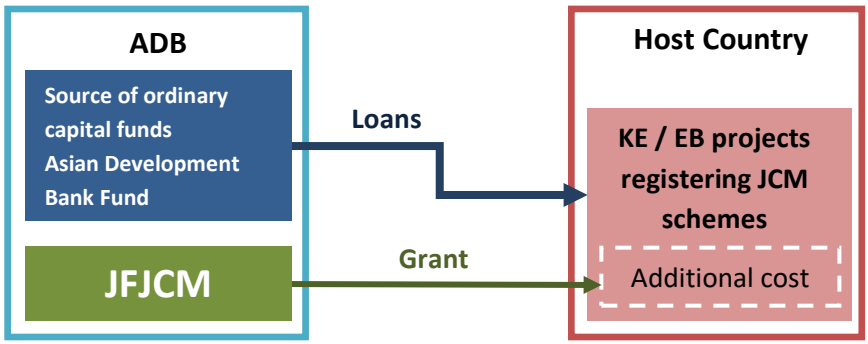


**Figure 5.2.** JFJCM funding for sovereign project.

*ii.* *Non-sovereign project*

Non-sovereign funding assistance projects are provided to private parties who have borrowed ADB funds to implement energy conservation or renewable energy projects. By this JFJCM, the private sector will receive a subsidy for the ADB loan rate shown in Figure 3. The amount of interest subsidy granted is 10% of the project cost (with a maximum amount of 10 million USD).

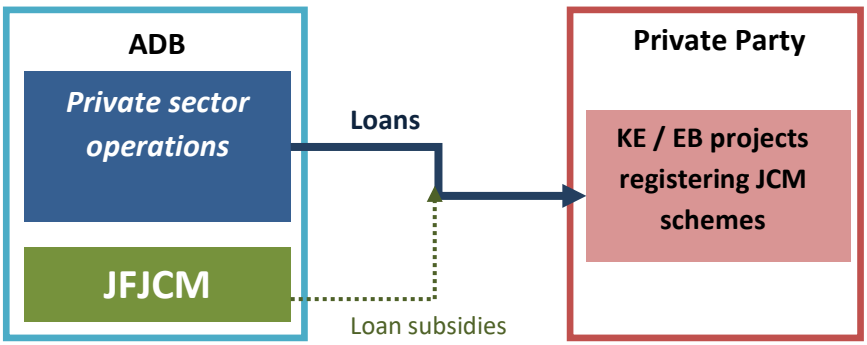


**Figure 5.3.** JFJCM funding for non-sovereign projects.

### *5.3 Demonstration Project*

Demonstration Project Scheme is a financing scheme of the Ministry of Economy, Trade, and Industry (METI) of Japan and the New Energy and Industrial Technology Development Organization (NEDO) of Japan to provide grant for the implementation of low-carbon technologies to host countries. As one of the requirements in this scheme is the need for a Memorandum of Understanding (MoU) on each of the NEDO project with one of the Indonesian government institutions (see Figure 5.4). NEDO have an interest to do the MoU with the Indonesian government institution to establish lines of communication with project participants, coordinate the relevant ministries in Indonesia to carry out a demonstration of the technology, and to provide a solution if there are problems during the project.

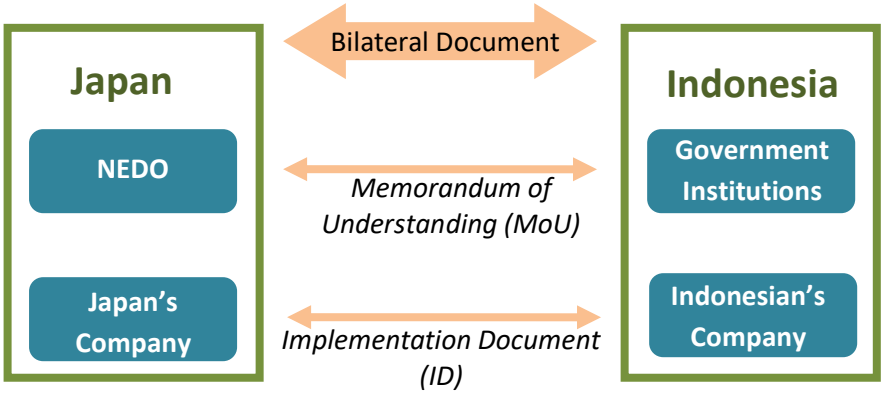


**Figure 5.4.** Demonstration Project Scheme.

In accordance with Japanese Government regulations, each technology has a product depreciation age at which the price of a technology will be zero (0) in year n. Under this regulation, then when the technology for JCM with Nation Technology Demonstration Project ownership is owned by NEDO, but after the price of zero technology (0) then the goods will be transferred to Indonesian companies.

# CHAPTER 6
# JCM Implementation Infrastructure

In the implementation of JCM cooperation, its implementation is closely related to rules, JCM project cycle implementation procedures, and JCM project implementation methodology. The implementation of the three things must be in accordance with ISO 14065 standards. The JCM implementation guidelines are also the infrastructure of JCM implementation. The instructions are explained in detail in several documents agreed upon by the Joint Committee. In addition to JCM infrastructure, it is also important to note the carbon credit registration system derived from the implementation of the JCM project. In general, the JCM implementation infrastructure can be shown in **Figure 6.1.**

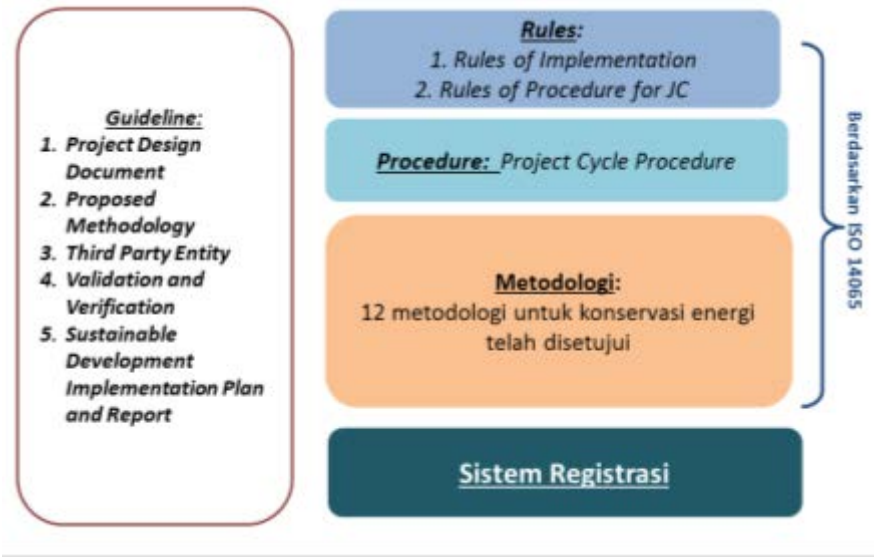


**Figure 6.1.** JCM Implementation Infrastructure

## 6.1 JCM Implementation Rules

The JCM implementation rules refer to bilateral cooperation between the Government of Indonesia and Japan in Joint Crediting Mechanism cooperation. The JCM implementation rules refer to the Rules of Implementation for The Joint Crediting Mechanism (JCM) ver_2.1 document. The things that become the main rules of this JCM implementation are:

1) The purpose of the Joint Credit Mechanism cooperation
2) The scope of cooperation of Joint Credit Mechanism
3) The roles and responsibilities of the Joint Committee
4) Roles and responsibilities of both parties in the implementation of JCM (including the scope of work of the secretariat)
5) Third Party Roles and Responsibilities (Third-Party Entities)
6) Roles and responsibilities of project participants
7) Mechanism of methodology
8) The mechanism of appointment of a third party registered in JCM cooperation
9) Explanation of validation implementation
10) A description of the Sustainable Development Implementation Plan (SDIP)

11) Explanation of the registration process
12) An explanation of the monitoring and measurement process for carbon emissions being reduced based on the project being implemented
13) Explanation of the verification process of the monitoring results and the measurement of carbon emissions reduced by the implemented project.
14) Explanation for the evaluation process of the sustainable development report that has been implemented
15) Explanation for the credit issuance process and the distribution of carbon credits

### 6.2 Rules of Procedures for Joint Committee

The rules for procedures of the Joint Committee shall govern matters relating to membership, decision-making processes whether derived from joint meetings or teleconferences or electronics such as emails and activities of the Joint Committee such as meetings, reporting, and other related activities. This rule is described in detail in the Rules of Procedures document for the Joint Committee ver _020.

### 6.3 Project Cycle Procedure

JCM implementation procedures are designed to allow JCM project implementation to be consistent with the JCM project cycle to run consistently and in accordance with the objectives of the JCM project implementation. This JCM implementation procedure is an administrative step that should be undertaken by JCM project participants, third party entities, Joint Committee, JCM Secretariat, Technical Team and stakeholders related to JCM project implementation. As mentioned earlier, JCM implementation procedures are made for JCM projects to run according to the JCM project cycle. This project cycle procedure refers to the Joint Crediting Mechanism Project Cycle Procedure document. The JCM implementation procedure is closely related to the JCM project cycle as shown in **Figure 3.2.**

### 6.4 Methodology

Methodology is a method of calculation and measurement such as a carbon emissions reduction measurement formula of a JCM project that can be measured and applied. The preparation of the methodology must be in accordance with ISO 14065. For each new methodology submitted must be approved by the Joint Committee. A JCM project can use a methodology with similar technology and has been approved by the Joint Committee. To date for the implementation of the JCM project in Indonesia, there are 12 approved methodologies.

There are two types of emission reductions recorded in JCM: **reference emissions & project** emissions as shown in **Figure 6.2.**

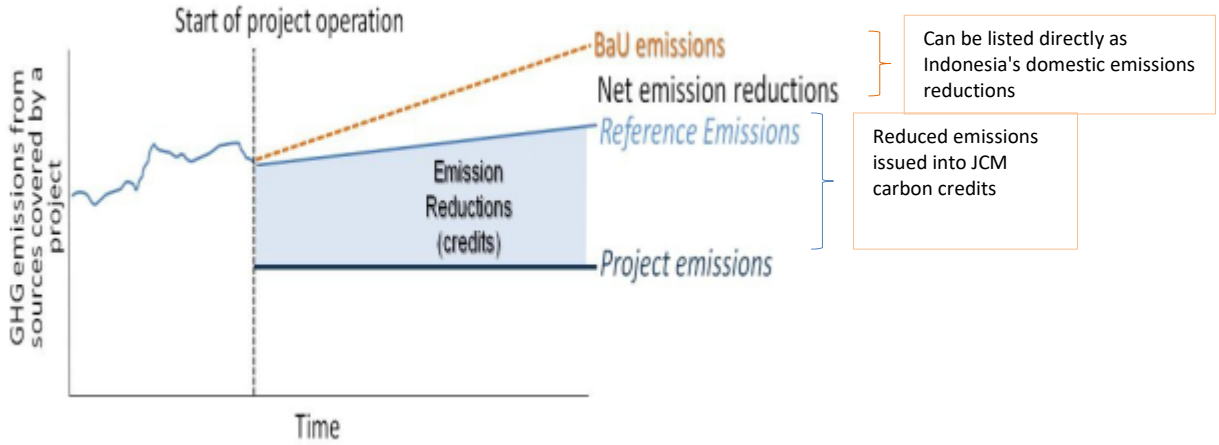


**Figure 6.2.** The relationship between BaU emissions, reference emissions and project emissions

The main things have to be noted include:

1) Baseline emission equivalent to BaU and/or Reference Emissions.
2) The mitigation emission is equivalent to Project Emissions
3) Reference Emissions are reasonable emissions in pre-project conditions and the amount under the BaU emission
4) Reference Emissions on JCM can be the same or different from the baseline emissions, depending on the methodology for calculating the emission reductions used.
5) GHG emissions listed in the system may be equal to or greater than JCM credits.

***Calculation cases:***

1. The latest chiller technology has been installed at Tunjungan Plaza Surabaya.
2. Coefficient of Performance (COP) of old chiller is 4.6 (0.77 KW / Ton Ref), new chiller 6.28 (0.56 KW / Ton Ref).
3. COP from the most circulating chiller in the market in Indonesia based on the survey is 5.94 (0.59 KW / Ton Ref). Without JCM, Tunjungan Plaza will select this type of chiller.
4. Reduction of emissions in JCM is a comparison between project emission and reference emission (not with baseline emission)
5. Reference emission - Project emission = 996 ton CO2 / year
6. Baseline emission - Reference emission = 3.925 ton CO2 / year. This can be reported directly as emissions reductions for Indonesia.

### 6.5 Registration

The JCM Indonesia registry system is a system developed to ensure the recording of JCM's issuance, ownership, transfer, receipt, cancellation and retirement credit. The components that exist in the JCM registry system as shown in Figure 6.2, include:

1) "Master Operation sheet" to register the JCM project and the new account in the system and to modify the registered information

2) "Credit Related Operation sheet" to manage JCM credit in the registry system
3) "Master sheets" for the data center and store each operation or input done inside
4) "Account sheets" to manage the amount of credit owed by each account


Figur**e 6.3.** JCM Registry System

Each JCM host country is free to develop their registry system. However, this registry system must still follow and conform to the Common Specifications of the JCM Registry ver_01.0 document. In this document defined the following:

1) Issuance,
2) Transfer
3) Acquisition
4) Cancellation
5) Retirement

As mentioned in the Common Specifications of the JCM Registry documents, both parties create a registration system that explains the accurate calculation of the number of credits including issuance, transfer, acquisition, cancellation, and retirement. The registration system should also avoid double counting.

The registration system must have the following accounts:

1) A government account
2) Participant's account
3) Cancellation account
4) A "retirement" account

Both parties must also prepare a platform that can help the public to access or query the data.

## 6.6 JCM Implementation Guidelines

In the JCM infrastructure there are documents that support the implementation of JCM. Instructions are organized into the following activities:

### 6.6.1 Guidelines for Project Design Document (PDD) and Monitoring Report

PDD is a document prepared by project participants that is useful for assisting project participants in implementing the project and delivering project monitoring results. In detail, the guidelines for the preparation of the PDD and the monitoring report are described in the document Joint Crediting Mechanism Guidelines for Developing Project Design Document and Monitoring Report ver 02.0. As for the preparation of the PDD and the monitoring report, the project participants should use the instructions described in the document and approved methodologies.

### 6.6.2 Methodology Guidelines

The methodology guidelines are used by the project participants in the preparation of the methodology for the Joint-Crediting Mechanism project and for the Joint Committee in compiling or assessing the proposed methodology. The instructions for this process are summarized in the Joint Crediting Mechanism Guidelines for Developing Proposed Methodology ver_1.1 document. The main things that are arranged in the PDD are:

1) Completed PDD form
2) Monitoring and monitoring plan and report consisting of monitoring plan sheet and monitoring structure sheet

### 6.6.3 Third Party Entities Guidelines

These guidelines are used as guidance relating to the third party entity involved in the JCM project as the party conducting validation and verification of JCM activities. This Directive consists of criteria and procedures for the mechanism of appointment, resignation and suspension or re-registration of a third party entity. These guidelines apply to the Joint Committee, secretariat, and project participants. In detail, the guidance on determining third-party entities is listed in the Joint Crediting Mechanism document Guidelines for Designation of a Third-Party Entity ver 3.1

### 6.6.4 Validation and Verification Guidelines

These validation and verification guidelines is intended for third party entities contracted by project participants to carry out validation and verification of projects that previously possessed a methodology approved by the joint committee. Detailed instructions on this activity are described in full in the Joint Crediting Mechanism Guidelines for Validation and Verification ver_01 document. In the implementation there are documents that must be considered including:

1) ISO 14964-3: 2006; Greenhouse gases - Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions
2) Joint Crediting Mechanism Project Cycle Procedure

3) Joint Crediting Mechanism Guidelines for Developing Project Design Document and Monitoring Report

### 6.6.5 Guidelines for the Sustainable Development Implementation Plan and Report

Guidelines for the preparation of the Sustainable Development Implementation Plan and Report (SDIP and SDIR) are demonstrated for project participants in order to assist in the preparation of SDIP and SDIR required in the JCM project cycle. The guidelines for the preparation of SDIP and SDIR are detailed in the document of the Joint Crediting Mechanism Guidelines for Developing Sustainable Development Implementation Plan and Report ver_01.0.

# CHAPTER 7
# JCM Project Cycle

If a project has received funding assistance to become a JCM project, the Government of Indonesia together with the Government of Japan shall monitor the progress of the project development. In the JCM funding assistance scheme, there are two (2) different but interconnected project cycles, namely: development cycle or technology installation and JCM project cycle as shown in **Figure 7.1.**

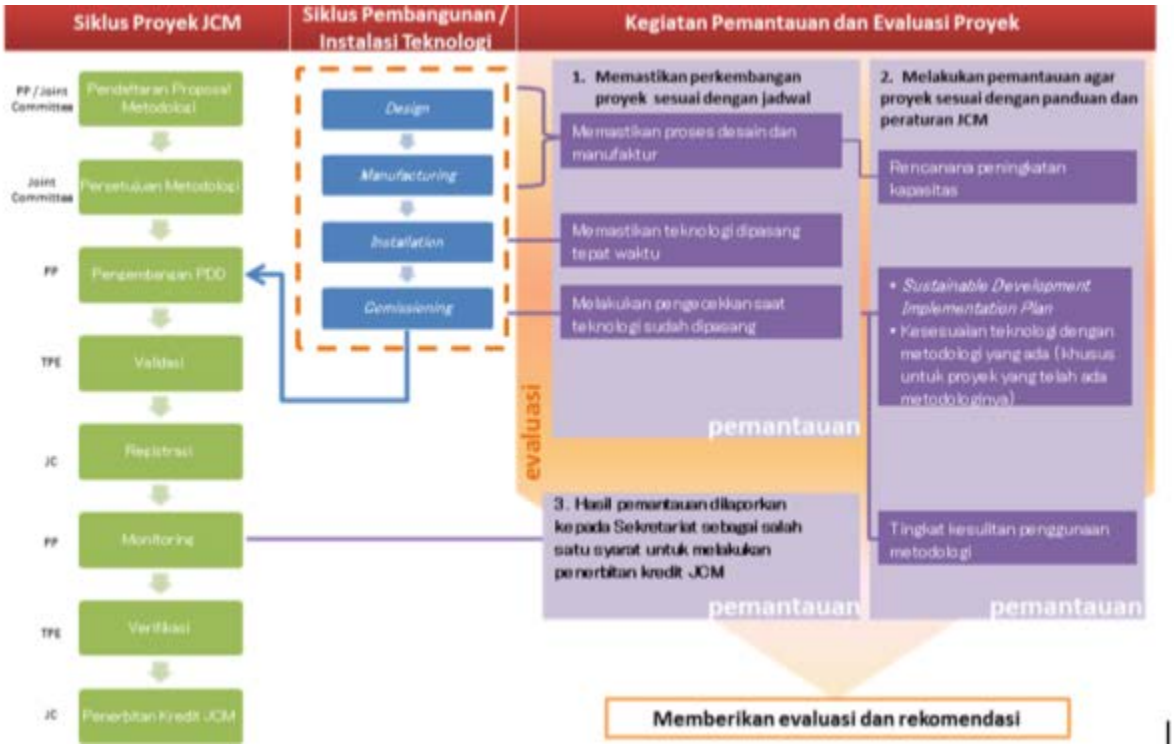


**Figure 7.4** Monitoring of project cycle and technology development / installation cycle

The development cycle or technology installation is a process that begins when the project has officially received a financial support from the Japanese Government as set in financial scheme of Model Project, JFJCM or Demonstration Project financing scheme until the technology has been installed. The stages that occur in this cycle cover the stages of contract of financing, design and manufacturing, installation, and commissioning. While the JCM project scheme cycle is a necessary step to register the project and issue JCM carbon credits.

### 7.1 Development Cycle or Technology Installation

When a project has been selected for funding from the Government of Japan, the Government of Indonesia can start communicating with the project participant to ensure the progress of the project goes according to the plan and schedule. There are two (2) things that should be monitored during the technology development / installation cycle, namely: 1. Ensure the progress of the project according to schedule; 2. Monitoring to ensure that the project is in accordance with JCM guidelines and procedures. In addition, the

Government of Japan have to deliver also a monthly report on the development of JCM projects to the Indonesian side so that it can be known if there are changes such as project location or schedule.
The JCM Secretariat in Indonesia has a duty to facilitate the project participants if there are difficulties in carrying out the project development related to the regulations in force in Indonesia. This is undertaken by bridging communication between relevant ministries and project participants by accommodate the gathering with policymakers.
An important role of the Government of Indonesia in the JCM scheme is to ensure that JCM schemes provide technology transfer and capacity building to private parties as project participants, so that JCM schemes can be utilized to the maximum extent by Indonesia. In addition, by ensuring capacity building, JCM project implementation in Indonesia can run sustainably. Therefore, members of the Joint Committee representing the Government of Indonesia, together with the JCM Secretariat of Indonesia, visit to the project site to ensure the progress project (Figure 7.2).

**Figure 7.2.** Implementation of JCM Project

## 7.2 Cycle of JCM Project Scheme

In the JCM scheme, project participants have an obligation not only handling the implementation of the project, but also officially enrolled meet the requirements as a JCM project in order to issue JCM emission reduction credits. In general, the JCM project scheme cycle can be divided into two (2), namely: 1. Pre-Project Registration Phase and 2. Post-Project Registration Phase (see **Figure 7.3**).

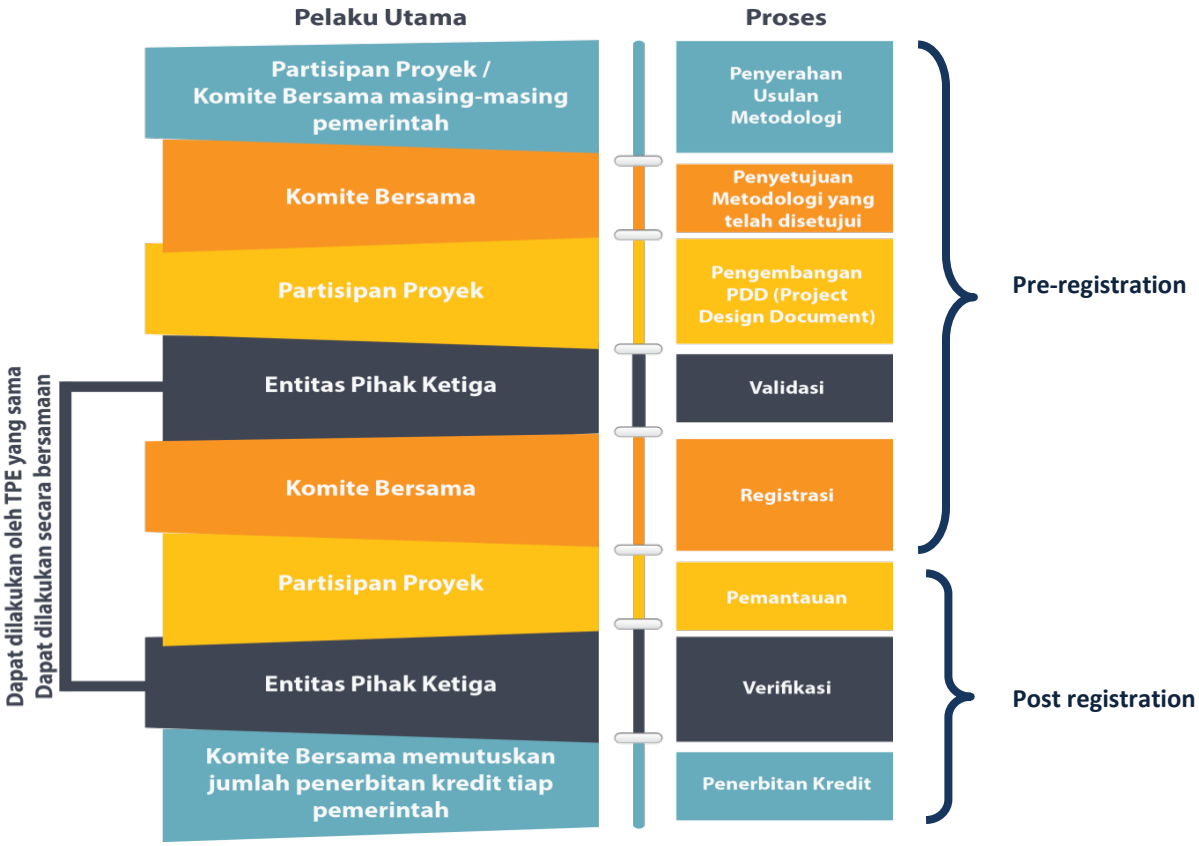


**Figure 7.3.** JCM Project Cycle

### 7.2.1 Pre-registration Stage

Project participants at pre-registration stage must prepare a Project Design Document that contains an explanation of the project location, the length of the project, the technology concept used to reduce greenhouse gas emissions, the emission reduction methodology used, the summary of the Environmental Impact Analysis if necessary (UKL-UPL or AMDAL), and the results of gathering with stakeholders. If there is projects undertake using technology has no methodology yet, so the project participant must process the proposal of methodology to Joint Committee of JCM too.

***a. Proposing JCM methodology***

The JCM methodology aside from being a document describing the procedures for calculating emission reductions, also explains the project criteria that may use the methodology document or the so-called eligibility criteria. If a project fails to meet the eligibility criteria of all existing JCM methodologies in Indonesia, the project cannot be registered as a JCM project and be forbidden to use any JCM methodology in Indonesia. Thus, if this thing happens so project participants can design and propose JCM methodologies which is appropriate and eligible to the Joint Committee in order to be approved and usable as shown in **Figure 7.4**

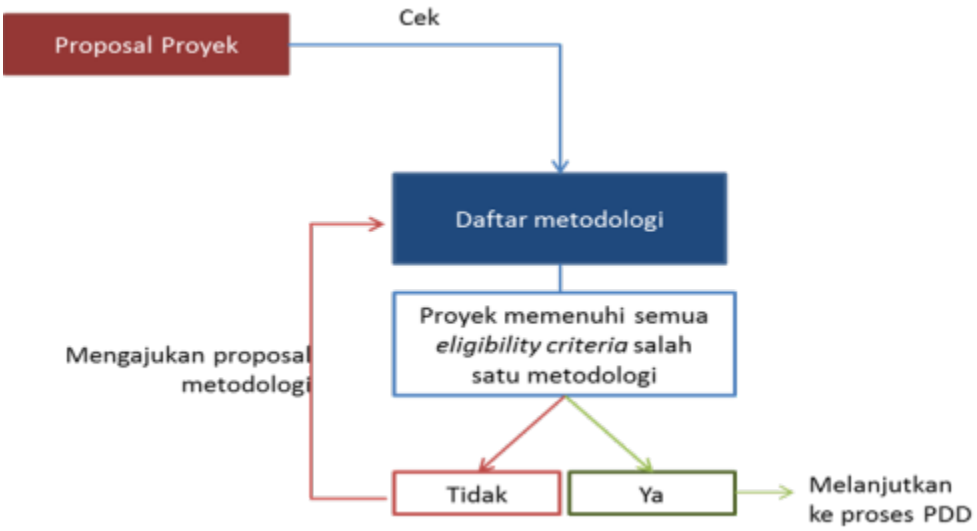


**Figure 7.4** Flowchart determines whether or not a methodology is submitted

The reduction greenhouse gas emissions credited in the JCM scheme is the difference between emission reference and project emission. Generally, reference emissions are lower than business-as-usual (BaU) emissions by discounting BaU figures or by methods specified in the methodology and approved by the Joint Committee.

The determination the value of emission is made by determining the assumptions approved by the Joint Committee in order for the reference emission value to be below the value of the BaU or conservative emissions. There are several things that the methodologists should consider in determining the assumptions in the methodology. It can be seen in **Table 7.1** below.

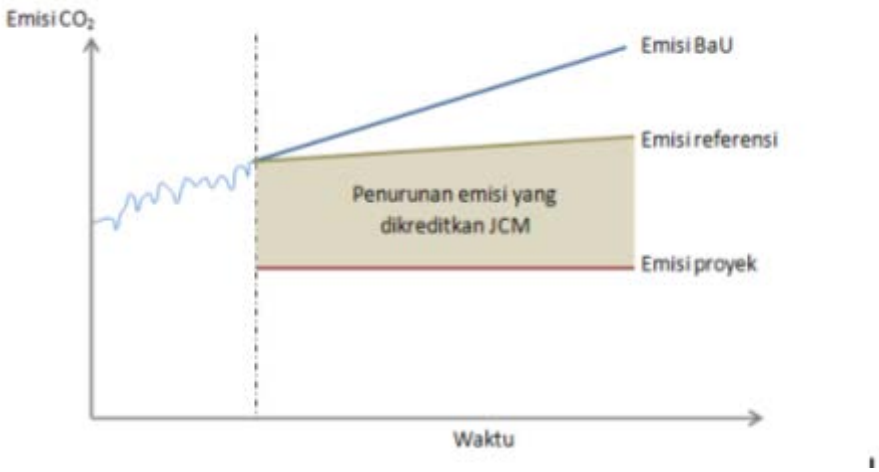


**Figure 7.5** Emission determination in JCM scheme

**Table 7.1** Assumption of Methodology Determination

| Aspect | Example |
|---|---|
| **Technic** | • Reference emissions of conservative value<br>• Referring to applicable standards such as Indonesian National Standard (SNI) or Japan Industrial Standard (JIS)<br>• Appropriate to scientific rules and theories |
| **Reference** | • Consider the conditions in Indonesia, such as:<br>• - Technology is common in the Indonesian market<br>• - Interview with relevant sources<br>• - Collect primary data and field surveys<br>• Use data from IPCC, national data, or public data |
| **Regulatory compliance** | • Compliance with national and international regulations (eg refrigerant type, B3 material, etc.)<br>• Compliance with JCM rules and guidelines |
| **Related to project** | • Can be used in actual project situations<br>• Consider possible sources of energy in the project<br>• It is a better technology than BaU technology |
| **Ease of understanding** | • Use simple diagrams to explain<br>• Using language that is easy to understand |
| **Consistency** | • Terms and references used are consistent with the approved JCM methodology in Indonesia |

The determination of a conservative or not a reference emission will depend on the views of experts, so to determine the value of the reference requires understanding and agreement between the Joint Committee of both countries. Examples of reference emission determinations from an approved methodology can be seen in the following table.

**Table 7.2** Sample Methodology

ID_AM002 Energy Saving by Introduction of High Efficiency Centrifugal Chiller

- This methodology describes the procedures for calculating emission reductions for projects that install energy-efficient centrifugal chillers that have a capacity of less than 1,250 USRt or 4,400 kW.
- Reference emission is determined by calculating the energy consumption of the reference chiller.
- Chiller that became the reference is the most circulating chiller in the market. This information is known based on interviews and reports from The Building Services Research and Information Association (BSRIA) in 2012 related to chiller in Indonesia.
- The reason for choosing is the most chiller on the market is because the chiller type is assumed to be a chiller that is likely to be purchased if the Indonesian project participants will replace the chiller without JCM assistance.
- Based on information and interviews, there are three (3) most chiller companies on the market. However, since one (1) the company uses refrigerant to be removed to meet the Montreal Protocol, only two (2) chillers are compared.

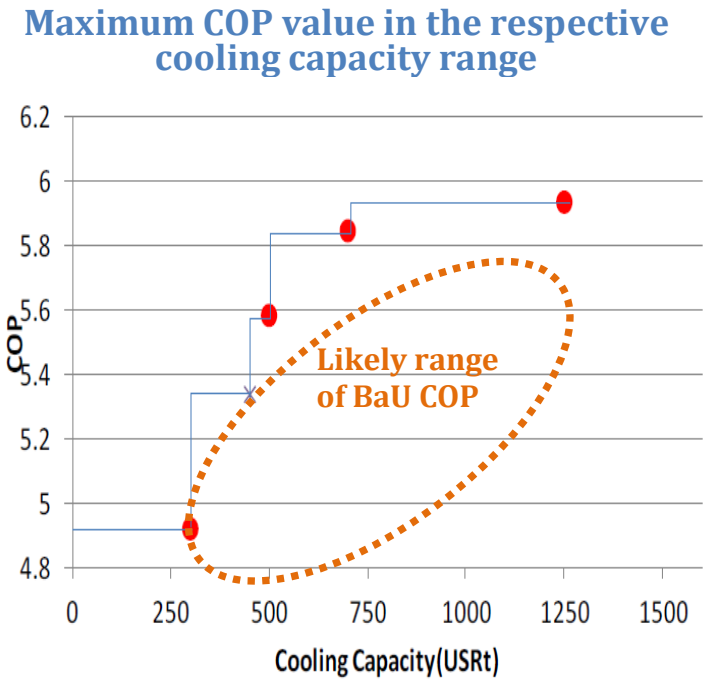


**Figure 7.5** Emission determination in JCM scheme

The proposed methodology submitted to the Joint Committee through the JCM Secretariat of the two countries, will subsequently go through a process of public commentary to ensure transparency of the proposed methodology. In addition, the methodology will also be reviewed by expert and specialist team as a recommendation of a decision to be submitted to the Joint Committee as the highest decision maker.

**b. JCM project registration process**

In order for a project to be officially registered into a JCM project, the project participant needs to meet the administrative requirements in accordance with the JCM guideline for Project Cycle Procedure. The documents prepared include the following, namely:

1. JCM Project Design Document Form (PDD) and monitoring plan
2. Modalities of Communication (MoC) and appropriate supporting documents
3. Sustainable Development Implementation Plan (SDIP)
4. Project validation report from TPE

***1. Project Design Document (PDD) or Project Design Document and Monitoring Plan***

This document is a material consisting of a completed "JCM Project Design Document Form" form and a monitoring plan for implementing the project. Prior to the preparation of the document, project participants were required to implement the Local Stakeholder Consultation (LSC). The implementation of the LSC is intended to inform the existence of a JCM project in an area by informing the project of implementation of this project to local stakeholders. In the preparation of this document should be in accordance with the

rules and instructions for making the PDD and the monitoring plan of the JCM project (PDD and Monitoring Guidelines).

***2. Modalities of Communication (MoC)***

The Modalities of Communication Statement (MoC) form is a form sheet stating the focal point of a project participant and signed by a participant-related project. The focal point in the project is the entity of the project participants communicating with the JCM Secretariat and the Joint Committee.

***3. Sustainable Development Implementation Plan (SDIP)***

An SDIP or sustainable development plan is a document that describes a project implementation plan that can contribute positively to the ongoing development of the implemented project. The SDIP is submitted to the secretariat for a review to see if the project can proceed in a sustainable manner. There are 7 things to be said in the SDIP:

- Environmental impact assessment;
- The impact of pollution;
- Occupational Health and Safety;
- Environmental and biodiversity;
- The economy;
- The social environment and community involvement;
- Technology.

JCM projects that have been implemented there are some projects that are installing or replacing tools that do not require an environmental impact assessment.

***4. Project Validation Reports from Third Party Entities***

The project validation process is performed by a third party entity (TPE) contracted by the project participant. Validation is carried out to check the project implemented by the project participants and the completeness of the registration documents (PDD, SDIP and MoC) and other supporting documents required to implement the JCM project. The procedure of validation and verification can be done simultaneously if conditions and circumstances allow.

As a form of communication between the JCM Secretariat of Indonesia and the relevant ministries, the JCM Secretariat of Indonesia prepares JCM implementation reports in Indonesia every 6 months. This report not only summarizes the JCM projects, but also explains the development of JCM scheme negotiations in joint committee meetings or within the UNFCCC.

# CHAPTER 8
# JCM Project and Status

## 8.1 List of JCM Projects and Status

There have been 29 projects under the JCM pipeline scheme in Indonesia with 26 projects using project model financing mechanism (including 1 LULUCF project in it) and 3 projects using demonstration project financing mechanism.

Briefly, based on the implementation cycle of the JCM project, in October 2017 there were 2 projects that have applied for carbon credits with 7 projects that have been registered as JCM projects, both projects that have been registered and applied for credit are projects using project model funding. Table 8.1 shows a summary of the JCM project in Indonesia and its status:

**Table 8.1** The JCM Project and its Status in Indonesia

| NO | PROJECT NAME | LOCATION | INDONESIAN PARTICIPANTS | JAPAN PARTICIPANTS | JCM PROJECT STATUS UNDER THE PROJECT CYCLE | TOTAL OF EMISSION REDUCTION EXPECTATIONS |
|---|---|---|---|---|---|---|
| ***MODEL PROJECT*** | | | | | | |
| 1 | *Power Generation by Waste-heat Recovery in Cement Factory* | Tuban, Jawa Timur | PT. SEMEN INDONESIA Tbk | JFE Engineering Corporation | Not Registered yet | 122.000 tons $CO_2$/year |
| 2 | *Installation of Solar Power System and Storage Battery to Commercial Facilities* | Jakarta Garden City, Cakung Jakarta Timur | AEON MALL INDONESIA | ITOCHU CORPORATI-ON | Not Registered yet | 549 tons $CO_2$/year |
| 3 | *Introduction of Gas Cogeneration System by absorption type refrigerating system* | Cikarang Pusat, Bekasi | PT. AMSL DELTA MAS | AEON MALL CO.,Ltd | Not Registered yet | 7.339 tons $CO_2$/year |
| 4 | *Roof Top Self Consumption Solar Power Generation Project for Food Ingredients and Aroma Ingredients Factory, Indonesia* | Cileungsi, Bogor, Jawa Barat | INDESSO AROMA | NEXT ENERGY AND RESOURCES CO | Not Registered yet | 469 tons $CO_2$/year |
| 5 | *Installation of Gas Co-generation System for Automobile Manufacturing Plant* | Karawang Jawa Barat | PT. TOYOTA MOTOR MANUFACTURIN G INDONESIA | TOYOTA TSUHO CORPORATION | Not Registered yet | 20.310 tons $CO_2$/year |
| 6 | *Introduction of High Efficient Old Corrugated Cartons Process at Paper* | Bekasi, Jawa Barat | PT. FAJAR SURYA WISESA | KANEMATSU COOPERATION | Not Registered yet | 14.884 tons $CO_2$/year |

| NO | PROJECT NAME | LOCATION | INDONESIAN PARTICIPANTS | JAPAN PARTICIPANTS | JCM PROJECT STATUS UNDER THE PROJECT CYCLE | TOTAL OF EMISSION REDUCTION EXPECTATIONS |
|---|---|---|---|---|---|---|
| | *Factory* | | | | | |
| 7 | *Energy Saving through Introduction of Regenerative Burners to the Alumunium Holding Furnance of Automotive Components Manufacturer* | Karawang, Jawa Barat | PT. YAMAHA MOTOR PARTS<br>MANUFACTURING INDONESIA<br>PT. TOYOTA TSUSHO INDONESIA | PT. TOYOTA TSUSHO INDONESIA | Not Registered yet | 865 tons $CO_2$/year |
| 8 | *Reducing GHG Emission at Textile Factories by Upgrading to Air-saving Loom* | Banten, Jakarta, & Jawa Timur | PT. EASTERNTEX<br>PT.. INDONESIA SYNTHETIC TEXTILE MILLS<br>PT. CENTURY TEXTILE INDUSTRY TBK | TORAY INDUSTRIES, INC.<br>TORAY INTERNATIONAL, INC | Not Registered yet | 566 tons $CO_2$/year |
| 9 | *Introduction of High Efficiency Looms in Weaving Mills* | Karawang, Jawa Barat | PT. NIKAWA TEXTILE INDUSTRIES | NISSHINBO TEXTILE INC | Not Registered yet | 1.317 tons $CO_2$/year |
| 10 | *Energy Saving for Textile Factory Facility Cooling by High Efficiency Centrifugal Chiller* | Karawang, Jawa Barat | PT. NIKAWA TEXTILE INDUSTRIES<br>PT. EBARA INDONESIA | EBARA REFRIGERATION EQUIPMENT SYSTEM CO.,LTD | Sudah Registrasi ID004 Belum mengajukan kredit | 118 tons $CO_2$/year |
| 11 | *Energy Saving for Air Conditioning and Process Cooling by Introducing High-efficiency Centrifugal Chiller* | Batang, Jawa Tengah | PT. PRIMATEXCO | EBARA REFRIGERATION EQUIPMENT SYSTEM CO.,LTD; NIPPON KOEI | already registered ID001<br><br>Have not applied for credit | 114 tons $CO_2$/year |
| 12 | *Energy Saving for Air Conditioning and Process Cooling at Textile Factory* | Batang, Jawa Tengah | PT. PRIMATEXCO | EBARA REFRIGERATION EQUIPMENT SYSTEM CO.,LTD; NIPPON KOEI | already registered ID005<br><br>Have not applied for credit | 117 tons $CO_2$/year |

| NO | PROJECT NAME | LOCATION | INDONESIAN PARTICIPANTS | JAPAN PARTICIPANTS | JCM PROJECT STATUS UNDER THE PROJECT CYCLE | TOTAL OF EMISSION REDUCTION EXPECTATIONS |
|---|---|---|---|---|---|---|
| 13 | *Energy Saving for Air-Conditioning at Shopping Mall with High Efficiency Centrifugal Chiller* | Surabaya Jawa Timur | PT. PAKUWON JATI,Tbk | NTT FACILITIES,INC | Not Registered yet | 966 tons $CO_2$/year |
| 14 | *Energy Saving for Industrial Park with Smart LED Street Lighting System* | Karawang Jawa Barat | PT. HARAPAN ANANG BAKRI & SONS,<br>PT.. KARAWANG TATABINA NDUSTRIAL ESTATE<br>PT.. MALIGI PERMATA INDUSTRIAL EST | NTT FACILITIES,INC | Not Registered yet | 900 tons $CO_2$/year |
| 15 | *Introduction of High Efficiency Once-through Boiler System and RO Pure Water System in Golf Ball Factory* | Karawang Jawa Barat | PT. SUMI RUBBER INDONESIA | SUMITOMO RUBBER INDUSTRIES, ltd | Not Registered yet | 329 tons $CO_2$/year |
| 16 | *Introduction of High Efficiency Once-through Boiler System in Film Factory* | Merak Banten | PT. MC PET FILM INDONESIA | MITSUBISHI PLASTIC,INC | Not Registered yet | 428 tons $CO_2$/year |
| 17 | *Solar PV Power Plant Project in Jakabaring Sport City* | Palembang Sumatera Selatan | PDPDE SUMATERA SELATAN | SHARP CORPORATION | Not Registered yet | 1.303 tons $CO_2$/year |
| 18 | *Energy Saving by Installation of Double Bundle-type Heat Pump* | Cikarang Jawa Barat | PT. TTL RESIDENCE<br>PT. TOYOTA TSUHO INDONESIA | TOYOTA TSUHO CORPORATION | Not Registered yet | 170 tons $CO_2$/year |
| 19 | *Energy Saving for Industrial Wastewater Treatment for Rubber Industry* | Gandus, Palembang, Sumatera Selatan | PT. ANEKA BUMI PRATAMA | EMATEC, SUZUKI SANGYO CO.LTd., MITSUBISHI UFJ RESEARCH AND CONSULTING | Not Registered yet | 546 tons $CO_2$/year |
| 20 | *Energy Saving at Convenience Stores* | 12 ALFAMIDI JAKARTA, BEKASI, TANGERANG, DEPOK | PT. MIDI UTAMA INDONEISIA Tbk | LAWSON, INC | already registered ID006<br><br>Already applying for credit | 28,5 tons $CO_2$/year/ store |

| NO | PROJECT NAME | LOCATION | INDONESIAN PARTICIPANTS | JAPAN PARTICIPANTS | JCM PROJECT STATUS UNDER THE PROJECT CYCLE | TOTAL OF EMISSION REDUCTION EXPECTATIONS |
|---|---|---|---|---|---|---|
| 21 | *10 MW Mini Hydro Power Plany Project in North Sumatera* | Humbang Hasundutan, Sumatera Utara | PT. CITRA MULTI ENERGI | TOYO ENERGY FARM CO.,LTD | Not Registered yet | 42.700 tons $CO_2$/year/ Store |
| 22 | *Introduction LED Lighting to Sales Stores* | Jakarta Indonesia | PT. FAST RETAILING INDONESIA | FAST RETAILING CO.,LTD | Not Registered yet | 2.617 tons $CO_2$/year |
| 23 | *Introduction of 1 MW Solar Power System in North Sulawesi* | Phakphak Barat, Sumatera Utara | PT Phakphak Bumi Energi | Chodai,co.ltd | Not Registered yet | 46,520 tons $CO_2$/year |
| 24 | *Introducing High Efficiency Refrigator to a Food Industry Cold Storage in Indonesia* | Karawang, Jawa Barat | PT. ADIB GLOBAL FOOD SUPPLIES; PT. MAYEKAWA INDONESIA | MAYEKAWA MANUFACTURING CO Ltd | already registered ID002<br>Already applying for credit | 29 tons $CO_2$/year |
| 25 | *Introducing High Efficiency Refrigator to a Frozen Food Processing Plant in Indonesia* | Bekasi, Jawa Barat | PT. ADIB GLOBAL FOOD SUPPLIES; PT. MAYEKAWA INDONESIA | MAYEKAWA MANUFACTURING CO Ltd | already registered ID003<br>Already applying for credit | 11 tons $CO_2$/year |
| ***DEMONSTRATION PROJECT*** | | | | | | |
| 26 | *Energy Saving by Optimum Operation at Oil Refinery* | Balikpapan, Kalimantan Timur | PT. PERTAMINA (REFINERY UNIT V) | YOKOGAWA ELECTRICITY CORPORATION | Not Registered yet | 3.400 tons $CO_2$/year |
| 27 | *Utility Facility Operation Optimization Technology* | Cilacap, Jawa Tengah | PT. PERTAMINA; AZBIL BERCA INDONESIA | AZBIL CORPORATION | Not Registered yet | 58.000 tons $CO_2$/year |
| 28 | *Installation of Tribrid System to mobile communication's Base Transceiver Stations in Republic of Indonesia* | TBA; *trial test* sudah dilaksanakan di Pulau Puri Jakarta | PT. PACKET SYSTEM INDONESIA;PT. HUAWEI SERVICE | KDDI COPORATION; ERNST &YOUNG SUSTAINABILITY CO LTD | Not Registered yet | 163 tons $CO_2$/year |
| ***REDD+ MODEL PROJECT*** | | | | | | |
| 29 | *REDD+ Project in Boalemo District* | Boalemo, Gorontalo | Gobel Group DKM (PT. Dharma Karyatama Mulia) | Kanematsu Corporation | Not Registered yet | 86.520 tons $CO_2$/year |

## 8.2 Implementation of JCM Project

### 8.2.1 Model Projects

#### 8.2.1.1 Power Generation by Waste-heat Recovery in Cement Factory

**Figure 8.1.** ***Power Generation by Waste-heat Recovery in Cement Factory project***

The Project of Waste Heat Power Plant 32 MW PT. Semen Indonesia in Tuban, East Java which is collaborate between Indonesia and Japan with the participation of JFE Engineering Corporation. 4 units utilized exhaust gas that still has a temperature of about 4000 C. Waste heat from exhaust gas are captured and utilized to heat the boiler and generate electricity. The system is capable to produce the electricity up to 25% of the total electricity needed for the whole plant requirement. Total Expected Emission Reduction from this project amounted to 122,000 tons CO2 / year.

The project (**Figure 8.1**) was approved in 2014. The design and manufacturing and installation process for this project began in 2015. The project consortium has just implemented Local Stakeholder Consultation (LSC). Total Expectations Emission Reduction 122,000 tons CO2/year. The project is expected to be completed by the end of 2017 or early 2018.

#### 8.2.1.2 *Installation of Solar Power System and Storage Battery to Commercial Facilities*

**Figure 8.2** Installations of Solar Power System and Storage Battery to Commercial Facilities Project

The 500 kW Project on Solar System Installation and Battery Storage to Commercial Factory has been done through the installation of solar power plants above the roof of the commercial area of AEON Mall Jakarta Garden City in Cakung as shown in Figure 8.2. The project is a joint venture with Itochu Corporation of Japan, and has been completed in July 2017 and will be operational by the end of September 2017. Total Expectations of Emission Reduction is 549 tons CO2 / year.

#### *8.2.1.3 Introduction of Gas Co-generation System by absorption type refrigerating system and PV system in Large Shopping in Indonesia*

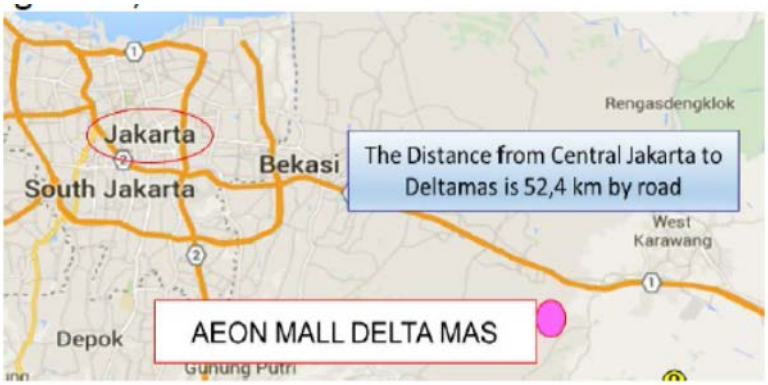


**Figure 8.3** Project Location "Introduction of Gas Co-generation System by absorption type refrigeration system and PV system in Large Shopping in Indonesia"

The project that will be implemented in this commercial building applied a co-generation gas system consisting of a turbine gas that generated electricity of 3.8 MW and air-conditioning system (AC) absorption (670 Ton ref). This AC absorption system utilized exhaust heat from the cogent system. In addition, the mall also applied solar panels with a capacity of 107.52 kW and generates 138.118 kWh / year. Total Expectation of Emission Reduction is 7.339 tons CO2/year. This project is collaboration between PT. AMSL Delta Mas (Indonesia) with AEON Mall Co., Ltd. (Japan).

#### *8.2.1.4 Roof Top Self Consumption Solar Power Generation Project for Food Ingredients and Aroma Ingredients Factory, Indonesia*

**Figure 8.4.** *Roof Top Self Consumption Solar Power Generation Project for Food Ingredients and Aroma Ingredients Factory Indonesia*

The project is being implemented with the installation of a solar power plant on the roof of the Aroma Indesso plant in Cileungsi, Bogor, West Java at 572 KW. The project is expected to be completed in October 2017. Total expected Emission Reduction 469 tons CO2 / year. This project is a collaboration between Indesso Aroma (Indonesia) with NEXT ENERGY AND RESOURCES Co. (Japan).

#### *8.2.1.5 Installation of Gas Co-generation System for Automobile Manufacturing Plant*

***Figure 8.5*** *Installation of Gas Co-generation System for Automobile Manufacturing Plant*

This project was implemented at PT. Toyota Mobile Manufacturing Indonesia in Karawang, West Java, which is a collaboration between PT. Toyota Motor Manufacturing Indonesia and Japan with participation from Toyota Tshuho Corporation. The purpose of this project is to generate electricity and steam for its own use by installing a co-generation system. The installed system also reduces emissions and saves energy. The co-generation system is able to meet the needs of 30% of total electricity consumption. The installation of the project is completed in April 2017. Total expected Emission Reduction is 20,310 tons CO2 / year.

#### *8.2.1.6 Introduction of High Efficient Old Corrugated Cartons Process at Paper Factory*

**Figure 8.6** *Introduction of High Efficient Old Corrugated Cartons Process at Paper Factory*

Installation of paper making machine for Old Corrugated Cartons (OCC) -line at PT. Fajar Surya Wisesa, Bekasi, West Java, in collaboration with Kanematsu Cooperation (Japan). The project is able to save up to 10% of

factory electricity usage. The system is built using the latest technology that is more energy efficient than previous systems. The project was completed in November 2016. Total Expected Emission Reduction is 14,884 tons CO2/year.

#### *8.2.1.7 Energy Saving through Introduction of Regenerative Burners to the Aluminums Holding Furnace of Automotive Components Manufacturer*


**Figure 8.7.** *Energy Saving through Introduction of Regenerative Burners to the Aluminums Holding Furnace of Automotive Components Manufacturer Project*

This project was implemented at PT. Yamaha Motor Part Manufacturing in Karawang, West Java, and cooperated between Indonesia and Japan with the participation of PT Yamaha Motor Parts Manufacturing Indonesia and PT. Toyota Tsusho Indonesia. This project replaced conventional burners with burners that have higher efficiency. This combustion engine used for die casting process. Total Expected Emissions Reduction is 856 tons CO2/year.

#### *8.2.1.8 Reducing GHG Emission at Textile Factories by Upgrading to Air-saving Loom*


**Figure 8.8.** *Reducing GHG Emission at Textile Factories by Upgrading to Air-saving Loom Project*

The "JAT 810" system, this spinning machine has the ability to reduce compressed air consumption by 20% which also directly consumes electricity on its air-compressor system. This system is implemented in 3 textile factories Indonesia in Banten, Jakarta, and East Java, namely PT. Easterntex, PT. Indonesia Synthetic Mills, PT. Century Textile Industry Tbk. and the participation of Toray Industri Tbk. Japan. Total Expectations of Emission Reduction is 566 tons CO2/year.

#### *8.2.1.9 Introduction of High Efficiency Looms in Weaving Mills*


**Figure 8.9.** *Introduction of High Efficiency Looms in Weaving Mills*

In this project, the JAT810 spinning machine is not only for the energy efficiency enhancement but also produces much better and modern quality textiles than previous generations. This project is implemented in textile factory of PT. Nikawa Textile Industries in Cikampek West Java and the participation of NISSHINBO TEXTILE INC from Japan. Total Expected Emission Reduction is 1.317 tons CO2/year.

#### *8.2.1.10 Energy Saving for Textile Factory Facility Cooling by High Efficiency Centrifugal Chiller*

**Figure 8.10.** *Energy Saving for Textile Factory Facility Cooling by High Efficiency Centrifugal Chiller*

In this project implemented energy-efficient cooling machine for the textile factory in PT. Nikawa textile Industries and PT. Ebara Indonesia in Karawang, West Java. This centrifugal chiller machine replaces the previous refrigeration (5000 Ton ref) which has 2 efficient compressor stages, economizer, and sub-cooler system. This project is a collaboration between PT. Nikawa textile Industries, PT. Ebara Indonesia from Indonesia with Ebara Refrigeration Equipment System Co. Ltd. from Japan. Total Expectations of Emission Reduction 118 tons CO2 / year.

#### *8.2.1.11 Energy Saving for Air Conditioning and Process Cooling by Introducing High efficiency Centrifugal Chiller*

**Figure 8.11.** *Energy Saving for Air Conditioning and Process Cooling by Introducing High-efficiency Centrifugal Chiller*

In this project the old refrigeration machine was replaced by an energy-efficient centrifugal cooling machine to produce cold air and room humidity greatly affected the quality of textile production. This project is the first project to be registered as a JCM project and implemented at PT. Primatexco in Batang, Central Java, This is a joint venture between PT. Primatexco with Ebara Refrigeration Equipment System Co., Ltd. and Nippon Koei Japan. Total Expected Emission Reduction 114 tons CO2 / year.

#### *8.2.1.12 Energy Saving for Air Conditioning and Process Cooling at Textile Factory*


**Figure 8.12.** *Energy Saving for Air Conditioning and Process Cooling at Textile Factory*

In this project the old cooling machines (230 USRt and 250 USRt) were replaced by energy-efficient centrifugal cooling machines for space conditioning at the PT Primatexco textile factory, Batang, Central Java. Total Expected Emission Reduction 117 tons CO2 / year. This project is a collaboration between PT. Primatexco (Indonesia) with Ebara Refrigeration Equipment System Co., Ltd. and Nippon Koei (Japan).

### *8.2.1.13 Energy Saving for Air-Conditioning at Shopping Mall with High Efficiency Centrifugal Chiller*

**Figure 8.13.** *Energy Saving for Air-Conditioning at Shopping Mall with High Efficiency Centrifugal Chiller Project*

NTT Facilities (Japan) and PT. Pakuwon Jati Tbk, cooperate to implement energy saving project by applying centrifugal chiller at Tunjungan Plaza Surabaya, East Java. The project is efficient and capable of saving up to 1,136 MWh of electricity annually. Chiller is implemented as many as 5 units to supply cold air for the purposes of shopping center operations. Total Expected Emissions Reduction 966 tons CO2 / year.

### *8.2.1.14 Energy Saving for Industrial Park with Smart LED Street Lighting System*

**Figure 8.14.** *Energy Saving for Industrial Park with Smart LED Street Lighting System Project*

Replacement of sodium street lamps in KIIC area, Karawang, West Java with LED lamps using smart control system can reduce electricity consumption up to 1106 MWh per year is also able to reduce carbon emissions of 900 tons of CO2 each year. This project is a collaboration between PT. Harapan Anang Bakri & Sons, PT. Karawang Tatabina Industrial Estate, PT. Maligi Permata Industrial Estate from Indonesia with NTT Facilities, Inc. from Japan.

### *8.2.1.15 Introduction of High Efficiency Once-through Boiler System and RO Pure Water System in Golf Ball Factory*

**Figure 8.15** *Introduction of High Efficiency Once-through Boiler System And RO Pure Water System in Golf Ball Factory*

Once-through boiler installations that replace conventional smoke tube boilers can increase production efficiency from 87% to 96%. This system also applies RO for feeding water for industrial water treatment used in water supply for this heating process. This project was implemented at PT. Sumi Rubber Indonesia, Karawang, West Java and cooperation with Sumitomo Rubber Industries, Ltd. Japan. Total Expected Emission Reduction 329 tons CO2 / year.

### *8.2.1.16 Introduction of High Efficiency Once-through Boiler System in Film Factory*

**Figure 8.16** *Introduction of High Efficiency Once-through Boiler System in Film Factory Project*

Mitsubishi Plastic, Inc. with PT. MC PET Film Indonesia collaborated in implementing this project with the goal of saving energy by installing once-through boilers that replaced the previously used water tube boiler. This process can improve efficiency from 87% to 96%. Total Expected Emissions

Reduction 428 tons CO2 / year. This project is implemented in PDPDE South Sumatra.

#### *8.2.1.17 Solar PV Power Plant Project in Jakabaring Sport City*

**Figure 8.17** *Solar PV Power Plant Project in Jakabaring Sport City*

The development of 1.6 MW Solar Power Plant is used to supply electricity in Jakabaring Sports Area, Palembang, South Sumatra. This project is cooperation between PDPDE South Sumatra (Indonesia) with SHARP CORPORATION (Japan). This project is also prepared to answer the challenge of electricity demand in the 2018 Asian Games grand event as well as making this event as Green Asian Games. The project is targeted for completion in January 2018. Total Expected Emission Reduction 1,303 tons CO2 / year.

#### *8.2.1.18 Energy Saving by Installation of Double Bundle-type Heat Pump*

**Figure** 8.18 Energy Saving by Installation of Double Bundle-type Heat Pump

This project is implemented to reduce the consumption of boiler natural gas by using a double bundle type-heat pump as a water heater to replace the boiler. The system is capable of generating heat up to more than 600C. Total Expected Emissions Reduction 170 tons CO2 / year. This project is implemented in Axia Hotel, Cikarang, West Java and is a cooperation between PT. TTL Recidence, PT. Toyota Tsusho Indonesia from Indonesia with Toyota Tsusho Corporation from Japan.

### *8.2.1.19 Energy Saving for Industrial Wastewater Treatment for Rubber Industry*

**Figure 8.19.** *Energy Saving for Industrial Wastewater Treatment for Rubber Industry*

The project applies energy-efficient aerators for the processing of liquid waste in the rubber industry. This waste water treatment is implemented at a rubber plant in Palembang South Sumatra with a system prepared by Suzuki Corp. Installation of this project is expected to reduce electricity consumption by 30-50%. Total Expectation of Emission Reduction is 546 tons CO2 / year. This project is cooperation between Indonesia and Japan with the participation of PT. Aneka Bumi Pratama with Ematec, Suzuki Sangyo Co. Ltd., Mitsubishi UFJ Research and Consulting.

### *8.2.1.20 Energy Saving at Convenience Stores*


**Figure 8.20.** *Energy Saving at Convenience Stores*

PT. Midi Utama Indonesia Tbk and Lawson, Inc. Japan cooperate are developing the energy-efficient refrigeration, air-conditioning and lighting (LED lamp) system at 12 Alfa Midi stores in Jakarta, Bekasi, Tangerang and Depok. This project is able to significantly reduce electricity consumption compared to previous technologies and equipment, about 25%. Total Expected Emission Reduction 28.5 tons CO2 / year per store.

### *8.2.1.21 10 MW Mini Hydro Power Plant Project in North Sumatera*

**Figure 8.21** *10 MW Mini Hydro Power Plant Project in North Sumatera*

Toyo Energy Farm Co., Ltd. Japan and PT. Citra Multi Energi Indonesia cooperates to produce clean electric energy by building 10 MW Mini Hydro Power Plant in Humbang Hasundutan area, North Sumatera. The project is expected to complete the installation process in December 2018. Total Expected Emission Reduction 42,700 tons CO2 / year per store.

### *8.2.1.22 Introduction LED Lighting to Sales Stores*

**Figure 8.22** *Introduction LED Lighting to Sales Stores*

PT. Fast Retailing Indonesia and Fast Retailing Co., Ltd. Japan are working with the goal of reducing carbon emissions and making energy savings by replacing conventional lamps with LED lights in 11 stores for clothing retailers PT. Fast Retailing in Indonesia. The project is expected to be completed in January 2019. Total Expectations of Emission Reduction 2,617 tons CO2/year.

### *8.2.1.23 Introduction of 1 MW Solar Power System in North Sulawesi*


**Figure 8.23** *Introduction of 1 MW Solar Power System in North Sulawesi*

The objective of the project is to utilize the potential hydro power of Lae Ordi river in order to provide the electricity for North Sumatera. This 2x5 MW hydro power project can generate about 75GWh of electricity production. By contributing the electricity supply, the project can support North Sumatera's development acceleration and economic growth. The location of the project is in Kecupak Village, Pergetteng Getteng Sengkut Sub-District, Pakpak Barat Regency, North Sumatera Province.

### 8.2.1.24 Introducing High Efficiency Refrigerator to a Food Industry Cold Storage in Indonesia

**Figure 8.24** *Introducing High Efficiency Refrigerator to a Food Industry Cold Storage in Indonesia*

This project has been published the results of its emissions reduction. This project is implemented in PT. Adib Global Food Supplies in Bekasi, West Java, in cooperation with PT. Mayekawa Indonesia with Mayekawa Manufacturing Co., Ltd. Japan. In this project, the factory installed a cooling system that uses natural refrigerant (NH3 and CO2) that can save energy significantly, between 20-30% of total energy consumption. Total Emission Reduction is 29 ton CO2/year.

#### *8.2.1.25 Introducing High Efficiency Refrigerator to a Frozen Food Processing Plant in Indonesia*

**Figure 8.25** *Introducing High Efficiency Refrigerator to a Food Industry Cold Storage in Indonesia*

This project has been published the results of its emissions reduction. This project is implemented in PT. Adib Global Food Supplies in Bekasi, West Java, in cooperation with PT. Mayekawa Indonesia with Mayekawa Manufacturing Co., Ltd. Japan. In this project, the factory installed a cooling system that uses natural refrigerant (NH3 and CO2) that can save energy significantly, between 20-30% of total energy consumption. Total Emission Reduction is 11 tons CO2/year.

### *8.2.2 Demonstration Projects*

#### *8.2.2.1 Energy Saving by Optimum Operation at Oil Refinery*

**Figure 8.26.** *Energy Saving by Optimum Operation at Oil Refinery*

PT. Pertamina (Refinery Unit V) and Yokogawa Electricity Corporation work together on this project with APC (Advanced Process Control) system that has been proven capable of controlling energy consumption so as to increase efficiency of oil production process and save energy significantly. This project is implemented in Pertamina Refinery Unit V in Balikpapan. Total Emission Reduction is 3,400 tons CO2 /year.

### *8.2.2.2. Utility Facility Operation Optimization Technology*

**Figure 8.27** Utility Facility Operation Optimization Technology Project

PT. Pertamina Azbil Berca Indonesia and Azbil Corporation Japan are working together to apply the "RENKEI control" system which is an automatic control model to control the energy use of 5 boilers in the oil processing unit so as to save significant energy usage. This project is implemented in PT. Pertamina Azbil Berca Indonesia in Cilacap. Total Emission Reduction is 58,000 tons CO/year.

### *8.2.2.3 Installation of Tribrid System to mobile communication's Base Transceiver Stations in Republic of Indonesia*

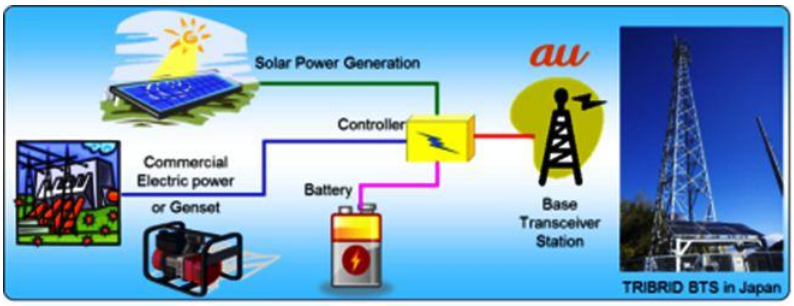


**Figure 8.28** *Installation of Tribrid System to mobile communication's Base Transceiver Stations in Republic of Indonesia*

PT. Packet System Indonesia and PT. Huawei Service (Indonesia) with KDDI Corporation Ernst & Young Sustainability Co. Ltd. (Japan) are working on this project and TRIBRID System regulates the use of diesel in BTS systems in off-grid / poor grid areas so that energy use can be more efficient and efficient. In addition, the system also utilizes solar power generation technology and stored powers in batteries as another power source. The test has been

conducted in Pulau Puri, Jakarta. Total Emission Reduction is 163 tons CO2/year.

### *8.2.3 REDD+ Model Projects*

#### *8.2.3.1. REDD+ Project in Boalemo District*

**Figure 9.29** *REDD+ Project in Boalemo District*

The project is a joint venture between Gobel Group DKM and Kanematsu Corporation to prevent slash-and-burn deforestation by improving the existing cocoa production in Boalemo, Gorontalo. Total Emission Reduction is 86,520 tons CO2 /year.