

MRV development for market based mechanism implementation

a Joint Crediting Mechanism case

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Understanding market based mechanism

The key elements of market based mechanism (MBM) instrument infrastructure is MRV

MRV is a system that developed based on transparency and accountability principles.



elements to have a robust emission reduction
i.e **1 tCO₂ is really 1 tCO₂**

MRV in carbon market is project based

Infrastructure in MBM

Regulated under scheme's rules and guidelines



Methodology

MRV

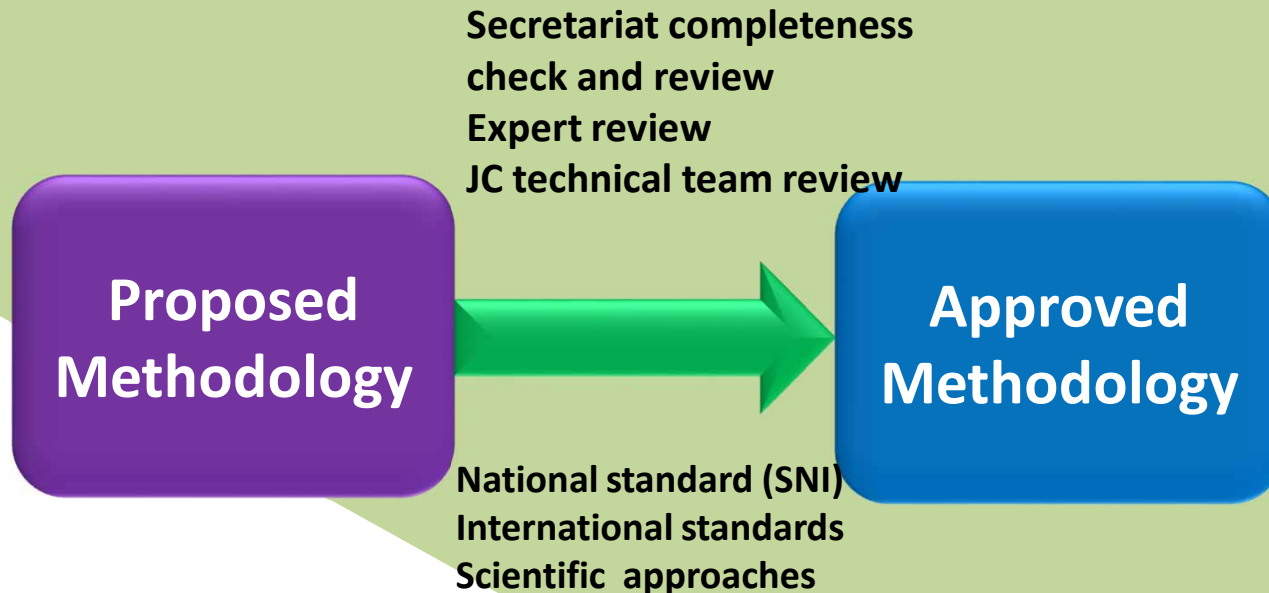


Registry

Align with national / international policy

- The scheme rules and guidelines may define:
 - Who will be the decision maker?
 - How to develop methodology? Who can develop methodology?
 - What is the standard for developing the methodology?
 - How to submit a project to be a project registered under a scheme?
 - What type of project can apply?
 - Specification of the registry system
- National and international policy support and recognition can secure activities under the market based mechanism

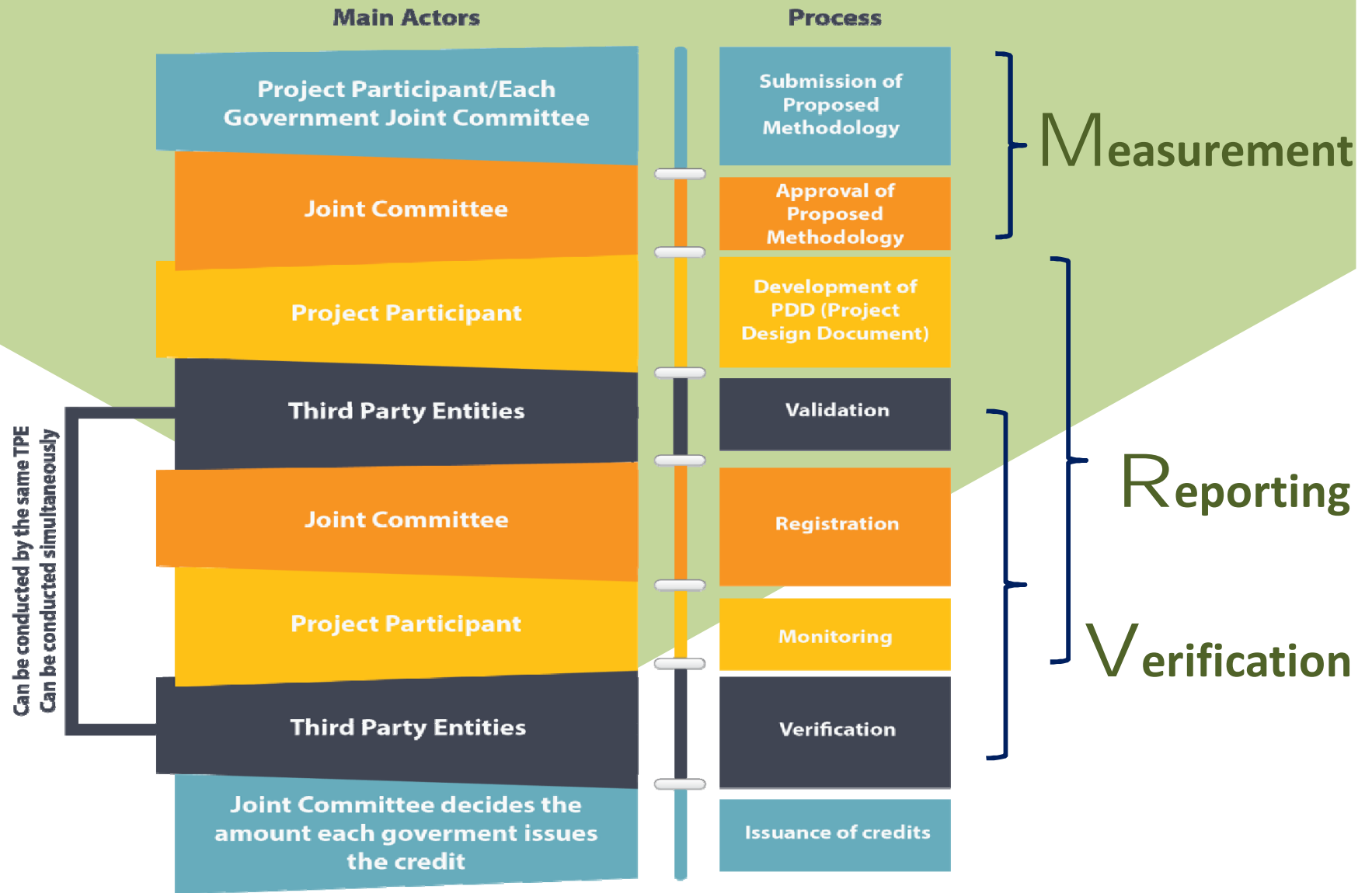
Example of transparency and accountability processes: JCM methodologies development



- The MRV system, from the scientific base to the measurement technique(s) have to be stated in the JCM methodology.
- The methodology development is based on the technology instead of project.
- Indonesia JCM Secretariat receives proposed methodology from project participants and then reviewed it (by the secretariat team and experts). Reviewed proposed methodology then will be reviewed and discussed on the JC meeting.
- The longest JCM methodology review took 9 months to be approved

- Every methodology must comply with the Indonesian national standard (Standar Nasional Indonesia/SNI).
- If national standard is unavailable, international standards or scientific approaches will be used.
- Example of the utilisation of the Indonesia National Standard is SNI 16-7062-2004: Measurement standard of light intensity in the workplace, as a based of the JCM methodology for "Installation of LED lighting for grocery store".
- The Indonesia national emission factor is utilised for the methodology calculation.

Step by step of JCM scheme



JCM has many similarities with other market based initiative scheme

JCM's infrastructures

Guideline:

1. Project Design Document
2. Proposed Methodology
3. Third Party Entity
4. Validation and Verification
5. Sustainable Development Implementation Plan and Report

Rules:

1. Rules of Implementation
2. Rules of Procedure for JC

Procedure: Project Cycle Procedure

Methodologies:

12 methodologies of energy efficiency and renewable energy have been developed

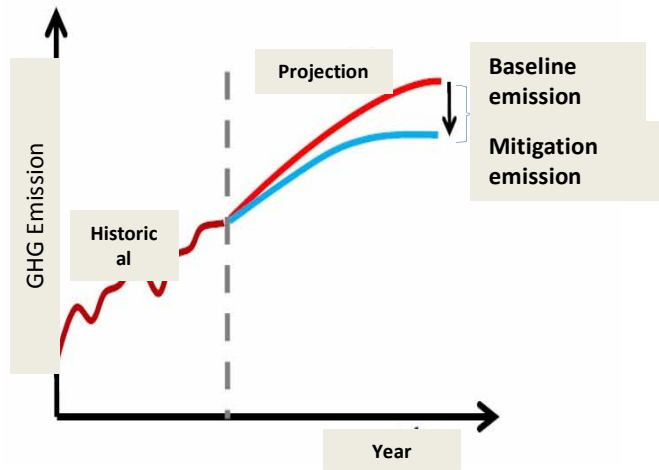
Registry system

ISO 14065 based

- As a bilateral cooperation scheme, JCM complies to each country's policy
- Decision maker in JCM is Joint Committee which consist of related ministries as the representative of each respective country
- Article 6 in Paris Agreement recognized market mechanism as part of the effort to achieve global emission reduction target

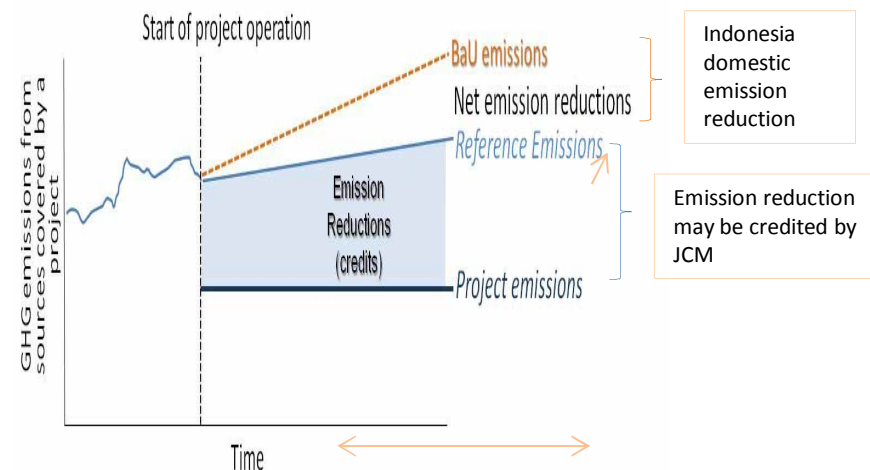
Comparison between JCM basic MRV with other schemes

Baseline emission based calculation



Other mitigation project in Indonesia

Reference emission based calculation

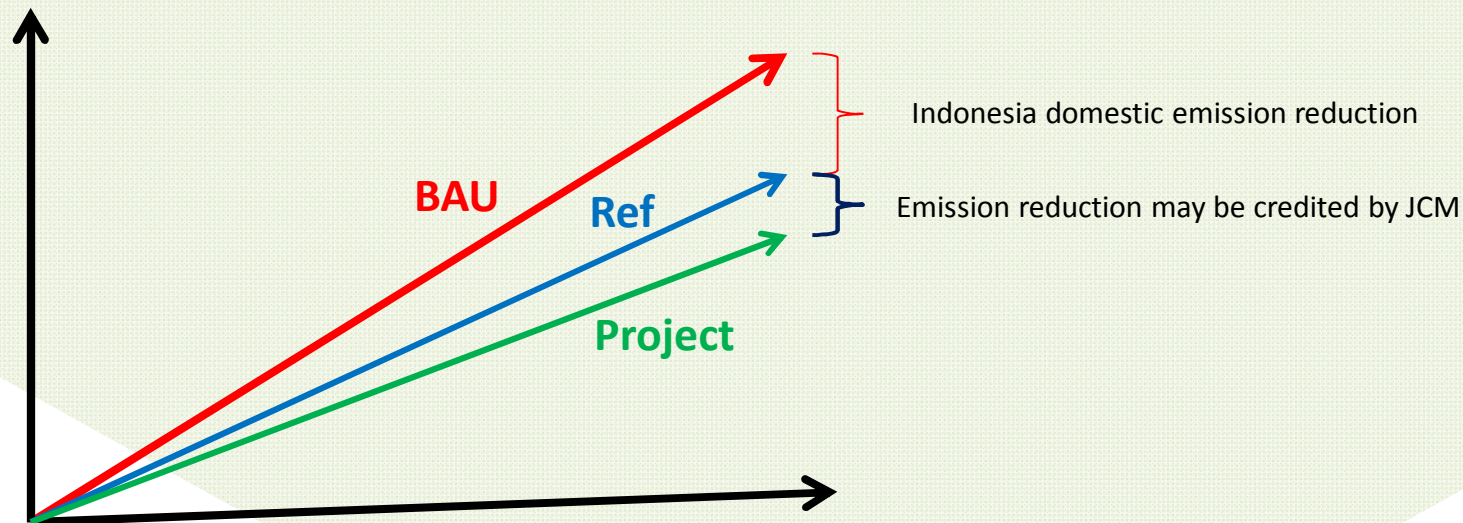


JCM project

1. In JCM scheme, *emission reductions* to be credited are defined as the difference between **reference emissions** and project emissions.
2. *Reference emissions* are calculated below business-as-usual (BaU) emissions which represent **plausible emissions** in providing the same outputs or service level of the proposed JCM project in the host country.
3. JCM approach will ensure a net decrease and/or avoidance of GHG emissions.
4. *The value of Reference Emissions in JCM depends on the methodology. Therefore, the value can be equal or different with Baseline Emission.*

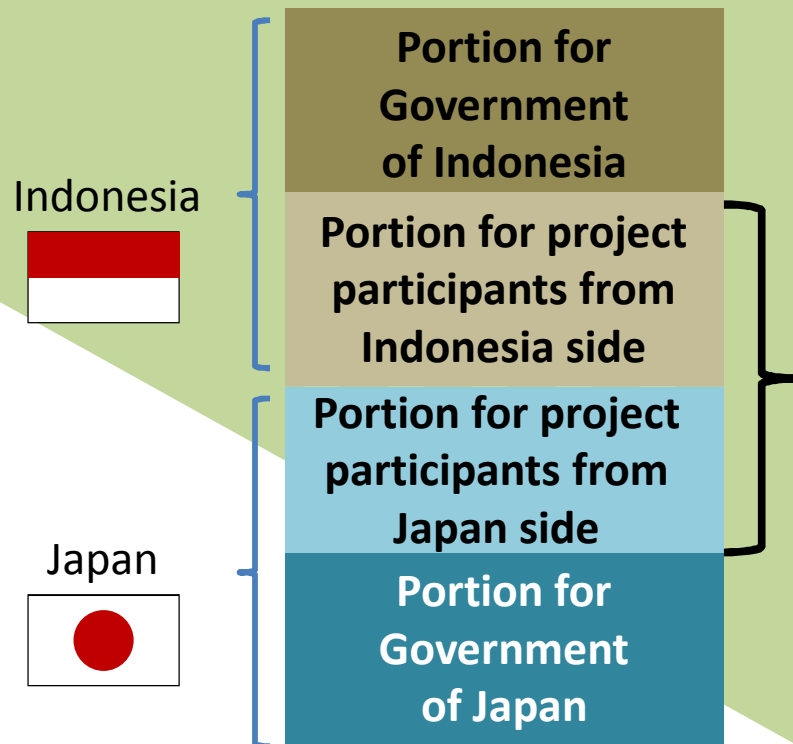
Example of JCM emission reduction calculation

Energy saving for air conditioning at shopping mall with high efficiency centrifugal chiller



1. The latest technology of high efficiency chillers are installed in Tunjungan Plaza Surabaya to replace the conventional chiller.
2. Coefficient of Performance (COP) for the old chiller is 4.6 (0.77 KW/Ton Ref) while the new chiller is 6.28 (0.56 KW/Ton Ref).
3. The COP of commonly available chiller in Indonesia market is 5.94 (0.59 KW/Ton Ref). Without JCM funding, Tunjungan Plaza will use this type of chiller (if they have budget).
4. The emission reduction calculation for the JCM is the 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 directly reported as the Indonesia domestic emission reduction.

JCM emission reduction credit sharing



- The Government of Indonesia and Government of Japan will receive portion of the total emissions reduction
- Indonesia side = Government of Indonesia shares + private sector shares
- Japan side = Government of Japan shares + private sector shares.

How to share the JCM credits?

1. Indonesia government will take its credit share.
2. The business entities as project participants will discuss among themselves on the emission reduction portions for each party. The credit will be shared based on its investment contributions. Everything will be discussed.
3. The Japan government will take their credits from their business entities.

JCM projects in Indonesia

JCM Implemented Projects (from 108 Feasibility Studies)			Emission Reduction
Demonstration Project			
Energy Saving by Optimum Operation at Oil Refinery			3.400 tCO ₂ /year
Utility Facility Operation Optimization Technology			58.000 tCO ₂ /year
The low carbonization of mobile communication's BTS by the introduction of TRIBRID system in Indonesia			163 tCO ₂ /year
Model Project			
Power generation by waste heat recovery in cement industry	122.000 tCO ₂ /year	Energy saving by introduction of high efficiency once-through boiler system in a film factory	428 tCO ₂ /year
Energy saving through introduction of regenerative burners to the aluminum holding furnace of the automotive components manufacturer	856 tCO ₂ /year	Introduction of high efficiency once-through boiler and RO pure water system in golf ball factory	380 tCO ₂ /year
Solar power hybrid System installation to existing base transceiver stations in off-grid area	2.786 tCO ₂ /year	Jakabaring Sports City Megasolar Power Plant Project	1.265 tCO ₂ /year
Energy saving by double bundle-type heat pump	170 tCO ₂ /year	Introduction of high-efficiency looms in weaving mill	1.317 tCO ₂ /year
Introduction of High efficient Old Corrugated Cartons Process at Paper Factory	14.884 tCO ₂ /year	Energy saving for industrial wastewater treatment system for rubber industry	546 tCO ₂ /year
Reducing GHG emission at textile factories by upgrading to air-saving loom	566 tCO ₂ /year	10MW Mini Hydro Power Plant Project in North Sumatra	42.700 tCO ₂ /year
Installation of Gas Co-generation System for Automobile Manufacturing Plant	20,439 tCO ₂ /year	Introduction of LED Lighting to Sales Stores	2.617 tCO ₂ /year
Energy Saving for Shopping Mall with High Efficiency Centrifugal Chiller	925 tCO ₂ /year	Energy saving for air-conditioning utility system in the airport terminal by introducing high-efficiency operating system	585 tCO ₂ /year
Energy Saving for Industrial Park with Smart LED Street Lighting System	900 tCO ₂ /year	Roof Top Self Consumption Solar Power Generation Project for Food Ingredients and Aroma Ingredients Factory, Indonesia	469 tCO ₂ /year
REDD+ Model Project			
REDD+ Model Project in Boalemo district			100.000 tCO ₂ /year
Registered Project			
Energy saving for air-conditioning and process cooling by Introducing High-efficiency Centrifugal Chiller			114 tCO ₂ /year
Project of Introducing High Efficiency Refrigerators to a Food Industry Cold Storage in Indonesia (credit issued)			29 tCO₂/year
Project of Introducing High Efficient Refrigerator to a Frozen Food Processing Plant in Indonesia (credit issued)			11 tCO₂/year
Energy saving for textile factory facility cooling by high efficiency centrifugal chiller			118 tCO ₂ /year
Energy saving for air-conditioning and process cooling at textile factory			117 tCO ₂ /year
Energy Savings at Convenience Stores			372 tCO ₂ /year

JCM project example 1: Energy efficient refrigerants to cold chain industry

The first two JCM projects which have issued credits

Project participants: PT Adib Global Food Indonesia & Mayekawa MFG

Karawang site:

- Installed technology: Compressor (43 kW) and Intelligent Quick Freezer.
- By using Intelligent Quick Freezer, production capacity in Karawang site has increased from 2 tpd to 4 tpd.
- Total amount of credit issued: 11 tCO₂



Bekasi site:

- Installed technology: Compressor (2x43 Kw)
- The chillers are used for the cooling room purposes.
- For Bekasi site 20% reduction of energy consumption has been attained through the JCM project implementation.
- Total amount of credit issued: 29 tCO₂

JCM project example 2: Waste Heat Recovery Power Generation

The participant:

PT Semen Indonesia Tbk, a state-owned company and the biggest cement producer in Indonesia & JFE Engineering

The project:

Project is utilizing the waste heat gases of exit preheater and cooler to generate electricity. The WHR power generation capacity is 30.6 MW

The benefit:

Expected CO₂ emission reduction: 122,358 tCO₂/year

The characteristic:

Currently is the biggest JCM project in Indonesia in terms of investment value and estimated emissions reduction

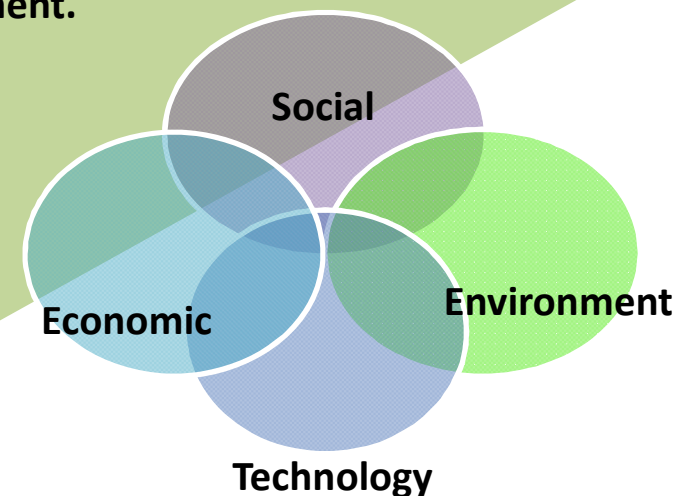


Sustainable Development Criteria

Paris Agreement article 6 para 2

Parties shall, where engaging on a voluntary basis in cooperative approaches that involve the use of internationally transferred mitigation outcomes towards nationally determined contributions, promote sustainable development and ensure environmental integrity and transparency, including in governance, and shall apply robust accounting to ensure, inter alia, the avoidance of double counting, consistent with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement.

1. One of the JCM purpose is to contribute to sustainable development
2. Indicator is needed to evaluate achievement in JCM.
3. Ensure every JCM project will deliver co-benefit for Indonesia.
4. To fulfill global standards for appropriate climate change mitigation action under the UNFCCC
5. Enforcement of sustainable development criteria suitable for Indonesian conditions



- ❖ Sustainable Development Implementation Plan (SDIP) will be submitted during request of registration
- ❖ Sustainable Development Implementation Report (SDIR) is assessed during request of issuance

And the latest development is our JCM registry system

JCM has issued carbon credits for its first 2 projects on May 2016!



The JCM registry is the first climate change registry that developed in Indonesia

Components of the Registry		
Operation	Remarks	Sheets Link
Master Operation	Register Project	Register Project
	Open Account	One account for one entity
	Edit Project Info	
	Edit Account Info	Editing credits info is not allowed
Credits Related Operation	Issuance of Credits	Issuance
	Transfer of Credits	Transfer
	Retirement of Credits	Retirement
	Cancellation of Credits	Cancellation
	Balance Inquiry	Balance
Database	Remarks	Sheets Link
Master	Project Info Master	Project Master
	Credit Issuance Master	Credit Master
	Account Master	Account Master
	Histry of Operation	History
Account	Holding Accounts	For Indonesian gov and entities
	Retirement Account	
	Cancellation Account	

- The Indonesia JCM registry system is developed and maintained to ensure the accurate accounting of the issuance, holding, transfer, acquisition, cancellation and retirement of JCM credits.
- Three (3) basic transactions in JCM registry: transfer, cancellation, and retirement.
- Components in the Indonesia JCM registry:
 - “Master Operation sheet” to register JCM project and new account in the system and to modify the information which already in the registry system
 - “Credit Related Operation sheet” to manage the JCM credit in the registry system
 - “Master sheets” act as a database that store all operation and input in the system.
 - “Account sheets” is to manage the credit amount of each account.

National Registry System: Objectives

Government recognition for contribution from all parties related to climate change control activities

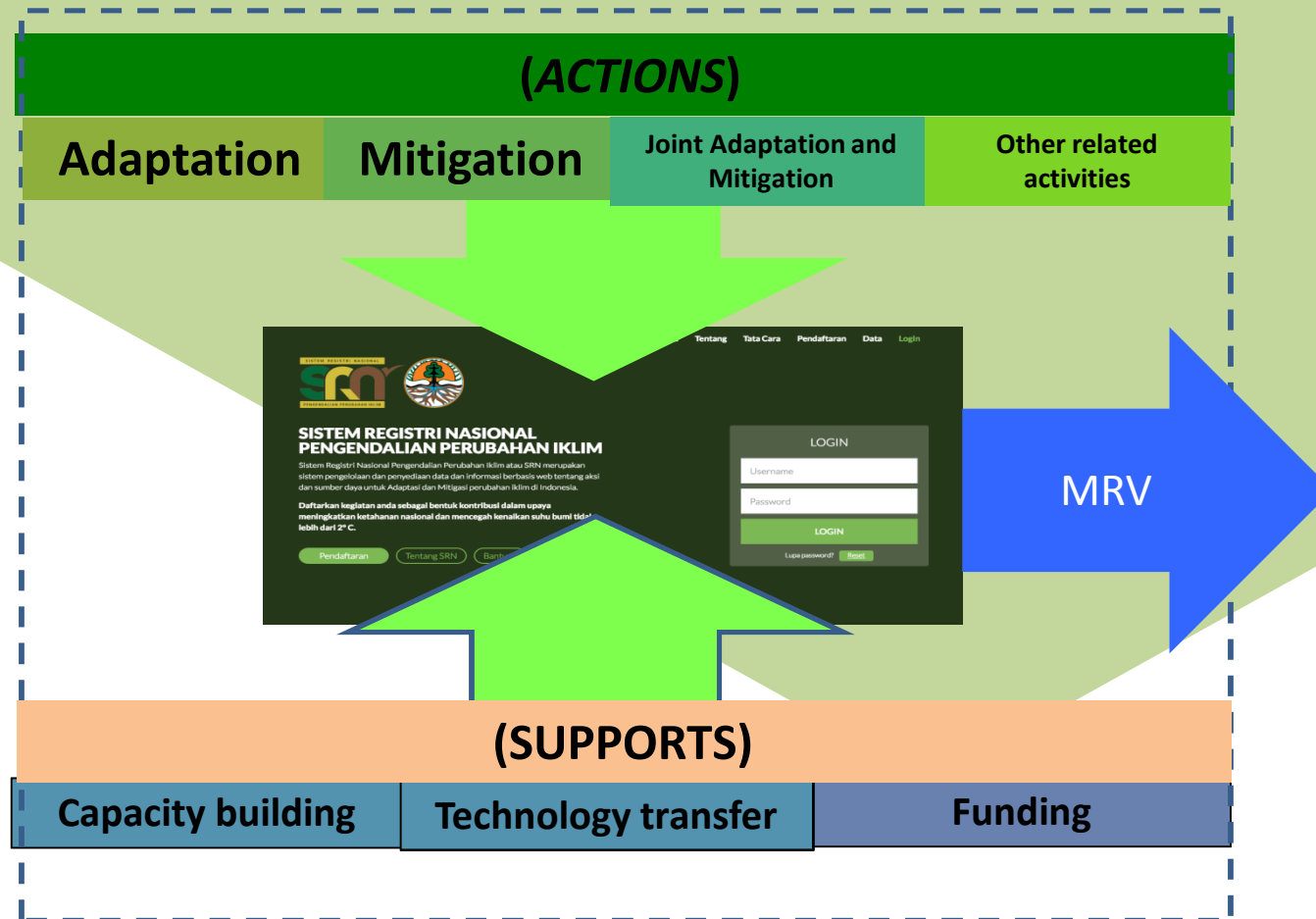
Environmental integrity

- Duplication
- Overlapping
- Double counting
- Double reporting

Synchronizing adaptation and mitigation action with the resources availability

The flow of National Registry System

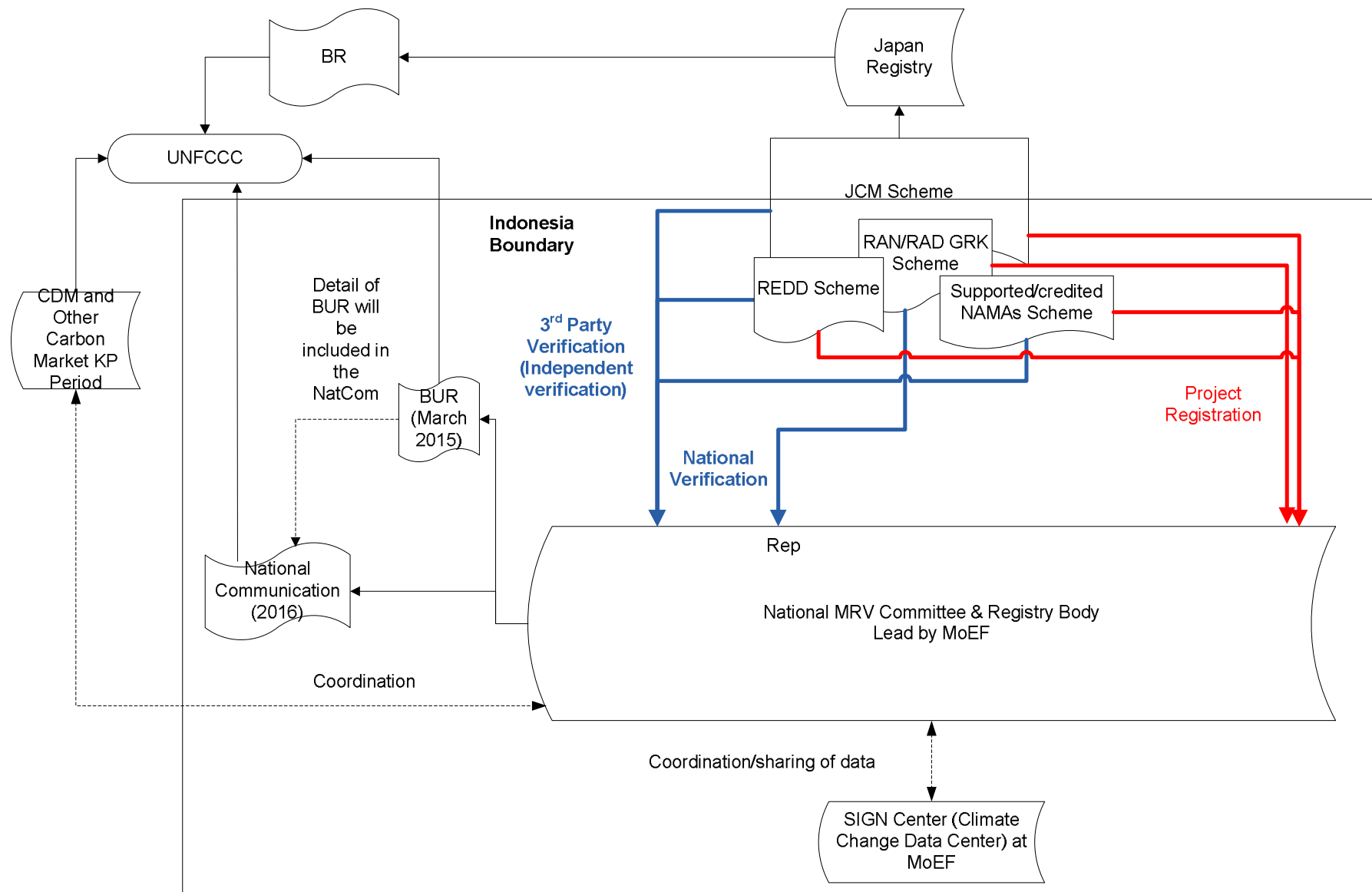
The flow of National Registry System



- General/common data
- Technical data
- Achievement of mitigation action (emissions reduction)
- Achievement of adaptation action
- Eco-village programme
- Resource realisation

Source: Directorate General of Climate Change Control, MoEF Indonesia , 2016
<http://www.ditjenppi.menlhk.go.id/srn>

Possible linkages between emission reduction schemes in Indonesia



Thank You!



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