



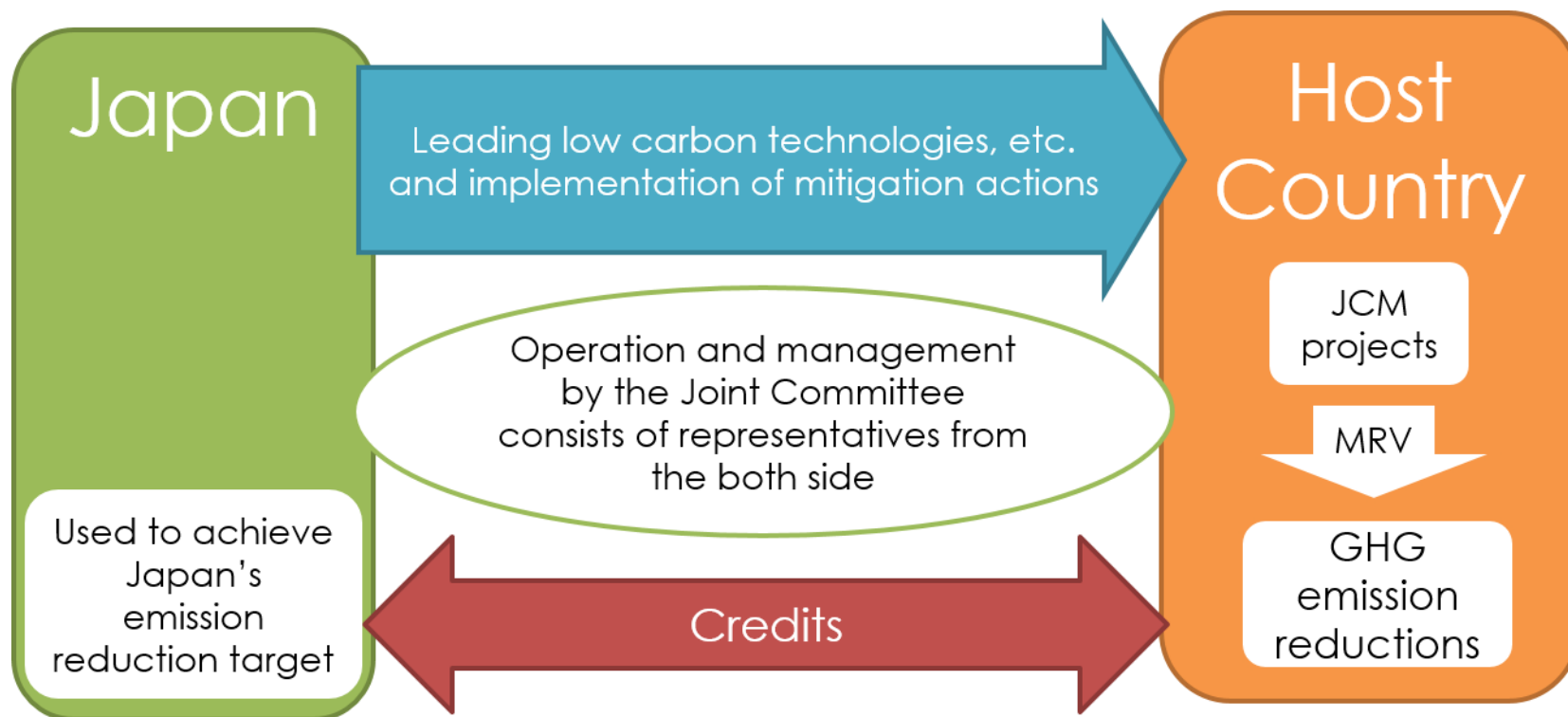
Implementation of the JCM in Thailand

Dr. Paweena Panichayapichet

Low Carbon Asia Research Network (LoCARNet), 1st November 2017

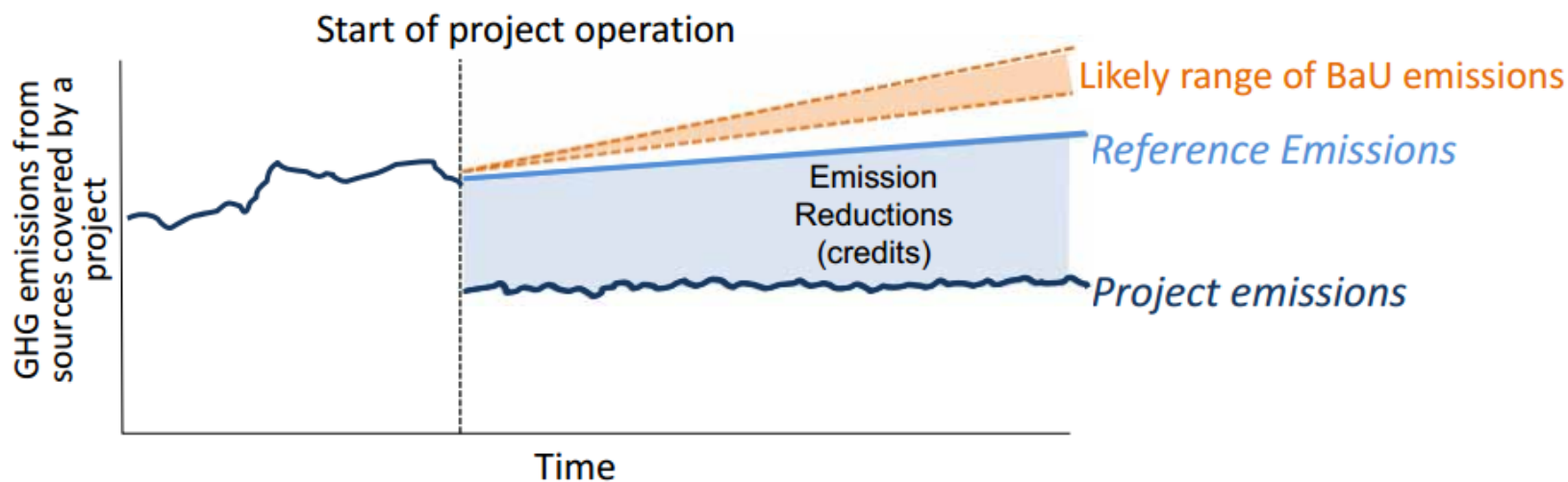
Basic concept of the Joint Crediting Mechanism (JCM)

- Implement jointly by both country
- Promote to diffuse leading low carbon technologies, products, etc.
- Evaluating GHG emission reductions by measurement, reporting and verification (MRV)

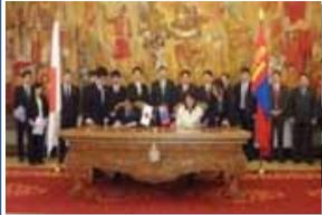


Basic Concept for Crediting under the JCM

- In the JCM, emission reductions to be credited are defined as the difference between “reference emissions” and project emissions.
- The 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 partner country.
- This approach will ensure a net decrease and/or avoidance of GHG emissions.



Signing Date of the partner countries



Mongolia
Jan. 8, 2013
(Ulaanbaatar)



Bangladesh
Mar. 19, 2013
(Dhaka)



Ethiopia
May 27, 2013
(Addis Ababa)



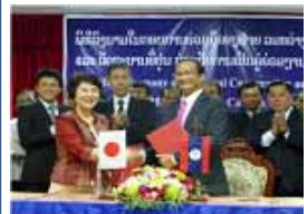
Kenya
Jun. 12, 2013
(Nairobi)



Maldives
Jun. 29, 2013
(Okinawa)



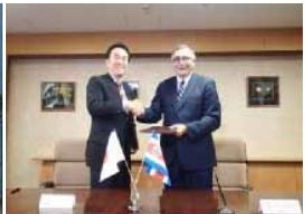
Viet Nam
Jul. 2, 2013
(Hanoi)



Lao PDR
Aug. 7, 2013
(Vientiane)



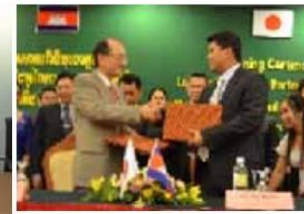
Indonesia
Aug. 26, 2013
(Jakarta)



Costa Rica
Dec. 9, 2013
(Tokyo)



Palau
Jan. 13, 2014
(Ngerulmud)



Cambodia
Apr. 11, 2014
(Phnom Penh)



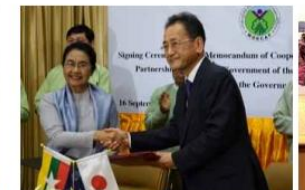
Mexico
Jul. 25, 2014
(Mexico City)



Saudi Arabia
May 13, 2015



Chile
May 26, 2015
(Santiago)



Myanmar
Sep. 16, 2015
(Nay Pyi Taw)

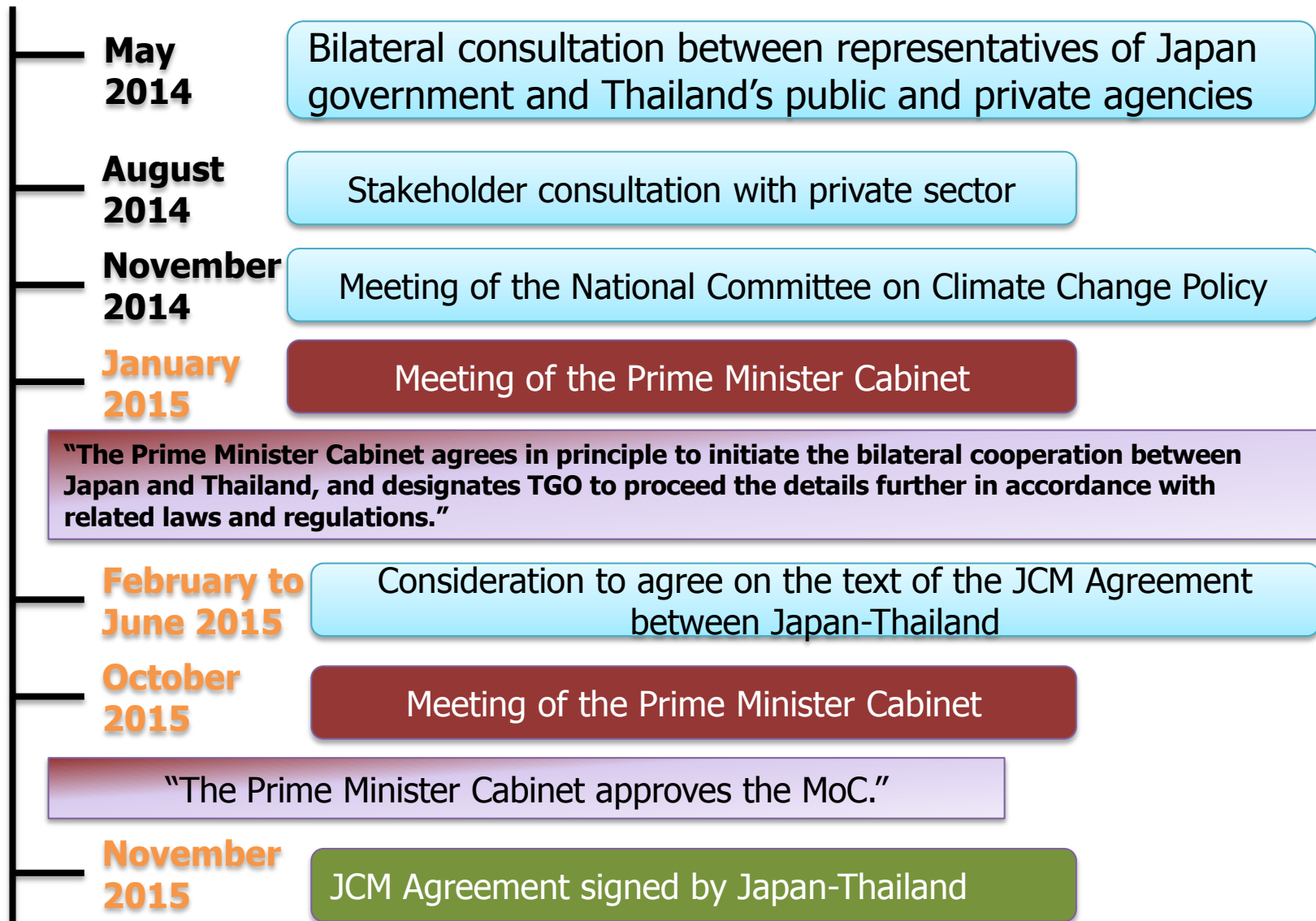


Thailand
Nov. 19, 2015
(Tokyo)



the Philippines
Jan. 12, 2017
(Manila)

Process Undergoing to Establish JCM Cooperation



Signing ceremony on November 19, 2015



The MoC was signed by

General Surasak Kanjanarat, Minister of Natural Resources and Environment, Thailand
and

H.E. Ms. Tamayo Marukawa, Minister of the Environment, Japan

JCM Model Projects by MOE

The budget for projects starting from FY 2017 is **6.0 billion JPY (approx. USD 60million)** in total by FY2019

(1 USD = 100 JPY)

Finance part of an investment cost (**less than half**)

Government of Japan

✕ Includes collaboration with projects supported by JICA and other governmental-affiliated financial institute.

Conduct MRV and expected to deliver at least half of JCM credits issued

International consortiums (which include Japanese entities)



- Scope of the financing: facilities, equipment, vehicles, etc. which reduce CO₂ from fossil fuel combustion as well as construction cost for installing those facilities, etc.
- Eligible Projects : starting installation after the adoption of the financing and finishing installation within three years.

Number of JCM Model Projects of each partner country

as of Apr 30 2017

Partner countries	Start from	No. of JC	No. of registered projects	No. of approved methodologies	Pipeline (JCM Financing Programme & Demonstration Projects in FY 2013-2016)
Mongolia	Jan 2013	4	2	3	6
Bangladesh	Mar 2013	3		1	6
Ethiopia	May 2013	3		3	2
Kenya	Jun 2013	3		3	3
Maldives	Jun 2013	2		1	3
Viet Nam	Jul 2013	5	4	6	20
Lao PDR	Aug 2013	2		1	4
Indonesia	Aug 2013	6	7	12	29
Costa Rica	Dec 2013	1			2
Palau	Apr 2014	4	3	1	3
Cambodia	Apr 2014	2		2	5
Mexico	Jul 2014	1			4
Saudi Arabia	May 2015	1			1
Chile	May 2015	1			2
Myanmar	Sep 2015	1			5
Thailand	Nov 2015	2		2	23
Philippines	Jan 2017				4
Total	16	41	16	35	122

Finance rate under JCM Model Project in FY2017

Finance rate will be determined based on the number of already selected JCM Model Projects using similar technology in each country. The actual number of already selected projects using similar technology will be published on the Web site.

Number of already selected projects using a similar technology in each partner country	None (0)	Up to 3 (≤ 3 , except 0)	More than 3 (> 3)
Maximum finance rate	50%	40%	30%

Regardless of the finance rate, selected entities in JCM Model Project are expected to deliver at least half of JCM credits issued to Government of Japan

Criterion for selecting the JCM model project (Cost effectiveness and Payback period)

Cost effectiveness (*1) and payback period (*2) of a proposed project are some of the criteria during selection by MOEJ.

*1: Cost effectiveness (JPY/tCO₂) is calculated as follows;

Dividing “Amount of proposed subsidy” by “Accumulated emission reductions achieved during the legal durable years under Japanese law

less than 4,000 JPY/tCO₂ (40 USD/tCO₂)

*2: Payback period (year) is calculated as follows;

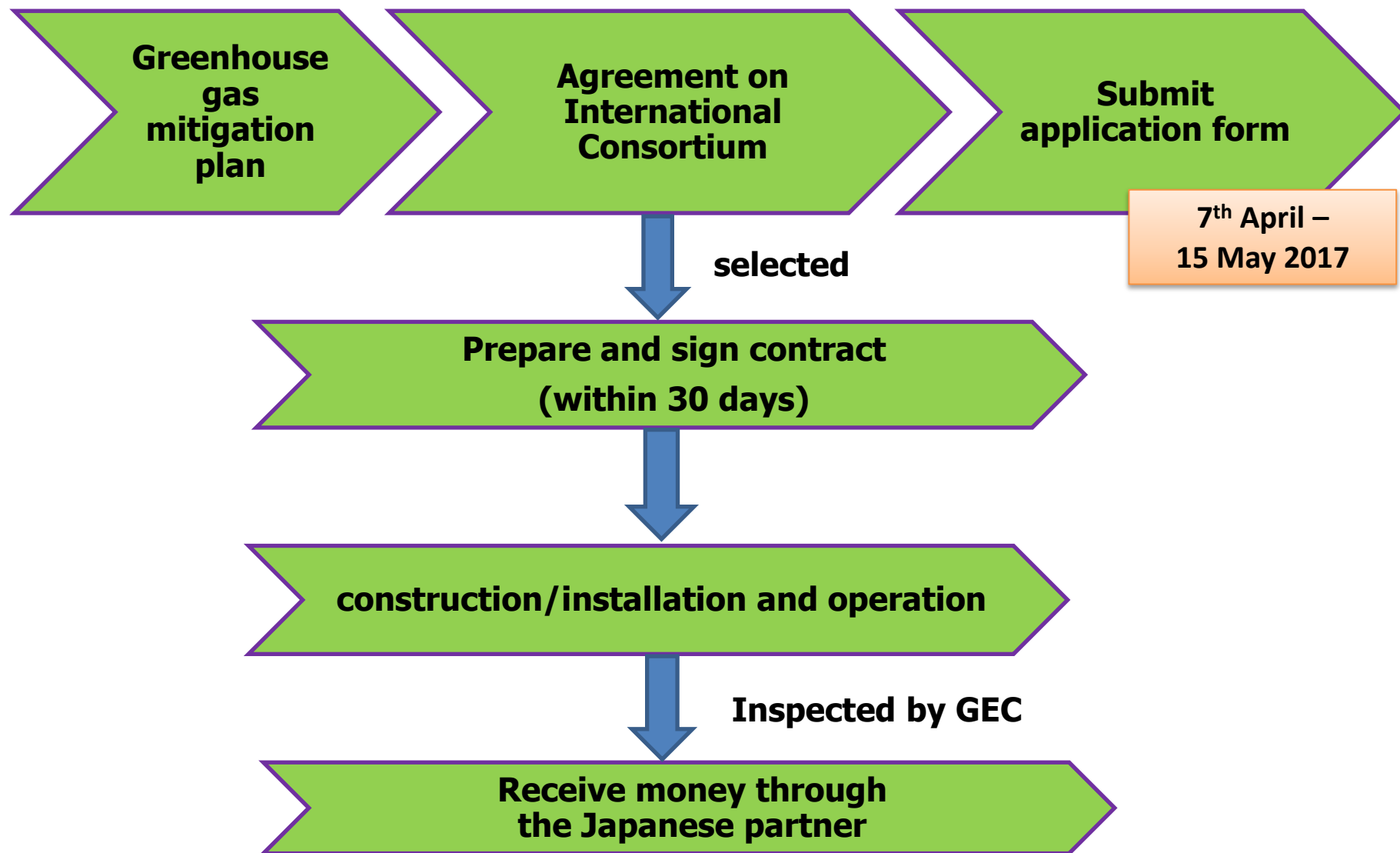
$$\frac{(\text{Total initial cost}) - (\text{Amount of proposed subsidy})}{(\text{Reduction for annual operation cost})}$$

or

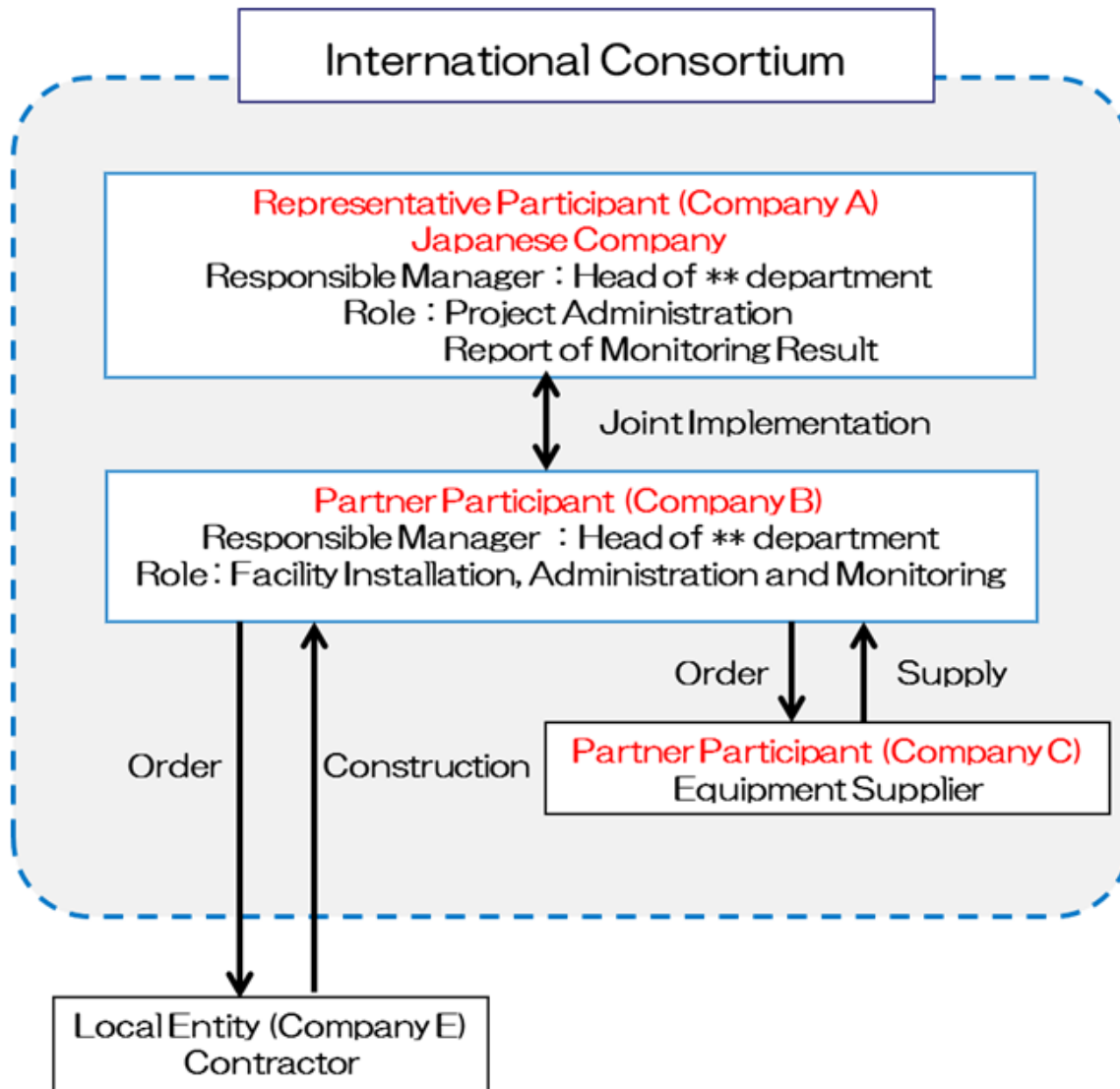
$$\frac{(\text{Total initial cost}) - (\text{Amount of proposed subsidy})}{(\text{Annual revenue}) - (\text{Annual operation cost})}$$

Payback period of a proposed project is more than 3 years.

Step-by-step: How to get the financial support



Development of JCM Model Projects



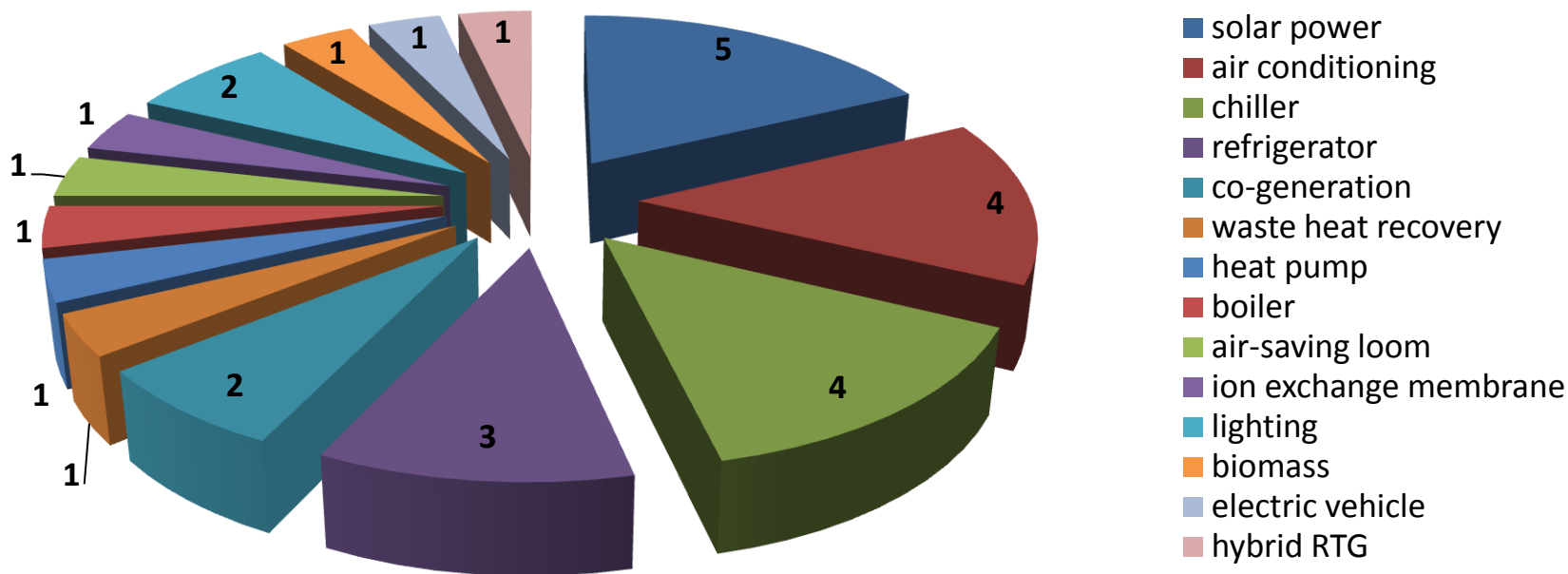
The representative participant of this Consortium shall be liable for

- purchase, installation, and commissioning of the facilities and equipment
- operational management and accounting of the project
- applying and receiving the financial support and also to administer

Type of JCM Model Projects

Project type	Number of projects	GHG reduction (tCO ₂ /y)
Energy efficiency	17	72,691
Renewable energy	6	27,179
	23	99,870

number of project categorized by technology



JCM Model Project

Energy Saving at Convenience Stores with High Efficiency Air-Conditioning and Refrigerated Showcase



Step-by-step: How to develop a JCM project

**draft
methodology
and get approval**

**prepare Project
Design Document
(PDD) and
stakeholder
consultation**

**get
validation
report from
Third-Party
Entity (TPE)**

**get
verification
report from
TPE**

**monitor
parameters as
specified in
the PDD**

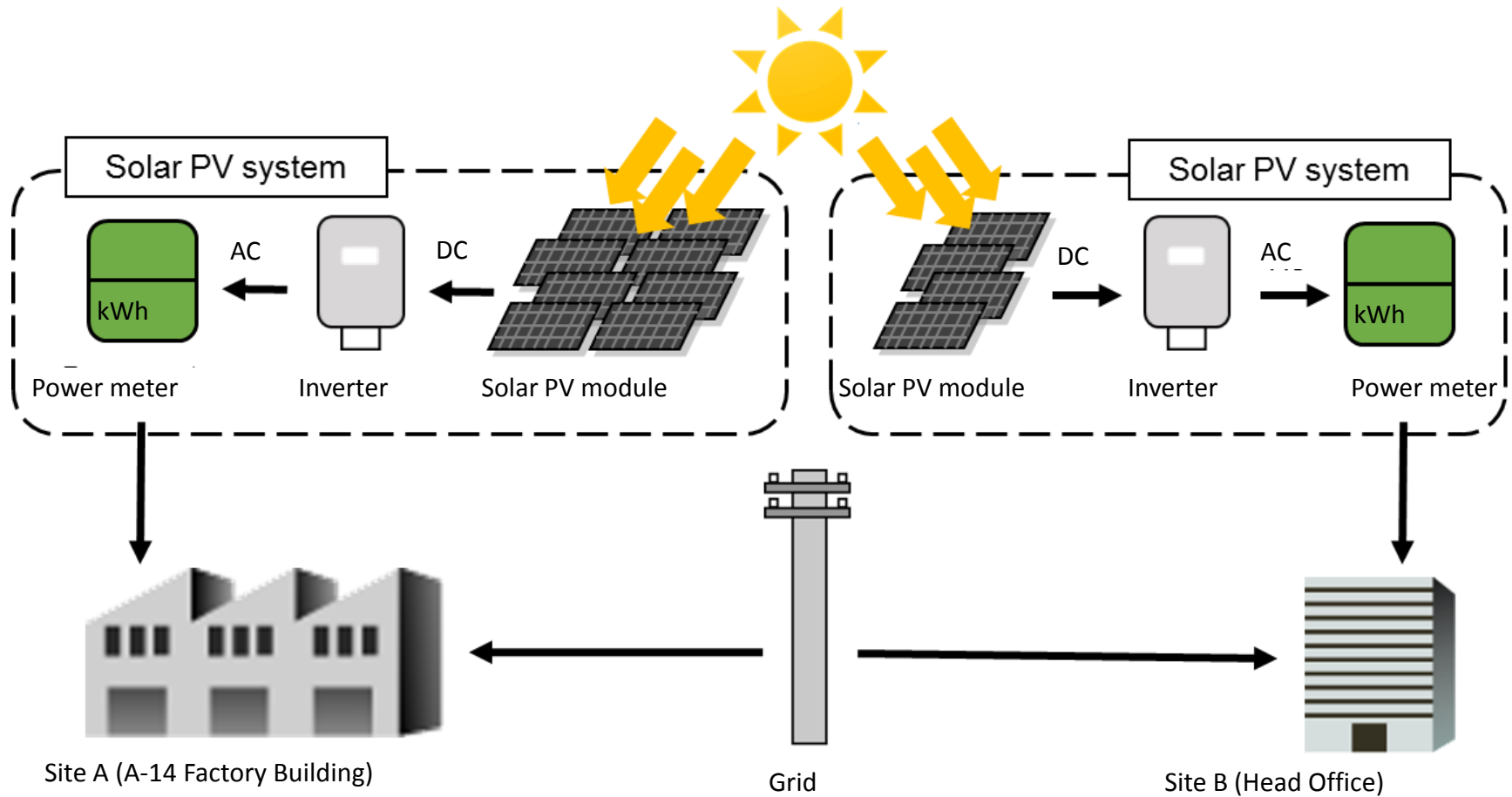
**request for
registration
within 1 year
after operating
the project**

request for carbon credit issuance

- within 1 year after registration
- within Year 2021 (monitoring from the last period until the end of Year 2020)
- within Year 2031 (monitor from 2021-2030)

JCM Methodologies: TH_AM001

Installation of Solar PV System



The first Registered JCM project

Project_code	Title	Submission	Public comments	Received Comment	Request of registration	Completeness check	Registration
TH001	Introduction of Solar PV Systems on Rooftops of Factory and Office Building	30 June 2017	17 July – 4 Aug 2017	0	8 August 2017	15 August 2017	21 August 2017



Office building 195.84 kW

↓
491
tCO₂/y



Factory building 798.72 kW

JCM Methodologies: TH_AM002

Energy Saving by Introduction of Multi-Stage Oil-Free Air Compressor



- Multi compression stage for higher energy efficiency
- Oil-free for clean working environment

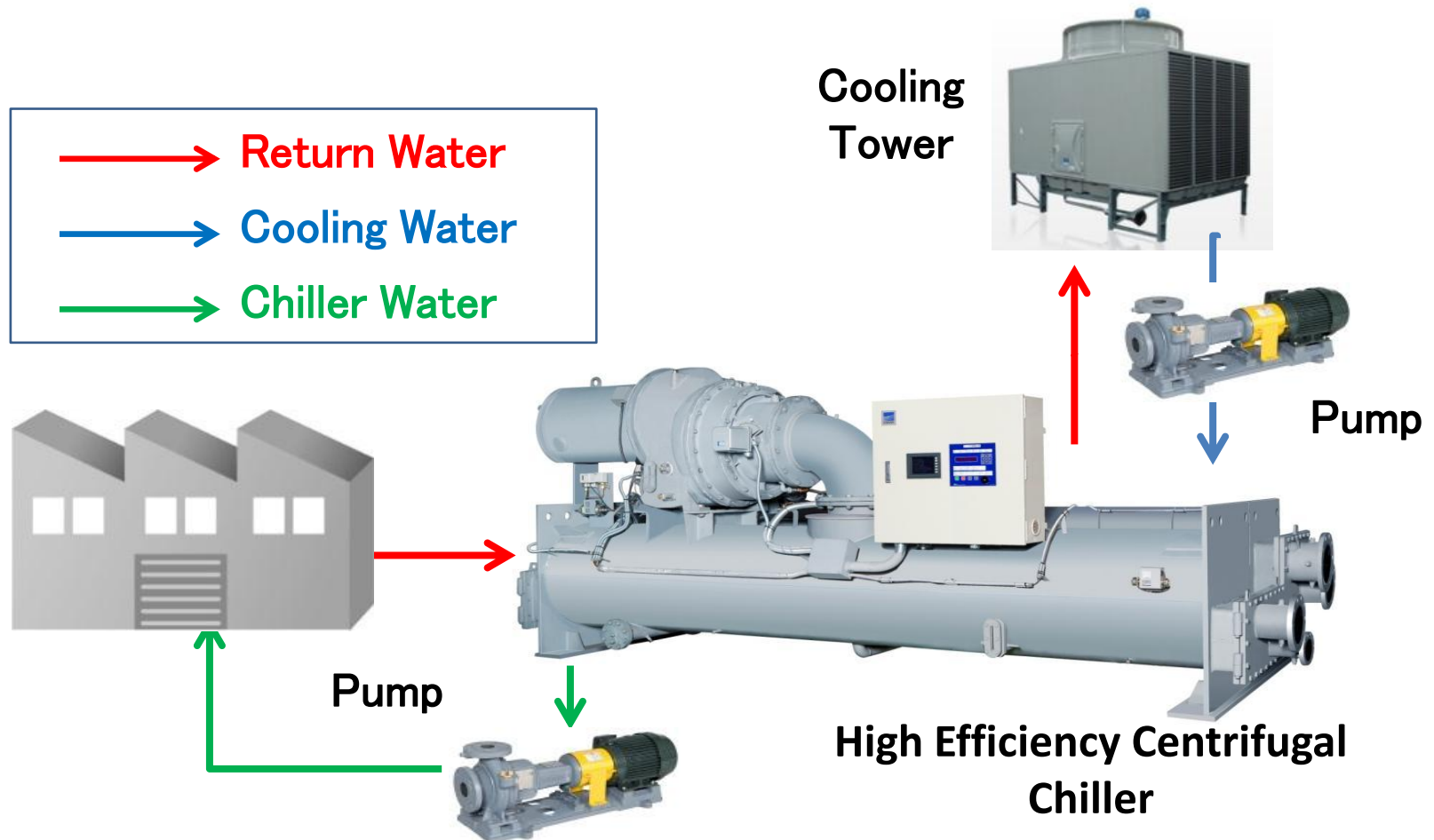
■ High-efficiency centrifugal chiller for air conditioning



- High COP (high energy efficiency)
- ODP of the refrigerant (HFC-134a) used is zero for the ozone layer protection

JCM Methodologies: TH_AM005

Energy Saving by Introduction of Non-Inverter High Efficiency Centrifugal Chiller

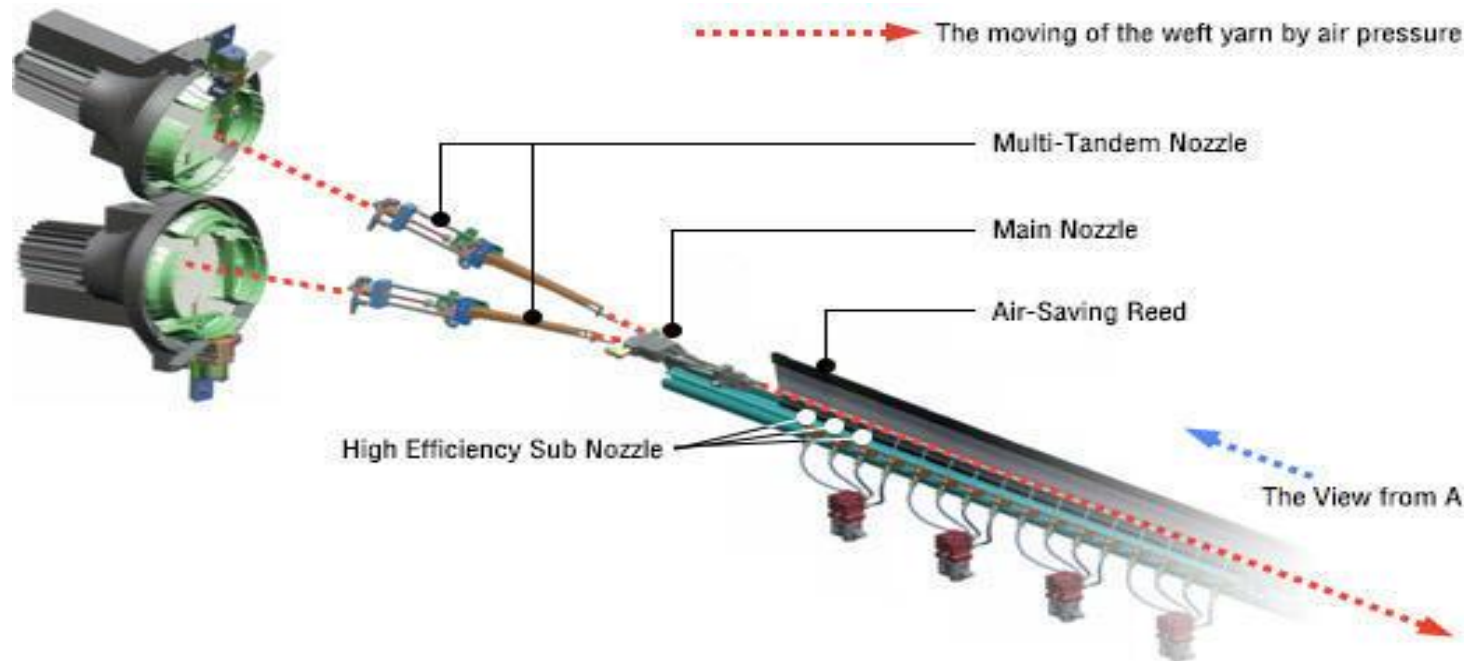


JCM Methodologies: TH_AM004

Installation of Energy Saving air Jet Loom at Textile Factory



Energy saving air jet loom
“Toyota JAT810” produced
by Toyota Industries
Corporation

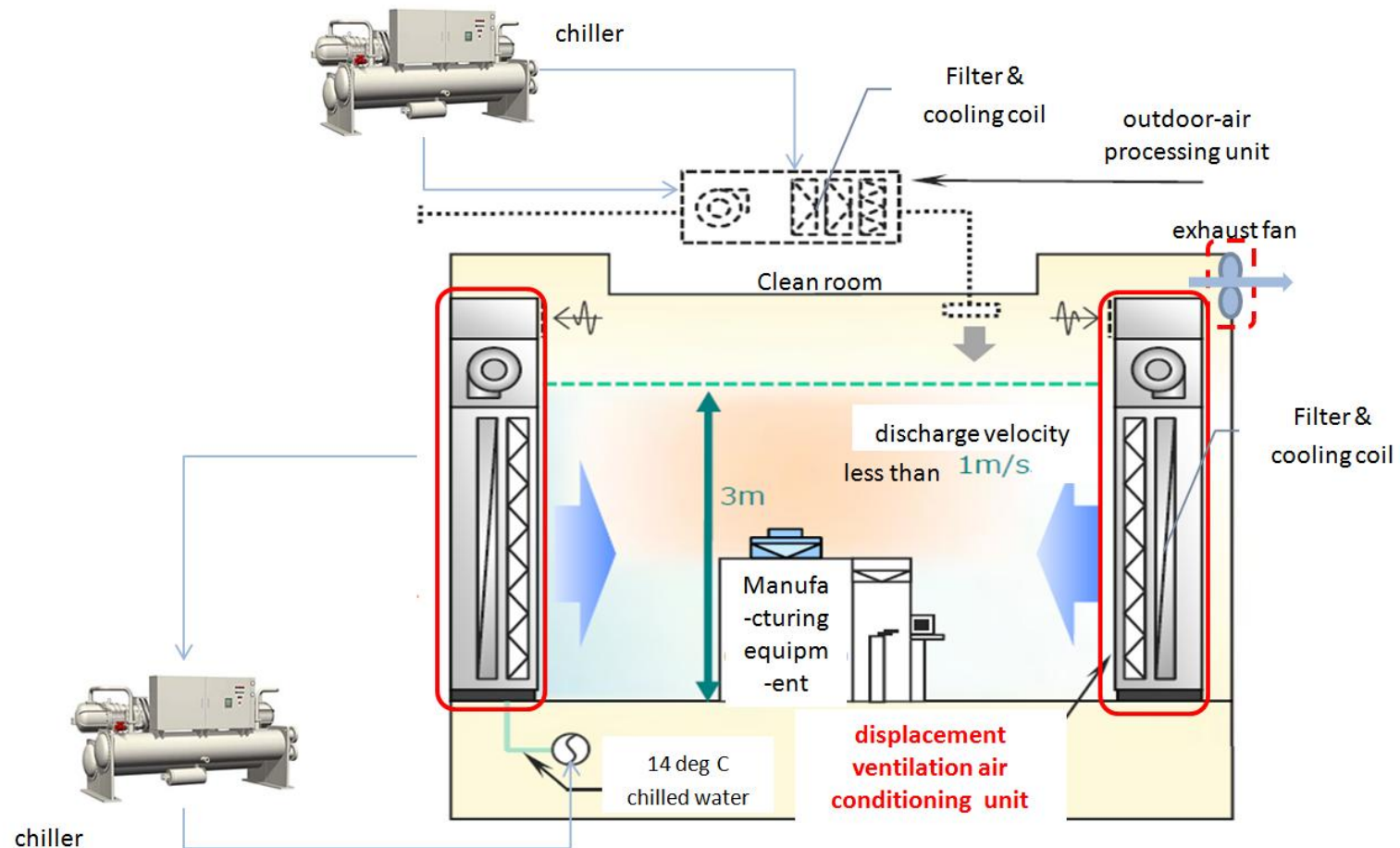


Air-Jet
weft
insertion
system

JCM Methodologies: TH_AM006

Installation of Displacement Ventilation Air Conditioning Unit in the Cleanroom of Semiconductor Manufacturing Factory

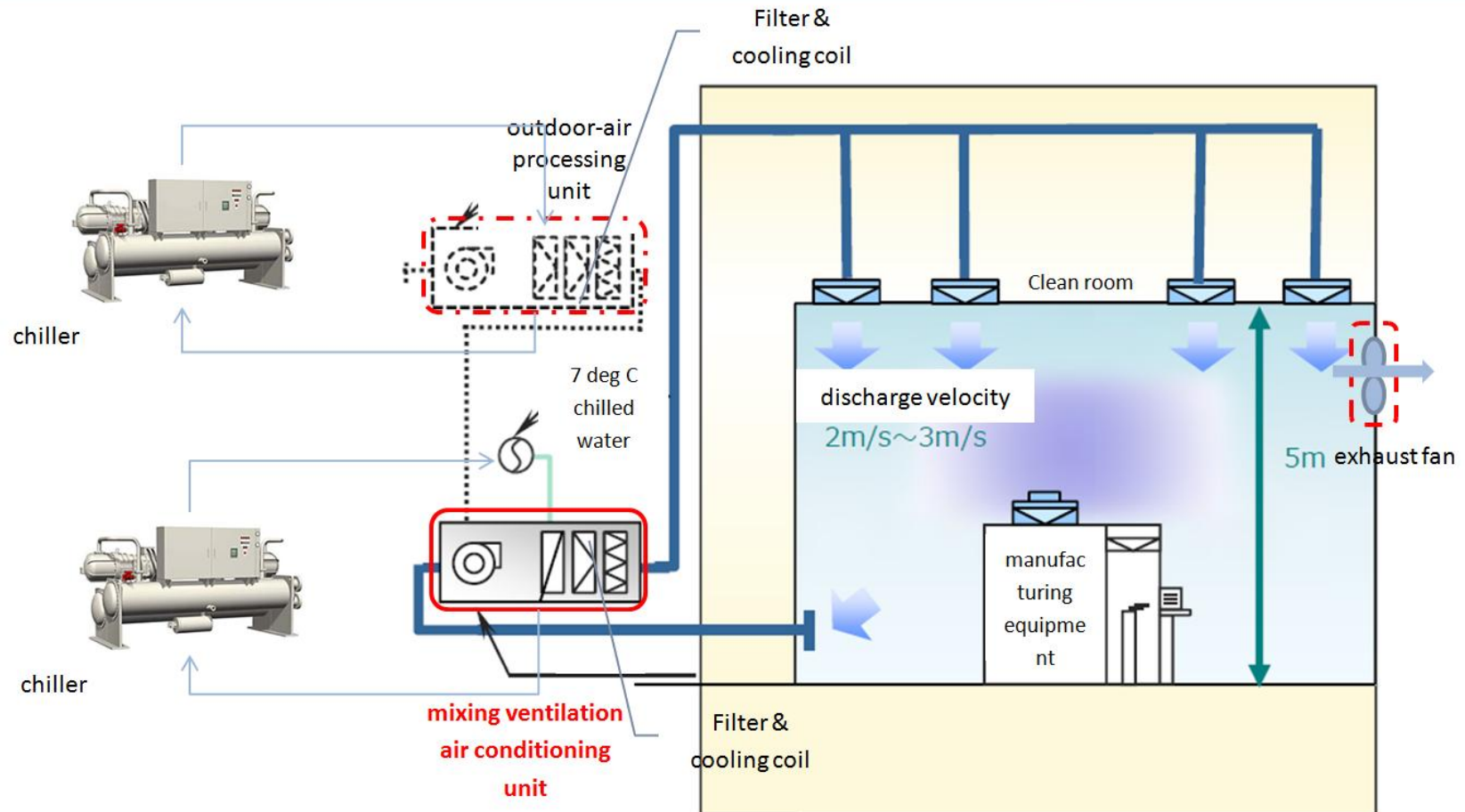
Outline of the technology applied



JCM Methodologies: TH_AM006

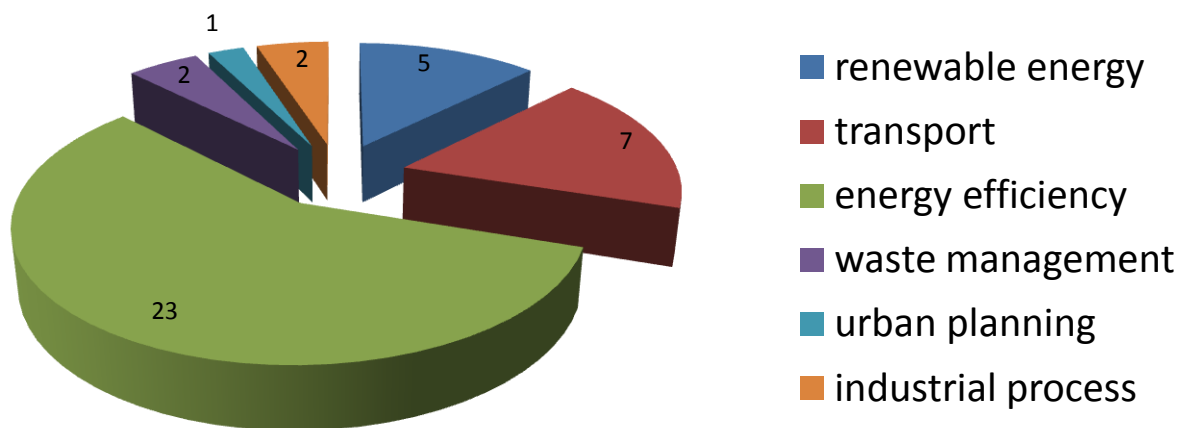
Installation of Displacement Ventilation Air Conditioning Unit in the Cleanroom of Semiconductor Manufacturing Factory

Outline of the reference technology



Type of Feasibility studies supported by METI, NEDO, MOE since 2010

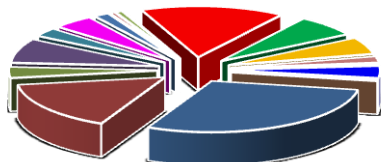
Project type	Number of studies
Energy efficiency	23
Renewable energy	5
Transport	7
Waste management	2
Industrial process	2
Urban planning	1



Market mechanisms in Thailand

CDM

154 CDM Projects Registered at CDM EB



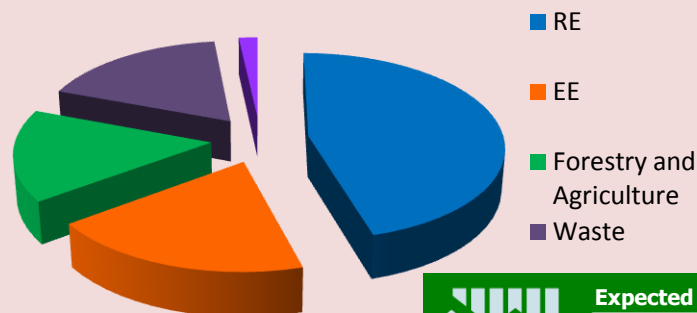
Expected Certified Emission Reduction
7.41 MtCO₂e/year

Biomass	16.13 %
Biogas	57.15 %
Others	26.72 %

AS of September 2017

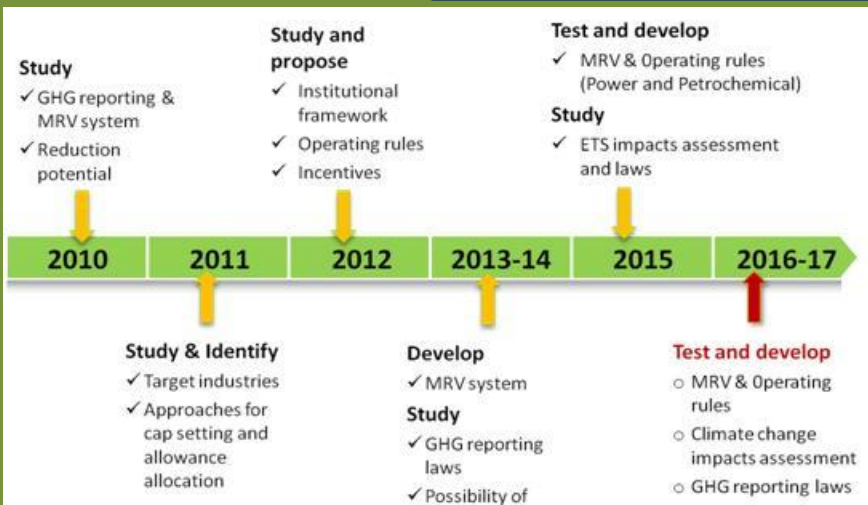
T-VER

80 T-VER projects registered at TGO



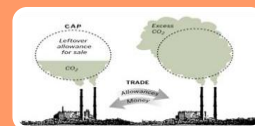
AS of September 2017

Thailand V-ETS



Implementation phase 2016-2019

PMR

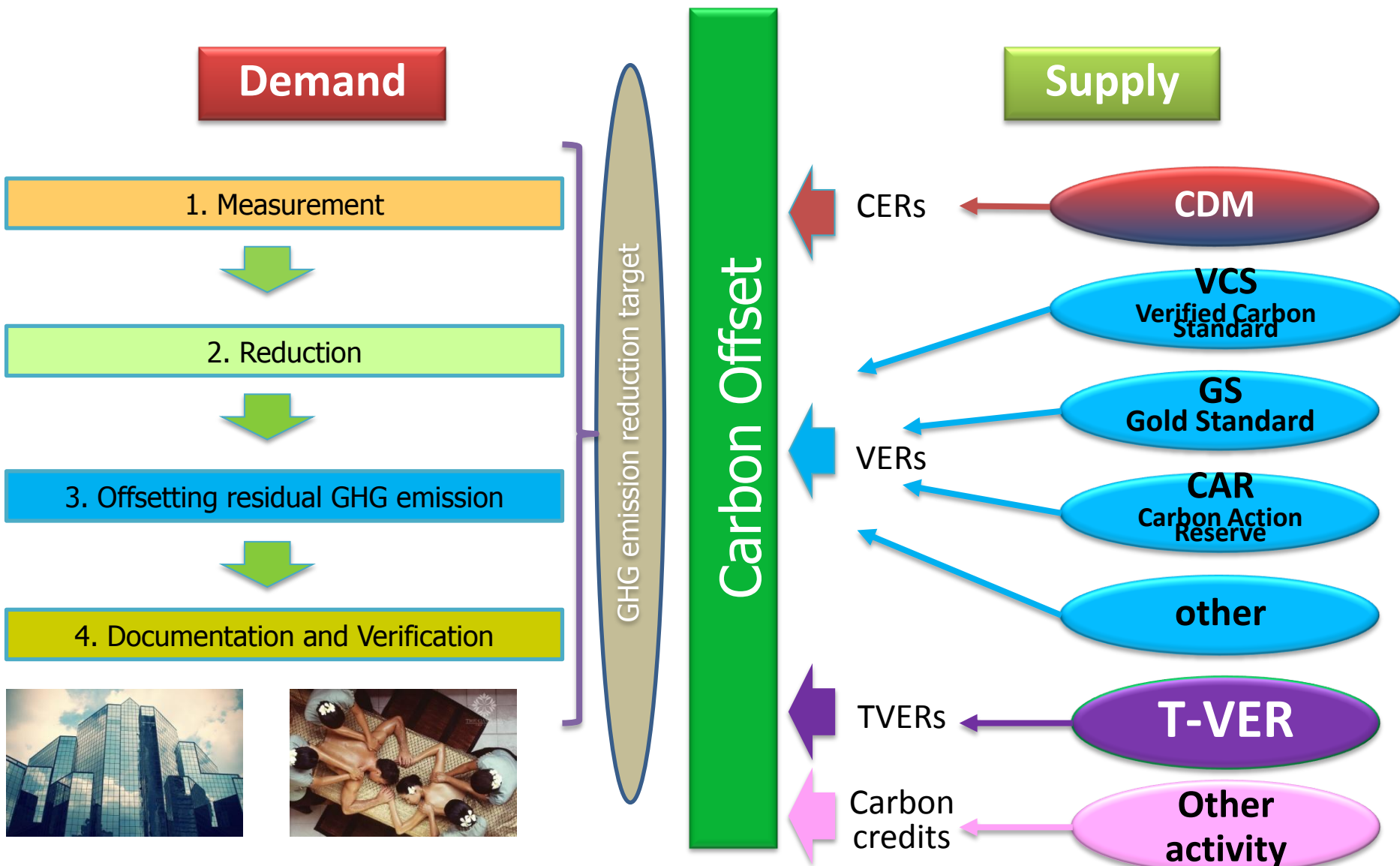


Component 1: Preparation of key market components of Energy Performance Certificate scheme (EPC)

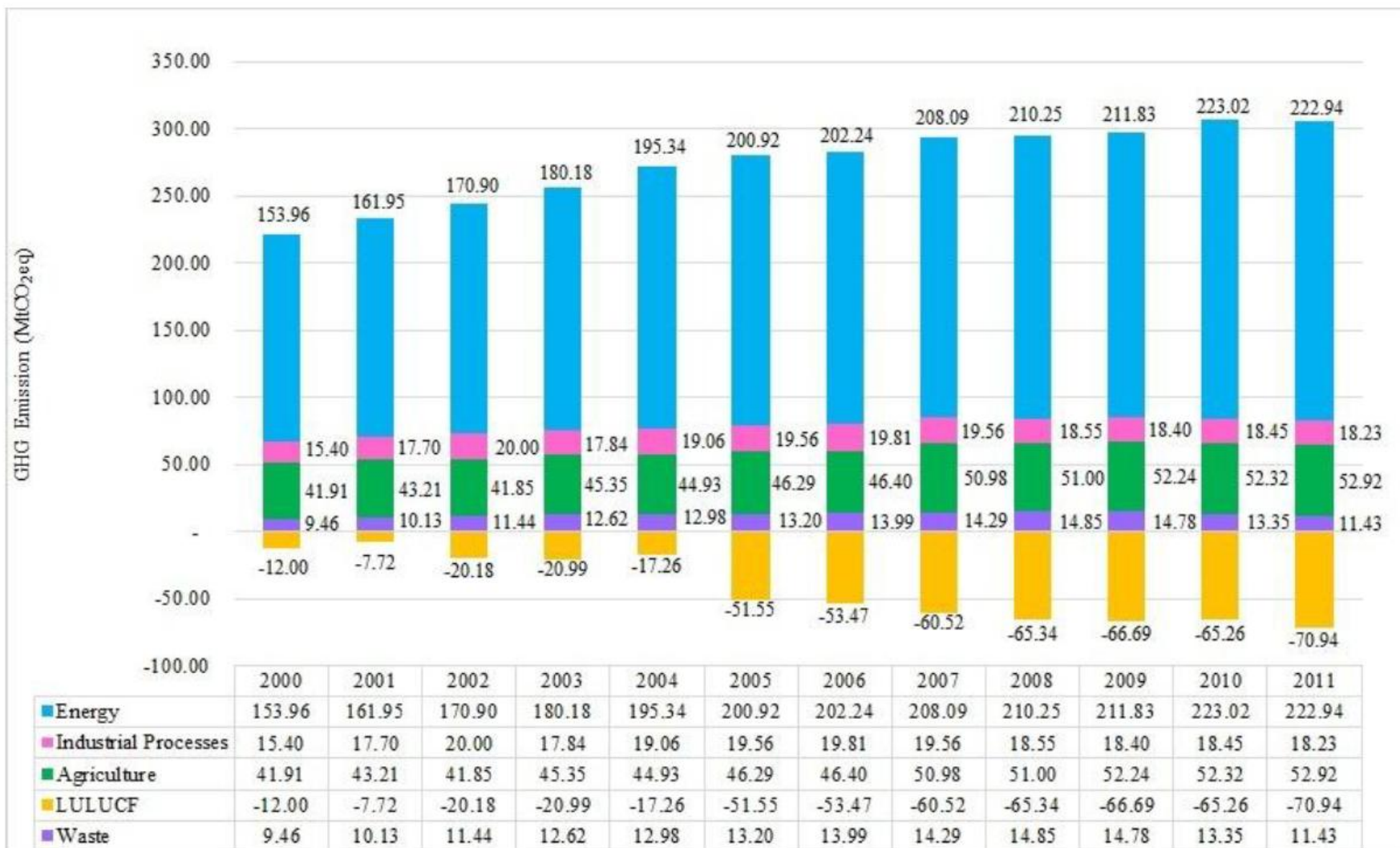
Component 2: Development of Local Greenhouse Gas Abatement Plans and a study on pricing mechanism for Low Carbon City program (LCC)

Component 3: Policy recommendation on legal framework to establish the Emission Trading Scheme (ETS)

Thailand Carbon Offsetting Programme (TCOP)

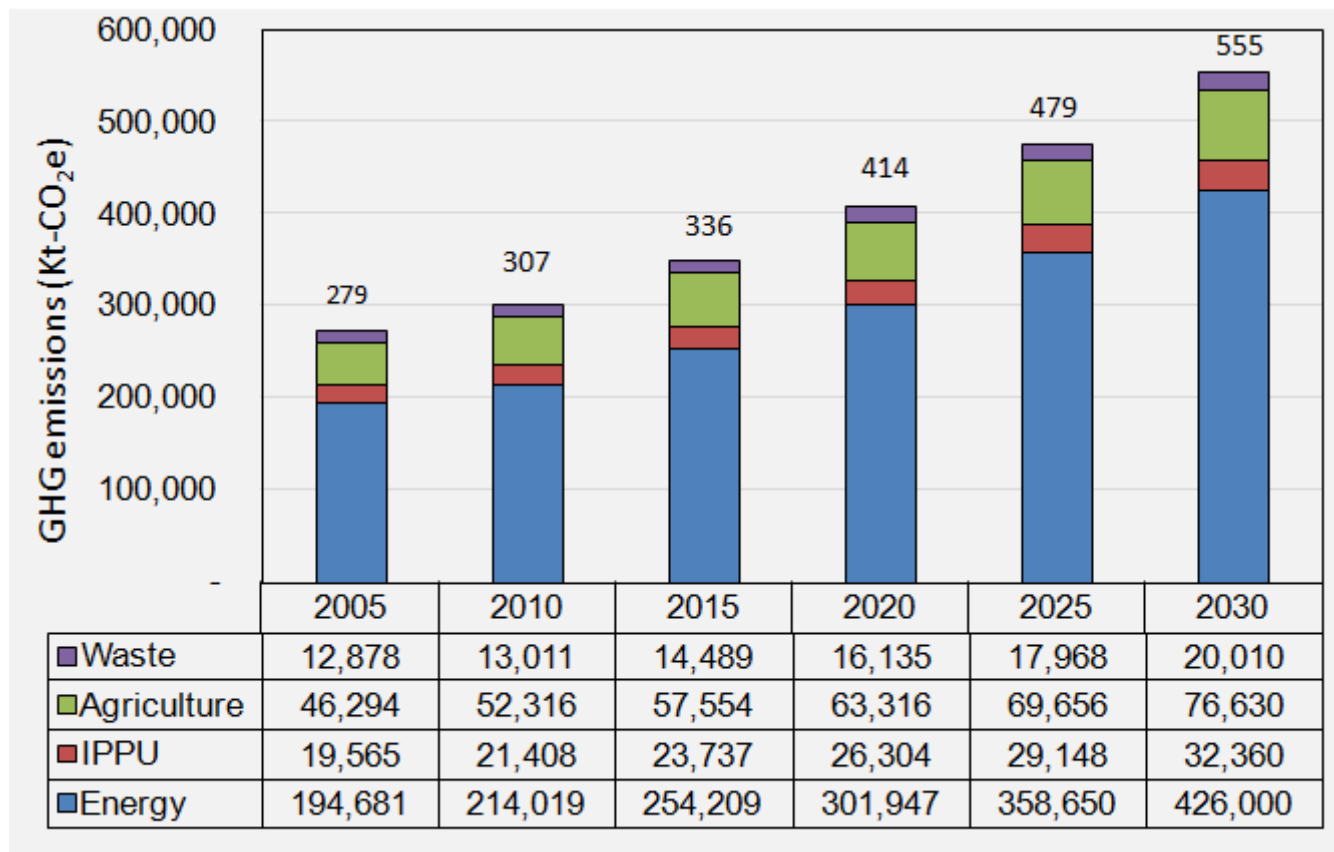


Thailand's greenhouse gas emissions in year 2000-2011



Source: Thailand's first BUR, 2015

Projected Thailand GHG emissions in BAU scenario



Source: NDC Roadmap, Office of Natural Resources and Environmental Policy and Planning (ONEP)

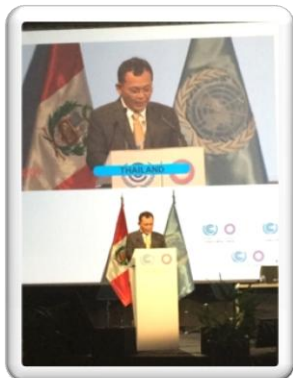
- ❑ The baseline emission is projected from BAU scenario from reference year 2005 in the absence of major climate change policies which is **555** MtCO₂e.
- ❑ The assumptions align with social and economic development direction.
- ❑ The projected Thai GDP growth during 2014-2036 expected to grow on the average of 3.94 percent annually and population growth rate (data of 2014) is 0.03 percent annually.



Thailand's GHG Mitigation goal

Pre-2020

❖ Nationally Appropriate Mitigation Actions (NAMAs)



“Thailand will endeavor, on a voluntary basis, to reduce its GHG emissions in the range of 7 to 20 percent below the Business as Usual (BAU) in energy and transportation sectors by 2020, subject to the level of international support provided [...]”

Coverage:

RE

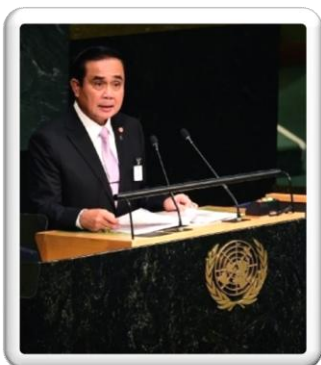
EE

Bio-fuels

Transport

Post-2020

❖ Intended Nationally Determined Contribution (INDC)



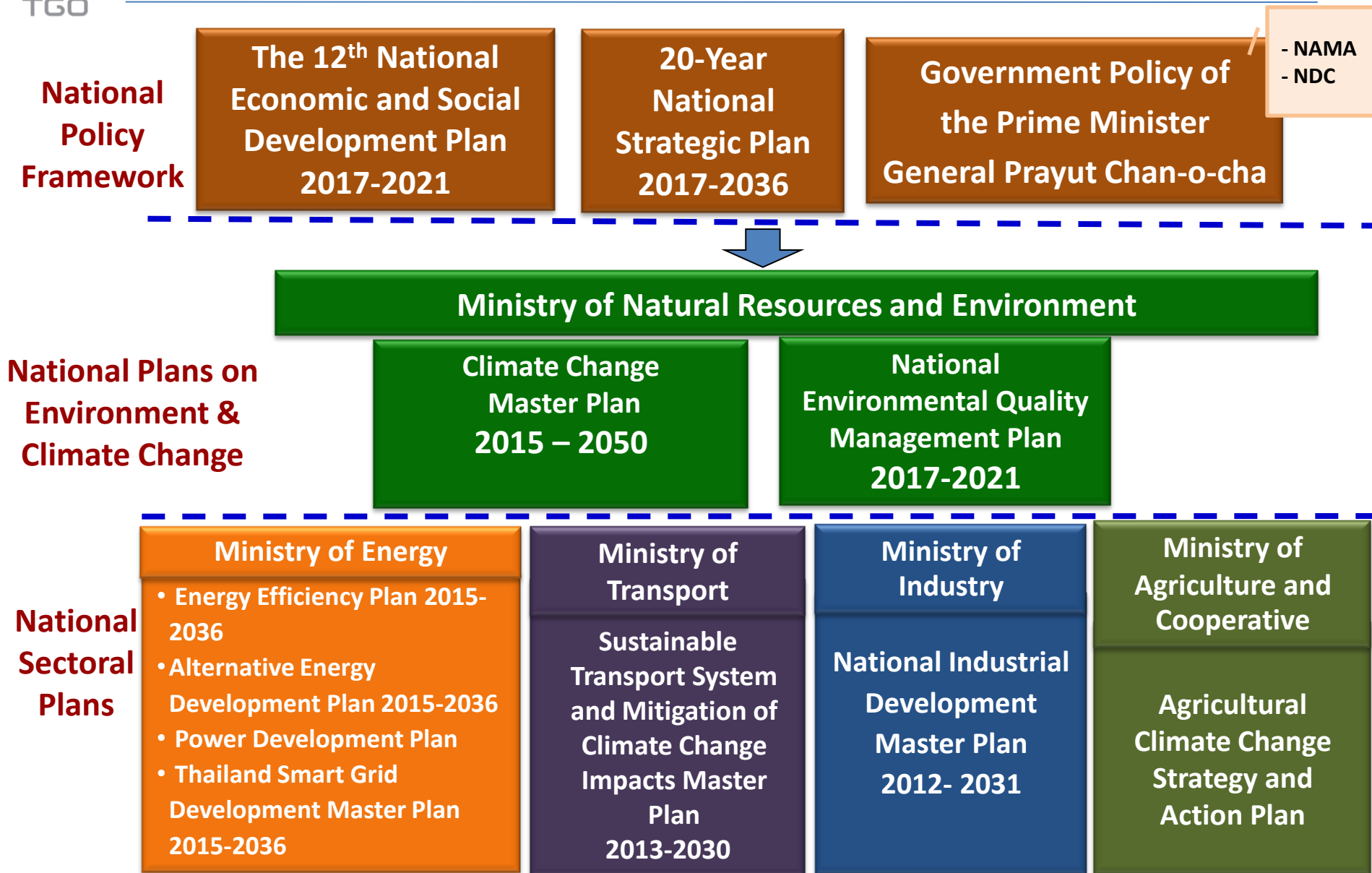
“Thailand intends to reduce its greenhouse gas emissions by 20 percent from the projected business-as-usual (BAU) level by 2030. The level of contribution could increase up to 25 percent, subject to adequate and enhanced [support] through a balanced and ambitious global agreement [...]”

Coverage:

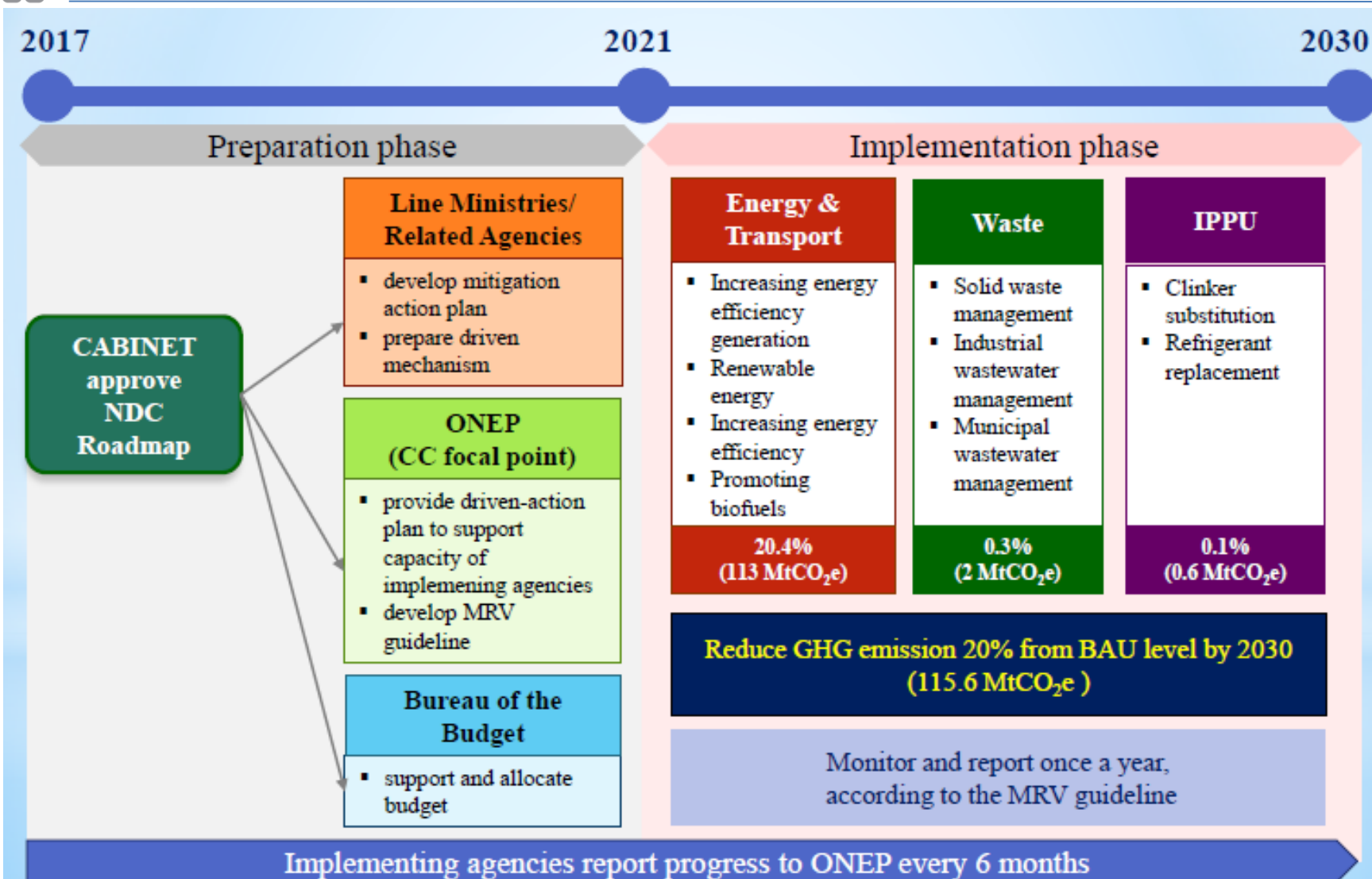
Economy-wide

Inclusion of LULUCF will be decided later

Overview of Thailand's Policies on Climate Change



NDC Roadmap

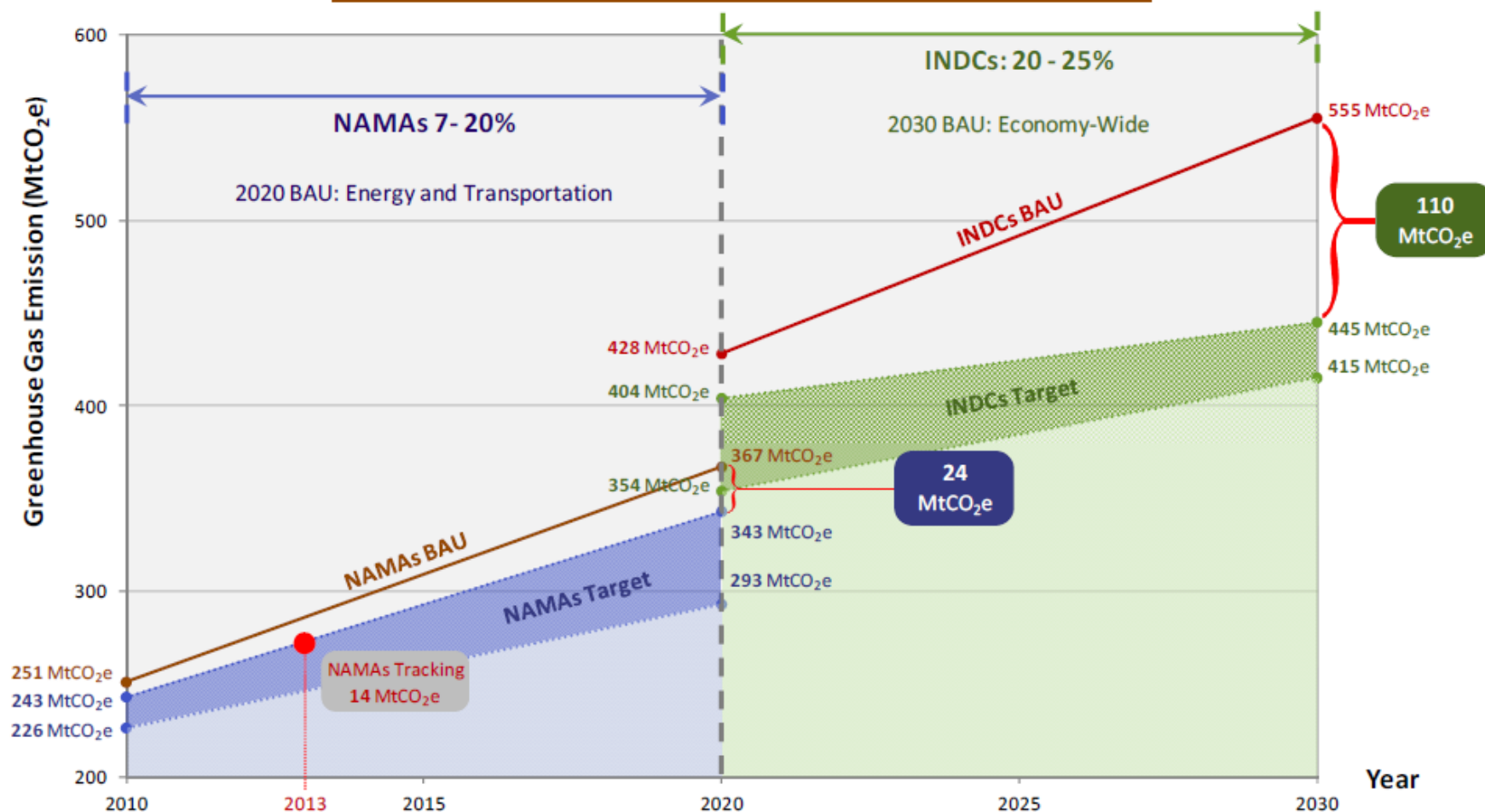


Source: Dr. Phirun Saiyasitpanich, ONEP, presentation in APN, LoCARNet and AIT/RRC AP Capacity Building Workshop and Science-Policy Dialogue on Low Carbon Development, 6th February 2017



Thailand NAMAs – INDCs Target

Thailand NAMAs - INDCs Target



Role of JCM in achieving NDC target

Environmental integrity		JCM
Robust accounting	<ul style="list-style-type: none"> - avoid double counting - accounted for NDC targets and emission reduction 	✓
Quality of units	<ul style="list-style-type: none"> - 1 tCO₂eq directly leads to an emission reduction of at least 1 tCO₂eq in the transferring country - additional - not over estimated - permanent 	✓
Scope of NDC target	- Thailand's NDC covers economy wide and the target is more stringent than BAU emissions	RE, EE

Ready Thailand to Combat Climate Change

Thailand Greenhouse Gas Management Organization (Public Organization): TGO

The Government Complex, Ratthaprasasanabhakti Bldg., 9th Fl., 120 Chaengwattana Rd.,
Laksi, Bangkok 10210

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