TICA

MEA

JICA

General Information

on

Third Country Training Program:

MODERNIZATION OF POWER DISTRIBUTION SYSTEM IN ASEAN COUNTRIES

3rd – 21th February 2025

Conducted by

The Government of Japan
Japan International Cooperation Agency (JICA)

The Government of the Kingdom of Thailand
Thailand International Cooperation Agency (TICA)
Metropolitan Electricity Authority (MEA)

Thailand International Cooperation Agency (TICA)

TICA's Vision

TICA aspires to be a central agency on technical and development cooperation under the Royal Thai Government to serve as a bridge for global sustainable development.

TICA's Mission

TICA is the main agency to execute international development cooperation with foreign governments, international organizations and intergovernmental organizations.

TICA is the focal agency in formulating strategic guidelines and policies on international development cooperation to be comprehensively in line with the Royal Thai Government's foreign policies.

Objectives

- To develop international cooperation plan, study and analysis on cooperation policy including implementation, follow-up and evaluation of technical cooperation projects.
- To administer development cooperation programmes provided to developing countries according to foreign policies of the Royal Thai government.
- To cooperate with various development partners including foreign governments and international organizations to develop technical cooperation projects for development under bilateral and multilateral frameworks.
- To administer fellowships and scholarships offered to developing countries for human resources development in public and private sectors as well as civil society.
- To coordinate international development cooperation.
- To disseminate information regarding development cooperation to government agencies concerned and international organizations.

Thailand International Cooperation Agency (TICA)

Ministry of Foreign Affairs
8th Floor, Government Complex Building B (South Zone)
Chaengwattana Road,
Laksi District, Bangkok 10210
Thailand

Telephone : +66-2203-5000 ext. 43302
Facsimile : +66-2143-8357
Website : https://tica-thaigov.mfa.go.th

Japan International Cooperation Agency (JICA)

ODA and JICA

Since 1954, Japan has been providing financial and technical assistance to developing countries through ODA (Official Development Assistance), aiming to contribute to the peace and development of the international community. JICA is in charge of administering all ODA such as technical cooperation, ODA loans and grant aid in an integrated manner. JICA assists and supports developing countries as the executing agency of Japanese ODA, and works in over 150 countries and regions and has some 100 overseas offices.

JICA's Vision

Leading the world with trust

JICA, with its partners, will take the lead in forging bonds of trust across the world, aspiring for a free, peaceful and prosperous world where people can hope for a better future and explore their diverse potentials.

JICA's Mission

JICA, in accordance with the Development Cooperation Charter, will work on human security and quality growth.

Actions

1. Commitment: Commit ourselves with pride and passion to achieving our mission and vision.
2. Gemba: Dive into the field ("gemba") and work together with the people.
3. Strategy: Think and act strategically with broad and long-term perspectives
4. Co-creation: Bring together diverse wisdom and resources.
5. Innovation: Innovate to bring about unprecedented impacts.

Japan International Cooperation Agency (JICA)
Thailand Office

31st Floor, Exchange Tower,
388 Sukhumvit Road,
Klongtoey, Bangkok 10110
Thailand

Telephone : +66 2261 5250
Facsimile : +66 2261 5263
Website : http://www.jica.go.jp/thailand/english/index.html

Metropolitan Electricity Authority (MEA)

MEA

The MEA main business is power distribution in Bangkok, Nonthaburi and Samut Prakan Province, covering an area of 3,192 square kilometers, Electricity is supplied to 4 main customer groups: residence, business, industry and government.

MEA's Vision

Energy for City Life, Energize smart living.

MEA's Mission

Innovate and operate smart energy system to empower city life for smart living.

Energy for City Life

- Enhancing the electricity service in metropolis.
- Operate the distribution system to be able to supply electricity continuously through reliability indices: SAIDI and SAIFI.
- Implement the replacement of overhead lines by underground cables project to improve aesthetic sceneries and support economic growth.
- Develop the smart Grid for the maximum benefit of energy consumption in the future.

Energize smart living

- Responding to the urban lifestyle.
- Install Smart Meters to show more real-time and accurate data.
- Support the Smart Metro Grid project, the intelligent system for the future metropolis.
- Facilitate the solar energy to the distribution system.
- Develop the MEA EV application including install the EV charging stations to support the EV growth.

Metropolitan Electricity Authority (MEA)
Head Office:
Watthanawipat Building, 1192 Rama IV Road, Klong Toei, Bangkok 10110 Thailand

Telephone : +66-2348-5000
Facsimile : +66-2902-5320
Website : https://www.mea.or.th/en/

The Group Training Course on "MODERNIZATION OF POWER DISTRIBUTION SYSTEM IN ASEAN COUNTRIES" will be conducted by the Royal Thai Government and the Government of Japan as part of their Technical Cooperation Programme.

The arrangements for the course are made by Thailand International Cooperation Agency (TICA), Ministry of Foreign Affairs, Thailand, and Japan International Cooperation Agency (JICA), in collaboration with Metropolitan Electricity Authority (MEA), Ministry of Interior, Thailand.

BACKGROUND TO THE COURSE

Since 2015, ASEAN has become the ASEAN Economic Community (AEC) in order to obtain equitable economic development in the region. It is acknowledged that an electric power system is a basic infrastructure for social and economic development of each country. However, although the power distribution systems in the Greater Mekong Sub-region (GMS) have undergone the satisfactory levels of development, there still exist gaps among ASEAN countries rendering direct impacts on social and economic development as well as the living standards of the population. Furthermore, the changed business environment as well as the emergence of the smart grid concept has urged utilities to balance all stakeholders' need by investing cautiously for power distribution network expansion and reinforcement, maximizing system reliability and power quality, fully utilizing the network components, while still minimizing the equipment failure risks and power losses. This thus requires the utility managers/engineers possess not only engineering knowledge but also management and technology engagement skills. In this course, the participants will be taught by experts in the area of project management, asset management and economic principles. In addition, the smart grid technological aspects such as Supervisory Control and Data Acquisition (SCADA) / Energy Management System (EMS) / Distribution Management System (DMS), Advanced Meter Infrastructure / Automatic Meter Reading (AMI/AMR), Substation Automation (SA) as well as technology for electrical testing, diagnostics and monitoring will be introduced and discussed. This is unlike the previous training where the focus was primarily on the power distribution engineering aspect. The course can assist utilities to guarantee power system reliability and quality for consumers and also assure that the benefits of all stakeholders are equally taken care of.

In this regard, the training on power distribution system engineering, management and technology will assist the GMS utilities to achieve robust, reliable and automated power distribution system networks through proper design and efficient management in order that the reliability and quality of power supply, as well as ensuring the benefits for all stakeholders, are assured. As a result, the success of the AEC establishment can be also guaranteed.

PURPOSES

The purposes of this program are to enhance the knowledge of managers/engineers who work for participating utilities in ASEAN countries on power distribution system modernization principles, techniques, and technologies; develop a knowledge network among participants to facilitate the best practices sharing on power distribution system modernization and nurture ASEAN Economic Community towards the end.

OBJECTIVES

To expose managers/engineers from the ASEAN countries to the principle as well as the recent development in techniques and technologies for modernization of power distribution system and encourage them to apply the knowledge and experiences gained from the training to modernizing their power distribution systems and countries.

(1) Power distribution system principle
(2) Smart power distribution grid
(3) Power distribution asset management
(4) Emerging technologies
(5) Workshops, discussion, presentations

QUALIFICATIONS

Candidates should:

(1) Be nominated by their Governments in accordance with procedure stipulated below;

(2) Have completed at least Bachelor Degree or equivalent academic background in electrical engineering or related field in power distribution system;

(3) Be managers / engineers with at least three (3) years working experience in electrical engineering, smart grid technology or management;

(4) Be under 45 years of age;

(5) Be proficient in spoken and written English;

(6) Not to be serving in any form of the military services.

(7) Gender Equality and Women's Empowerment: Women are encouraged to apply for the program. We are committed to promoting gender equality and women's empowerment, and providing equal opportunities for all applicants regardless of their sexual orientation or gender identity.

NUMBER OF PARTICIPANTS

The maximum number of participants is twenty five (25) with participants from overseas of about twenty (20) and participants from Thailand not exceeding five (5). (Subject to change)

DURATION AND VENUE

3rd – 21th February 2025 (exclusive of travelling dates) at BANGKOK and NAKHONRATCHASIMA

INVITED COUNTRIES

ASEAN member countries with Cambodia, Lao PDR, Myanmar, and Vietnam as the main target countries.

LANGUAGE

The course will be conducted in English.

INSTITUTIONS

The course will be jointly sponsored by Japan International Cooperation Agency (JICA), Thailand International Cooperation Agency (TICA), and in collaboration with Metropolitan Electricity Authority (MEA), Ministry of Interior, Thailand, as the course conductor.

PROCEDURES FOR APPLICATION

1. A government desiring to nominate an applicant(s) for the course should send a nomination letter and three (3) sets of Application Form for each nominee to the Royal Thai Government through the Royal Thai Embassy, or Consular Representative in their countries, and send one (1) copy directly to the following e-mail address:

Email: tctp.tica@gmail.com, siwalee.w@mfa.go.th

For more information please contact:

TICA

Director, Human Resources Development

Cooperation Division, Thailand

International Cooperation Agency (TICA),

Ministry of Foreign Affairs

Tel: (+66) 2 203 5000 ext. 43001, 43302
Fax: (+66) 2 143 8357
E-mail: tctp.tica@gmail.com,
siwalee.w@mfa.go.th

MEA

Mrs. Kesinee Chantawimol

Tel: (+66) 2 902 5200 ext. 4270

Email: kesinee.pa@mea.or.th

Ms. Montira Sansanashotirussamee

Tel: (+66) 2 902 5200 ext. 5287
Email: montira.sa@mea.or.th

The Fellowship Application Form can also be downloaded from Website: **https://tica-thaigov.mfa.go.th** (Fellowship/trilateral-short-term-training-courses/TCTP)

Deadline for application is 22nd November 2024

2. The Royal Thai Government will inform the applying Governments of the name(s) of the selected nominee(s) to participate in the course not later than thirty (30) days before the commencement of the course.

ALLOWANCE AND EXPENSES

The following allowance for expenses will be borne by the Royal Thai Government and the Government of Japan:

(1) An economy class round trip air ticket designated by TICA will be issued to the approved candidates. The approved candidates are requested to send the copy of his /her passport for arranging the air ticket. The ELECTRONIC AIR TICKET will be issued and sent to the participants in advance **via email** from TICA.

(2) A living allowance at the rate of Baht 600 per day (equivalent to approximately US$17) will be paid to each participant during stay in Thailand. This living allowance is for food and other personal daily expenses. However, each participant is requested to bring pocket money for a few day-to-day expenses prior to the allowance payment.

(3) In accordance with relevant Thai regulations, medical insurance will be provided for each participant who becomes ill during his/her stay in Thailand.

CERTIFICATE

Participants who successfully complete the courses will be awarded a certificate issued by TICA, JICA Thailand Office and MEA.

OTHER INFORMATION

1. Participants are required to arrive in Thailand on the date designated by TICA after its confirmation of acceptance. However, this date will be finally confirmed through the air tickets sent to the participants (see also Allowance and Expenses, Item 1)

2. All Thai participants as the hosting participants MUST stay in the same hotel as the overseas participants to deliver assistance to guest participants in terms of daily affairs, class works, and promoting Thai cultural activities and not to be distracted by their office work.

3. Participants should assume responsibility for other expenses incurred while travelling between the participants' home countries and Thailand.

4. Participants shall make their own arrangements for any private financial matters. This is not provided by TICA and JICA.

5. Upon arrival at Suvarnabhumi Airport, participants are asked to look for TICA sign at the AOT Limousine customer relation counters and proceed to it. Participants are required to show the Instruction of Fellowship Award at the counter so that arrangements for airport transfer to the reserved hotel will be made. Participants do not have to pay for the AOT limousine service charge since the cost will be paid directly to AOT by TICA. Participants are not recommended to take a public taxi to the hotel by themselves as the taxi fees cannot be refundable from TICA.

6. Participants are strictly required to meet 100 % attendance record of the course schedule.

7. Applications to change the training subject or to extend the training period will not be accepted.

8. Participants are requested not to bring any of their family members on this trip.

9. All participants are required to stay at the accommodation provided.

10. Further relevant information is available at the address specified in Procedures for Application, Item 1.

11. Prior to arrival in Thailand, all participants MUST first obtain the appropriate visas from the Royal Thai Embassy or Consular Representative in their countries and are requested to send a copy of their passports, including the name page, to TICA for the travel arrangement.

12. Participants are requested to confirm the flight details and date of arrival in Bangkok by signing the acceptance form, which will be sent to them when they are accepted to the course, and forwarding it to TICA at least 1 week before the course commencement.

13. Participants MUST prepare a two - page essay describing their academic background, job responsibilities, working experiences, applicant's expertise, expected benefit from course attendance and application of knowledge gained to their work. This information is required to indicate the applicants' qualifications for scholarship. (See ANNEX-I).

14. Participants are required to prepare their COUNTRY REPORTS, concerning **"power distribution system"** for a half hour presentation in class (see ANNEX-II).

15. Participants are required to write a short report on their application of the knowledge and experience and its impact on their work and make a presentation at the end of the course.

16. MEA, through TICA, will inform the participating organizations of the results of the training examination and participants report within six months after completion of the course.

17. Participants are required to write a report on their experiences from the course and send back to TICA within six months after completion of the course.

TENTATIVE PROGRAMME

1. Power distribution system principle
    a) Overview of power distribution system revolution
    b) Classic Planning and Criteria
    c) Power distribution system design
    d) Protection and Loss reduction

2. Smart Grid
    a) Smart Grid Overview and MEA Energy Landscape
    b) Smart Meter
    c) Smart Meter and Advanced Metering Infrastructure

3. Emerging Technology
    a) New Era of SCADA Technology
    b) DER Principle Technology (PV EV ESS) / Grid Requirement
    c) Modernization PDS and DERs High Penetrations
    d) IoT and Data Management Technique
    e) UG Substation Technology

4. Digitalization Transformation
    a) Distributed Energy Resource (DER) Management Platform Pilot Project
    b) Digitalization in Business Process

5. Workshops, discussion, and presentations

CURRICULUM OF
MODERNIZATION OF POWER DISTRIBUTION SYSTEM
IN ASEAN COUNTRIES
3rd – 21th February 2025

Date/Month/Year	MORNING (09.00 - 12.00)	AFTERNOON (13.00 - 16.00)
Arrival		
Day 1 (MON) 03/02/25 am: Lecture Class pm: Lecture Class/workshop	**Registration** **Course Orientation & Introduction and Pre-test.** ---------- **Overview of Power Distribution System revolution:** Revolution of Power Distribution System from the past to future, key driver, key component in PDS transition and CHANGE digitalize mindset management.	**Power Distribution System Principle: Classic Planning and Criteria and Loss reduction** Principle, planning and criteria of Power Distribution System design and loss reduction technique.
Day 2 (TUE) 04/02/25 am: Lecture Class/workshop pm: Lecture Class/workshop	**Smart Grid Overview and MEA Smart Metro Grid:** Introduction, Communication technology and Distribution automation technologies. MEA Smart Metro Grid and IT application for grid operation and management and experiences sharing.	**Distributed Energy Resource (DER) Management Platform Pilot Project:** MEA Energy Trading Platform/ Demand Response **Emerging Technology:** - Power System Operation with High Renewable Energy Penetration - Development of Grid-interconnection code in Japan
Day 3 (WED) 05/02/25 am: Lecture Class/workshop pm: Site Visit	**Emerging Technology:** **"Distribution Simulation and SCADA Systems" part 1** - Automatic Generation of Distribution Simulation Data Cases from Utility Databases - Integration of Data for the Next-Generation SCADA and Planning Systems	**Smart Meter and Advanced Metering Infrastructure:** Principle and main features on smart meter, data management, communication technology, interoperability and advanced metering technology. **Site Visit:** Smart meter/AMR **Site Visit:** BEMs Building Energy Management System

Date/Month/Year	MORNING (09.00 - 12.00)	AFTERNOON (13.00 - 16.00)
Day 4 (THU) 06/02/25 am: Lecture Class/workshop pm: Lecture Class/workshop	**Emerging Technology:** **"Distribution Simulation and SCADA Systems" part 2** - Development of a Power Flow Calculation Program for Distribution-and-Subtransmission-Integrated systems - Simulation Program for the Analysis of Electromagnetic Transients in Distribution Systems	**Emerging Technology:** - UG Substation Technology Concept, technology, key equipment, safety, sharing experience and lessons learned project reference in JAPAN. - Social innovation & co-creation activities of Smart Resilience Network to enhance society's carbon neutral resilience
Day 5 (FRI) 07/02/25 am: Ceremony & Workshop pm: Workshop	**Opening Ceremony** **Country Report Presentation:** Participants present about their country report (focus on grid modernization policy and pilot project implementation).	**Country Report Presentation:** **Workshop:** Discussion and experiences sharing**.**
Day 6 (SAT) 08/02/25	Cultural Activity	
Day 7 (SUN) 09/02/25	Free Day	
Day 8 (MON) 10/02/25 am: Site Visit pm: Lecture Class/workshop	**Registration** **Travel to Nakhonratchasima province** **Site Visit:** Wangnoi Power Plant (Green Power Plant)	**Power Distribution System Principle:** Classic Components Principle and classic components of Power Distribution System (Focus on UG System).
Day 9 (TUE) 11/02/25 am: Lecture Class/workshop pm: Site Visit	**Site Visit:** Lam Takong Dam	**Site Visit:** EGAT Learning Center, Lam Takong

Date/Month/Year	MORNING (09.00 - 12.00)	AFTERNOON (13.00 - 16.00)
Day 10 (WED) 12/02/25 am: Lecture Class/workshop pm: Lecture Class/workshop	**Project Management**: Project management framework- basic principles of project management including concepts from the initiating, planning, Executing, monitoring & controlling. And closing process. **Asset Management**: Principle, Asset management concept & principle. PAS 55 specification for the optimized management: condition & life assessment of electrical network for replacement.	**Workshop:** Workshop on project management.
Day 11 (THU) 13/02/25 am: Lecture Class/workshop pm: -	**Engineering Economics:** Introduction, Principle for economic analysis of engineering projects, time value of money concepts, present value, rate of return, cost-benefit analysis, cost estimation & alternative analysis. **Workshop:** Workshop on RE Economics.	Travel back to Bangkok
Day 12 (FRI) 14/02/25 am: Workshop pm: Workshop	**DER Principle Technology:** EV and PV **Modernization PDS and DERs:** Impact of EV and PV	**The experience of the MEA's GIS Project & implementation:** Introduction to MEA GIS and its implementation to MEA business
Day 13 (SAT) 15/02/25	Cultural Activity	
Day 14 (SUN) 16/02/25	Free Day	
Day 15 (MON) 17/02/25 am: Lecture Class/workshop pm: Lecture Class/workshop	**Automation technology:** Smart Substation Automation **Emerging Technology:** **Emerging Applications:** Principle, Case Studies and Demonstration in MEA Grid	**Emerging Technology:** **IoT and Data Management Technique and Cyber Security** Principle, concept on big data, data management, data analytics communication technology, principle IoT and application. Experiences sharing.

Date/Month/Year	MORNING (09.00 - 12.00)	AFTERNOON (13.00 - 16.00)
Day 16 (TUE) 18/02/25 am: Lecture Class/workshop/Site Visit pm: Site Visit	**Emerging Technology:** **Automation technology** A New Era of SCADA Technology **Site Visit:** SCADA/EMS/DMS **Site Visit:** SA-IEC 61850 **Site Visit:** EV and charging station	**Site Visit:** 230 kV UG Tunnel
Day 17 (WED) 19/02/25 am: Lecture Class/workshop pm: Site Visit	**Digitalization in Business Process**: Key change, apps and technology for customer services, demonstration and experiences sharing.	**Site Visit:** MEA Klong Toei District
Day 18 (THU) 20/02/25 am: workshop pm: workshop	**Workshop:** Group presentation	**Workshop:** Individual presentation **-Farewell Party-**
Day 19 (FRI) 21/02/25 am: Workshop pm: Ceremony	**Workshop:** Post-test & course evaluation	Certificate awarded & closing ceremony
Day 20 (SAT) 22/02/25	Departure	

Remark: This schedule is tentative and may be appropriately adjusted due to the time travelling during week 2 for lectures and site visits outside Bangkok.

ANNEX-I

ESSAY ON BACKGROUND AND INTENTION
OF
INDIVIDUAL APPLICANT
FOR TRAINING COURSE ON
"Modernization of Power Distribution System in ASEAN Countries"
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1. **Academic Background**

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2. **Job Responsibilities**

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3. **Job Experiences**

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4. **Applicant's Expertise**

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5. **Expected Benefit from Course Attendance**

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6. **Application of Knowledge Gained to Work**

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ANNEX-II

COUNTRY REPORT ON THE BASIC DATA
FOR
THE GROUP TRAINING COURSE ON
"Modernization of Power Distribution System in ASEAN Countries"
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1. Country _____

2. Name of Participant _____

3. Chart of the organization which the participant belongs to, the type of participant's current job (e.g. managing, training, instructing), and job description.

4. Information

    4.1 Brief general information

        a) Introduction to participant's country (location, population, map, natural resources, etc.)

        b) Government administration system

        c) Social and economic background

        d) Briefing on power development plan, if any

    4.2 Necessary related information useful for the training programme

        a) Current status and operational challenges of power distribution System in ASEAN Countries

<u>Note:</u> Participants are asked to prepare slides, video tape, CD, DVD, power point presentation, or other audio-visual aids to support the 30-minute country report presentation, and bring national popular song cassettes/CD, if possible.

ANNEX-III

APPLICANTS SUGGESTION LIST
FOR
THE TRAINING COURSE ON
"Modernization of Power Distribution System in ASEAN Countries"

Cambodia	Electricite du Cambodge, Combadia (EDC)
	Electricity Authority of Cambodia (EAC)
Lao PDR	Electricity du Laos (EDL)
Myanmar	Ministry of Electrical Power No. (2) (MOEP) - Department of Electric Power - Myanmar Electric Power Enterprise (MEPE) - Yangon City Electric Supply Board (YESB) - Electricity Supply Enterprise
Vietnam	Electricity of Vietnam (EVN)
	Ho Chi Minh City Power Corporation
	Hanoi Power Company
	Danang Power Company Limited
	Hai phong Power Company
	Central Power Company
	Northern Power Corporation
	Southern Power Corporations
Thailand	Electricity Generating Authority Agency (EGAT)
	Metropolitan Electricity Authority (MEA)
	Provincial Electricity Authority (PEA)