Report
on
The 9th Energy Management Action Network (EMAK) Workshop
(EMAK9)

"Toward Sustainability"

Dissemination of Showcase Energy Management System (EnMS)
and Best Practices in Energy Efficiency and Conservation (EE&C)

(Held on 21 November, 2018 at the São Paulo, Brazil)

February 2019

Ministry of Economy, Trade and Industry
The Energy Conservation Center, Japan

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List of Acronyms

APO :	Asian Productivity Organization
CEM :	Clean Energy Ministerial
CNI :	Brazilian National Confederation of Industry
CONPET :	Program for Rational Use of Petroleum Products
EC :	Energy Conservation
EE&C	Energy Efficiency and Conservation
ECCJ :	The Energy Conservation Center, Japan
EM :	Energy Management
EMAK :	Energy Management Action Network for Industrial Efficiency
EnMS :	Energy Management System
IPEEC :	International Partnership for Energy Efficiency Cooperation
MDIC :	Ministry of Industry, Foreign Trade and Services (Brazil)
METI :	Ministry of Economy, Trade and Industry (Japan)
MME :	Ministry of Mines and Energy (Brazil)
PBE :	Labeling Program
PROCEL :	Program for Conservation of Electricity Efficiency
Project :	Japan – Brazil Cooperation Project on Energy Conservation

Executive Summary

The Ministry of Economy, Trade and Industry of Japan (hereinafter referred to as "METI") and The Energy Conservation Center, Japan (hereinafter referred to as "ECCJ") successfully implemented the 9th workshop of the Energy Management Action Network (EMAK) (hereinafter referred to as "EMAK9") under the International Partnership for Energy Cooperation (IPEEC) on 21st November 2018 in São Paulo, Brazil, which was hosted by the Ministry of Industry, Foreign Trade and Services of Brazil ((hereinafter referred to as "MDIC").

The theme of the EMAK9 is "Sharing Energy Management Know How and Good Practices toward Sustainability". Seventy two (72) representatives of the public and private organizations from Brazil, Japan and Chile participated in the EMAK9 at the venue in São Paulo and over one hundred (100) persons shared the presentations and discussions by joining on-line internet broadcasting from Brazil and the 6 foreign countries.
The workshop provided participants with the opportunity to :

(1) Learn and share the showcases of energy management system (hereinafter referred to as "EnMS") based on ISO 50001 including experiences in establishment of well functioned EnMS established in industrial & commercial sectors.
(2) Share information about best practices in energy efficiency proven by having implemented energy conservation measures identified under the energy management system and the national policies including programs to promote EnMS and energy efficiency.
(3) Discuss and exchange opinions on the specific issues, requirements and proposals for the future EMAK program
(4) Build and expand networks among organizations through exchanges by the participants to work the EMAK program

The EMAK9 concluded its success by the following :

(1) EMAK9 disseminated best practiced in EnMS and energy efficient measures / technologies under EnMS among the participants.
(2) The event established and expanded the among the participated public and private organizations contributed to promoting EnMS hence energy efficiency and conservation (EE&C)
(3) Through the discussions, the conclusion of the EMAK9 also suggested and proposed the

future direction of the EMAK program as follows.

1) Development of programs to improve behavior and awareness under EnMS
2) Development and expansion of application of EnMS to enjoy larger impacts on energy efficiency

This report was prepared by ECCJ on behalf of METI to summarize and share the above outcomes with more parties and organizations concerned including persons interested in these outcomes.

This report, all the presentation materials and video will be available on the website of the IPEEC possible to access by everybody.

1. Introduction

The "Energy Management Action Network for Industrial Efficiency" (EMAK) aims to promote improvement of energy efficiency and energy savings particularly in the industrial sector through promoting energy management with developing the networks among policy makers and practitioners such as energy managers.

The EMAK was established in 2009 by Japan which has led its implementation with the 9 countries (Australia, Brazil, Canada, China, India, Indonesia, Mexico, Russia, Saudi Arabia and The United States of America).

The eight (8) workshops (*) were held before the EMAK9, in order to share and discuss the best practices in energy management and energy efficiency including policy issues related to energy management in each country and region. The EMAK also built and integrated the two groups' networks, namely one comprised of policy makers responsible for promoting best practice policies for energy management and the other consisted of the practitioners actually practicing energy management day to day and improving efficiency in the industry.

(*) Eight (8) workshops held to date

1st : Paris, France – January 26-27, 2010
2nd : Washington, USA – May 10, 2010
3rd : Guilin, China – November 15, 2011
4th : Tokyo, Japan – January 31, 2013
5th : Sydney, Australia – February 27, 2014
6th : New Delhi, India – February 25, 2015
7th : Moscow, Russia – November 19, 2015
8th : Jakarta, Indonesia – February 3, 2017

The EMAK9 was held in Brazil with the following significance.

(1) The Japan – Brazil cooperation project on energy conservation ("Project") resulted in creating the outcomes which are just appropriate to share under the EMAK
(2) Brazil is the leading country with the largest GDP in the Latin American and Caribbean region and in promoting ISO 50001 Energy Management System. No EMAK activity has implemented in this region. Therefore, it is possible to expect a large impact of dissemination.

The Japan – Brazil cooperation project on energy conservation (EC) had established in 2015 between METI and MDIC. ECCJ, entrusted by METI, implemented the project with the

Brazilian partners led by MDIC.
This project was completed in March 2018 and contributed both ① to establishing the basis of the demand management and demand response and ② to promoting energy efficiency with the following outcomes.

(1) Showcased EnMS based on ISO 50001 with best practices in energy efficiency established by the 4 Brazilian companies
(2) Useful energy management tools including the "Action Guide for Peak-cut and Saving Electricity" for the Brazilian industry
(3) Prepared the proposal on developing the legal framework on energy management
(4) Group consisted of the public and private organizations functional to promote energy efficiency and conservation

Based on these achievements and visions, METI and the Brazilian government through MDIC agreed to hold the EMAK9 in Brazil expecting maximized impact of the EMAK, because the both ministries confirmed that the outcomes of the cooperation would be very useful to share in the EMAK9.
ECCJ was entrusted by METI to implement the EMAK9 with the Brazilian hosting partner, namely MDIC.
Finally, the EMAK9 was held on Wednesday, 21 November 2018, at the São Paulo Office of the Confederação de Nacional Indústria (hereinafter referred to as "CNI") in São Paulo, Brazil. CNI which is one of the important ECCJ's partners kindly provided the conference room with very good facilities for the venue of the EMAK9.

As a conclusion, the EMAK9 was very successful as this workshop achieved its targets with the fruitful outcomes to direct the future EMAK.
The details are explained after this.

2. Plan of The 9th Energy Management Action Network Workshop (EMAK9)

The plan was drafted and finalized by METI and ECCJ, consulting with the Brazilian side through MDIC.

The plan of the 9th Energy Management Action Network Workshop (EMAK9) was developed and established on a basis of the following.

(1) Purpose and target of the EMAK
(2) Subjects covered and results confirmed in the previous 8 EMAK workshops.
(3) Outcomes suitable for EMAK newly established until FY 2018 through implementation of the cooperation projects by Japan
(4) Interests related to the EMAK of the government and private organizations in the host country, or Brazil
(5) Possible regional (Latin America) deployment with impact of outcomes of the EMAK9

2-1. Points of the Plan of EMAK9

Particularly concerning the Item (3) above, at first, based on the Japan – Brazil cooperation project on energy conservation (EC) aimed at establishing the basis of the demand management and the demand response, this "Project" established the following outcomes valuable to share under the EMAK program.

1) Energy Management System (EnMS) based on ISO 50001 which showcased by the cooperating Brazilian companies in the industrial sector
2) Best practices in energy conservation measures realized through having implemented +9improvements identified through activities to establish EnMS
3) Energy management tools including the "Action Guide for Peak-cut and Saving of Electricity" customized for the Brazilian industry which was developed as a tool
4) Proposal to develop the regulation on energy management under the existing Energy Conservation Law to promote establishment of EnMS in Brazilian companies.
5) Group and networks among the public and private organizations functional to promote energy conservation

Secondly, after the issuance of ISO 50001, more companies have been in process of establishing EnMS referring to ISO 50001. With regard to the Item (4) above, it is noted that Brazil is the country which jointly proposed to develop ISO 50001 with the United States of America.

As a result, since the issuance of ISO 50001 in 2011, many excellent cases of energy management and energy efficiency have been realized and some of them have been shared

through various national and international programs including the “CEM Energy Management Leadership Awards”.
Moreover, especially many Japanese companies have also developed and established excellent EnMS especially since the oil crises happened in the 1970’s, which resulted in the dramatic improvement in energy efficiency. Nowadays, these companies and suppliers jointly developed and realized the computerized energy management system such as the FEMS (Factory Energy Management System) and BEMS (Building Energy Management System) incorporated with control systems of various facilities using advanced energy efficient technologies including IoT (Internet of Things).

Therefore, with understanding that there exists very useful outcomes to share in the EMAK program, the basic plan of the EMAK9 was developed.
The details of the plan are described below.

2-2. Details of the Basic Plan
The plan was detailed as follows：
2-2-1. Objective of EMAK9
The plan of the EMAK9 established to achieve the following two specific objectives.

(1) To share and disseminate showcase EnMS and best practices in energy efficiency and conservation (EE&C)
(2) To build network of stakeholders to promote EE&C

As for the Item (1), the EMAK9 designed to provide showcases of EnMS and best practices in EE&C established in Brazil, Japan and the third countries.
The EnMS is the very important basis for sustainable improvement in energy efficiency based on systematic planning, implementation and reviewing. ISO 50001 Energy Management System issued in 2011 is a good reference for developing EnMS.
As for the Item (2), the EMAK9 was designed to expand the existing functional public – private network established in the Japan – Brazil Cooperation Project by linking with the other concerned organizations not only in Brazil but also in Japan and the other countries. This kind of network also could be a model for the EMAK.

2-2-2. Venue and Date of EMAK9
In Brazil, São Paulo was selected for the city to hold the EMAK9 because São Paulo is more convenient for participants to join the workshop since many companies are based in the State of São Paulo and the city is more accessible for the foreign guests.

In reality, as aforementioned, Brazil has established the very good group to promote EC through the Japan – Brazil cooperation project. This group includes CNI under which there are many major Brazilian companies as its members. CNI is also implementing some of the activities and programs for EC, so that CNI owns a very good facilities for conferences and workshops. Accordingly, this time, CNI kindly provided the conference room with excellent facilities in the CNI's São Paulo Office for the workshop venue.

Consulting with MDIC, Ministry of Mines and Energy (hereinafter referred to as "MME") and CNI, the date of EMAK9 was setup to be November 21st, 2018.

2-2-3. Participants

It was planned to invite one hundred (100) participants.

The invited participants were both from the public and private organizations in Brazil, Japan, and the third countries and also from the international organizations including the Secretariat of the IPEEC.

Moreover, in order for more persons interested in the EMAK9 to share presentations and discussions made in the workshop from remote locations outside the workshop venue, the plan also included to prepare the facility of on-line broadcasting through internet.

2-2-4. Key Specifics of Program

The basic program of the EMAK9 was designed as follows.

<u>Opening and Keynote</u>

The representatives from CNI, MDIC and IPEEC would provide addresses in the opening session.

In addition, it was planned for the representatives from METI and MME to provide keynotes. The keynotes was planned to direct the EMAK9 by providing the participants both with the purposes and information on the EMAK including the EMAK9 and with the points of inputs given through presentations for their better understanding to smooth introduction to the panel discussion.

<u>Session – 1　Showcases Established in Brazil</u>

This session was to share the showcases and EE&C best practices established in Brazil through the Japan – Brazil EC Cooperation, namely the outcomes of this project as follows.

- Showcases of EnMS and in best practices in EC established by the Brazilian companies
- Functional public – private network to promote EC including dissemination of the above

- Voluntary program to promote EE&C in industry related to dissemination of the above
- Policy and legal frame work to promote EE&C through establishing EnMS

Session – 2　Successful Cases in Japan and in Foreign Countries

This session was to share the advanced EnMS and best practices in EC measures including technologies for EE&C realized in Japan and the third countries.

The required presentation would include the following.

- Systematic energy management practice and implementation of EC measures with use of computerized energy management system (FEMS and BEMS etc.) with use of IoT
- Realized best practiced EC measures including effective EC technologies

Session – 3　Panel Discussion and Wrap-up

In order to figure out the future EMAK, this session is planned for all the presenters and participants to freely discuss and exchange opinion on how to promote EC by establishing EnMS based on the presentations made in Session – 1 and Session – 2.

Finally, the moderator would wrap up the discussions to conclude the future direction of the EMAK including possible cooperation with Japan in order to realize future actions consistent with the identified direction of EMAK.

Closing

The closing was expected that the representatives of METI, MME and MDIC would provide some evaluations of the outcomes of the EMAK9 and aspects to move forward the EMAK and cooperation among countries.

In addition, opportunities for the participants to freely exchange so as to build networks were prepared, namely the networking lunch and the reception

As per the above plan, the detailed program was developed by requiring the concerned organizations to present in the workshop.

Concerning the Session – 1, the presentations on the outcomes of the "Project" were prepared by the following organizations implemented the Japan – Brazil cooperation project.

- ECCJ (Japanese Project leader)
- MDIC (Brazilian leading counterpart) and MME (in charge of the policy related)
- CNI (in charge of leading the industrial program)
- Cooperating company (in charge of implementing the industrial program)
  ECCJ finally chose one (1) automobile manufacturing company among the four (4) companies implemented the industrial program under the "Project".

On the other hand, for the Session – 2, in order to choose companies and to require them to

present in the EMAK9, ECCJ surveyed published information of the excellent cases of EnMS and EE&C measures / technologies published by Japanese companies and companies in the third foreign countries.
As for the Japanese companies, ECCJ targeted the companies of which manufacturing and sales are also based in Brazil, including Japanese – Brazilian joint ventured companies.
Because we understand that these Japanese companies must have established their outcomes with better understanding of the local situations of the Latin America including Brazil through their businesses and projects.
Regarding the companies in the third countries, ECCJ targeted some companies of which cases were awarded for the "2018 CEM Energy Management Leadership Award".
Finally, three (3) Japanese companies and one (1) Chilean company accepted the ECCJ's request for presentation in the EMAK9.
These four companies from the industries to manufacture air conditioning system, electrical equipment, automobiles and pulp & paper.

The finalized program is shown in in the Paragraph 6-1 of the Article 6 "Appendix".

2-2-5. Key Points of Requirements for Presentations
In order for the companies and organizations presented in the EMAK9 to prepare the presentation materials basically consistent with the workshop purposes, ECCJ have prepared the basic guide including requirements for each presentation so that each company can prepare the presentation materials as per the guide with their better understanding of the required key points of the EMAK9

3. Implementation and Results of EMAK9

3.1 Overall Results

With seventy two (72) participants, the EMAK9 was smoothly implemented as per the program. The organizations of the participants are categorized in Table-1, comparing with the invitees.

Over 80% of the participants were from the private sector.

Table 3-1 Comparison of Participants with Invitees by Category of Organization

		Number of Persons	
Category of Organization		Invited	Actually Participated
International		3	0 (*)
Public	Government	13	12
	Governmental / State Owned Organization	4	2
Private	Industrial Association	6	14
	Enterprise	122	44
	Total	**148**	**72**

(*) IPEEC provided the video message instead of participating in the EMAK9.

The presentations were prepared based on the guide given by ECCJ beforehand. Therefore, it was possible to have provided the participants with inputs in accordance with the plan. In addition, the panel discussion was made also as per the plan based on the inputs through presentations, which resulted in reaching the conclusions to appropriately direct the future programs of the EMAK.

The details of the points of the presentations including speeches and discussions are explained below.

All the presentation materials in pdf files are published through the website of IPEEC and are available to browse and download them.

3.2 Summary of the Sessions

The details of the points of the actual speeches, presentations and discussions are explained as follows.

3-2-1. Opening and Keynote Address

Opening Remarks

At the opening of the workshop, remarks including welcome addresses were delivered by the representatives of the CNI, MDIC and the Secretariat of the IPEEC. They showed their expectations for the outcomes of the EMAK9 with explaining the purposes of the EMAK including EMAK9 or the Brazilian policy for EE&C. Speakers and the points of speeches are described below;

Mr. Rodrigo Sarmento Garcia, Industrial Policy Specialist, CNI

As the host organization which not only provided the venue and facility of the EMAK9 but also contributed to the Japan – Brazil EC Cooperation, he warmly welcome the participants and briefed about CNI.

(1) As a leader of promoting energy efficiency in CNI since 2005, he briefed the points of the programs for energy efficiency by CNI including the Japan – Brazil cooperation project in terms effects and achievements.
He was very happy to hold this event with the collaboration of the Brazilian government represented by the MDIC and MME.

(2) For CNI, energy efficient is very important mission to make the Brazilian industry great. This partnership between Japan and Brazil makes Brazilian industry more successful, which also brought Brazil the Japanese experiences achieved more productive industrial processes.

(3) CNI will contribute to encouraging the Brazilian industries to promote EE&C harmonizing with the Brazilian government policies.

Mr. Gustavo Saboia Fontenele e Silva, MDIC

On behalf of the Secretary of MDIC who was planned to make the speech, he provided the opening speech due to an abrupt absence of the Secretary caused by the urgent duty.

He provided the following points of speech as a representative of the host country.

He briefed the fruits of the Japan – Brazil EC cooperation and touched the background to hold the EMAK9 in Brazil, emphasizing the importance of EC including mitigation of global warming toward sustainable development, especially the following policy aspets.

(1) To promote the improvement of energy efficiency is more essential for Brazil because Brazil need to develop routes to ensure the energy safety. However, the reality of EE&C

in Brazil is not as developed, compared with other countries such as Japan

(2) To enhance training etc. to know the policy and measures in the other countries alike Japan in order to define the baseline of the actual situations of EE&C in Brazil toward directing the future improvement with deepening understanding of merits of EE&C

(3) To encourage economic growth, the action of energy efficiency is extremely powerful for bringing environmental gains, especially in the reduction of green gas emissions, and reduction of energy cost for the industrial activity.

Mr. Benoit Lebot, Executive Director, Secretariat, IPEEC

He provided the video message because of his unavailability to attend EMAK9.

He comprehensively briefed the IPEEC including outline and objectives of the EMAK with introduction of the past achievements, showing his expectation for great fruits of the EMAK9.

The points of his speech was as follows.

(1) EMAK is one of the oldest IPEEC Task Groups and EMAK focuses on best practices in energy management and it aims to establish a worldwide network of governments and private companies working on energy management.

(2) Energy efficiency is part of the knowledge economy and sharing good practices, sharing information is at the very heart of what needs to be done.

(3) IPEEC is looking forward to seeing the next steps and the path for action that you will sent and discuss during this workshop.

Keynote

According to the objectives of the EMAK9, the keynotes provided the participants with inputs and explanations on the specific purpose of the EMAK9 and the points of presentations and discussion to understand with the specific related information on the policies, regulations and programs in Japan and Brazil.

In the keynotes, it was emphasized the effectiveness and role of energy management systems (EnMS) in addressing energy efficiency with the importance of increasing uptake of EnMS by governments and other stakeholders.

The points of the individual keynotes are shown below.

(K-1) Purpose of EMAK 9 / Effectiveness of EM Experienced in Japan for EC Promotion by Mr. Masaomi Koyama, Director, METI, Japan

He provided the keynotes consisted of the two important points, namely, (1) the purposes and targets of the EMAK and EMAK9 and (2) the experiences and the actual progress with the future target of the EC policy including the EC Act in Japan with emphasis on effectiveness

of energy management. He explained the following.

(1) Basic role of IPEEC and the purposes of the EMAK for energy efficiency for sharing best practices of energy management and for establishing networks of policy makers and practitioners.

(2) The Japanese experiences to have actually improved energy efficiency by over 40% for these 40 years and the Japanese future target to further improve energy efficiency by 35% until 2030 introducing the point of the policy and measures for energy efficiency and conservation including the regulation on energy management which recently amended and enforced the "Benchmark System" and "Top runner program".

(3) Future plan to achieve the EE&C target and the required challenges to develop and introduce the advanced technologies such as EV with fuel cell and application of IoT etc.

(K-2) Importance of EM for EC Promotion in Brazil and Consideration of EM in EC Policy by Mr. Carlos Alexandre Prìncipe Pires , Director, MME, Brazil

He provided the Brazilian policy prioritized EE&C deeply related to the global challenge to mitigate the global warming emphasizing a large potentiality of EE&C in the industrial sector of which structure is complicated with a large variance in terms of the size of enterprises. Considering these points, he explained the Brazilian policy, legal framework and the national programs which would be important to promote EE&C also through disseminating EnMS.

Namely, at first, the energy situations and industrial structure, economic condition in Brazil, the existing policy, the legal framework and the key federal programs for EC are explained. Moreover, he introduced that Brazil is the first country of which the national congress approved the Paris Agreement so that Brazil established the NDC to reduce 37% of GHG emission by 2025.

Next, he introduces the Brazilian law enforced in 2001 and the key programs for EC such as PBE (Labeling Program), PROCEL (Program for Electricity Efficiency) and CONPET (Program for Rational Use of Petroleum Products).

The presentation also touches the following.

(1) The greatest potentiality for energy conservation is in the industrial sector.

(2) Importance of energy management not only in the small and midsized companies but also large companies.

(3) Improved the minimum energy efficiency standards especially for motors used in industry.

3-2-2. Session -1: Showcases Established in Brazil

Session – 1 introduced and discussed the outcomes related to EMAK of the Japan – Brazil EC cooperation project related to the EMAK through presentations as per the program.
This session was chaired by Mr. Gustavo Saboia Fontenele e Silva of MDIC, who briefly touched the achievement from Japan-Brazil EC cooperation project which ended successfully in March 2018, as an introduction of this session.

(S1-1) Outline and Summary of Outcomes of the "Japan – Brazil Cooperation Project" by Mr. Kazuhiko Yoshida, Technical Consulting Adviser, ECCJ

He overviewed the Japan – Brazil EC cooperation project ("Project") including the summary of the outcomes so that the followed presentations can be understandable for the participants.
The Project was established in 2015 and completed in March 2018 between the Japanese and Brazilian governments.
The Project aimed to establish the basis of the "Demand Management" and the "Demand Response" contributed especially to peak-cutting and saving of electricity which met the Brazilian needs. As a result, the following outcomes were established.

(1) Showcase Energy Management System (EnMS) based on ISO 50001 by the 4 Brazilian cooperating companies of the 4 sub-industries for dissemination. These companies are from the industries to manufacture automobiles, cement, aluminum product and zinc metal. They achieved improvements in the energy performance indicators by 2% to 36%.
(2) Proposals to introduce the regulation on energy management under the existing EC Law and to improve the support system for EC Promotion
(3) Comprehensive and simple "Action Guide" for Industry (general)

The demonstration activities by the 4 Brazilian companies proved the effectiveness of EnMS for EC promotion with the energy performance indicators improved by 5% to 34%. Finally, the project team developed the roadmap to disseminate / expand these outcomes in the future.

(S1-2) Energy management System and Energy Conservation Initiatives by Ms. Glaucia Sella Roveri dos Santos, Regional Energy Manager – General Motors South America, General Motors do Brasil

She presented the achievements and outcomes of the demonstration program implemented by this company under the Japan – Brazil EC cooperation project.
This presentation shows the historical commitment of General Motors in energy conservation at its processes, exploring how it was possible to reduce over 60% of energy to produce its vehicles within 15 years in South America region and the challenge to get even more efficient

for the next years in a very difficult environment for initiatives. It will show the alternatives to achieve its corporate objectives by sharing benchmark experiences through associations, enhancing its management system according ISO procedures, being part in partnerships like ECCJ and CNI and establishing "SMART" objectives for short, mid and long term to contribute to the vision of zero emissions in the environment, one of the pillars of the corporation.
She also mentioned the experiences and learning through the joint activities with ECCJ in the "Project".

(S1-3) Established Public and Private Network / B+P EE

by Mr. Gustavo Saboia Fontenele e Silva, General Coordinator, MDIC

The MDIC-METI cooperation ("Project") was implemented by ECCJ and was concluded in 2018.
The "Project" contributed to the process of elaborating the Alliance Program (CNI) and influenced the B+P EE (Brazil More Productive in Energy Efficiency). The Cooperation "Project" identified gaps in the coordination of efforts of different public entities that are involved in promoting energy efficiency, which led to the perception of the need to reform the system for promoting energy efficiency.
This was a significant achievement of the cooperation and strengthened the public and private network.
B+P EE is the program that targets the improvement of energy efficiency for industrial processes of SMEs. MDIC implemented the pilot project and realized a significant average reduction of energy consumption of about 26% with merits of 12,000 US$. This presentation of the showcases included the concept, methodology, performance indicators, industrial sectors covered, and results of the pilot project. He also informed about the ongoing implementation of the first stage of the scale-up of B+P EE.

(S1-4) Alliance Program : CNI's Initiatives to Promote Energy Efficiency in Large Industry

by Mr. Rodrigo Sarmento Garcia, Industrial Policy Specialist, CNI

He presented the role of CNI played for EE&C and the contribution of CNI to the Japan – Brazil EC cooperation project. He also introduced the outline and progress of the "Alliance Program" as the deliverable of this "Project".
Uncompetitive market structures have led to an excessive cost increase for the energy consumed by the industry in Brazil, especially for the energy-intensive business. In order to improve the competitiveness of the local industry, CNI and ABRACE have worked together to develop the Alliance Program. The methodology of the program includes activities of

energy optimization, identification of technology improvements and development of strategies for energy management, design for each industry. To participate, the industry will sign a Voluntary Agreement with CNI, valid for 24 months, formalizing the objective of improving the company energy efficiency in 5% within this period. The Program was designed to be implemented in 100 large industries until 2022.
Since August of 2018, 6 industries have agreed to the program in Brazil, the actions proposed by the methodology, if correctly implemented, could reduce an average of 8.6% in energy consumption.

(S1-5) PROCEL – National Program of Electrical Energy Efficiency (Collaborative Program)
by Mr. Carlos Alexandre Prìncipe Pires , Director, MME

He presented the policy and programs for EC by the Brazilian government including the PROCEL related to dissemination and development of the outcomes of the Japan – Brazil EC cooperation project.
"Industry" is the driver of complex economy also in Brazil which is aware of the necessity of providing and improving the conditions to adopt energy efficiency (EE) measures in the industry. The National Energy Conservation Program (PROCEL) was created in 1985 with the mission of promoting energy efficiency and contributing to improve quality of life and reduce environment impacts. Since then by 2017, PROCEL was able to save over 20million kwh.
Therefore, the Federal Government have recently implemented the following.

(1) Improved the minimum EE standards especially for electric motors, allowing to manufacture and sell only class IR3 motors.
(2) National Energy Conservation Program (PROCEL) implemented to promote EE for large companies through the "Program Alliança" and for SMEs through the "Programa Brasil Mais Productivo".
(3) Established the "Transformative Investment of Energy Efficiency in Industries (TI4E)" under NAMA.

The Federal Government have intention to achieve encouraging the use of ISO50001 with training, investments, energy audits through PROCEL.

3-2-3. Session -2: Successful Cased in Japan and in Foreign Countries

Session – 2 presented the excellent and advanced EnMS realized by the Japanese and Chilean companies which visualized the systematic energy management practices and implementation of EC measures including effective EC technologies under the EnMS with

use of computerized systems. The presentations showed the large effects of energy efficiency which proved the excellent performances of EnMS.
Each presentation included the outline of the company, which eases understanding of the business background including the company policy led to such achievements.
This session was chaired by Mr. Masaomi Koyama of METI and co-chaired by Mr. Yoshihiro Kawaguchi of ECCJ.

(S2-1) High Efficiency Products with Central Management as a Key Solution to Achieve Lowest Power Consumption of Air Conditioning System
by Mr. Leandro Lourenço, Product Manager, Daikin McQuay Air Conditioning Brasil Ltda.

He presented the specific successful cases achieved the high energy efficiency of the air conditioning system where they combined very efficient equipment developed by the company with the good energy management system. In order for Brazil to promote EE&C especially through improving air conditioning, he also suggested the necessity to improve the regulation for EC
In Brazil, energy consciousness awareness has increased and gradually the spread of high efficiency air conditioners is progressing. However, relying on only efficient air conditioning units is not enough to achieve lowest power consumption. In order to achieve the best performance, a management system is required, because the way the system is used has a big impact on the overall results. Daikin would like to take this opportunity to share how the synergy between equipment and management system resulted in huge savings in its own facility, as well as show how the air conditioning technology can contribute dramatically to reduce the domestic electric power consumption.

(S2-2) Energy Management System for Factory (FEMS) and Building (BEMS)
by Mr. Koji Miyashita, President, Mitsubishi Electric Do Brasil

He presented the excellent computerized energy management systems and advanced EC technologies which were developed, applied and commercialized by the company, including the actual experiences to have improved energy efficiency. The following are the point of his presentation.
- Factory automation and FEMS (Factory Energy Management System) is their typical expertise with various hardware like VFD inverter, PLC controller with SCADA software.
- The “Japan House São Paulo” is a good reference of BEMS (Building Energy Management System) in Brazil. Here, they apply the BEMS solution to monitor and control air conditioning system, lighting, ventilation of the facility. In the facility, this company’s VRF

air conditioning system possible to perform very high energy efficiency. Furthermore, the facility combined with the BEMS system proved to be effective for optimizing energy consumption further.

- Challenge toward the net zero energy building (ZEB) under the policy of the Japanese government

(S2-3) Energy Efficiency Continuous Improvement activity based on Toyota Way and Toyota Production System, and Contributions to Sustainable Society
by Mr. Dario Masahiko Yanagita, Department Chief, Toyota do Brasil

He presented the energy management system realized by the company which also contributed to realizing the global policy of the company named as the "Toyota Environment Challenge 2050". This policy aims at achieving the targets of both energy conservation and environmental protection. In addition to the advanced policy and technologies, he emphasized the importance human factors and the system of the grass root approach by employees including their capacity building.

This presentation shows the Toyota do Brasil's policy and the basic principles to guide activities as follows.

1) The Toyota's global policy which is consisted of the six challenges. He introduced specific key activities and achievements of the six challenges including the challenge for energy efficiency.
2) "Toyota Way" which is based on the systematic activities including "KAIZEN" also for the purpose of human resource development with use of effective guideline and tools including the QC tools
3) Toyota Production System set guideline of energy efficiency for continuous improvement activity in daily routine.

He also presented specific points of the other challenges including management of utilities and materials to reduce bad impacts on the environment also with his emphasis on the importance of human resources development resulted from strong interaction between management and teamwork of members.

The "Toyota Environment Challenge 2050" will contribute to realize the sustainable society.

(S2-4) CMPC (Energy Management System (EnMS) and Best Practices)
by Mr. Carlos Marín, Head of Energy Efficiency Unit, CMPC Pulp, Chile

He presented the best practice in energy management and EE&C measures established by the company which was one of the winners of the "2018 CEM Energy Management Leadership Awards". They showed their excellent EnMS applied to twenty eight factories etc.

operated in the Latin American region, which brought enormous energy saving hence benefits to the company.

He introduced CMPC as a leading pulp & paper company that produces wood products, pulp, paper, and packaging and tissue products in over 8 countries in Latin America. Energy comprises one of CMPC`s main costs and on a global scale the company consumes over 32.500 GWh of energy inputs.

CMPC aims to be more efficient and competitive in the participating markets, thus securing the long term sustainability of its processes. Hence, in 2013 started implementing an EnMS on its Pulp operations in Chile. Currently, the company is working with EnMS in 28 sites in 6 countries in Latin America.

CMPC Pulp EnMS has proven an effective management system; surpassing its initial 2020 goal in 2017, obtaining a 22% external energy use reduction, which led 40.2 million USD in energy savings and emissions reduction of 198.000 t CO2. Main tools to achieve this were energy efficiency projects, operational best practices and energy monitoring systems.

He introduced a case for the integrated pulp and paper manufacturing factories certified for ISO 50001 where they focused energy efficiency to reduce energy purchased from outside by maximizing usage of biomass energy including black liquor. In addition, based on the experiences of their global business, he pointed the importance of activities harmonized with the local culture and legal frame work.

3-2-4. Session -3: Panel Discussion

(Panelist : All Speakers - Representatives of Government and Private Sector)

All the presenters of the previous sessions were invited to participate in the panel discussion. Mr. Kazuhiko Yoshida of ECCJ moderated discussion and proceeded the panel discussion as follows.

(Step-1) Briefed by Mr. Yoshida on the points of inputs by presentations made in the Keynote, Session – 1 and Session – 2

(Step-2) Comments and suggestions by the panelists on the following two points

① Requirements and challenges to improve EnMS

② Possible solutions and way forward

(Step-3) Open discussion from the viewpoints shown below based on the Step-1 and Step-2

- Way forward of EMAK
- Future direction of possible cooperation with Japan

(Step-4) Summarization of the results of discussions by Mr. Yoshida

The following are the points of the panel discussion.

Step-1

At the beginning of the session, Mr. Kazuhiko Yoshida briefly reviewed the previous sessions including "Importance and Effectiveness of Energy Management in the Policy and Law to Promote EC", "Outline and Outcomes of the Japan – Brazil EC Cooperation Project", "EC Programs by MDIC / MME / CNI Tied or Harmonized with the Japan – Brazil EC Cooperation Project" and "Advanced EnMS and Best Practices in EC Measures and Technologies Controlled under EnMS Established by Japanese – Brazilian and Chilean Companies".

Step-2 and Step-3

The points identified by the panelists are as follows.

(1) Challenges and issues etc. to establish EnMS for EE&C promotion

① Large variance of energy efficiency levels including competent managers and engineers of companies compared with the advancing companies

② Requirements to establish national targets and EC measures including regulation by the government to promote EE&C through establishing EnMS and disseminating energy efficient equipment and technologies

③ Difference of country conditions to develop the regulative framework on EC based on the successful national cases including the Japanese

④ Policy of many companies to prioritize production rather than EE&C

⑤ Tough efforts to achieve the group or holding company's targets including environmental targets from EC actions by integrating actions for EE&C with understanding and cooperation of the other companies under the same enterprise group or enterprises allied in their business

⑥ Lack of local capacity of consultation for EnMS and EE&C and of financing alike "green finance"

⑦ Insufficient mindset and awareness to change behaviors of stakeholders and people to take actions for EE&C, including insufficient knowledge on energy and energy efficiency

⑧ Cheap energy price particularly for people (residential)

Many panelists including some participants pointed the seriousness of the issues on behavior, mindset and awareness shown in the item⑦.

(2) Possible solution and way forward

Based on the identification of challenges and issues made by the panelists, considering

the immediate issue, discussions were made and the results clarified the following possible solutions and directions of the EMAK.

① Confirmed effectiveness by establishment of and/or improvement in EnMS
② Prioritized actions to change behavior for EE&C promotion by improving mindset and awareness
③ Enhancement in education and training as the important component of EnMS
④ Improvement in the government policy and/or national program
⑤ Provision of useful information with merits of EE&C to motivate stakeholders
⑥ Consideration to include the above items in the national program such as PROCEL
⑦ Development of supporting infrastructure to assist (small and medium sized) companies in consultation, training and finance to promote EE&C

The moderator (Mr. Yoshida) also provided the panelists with his comments and opinions on the comments and suggestions.

Step-4

The moderator (Mr. Yoshida) summarized and wrapped up the points of the panel discussion, as pointed above.

Based on the summary, he also provided his opinion and suggestions on the way forward of the EMAK and possible cooperation by Japan to conclude the panel discussion.

Suggestion by the moderator

Enhance EnMS to contribute not only to EE&C but also to achieving SDGs related energy toward sustainable improvements

Realize much larger impacts by improving the quality of EnMS and by expanding EnMS for supply chain and/or business alliance

Identify and enhance components of EnMS such as the company policy and education / training to change behavior by improving mindset and awareness

Based on the above summary and wrap-up, the way forward and the conclusion are described in Article 4 and Article 5.

3-2-5. Closing and Reception

Following the panel discussion, Mr. Koyama, Mr. Carlos Alexandre Prìncipe Pires and Mr. Gustavo Saboia Fontenele e Silva provided the closing remarks for the workshop. They shared their evaluation of the EMAK9 namely success with fruitful results of the workshop

with the participants and thanked all the participants particularly presenters for their contributions.
They also spoke of the inter-culture exchange between Japan and Brazil toward the future referring a word that express one's gratitude in Japanese and Portuguese.

Following the closing remarks, workshop participants attended the network reception which was setup to provide the participants with an opportunity for developing and/or expanding their networks and for exchanging their perspectives across governments, industrial associations, enterprises in the industrial sector, financial institutions, NGOs and researchers. These relationships and networks are expected useful for their jobs and businesses.

3-3. Networking Opportunity (Networking Lunch and Reception)

For the purpose of easing exchange for the participants to establish or expand their networks, we set up lunch and reception. The lunch was prepared for free sitting with interested persons and reception was prepared for the participant to freely walk around in the room.
During the lunch, ECCJ also showed a video which recorded the actual activities and outcomes of the EC project related to the theme of the EMAK9 implemented by ECCJ.
The briefed points of the project and video are explained in the appendix 6-4.

3-4. Evaluation of EMAK9

The actual performance and impacts of the EMAK9 was evaluated by the participants by asking them to reply the questionnaire consisted of the 5 items, namely (1) usefulness of inputs by the presentations, (2) specific information useful for their activities to establish EnMS and to promote EC, (3) results of networking, (4) overall performance of the workshop and (5) facility and operation. In addition, the questionnaire asked the participants any opinion and suggestions to improve the future program of the EMAK. The questionnaire is a good procedure to objectively evaluate the results.

As a conclusion, it could be conclude that the evaluation by us is almost same as the evaluation by the participants through the questionnaire, which proves the real success of the EMAK9.

Forty two (42) participants replied to the questionnaire.

Next, the results of evaluation are analyzed and explained.

Profile of Participants

The workshop was attended by seventy two participants from Brazil, Japan and Chile and over one hundred audiences accessed from the seven countries shown in Figure 2 through live streaming.

The profile of the participants are shown in Figure-1. It is featured that majority of the participants is from the private sector mainly from Brazil and Japan. This fact would signify the following of the private sector.

(1) Eagerness of companies and industrial associations to promote EC by establishing EnMS
(2) Expansion to business to realize better energy efficiency
(3) Possible exchange and consultation with the policy makers to find opportunities or programs to participate for promoting EC

In addition, as shown in Figure-2, many persons were interested to share the inputs through presentations with discussions. They accessed to the on-line broadcasting not only from the outside the venue in Brazil but also from the 6 foreign countries regardless of time differences. This fact proves both the effectiveness of the well prepared internet broadcasting to increase the impact of EMAK9 and the facts that the goal with agenda is well understood and interested in by much more persons in the world.

The profile of the participants who replied to the questionnaire is shown in Figure 1. 67% of them belonged to the “Private Corporate”.

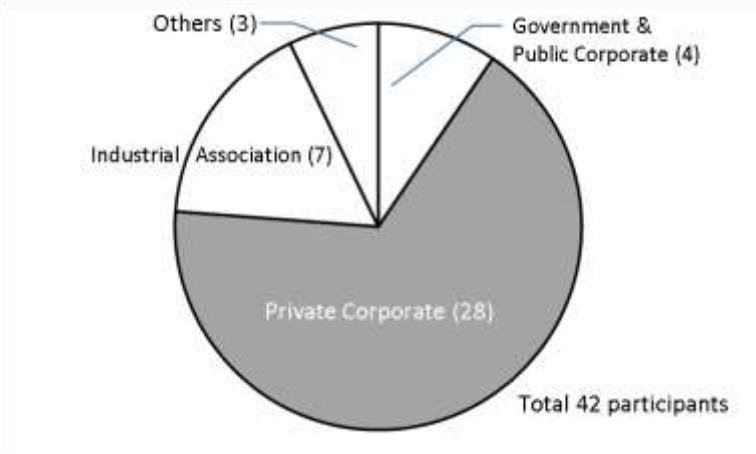

Figure 1. Organization profile of participants evaluate the workshop.

Figure 2. Location of audiences of EMAK 9 through live streaming

Evaluation of Inputs

The results evaluated that 88% of the 42 participants acknowledged the EMAK9 to be useful. The analysis of useful information provided in the workshop to establish energy management system and to promote EE&C is shown in Figure 3. Information predominantly selected are "Excellent Cases of Energy Management Practices", "Policy / Support System (Government)", "Showcase Energy Management System (EnMS)" and "Public and Private Programs to Promote EC". Support system or promotion programs for EC and specific energy management practices are recognized as useful.

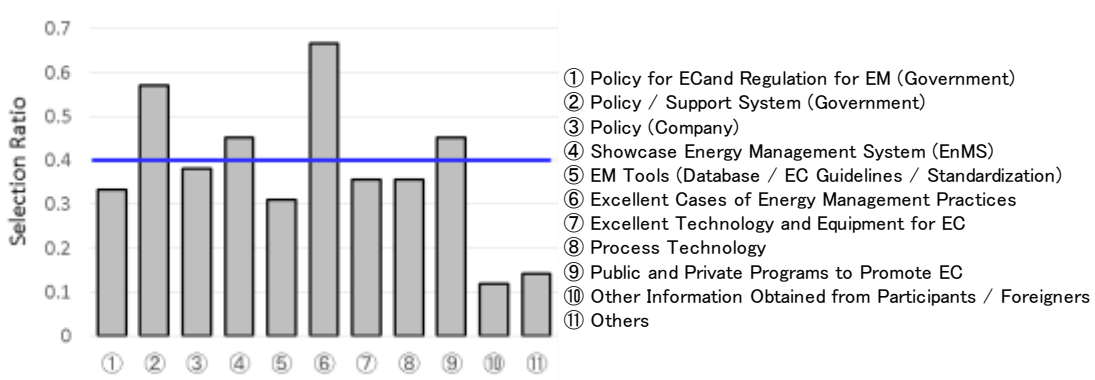

Figure 3.

The further analysis in terms of interested items by category of participants is shown in Figure 4.

The analysis clarified useful information shared with the government officials as follows.

- Information from government (① and ②)
- Information of public and private program (⑨)

In addition, the following information is useful to share with managers and practioners from the private organizations.

- Policy for energy management and EC (③, ④ and ⑥)
- Concrete energy management practices and EC technologies.

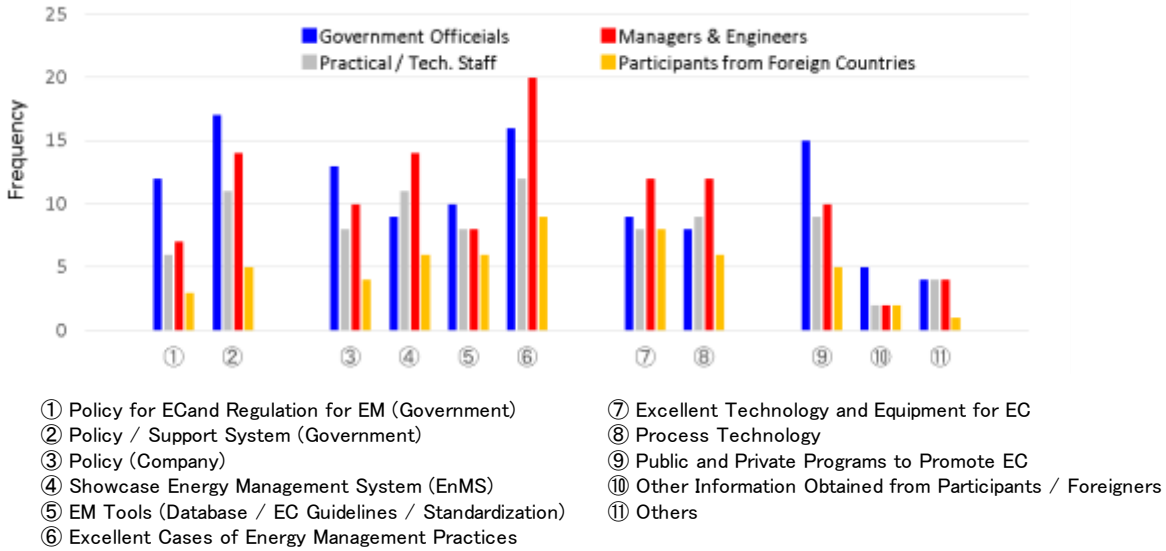

Figure 4.

Evaluation of Networking Opportunity

The analysis of the results on the "Networking Opportunity" to build a networks is shown in Figure 5. More than half of participants considered the EMAK9 facilitated building networks including information exchange with "Government Officials" and "Managers & Engineers of Private Organizations".

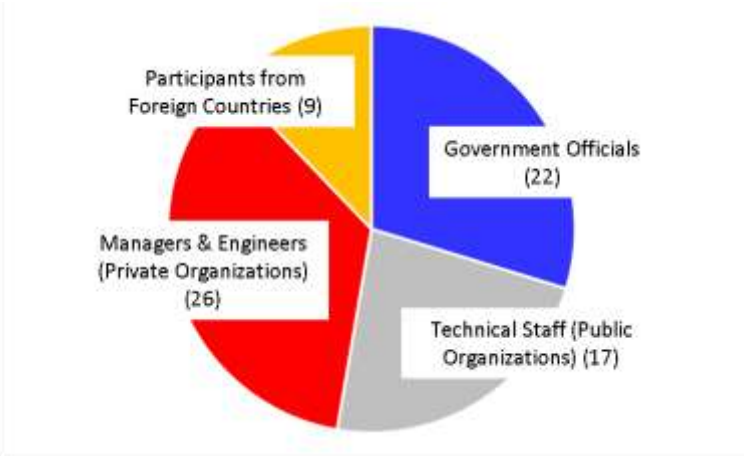

Figure 5.

Overall Evaluation

88% of the participants evaluated the EMAK9 to be "Very Useful" and "Useful" as a whole.

Performance of Facility and Operation

98% of the participants evaluated the facility and operation of the EMAK9 to be "Excellent" and "Good".

Some participants kindly provided suggestions and recommendations to improve for the future workshop.

4. Way Forward – Recommendations

The summary and wrap –up including the "Way Forward" was made by the moderator (Mr. Yoshida) of the Session – 3 (Panel Discussion.) Please refer to the slides used for explanation shown in the Article 6 "Appendix".

In the workshop, the participants shared the following viewpoints identified by presentations and panel discussions.

(1) Effectiveness of developed showcase EnMS based on ISO50001to enjoy much more benefits of EE&C

(2) Issues on improving behaviour, mindset and awareness of stakeholders including financiers and small – medium sized enterprises

(3) Requirements for establishing regulative framework to enhance EE&C

Based on the identification shown above and discussion made in the panel discussion, the way forward of EMAK would be proposed as follows in terms of the next actions and the future network in accordance with the key components of EMAK.

Next Action

- Enhance creation and dissemination of showcased EnMS and best practices in energy efficiency
- Standardize and upgrade EnMS / expand EnMS to supply chains beyond EnMSs for single companies
- Identify and enhance key elements of EnMS to deal with the issue on changes in behaviour with mindset and improvement in awareness which were raised in the workshop
- Develop platform, program and procedure with tools to share best practices in EnMS and EE&C under EMAK

Future Network

- Expand and/or create public and private networks for cooperation to realize disseminated outcomes in each country
- Connect national public – private networks in each region

In addition, some participants pointed out that it is important to actually take the next actions after the EMAK9. Otherwise, there would be no opportunity to share the above developments hence neither momentum nor motivation for the stakeholders to continue the above challenges. Specifically, they suggested to continue at least setting up assemblies alike the EMAK workshop to share new best practices including experiences of the continued

activities and discuss future action.

5. Conclusion

The EMAK9 was successfully completed with 72 participants who gathered the workshop venue and over 100 audiences accessed to the internet broadcasting outside the venue. Namely, the EMAK9 achieved its objective hence the objectives of EMAK with the outcomes as follows.

(1) Shared and disseminated both the advanced and well functioned EnMS and the best practices in EE&C measures / technologies which were established and showcased by the Brazilian, Japanese and Chilean companies.
(2) Provided the participants with the opportunities and activities to expand and/or newly build personal and organizational networks among participants for future cooperation or their business.
(3) Identified the future direction of the EMAK program.

Based on the results and outcomes of the EMAK9, EMAK will build on its existing work for the FY2019 to:

- Host workshops to facilitate exchange on EnMS best practice among policy makers and energy managers. Participating countries will explore potential themes/topics for future workshops, which could focus on a specific region or geographic area.
- Take efforts to publicise the Action Guide on Electricity Peak Cuts and Savings for regional and global use among EMAK members and to broader audiences. This Action Guide helps EMAK members and other interested stakeholders partake on electricity saving schemes with a special focus on businesses and households.
- Continue identifying options (tools and best practices) available for implementing EnMS to overcome energy efficiency barriers, both through workshops and by sharing workshop outcomes and reports.

- Encourage greater private sector involvement in EMAK activities, in addition to enhancing cooperation and partnerships with other IPEEC Task Groups and international organisations.

6. Appendix

6-1. Workshop agenda

Time	Agenda
08:30-09:00	**Reception**
09:05-10:15	**Opening and Keynote Address**
09:05-09:15	Opening Remarks by CNI (Mr. Rodrigo Sarmento Garcia, Industrial Policy Specialist, CNI)
09:15-09:25	Welcome and Opening Remarks (Mr. Gustavo Saboia Fontenele e Silva, General Coordinator, MDIC, Brazil)
09:25-09:35	Opening Remarks (Mr. Benoit Lebot, Executive Director, Secretariat, IPEEC)
09:35-09:50	K-1 Keynote – 1 (Mr. Masaomi Koyama, Director, METI, Japan) Purpose of EMAK 9 / Effectiveness of EM Experienced in Japan for EC Promotion
09:50-10:05	K-2 Keynote – 2 (Mr. Carlos Alexandre Prìncipe Pires , Director, MME, Brazil) Importance of EM for EC Promotion in Brazil and Consideration of EM in EC Policy
10:05-10:15	Photo Session
10:15-10:35	**Networking Coffee Break**
10:35-12:30	**Session – 1 : Showcases Established in Brazil** **Showcases of Best Practices in Energy Management System (EnMS) and in Energy Conservation (EC) to Disseminate** **(Chaired by Mr. Gustavo Saboia Fontenele e Silva, MDIC)**
10:35-10:55	S1-1 Outline and Summary of Outcomes of the “Japan – Brazil Cooperation Project” (Mr. Kazuhiko Yoshida, Technical Consulting Adviser, ECCJ)
10:55-11:20	S1-2 Energy Management System and Energy Conservation Initiatives – General Motors Experience and Commitment – Road to 2050 (Ms. Glaucia Sella Roveri dos Santos, Regional Energy Manager – General Motors South America, General Motors do Brasil)
11:20-11:35	S1-3 Established Public and Private Network / B+P EE (Mr. Gustavo Saboia Fontenele e Silva, General Coordinator, MDIC)
11:35-12:05	S1-4 CNI’s Initiatives to Promote EC in Industry including Voluntary Program (Alliance Program) (Mr. Rodrigo Sarmento Garcia, Industrial Policy Specialist, CNI)
12:05-12:20	S1-5 Collaborative EC Program : PROCEL Industry (Mr. Carlos Alexandre Prìncipe Pires , Director, MME)
12:20-12:35	Q&A
12:35-14:00	**Networking Lunch**

14:00-15:20	**Session – 2 : Successful Cases in Japan and in Foreign Countries** **Advanced EnMS : Systematic Energy Management Practice and Implementation of EC Measures including Effective EC Technologies** **(Chaired by Mr. Masaomi Koyama, METI / Co-chaired by Mr. Yoshihiro Kawaguchi, ECCJ)**
14:00-14:20	S2-1 High Efficiency Products with Central Management as a Key Solution to Achieve Lowest Power Consumption of Air Conditioning System (Mr. Leandro Moraes Lourenço, Product Engineering Manager, DAIKIN McQuay AR CONDICIONADO BRASIL LTDA.)
14:20-14:40	S2-2 Energy Management System for Factory (FEMS) and Building (BEMS) (Mr. Koji Miyashita, President, MITSUBISHI ELECTRIC DO BRASIL)
14:40-15:00	S2-3 Energy Efficiency Continuous Improvement activity based on Toyota Way and Toyota Production System, and Contributions to Sustainable Society (Mr. Dário Masahiko Yanagita, Department Chief, TOYOTA DO BRASIL LTDA.)
15:00-15:20	S2-4 CMPC Energy Management System (EnMS) and Best Practices (Mr. Carlos José Ignacio Marin de la Fuente, Head of Energy Efficiency Unit, CMPC Pulp, Chile)
15:20-15:35	Q&A
15:35-15:50	**Networking Coffee Break**
15:50-16:50	**Session – 3 : Panel Discussion and Wrap-up (Speakers / Representatives)** **Direction of Cooperation with Japan to Promote EC by Establishing EnMS** **(Chaired by Mr. Kazuhiko Yoshida, ECCJ)**
15:50-16:45	Panel Discussion (Speakers and Representatives of Government / Private Sector) Agenda-1 : Requirements Agenda-2 : Challenges Agenda-3 : Areas and Subjects for Next Step
16:45-17:00	Wrap-up (Chairperson) Summary and Way Forward – Direction of Possible Cooperation with Japan
17:00-17:15	**Closing**
17:00-17:05	Closing Remarks (Mr. Masaomi Koyama, Director, METI, Japan)
17:05-17:10	Closing Remarks (Mr. Carlos Alexandre Prìncipe Pires , Director, MME, Brazil)
17:10-17:15	Closing Remarks (Mr. Gustavo Saboia Fontenele e Silva, General Coordinator, MDIC, Brazil)
	END of Workshop
18:00-19:30	**Reception**
	Opening Free Exchanging Opportunity Closing
	END

6-2. List of Presentation Materials

No.	Title	Author
K-1	Purpose of EMAK 9 / Effectiveness of EM Experienced in Japan for EC Promotion	Mr. Masaomi Koyama (METI)
K-2	Importance of EM for EC Promotion in Brazil and Consideration of EM in EC Policy	Mr. Carlos Alexandre Prìncipe Pires (MME)
S1-1	Outline and Summary of Outcomes of the "Japan – Brazil Cooperation Project"	Mr. Kazuhiko Yoshida (ECCJ)
S1-2	Energy Management System and Energy Conservation Initiatives – General Motors	Ms. Glaucia Sella Roveri dos Santo (General Motors do Brasil)
S1-3	Established Public and Private Network / B+P EE	Mr. Gustavo Saboia Fontenele e Silva (MDIC)
S1-4	Alliance Program : CNI's Initiatives to Promote Energy Efficiency in Large Industry (Voluntary Program)	Mr. Rodrigo Sarmento Garcia (CNI)
S1-5	PROCEL : National Program of Electrical Energy Efficiency (Collaborative EC Program)	Mr. Carlos Alexandre Prìncipe Pires (MME)
S2-1	High Efficiency Products with Central Management as a Key Solution to Achieve Lowest Power Consumption of Air Conditioning System	Mr. Leandro Moraes Lourenço (Daikin McQuay Ar Conditionado Brasil)
S2-2	Energy Management System for Factory (FEMS) and Building (BEMS)	Mr. Koji Miyashita (Mitsubishi Electric do Brasil)
S2-3	Energy Efficiency Continuous Improvement activity based on Toyota Way and Toyota Production System, and Contributions to Sustainable Society	Mr. Dário Masahiko Yanagita (Toyota do Brasil)
S2-4	CMPC Energy Management System (EnMS) and Best Practices	Mr. Carlos José Ignacio Marin de la Fuente (CMPC Pulp)
PD-1	Panel Discussion : Summary and Wrap-up	Mr. Kazuhiko Yoshida (ECCJ)

6-3. Album of Snapshots

Reception & Workshop Venue



Opening & Keynote Session






Participants including Assembly Photo of Speakers with Guests






Presentation – Presenters

Session – 1





Session – 2




Discussion : Session – 1 and Session – 2






Session – 3




Networking








6-4. Brief Explanation of Video Shown during Lunch

APO – ECCJ EC Project : Demonstration Program in Sri Lanka

[Name of The Project]
Project on Energy Conservation for Asian Countries
- Establishment and Dissemination of Training of Trainers (TOT) -

[Outline and Purpose of The Project]

The project was established and funded by **Asian Productivity Organization (hereinafter referred to as "APO")** for the purpose of promoting energy conservation in the member countries. APO has implemented this energy conservation project (hereinafter referred to as "Project") for the 5 countries (*) among 20 member countries in the Asian region.

The Energy Conservation Center, Japan (hereinafter referred to as "ECCJ") supported APO as a technical leader in implementing the Project. ECCJ provided APO with technical supports from the planning up to completion of the "Project".

Specifically, the Project aims to improve the capability of key staffs of National Productivity Organizations and leading practitioners from the industrial organizations concerned on energy management and energy conservation technologies required for the promotion of energy conservation. Namely, this is the project to have trained the personnel who became trainers in the 5 relevant countries.

Namely, the Project is on Training of Trainers (hereinafter, referred to as "TOT"). The period of the Project was almost 3 years from FY 2015 to early FY 2018.

(*) Target 5 countries: Bangladesh, Mongolia, Nepal, Pakistan and Sri Lanka

The "Project" was planned and implemented as follows.

(1) Established the basic plan of the "Project" including Terms of Reference (TOR) of the future trainers based on survey conducted in the 5 target countries.
(2) Established the curriculum and textbooks as per the TOR
(3) Conducted TOTs in Japan and the target countries
(4) Planned and implemented the **"Demonstration Program"** in the 5 target countries to prove knowledge obtained by TOTs
   - Demonstration activities by the cooperating factories (9 factories from 7 industries)
   - Summarized / evaluated results and outcomes of the demonstration activities
   - Established procedures and systems to disseminate in each country
   - Held the "Conference of Dissemination" in each country to kick-off dissemination
(5) Implemented the "Final Workshop" in Japan both to evaluate / conclude the "Project" and to develop the plan of future activities to promote EC in each country

The video shows the activities and achievements established in the "Demonstration Program" implemented in Sri Lanka, especially activities by the national newspaper company (Wijeya Newspapers Ltd.) where they print various types of newspapers etc. They improved energy intensity by over 30% in a short term and 6% in a long term (average for 18 months)
The local team was led by the National Productivity Secretariat (NPS). Its members are from this company and NPS.

ECCJ Team (Worked for the "Project" activities from Items (1) through (7))
(Leader) Mr. Kazuhiko YOSHIDA (Energy Management and EC Technology)
(Experts) 3 experts for thermal and electrical energy efficiency