20th APEC Energy Statistics Workshop (EWG 02 2022S): APEC-IEA Joint Training Workshop on End-use Energy Consumption Data and Energy Efficiency Indicators (Part 2) Virtual Workshop, 15-17 November 2022 Tokyo, Japan (Host)

Summary proceedings

The ***20th APEC Energy Statistics Workshop-*** APEC-IEA Joint Training Workshop on End-use Energy Consumption Data and Energy Efficiency Indicators (Part 2) was held online on 15-17 November 2022, hosted by Japan with the generous financial support of Japan's Ministry of the Economy, Trade and Industry (METI). The workshop is a 3-day event jointly organised by the Energy Statistics and Training Office (ESTO) of the Asia Pacific Energy Research Centre (APERC) and the International Energy Agency (IEA).

There was a total of **59** participants from **15 APEC member economies and other sub-fora/organizations**, namely: Australia; Canada; People's Republic of China; Hong Kong, China; Indonesia; Japan; Korea; Malaysia; Mexico; Papua New Guinea; the Philippines; Chinese Taipei; Thailand; United States; and Viet Nam; APERC, experts from IEA and the Chair of the Experts Group on Energy Efficiency and Conservation (EGEEC). Dr. Alenka Kinderman Lončarević, the consultant contracted by APERC and Dr. Mafalda Coelho da Silva, independent consultant of IEA were also in attendance to serve as experts and speakers of the workshop. The participants from Canada; Indonesia and Mexico and additional participants from the USA were invited by IEA from its list of members and associates.

The summary proceedings of the 3-day virtual workshop are as follows:

Day 1— 15 November 2022

Session 1: Opening session

The Opening session was moderated by **Mr. Edito Barcelona, Senior Research Fellow and Head of ESTO/APERC.** The session included opening speeches both from Japan and IEA sides.

The workshop commenced with Dr. Kazutomo Irie, APERC President's *Opening Remarks***.** Dr. Irie thanked the participants in the workshop despite the huge time differences, especially from North America and Oceania. He likewise extended his appreciation to IEA colleagues and the project consultant on energy efficiency indicators. He mentioned that past training and workshops that were held online were all successful and wished the 20th APEC Energy workshop will be a success again. He looked forward to conducting the workshop physically next time.

Ms. Reiko Eda, **Director for Natural Resources and Energy Research, International Affairs Division, METI** delivered the *Welcome Remarks*. She likewise thanked the participants, IEA, the speakers and experts of the workshop. She expressed her regret that the workshop cannot be held physically due to the current situation. She highlighted the importance of the workshop in order to achieve balanced energy transition, taking into account sustainable economic growth, climate change measures, and energy security. She also wished that the workshop be held physically next time.

On IEA's side, **Dr. Nick Johnstone**, **IEA's Chief Statistician** delivered his *Opening Remarks*. His remarks highlighted the strong collaboration of IEA and APERC, including Part 1 of the workshop held last year and he looks forward to further collaboration in the future.

His remarks opened by reminding everyone that energy efficiency is the first fuel and energy efficiency improvement will drive more than 40% of the reduction of energy-related greenhouse gas emissions over the next 20 years. This is a tall order from the world ministers and leaders, challenging but realising these have corresponding benefits such as supporting jobs and growth. He also mentioned the IEA World Energy Outlook where the state policy scenario shows a 2% improvement in energy intensity. This ambition will be increased thanks to the pledges of the countries that will ensure a 3% improvement on energy intensity. He mentioned the need to move quickly to avoid missing the goals. He likewise reiterated IEA members' obligation in realising these goals. He mentioned as well that the IEA energy efficiency data collection was implemented back in time to raise awareness and create a homogeneous and comparable database for relevant analyses. Detailed end-uses and efficiency data allow detailed analyses such the decomposition which is included in the dataset published by the IEA. Decomposition allows to disentangle the different effects in the final energy consumption including efficiency. He also mentioned that we need to keep working to ensure timeliness and the quality of the data.

Session 1a: A review – The need to enhance data for energy efficiency indicators

The first part of **Session 1** was moderated by **Dr. Roberta Quadrelli, Head of Data and Indicators for Energy Transitions** at International Energy Agency (IEA). The objective of this session was to provide a review of the importance of energy efficiency indicators from the perspective of the Asia Pacific Energy Research Centre (APERC), IEA and APEC Expert Group on EEC.

The session began with a presentation from **Mr. Nobuhiro Sawamura, Senior Researcher at Energy Statistics and Training Office (ESTO), APERC**. He briefly shared the main highlights of the previous 19th APEC Workshop on Energy Statistics that was held online from 28 to 30 June 2021. He explained that the objective of the workshop was to get a better understanding of the importance of energy efficiency indicators in energy policy making through sharing of experiences on end-use energy consumption data collection and estimation.

Mr. Sawamura's presentation is attached as **Annex A.**

Ms. **Elvira Gelindon, Research Fellow of ESTO/APERC** presented the trends in energy consumption and energy efficiency indicators in APEC. She mentioned that while APEC's final energy consumption grew by 1.4% annually between 1990 and 2020, the consumption declined by 3.9% between 2019 and 2020 which was attributable to the decrease in economic activities brought about by the COVID-19 pandemic

lockdowns. In terms of energy intensity, final energy intensity has been declining by 45.5% between 1990 and 2020, while similar trend was also observed for primary energy intensity albeit at a lower magnitude of 37.6% between the same period. Energy consumption can also be analysed through decomposition analysis, which focuses on three main factors such as activity effect, structure effect and intensity effect. For APEC, the activity effect has been the main driver of the region's energy consumption growth between 2005 and 2020, which was offset by reduction in energy intensity (intensity effect). At the end of the presentation, she emphasised the importance of the decomposition analysis that allows for better understanding of true trends in energy consumption and economic activity that influence APEC's overall energy consumption.

Ms. Gelindon's presentation is attached as **Annex B**.

The third presentation was from **Mr. Domenico Lattanzio, Team Lead for Energy Efficiency Indicators at IEA**, who presented the end-use data and energy efficiency indicators from IEA's perspective. He emphasised the importance of having disaggregated data for identifying patterns and drivers of energy consumption and emissions of economies. In addition, these data are key to (i) analyse and understand the current situation of each economy; (ii) set targets for policies; (iii) check policy results; (iv) analyse vulnerabilities and energy security; and (v) benchmark with other economies. In closing, he highlighted that while obtaining end-use disaggregated data is a challenge, these are essential to ensure an equal and just energy transition.

Mr. Lattanzio's presentation is attached as **Annex C**.

The fourth presentation was on APEC cooperation in energy efficiency that was delivered by **Mr VY Ek Chin, Chair of APEC Expert Group on Energy Efficiency and Conservation (EGEEC)**. He mentioned that energy efficiency is crucial in addressing the global climate crisis, given that the world is not on track to limit global warming to 1.5-degree Celsius as per Intergovernmental Panel on Climate Change's (IPCC) assessment. Therefore, it is important that the goal of doubling the energy intensity improvement to over 4% annually on average be achieved to avoid further emissions, based on IEA's Net Zero Scenario. He emphasised that development and maintenance of well-founded energy efficiency indicators can help in improving evaluation of impact and achievements of energy efficiency, as well as closing the gap between ambition and target. Towards the end of his presentation, he shared some examples of APEC cooperation projects related to energy efficiency and conservation that have been completed and are currently in the pipeline.

Mr VY's presentation is attached as **Annex D**.

Mr Jungyu Park, Energy Efficiency Data Officer of IEA, facilitated the icebreaking session for participating APEC economies. Several icebreaker questions related to historical energy consumption trends in APEC economies were posted on Mentimeter (www.menti.com) where participants could access these questions via a designated code. The ice breaker was well-participated in.

The Ice breaker questions and answers are attached as **Annex E**.

The last presentation for Session 1a was given by **Ms Risa Pancho, Researcher at ESTO, APERC**, who shared briefly on the result of the survey conducted for APEC economies prior to this workshop. The

survey was conducted in June 2022 and only seven out of 13 non-OECD APEC economies participated in the survey, for which the objectives were to identify data availability with regard to end-use energy consumption and energy efficiency indicators, to understand economies' energy information system, and to explore the perceived value of international collaboration. Key findings of this survey included shortage of full-time employees (FTEs) in the collection of end-use energy consumption and energy efficiency data faced by some economies. In addition, surveys or admin sources are the most common methods of collecting data for all end-use sectors.

Ms. Pancho's presentation is attached as **Annex F**.

Session 1b: Consultant's report on the APERC-IEA energy efficiency indicators and end-use energy consumption data project

The session was moderated by Ms. Gelindon. It consisted of reporting from the consultant and economy presentations highlighting the respective economy's practices in analysing energy efficiency indicators and how these indicators helped them in formulating energy efficiency policies.

1) **Dr. Alenka Kinderman Lončarević**, a private consultant hired by APERC has conducted assessment of the energy efficiency indicators data of the 13 Non-OECD APEC economies. She presented the proposed methodology to estimate end-use energy consumption (by modeling and using survey results) as well as in improving collection of activity data (by using administrative sources) of each of the economies.

   The following is the summary of her preliminary findings:

   - Hong Kong, China and Chinese Taipei have very good end-use energy consumption data and can fill-out the EEI template. These economies are good examples of very good data collection practice
   - Several economies (Brunei Darussalam; Malaysia; the Philippines) have conducted end-use energy consumption survey but have not scaled up the result to national total. Models are developed by the consultant to use survey data.
   - China; Indonesia; Papua New Guinea; Peru; Russia; Singapore; Thailand and Viet Nam have no end-use energy consumption data

   Dr. Lončarević's presentations are not attached in this summary proceedings as they will form part of her final report of the energy efficiency indicators project.

2) **Economy presentations**

   Ms. Chih-ching Yang of Chinese Taipei presented "*Energy transition policies and tracking energy efficiency indicators*" showing how energy indicators are used to track energy transition policies. She presented 11 indicators for tracking energy transition.

   Dr. Ian Meade of the United States presented "*EIA's experience with end-use energy estimation"*. He mentioned that end-use estimation is a meaningful disaggregation of the billing

totals using billing data, building characteristics data, administrative data and wider community knowledge. They use two approaches such as regression models and engineering models. Results should be calibrated/adjusted with billing data.

Chinese Taipei and United States' presentations are attached as **Annex G and H, respectively**.

During the question and answer, the consultant encouraged the members economies to share their respective economies' experiences in the collection and estimation of end-use of energy consumption.

Hong Kong, China – Having been cited by the consultant as an economy with good end-use data compilation, **Ms. Becky Chim,** shared that her economy conducts energy consumption survey regularly and updates the data accordingly based on the survey findings.

Malaysia – **Ms. Nur Waheeda Wahab** shared information on energy survey in the manufacturing in 2013 in Peninsular Malaysia region as well as the household energy consumption in 2014 also in the same region. She also shared that Malaysia will be conducting surveys on the commercial, residential and industrial sectors for all the regions of Malaysia in 2023.

Peru – In reaction to the presentation of the consultant, **Dr. Manuel Heredia, visiting researcher of APERC from Peru**, mentioned that Peru's energy balance is aligned with the energy balance format of OLADE (regional energy organisation in Latin America). He cited the difficulty in conducting a survey in the households in the remote areas. In the transport sector, it is also difficult to collect data due to the very informal nature of the sector in the economy.

Chinese Taipei – **Ms. Yu-chun Chen** showed their methodology of filling-out the energy efficiency indicators template. She shared the sources where she usually collects the data for the template.

The Philippines – **Mr. Danilo Vivar** mentioned that the next survey will hopefully be conducted in 2023, after the last survey was carried out in 2011. . He mentioned that technological and behavioral changes during the last ten years would have changed the energy consumption patterns. The Philippines is signing a memorandum of agreement with the Philippine Statistics Authority for the preparatory stage of the survey.

Mr. Lattanzio asked Dr. Meade about the differences about the engineering model output vs statistical approach, whether EIA is planning to look into the electricity load profile during the day, validate the interval of confidence of each estimation and whether they are also looking at smart metering to determine end-use consumption. Dr. Meade responded that regarding load profile during the day, EIA have not really used it although they collect monthly data to take into account temperature differences. On smart metering, EIA is looking at the technologies and the solutions that they offer but they are not confident that the technology is already useful for their purposes.

Ms. Gelindon asked about confidentiality in the United States whether companies are mandated to submit data to EIA. Dr. Meade responded that there are laws for utility companies but for household and buildings survey, these are voluntary. Penalties are imposed on companies that do not comply with the mandatory data submissions.

Dr. Quadrelli shared that in Europe there are discussions on how to leverage on innovations and emerging technologies and how to integrate it to statistical surveys and what information these technologies can provide once there is access to utility metering. The use of micro data from these technologies and energy audit might reduce resource intensive activities in favor of accuracy of data.

Day 2 – 16 November 2022

Session 2a: Tracking energy efficiency indicators by sector

This session is a continuation of consultant's reporting as well as presentation on tracking energy efficiency indicators by sector by IEA. The session was moderated by Mr. Lattanzio of IEA.

Dr. Thomas Elghozi, Energy efficiency data officer, IEA gave his presentation about "*Tracking energy efficiency indicators in Household*". His presentation included analyses using 2019 data and showed that the residential sector consumes 20% of the final energy consumption in APEC and IEA. He also added that residential consumption varies between economies due to each economy's characteristics e.g., climate. He highlighted that end-use consumption in the residential sector provides key insights for policy design. He also stressed that surveys, experience sharing databases, and human factors are important for data collection.

Dr. Elghozi's presentation is attached as **Annex I.**

Dr. Lončarević, Consultant presented "*A short review of the most common methods by sectors used for data collection and modeling energy efficiency indicators, presentation of the concepts for modeling end-use consumption (Household sector)*". She emphasised the importance of the annual "simple" survey by focusing on its main goal to improve national energy balance accuracy and all estimates which are derived from an energy balance. She also added that a questionnaire should be designed as a simple one. Then, she explained the complex survey in reference to questionnaire design bits of advice.

Dr. Lončarević shared the excel files of hands-on exercises including a generic model for obtaining the total end-use data. She explained how the exercises work while referring simultaneously to her presentation material.

Q&A

The Philippines clarified about the amount of fuel for cooking and water heating, if the same percentage share is assigned this would mean no fuel switching. Dr. Lončarević agreed with the Philippines' observation. She explained that for simplicity of the exercises, the value assigned were just for illustration purposes only and true value may be obtained from a survey.

Session 2b : Consultant's report on energy efficiency indicators and data project

The session was moderated by Mr. Barcelona.

To give a background on *tracking energy efficiency in the services sector*, Mr. Park of IEA delivered the presentation. He explained what can be learned from energy balances and energy indicators, subcategories of energy consumption data and activity data for developing energy efficiency indicators of the services sector, and how to collect these data for services (sources and methodologies).

Mr. Park's presentation is attached as **Annex J.**

Dr. Lončarević later presented data collection methods and modeling for the services/commercial sector. She explained about the definition of services and highlighted that energy consumption in the services sector is determined by differences between total final energy consumption and consumption in other sectors. Based on the International Standard Industrial Classification presented by the Consultant, Ms. Gelindon clarified how to determine whether the activity in "*Transport, Storage and Communication*" is exclusively for services only. Dr. Lončarević clarified that as long as the fuel consumed for the activity is not for transporting goods, the activity is categorised in the service sector.

Economies shared their experiences about 1) how to design the sample, and 2) who will conduct it if you want to ensure the sustainability of the process (which institution has a responsibility for it).

Hong Kong, China Ms. Chim, shared that the surveys conducted for micro data are outsourced to survey specialist contractors. With the support of the Statistics department, available macro data are collected from the department annually.

People's Republic of China – **Ms. Dongya Li, from Energy Research Institute of National Development and Reform Commission**, shared that "building" is categorised into the services sector in Beijing and Shanghai.

The United States – Dr. Meade further shared that EIA have been conducting commercial surveys on building energy for many years by the same survey protocols. However, EIA is continuously finding ways to improve data collection in the buildings sector.

Dr. Lončarević presented a methodology on how to collect energy consumption data (in the form of questionnaire) and disaggregated indicators by processes in services. She also proposed the modeling process for completing a comprehensive end-use consumption data.

The hands-on exercises were conducted later which includes a proposed format of the annual questionnaire for enterprises in the services sector.

During the Q&A session, some economies gave answers regarding the institution that has responsibility for the survey on the services sector.

Brunei Darussalam – **Mr. Nabih Matussin, visiting Researcher of APERC from Brunei Darussalam** shared that the Ministry of Energy conducted Household Energy Consumption Survey (BDHECS) in 2015 and the Commercial Buildings – Brunei Darussalam Energy Consumption Survey (C-BDECS) in 2018 supported by the Economic Research Institute for ASEAN and East Asia (ERIA).

Hong Kong, China – Ms. Chim shared that it is important to disaggregate the data by defining the subsegments and assessing the target respondent of the survey (taking the health segment as an example, public or private; type of clinics (western medical facility or Chinese medical facility), due to the inherent differences between the two).

Australia – **Mr. Shamim Ahmad from Department of Climate Change; Energy, Environment and Water** shared that the report of "Commercial Buildings Stock Model FY2020-2021" was published in November 2022; it includes the physical nature of the national commercial building stock.

The Philippines – **Ms. Ma. Victoria B Capito, Energy Policy and Planning Bureau, Department of Energy**, raised a question regarding the experience of other countries on the best approach in conducting surveys on establishments (whether by interview with the manager/owner of the establishment or sending by mail). Dr. Lončarević answered that a face-to-face interview is the best way of collecting data on the service sector.

Ms. Capito also shared the Philippine Statistical Authority conducted the Survey on Energy Consumption on Establishment (CESE) in 2010 in collaboration with the Department of Energy.

Mr. Barcelona observed that in South-East Asia energy consumption surveys are not conducted on a regular basis, however sectoral consumption surveys are conducted regularly in the United States. He asked Dr. Meade what made it possible.

Dr. Meade replied that the major consumption survey for the services sector is conducted once every four years according to the law in the United States.

Day 3 – 17 November 2022

Session 2c : Continuation of Consultant's report on energy efficiency indicators and data project

Day 3 continued with the reporting of the Consultant as well as tracking energy efficiency in the two remaining sectors, namely, transport and industry sectors. The session was moderated by Mr. Lattanzio.

The session began with a presentation on *tracking energy efficiency indicators in transport* given by Mr. **Alexandre Bizeul, Energy transitions data manager, IEA**. He explained what we can learn from energy balances and energy efficiency indicators, energy consumption data and activity data for developing energy efficiency indicators of the transport sector, and how to collect these data for transport (sources and methodologies).

Mr. Bizeul's presentation is attached as **Annex K.**

Dr. Lončarević delivered a presentation on data collection methods and modeling for the transport sector. She explained about the structure of the indicators in the transport sector, modeling energy indicators for passenger road transport and freight road transport, and examples of good practices for collecting energy consumption and intensity data in the transport sector. Her presentation included international benchmarks used in ODYSSEE database (EU countries).

After the presentation, several questions were raised.

Korea – **Mr. Sungkyun Kim from Korea Energy Economics Institute** asked about the techniques for reducing the discrepancies between the model of energy consumption in the transport sector and its energy balance data. Dr. Lončarević answered that reviewing the estimates carefully and then calibrating with some parameters of the model would be important.

The Philippines – Mr. Vivar raised the question about average occupancy per vehicle indicator for modeling passenger road transport. Dr. Lončarević answered that some international benchmarks are available, however, she highlighted the importance of collecting these data or researching available data that are applicable in each economy.

At the end of the presentation, the hands-on exercises were given which include an explanation of her proposal on the modeling for energy consumption in the transport sector, and a simple calculation of a hypothetical transport energy consumption.

Dr. Elghozi, IEA presented the "*Tracking energy efficiency indicator in industry*". His presentation indicated that the industry sector consumes more than a third of the final energy in APEC and IEA. He again emphasised9 the importance of detailed end-use data for policy making as well as activity data in building efficiency indicators.

Dr. Elghozi's presentation is attached as **Annex L.**

Dr. Lončarević made her presentation about the most common methods used for data collection and modeling energy efficiency indicators as well as the concepts for modeling end-use consumption in the industry sector. She presented sample analysis of energy consumption in industry sector and the manufacturing industry in China and Hong Kong, China. She also explained sample questionnaire design and data processing in the industry sector by using EBTs.

As in earlier hands-on exercises, Dr. Lončarević showed a generic model for obtaining the total end-use consumption in the industry sector.

Q&A

Ms. Gelindon asked if GVA can be used as a basis in estimating end-use consumption in the industry sector which Dr. Lončarević answered that she does not recommend estimating because that process is not appropriate, the best method would still be through a survey.

There was a comment from Mr. Lattanzio that fuel use under the autoproducer in the industry sector is difficult to distinguish between final energy consumption and transformation.

Session 3: Data collection practices of IEA members

The final session of the workshop was jointly moderated by Mr. Barcelona of APERC and Dr. Quadrelli of IEA.

The first presentation was delivered by Mr. Lattanzio, who shared how international collaboration can play a significant role in harnessing energy efficiency. He mentioned that several entities beyond IEA are actively involved in energy efficiency indicators' multilateral and bilateral collaborations, for instance Eurostat, Economic Commission for Latin America and the Caribbean (UN-ECLAC), the APEC Expert Group Energy Data Analysis (APEC EGEDA), French Environment and Energy Management Agency (ADEME), African Union and others. He flagged that international cooperation is crucial to build a comparable and high-quality dataset for analyses, endorsing all the initiatives in this space. In

conclusion, he emphasised that having robust energy efficiency indicators is key towards achieving energy transition, and international cooperation plays a major role.

The second speaker**, Dr. Mafalda Coelho da Silva, Consultant at Institute of Science and Innovation in Mechanical and Industrial Engineering (INEGI) in Portugal** shared the national roadmap for demand side data collection and development of energy efficiency indicators. While it's important that a roadmap must have data and indicators, designing it is challenging and not straightforward. In addition, the roadmap is not a prescriptive document, but it can help economies understand the key steps and different kinds of options to achieve their energy-efficiency related ambitions and goals. Essentially a roadmap shall include energy efficiency indicators and their significance, different kinds of enablers (political will and awareness, trusted and empowered data collection system, proper resource allocation, staff capacity and stability, data collection strategy, and multilateral collaboration) for indicators' development, assessment tool and a guide. She also added that the success of roadmap lies in the effective utilisation of Plan-Do-Check-Act/Adjust (PDCA) tool.

Mr. Lattanzio and Dr. Coelho's presentation are attached as **Annex M and N,** respectively**.**

Round table discussion

Towards the last part of the workshop, the roundtable discussion was carried out by Mr. Barcelona. To ensure larger participation, the set of questions was entered into Mentimeter as in the icebreaker and facilitated by Mr. Park. The questions were taken very well and following were the majority of the responses to each question.

Questions	*Responses*
1. Whether participating economies have done similar assessments on data availability?	*– Majority have not done assessment and found the results of the Consultant's assessment useful*
2-1 and 2-2. On what sectors that participating economies have a demand side survey? And the next priority for data collection	*– Majority conducted household energy consumption surveys.* *– Majority still prefer to prioritise household sector, services and industry sectors followed next which tied at second place.*
3. Whether participating economies would be interested in tailoring the sectoral models that were presented by Ms. Lončarević earlier?	*–Majority answered yes but still needs training.*
4. Whether participating economies would be interested in utilising the roadmap as presented earlier, and for what?	*– Majority answered for finding weaknesses and strengths in their systems.*
5. On what kind of international supports that would be useful for participating economies?	*– Majority answered for building and enhancing knowledge, thanks to trainings and workshops.*

Answers to the Menti round discussion part is attached as **Annex O**.

During the Q&A and wrap-up session, Ms. Gelindon observed that one of the enablers presented in the roadmap for successful energy efficiency indicators and data collection is political will. This was

concurred by Dr. Coelho and expounded that it is up to each economy on the ways to advise their respective APEC leaders.

Delegates from **Papua New Guinea** shared their experiences in such a way that currently the economy's data information is highly fragmented which need proper reorganisation. They also commented on the current electricity access rate, which stands at 15% and not 60% as presented by the Consultant earlier in the gap assessment. Lastly, Papua New Guinea would be interested to get in touch with IEA for technical and expert assistance in developing the economy's energy efficiency indicators which IEA responded well that they are open for any collaboration in the future.

Way forward

- Seeing the need for enhancing the members' capability and consequently improve collection of energy efficiency indicators, the EGEDA secretariat is exploring the possibility of tapping APEC funding to develop a project for capability enhancement in conducting energy consumption surveys.
- To continue its collaboration with IEA, APERC is looking into the possibility of inviting IEA to form part of the speakers/lecturers of energy statistics training courses in the future.
- APERC will also help in promoting the guide for national roadmap for demand-side data collection and development of energy efficiency indicators prepared by IEA.

As there were no other issues and concerns, the workshop was adjourned. Both EGEDA secretariat and IEA thanked the participants for their active contribution throughout the workshop.