

MINUTES of

The 3rd Tripartite Roundtable on Environmental Business

Dates: August 23-24, 2017

Location: IBIS Ambassador Hotel Suwon, Korea

Theme: Social Responsibility of Environmental Industry for Improving Green Economy Performance

Participants: Korean, Chinese, Japanese Delegates

OPENING SESSION

An introduction of the 3rd TREB meeting was made.

Mr. Kim Yeonghun, Director General of Ministry of Environment of Korea (Korea), made an opening address welcoming all delegates from China, Japan and Korea. He stated the past accomplishments and contributions of the meeting. With active tripartite cooperation in the Northeast Asia in the recent years, he stated that the objective of this year's meeting is to boost communication and exchange experiences amongst enterprises in the three nations to increase social responsibility for green economy performance. He ended the address thanking all the delegates for contributing to the success of the 3rd Tripartite Roundtable on Environmental Business.

Mr. Lee Hankyu, Deputy Mayor of Suwon City (Korea), gave a welcoming address, expressing his hopes to find efficient solutions to environmental issues in all three nations through the tripartite roundtable.

Mr. Goto Toshihiko, CEO of Sustainability Forum Japan (Japan), gave a brief summary of last year's 2nd TREB meeting.

Commemorative photograph was taken during the photo session.

Session chairs were introduced.

SESSION 1: Practices on Environmentally Sustainable City

Ms. Liu Ting, Section Chief of China-ASEAN Environmental Cooperation Center (China), the Chair of Session 1, expressed her hopes to find positive measures for

development of sustainable cities based on actual practices and experiences from the three nations, and introduced the first speaker of the session.

Mr. Lee Hunseong, Director of Suwon City (Korea), delivered a speech on “Sustainability of Suwon City”. He began his speech with an introduction of Suwon City of its past and present. He first introduced “EcoMobility Festival Suwon 2013”, which was held in September, 2013. The festival became the basis for establishing sustainable infrastructures for a better urban environment, and motivating citizen participation for eco mobility. He then introduced “Rain City Suwon”, which is a newly implemented measure to preserve water by building facilities around the city to reserve rain water. He mentioned that the vision of Suwon city is to become one of world’s Top 3 eco cities by donating to solar photovoltaic power stations, building bike and electric vehicle facilities, monitoring biodiversity in the region, and finding measures for health issues. He ended the presentation stating his hope for the city to continue its cooperation with citizens to create a sustainable city.

Mr. Kitamura Takeyuki, Advisor to Director of Energy Policy of Hamamatsu City (Japan), delivered a presentation on “Energy Policy by Hamamatsu City”. He gave a brief outline of Hamamatsu City and its relatively low energy consumption level. The city has an energy vision of deploying renewable energy sources, promoting energy efficiency improvement, introducing energy management, and creating environmental and energy industries. He also described an optimal energy mix including solar, wind, biomass, and small-hydro energy. Under the energy vision, the goal is to increase renewable energy to 20.3% by 2030. The currently replaced level is 13.6% in 2016. He explained that the city is especially focused on promoting solar power generation by establishing solar energy infrastructures, becoming the largest deployer of solar power generation of all municipalities in Japan. He then introduced Hamamatsu Shindenryoku, which enables 80% local production and local consumption of energy. He went on to explain smart community projects for city centers and the industrial park and stated the city’s effort to engage in developing a hydrogen economy.

Mr. Li Jing, Investment Director of Everbright International (China), presented on “Urban Sustainable Development Strategy and Case Studies”. He first gave an introduction of Everbright International’s corporate profile. The company has six business segments including envirotech, environment energy, environment water, greentech, equipment manufacturing, and international business. As of 2016, the company has initiated 44 projects, totaling up to 213 projects, including diverse overseas business developments. He explained

that the company prioritizes its sustainability measures. He introduced specific cases, including the establishment of environmental protection industrial park and urban water management. The company has been establishing industrial parks in 11 cities, which aims at solving the problem of solid waste. The company is building a “Sponge City” in Zhenjiang, which is the first batch of national pilot city, and is actively developing underground sewage plants in some cities. The presentation ended with the statement of the company’s goals of preserving environmental values.

During discussion time, an active discussion was made.

- 1) **Mr. Yang Myung Sik (Korea)** asked **Mr. Kitamura Takeyuki (Japan)** whether there are any financial supports from the local government to businesses and households for solar energy development, and whether there were any conflicts with local citizens in the process of implementation. Mr. Kitamura answered that for the business operators, there is not any financial assistance by Hamamatsu city because there is already a FIT system of the national government. For households, financial support has continued for 17 years. He also mentioned that there was a 3-level financial support by nation, by prefecture, and by city in the past, but currently only the city is providing financial support. He stated that there weren’t any conflicts with citizens in the process since citizens are the active participants of implementing solar energy.
- 2) **Mr. Yang Myung Sik (Korea)** asked **Mr. Li Jing (China)** whether the development of 11 environment protection industrial parks is already under process, and whether there are any conflicts with existing industries. Mr. Li Jing answered that all the projects are newly initiated and that waste disposal of waste matter is already under process.

Ms. Liu Ting summed up Session 1, thanking the presenters for their presentations and all the delegates for actively participating in the discussion.

SESSION 2: Practices on CSR on the Environment for Business Sector

Mr. Goto Toshihiko, CEO of Sustainability Forum Japan (Japan), Chair of Session 2, started the session with an introduction of the topic and presenters for the session.

Mr. Zhu Zhanhong, Vice General Manager of Delta Aluminum Industry Co., Ltd. (China), presented on the “Development and Demonstration of the Waste Aluminum Can to Can Recycling Technology – A Case of Green Supply Chain”. He gave an overview of the

project's development and its current situation. With the increased aluminum consumption cans, measures have become necessary to reduce its negative impact on the environment. He stated the possible contributions of the company's project. The company is bringing technical breakthroughs, resulting in preservation of the environment while increasing efficiency. In comparison to existing technology, the company's technology saves 40% energy. The company plans to expand its platform domestically and internationally based on its technology. The presentation ended with a statement on the company's mission, which is to build an environmental resource utilization mode, to perform cooperative responsibility for resource environment, and to realize environmental production and reduction of resource waste.

Mr. Ruan Haifeng, General Manager of Hangzhou Shenlian Environmental Technology Co., Ltd. (China), presented on "Technology Innovation Promotes Industrial Upgrading". He started the presentation by briefly introducing the company profile. He introduced that the company is focused on harmless disposal of industry waste, comprehensive utilization of resources, and social remediation. He explained the company's cultural philosophy on improving human living environment and changing waste to resources through technical innovation. The company is contributing to the industry through strict implementation of environmental standards. He also stated that technical innovation is essential in industrial upgrading since traditional disposal methods have its limits in resourcing impurities. The company is currently putting in much effort in turning waste into resources and introduced the profile of Jiangxi company and its operations. The company hopes that its activities will contribute to the circulation economy.

Mr. Moon SangGwon, General Manager of CJ Cheiljedang (Korea), delivered a presentation on "Responsible Consumption & Projection". He gave a brief overview of CJ Cheiljedang. He then explained the five core sustainability issues of the company and the company policies for water use and recycling. The company is making R&D investments to develop eco-friendly materials and to produce BIO amino acids. The company is using nature-based and recycled materials, which reduces nitrogen excretion in livestock and increases food security for consumers. He stated that the new materials produced by the company will be applied as eco-friendly adhesives, eco-friendly insecticides, and as soil stabilizers. He ended the presentation stating that the company will continue its technological development in the future to fulfill the Sustainable Development Goals (SDGs).

Mr. Nagamiya Takuya, Manager of Fujitsu Limited (Japan), presented on “The Power of ICT – Practices on CSR on the Environment for Fujitsu”. A brief overview of the company and its vision was given. With the explosion of population, a redesign of lifestyle is needed in order to reduce the risks of climate change. Fujitsu aims to achieve the shared values of SDGs with a medium-to-long-term environmental vision, which includes achieving CO₂ zero emission, contributing to de-carbonization, and contributing to ease loss and damage. He introduced 3 examples that the company is addressing challenging social issues with its key technologies in Artificial Intelligence. First of all, the technology is applied in disaster risk management including tsunami impact simulation and damage prediction. Secondly, smart mobility solution called “SPATIOWL” was introduced, which allows real-time decision-making. Then, application of deep learning in advanced urban monitoring system was introduced, which allows prediction of traffic situations. Lastly, smart manufacturing using AI technology and Fujitsu’s intelligent dashboard was mentioned as a contributor to improving production and operations. The presentation was summed up with a statement that ICT will be a better measure in improving our society to the sustainable future, and that the company is making efforts for digital co-creation.

During discussion time, active discussion was made.

- 1) **Mr. Yang Myung Sik (Korea)** asked **Mr. Zhu Zhanhong (China)** to give supplementary explanation on how the company will connect the Belt and Road Initiative to their international strategy, and Mr. Zhu answered that the company hopes to gradually expand its business by technology cooperation with local companies through this strategy.
- 2) **Mr. Zhang Xu (China)** asked **Mr. Nagamiya Takuya (Japan)** whether there are undergoing projects as of now. Mr. Nagamiya answered that management of energy data is only a part of project which has been already introduced and is operating, and that there are on-going projects in diverse areas.
- 3) **Mr. Li Jing (China)** asked **Mr. Nagamiya Takuya (Japan)** about the company’s CO₂ zero emission goals, and whether there is any specific experience of achieving zero emission. Mr. Nagamiya answered that the company’s zero emission plan is set to 2050, and that there are measures being taken to achieve this goal, including reduction of energy waste in manufacturing. The company is planning to use renewable energy including solar energy in its operations. The company is internally searching for methods to achieve its vision.

Mr. Goto Toshihiko summed up Session 2, summarizing the common goals of the CSR practices mentioned in the four presentations. He stated his hopes for the three nations to contribute to the environment through its diverse practices. He thanked all the delegates for their presentations and active participation in the discussion.

SESSION 3: Environmental Labelling

Introduction of the session was made by the host.

Mr. Jeon Seung Hwan, Senior Researcher at KEITI (Korea), presented on “A Report on the Proceeding for Environmental Labelling”. He briefly explained the CJK Common Criteria and its expected effects on cost and time reduction. Currently, Korea’s Korea Environmental Industry and Technical Institute, China’s Environmental Certification Center & China Environmental United Certification Center, and Japan’s Environment Association are involved in eco-labelling. He explained the progress and outcome of CJK Common Criteria. As of now, 7 categories of Common Criteria are set. In March, 2017, discussion on development of common criteria in textile reached an agreement, and the next target category will be furniture. Enhanced channels for information sharing amongst the three nations will be used for efficient negotiation of CJK Common Criteria.

An agreement was signed by **Mr. Ko Tae Won, General Manager of Korea Environmental Industry & Technology Institute (Korea)**, **Ms. Liu Ting, Section Chief of China-ASEAN Environmental Cooperation Center (China)**, **Mr. Uno Osamu, Secretary General of Japan Environment Association (Japan)**.

Commemorative photograph was taken during the signing event.

SESSION 4: Policies and Cooperation on Air Quality Improvement

Mr. Goto Toshihiko, CEO of Sustainability Forum Japan (Japan), Chair of Session 4, introduced the topic and the presenters of the session.

Mr. Hitomi Tomoyuki, Deputy Director of Tokyo Metropolitan Government (Japan), presented on “TMG’s Diesel Vehicle Control”. He gave a brief introduction of Tokyo and its past traffic and air quality problems. A public awareness campaign to ban diesel vehicles which was started in 1999, was further developed into a legal ban on diesel vehicle. The

regulation on diesel vehicle achieved a significant improvement in air quality in Tokyo. The regulation targets vehicles in use, and has been implemented beyond municipal boundaries and enacted in the Tokyo Metropolitan Region in cooperation with three neighborhood prefectures, businesses, citizens and stakeholders. Early supply of low sulfur diesel fuels, and a practicality and spread of PM reduction devices were accelerated before the enactment of regulation. After the introduction of regulation, to ensure effective enforcement of diesel regulations, offending vehicles are being regulated through a flow of regulations and administrative measures.

Mr. Huo Zhonghe, President of Chine Energy Conservation & Environmental Protection Group Consulting Co., Ltd. (China), delivered a presentation on “Work Together for Environmental Protection, Promote Green Development”. He gave a short introduction of CECEP and the green technology projects the company is currently involved in. He stated that green finance is essential for the development of green technology, which includes green credit, green bond, and green fund. The company will be implementing green fund for improving air quality in Greater Beijing-Tianjin-Hebei region. The presentation ended with suggestions for international cooperation in coping with air pollution through green finances.

Ms. Jung Haemin, Deputy Director of MOEK (Korea), presented on “Policies and Cooperation Strategies for Air Quality Improvement – Focusing on Regional Collaboration for Air Quality Mitigation”. She described the categories and action details of special measures on air quality mitigation, focusing on policies related to fine dust. Overview and background of regional cooperation activities for air quality improvements were described, which include joint researches, bilateral and tripartite meetings, data sharing, and technology demonstration projects. She further explained multilateral regional cooperation activities such as LTP, NEASPEC, and EANET. She summed up the presentation with hopes of industrial support for a sustainable environment.

During discussion time, an active discussion was made.

- 1) **Mr. Moon SangGwon (Korea)** asked **Ms. Jung Haemin (Korea)** if there are any specific measures for businesses to participate in the introduced policy projects. She answered that China and Korea are cooperating in a project to reduce fine dust, and in the future there are new projects on Diesel Particulate Filter which are under plan in which businesses can cooperate.

- 2) **Mr. Kim Du Hwan (Korea)** asked **Mr. Hitomi Tomoyuki (Japan)** whether there were any conflicts amongst interest groups during the beginning of diesel car regulations, and if there were, how the government solved them. Mr. Hitomi answered that conflicts were avoided due to strong leadership, and that public negotiations were held with interest groups to reach a common ground on solving air pollution.
- 3) **Mr. Qiu Yizheng(Japan)** asked **Mr. Hitomi Tomoyuki (Japan)** whether there are any plans to replace diesel cars with electric cars in Tokyo, and how much percent will be replaced until the Olympics. Mr. Hitomi answered that financial support for businesses related to next-generation cars are being institutionalized, and that such support is aimed at achieving TMG's environmental master plan, where the level of installation of passenger vehicle is more than 80%.

Mr. Goto Toshihiko summed up Session 4 thanking the presenters for providing broad perspectives on air pollution and regulation. He mentioned that green finance is being widely circulated in Korea, China, and Japan. He expressed his hopes for a more in-depth sharing amongst the three nations on such environmental policies and green finance in the future.

SESSION 5: Technology Exchange and Cooperation for Air Quality Improvement

Mr. Shao Kunkun, CEO of Jiangsu Feili Environmental Engineering Co., Ltd. (China), Chair of Session 5 introduced the topic and the presenters of the session.

Mr. Zhang Xu, President of Chinatech Talroad (Beijing) Technology Co., Ltd. (China), presented on "CEPEC Technical Exchanges on Air Quality Improvement". He began by explaining the status of air pollution in China and the requirements for air pollution prevention and control. CEPEC is active in implementing comprehensive air pollution control programs, and using big data to provide accurate treatment services. With its air quality monitoring network, it is able to quickly detect air pollution, and the data is analyzed to visualize the level of air pollution in the detected regions. Also, he stated that auxiliary decision-making is possible using the data. The company also leads in Calcium desulphurization technology, which is applied in diverse projects in the industry. The presentation ended with a brief explanation of CEPEC's main business concerning air quality, environmental monitoring, and environmental protection equipment.

Ms. Hong JeongHee, Team Leader of KC Cottrell (Korea), presented on “KC Cottrell Air Quality Improvement Technology - Keeping Our Planet Sustainable”. The presentation started with a brief explanation of the company’s motto, history, and its business items. She gave an overview of IMO air pollution regulation, and an estimate for scrubber operation and fuel change, which will be necessary for all marine vessels from 2020. Then, an introduction on the company’s air quality control technology was made, which includes ESP for road and subway tunnels, and harmful gas treatment system. Also, the company possesses catalyst remanufacturing technology and new technology in wet ESP. The presentation ended with an explanation of the company’s future technology.

Mr. Morita Mitsuo, Group Leader of JGC Corporation (Japan), gave a presentation on “Dry-DeSOx / DeNOx System”. He began with a short introduction on the background of the company’s technology. Dry-DeSOx plant is applicable in a wide range of temperatures and has high-efficiency removal rate of 90% or more SOx. He then explained the SCR system. The SCR system uses JGC C&C’s DeNOx catalyst, which provides an optimum design of SCR system. The company plans to apply the system to other areas of the industry including coal-fired power plants.

During discussion time, an active discussion was made.

- 1) **Ms. Liu Ting (China)** asked **Mr. Morita Mitsuo (Japan)** where in China the company is operating at. She asked how much the technology costs in China. **Mr. Morita** answered that the plant is operated in inner Mongolia. To the second question, he cannot disclose the exact cost.
- 2) **Mr. Yang Myung Sik (Korea)** asked **all three presenters** if there were any cooperation amongst the three companies in the past in the DeSOx-DeNOx area, and whether there will be any plans for cooperation in the future. Also, he asked **Mr. Zhang Xu (China)** on China’s recent wet and dry DeSOx method trends. **Mr. Zhang Xu (China)** answered first, stating that since different companies have different merits in their technology, he believes that diverse methods can be used. **Ms. Hong JeongHee (Korea)** answered that it is important for companies to have key technology which can be applied on-site. In case of China, they prefer establishment of domestic corporations for direction operations. Therefore, the strategy of transmitting basic technology is applied in China. This implies that there can be many solutions in the future. **Mr. Morita Mitsuo (Japan)** answered that his company is different from the two companies from China and Korea in that it can utilize the best technology on a case-by-case basis in general. Therefore, he believes that there is potential for cooperation with the two countries in the future.

- 3) **Mr. Zhu Zhan Hong (China)** asked the Japanese delegates whether the difference of process between Japan and China in the DeNOx area will impact cooperation between the two nations.

Mr. Shao Kunkun summed up the session with hopes for a shared economy amongst the three nations, and thanked all the participants for their presentations and active participation in the discussion.

SESSION 6: Technical Exchange on Soil Pollution Restoration

Mr. Kim Du Hwan, Professor of SangMyung University (Korea), Chair of Session 6, thanked all the delegates for their full participation and introduced the topic of the session on soil pollution restoration. He expressed hopes for the presenters to share their experiences, and introduced the first presenter.

Mr. Lee Jaewon, CEO of JIU Corporation (Korea), presented on “Soil Remediation Technics and Application of JIU Corporation”. He first gave an explanation of soil contamination and its side-effects. Soil Environments Conservation Act & Criteria was implemented, and there are four parts in soil contamination management system. Most of the projects are mostly conducted in military bases, but there is plenty of potential in the private industry. Gradually, there will be more R&D on complex applied technology. The technology can be divided into site characterization, soil remediation, and groundwater remediation. He gave a brief introduction of the company’s projects which deal with oil and hazardous metal contamination sites. The presentation ended with a statement hoping for further negotiation with relevant businesses from China and Japan.

Mr. Aizawa Wataru, General Manager of SHIMIZU CORPORATION (Japan), presented on “Situation of Countermeasures Against Soil Contamination in Japan and Efforts by SHIMIZU CORPORATION”. He began the presentation with an introduction of Soil Contamination Countermeasures Act in Japan and the 26 hazardous substances designated to have harmful effect on human health. The criteria for soil contamination include the number of contaminants in the soil and the amount of contaminants eluted in groundwater. Currently, Japanese business practice for soil contamination is mostly focused on removal of soil contamination. He then explained the basic concept of soil remediation engineering and introduced treatment technologies including fenton treatment, anaerobic biological treatment, and soil washing technologies. Concept of washing treatment and SHIMIZU’s on-site type washing plant was explained. Also, examples of soil remediation at on-site washing plants

were given. The presentation ended with a brief explanation of frequent problems related to soil contamination, and hopes of reducing the problems with its services.

Mr. Zhu Hongxiang, Technical Director of Guangxi Bossco Environment Protecting Technology Co., Ltd. (China), delivered a presentation on “Application and Demonstration of Organic Polluted Soil Treatment Technology”. He started the presentation with an explanation of the current global and domestic pollution statuses. Relevant policies and regulations have been implemented in the recent years. He explained the company’s core treatment technology, which include Off-site Thermal Treatment Technology, RemedX Thermal Treatment Unit, and Bossco Thermal Desorption Facility. The technology is used with stability in regions, and case examples were given. He suggested that there are areas in which China, Korea, and Japan can cooperate, and expressed his hopes that the company will be able to participate in diverse business activities in the future.

During discussion time, active discussion was made.

- 1) **Mr. Goto Toshihiko (Japan)** mentioned that in case of Japan, countermeasures of soil contamination were delayed as naturally-derived metal contents and industrial pollution were not distinguished. He asked whether there are any problems of natural hazardous metal issues in Korea. **Mr. Lee Jaewon (Korea)** answered that Korea does not distinguish naturally-derived metal contents and industrial pollution, and that natural pollution is not much of a problem. He also mentioned that mining areas are separately categorized, and that industrial pollution has not been examined yet.
- 2) **Mr. Aizawa Wataru (Japan)** mentioned that in Japan, soil contaminated with hazardous metal is put into cement. He asked **Mr. Lee Jaewon (Korea)** and **Mr. Zhu Hongxiang (China)** on how Korea and China treat soil polluted with hazardous metal. Mr. Lee answered that in case of Korea, there are ways of using the soil in cement or roadbeds. However, a management system needs to follow for this to become effective, and the current system is insufficient. Currently, contaminated soil is used to cover up landfill since it is the most risk-free method. Other methods have not been used yet. Mr. Zhu answered in that there are many regulations in China that presume safe use of contaminated soil. If hazardous metal is not detected in the soil, it can be used in cement. However, if detected it must be reclaimed or other costly methods must be used for treatment.

Mr. Kim Du Hwan summed up the session with an explanation of past experiences of soil pollution and the different regulations adopted in the three countries, and thanked all the presenters for sharing their experiences.

SUMMARY SESSION

All delegates actively participated in the review and discussion of meeting minutes.

Ms. Liu Ting, Section Chief of CAEC (China), introduced the 4th TREB and encouraged the delegates from the three nations to participate in next year's meeting.

Mr. Kim DuHwan, Professor of SangMyung University (Korea), gave a closing address, thanking all the delegates for preparing and participating in this year's 3rd Tripartite Round Table. He summed up the results of this year's meeting, and expressed his hopes for further cooperation amongst the three nations.

Ms. Liu Ting, Section of Chief of CAEC (China), congratulated the success of this year's meeting, and expressed her hopes that there will be continuous exchange amongst the three nations.

Mr. Goto Toshihiko, CEO of Sustainability Forum Japan (Japan), thanked the Korean delegates for their great hospitality, and also the presenters for sharing their presentations. He emphasized the importance of sharing information amongst businesses in the three nations to solve environmental issues and expressed his hopes for further exchange.

Mr. Yang MyungSik, Senior Deputy Director of MOEK (Korea), delivered the closing remarks and finalized the 3rd Tripartite Roundtable on Environmental Business. .