Asia-Pacific
Economic Cooperation

APEC WORKSHOP ON ENVIRONMENTAL SERVICES IN THE 21ST CENTURY: CHALLENGES AND OPPORTUNITIES FOR SUSTAINABILITY

14 – 15 OCTOBER 2014
THE GARDENS HOTEL & RESIDENCES, KUALA LUMPUR

Workshop Report

APEC Group on Services
APEC Committee on Trade and Investment

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Chapter 1 Introduction

The world population has increased and at the same time, human activities have intensified. The trend of such development has led to an extensive utilisation of natural resources, energy, chemicals and other materials, thus directly and indirectly leading to environmental degradation. In order to better protect the environment, an emerging service known as 'environmental service' has been recognised by the government, private and public sector. Environmental services are not restricted to a cleaning up of the earth, nor are they limited to reverse damages attributable to human activities in an economically-viable way. Environmental services have become a feasible and increasingly lucrative business venture. Environmental services are primarily provided by governments and normally considered to be either public or community services (e.g. road cleaning, waste collection, sewage services etc.). However, this has changed in many economies. Environmental services coverage is now much broader, to include example such as environmental design, technology development for equipment and systems as well as consultancy services which includes services related to carbon capture and storage for environmental conservation needs. As demand increases, private sectors come in to provide solution for shortcoming of effectiveness and quality from the impact of the services provided by the local government and public utility agency of a economy. Hence the Governments have started to open markets for environmental services and permitting private operators to become key player and bid on contracts.

Environmental services have become an industry by itself where the future of this industry will go beyond the existing understanding and practice. The current scenario shows that there are already growing environmental services businesses across economies, especially among the APEC economies. As the industry grows, there are many issues and challenges, which need to be dealt with. Hence, to accommodate the needs for the growth of environmental services in Asia-Pacific region, APEC has initiated a workshop known as 'Environmental Services in the 21st Century: Challenges and Opportunities for Sustainability' on the 14th and 15th October 2014 at Kuala Lumpur, Malaysia. The purposes of the workshop are:

i) to provide the context for environmental services and environmental services industries in APEC economies;
ii) to capture information on latest trends, as well as opportunities and challenges of environmental services and environmental services industries in APEC economies; and
iii) to identify key options for the development and liberalisation of environmental services and environmental services industries in APEC economies for the 21st century

Currently there is no single agreed definition for environmental services and the scope of environmental services is too wide. Therefore this workshop has identified four thematic areas for discussion and deliberation, namely:

i) solid waste management;
ii) hazardous waste management;
iii) green technology; and
iv) renewable energy

Two approaches have been engaged in this workshop, the first approach was paper presentation and the second approach involved focus group discussion, based on the four thematic areas. For the paper presentation, the workshop organizers have invited international and Malaysian speakers from international agencies, governmental agencies, industries and associations to share their views, experiences, best practices and case studies that are related to environmental services. The paper presentations were conducted through 4 sessions with 17 papers presented (Please refer to Workshop Program in Annex 1). After the paper presentation, workshop participants should be able to:

i) provide the context of environmental services and environmental services industries;
ii) describe current direction of environmental services and environmental services industries;
iii) describe current regulatory and/or policy regimes including voluntary measures for environmental services and environmental services industries;
iv) describe current and best practices including scientific, technical and technological advancement for environmental services and environmental services industries;
v) describe key issues, challenges and opportunities for the development and liberalisation of environmental services and environmental services industries; and
vi) describe current and best practices for environmental services and environmental services industries

For focus group discussions, the emphasis was on two main aspect; the developmental needs and liberalisation requirements of environmental services according to each thematic area. In order to facilitate the discussion, different aspects have been identified prior to the group discussion, namely:

i) current Initiatives;
ii) concerns, issues and challenges;
iii) recommendations;
iv) R&D opportunities; and
v) funding and investment

Hence, the workshop aspired to enable a better understanding of environmental services within the context of the 21st century. The discussion over key issues, challenges, and opportunities posed for environmental services, in addition to the sharing of current and best practices in environmental services and environmental services industries facilitated the development and liberalisation of environmental services in APEC member economies in the promotion of environmentally-responsible economic growth.

Chapter 2 Workshop Report

The APEC Workshop on Environmental Services in the 21st Century: Challenges and Opportunities for Sustainability 14 – 15 October 2014 was successfully held at The Gardens Hotel and Residences, Kuala Lumpur. The opening of the Workshop was officiated by Datuk Dr. Rebecca Fatima Sta Maria, Secretary General Ministry of International Trade and Industry, Malaysia. The Workshop grouped environmental services into four main types, namely solid waste management, hazardous waste management, green technology, and renewable energy development.

2.1 Session 1: Environmental Services in the 21st Century

The first session of the workshop gave an overview of environmental services in the 21st century. The plenary session was moderated by Mr. Mohd. Rosli Hj. Abdullah, Director-General of National Solid Waste Management Department, Malaysia. The speakers for this session were:

- Mr. Abdel Hamid Mamdouh
  Director, Trade in Services Division, World Trade Organisation.

- Mr. Joachim Monkelbaan
  Senior Programme Officer, Trade, Policy and Planning Unit Economics and Trade Branch, United Nations Environment Programme.

- Dato' Dr. Nadzri bin Yahaya
  Deputy Secretary General (Energy), Ministry of Energy, Green Technology and Water, Malaysia.

- Mr. William Tan
  Council Member, Association of Environmental Consultants and Companies of Malaysia.

2.1.1 Presentation by Mr. Abdel Hamid Mamdouh

Mr. Abdel Hamid Mamdouh is a Director, Trade in Services Division, World Trade Organisation (WTO). The objective of the presentation was to demonstrate the role of WTO and how WTO could assist in the regulatory developments of environmental services. WTO from the beginning focuses on trade perspective but do not interfere with the policy of member economy on this sector. Increasing demand for initiative towards agreed regime or mechanism, considering the slow progress in WTO negotiations. In the early 1990s, environmental services is a sector which does not exist as a legal context for international trade. Services mostly were provided by the local government and public utility agencies of a economy, which is not a concern of the WTO. As demand increases, private sectors came in to provide solutions to

address adverse environmental impacts caused by industrial activities. As the sector developed and grew, and after the Uruguay Round, the understanding was that environmental services encompass waste and water disposals. Development of prevention mechanisms, sciences, green technology and environmentally friendly technologies enhance the sector capabilities. This development enabled the transformation of environmental services, which is also supported by increased awareness among the people, regulatory requirements that strengthened control on the environment, and the application of new technologies.

The growth of the sector in domestic and global markets increases the demand for liberalisation. This is often linked to the income of economies, normally where developed economies have more expertise. The current trend showed that the demand is much higher for better environmental friendly services in developed economies as compared to developing economies. The US International Trade Commission has reported that the global value of environmental services is estimated at half a trillion USD. The bulk of the market is in the area of waste water, solid and hazardous waste management services,. Trade opportunities have increased especially in the Small and Medium Enterprises (SMEs).

In reference to the role of WTO, the challenges remain in the classification and determination of the definition of the sector. The lack of a common agreed definition has resulted in dissents among member economies. Therefore the existing agreement does not impose any specific classification, hence there is no compulsory guideline to follow. However, WTO is still working on an ideal definition. The problem is in the exchange of commitments which has not reached conclusion of any form. In addition, Environmental Services is often referred to the experts/professionals offering services/services suppliers for market. Hence, the trade of Environmental Services is different from the trade of goods. It involves movement of experts, workers and services across economy borders.

Another highlight is the important function of General Agreement on Trade in Services (GATS). However, it does not impose any mandatory classification/compulsory system. Currently, there are classification differences and differences as to how the system could be applied by economies. Among the concerns over the applicability of the General Agreement on Tariffs and Trade (GATT) on environmental services trades are:

- there is no compulsory guidelines; and
- trade regulations for this sector

It is important to keep in mind that the GATT concerns only the trade of goods, and has no application in the regulation of services. It means, it is of the utmost importance that foreign service providers are given similar access to the local market compared to a local provider and be given fair and equitable treatment. The need for a commitment to liberalise the services sector depends on:

- the realisation that trade in services is different from trade in goods;
- factors of production - labour and services;
- the 4 modes of supply; and
- services supplier and services consumer.

The most important element of liberalisation is the establishment of commercial presence in the host economy. So far, there is no conclusion for environmental services concluded by the Doha Round held 15 years ago under the WTO regime. There are on-going efforts after the Doha Round to negotiate environmental services. Discussions are centred on classification issues and definition. Progress was achieved, but it was consistently held hostage and overshadowed by negotiations in agriculture. This has left the negotiations in a dormant state.

Since the multilateral process is in a crisis and negotiations have been stalled for several years, it is proposed that an agreement should be crafted outside WTO. Initiative for Environmental Services sector, conducted by the APEC, had supported WTO negotiations through the establishment of the Environmental Goods List, as agreed in the 20th APEC ECONOMIC LEADERS' Declaration, in 2012. Hopefully, the results will be implemented in most of the WTO members.

2.1.2 Presentation by Mr. Joachim Monkelbaan

He is currently working with the United Nation Environment Programme. He presented Sustainable Energy Services as an example of environmental services in his presentation. Sustainable Energy (SE) Services is an important area that could address crucial issues such as climate change and air pollution. Growing global demand for SE has caused renewable energy to become more expensive than fossil-based energy in many economies. Trade in energy services can be a driver of greater selection, competition and greater dissemination of SE. Sustainable energy services and goods are important for sustainable energy services.

SE is one of the Green economy activities which provide many opportunities. For example in Germany, social benefits of SE was shown to have provided half a million job opportunities. However there are challenges in the development of SE:

- Many barriers in SE services;
- Slow progress in removing these barriers;
- Classification (W/120) system is outdated and unsuitable;
- GATS is insufficient: especially the rules and the positive list;
- Realisation of development benefits.

The current trend of SE at the global level showed three scenario for Environmental Goods Services:

- Trend 1 - South-south trade has grown faster than global trade;
- Trend 2 - Global trade in renewable energy goods outpaced trade in manufactured goods; and
- Trend 3 - developing economies have become net exporters of many renewable energy goods.

This findings was in reference to the total trade in HS 854140 (including solar PV), from year 2004 to 2012. The current trend of trade flows goes both ways, more south to north, and followed by south-south.

SE transformation as a means to a greener economy could generate 15-60 million additional global jobs over the next two decades (ILO). In 2012, the renewable energy sector has employed 5 million workers. Energy efficiency is an important source of green jobs in the construction sector which was especially hard-hit by the recession. However there are barriers which will leads to sustainability of SE sector. Enhanced regulation has an implication to the trade flow. For example China's exportations of Photo Voltaic cells to EU have shrunk tremendously from 2009 -2012 because of the EU trade legal action on China (anti-dumping measures). In addition trade barrier impose by economy will also affect SE sustainability. Moreover current trends of financial services is not promoting SE and in certain economies it is difficult to obtain financial support. While the global tariff is almost close to 40%, the trade restrictions/trade barriers are still considered high. Currently no specific tariff agreed by economy. There is a need to recalculate the trade barriers trends for SE and Environmental Services.

The needs widen the scope of Environmental Services, where this sector should be viewed as an industry. It is important to include the supporting services which will ensure the sustainability of SE supply:

- Construction services;
- Financial services;
- Business and technical services;
- Telecommunications;
- Transportation;
- Design services; and
- Human resources

In addition, there is a need to conduct mapping analysis for environmental services, mainly by identifying the appropriate sectors and modes of supply. This will provide better understanding and data for economies to refer as they enter negotiations. APEC has initiated innovative policy approaches to promote environmental services. This is in reference to the APEC Environmental Goods List which has contributed to

the development and use of efficient and cleaner technologies, and promotes clean growth and energy security. It is better to propose liberalisation in environmental services to be based on the APEC Environmental Goods and Services list.

2.1.3 Presentation by Dato' Dr. Nadzri bin Yahaya

He is the Deputy Secretary General (Energy), Ministry of Energy, Green Technology and Water, Malaysia. He started by sharing the definition of environmental services. According to Dr. Nadzri, Environmental Services were group into two categories:

1. Infrastructural Services:
   Wastewater treatment, refuse collection and disposal – often associated with public services and can be provided fully or partially by the public sector

2. Non-Infrastructural Services:
   Engineering design and environmental consultancy services - mostly business-to-business or government – business transactions and are usually provided by the private sector.

In Malaysia, solid and hazardous waste management is a joint commitment of the federal government, the state government, local authorities and the private sector. However, there are challenges in implementation due to overlapping governance. The current scenario saw many issues, for example solid waste services, between public agencies and private companies and also Federal Government and State Government. However for hazardous waste, since it is directly under Federal Government, the issues are not as many as issues relating to solid waste services.

Malaysia has established several legislations for environmental services. Currently there are at least three legislations which are directly related to environmental services in Malaysia and were listed as follows:

- Solid waste and public cleansing management Act 2007(Department National Solid Waste Management);
- Environmental Quality Act 1974(Department of Environment); and
- Water Service Industry Act 2006 (National Water Services Commission).

The cost of waste management services in Malaysia for year 2001 is RM 360 million. It is expected that in 2014, the cost will increase to RM 1 billion. The expected three fold increase for waste management expenditure goes along with increasing number of population, changes of life style and increasing volume of waste generation. A total of 45 – 80% local government expenditure goes to waste management, and the collection cost is the highest. The breakdown of costs are: collection - 83%, disposal - 16% and recycling - 1%.

The costs for solid waste management services must take into consideration many aspects because the SE services provide many economic sectors with opportunities for businesses, especially the businesses and industries that support the whole system. The waste management services has created many jobs, for example, the three concessionaires had created a total of 15000 jobs jointly. This does not include supporting and indirect business and industries benefitted from the waste management services.

Environmental services provide new economic opportunity and growth. However there should be a balance to be struck between environmental services opportunities and government prudent expenditure. Suggestions for transition of responsibility from government funding to private sectors has been raised. However these suggestions must be studied and analysed for their suitability, viability and acceptability by the communities and consumers. With increasing demand, there will be future opportunities for foreign participation. Possibilities of Malaysian services provider going abroad are possible, and privatisation of the environmental services enhances trade capability in this sector. But this will require a clear rules and regulation framework that will facilitate trade of environmental services. It should be consistent and supported with technical information.

2.1.4 Presentation by Mr. William Tan

Mr. William Tan is a Council Member of the Association of Environmental Consultants and Companies of Malaysia. The existing scenario in Malaysia does not promote Renewable Energy (RE) industry. This is because of the availability of 'cheap energy'. Current energy price in Malaysia is low:

- Diesel RM2.20/litre; and
- Electricity RM .218/KWh, commercial from RM0.393/KWh.

However there are significant demand for RE in the global market. In reference to REN21 2014 report, 22.1% of global electricity production comes from renewable sources. The WWF projected that by 2050, renewable energy will play a more significant role as an alternative source of energy. This is due to the decreasing supply of fossil fuel supply and this lead to price increase for fossil fuel. There are challenges for RE in the current scenario mainly in Malaysia. The private sector claimed that RE projects are not economically viable because of the strict regulations. This has resulted in the failure to build functional plants that can operate at the correct percentages and procedures. The reason for the failure is often tied to the fact that businesses will try to reduce expenditure. Moreover most of the available projects were conducted to comply with legislation or contract requirements, which are not voluntary and not in the interest of the business and the industry. Thus they will go for the lowest costs for installation and operation.

With this situation there is a need to enhance business and industry to be more responsible.

Ministry of Energy, Green Technology and Water (KETTHA) Malaysia sets a humble and reasonable target that 34% of energy in Malaysia will be contributed by RE in 2050. There is a need to promote RE by providing good incentives such as Feed in Tariff (FIT) rate for Biogas and Solar. Currently the Solar price is better. There is a potential of RE from bigger sources especially from palm oil mills. Municipal solid waste (MSW), livestock manure (large chicken layer farms, airy farm), and other types of waste (food processing waste, sewage sludge and agricultural waste) could also be suitable resources. There are many researches conducted in Malaysia, such as the research conducted by Bio Tech Corp where it is calculated that 3 billion cubic meter was ready to be used to generate RE. This will come from palm oil mill effluent (1.0 billion cubic meter), sewage treatment plant (1.2 billion cubic meter) and municipal solid waste (0.8 billion cubic meter). In terms of supply values, the basic calculation for conversion of biogas in volume to Electricity in KW; the average CH4 Methane content in biogas is 60%, and energy content of $1m^3$ methane is equivalent to 9.94kWh. Three billion m^3 of Bio-Methane is equivalent to about 12 Billion KWh of RE or about 1.5 GW.

The potential of biogas from methane will give an idea to assist in managing solid waste in a sustainable manner. According to PPSPPA, the target is to reduce 40% of waste to landfill and to reduce GHG emission by 38% by year 2020. Options for waste to energy will be given a priority.

The transition from fossil to RE requires a holistic views of the existing energy sources and energy consumption. RE has a huge potential as an alternative energy in Malaysia and also to other economy. In reference to Malaysia, there is a need for more work to be done. The promotion of RE as the main alternative for fossil fuel will require the government to be smarter and to assist the business and industry in addressing the following issues:

- energy price is relatively low compared to neighbouring economies. The return of investment (ROI) are less attractive;
- difficulty in securing finance from banks for the development and operation of renewable energy facility;
- the grid connection issues, where it is expensive to connect to facilities in remote areas;
- the profit margins are not attractive;
- long term contract issues with the feed stock supplier; and
- a lack of skilled human resources in the field of RE.

Transition to RE will help to reduce pollution intensity. For example it will help to reduce dependency of landfill for waste disposal and help to reduce of GHG emission. In addition it also assists to reduce ground water pollution hence reduce overall cost of solid waste management. The best part it will improve environment quality in the future.

2.1.5 Summary of Q&A

The Q&A session raised two question. First question by Mr Khalid Basoon, of UEM. He commented about the feed in tariff (FIT) subsidies, which are currently relatively low as compared to fuel subsidies. This has affected industries growth and has resulted in a mismatch. He later ask about how the government respond in addressing this problem/issue? His question was replied by two speakers. Dato' Dr. Nadzri bin Yahaya, responded that, in this context, policies are often viewed as a perception of doing things. The government considers fuel subsidies as a social obligation to its people. FIT subsidies are not economical as the cost of infrastructure for solar technology is relatively high. Fuel subsidies are focused on benefitting the community and it is influence by socio-political needs, while FIT subsidies will benefit individuals. Next was responded by Mr. William Tan, where he said that in ASEAN, renewable energy is define differently (Hydropower is included as part of the definition). However in Malaysia, it will be too costly and bureaucratic to develop a hydropower plant. In reference to Biomass, the tariff is currently not attractive. Although the quota for Biomass is opened it is not of a matter of concern to many. The Solar technology is currently very attractive and on high demand from public to participate in the FIT mechanism. Another potential renewable energy resource is the biogas quota. Comparing solar technology with biogas, solar energy is a passive/limited source (1 MW/day) of RE. While Biogas can be generated 7 times more (7MW/day). Hence there is a need to promote more investment for biogas plant for energy. Propose the government to look into the possibilities of developing the potential of Biogas in Malaysia.

Second question was by Dato' Guntor Tobeng, from Gading Kencana Sdn Bhd. He started by commenting KETTHA and SEDA for a job well done. Each technology has its own advantage and disadvantage. Solar investment now is getting lower. However there is a problem of grid connectivity. There are issues of providing services to other economies due to regulations and market price. For example, attempts to penetrate the Japanese market is quite difficult due to the regulations in place. There is a need for a free and easier movement of business across economies. For example Malaysia has the support system and it creates conditions friendly to foreign business and industry for energy sectors hence the energy sector is well managed. The problem is in other economies as the support system is not well developed. He suggested APEC to look into the possibilities of opening up the market for renewable energy and economies to facilitate the process. His comment was responded by Mr. Abdel Hamid Mamdouh and Mr Joachim Monkelbaan. Mr. Abdel Hamid Mamdouh, responded by highlighting the need to promote negotiations which can provide markets access. There will be challenges due to the

slow progress in the existing WTO mechanisms. It is time to make the Environmental Services one of the sectors in the WTO and initiatives are needed to launch the sector in the WTO. There is a mandate under the WTO to address the cumbersome, regulatory barriers on international trade. Under GATS, economies can explore the possibilities of negotiating regulatory principles, competition, licensing in market access etc. Hence the targeted approach is needed to assess the barriers of business practice in domestic markets. The question of licensing, regulation, competition should be put in the context of both business and government agencies. Mr. Joachim Monkelbaan responded, there is a drive for cross border trade by government/policy makers and cross border businesses by the private sector. Business people are constantly lobbying for cross border businesses. However the cross border need trade negotiation and the business need to show the benefits. The cross border business should not only focus on economic profits but need to ensure that the needs of the environment and the society are met. Based on the WWF report, by 2050, most of the economies are ready to fully embark on the RE sector. There is optimism in realising the potential of renewable energy. Relatively, coal/fire energy are cheaper than renewable energy. However, based on research, the fossil fuel for energy cost has increase compare to RE. The coal/fire energy will also cause other forms of negative impacts to both human health and the environment.

2.1.6 Summary of Session 1

Session 1 presentations and discussions provide the economic profile of the environmental services industries in Malaysia with reference to global examples. The presenters have also discussed the current direction of environmental services and environmental services industries in Malaysia and Europe. Where the presenters have highlighted the increasing demand for environmental services regionally. Discussions also focused on the role of APEC members and the importance of value-added services for growth and development. This session also has put into context the importance and relevance of environmental services in APEC and other region. Presentations and discussions described the current direction of environmental services and environmental services industries in Asia Pacific region as well as other region. The presenters and participants agreed that there is a need to shape the future of the environmental services and environmental services industry, especially the direction for the 21st century.

2.2 Session 2: Role of Government and Industry in Development of the Environmental Services

The second session of the workshop addressed the role of government and industry in the development of environmental services where experience are shared on development of policies by Governments, processes, and procedures of regulations, and the coordination of industries focusing on environmental services sub-sectors which could benefit developing economies. The plenary session was moderated by Associate Professor Dr. Ahmad Fariz Mohamed, Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia. The speakers for this session were:

- Mr. Yoshikazu Hasunuma
  Deputy Director, Global Environmental Partnership Office, Industrial Science and Technology Policy and Environment Bureau, Ministry of Economy, Trade and Industry, Japan.

- Mr. Franck Jesus
  Head of Environment Division, Trade and Agriculture Directorate, Organisation for Economic Co-operation and Development.

- Dato' Halimah Hassan
  Director General, Department of Environment Malaysia.

- Mr. Khalid Bahsoon
  Chief Executive Officer, UEM Environment Sdn. Bhd.

2.2.1 Presentation by Mr. Franck Jesus

Mr. Franck Jesus, Head of Environment Division, Trade and Agriculture Directorate, Organisation for Economic Co-operation and Development (OECD) shared his thoughts on the role of government in developing environmental services. He highlights that most of the environmental services are driven by environmental taxes and regulations. Hence government policies, such as energy-efficiency regulations and taxes on pollutants or greenhouse gases, are the main driving force that promotes environmental services. However, promotion of environmental services should be associated with other services, such as business services, education services and financial services. Examples of the environmental services include win-turbine maintenance, biogas production, green renovation, carbon capture and storage, etc. Although the growth of environmental services is increasing gradually, there are many policies that impede the development of environmental services. Subsidies to fossil fuels and high import tariff of environmental goods are example of such barriers. Furthermore, Mr. Frank elaborated common barriers to Mode 3 (commercial presence) where, for examples,

limits are imposed on share of foreign ownership, foreign investments are subjected to special screening by the government and only joint ventures are allowed. Based on the potential barriers in promoting environmental services, Mr. Frank proposed few strategies to promote environmental services, namely (i) increase the stringency of environmental regulations; (ii) identify the level of the playing field to tackle market rigidities; (iii) phase out subsidies; (iv) liberalise barriers to trade; (v) adapt local skills to perform environmental services; and (vi) work with trading partners to encourage freer trade in the four modes of trade in environmental services. Last, Mr Frank concluded that there is a positive correlation existing between revealed comparative advantage (RCA) in exporting products and the OECD's index of environmental policy stringency. Meaning that stringent policies can also increase promotion of environmental services.

2.2.2 Presentation by Mr. Yoshikazu Hasunuma

Mr. Yoshikazu Hasunuma from Ministry of Economy, Trade and Industry (METI) Japan introduced Japan's initiatives on the Joint Credit Mechanism (JCM), where the JCM aims to facilitate diffusion of leading low carbon initiatives (such as technologies, systems, services and infrastructures), appropriately evaluating contributions to GHS emission reductions and removals from Japan in a quantitative manner, and contributing to the ultimate objective of the United Nations Framework Convention on Climate Change (UNFCCC) by facilitating global actions for GHG emission reductions or removals that complementing the Clean Development Mechanism (CDM). The JCM is a bilateral collaboration between Japan and a host economy, and it is facilitated by a joint committee. In order to show the correlation between JCM and CDM, Mr. Yoshikazu compared project cycles for both JCM and CDM, as well as the key features of both mechanisms, namely governance, sector/project coverage, validation of project and calculation of emission reduction. Currently there are 12 economies that collaborating with Japan on the initiatives of JCM, where the first economies was Mongolia that commenced on 8 January 2013. Also, Mr. Yoshikazu shared the plan of the Government of Japan to increase numbers of JCM partner economies in the near future. In his conclusion, he highlights that the JCM initiatives is in-line with the UNFCCC Negotiation, particularly Decision 1/CP18 where UNFCCC acknowledges that Parties, individually or jointly, may develop and implement various approaches, including opportunities for using markets and non-markets, to enhance the cost-effectiveness of, and to promote, mitigation actions, bearing in mind different circumstances of developed and developing economies.

2.2.3 Presentation by Dato' Halimah Hassan

Dato' Halimah Hassan, Director General, Department of Environment (DOE) Malaysia presented a paper on scheduled waste management in Malaysia and the way forward. She starts her presentation by introducing the policy statement of the National Environment Policy – for continuous economic, social and culture progress and enhancement of the quality of life of Malaysians, through environmentally sound and sustainable development. Besides that, she also emphasised the shift of paradigm in waste management, i.e. from 'cradle to grave' to 'cradle to cradle'. She

explained that due to rapid industrial growth in the 60s, the Environmental Quality Act (EQA) 1974 was gazetted to balance the economic development and environmental conservation. As far as schedule waste is concerned, there are few legislation for scheduled waste management in Malaysia that governed by DOE to ensure that all 77 categories of scheduled waste that were generated are collected, treated and disposed in a proper and safe manner. On 18 December 1995, Kualiti Alam was awarded that exclusive right to implement and operate the fully integrated facility for collection, transport, treatment and disposal of scheduled waste in Malaysia. In year 2013, a total number of 2,965,611.65 metric tonnes of scheduled wastes were generated. The DOE's inventories indicated that gypsum, dross/slag/clinker/ash, spent lubricating oil, heavy metal sludge and contaminated containers were the main categories of scheduled wastes that generated in Malaysia. The State of Terengganu generated the largest amount (29.78%) followed by Perak (17.98%), Selangor (16.68%), Johor (12.28%), Pulau Pinang (9.99%) whilst the other 10 states generated a total of 13.28%. Dato' Halimah also deliberated issues on trans boundary movement of hazardous waste, as well as the amendments in the EQA 1974 that introduced the new provisions that address illegal disposal of scheduled waste. In her presentation, she highlights that e-waste is one of the most challenging waste stream in Malaysia, where the e-wastes were generated by industry and household. As far as household e-wastes are concerned, DOE collaborating with different agencies, such as JICA, to carry out programme for the recycling of e-wastes. A part from scheduled waste, Dato' Halimah also share the current initiatives of DOE, namely the Environmentally Hazardous Substances (EHS) Notification and Registration Scheme and the enforcement related to contaminated land. Dato' Halimah concluded her presentation by indicating importance of environmentally sound management if hazardous substances and wastes in order to enhance protection on human health and the environment.

2.2.4 Presentation by Mr. Khalid Bahsoon

Mr. Khalid Bahsoon, Chief Executive Officer, UEM Environment Sdn. Bhd. delivered his presentation based on four sections, namely the past, present, collaboration between industry and government, and the future. For the past, Mr. Khalid indicated that 1980s to early 1990s, the policy was more towards end of pipe solutions. In 1989, the scheduled waste regulations were gazetted by taking into consideration inputs provided from NGOs and private sectors to ensure it covers all aspects and dimensions. However, modern treatment and disposal facility are not available at that time. Hence this has resulted Malaysia to open its first Integrated Waste Management Centre (WMC). For present scenario, since Department of Environmental (DOE) Malaysia had shifted it policy direction from end of pipe solutions to waste minimization/ recycling and recovery, and also to encourage waste minimization, government of Malaysia had provided 60% tax rebate on waste management resource recovery, it has resulted less waste sent for treatment and disposal. As far as collaboration between industry and government is concerned, Mr. Khalid highlighted that Kualiti Alam is actively involved in providing professional advices to the government especially in identification, classification and waste

group, schedule waste sampling, handling, storage and transportation guidelines and also spills and accidents action plan; and Kualiti Alam had taken their own initiative to assist government in identifying those companies that mismanage their hazardous wastes. Kualiti Alam has their own data management system where they can generate report of facility inventories, tracking and notification system (e-SWIS) to make the hazardous waste management more effective. Kualiti Alam also collaborates with DOE to create more awareness to the society and industry on proper management of hazardous waste. Mr. Khalid concluded his presentation by indicating that to continuous excel Malaysia performance in hazardous waste management, private sectors must work closely with government to attract more foreign direct investments (FDI), and this will lead to more job creations and boost the domestic economy. He believed smart partnership between private and government will put Malaysia on the world map for best practice of hazardous waste management.

2.2.5 Summary of Q&A

During the Q&A session, question on whether Kualiti Alam has transferred local technologies to overseas were raised. On behalf of Kualiti Alam, Mr. Khalid responded that there is no export of local technologies as development of local technologies for hazardous waste management is still at the early stage. However, he believed that with the supports from the government and progressive R&D, export of local technology is feasible in the future. Also, issue on the safety of hazardous waste use as resources were raised, and Dato' Halimah responded that DOE will ensure that these wastes are safe to be used. Besides that, one of the participants concerned on different standards on foreign equity, where WTO encourages 70% of foreign shares but some economies only allow around 50% of foreign shares for business development. Mr. Franck proposed two potential solutions, i.e. to engage with the economy on free trade agreement; or check with the lawyer on the compliance with WTO agreement. The latter potential solution is considered as a 'hard' solution.

2.2.6 Summary of Session 2

This session focus on the role of government and industry in development of the environmental services. Mr. Franck from OECD shared his thoughts on driving forces, barriers and strategies to promote environmental services, whereas Mr. Yoshikazu shared Japan's initiatives in developing a tool that complement CDM (Clean Development Mechanism), namely the Joint Credit Mechanism (JCM). For the presentation from Malaysia, Dato' Halimah presented existing hazardous waste management in Malaysia and the way forward, whereas Mr. Khalid shared experiences of Kualiti Alam in setting up the Integrated Waste Management Centre in Malaysia. In conclusion, this session has brought up three key messages to enhance environmental services, namely (i) stringent environmental regulations will promote development of environmental services; (ii) it is based on economy's creativity and capacity to develop appropriate tools that could enhance

environmental services; and (iii) the government and industry must work together to promote environmental services at the national level.

2.3 Session 3: Challenges and Opportunities in Developing and Liberalising the Environmental Services Sector

The third session of the workshop discussed the challenges and opportunities presented in developing, promoting, and liberalising the environmental services sector in developed and developing economies. The plenary session was moderated by Mr. Abdel Hamid Mamdouh from the WTO. The speakers for this session were:

- Mr. Johannes Bernabe
  Senior Associate, International Centre for Trade and Sustainable Development.

- Dr. Theng Lee Chong
  Deputy Chairman of Association of Environmental Consultants and Companies of Malaysia.

- Datuk. J. Jayasiri
  Senior Director, Strategy and Monitoring Division, Ministry of International Trade and Industry, Malaysia.

- Mr. Mohamed Azrin Mohamed Ali
  Vice President, Built Environment, Green Technology Corporation, Malaysia.

2.3.1 Presentation by Mr. Johannes Bernabe

Mr. Johannes Bernabe is a Senior Associate with the International Centre for Trade and Sustainable Development (ICTSD) and a Senior Partner at Ocampo Manalo law firm in Manila. He started his presentation on the challenges and issues of trade in clean energy-related services. He stressed that there is a need for political will in policy-making and negotiations. Therefore, the policy-making and negotiations should be a 'win-win' situation whereby the domestic resolution of issues and related questions needs inter-agency coordination, namely Trade, Environment, Energy, Transportation, etc. There are also vested interest lobbied by oil companies, consumers and automotive sector on the subsidies to fossil fuels. The substantive technical issues include sector coverage, regulatory framework and embedded barriers as well as consistency with international rules. In view of businessmen do not distinguish goods and services based on conventional paradigm of goods and services because the core and related services are often integral, critical, dual use and applicability. Hence, it may be beneficial for not making different regulatory regimes for goods and services. At the domestic level, perhaps the governments should look at the environment and renewable energy from a holistic sectoral perspective, not as policy spheres distinct from one another. The governments are aware of difficulty in having a WTO agreement which encompasses consolidated rules for goods and services, using existing GATT/GATS architecture. Thus, the WTO

framework should not be a barrier to a domestic sectoral approach towards liberalisation. The definition and scope are also one of the challenges whereby core environmental services are not really clear cut due to the different components. There are components such as generation, transmission and distribution under renewable energy services. However, not less than 35 services are involved (including smaller equally critical services: foods, transportation and maintenance crews). Therefore, the three components model may need to be adjusted. Another issue is 'Duality' whereby there is no distinction for the purpose of liberalisation. It is complicated by 'dual applicability' of related services, environment and renewable energy. Environmental services are often impeded by trade and investment barriers and domestic regulations. Domestic regulations in WTO context include qualification requirements and procedures, licensing requirements and procedures and technical standards. Number of procedures, time required, costs incurred, captive standards, on-the-ground competence of government agencies and financial institutions also give challenges to secure the loans for the project. Mr. Johannes also shared some opportunities and platforms, such as: (i) WTO GATS Negotiations (since 2000) – multilateral approach as well as sector-specific proposals in environmental and energy services. (ii) The Green Goods Initiative – Plurilateral approach among 14 WTO members, aims to remove barriers to trade and investment in 'green' goods, services and technologies. (iii) Trade in Services Agreement (TISA) – Plurilateral approach among 50 economies, representing 70% of world trade in services. (iv) Free Trade Agreements (FTA) – Mega-Regional, e.g. ASEAN, ARCEP, TPP (v) Asia-Pacific Economic Cooperation (APEC). Lastly, Mr. Johannes concluded his presentation by giving some way forward options, such as: (i) Reference papers should be prepared by the governments for environmental and renewable energy services, (ii) Holistic approach is needed at the domestic level in view of difficulty in segregating goods and services - Understanding on financial services is needed. It should be descriptive rather than enumerative entry and listing of committed services. Transparency disciplines, standstill binding of commitments, access to payment and clearing systems and necessity testing in regulation, (iii) Waiver or authoritative interpretation to allow green subsidies in the WTO to avoid possible disputes.

2.3.2 Presentation by Datuk J. Jayasiri

Datuk J. Jayasiri is the Senior Director for the Strategy and Monitoring Division of the Ministry of International Trade and Industry, Malaysia (MITI). Datuk Jayasiri started his presentation on the APEC Mandate, such as: (i) Leader's Action Agenda 2007, (ii) APEC EGS Program Framework 2008, (iii) Honolulu Declaration 2011. Datuk Jayasiri also highlighted the achievement of 2011 APEC leaders Ministerial Meeting in Montana, reaffirmed Leaders' previous commitments to reduce existing barriers and refrain from introducing new barriers to trade and investment in environmental goods and services, to explore ways to promote greater liberalisation of trade in environmental goods and services. APEC Economic Leaders agreed to reduce applied tariff in 54 environmental goods to 5% or less by the end of 2015 despite the lack of uniform definition of environmental goods and services. However,

there are challenges to develop and liberalise environmental services sector. The fundamental challenge is no agreed international definition which must be addressed. UN Central Product Classification (CPC) has listed seven sub-categories of environmental services: sewage services, refuse disposal services, sanitation services, cleaning out exhaust gases, noise abatement services, nature and landscape protection services and other environmental protection services. Several other definitions have also been proposed for environmental services by WTO, GATS, Henry Phillippe Ibanes de Novion. Datuk Jayasiri highlighted other challenges including interpretation of "Environmental Services", coordination on policy – various ministries/agencies involve and over 250 multilateral environmental agreements (MEAs), developing the sector, liberalisation and lack of public awareness. Datuk Jayasiri also elaborated initiatives in other multilateral/ international forums need to have coherence between work being done in APEC with other international bodies such as UNFCCC and WTO. There are over 250 MEAs, about 20 of these may affect the trade. Malaysia is not a member to all MEAs. Therefore, the challenge is to ensure coherence and policy coordination. The global community is confronted with many challenges related to the environment and climate change. As a result, many economies are promoting sustainable development by investing in improvising environmental services such as ensuring clean drinking water, pest and disease control and proper sanitary measures including waste disposal. Apart from this, initiating the concept and adoption of sustainability amongst policy makers and the public at large imposes the greatest challenge. Any public policies and initiatives can only succeed with the support of the public. Instilling awareness on environmental conservation is an important step towards creation of an environmental conscious society. Environmental service and its importance should made known to the people at the grassroots level. Continuous promotion, education and information dissemination is essential to create the buy-in of the public to adopt sustainability as part of their lifestyle. Even though there are challenges, there are also opportunities that provide benefit. Malaysia believes national efforts are crucial in achieving the goals of sustainable development in which Malaysia has developed various policies and initiatives to attain the agenda. The national policy on the environment, aims at the continued economic, social, and cultural progress of Malaysia as well as enhancement of the quality of life of its people, through environmentally sound and sustainable development. The policy aims at achieving: (i) A clean, safe, healthy and productive environment for present and future generations, (ii) The conservation of the economy's unique and diverse cultural and natural heritage with effective participation by all sectors of society, (iii) A sustainable lifestyle and pattern of consumption and production. Malaysia's national environmental policy emphasises on: (i) Exercising respect and care for the environment accordance with the highest moral and ethical standards, (ii) Conserving the natural ecosystems to ensure the integrity of biodiversity and life support systems, (iii) Ensuring continuous improvement in the productivity and quality of the environment while pursuing economic growth and human development objectives, (iv) Managing natural resources utilisation to sustain the resource base and prevent degradation of the environment. The National Green

Technology Policy was formulated in 2009. The policy was built on four pillars, i.e. energy, environment, economy and social which clearly state that green technology shall be the driver to accelerate the national economy and promotes sustainable development. The National Goal of the policy is to provide direction and motivation for Malaysians to continuously enjoy good quality living and a healthy environment while promoting sustainable environmental development. Datuk Jayasiri concluded the opportunities created include: (i) Introducing Feed-in-tariff to help finance renewable energy investments, (ii) Providing fiscal incentives and funding for green technology investments, (iii) Promoting projects eligible for carbon credits, (iv) Promoting eco-tourism to create commercial value in sustainability, (v) Facilitating greater participation of local communities in eco-tourism activities and bio-diversity protection as a self-sustaining means to support environmental conservation, (vi) Initiating public-private CSR initiatives around protection of flagship species (e.g. the Malaysian tiger, orang-utan, leatherback turtle) as part of broader habitat.

2.3.3 Presentation by Dr. Theng Lee Chong

Dr. Theng Lee Chong is the Deputy Chairman of the Association of Environmental Consultants and Companies of Malaysia (AECCOM). Dr. Theng shared his view from the waste management perspectives. Malaysia has made considerable headway in environmental issues compared to other economies. In the 2010 Environmental Performance Index Malaysia ranked 54th out of 163 examined economies. Despite a relatively positive environmental record, the economy faces a number of environmental problems due to the rapid economic growth and industrialization in the past decades. Dr. Theng shared the linkage between different types of waste and the development of waste management in Malaysia. In the early 1970s, Malaysia was practising open dumping which contributed to pollutions and hygiene problems. Malaysia was then practising sanitary landfills and 3R waste management. And currently, Malaysia has SWM Strategic Plan, Waste Minimisation Plan as well as well as SWM Act and Regulations in place. Waste sectors in Malaysia are interlink but rarely integrated/managed holistically. Moving forward, Malaysia will adopt integrated SWM and waste-to-energy management. Dr. Theng deliberated the challenges: (i) Setting of priority (not in priority list, lack of long-term planning and economic/physical development), (ii) Economic instruments/funding (willingness to pay, best affordable model and development budget), (iii) Technical (technical know-how, transfer of technology and technology barriers of local vs foreign), (iv) Legal & institutional framework (overlaps of jurisdictions, private and public gap and capacity constraint), (v) Culture (maintenance, awareness, and commitments) and (vi) Political will (the factor that drive all the initiatives). Dr. Theng also highlighted the opportunities whereby Malaysia has a huge need of environmental technologies in many areas. There is a great need for investments in the waste and other environmental related industries, such as: public-private partnerships (PPP), private financed initiatives (PFI), provisions of incentives/ subsidies/FIT/other supports and financing scheme. Malaysian government and companies require expertise from foreign partners and are willing to collaborate with highly industrialized economies; as well as assisting other developing economies in need

through G-G collaborations and technical exchange/capacity buildings. The National Green Technology Policy and Green Malaysia Plan 2030 are also the opportunities for the environmental services. Lastly, Dr. Theng concluded that technical know-how, capacity building, money, materials, manpower and commitments/political will/self-efforts by the Malaysians are the solutions to move towards integrated SWM with high technology.

2.3.4 Presentation by Mr. Mohamed Azrin Mohamed Ali

Mr. Mohamed Azrin Mohamed Ali is the Vice-President (Built Environment) for Malaysian Green Technology Corporation (GreenTech Malaysia). Mr. Azrin started his presentation by giving some introduction about GreenTech Malaysia which is catalysing green technology deployment as Malaysia's strategic engine for socio-economic growth. The green growth in Malaysia can be induced by enable players to facilitate green technology adoption and experience immediate as well as medium-long term impact. Mr. Azrin also deliberated the key issues of green technology in environmental services, such as: (i) lack of innovative financing of green technology projects, (ii) green technology products perceived as expensive, (iii) lack of understanding on green technology, (iv) scepticism & confidence in some green technology product, (v) infrastructure to support green technology, (vi) lack of influencing/enforcing instruments, (vii) unclear direction & prioritisation, (viii) lack of green technology product in local market, (ix) lack of local expertise throughout value chain and (x) multiple strategic plan at ministries/sectors. Mr Azrin shared the case study of electric mobility in terms of key motivation, benefits and putting it into action. Lastly, Mr. Azrin concluded the presentation by sharing the way forward for green technology, such as: (i) strengthening the financial support for green technology adoption, (ii) increasing recognition of green product labelling, (iii) catalyse green business and women entrepreneurship, (iv) procurement – leading by example government and private sector, (v) capacity building in green technology, (vi) transforming the green technology institutional framework and ecosystem, (vii) regulatory framework and market instrument – carrot and stick approaches, (viii) encouraging green technology innovation, (ix) easy access to information – green technology knowledge repository and (x) more promotion, awareness, advocacy programs.

2.3.5 Summary of Q&A

Mr. David from 3R Quest posed a question on whether liberalisation of incineration is the only way to manage solid waste and hazardous waste. Datuk Jayasiri from Ministry of International Trade and Industry responded that Malaysia has already liberalised 19 sectors of environmental services and 1 of them is incineration. Datuk Jayasiri also added that Malaysia does not discriminate foreign investment in environmental services, but it is being negotiated at different stages with different acceptance of foreign equity level. Malaysia has also liberalised environmental services through MAFTA and Malaysia-NZ FTA, providing market access and trade expansion for trade and services related to environmental services. These commitments include wastewater management, cleaning services of exhaust gases,

noise abatement services and nature and landscape protection services. Under the autonomous liberalisation initiative in 2012, incineration services were liberalised.

2.3.6 Summary of Session 3

Session 3 discussed the Challenges and Opportunities in Developing and Liberalising the Environmental Services Sector. In this session, the speakers have shared and discussed the relevance of environmental services from the perspectives of clean energy-related services, MITI, waste management and GreenTech Malaysia. The speakers have provided the context for environmental services and environmental services industries. The latest trends, as well as challenges and opportunities in environmental services and environmental services industries have also been updated by the speakers through the discussion on developing, promoting and liberalising the environmental services in APEC economies. In conclusion, this session has highlighted the key challenges for developing and liberalising environmental services sector, namely (i) definition and scope of environmental services, (ii) funding instruments, (iii) technical know-how and technology transfer, (iv) legal and institutional framework, (v) coherence and policy coordination and (vi) political will. The speaker have also proposed the way forward and sets of good policy practices in environmental services, namely (i) strengthening the financial support for environmental services, (ii) transforming the environmental services institutional framework and ecosystem, (iii) capacity building and (iv) promotion, awareness and advocacy programs.

2.4 Session 4: Experience Sharing on the Development of Environmental Services by APEC Member Economies

The fourth session revolved over the sharing of the development of environmental services regime, the development of environmental services policies, and the coordination and implementation of strategies for current and future of the sector. The plenary session was moderated by Mr. Joachim Monkelbaan from the Trade, Policy and Planning Unit Economics and Trade Branch of the United Nations Environment Programme (UNEP). The economy representatives were given 5 – 7 minutes each:

- Solid waste management
  Ms. TRAN Thi Thanh Thuy (Vietnam)

- Hazardous waste management
  Ms. Imelda Matubis (Philippines)

- Renewable Energy
  Dr. Natalia Stapran (Russia)

- Green Technology
  Mr. Hazli Jemaat (Malaysia)

- Datuk Ab Rahim bin Md Noor (Malaysia)

2.4.1 Presentation by Ms. Tran Thi Thanh Thuy

Ms. Tran shared the experience on the development of environmental services in Viet Nam through Viet Nam domestic policies and international commitments on environmental services. Viet Nam's has put in place several policies to protect the environment such as:

- National Strategy on Environmental Protection (2010-2020) that aims to meet the requirements of environmental protection in the context of industrialization and regional economic integration;
- Environmental Protection Law (1993-2005) incorporated environmental services, waste management and encouraged investment to spur the growth of environmental services as well as introducing environmental protection planning and provisions on green growth;
- National Environmental Services Development Strategy 2020 that gives an overview and recommendations on proposals to develop environmental services.

Currently Viet Nam is a member to 11 conventions and international protocols related to environmental protection and services. Under the GATS schedules, Viet Nam has committed to open up 11 sectors, including environmental services, namely, sewerage services; wastewater treatment services; cleaning exhaust gas services; noise services; and environmental impact assessment services. The number of environmental enterprises has increased over the years with 740 enterprises in 2013 compared to 605 enterprises in 2008 with most of the companies are SMEs. Meanwhile, the percentage of stock companies distribution is as follows: 44% state capital; 32% private owned companies; 11% cooperative; and 13% FDI. Until 2013, there are 104 FDI projects in environmental services operating in Viet Nam with the big investors are USA, Australia, and Japan. However, Solid Waste Management in Viet Nam is still in its infancy as capacity to classify, destruct and regenerate waste is limited. Currently, Viet Nam is entering negotiations in the Trans-Pacific Partnership, bilateral FTAs with the EU, Korea and the ASEAN framework.

2.4.2 Presentation by Ms. Imelda F. Matubis

Ms. Imelda shared Philippines experience mainly from the hazardous waste management perspective. In general, Philippines shared their commitment in 3 conventions, namely: Stockholm Conventions; Basel Conventions; and Rotterdam Conventions. The Republic Act 6969 provides legislative framework on toxic substances, hazardous and nuclear waste. There are 14 classifications of hazardous waste. She also shared with some of the opportunities and challenges in managing hazardous waste. Some of opportunities mentioned were ability to generate job such as chemist and sanitary engineers, conduct outreach programme to encourage

industry and services sector to adopt ecologically sound waste management system and provide investment opportunity to rehabilitate abandoned dumping sites transform into other form of economic growth. Meanwhile challenges exist in terms of raising public awareness on the presence of hazardous waste in materials, lack of incentives given to encourage best management practices, insufficient and disaggregated data in managing hazardous waste and ill-equipped medical services/personnel for emergency situation due to hazardous exposure.

2.4.3 Presentation by Ms. Natalia Stapran

Ms. Natalia shared the experience of renewable energy from the Russian perspective mainly from RusHydro. Russia shared its experience on the renewable energy generated from hydropower. In the context of renewable energy, there is no clear definition and classification. Russia's potential in renewable energy is not optimised as it generates 1% of green electricity and less than 5% of green heat in total annual power and heat output. Russia's energy strategy 2020 sets to expand the production of electricity and heat from renewable energy sources of at least 80-100kWh per year by 2030. Thus, the Renewable Energy Development Agreement (2013) has given focus for Russia to generate renewable energy through the following technology: Wind generation; Biomass energetics; Hydraulics power stations; Photo-voltaic; and Geothermal energetics. RusHydro is the leading Russian utilities and renewable energy company. The company is due for partial privatisation (50%+1% should remain as state owned). The company operates 70 hydropower stations and over 30 mid and large size thermal plants. RusHydro's commitment to sustainable energy production has led the company to become: Rank 7th globally by definition of green capacity; Rank 5th globally by hydro and renewable energy; and Rank 4th globally by hydropower.

2.4.4 Presentation Mr. Hezli Jemaat

Mr. Hezli Jemaat shared the Malaysian experience by stating investment opportunities and incentives as well as challenges in green technology and environmental services. Malaysia has liberalised the manufacturing sector with allowing 100% foreign equity. In the services sector, Malaysia has liberalised 45 services sub sectors including healthcare, tourism, logistics, education, oil, gas, and management consulting services. In terms of Green Technology, the formulation of the National Green Technology Policy aims to reduce the energy usage rate and at the same time increase economic growth; facilitate the growth of green technology industry; increase national capability and capacity for innovation in green technology development and enhance Malaysia's competitiveness in green technology; ensure sustainable development and conserve the environment for future generations; and enhance public education and awareness on green technology and encourage its widespread use. Some of the promoted green activities are renewable energy; energy efficient; waste recycling; green transport; building technology; electrical and electronic products; and oil palm biomass. However there are several challenges in promoting green technology and

environmental services namely require mindset change, create ecosystem, value and supply change; lack of quality investment, R&D efforts and technical know-how, confusion of task and jurisdiction implication; high investment and inability to achieve national target. Therefor more initiatives are needed to tackle these challenges in promoting green technology among industry and service players, such as major incentives offered are pioneer status with income tax exemption ranging from 70% to 100% for a period of 5 to 10 years; investment Tax Allowance from 60% to 100% on qualifying capital expenditure for 5 years; and reinvestment Allowance 60% on qualifying capital expenditure for 15 consecutive years; and import duty & sales tax exemption for raw materials, components, machinery and equipment.

2.4.5 Presentation by Datuk Ab Rahim bin Md Noor

Datuk Ab Rahim shared Malaysia's experience in transforming solid waste management from local authority to privatization by the three concessionaires.
In his presentation, he shared extensively on PPSPPA Strategic Plan 2014-2020, in which there are seven strategic thrusts as stated below:

Thrust 1 - Mindset transformation towards clean and sustainable environment
Thrust 2 - Excellent solid waste management for sustainable future
Thrust 3 - Enhancement of technology, facility and service of solid waste management
Thrust 4 - Strengthen regulatory and enforcement actions
Thrust 5 - Strategic financial management for sustainability
Thrust 6 - Enhancing R&D capacity
Thrust 7 - Enhancement of corporate image and organization delivery system

The Comprehensive Action Plan for Solid Waste Management 2015 – 2020 was also deliberated into six components:

(i) Transforming the mindset of public by educating and creating awareness on the environment and solid waste management;
(ii) Encouraging the public to practice 3R in their daily life;
(iii) Providing system, facilities, and technology for solid waste management;
(iv) Creating a conducive environment that promotes 3R and to ensure sustainable future;
(v) Enhancing R&D in the areas of solid waste management; and
(vi) Effective enforcement of the enacted laws and regulation

Some of these waste components focused are food waste, industrial waste, diapers, tetra pack, construction & demolition waste, plastic waste and electric and electronic waste. PPSPPA strives to eliminate illegal dumping by 2014 in the states which have adopted Act 672 and complete the cleaning of all problematic public drains by mid-2015.

2.4.6 Summary of Q&A

A question regarding the availability of any incentives for the public to promote the 'reuse' component of environmentally friendly practices are raised by Mr David of 3R Quest. Mr. Hazli Jemaat responded to the question where he requested Mr. David to visit MIDA for further advice. Mr. Abdel Hamid Mamdouh, the Director of the Trade in Services Division of the WTO raised an open question to the panel of speakers regarding capacity building by governments on matters relating to environmental services to enhance the competitiveness of domestic players. He posed a question on the current status of competition policy in respective economies, and followed by another question on whether these economies are ready to embrace liberalisation in the environmental services sector in order to benefit the people. Dr Natalia Stapran (Russia) mentioned that in Russia, there is not much profit in renewable energy businesses, which has resulted in less desire for competition. However, the government has encouraged businesses to embark on green initiatives. Whereas in Viet Nam, Ms. TRan Thi Thanh Thuy stated that
Viet Nam encourages foreign direct investment in the environmental services sector to improve the capacity of domestic services suppliers.

2.4.7 Summary of Session 4

In this session, speakers have shared their experiences in the development of environmental services based on issues in environmental services, past, present and emerging, where incentives, opportunities and challenges were also presented and described.

2.5 Group Discussion

The break-out session for the four thematic groups, namely solid waste management, hazardous waste management, green technology, and renewable energy development were conducted in the morning of Day 2. The thematic break-out groups are:

- Group 1: Solid waste management
  Facilitator: Mr. Sivapalan Kathiravale
  Principal Analyst, Emerging Technology, Malaysian Industry Government High Technology.

- Group 2: Hazardous waste management
  Facilitator: Ms. Norhazni Mat Sari
  Director, Hazardous Substance Division, Department of Environmental Malaysia.

- Group 3: Green technology
  Facilitator: Associate Professor Dr. Ahmad Fariz Hj. Mohamed
  Research Fellow, Institute for Environment and Development (LESTARI), UKM

- Group 4: Renewable energy development
  Facilitator: Ms. Azah Ahmad
  Director of Renewable Energy Technology Division, Sustainable Energy Development Authority, Malaysia

The participants of the workshop were gathered after lunch for a plenary session on Good Policy and Regulatory Practices in Environmental Services where each group presented the outcome of their respective discussion in break-out groups, followed by discussion and concluding remarks. Dato' Abdul Latif Haji Abu Seman, the Deputy Director General (II) of Malaysia Productivity Corporation chaired the session.

This session was summarised in a schedule for brevity and clarity.

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
Wong Chee Ming @Aiman Wong	GROUP 1: SOLID WASTE MANAGEMENT	
	General issues/ concerns	• **Regulation and enforcement**. Measures and provisions are available, but in Malaysia enforcement is lacking. Need to strengthen political will. • **Performance**. Need a key performance index to assess implementation and market performance. • **Awareness and education**. Lack of awareness and need for education. Intensification of awareness programmes for waste minimisation. Translate data into info graphics at multiple scales. • **Markets.** Availability of markets for recyclable products need to be addressed. • **Disposal systems**. Need for systematic disposal system for home users. • **Initiatives/ Funding / Investments**. Initiative/Funding/Investments to encourage waste reduction and recycling, and turn 'waste to wealth' (need to be more PFI-driven). • **Consumerism/ Consumption.** Need to target consumers, and address consumption patterns. Give consumer choices for environmental/non environmental friendly products/ environmental ratings. • **Environmental services**. Need to look at it as 'open services', not just a government driven public service; liberalisation of services. • **Expertise.** Lack of expertise to push for better environmental services/ competiveness.
	Development of Solid Waste	
	A1. Initiatives	• Available regulations, e.g. Solid Waste and Public Cleansing Management Act 2007 (Act 672). • Initiatives for public awareness available but rather top down • Government incentives for recycling available but limited • Key Performance Index available • Limited privatisation of services
	A2. Issues/ concerns	• Lack of effective enforcement of laws and regulations • Conflicts of interests : political/regulation/market interference • Problem of monopoly, Insufficient number of SWM firms • Lack of awareness in terms of services, markets, consumers/public • Addressing handling of waste from generation to final disposal, with material recovery and promotion of recycling centres. • Competitiveness in terms of services costs and delivery particularly efficiency and transparency, and operating costs and environmental products.
	A3. Recommen	• Synergise related laws and policies to allow for extended services to be integrated.

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
	dations	• Attractive incentives for current and new markets for private sector to drive the market. Create markets and drive demand for recyclables. • Introduce new policies or programmes to address consumption patterns and make available biodegradable products from government to individual consumers. • Targeted, Private Public Partnership initiatives with outcome based indicators for awareness and education programmes. • Any developers to build communal recyclables facility and private O&M. • Polluter Pay Principles and Extended Producer Responsibility to be implemented. • Benchmark. Look at best practices and methods • Introduce certification schemes for industries, e.g. zero waste certification • Environmental service providers get good ratings.
	A4. R&D Opportunities	• R&D for waste processing and treatment • R&D to push use of recyclable or reused materials / products / 'innovative and friendlier' packaging • R&D and innovation for management and disposal of solid wastes • R&D for value creation • R&D on establishing a clearing house for solid waste, to sort recyclables for local or overseas markets • R&D for mind-set and cultural change
	A5. Funding & Investment	• Funding and investment is available, but coverage limited, government can call for increased investments from multiple sectors and looks at positive 'subsidies' • Environmental services/awareness/education led by industry to get new tax structure • Incentive for environmental services start-ups where recyclables can become commodities. • Penalties collected to be channelled for RDI funding. • State/local authorities that do good environmental services get more allocation from federal government. • Public Private Funding for creation of education and awareness towards culture change.
	Liberalisation of environmental services	
	B1. Initiatives	• Strict regulation to set up SWM firms/due to current act and regulation. • Liberalisation based on foreign equity ownership.
	B2. Issues/ concerns	• Market monopoly and demand/lack of expertise/protecting local market.

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		• Define environmental services, provide clear context and coverage for liberalisation of environmental services. • In Malaysia, environmental services not fully liberalised e.g. Malaysia –New Zealand market access for foreign equity is only at 30% and only through joint ventures. • Promotion and drive to further develop SWM services.
	B3. Recommendations	• Open markets for environmental services. • Packaging directive policies and product design directives for manufacturers. • Promote public private environmental services through targeted programmes. • Special provisions of incentives for companies who invest in environmental services for solid waste treatment. In Viet Nam incentives are given to FDI's. • Government to create policies and act that drives demand for environmental services e.g. creation of biodegradable bags and encourage usage of recyclable by local authorities in SWM.
	B4. R&D Opportunities	• Foster regional (ASEAN and APEC) collaboration in SWM R&D. • Increase joint R &D activities in the Asia Pacific. • Annual platform for R & D activities on environmental services.
	B5. Funding & Investment	• Extend scope of existing grants/ soft loans to promote SWM start-up companies. • Tax reduction for environmental services companies. • Establish mechanism to facilitate funding for the development environmental services and solid waste treatment services. • Encourage foreign investments for environmental services
	Conclusion	Way Forward • KPI's to be set in the environmental services sector to meet the demand in solid waste industry • Awareness and education is the key in driving environmental services. • Creation of new market for the Liberalisation of environmental services. • Follow up meetings on the same topic in the next APEC forum to gauge outcome.
Ms Brenda Heah 3R Quest Sdn Bhd	**GROUP 2: HAZARDOUS WASTE MANAGEMENT**	
	A. Development in Hazardous Wastes	
	General issues/ concerns	**Malaysia** Prior to 2005, the approach is cradle to grave (end of pipe solution) • From 2005, by amending the laws – promoting 4R (cradle to cradle) • In the planning to amend regulation on HWM – focus on risk based approach.

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		• It is challenging to identify culprit of illegal dumping of hazardous waste • Establishing finger printing profiles for HW. • Strengthening import and export of HW • Potential illegal traffic on E-waste in this region • Policy (for private sector) needed for HWM, e.g. incentives for green technology in HWM. • In general, liberalisation normally applied to services that are not available locally. • Demand on environmental services increasing gradually and perhaps Malaysia could spearhead certain sector under environmental services, such as HWM. • Common agreements among APEC economies on environmental services would facilitate promotion of development and liberalisation of environmental services. • Enforcement is one of the important components to ensure environmental protection. • Perhaps more facilities (in different region) that capable in treating HW to be established, where it could reduce transportation cost for schedule waste generators etc. • Regulatory framework for recovery facilities is in place. • In terms of recovery facilities, for example, e-waste recovery facilities are different compare to other economies. • In general, termination of exclusivity can be seen as opportunity for liberalisation. • As far as local knowledge in concerned, Malaysia should build its own capacity in promoting environmental services, e.g. recovery facilities for HW. **Philippines** • Enforcement of the streamlined procedures for hazardous waste – transportation, process, disposal. • Upgraded and more stringent standards is now in place • Accreditation through license or permits to become providers for disposal & treatment of HW. • The local technology for HW treatment is needed. **Chile** • More than 50% export is copper • Welcome investment related to environmental services • HWM is a business opportunity. • Challenge – concerns from the people, hence need a better regulatory institutional framework and enforcement. • Incentives needed for industries, for example, companies that reduce and reuse their materials.

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		China • Since 1990s, numerous private sectors involve in environmental services. • Law in China after 2007 allow foreign investment on HWM, but with limitation. However, such limitation was removed 2 years ago. • Government of China monitor closely all type of development via satellite monitoring. • Satellite monitoring has shown successful case in preventing environmental pollution. • Challenges – too many people intend to involve in relevant services. • Air pollution is one of the concerns of the government of China – develop more tools for monitoring purposes • Initiated more stringent control on HW, especially e-waste • Opportunity for environmental services in China **Vietnam** • List of regulations on Hazardous substance and waste • Challenge is on the collection of hazardous waste. • There are import and export of hazardous waste. • To enhance capacity of private company dealing with HWM. • Special facilities are available in Vietnam that handling HW. • Numerous regulations are available, need to strengthen enforcement related to HWM.
	A1. Initiatives	• Classification • Technology standards varies • Exclusivity • Integrated waste management • Valuation of waste • Exclusivity to be fair for business development • Extended producer responsibility • National policy on the environment
	A2. Issues/ concerns	• Shortage of sources of HW • Communication avenues to be improved with Govt. regulatory bodies e.g. MITI, DOE, MIDA • Mechanism should be put in place to monitor transport of HW from origin to the end user • SME's look and see • HW generated by household • Delivery method to be specific e.g. regular forums follow up • Less red tape • Laws and institutions/Supervision/Enforcement • More and better information to generate efficient policies

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		• Definition of HW code and custom tariff code • Stiff competition among recycles (for the same waste) • Interpretation of regulation 7 SWM (Scheduled Waste Management) varies
	A3. Recommendations	• End monopoly with SMEs • Integrate HW and solid waste collection for more effective operations • Capacity building • Terminate exclusiveness for schedule waste facilities • Advance technology in tracing/monitoring transport of HW from origin (source) to recycling economy • Refine the requirements for regulation 7 SWM (Scheduled Waste Management) • Conduct horizontal mapping to identify overlapping regulations • Stop licensing new facilities unless its proven green/ESM technologies • Working with communities • Allowing foreign players allows transfer of knowledge and technology to domestic players • Green procurement purchase eco material alternative material to replace the current toxic material for production/operation • Weed out partial recovery (inactive) • Do not forget to apply hierarchy: • Prevention • Reuse • Recycling • Energy valuation • Elimination • Small incinerator for individual industry use reduce logistic cost • Govt. should allowed recycling industry enjoy tax and duty exemption • GST • Custom duty • during importation, LMW (license manufacturing warehouse) and FTZ • Recycling at license contractor site • Direct contact to regulatory/ Govt. bodies dedicated line/ liaison officer appointed • Application processes for all permit and approval to be easier online • Skilled workers especially for workers directly involved in HW handling • Govt. and regulatory bodies to coordinate with each other

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		• To establish a green incentive program e.g. recognition, rewards, funding, tax reduction, etc. • Enforce domestic segregation of HW • More education for public on HW • Audit on HW management – conducted by registered consultant (3rd party) • Technology • Integration of waste management in business plan • Policy on licensing based on supply and demand • Duties, GST, tariffs etc for all green companies to be evaluated • All factories, especially new must be DOE registered as a requirement before operating licence issued
	A4. R&D Opportunities	• Nurture local industries • Capacity building in technology development, operations • Study on more possibilities of recycling HW • Development of experts (to assist on various issues as well as court cases) • Detail characteristics of each 77 code for forensic purposes • Funding program for R&D • R&D on alternative resources to replace current toxic material
	A5. Funding & Investment	• Funding/incentive for SME to transform their production to clean production • More officer competent in HW management (private and Govt.) • Govt. should support on the funding and investment for • New technology • Initiative programme • Support local technology – landfill. Incinerators, facility • Create incentives and funding • Funding – local and foreign to be easier e.g. MIDA, MITI, DOE, Green Tech to facilitate • Provide cess for investment on hazardous waste recovery facilities
	B. Liberalisation of environmental services	
	B1. Initiatives	• For selected APEC economies - monopoly of Treatment Disposal • For selected APEC economies - monopoly by One Party • APEC Forum On Trade • Facility and Transportation need to be same owner (DOE Law)
	B2. Issues/ concerns	• Too Many Players • Review and Dismantle same ownership for facility and transportation (DOE Ruling)
	B3. Recommendations	• Import of HW to be considered with green and ESM proven technologies • Fully liberalized the services to allow participation WM Services from within the economy and from abroad to allow the sector to

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		be competitive in translating to quality services and fair pricing. • Exchange of environmental experts • Promote ISO 14001 • Enforcement to be tighten/enhanced • Sources of hazardous waste should be listed or available anytime • Open up market for players with new technologies • Extended Producer Responsibility • Audit for HW players. • Exports permit application (easier) for waste that cannot be treated in Malaysia.
	B4. R&D Opportunities	• Repository of Information – players/technology? • Advanced technology at par with developed economies • Bilateral cooperation on R&D should be promoted.
	B5. Funding & Investments	• Foreign funding partners – maybe list of potentials • R&D Opportunities with foreign institutions and companies • APEC should provide fund for regional projects
	Conclusion	• Incentives for industries that promote green processes and products. • Regulatory framework to be strengthened. • Environmental services provide better opportunities for business • Promotion of liberalisation should be in line with Multilateral Environmental Agreements (MEAs) such as Basel Convention. • Enhancement of local capacity, as well as knowledge and technology transferred. • Intensification of information exchange and dissemination of environmental services. • APEC should define 'environmental services', 'development' and 'liberalisation' in the context of APEC economies.
Dr. June E-Tan ISIS	**GROUP 3: GREEN TECHNOLOGY**	
	Development of Green Technology	
	General issues/ concerns	Definitions: • Green Technology is the development and application of products, equipment, and systems used to conserve the natural environmental and resources, which minimises and reduces the negative impact of human activities. • The definition agreed by the participants – "*Technology that supports the three pillars of the sustainable development agenda*" – Environmental protection, economy opportunities and social well-being.
	A1. Initiatives	**<u>Malaysia</u>** • Green Jobs Website • Incentives for RE & EE.

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		• National Automotive Policy 2 (NAP)- Energy Efficient Vehicle & EV • Budget 2015 - Electric Buses • Eco-label products • Carbon footprint-SIRIM • EV excise duty reduction • Gifts- RE / Energy Efficiency • MyHijau • Greentech Policy and master plan • Feed In Tariff • Certification Scheme for Hotels • Stewardship councils • Subsidy rationalisation for fuel • Awareness and campaign • Development of National Green Building Rating System • Pilot agencies on green programmes • Mini incinerator-Foreign technology used by Malaysian Govt. **<u>Other APEC economies</u>** • Available technologies from technology providers worldwide • Japan: Joint Crediting Mechanism (Support cost of FS-demonstration project and capacity building • Japan: Innovation for Cool Earth Forum (ICEF)-International forum for technology innovation to address the climate change issue • Russia: Technological Platform Technological for ecological development - to combine the efforts of govt. bodies, business science to work together on development of green tech and implementing them in practice. • Indonesia: Presidential decree No. 39/ 2014 regarding business field that are conditionally open for investment • Indonesia: Law No. 32/2009 (rev 2002) regarding environment protection & management
	A2. Issues/ concerns	**<u>R&D</u>** • Research not applied and commercialized especially those obtain government funds. • Providing new technology to SMEs. • Lack of trained and skilled personnel/human capital in development and maintenance. • Lack of opportunities of new technology development and application. • Inadequate technological know-how. • Foreign tech. adaptability due to differences in climate such as humidity. • Lack of funds to expand the eco-label products.

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		• Not many R&D initiatives conducted for eco-label. **Policy** • Unattractive FIT i.e. low rate of return on investment • Overlapping function and lack of coordination among agencies. • Buy-in by policy makers/consumers/industry players. • Transparency in policy and decision making • Lack of opportunities for local companies • Preference for foreign technologies • Green procurement - Govt. green procurement officers in MOF in charge of procurement not involved in green tech initiatives • Bureaucracy - Legal amendments takes too long make Malaysian industry unable to grab the opportunities (take min 3 years). • Not stated in the law- difficult to do business under current legal regime. • Government awarded projects to certain "groups" frustrate green experts – not the right people get the projects. **Infrastructure** • Lack of infrastructure for charging/fuelling green car. • Infrastructure is not sufficient and up-to-date to support green tech development. **Awareness** • LCA- Lack of manufacturers' awareness. • Indifference from stakeholders. • Industries concerned about profit more than environment • Cost of production does not include lifecycle assessment • Carbon footprints/ logistics not a priority of its own • Non- biodegradable packaging materials **Standards** • Standards for Green Technology in developing stages. • Perception- new tech = high cost • Difficult to change • Too many labels confuse the public, e.g. green building rating systems for private and govt. **Others** • Prices/ costs not competitive and willingness to pay as internal costs increase the price. • Difficult to promote eco-label products/ carbon footprint products to SMEs. • High cost of green car, i.e. purchasing and maintenance. • Russia: A gap between science and business. There is no stimulus for research institutes to develop green tech if they are not then used by businesses. In its turn, business is not motivated to use green tech because they don't think it is profitable. The aim is to

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		make business motivated and to reduce gap between science and business.
	A3. Recommendations	**<u>R&D</u>** • Innovation systems for selected technologies • Knowledge sharing platform for green tech and sustainable development – Malaysia and APEC. • Capacity building on green tech • Universities & colleges to introduce courses in green tech and environment **<u>Policy</u>** • Policy to only allow manufacture/ usage of biodegradable plastic bags • Incentives to manufacture and promote green consumables eg stationery, packaging materials • Government Funding • Partnership between university, govt & private sector • Malaysian Govt should look/explore /prioritize our current local companies that already have the technology that suits our local context. • Government to assist in marketing the local companies • To create a proper standard to follow on GT tech • Regulate the companies involved in green tech to ensure quality • Improved coordination between private and public sector and also among Government agencies to develop roadmap and action plans. • Include the cost of logistics, production, manufacture & disposal of products • Provide initiatives for locally sourced and manufactured products • "Transformation" involving reorganization of ministries to group together common job scope under single ministry eg. solid waste mgmt./ hazardous waste/ green tech **<u>Awareness</u>** • Create awareness among consumers on recycling and importance of using eco-friendly products/ carbon footprint • Training to govt. officers about green procurement • Start programs in schools on 3Rs & 5s • Best practices from successful economies • Promote green products/ CFP label products/ eco-label products • Use simple terminology to explain effects of products/ actions to environment.
	A4. R&D Opportunities	• Government and private to work together on campaign • To share or adopt standard from other economies and formulate based on local requirements • Malaysian Government should support our local company R&D

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		technology • Clear guidelines on green manufacturing • Fuel efficiency to reduce carbon footprint in cell industry. • More research on green tech in local universities • Funding from international agencies such as EU-Switch Asia etc, JETRO from Japan. • To do more research on chillers technology and thermal storage • Testing facilities for certification services of green tech • Establish a centre of excellence tied-up with university on R&D on green tech. • Commercialization of research • Wave energy-power generation • OTEC- power generation • More environment friendly packaging • Distribution methods that can reduce cost of logistics • How to develop blue carbon • Monitor environment effects of current practices • Increase efficiency of producing products • Reduce wastage in production processes
	A5. Funding & Investment	• Green Tech Grants/ Incentives/ Soft Loans • Banks need to build expertise to evaluate green tech proposals for funding • Have Government funded public-private initiative to facilitate harvest of solar energy on a long term win-win contract agreement. • MOSTI Funding- Flagship/Techno-fund/FRGS/ERGS • MIGHT funding • ADB, UNDP, GEF • Initiatives/rebates/exemptions from tax • Malaysia can support local company technology because some of them are already selling their expertise internationally. • Government and industry contribute to matching grant/ incentives for green tech adoption R&D
	Liberalisation of environmental services	
	B1. Initiatives	• EU and 13 WTO members (i.e.: Australia, Canada, USA Japan, etc.) – • 2 stages -1.elimination of tariffs and 2.reduction of non-tariff barriers/measures • Green tourism • Green Transportation • Presidential Decree 2014 regarding business field that are conditionally open for investment. Ratified AFAS 9 • Government already provide a platform to greentech industry in Malaysia

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		• Project with EU available in the area of carbon footprint labelling scheme • FTA – to include green tech • Decide our List of EGS for AFTA • Autonomous liberalisation on green technology-unilateral liberalisation
	B2. Issues/ concerns	**<u>Awareness</u>** • Awareness – public mind-set (the mind-set of green technology does not add value to profit maximisation) • Lack of awareness/emphasis on the importance of the value of water, air and power • More aggressive awareness campaign jointly organised by government, NGO, media. **<u>Policy</u>** • Slow government assistance and limited number of companies are promoted by government for new markets overseas. • Lack of transparency • The number and quality of local green tech company and products need to be strengthened. • Lack of political will • Need central body to monitor and control the liberalisation of green tech. • Malaysia need to liberalise fully (mode 3 and 4) to leap frog adoption of green tech • Harmonisation of standards • Reduction of non-tariff barriers especially local requirements. • Support and regulate business friendly atmosphere to grow our local private companies • Include adoption of green technology and services in development plus project, e.g. UNDP and GEF projects **<u>Impact on local industries</u>** • Local companies competing with advanced foreign entities • Less opportunity for local expert in Green Tech • Pioneer status for new industries; require protection for local companies for short period-15 years. Government should promote local companies. **<u>Impact on local industries</u>** • Local companies competing with advanced foreign entities • Less opportunity for local expert in Green Tech • Pioneer status for new industries; require protection for local companies for short period-15 years. Government should promote local companies.

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		<u>Others</u> • Implement findings from willingness to pay studies with regards to eco-tourism services • To make global policy Master Plan(US, EU, APEC, PAC) • Government should help to upgrade our local company to be more competitive in internationally • To negotiate for market access for Green Tech for foreign market.
	B3. Recommendations	• More collaboration among APEC economies on Green Tech. • To have similar standard by stakeholder on green tech within participating economies. • Continue to support FTA but to check regularly foreign companies in Malaysia as agreed • Need to keep 'social inclusiveness' in mind-not economy liberalisation and grow at all cost
	B4. R&D Opportunities	• Conduct market research globally • Technology transfer • Increase the use of autonomous and automated system • Increase the use of predictive and analytical models to determine environmental effects • Address global issues i.e. power generation, RE, Energy efficiency. • APEC economies to operate a shared service centre on R&D activities • ASEAN members to set up a centre for R&D in Green Tech with joint funding
	B5. Funding & Investments	• A more clear/active trans boundary relationship especially ADB/IDB etc. • To provide funding and investment in overseas and legal advices • Collaboration with overseas partners for green tech • G2G initiative involving credible private sector companies to promote sustainable technology initiative i.e.: 1 state :1 incinerator(minimum) • To create proper carbon trade funding among participating economies • By supporting our local green tech company, it will generate more revenue to our economy in the future • Shared funding • Request for funding from UNITAR and other international body like OECD, UNDP etc. • Public – private partnership
	Conclusion	
En. Wan Zulkifli Wan Idris	**GROUP 4: RENEWABLE ENERGY**	
	Development of Renewable Energy	
	General	

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
Comintel Green Technology Sdn Bhd	issues/ concerns	
	A1. Initiatives	• FIT Mechanism • Renewable Energy Act 2011 • cut subsidies on electricity tariff • Geothermal potential • Solar, mini hydro, biomass and biogas • Commercialization of OTEC / technology to generate electricity or hydrogen fuel • Regular regional plenary meeting on RE • Solar hybrid stations to supply systems to rural areas in Sarawak • Expert group on various RE issues • RE Master Plan, transport sector not addressed • Energy Efficient Master Plan, but what is the status? • Initiative in Thailand – the board of investment has 8 years tax leverage for companies that import materials for developing RE (43 projects)
	A2. Issues/ concerns	• To tap EE (low hanging fruits) 80% buildings in Malaysia are old building and are using a lot of energy. • Lacking in practicing Energy Efficiency (EE)& concession cost too high • Inadequate RE Fund • Regulation too rigid • Energy pricing does not reflects true cost • Energy carrier not only electricity • Scarcity of sugar daddy / honey mommy • High capital cost for RE considered as barrier for environment • Energy security and current energy mix • Technical problems of how to collect or reserve biomass energy • Difficult to access information or governmental policies of RE • People do not have correct ideas of RE; misunderstanding • High expenditure, high risk • Too many authority with too many regulations on RE. • Capacity buildings • Too many authorities with too many regulations on the RE. Ex: Electricity Act, RE (SEDA), Land/ Water (State) and Environmental (DOE) • Green Tech Financing vs Conventional • Concerned not enough assistance given to export locally development technologies. • Biomass Feedstock Access
	A3. Recommen	• Grid connections to the palm oil mills (grant availability) • Government need to do more promoting RE industry, not just

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
	dations	depending on 1.6% collection from *rakyat* • Include biodiesel, ethanol, solar thermal, CSP power, OTEC • Reduce the large scale E projects and do more small scale projects, let more people gets involves • Reduce the high tariff FI projects to increase the MW capacity • Extend tax exemption on corporation tax. Pioneer status. • Simplify RE mechanism • Need to reduce the technology cost to end user (demand side), this will bring more marketability for RE • Abolish sales tax on import equipment on RE • Starts small RE community • Promote solid trade / investment incentive on RE business • Establish OTEC development unit, board and incorporate the like of PETRONAS • New policies to help export locally develop technology • To develop "green mind-set" (education, social activities) • Policy – true cost pricing, no more subsidy • RE Project life cycle postings should be considered not only capital cost • Promote smart grid and Hydrogen Fuel Cells
	A4. R&D Opportunities	• Promoting & Prioritize more grants on RE • Involve IPTA in collaboration with industries • A lot of opportunity for R&D to test out the efficiency of some imported technologies for our local waste. • Distributed energy supply • To develop facilities to test next generation technologies • Open platform data on the technology. • Geothermal potential in Malaysia. • To improve the current technologies heat exchanges, working fluids etc. • Recommendations on suitable technology for Malaysia's climate. • More open collaboration between industries and universities. • Easy access to R&D funding • Difficult to commercialize the locally developed technologies, especially when the government is the main customer.
	A5. Funding & Investment	• Restructuring equity on investor capacity based on JV project (private sector) • Financial institutions should be given proper guidance on financing RE projects. • Setup Green Bank • Review Banking procedure in providing support to investor • Federal Government & Local Government • Introduce specific package of incentives for investments

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		• Promote more in "sugar daddy" & "honey mummy" as the first investors for equity financing. • Laws, policies, incentives etc. • Regional funding capacity and mechanism.
	Liberalisation of environmental services	
	B1. Initiatives	• Export of services/ consultancy • Export trans-shipment stock • Structure capacity building • Supply of Bio-mass very fragmented • RE Act limit foreign ownership at 49% • The Government of Malaysia through its relevant agencies invest in the first pioneer plants for every type of RE technology of Malaysian-own
	B2. Issues/ concerns	• No single agency for biomass sector – supply & demand • No project reference in Home Land (need reference to venture overseas) • Company that come in are too big (strength in financing) • To grow local companies to be competitive in the region. Protect local business • Need to study the FTA policy • Biomass – either for other products or energy that gives better return remains uncertain • Foreigners have the economy of scale • The benefits or downside of liberalisation? • Policy to protect local companies • Double taxation issue on export product • No adequate definitions for some REs. The definitions (CPC) that are employed in trade services negotiations are updated (explanations) • The RE is subsidized so no push for negotiations in the multilateral forum i.e.: WTO • Governmental agencies only supports or promote certain energy sectors, so negotiating for RE sectors are not taken into negotiations for liberalising this sector • Government procurement is related to energy sector or RE but according to WTO government procurement is carved out, hence the negotiations of liberalising RE is not taken into account
	B3. Recommendations	• Implement local content 40% in Malaysia • Implement carrying out policy in government tenders to local companies • Conduct a thorough study on pros and cons in liberalisation • Education and technical programmes and courses for our talent • Government led initiatives in opening foreign market.

Name of Presenter	Presentation Summary/Questions/Comments/Feedback	
		• Government should assist to promote more local companies to oversees market • More capital building for export businesses personnel • Government to take the lead to fast forward the infrastructure to gather for economy of scale • Redefined adequate energy sectors. • Malaysia to provide technical assistances to less developing economies the like of JICA programmes
	B4. R&D Opportunities	• Upstream activities • Identify RE technology that can be developed and positioned strongly in the region • Mobility of experts • Work permit of experts • Those RE foreign investors should allow local universities to participate • Green tech competency centre • R&D universities and industry partnership
	B5. Funding & Investments	• Tapping APEC funding, government need to support local companies to participate in APEC projects • Local and foreign partnership for funding • Export financing from EXIM Bank • Friendly project mechanism • CGC should guarantee expat guarantee payment service
	Conclusion	

Question and Answer session **Question/ Comment/ Point of view**		
Name	Q/C/POV	Notes
Solid waste and Hazardous Waste		
Mr Guntur Tobeng	Q	If we were to liberalise the market is there profit to be made?
Dato' Abu Bakar Jaafar	Reply/POV	If we can profit, then it wouldn't be called waste, and the reality is, there is no difference between waste and resources, it's a question of market value. There is need to understand, that waste is equal to resource except in value. We still see litter all around, why? Because it has no value. The challenge is for the government to introduce law or policy that will get the individual to pick up the litter. 20 years ago this was brought up and raised, this principle of valuing waste, will actually solve the problem. The market has to come in. One option, is to introduce, a programme, if I wish to purchase something new, I have to return the old item, or pay levy if I choose to keep, or set up a

Question and Answer session **Question/ Comment/ Point of view**		
Name	Q/C/POV	Notes
		credit system, this can help sort out the materials, and push for recycling. The industries can be brought in, and we can create a market for recyclable. At the beginning the volume will be small, but in the future, it will grow. Waste can be sorted out, and can be used and recycled, and those which cannot, can be transformed into renewable energy feedstock. 10 years ago, 11 ministries would have had to be mobilized for this, but we need to get this done. Polluters pay principle, we will have to make it mandatory. Why is investment low for waste treatment? It's not attractive. Perhaps DOE can look at opportunities to push for recyclables, and use this as a means for resource harvesting. We should also encourage regional toxic waste facilities, even now it's difficult to establish one today, because of the political interference. There is a need to shift from the NIMBY syndrome. There is a need to study the implication or exclusivity factor, for incineration, avoid the picking and choosing, so that we don't spend too much on treating for a material that is of low recyclable value. The law, doesn't say that the operator does not have the full obligation, the individual is responsible, unless it is beyond the individual's capacity to do so.
	Moderator's POV	Need to have a different point of view. Gone are the days that the government knows everything; we need to consult and be consulted, have more engagements.
Dr Johannes Bernabe	Q/C/PoV	In the Philippines, we have clients who engage in waste management. Garbage to one person, is gold to another e.g. poultry refuse has high value for bioenergy. Palm fronds can be feedstock for biomass energy facilities. When waste has value, there will be a willingness to pay. APEC can be the 'lab' to see how markets can be opened up to prospective services, even if we hold to traditional view that government has the role to solve problems. In the Philippines when we opened the markets we found solutions from the markets. Liberalisation has its benefits. There should be inter-regional APEC services, to help address the finality of wastes, the standards to be applied, the assessment of sites and consultations where wastes will be disposed at. The first step, is to look at alignment of standards, regionally.
	Moderator's POV	Some of the regulations will have to make way for new ones.
Green Technology and Renewable Energy		
Mr Hamid Mamdouh	Q/C/PoV	Linking liberalisation with the internal market. Based on experience, the process of liberalisation of services, is different to lliberalise goods. The opening of the market for renewable energy, this is interesting, the logic of protection of infant industries. But we are looking at services, like

Question and Answer session **Question/ Comment/ Point of view**		
Name	Q/C/POV	Notes
		telecommunications, the successful ones, that have had gains in domestic development sectors, have relied on foreign technology, and soft know how of running the industries, benefits are there. It is dependent on how you open the market and regulate, to impose conditions for some training and transfer f technology. Questions, how do you see the RE sector will respond to the liberalisation?
Frank Jesus	POV	In Chile, decided to put up stringent environment regulations, and open up market, it actually saw an influx of foreign investors, which in turn helped build its capacity, and later export its capacity
Dato ABJ	POV	Environmental services, to be or not to be. Personal position, liberalise. We need to get ourselves organized, and this statement was made in 1972, in Stockholm, the Stockholm Declaration, and there it states that we need to get ourselves organized. Based from my experience in government and industry, now in University, and I notice that o Had perception that they were all not doing much, then I realized that it's a problem of the economy. We cannot rely on government, industry or universities or NGOs, we need to create a new organization NP20: non-profit and non-private organization. We create this, we create a law, and we let NP20 as the entity to recover costs, wastes, and help address the problem.
Mr. Siva MIGHT	POV	Waste is a problem. Let's solve the problem, not just make money, i.e. make money then solve problem. RE, to me means renewable type of energy, but we tend to speak about renewable electricity, lets understand what it means, i.e. RE. So don't look like every source turning into electricity. When we talk about liberalisation of RE we are looking at the raw form of resources, not the point of conversion to electricity, it's the creation of energy is critical, not just look at electricity. We need to deliberate on this, get the context and expand.
En. Wan	Response	The growth and liberalisation of telecommunications sector, in Malaysia for that sector the policies are in place to ensure proper development of the sector, and make it competitive. Get the international company to get in, we may put aside local vendors. The transfer of technology and development of local expertise that we were able to transfer out expertise. The question is whether this can take place in RE. The only government initiative for RE is FIT, producing biodiesel, but we cannot do that or penetrate local market.. The government doesn't have the initiative in place to allow for biodiesel for example to take off, and other types of RE to grow.
Dato' Abu Bakar Jaafar	POV	If the government can address the question of energy pricing not reflecting the true cost, we would have solved the problem. The greatest difficulty is raising capital or equity, there is a need for sugar

Question and Answer session **Question/ Comment/ Point of view**		
Name	Q/C/POV	Notes
		daddies, or honey mummy, who believe in this and willing to invest. High capital cost is a barrier to the service, and calculate true cost of other energy sources. Investors or bankers shouldn't have to compare capital to capital, and true costing over project life. Energy security and current energy mix is not balanced, apparently our coal import is over 53%, which is a threat to our energy supply, as Indonesia already supplies 70% of that, and we will be in trouble if they stop supply.
Moderator's summary		▪ A lot of points shared and observations made ▪ We should look at what others have ▪ We should look at liberalisation as something resourceful, useful to the economy, a way of sharing resources ▪ Promotion of awareness on the subject ▪ Address issues, about taking a holistic approach, solutions and partnerships, break silos ▪ Need to enhance partnerships between government, industry, universities and NGOs ▪ We need to have good rule making processes, we need transparency and accountability, with continued engagement which will allows us to share and improve ▪ Good practices, we should look at available options, do cost benefit analysis ▪ Look at options, what we have readily available, what we need or may be stay on a status quo. ▪ Strategies to implement, we need to go beyond d policies, we need something that can work on the ground ▪ Salient feature - having sufficient engagement and consultations with all parties.
Concluding Remarks Ms. Ho Siew Ching		▪ Objectives have been met. ▪ Good opportunities, from discussions and deliberations, issues highlighted, options identified. ▪ Look forward to working together towards addressing environmental services.

2.5.1 Summary for the Q&A Session

A) Solid waste and hazardous waste management

Members of the audience raised two key issues. The first addressed the issue of profit generation in a liberalized market. It was noted that waste in itself is a resource of value, as an item that can be reused, and as an item when reduced in

volume for treatment or disposal, will actually benefit or improve the expenditure of a economy, through strategic cost savings. Through the introduction of proper programmes, a system can be put into place to allow for recovery of waste material through incentivized sorting and separation systems, and create a market as well as demand for recyclables. IT can also be transformed into a material to solve another issue, such as energy, with wastes being turned into energy feedstock. There is also a need to look at the present investment structure to facilitate and mobilise this, which in turn will reduce costs in the collection, treatment and disposal of wastes, which in turn will lead to government costs savings.

The second point raised was the opportunity for APEC to look at the opportunity to serve as a lab to foster market growth, with inter-regionalisation of services, particularly for wastes, which to some extent has high values based on specific demands, e.g. palm fronds as energy feed stock; or poultry waste for bioenergy. There is host of prospective services that can be liberalised, and APEC has a role to play, providing inter-regional services, such as in helping set standards, assessment measures and consultancy services. This can provide some structure to a liberalized market, and allow for the demand and market to both grow.

The Moderator to the session then summed up that there is a need to study the implications of a liberalised market and exclusivity factor. He noted that, as held by the Malaysian government, the days where the government knows everything is long gone. There is a need to consult, be consulted, engaged and be engaged. Given the regulatory constraints, there is need to make way for new ones that will benefit the market.

B) Green Technology and Renewable Energy

Members of the audience raised five main points, i.e. linking liberalisation with internal markets; flexibility of regulatory systems to respond to open markets; competitiveness; incentives and true costing. There is a need to draw a distinction between liberalisation of services as opposed to liberalisation of goods. Another aspect was also raised in terms of renewable energy, in relation to context and semantics, which is to look at it as renewable energy not just renewable electricity, as it is sometimes confused. By determining the appropriate contexts only then can we look at internal market situation. The opening of the markets for renewable energy is interesting as there is often a push to protect domestic infant industries, but much can be learnt from the telecommunication industries. What is key are addressing the issues of transfer of technology and training of local expertise as well as skills development.

The second point looked at regulatory systems, an example of Chile's stringent environmental regulations to regulate liberalisation was shared. In that example, the stringent regulatory measures actually saw an influx of foreign

investors, which in turn helped build Chile's local capacity and allowed it after a few years to 'export' their expertise. Liberalisation can foster competitiveness, within the economy and regionally.

Thirdly, liberalisation is good for the markets, once governments organize themselves, perhaps look at creating a new organization, non-profit and non-private organization, that will serve as an entity to mobilise markets, where services are concerned, recover costs and look at solutions collectively. Another key issue is incentives. There is a need for incentives to be put into place to allow for different types of renewable energy sources to grow.

Fifthly, the issue of true costing or pricing, we need to address the issue of raising capitals or investments for alternative sources, as high capital costs are often a barrier to service provision. If true costing or valuation can be done, perhaps this will allow for the investment and banking sectors to shift the way of doing business, not treat it as any commercial transaction, but a long term investment over a project life span, with specific modalities.

For this session, the Moderator summed up the whole discussion in three key points for consideration. The first to acknowledge that the scope and breadth of the subject matter of environmental services liberalisation is wide, and that liberalisation should be looked at as something that could be useful to the economic growth, as a means of sharing 'resources'. Secondly, it was noted that there is a need to promote or increase awareness on the subject, looking at possibilities of the adoption of holistic approaches, solutions and partnerships, as well as breaking silos. Partnerships between government, industries, universities and NGOs must be given due attention. Thirdly, there must be a good rule making system and process in place, one that its transparent, ensures accountability and fosters continued engagement that will allow for structured and sharing for improvement. This includes looking at good practices, available options and cost benefit analyses. If there is one already available, e.g. practice, then, maintain the status quo. Following on, there is a need for workable strategies, having policies that do not work on the ground will not be useful. In order for all these considerations to take root, the role of continuous engagement and consultation of all parties cannot be ignored.

Chapter 3 Way Forward

The adverse impact on the environment due to economic and development pressure has become an irrefutable fact. The emergence of environmental services and environmental services industries are important in addressing key issues and challenges in the 21st century, driven with threats of ecological collapse, towards achieving the aspiration of sustainable development.

The Environmental Service and Environmental Services Industry have becoming an important economic sector and have started to open up in many developing economies. Development of science and new technology especially towards enhancing the efficiency of environmental services and ensuring minimum impact to the environment and human health, enhance the sector capabilities. The growth of the sector in domestic and global markets however, demand for liberalisation (and this is often linked to income of economies), is normally originated from developed economies who have more expertise. The current trends showed that the demand is much higher in developed than developing economy for better environmental friendly services. However there is a shift of the environmental services and environmental services industry towards meeting the increasing demands by developing economies especially in South Asia and South East Asia. Such demand will require the understanding of key issues in relation to the development and liberalisation of this sector at domestic and global markets. Hence there is a need to conduct a mapping analysis for the environmental services and environmental services industry in domestic and global markets. The main focus of this mapping analysis is to identify the appropriate sectors and modes of supply. This will provide better understanding and provide more data for the policy and decision makers as they enter into negotiations.

In support of the development and liberalisation of this sector, there is a need to have a comprehensive support system and an agreed mechanism by the participating economies from both developed and developing economies. The existing WTO platform is unable to provide effective measures to promote and enhance the development and liberalisation processes of the Environmental Service and Environmental Services Industry. The non-interference stance adopted by the WTO where the WTO would not interfere with members' economy policy and legislation could lead to the creation of several critical issues. One of it is the resulting crisis in the multilateral process where negotiations stalled for several years. It is proposed that an agreement should be arrived at outside purview of the WTO. The initiative for the Environmental Services sector undertaken by the APEC could be one instance of such agreement, which could be of assistance to the WTO. It would be relevant to analyze both successful and negative liberalization experiences among APEC economies and other relevant countries, taking into consideration their corresponding contexts.

APEC has made a commitment to ensure the future growth of environmental services and environmental services industry. **The Vladivostok Declaration - Integrate to Grow, Innovate to Prosper, 2012** for APEC economies is a commitment to the liberalisation and facilitation of trade and investment in the Asia-Pacific region. This includes the need for environmental services and environmental services industry, where APEC has endorsed the **APEC LIST OF ENVIRONMENTAL GOODS,** under Annex C of the declaration. With this list, it will directly and positively contribute towards green growth and sustainable development objectives. The list will also benefit trade and investment liberalisation of environmental goods. It will enable APEC businesses and citizens in accessing important environmental technologies at a lower cost, which in turn will facilitate their use and ultimately, benefit the environment. Thus, APEC has supported the WTO negotiations through the establishment of the List of Environmental Goods. With the commitment shown by APEC, it is proposed that APEC should undertake innovative policy approaches to promote the development and liberalisation of environmental services and environmental services industry to meet future needs especially in the Asia Pacific region.

Environmental Services and Environmental Services Industry provide new economic opportunity and growth. However there should be a balance between environmental services opportunities and prudent expenditure by governments. Suggestions for the transfer of responsibility from government funding to private sector funding has been raised. However these suggestions must be studied and analysed for its suitability, viability and acceptability by the communities and consumers. With increasing demand, there will be future opportunities for exporters. Possibilities of Malaysian environmental services provider going abroad are possible, and privatisation of environmental services enhances trade capability in this sector. A clear regulatory framework will help trade of environmental services. The regulatory framework should be consistent, and adequately armed with the necessary technical information and expertise.

In addition there should be a mechanism to prepare economies towards the development and liberalisation of environmental services and environmental services industry. Many economies are not well equipped to handle increasing demand of complex environmental services and environmental services industry. One of the main priority is to have a common definition of environmental services and environmental services industry for trade. This will help to handle issues of different definition by economies involved in the environmental services and environmental services industry. The mechanism towards establishing agreed definition will require legislation, international agreement and convention. APEC has created the platform for such mechanism and it should be followed-up by government of APEC economies with initiatives such as a well-developed decision making process, a comprehensive support system that includes financial, legal and human resources as well as strategic research activity. With a common definition and legislation platform in place, the development and liberalisation of the sector

could be undertaken. In addition, such initiatives will help to facilitate the economic integration and agreement between economies with a view of expanding opportunities for business collaboration in the future. As the chain reaction continues, it will also augment the development and enhancement of technology for environmental services, which will advance the capacity of the environmental services industry.

The development and liberalisation of the sector will also require the understanding of critical and dynamic issues related to the sectors, where participation of all key stakeholders is required, especially in the decision making process. Hence there is a need to include the industry, business, traders and other key stakeholders in decision making process for the development and liberalisation of environmental services and environmental services industry. For example, the process of the enhancement of legislation, standards, and guidelines will ensure the sustainability of environmental services and environmental services industry while protecting the environment and human health.

The environmental services sector and its industry have shown their importance in meeting global needs and market, especially in the past two decades. Demand for this sector has increased with flows of trade and providers in both ways between developed and developing economies. The demand is expected to grow, as the sector is critical in realising our goal to achieve sustainable development. However there is a need to establish mechanisms and systems that are committed by many economies in order to ensure the sustainability of this sector in the future.

Annex 1

Workshop Programme

DAY 1: TUESDAY, 14 OCTOBER 2014

TIME	EVENT
0830 – 0900	Registration
0900 - 0920	**WELCOME** Ms. Ho Siew Ching, Senior Director of Services Sector Development Division, Ministry of International Trade and Industry, Malaysia. **OFFICIAL OPENING** Datuk Dr. Rebecca Fatima Sta Maria, Secretary General, Ministry of International Trade and Industry, Malaysia.
0920 – 1100	**SESSION 1: ENVIRONMENTAL SERVICES IN THE 21ST CENTURY** Overview of the environmental services. Economic profile of the environmental services industries globally and in APEC members, their economy-wide enabling role and the importance of services value-add for growth and development. Relevance of environmental services regionally and how the 21st century has shaped the architecture and breadth/characterisation of the industry **Moderator: Mr. Mohd Rosli Hj. Abdullah** **Director General, National Solid Waste Management Department, Malaysia.** **Speakers:** • **Mr. Abdel Hamid Mamdouh** **Director, Trade in Services Division, World Trade Organisation.** • **Mr. Joachim Monkelbaan** **Senior Programme Officer, International Centre for Trade and Sustainable Development.** • **Dato' Dr. Nadzri bin Yahaya** **Deputy Secretary General (Energy), Ministry of Energy, Green Technology and Water, Malaysia.** • **Mr. William Tan**

	Council Member, Association of Environmental Consultants and Companies of Malaysia. **Q & A**
1100 - 1115	**Coffee Break**
1115 – 1255	**SESSION 2: ROLE OF GOVERNMENT AND INDUSTRY IN DEVELOPMENT OF THE ENVIRONMENTAL SERVICES** Experience sharing on development of policies by Governments, processes and procedures by regulators, industry coordination, focusing on environmental services sub-sectors which could benefit developing economies. **Moderator: Associate Professor Dr. Ahmad Fariz Mohamed** **Institute for The Environment and Development (LESTARI), Universiti Kebangsaan Malaysia.** **<u>Speakers</u>:** • **Mr. Yoshikazu Hasunuma** **Deputy Director, Global Environmental Partnership Office, Industrial Science and Technology Policy and Environment Bureau, Ministry of Economy, Trade and Industry, Japan.** • **Mr. Franck Jesus** **Head of Environment Division, Trade and Agriculture Directorate, Organisation for Economic Co-operation and Development.** • **Dato' Halimah Hassan** **Director General, Department of Environment Malaysia.** • **Mr. Khalid Bahsoon** **Chief Executive Officer, UEM Environment Sdn. Bhd.** **Q & A**
1255 – 1430	**Lunch Break (The Spread, Level 6)**
1430 - 1610	**SESSION 3: CHALLENGES AND OPPORTUNITIES IN DEVELOPING AND LIBERALISING THE ENVIRONMENTAL SERVICES SECTOR** Discussion on the challenges and opportunities in developing, promoting

	and liberalising the environmental services sector in developed and developing economies. **Moderator: Mr. Abdel Hamid Mamdouh, WTO** **<u>Speakers</u>:** • **Mr. Johannes Bernabe** **Senior Associate, International Centre for Trade and Sustainable Development.** • **Dr. Theng Lee Chong** **Deputy Chairman of Association of Environmental Consultants and Companies of Malaysia.** • **Datuk. J. Jayasiri** **Senior Director, Strategy and Monitoring Division, Ministry of International Trade and Industry, Malaysia.** • **Mr. Mohamed Azrin Mohamed Ali** **Vice President Built Environment, Green Technology Corporation, Malaysia.** **Q & A**
1610 – 1700	**<u>SESSION 4</u>: EXPERIENCE SHARING ON THE DEVELOPMENT OF ENVIRONMENTAL SERVICES BY APEC MEMBER ECONOMIES** Sharing of the development on environmental services regime on development of environmental services policies, coordination and implementation of strategies for current and future of the sector. **Moderator:** **Mr. Joachim Monkelbaan, Trade, Policy and Planning Unit Economics and Trade Branch United Nations Environment Programme.** **<u>Sharing of experience</u> (<u>5 - 7 minutes each</u>):** • **Solid waste management** **Ms. TRAN Thi Thanh Thuy (Vietnam)** • **Hazardous waste management** **Ms. Imelda Matubis (Philippines)** • **Renewable Energy**

	Dr. Natalia Stapran (Russia) • **Green Technology** **Mr. Hazli Jemaat (Malaysia)**
1700 - 1715	**Coffee Break**

END OF DAY ONE

DAY 2 : WEDNESDAY, 15 OCTOBER 2014

TIME	EVENT
0900 – 1230	**SESSION 1: BREAK-OUT SESSIONS** **<u>Thematic break-up groups</u>:** • **Group 1: Solid waste management** **Facilitator: Mr. Sivapalan Kathiravale** **Principal Analyst, Emerging Technology, Malaysian Industry Government High Technology.** • **Group 2: Hazardous waste management** **Facilitator: Ms. Norhazni Mat Sari** **Director, Hazardous Substance Division, Department of Environmental Malaysia.** • **Group 3: Green technology** **Facilitator: Associate Professor Dr. Ahmad Fariz Mohamed** **Senior Research Fellow, Institute for Environment and Development (LESTARI), National University of Malaysia (UKM), Malaysia.** • **Group 4: Renewable energy development** **Facilitator: Ms. Azah Ahmad** **Director of Renewable Energy Technology Division, Sustainable Energy Development Authority, Malaysia.**
1230 – 1400	**Lunch Break (The Spread, Level 6)**

1400 – 1600	**SESSION 2: PLENARY SESSION ON GOOD POLICY AND REGULATORY PRACTICE IN ENVIRONMENTAL SERVICES** • **Presentation by each break-up group** • **Open discussion** • **Concluding Remarks** **Chairperson:** **Dato' Abdul Latif Haji Abu Seman, Deputy Director General (II) Malaysia Productivity Corporation, Malaysia.**
1600 – 1630	**CLOSURE** Ms. Ho Siew Ching Senior Director of Services Sector Development Division, Ministry of International Trade and Industry, Malaysia**.**

****END OF PROGRAMME****

Asia-Pacific
Economic Cooperation

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14 – 15 OCTOBER 2014
THE GARDENS HOTEL & RESIDENCES, KUALA LUMPUR

APEC Group on Services
APEC Committee on Trade and Investment

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