

APPENDIX G

Summary of Thematic B: Climate Change

Thematic Session B1: Low Carbon Cities Part 1

This session was chaired by Dr. Tadashi Matsumoto, Senior Policy Analyst, Regional Policy for Sustainable Development Division, OECD and co-chaired by Ms. Michie Kishigami, Director, ICLEI Japan. A total of 4 presentations were made:

1. *"The History and Challenges of Yokohama"* by Mr. Tetsuya Nakajima, Director, International Technical Cooperation Division, Policy Bureau, City of Yokohama
2. *"Building up Haiphong Towards a Low Carbon City"* by Mr. Le Anh Quan, Deputy Director, Department of Planning and Investment, Haiphong
3. *"Iskandar, Malaysia"* by Mr. Boyd Jouman, Senior Vice President (Environment), Iskandar Regional Development Authority (IRDA)
4. *"Tokyo's Initiative for Low Carbon City - Programs for Building sector"* by Mr. Kaoru Nakanishi, Deputy Director, International Cooperation Section, Bureau of Environment, Tokyo Metropolitan Government

Mr. Tetsuya Nakajima, Director, International Technical Cooperation Division, Policy Bureau, City of Yokohama presented "The History and Challenges of Yokohama".

Yokohama is the largest city in Japan with the population of 3.7 million, and has a history of approximately 150 years. During the course of its development, Yokohama has faced many difficulties. Since 1950, Yokohama has experienced and overcome various urban issues caused by population explosion and rapid urbanisation, including lack of infrastructure, traffic jams, pollution etc. which are the exactly same issues as what the cities in emerging countries are facing now.

Two approaches were introduced - Yokohama Smart City Project and Y-PORT Project.

Currently, Yokohama is taking actions to significantly reduce GHG emissions which have increased as the city has matured. The Yokohama Smart City Project aims to introduce effective energy management systems into existing urban areas making the system and associated projects applicable to other existing Asian cities. Citizens and private sector work together with the city on various projects.

Yokohama is currently promoting the Y-PORT project, a new international technical cooperation scheme utilizing Yokohama's experiences and expertise for sustainable urban development. Based on city to city cooperative relationships, Yokohama is providing holistic engineering cooperation together with the private sector. Various projects are ongoing in some Asian cities such as Bangkok, Thailand and Cebu, Philippines.

Prior work in environmental sustainable has enabled Yokohama to accrue various experiences and expertise which have been highly evaluated. Yokohama would like to share experiences and expertise on sustainable urban development with other cities in emerging Asian countries and is actively looking to find partners.

Mr. Le Anh Quan, Deputy Director, Department of Planning and Investment, Haiphong presented "Building up Haiphong Towards a Low Carbon City".

Having over 4,200km² of marine surface, with more than 2,800 islands, Vietnam is one of the countries most affected by climate change and sea level rises. Furthermore, development based on the brown economy has destroyed the environment and degraded natural resources. The Strategy on Green Growth of Vietnam to the year 2020 and vision to 2050 has been approved by Government in 2012.

As a seaport city, the main gate to the sea and key transportation hub of the Northern Urban Centre of the Country, Haiphong City is determined to be a centre for industry, commerce, services, tourism for Vietnam and the Northern Coastal area. In its master plan, the viewpoint for its urban development to 2025 is sustainable urban development with set targets to achieve this. To reach its targets, Haiphong has to face lots of challenges and in order to overcome those challenges it has built solutions to reach to a low carbon – green port city.

Achieving a low carbon city is a great responsibility and will consume considerable time and resources. Haiphong is actively carrying out an action plan with certain solutions to achieve a low carbon city and is looking for partners within the international community who are interested in collaborating together in order to achieve environmental sustainability.

Mr. Boyd Jouman, Senior Vice President (Environment), Iskandar Regional Development Authority (IRDA) presented "Iskandar, Malaysia: Low Carbon Cities Planning and Management".

IRDA has adopted a 'Green-focused Agenda' since 2010, as its overarching strategic environmental policy in the development of Iskandar Malaysia, an economic region in the southern state of Johor. IRDA is now working on the implementation of the Green-focused Agenda, using the Low Carbon Society (LCS) Blueprint (Nov 2012), as its primary planning and management tool for GHG emissions reduction.

Planning for low carbon society aims to reduce urban CO² emissions. Being a new and rapidly developing region, Iskandar Malaysia provides a good opportunity for urban planners to incorporate low carbon society ideas into regional and city development.

Through the Green-focused Agenda, IRDA is making a commitment that a green and sustainable environment is the focus and the goal. IRDA believes that the astute resource management is the most important aspect of sustainable development and sets the context within which all other factors must be considered.

Following the launch of the LCS Blueprint for Iskandar Malaysia at COP18 Doha, and the subsequent endorsement by the Prime Minister of Malaysia, IRDA has now started implementing the 12 Actions (and 281 programmes/measures) to reduce emissions leading to a low carbon region.

Factors for the success of the LCSBPIM are: (i) Governance Structure – coordination of policies through close collaboration between all agencies; (ii) Public awareness & direct

involvement - Awareness, involvement and readiness of everyone in the implementation of LCS and stakeholders' preparedness; (iii) Visible evidence & creating champions of LCS - Public acceptance of a high sustainability Iskandar Malaysia and Green Growth; and (iv) Monitoring and review of implemented LCS programmes - Actions need regular monitoring and review to ensure effectiveness and acceptance.

Mr. Kaoru Nakanishi, Deputy Director, International Cooperation Section, Bureau of Environment, Tokyo Metropolitan Government presented "Tokyo's Initiative for Low Carbon City - Programs for Building sector".

CO² emissions in Tokyo are approximately 61.5 million tonnes in FY2011 with the building sector accounting for two thirds of this figure. Tokyo Metropolitan Government's (TMG) low carbon city efforts therefore focus on the building sector.

To this end, Tokyo launched world's first urban Cap-and-Trade programme in April 2010, targeting large facilities and targeting office buildings. According to the second year report, the total emission reduction was 23% in FY 2011.

In addition to the Cap and Trade Program, TMG has been committed to many climate policies, including the Carbon Reduction Reporting Program for small and medium facilities, as well as the Green Building Program for new buildings.

As a result of these actions, Tokyo has entered into a green building era. High energy performance buildings are being constructed and retrofit projects are underway in large buildings in private sector. Key lessons learnt by TMG include (i) local government can play a significant role in reducing GHG emission on the energy demand side; (ii) powerful and well supported initiatives will induce private sector investment; (iii) an urban Cap-and-Trade programme is effective in lowering GHG emissions from buildings; (iv) a mandatory reporting programme plays an essential role as a first step in reducing GHG emissions.

TMG is interested in extending its work into Asia and assisting Asian cities with their efforts in CO² emissions reduction and climate change actions through exchanging experiences.

Discussion:

Q: What are the key issues which allow your agenda to be realised?

A: In Tokyo, stakeholder engagement has been a key factor. We have conducted open and transparent stakeholder meetings during the introductory phase of the cap and trade programme. We have invited targeted groups including private sector, NGOs and academics. We have disclosed all of the meeting materials and encouraged the attendance of the public.

A: In Iskandar there are three aspects. First is the political will and commitment from the Prime Minister as well as from the State of Johor, which we have and is critical for success. Second, people must be aware of and champion the idea. Finally funding is critical – this is has been on two tracks. Smaller activities have been funded by foreign donors whereas with larger activities funds are sought from the Federal Government. As long as we have their

ear we can achieve this. With the continuing assistance from them and foreign governments we can do more work in the future.

A: In Haiphong the most important aspect has been to undertake public awareness campaigns to demonstrate support for establishing a low carbon city.

A: I would like to tailor my answer to the issue of smart technology cost. Currently Yokohama is working with the City of Bangkok to make a Master Plan for Climate Change Management. Smart technology works best in highly or densely populated business centres or in cities where cost of energy is very high. Smart technology is IT based and uses existing infrastructure so that the total cost is not so large.

Thematic Session B2: Low Carbon Cities Part 2

This session was chaired by Dr. Tadashi Matsumoto, Senior Policy Analyst, Regional Policy for Sustainable Development Division, OECD and co-chaired by Ms. Michie Kishigami, Director, ICLEI Japan. A total of 5 presentations were made:

1. *"Green Cities Initiative"* by Ms. Siti Hasanah, Senior Project Officer (Urban Development), Indonesia Resident Mission, Asian Development Bank
2. *"Strategi Pembangunan Rendah Emisi (LEDS) di Kota Bogor"* by Mr. Irvan Pulungan, Country Director, ICLEI Indonesia
3. *"GEF Support for Sustainable Cities"* by Mr. Hiroaki Takiguchi, Senior Environmental Specialist, Climate and Chemicals, Global Environment Facility (GEF)
4. *"Environmental Solution for Isolated Islands/Communities"* by Dr. Hachidai Ito, Executive Vice President, T.T. Network Infrastructure Japan Corporation
5. *"HCMC-Osaka City Cooperation Project for Developing Low-Carbon City"* by Mr. Ken Izumi, Assistant Manager of Environmental Policy Department, Environment Bureau, Osaka City Government
6. *"Ho Chi Minh City Green Growth and Low Carbon Emission"* by Mr. Chau Ha, Vice Manager, Climate Change Bureau, Department of Natural Resources and Environment, Ho Chi Minh City

Ms. Siti Hasanah, Senior Project Officer (Urban Development), Indonesia Resident Mission, Asian Development Bank presented "Green Cities Initiative"

The ADB Green Cities Initiative aims to bridge the gap between urban planning and environmental management and create green, inclusive and competitive cities. The outputs of the initiative will be Green City Action Plans which will be a time based plan with defined goals and socio-economic and environmental co-benefits. Performance monitoring indicators will be included alongside citizen feedback. Investment and innovative financial modalities will also be a key factor. Urban Management Partnerships will enable peer-to-peer learning engaging mentors from transformed cities, improving competencies through skills development and vocational training. Asian Green Infrastructure Fund will draw funding from national governments, private investors, ADB and global funds alongside specialist green investors and donors.

Current work includes interventions in the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT) with Melaka, Malaysia (Green City Action Plan), Songkhla, Thailand and Medan, Indonesia. Melaka plans to become a green city through (i) increased climate resilience; (ii) improved natural resource efficiency and management; (iii) upgraded infrastructure for low carbon growth. As part of these efforts it plans to improve walkability in the city as well as increase connectivity and promote other forms of public transport. Implementation will require coordination between government agencies, private sector, community organisations and citizens. In addition an adaptive management approach and capacity building is needed alongside knowledge of funding sources and facility to raise capital. Tools and databases are needed to monitor plan implementation. Another project is Green Cities Indonesia currently in the concept stage. It is hoped to start this in 2014 and run for 2.5 years in association with BAPPENAS (Directorate of Urban and Rural Affairs, EA) and MPW (Directorate General of Spatial Planning of the Ministry of Public Works)

Mr. Hiroaki Takiguchi, Senior Environmental Specialist, Climate and Chemicals, Global Environment Facility (GEF) presented "GEF Support for Sustainable Cities"

The Global Environment Facility (GEF) is an independent financial organization which supports developing countries in achieving global environmental benefits. GEF projects are implemented by GEF Agencies, including the World Bank, Asian Development Bank, UNDP, and UNEP. The GEF has supported projects and programmes for sustainable cities so far mainly for climate change mitigation and adaptation. GEF sustainable city projects include low-carbon transport, energy efficient buildings and climate resilient cities.

Based on GEF's previous experience, it has been proposed that GEF-6 (July 2014–June 2018) establishes two funding channels for its sustainable city portfolio. One is a programme in the climate change mitigation focal area, which promotes low-emission urban systems, helping cities shift towards low-emission urban development. The other is an Integrated Approach focusing on sustainable cities. This pilot approach aims to help cities address the drivers of mega-trends of global environmental degradation in an integrated manner, harnessing local actions for global commons.

Mr. Ken Izumi, Assistant Manager of Environmental Policy Department, Environment Bureau, Osaka City Government presented "HCMC-Osaka City Cooperation Project for Developing Low-Carbon City"

Osaka City and Ho Chi Minh City have established cooperation to support environmental technologies and environmental administration expertise of Osaka as package as Japan has many low carbon technologies relating to water supply, buildings, renewable energy, energy management systems, commercial facilities, transportation, housing, factories and incineration plants. Major events this year (FY2013) have been the Official Launching Workshop (Ho Chi Minh City, July); Meetings in Ho Chi Minh City and Osaka City (September and November); International Symposium (Osaka City, October); Study Debriefing (Ho Chi Minh City, February). This has led to an MOU between the two cities in which it has been agreed to elaborate HCMC's Climate Action Plan by 2015 through mutual collaboration as well as holding an Annual Mayor-level Policy Dialogue for promoting

projects and promoting JCM projects and investments in identified priority areas on mitigation and adaptation in HCMC.

With cooperation at the local and national levels and the involvement of the private sector it is planned that Japanese technical assistance can be utilised for low carbon city projects. Examples include reduction of waste through the establishment of incineration facilities as well as safe, secure and smart urban development which will be implemented through flood prevention methods, community cycle systems and smart energy (BEMS, HEMS, Renewable Energy, Smart Home Appliances, Smart Meter). In short, the project is an example of city to city cooperation in close cooperation with the national governments of both countries which utilises JCM (Joint Crediting Mechanism) for realizing local benefit as well as global benefit as well as offering integrated support including support for planning; capacity building and technology transfer.

Mr. Chau Ha, Vice Manager, Climate Change Bureau, Department of Natural Resources and Environment, Ho Chi Minh City presented "Ho Chi Minh City Green Growth and Low Carbon Emission"

Ho Chi Minh City is facing many problems: (i) the domestic economy is being developed using backward and wasteful technology (ii) the electric energy consumption per unit of product is very high, being on average 3-5 times higher than average (iii) a lack of infrastructure and existing infrastructure is of low quality and not comprehensive (iv) general management is not efficient (v) a lack of high capacity human resources (v) a lack of investment capital (vi) climate change.

Ho Chi Minh requires (i) bilateral and multilateral cooperation to enhance technology transfer (ii) to have mechanisms and policies for cooperation (iii) increased capacity (iv) to find sustainable financial assistance and investment mechanisms that bring the dual benefits of adapting to climate change and boosting the economy. This will lead economic-social development forward towards green and sustainable growth. The priority fields in climate change adaptation activities are urban planning; energy; transportation; water management; waste management.

Potential projects under JCM include amongst others, a pilot project for urban low carbon emission buildings which analyses investment cost, socio-economic benefit and compares with standard construction and pre-feasibility studies on (i) solid waste treatment by incineration technology with integrating into electricity generation and (ii) sludge treatment plant with a capacity 500-1,000 tonnes/day.

The Program of Green Growth & Low Carbon Emission is reflected in the Action Plan of Climate Change Adaptation 2013-2015 which has 7 priority fields: city planning, energy, transportation, water resource management, agriculture, healthcare & public health, waste management. The Action Plan of Climate Change Adaptation 2016-2020 is currently being drafted.

Discussion:

Two questions were given by the Chair to frame the discussion:

1. Are these tools really reflecting your needs? Is there anything needed for your cities to develop?
2. What are the keys to replication?

Q: How difficult is it to achieve high level support for city action?

A: When Osaka City worked with Ho Chi Minh, it was found that working with the second and third tier leaders, not just the most senior, is important as it is the second and third tier leaders who deal with these problems on a day to day level.

A: Ho Chi Minh found that it is necessary to ensure that the demand is clear and that the proposed action is suitable. For example, it was necessary to show that JCM was useful for Ho Chi Minh City. Nevertheless this was not easy to establish, there needed to be many discussions with senior staff to ensure buy in.

Q: What does ADB feel is the key success for cities carrying out green development action plans? How can city to city collaboration assist such endeavours?

A: Collaboration between government, private sector and community organisations is vital. Flexibility is further required – the city needs to be willing to alter the initial plans following consultation. There is also a need for strong project management and capacity building by the cities themselves. There needs to be further understanding of funding so that planning can be done in the light of funding possibilities.

City to city collaboration is part of the initiative itself. The initiative comprises three parts (i) the green city action plan itself (ii) urban management partnerships (iii) identification of financing. Without financing all a city is doing is decorating its bookshelf.

Q: How should cities approach and ask for support from international agencies and funders for support for sustainable development for cities?

A: ICLEI Indonesia is currently engaged with six cities in Indonesia and 29 cities in four continents. ICLEI is always open to working with other cities.

A: ADB Green Cities is always open to broaden the initiative although it is currently focused on Southeast Asia. They can be contacted through the Indonesian Regional Mission or Southeast Asian Department in Manila. Commitment for a long term partnership of 15 – 20 years is necessary in order to be able to implement the actions fully.

A: If you would like to work with GEF then the first point of contact is the relevant National Focal Point, whose contact details can be found on the website, as each country has their own agenda.

A: For power network projects it is important to have connections and support from the national government, so that is what would be required for these types of project.

Comment: In order to be successful it is very important to focus on communication.

Comment: It is important for cities to be able to work within national government frameworks to ensure support for proposed work.

Comment: Cities must start by understanding their problems clearly and then look for similar cities to ensure that any best practices are applicable to their situation. Clear channels of communication must be established, often these can be national government focused so it is necessary to ensure that cities are involved.

Thematic Session B3: Air Pollution and Transport

This session was chaired by Mr. Robert Earley, Transport Program Manager, Clean Air Asia and co-chaired by Ms. Dollaris Suhadi, Executive Director, Swisscontact Indonesia. A total of 6 presentations were made:

1. *"Global Transport Emission Reduction Campaigns: Gaps and Opportunities"* by Mr. Robert Earley, Transport Program Manager, Clean Air Asia
2. *"ASEAN – German Technical Cooperation Programme 'Cities, Environment and Transport'"* by Mr. Roland Haas, Clean Air for Smaller Cities, GIZ
3. *"Air Pollution and Transportation Management in Bandung City, Indonesia"* by Ir. Ayu Sukenjah, MSi. Head of Environmental Rehabilitation Division, Bandung City, Indonesia
4. *"MRVing Transport Projects at City Level: Lessons Learnt from IGES MRV Transport Project in ASEAN cities"* by Dr. Sudarmanto Budi Nugroho, Policy Researcher, Integrated Policies for Sustainable Cities, Institute for Global Environmental Strategies
5. *"Bike Sharing - Pasig City, Philippines"* by Engr. Reynaldo Rey, Assistant Head Pollution Management Section, Pasig City
6. *"Electric Vehicle Program in Korea"* by Mr. ChungYool Lee, Manager, Department of Vehicle Environment, Korea Environment Cooperation (KEC)

Mr. Robert Earley, Transport Program Manager, Clean Air Asia presented "Global Transport Emission Reduction Campaigns: Gaps and Opportunities"

CO² emissions from fossil fuel combustion will increase 45% from 2006 to 2030 with 97% of this growth in non-OECD countries. Currently, the transport sector is responsible for 23-24% of global emissions; 17-18% of which are from road transport activities. Clean Air Asia has been involved in finding gaps and opportunities to deal with the issues faced by such statistics.

Regarding PM_{2.5} and black carbon emissions, Asia accounts for the bulk of PM_{2.5} and black carbon emissions but there is lack of or ineffective implementation of more stringent fuel & vehicle standards to address this as well as exploration and promotion of alternative fuels and hybridization.

There has been an increase in the number of two or three wheel vehicles without a matching improvement in standards or technology. Retrofitting and alternate fuels and e-tricycles should be explored.

Green Freight: Medium and heavy-duty vehicles comprise less than 10% of total vehicle fleet but account for majority of emissions. Regional initiatives and successful pilot projects for green freight that can be scaled up should be implemented. Other difficulties include inspection and maintenance programmes as well as low standards for imported second hand vehicles.

Fuels and vehicles together comprise a system and campaigns need to be aware of overlaps between issues. Curbing PM_{2.5} and black carbon emissions from diesel engines

cuts across other priority issues such as green (road) freight, emissions from two and three wheel vehicles, and stringent standards for imported second-hand vehicles. Policies and standards, when effectively implemented, strengthen and contribute to the success of existing programs. Inspection and maintenance programmes need to be backed up by stringent standards as well as efficient and effective systems of implementation. Technologies (e.g. diesel particulate filters) to reduce emissions from in-use vehicles can only be used when sulphur content in fuels are significantly low.

Mr. Roland Haas, Clean Air for Smaller Cities, GIZ presented "ASEAN – German Technical Cooperation Programme 'Cities, Environment and Transport'"

GIZ has three programmes in the ASEAN region – Clean Air for Smaller Cities (CASC); Transport and Climate Change (TCC) and Sustainable Port Development which work at regional, national and sub-national levels (except TCC which does not work at the sub-national level). CASC has developed Clean Air Plans (CAP) in 11 cities with 7 starting implementation. National environmental agencies further develop the legal basis to improve air quality. The training modules of “Train-for-Clean-Air” are anchored at regional and national level. Key activities are Road Map elaboration; Public participation e.g. Vision and Goals Workshops; Refinement of air quality monitoring data; Emission inventory development; Immediate Action Plans; CAP development; Training development.

TCC aims to increase of energy efficiency and reduction of greenhouse gas emissions for the land transport sector in ASEAN by means of strategies and action plans. Indicators are the development of an ASEAN regional policy for transport and climate change; guidelines and templates for national policies and action plans for Member State; action plans for five countries and implementation started in at least three ASEAN Member States; improvement of the measurement, reporting and verification (MRV) system in five countries. SPD aims to ensure selected ports have improved the quality and efficiency of their Safety, Health and Environmental (SHE) management. Indicators are: the management systems of at least 6 ports are certified; port waste management systems have been implemented in the participating ports; at least 6 ports have developed a system for collecting and monitoring accidents rates. Advantages of regional projects are regional integration at working level; sharing the same problems helps finding same solutions; stronger countries help weaker ones (“south-south” cooperation); exchange of experts; economies of scale; harmonisation of approaches and methods (“same standards”) and mainstreaming of environment and climate issues in the ASEAN bodies and “trickle-down” to member state authorities.

Ir. Ayu Sukenjah, MSi. Head of Environmental Rehabilitation Division, Bandung City, Indonesia presented "Air Pollution and Transportation Management in Bandung City, Indonesia"

Bandung city is the capital of West Java Province in Indonesia, the country’s third largest city with a population of 2.5 million in 2013. Bandung has air pollution problems, exacerbated by pollutants being trapped by a combination of surrounding mountains and the city's concave, bowl-like footprint, preventing their release into the upper atmosphere. Air Quality Monitoring has been implemented in five locations since 1999 but has not been calibrated well since 2011. However, non-continuous monitoring is being implemented across the city.

Bandung has implemented a number of air quality control strategies such as vehicle emission test programmes and car free days. Clean Emission zones have also been established where entry is only permitted for vehicles which have passed efficient emission tests. In collaboration with the university, Bandung has conducted preliminary studies for emission load analysis and air quality dispersal.

Bandung has further started implementing the eco-village concept which aims to have more emphasis on adoption to local culture, renewable energy especially based on solar and biomass, organic farming, low water intensive usage with decentralized and community driven solutions. Transportation solutions include bike sharing, automated parking, buses and skywalk (a steel bridge across a main road).

Dr. Sudarmanto Budi Nugroho, Policy Researcher, Integrated Policies for Sustainable Cities, Institute for Global Environmental Strategies (IPSS IGES) presented "MRVing Transport Projects at City Level: Lessons Learnt from IGES MRV Transport Project in ASEAN cities"

Over the past two decades, motorization in Asia's developing megacities has increased sharply, contributing to traffic congestion, air pollution, and climate change. A number of climate finance mechanisms could potentially provide funding and technical support to help manage these challenges. Options range from the Clean Development Mechanism (CDM) to Green Climate Fund (GCF) for Nationally Appropriate Mitigation Actions (NAMAs). However, two related dilemmas confront policymakers hoping to access resources from these mechanisms. To acquire climate funds requires measuring, reporting, and verifying (MRV) greenhouse gas (GHG) emissions which is a time consuming and costly process due to the number and diversity of actors in the transport sector. Key findings from the case studies undertaken by IGES IPSS are: (i) public transport projects give benefits on emission reductions, but these are long-term (ii) integrated and broad network services of formal transit systems gives a better impact for GHG reduction (iii) non-motorized transport projects may also give significant GHG emission reductions (iv) cost-effectiveness, expansion factor and non-linearity are the key points of doing MRV of informal transit systems (v) rapid transition in ASEAN cities creates several challenges for accurate quantification, including sufficient data, reasonable assumptions and therefore (vi) proper benchmarking and adjustment of initial values after verification are Important.

Engr. Reynaldo Rey, Assistant Head Pollution Management Section, Pasig City presented "Bike Sharing - Pasig City, Philippines"

Pasig City, part of Metro Manila with a population of 650,000, has recently introduced bike sharing schemes. The scheme called Tutubi, which means dragonfly in Tagalog, enables city employees to hire bikes for a short period using a card style system. Swiping the card releases the bike and records the time the bike is taken and returned. The programme is being established in partnership with the Asian Development Bank (ADB) and the Japanese Fund for Poverty Reduction (JFPR) and aims to help reduce air pollution in the city whilst encouraging a healthy lifestyle for the city employees and lessening fuel and maintenance expenses for the local government.

Pasig City has also instituted a bike to work loan programme which city employees can borrow the cost of a bike at zero percent interest. Car free days have also been implemented on every Sunday from 6am to midday since June 2012 with the objective of clearing the roads and keeping it open for bike riders and pedestrians. The programme aims to demonstrate the strong social and fun aspect of cycling, as well as the health benefits. Strong anti-smoke belching rules have also been put into place.

Mr. ChungYoul Lee, Manager, Department of Vehicle Environment, Korea Environment Cooperation (KEC) presented "Electric Vehicle Program in Korea"

There is a clear need for electric vehicles due to resource depletion, emission of greenhouse gases (GHG) and risk of automobile emissions. However issues with price, inconvenience caused by a lack of recharging infrastructure and lack of a large number of vehicles meaning positive environmental effects are not at a sufficient scale to impress demonstrates the need for government intervention for support.

Nevertheless the Korean market has seen marked growth in electric vehicles both in terms of sales and variety. This has been assisted by support through lower duties and government procurement policies as well as the construction of public charging utilities and purchasing support. There are three phases to building the electric vehicle supply. Firstly a supply base is built through the public sector, before increasing private supply and mass production to finally the popularization of the electric vehicle (planned for 2016 -2020). The business model is based around 3 main areas – cities with short driving but heavy traffic (such as Seoul); for defined areas and neighbourhood facilities; tourist and ecological sites. Recent government actions include subsidies for low carbon vehicles, promotion of charger standardisation and reinforcement of car GHG and fuel efficiency standards.

Discussion:

Q: What are the best ways of getting the private sector involved in air quality and transportation issues?

A: Bandung is achieving this through (i) building public awareness concerning the importance of air quality and (ii) law enforcement to decrease the emissions particularly from non-moving private sources.

A: GIZ's experience is that medium scale private businesses are usually opposed being involved in air quality and transportation due to cost. Therefore whilst awareness raising is preferable but generally more is achieved through properly enforced legislation.

A: Economic incentives are a key factor in reducing emissions. If these are in place, then more support can be achieved.

A: Previously it has been noted that projects simply led by the local government cannot necessarily be fully sustained, but with private sector participation this can be sustained more easily.

Q: Why is public transport not included in the Clean Air Asia portfolio and what is the future for public transport?

A: This particular research focuses on vehicle technology due to the focus of the funder. Public transport and better management of vehicles to get people out of their cars is a more sustainable solution for the future.