

***APEC High Level Meeting on Overcoming Barriers to Financing Waste Management Systems to Prevent Marine Litter  
Mita Kaigisho Conference Center, Tokyo, Japan, September 28-29***

***Meeting Summary***

**Executive Summary**

The APEC High Level Meeting on Overcoming Barriers to Financing Waste Management Systems to Prevent Marine Litter convened senior leadership from private investors and multilateral development banks, leading consumer packaged goods businesses, treatment technology providers as well as personal engagement from U.S. Ambassador Caroline Kennedy, Japanese State Minister of the Environment Tadahiko Ito, Parliamentary Vice-Minister for Foreign Affairs Motome Takisawa and APEC Business Advisory Council Chair of the Finance and Economic Group Hiroyuki Suzuki. The meeting participants concluded that a systematic de-risking of the waste management asset class is essential as has been done in other asset classes such as water, energy and transportation. Member economies need to accord priority to waste management infrastructure and design policies to de-risk and encourage private sector investment. If such policies are in place, cities are far more likely to subsidize the collection efforts necessary to support investment in integrated/comprehensive waste treatment.

The International Financial Institutions (IFIs) play a critical role in providing guarantees – the IFIs’ capacity to do so is much greater than what is currently exercised by them in the waste management sector. Commoditization of the waste management asset class is essential. This ranges from creating standard definitions of terms like “waste” or “recyclables” to enforcing standardized metrics for investment grade conditions. Transparency and predictability in the regulatory process is also essential. Currently, developers have far too much exposure to regulatory uncertainty; they would be better able to adapt if conditions were stable. Additionally, institutional investment arrangements need more clarity. Project-by-project financing is rarely attractive to investors, and sophisticated project development entities will need to be involved.

The meeting participants discussed nine policy and practice recommendations under consideration by APEC Member Economies and expressed hope that they would be endorsed at the highest levels of the APEC process. State Minister Ito voiced his support and intention to work with Prime Minister Abe to make waste management infrastructure development a priority within APEC and take the results of the workshop to APEC Leaders.

The next steps included efforts to have the work and, specifically the policy and practice recommendations, endorsed by APEC Ministers and Leaders. In particular, a recognition of the link between waste management on land and marine debris, and the need to prioritize investment in waste management systems.

**Opening Remarks**

**Ambassador Kennedy** of the United States thanked the Government of Japan, noting their work within the G7 and their hard work to bring the Paris Agreement agreed to at COP 21 into force.

The Ambassador also congratulated Ocean Conservancy, the Trash Free Seas Alliance<sup>®</sup>, the Japanese Ministry of Environment, the Japanese Ministry of Foreign Affairs and the U.S. Department of State for organizing the important event and commended all for bringing the public, private and civil society sectors together to solve this urgent international problem with profound impacts on sustainable economic development. Each economy must develop its own solution and, most importantly, there is an urgent need to stop plastic waste from getting into the ocean in the first place. Economies will need to develop waste management systems that work for the people they serve and help needs to be provided to economies that are developing rapidly. There is a need to create incentives for capturing waste in ways that create economic and employment opportunities for local communities. Ambassador Kennedy concluded that this workshop was critical to help solve the financing problem, which will require commitment and creativity, create awareness and raise resources to address this urgent challenge.

**State Minister of the Environment Tadahiko Ito** of Japan welcomed participants and noted his hope that this workshop would help advance waste management and the reduction of marine litter in the Asia Pacific region. He observed that rapidly developing economies in the region are facing challenges such as good waste collection, prevention of illegal dumping, appropriate treatment and final disposal. APEC needs to recognize that the marine litter issue cannot be solved without solving the waste management infrastructure because of the close linkage between waste management on land and marine litter. He noted that reducing marine litter was included in the communiqué of the G7 Environment Ministers meeting this past May. Technologies such as waste to energy will need to be promoted. He observed that the resulting reduction in GHG emissions from dumping sites will contribute to the formation of low carbon cities and thus contribute to the commitments in the Paris Agreement. In conclusion, Minister Ito said that Japan would like to share the results of this meeting with APEC economies at the Summit in November, as well as the 7<sup>th</sup> Regional 3R Forum in Asia and the Pacific<sup>1</sup> to be held in Adelaide, Australia November 2-4, 2016.

**Motome Takisawa, Parliamentary Vice-Minister for Foreign Affairs** noted that APEC Member Economies derive great benefits from the sea but they are also the source and final destination for much of the marine litter. Japan strongly recognizes the importance of reducing marine litter. Marine litter is a global issue that has serious impacts on fisheries, tourism and human health – hence the need for the international community and especially governments to tackle it as a whole. Various working groups within APEC are addressing this issue as well as in the G7 where leaders reaffirmed their commitment to address marine litter. He observed that this meeting is being held in Tokyo as part of the broader U.S.-Japan cooperation within APEC. Additionally, other economies such as the Republic of Korea, People’s Republic of China and the Russian Federation are co-sponsors of the workshop. Korea will also hold a capacity building workshop for marine litter next year so it is Japan’s hope that economies will cooperate to address this issue.

**Ben Wohlauer, Director, U.S. Department of State** noted that the meeting was bringing together governments and the private sector to seek comprehensive solutions to a shared challenge. He thanked the Japanese Ministry of Environment, the Japanese Ministry of Foreign Affairs, Ocean Conservancy, the Trash Free Seas Alliance and C&M International as well as the

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<sup>1</sup> [7th Regional 3R Forum in Asia and the Pacific](#)

many participants who traveled to Tokyo. A valuable contribution to the issue of marine litter would be some concrete conclusions on how to better incentivize private sector-led solutions to the challenges facing municipal leaders across the APEC economies – challenges that ultimately have an impact on the global economy. He observed that this meeting builds off the landscape analysis that examined the marine debris and waste management problem in three APEC economies and will examine ways to make investment in waste management more likely and thus reduce the volume of litter in the world's oceans. The dialogue will also contribute to broader efforts within APEC focused on ocean protection, the creation and maintenance of sustainable fisheries, and the promotion of tourism. The issues being discussed are central to APEC's goal to promote economic growth and advance regional economic integration. Most immediately, he commented that the U.S. and Japanese governments looked forward to presenting recommendations to Senior Officials and ultimately Ministers and Leaders at future APEC meetings. These will assist to increase attention to the problem of marine litter and help develop the consensus needed for workable solutions.

### **Setting the Scene: A Vision for Better Waste Management in Asia**

**Joi Danielson, Senior Fellow, Ocean Conservancy** prefaced the panel with an explanation of the themes that would be covered including why marine debris matters, why it's important that solutions are found quickly, as well as the immediate connection between marine debris and waste management on land. There is a cost of inaction and benefits to addressing the problem including improvements to public health and the economy. Key questions include: what has been the impact of marine litter and why has waste management not been a higher priority? Waste management is hard and it can be controversial. But it is possible to improve the situation.

**Andreas Merkl, CEO, Ocean Conservancy** noted the growing levels of plastic debris in the ocean, with much of it coming from five rapidly developing Asia-Pacific economies. He stressed that **the goal of this effort is to sustainably reduce the volume of plastic waste leaking into the ocean annually by 50% globally by 2025**. Mr. Merkl observed that plastics are extremely important for all economies, and the attributes that make them attractive (strength, inexpensiveness and lightness in weight) also make them difficult to deal with in terms of waste and associated marine debris. **Solutions must start on land with both reduction and better management of plastic waste.** He listed a number of important lessons that have been learned:

- Waste management matters. It offers significant upside in terms of long-term economic opportunity, job growth, public health and climate.
- Waste management competes well with the other infrastructure asset classes in terms of social cost/social benefit.
- Investors need political support that ensures reliable feed stock flows and basic risk reduction measures.
- Political support needs investors. There are a range of potential investors across risk/return spectrum, but little coordination.
- Cities need technical and financial support. Systems design, technology choices, project financing, etc. Coordinated network of expert support/financing is essential.

The objectives of this effort are to:

- 1) establish a shared understanding of barriers to greater waste management investment and explore options for removing these barriers
- 2) learn innovative approaches to securing derived value from plastic waste; and

- 3) discuss a set of APEC policy and practice recommendations to incentivize and de-risk greater investment.

**Hideshige Takada, Professor, Tokyo University of Agriculture and Technology**, presented data on his research into microbeads and micro-fragments and provided descriptions of the processes by which plastic is broken down into smaller pieces. Micro-fragments are more prevalent than microbeads, and the bottom sediment may be used to record the history of plastic waste. Professor Takada showed data on the accumulation of plastic in the ocean, including in the seas around Japan, and noted the need to promote better collection, segregation, and composting.

**Ryutaro Yatsu, Senior Advisor, UNEP IETC** noted that 80% of marine litter originates from land with the top sources of litter coming from Asia. There is a critical waste problem in Asia due to increasing economic growth and increasing population and the waste is not always being disposed of properly. Professor Yatsu highlighted some of the waste to energy projects in the region including those supported by the Asia Development Bank (ADB), the Global Environment Facility (GEF), and the Japan Bank for International Cooperation (JBIC). He described the Joint Crediting Mechanism (JCM) being used in Burma in which Japan provides technological and financial support and receives Greenhouse Gas (GHG) emissions credits in return. In conclusion, a series of observations and recommendations were presented to help overcome barriers to financing waste management systems in emerging Asia-Pacific economies including:

- No one is willing to pay the cost of waste management particularly in developing Asian economies.
- Institutional development and the critical role of government in internalizing command and control, planning, capacity building and financial support.
- Waste to energy (WtE) contributes environmental sanitation, reduces the volume of final disposal, and contributes to power generation and GHG emission reduction.
- The successful outcome of a WtE project first depends upon waste quantities and quality through separation at source, effective collection and transport.
- WtE guidelines in compliance with environmental standards, considering lifecycle performance such as durability and reliability of the facilities, will help decision makers in selecting the appropriate system.
- There is a huge need for waste management financing by bilateral and multilateral donors (grant aid, soft loan) and public investment funds – international development financing in Sustainable Waste Management (SWM) represents just 0.3% of the total.
- Climate related financial mechanisms play a leading role in supporting WtE projects and reducing GHG emissions.

**Hermann Koller, Managing Director, ISWA**, presented an advanced draft of the Regional Waste Management Outlook for the Asia Pacific Region for private consideration. He noted that in emerging economies dumping and landfilling is most prevalent, and in developed economies there's more recovery and incineration of waste. International funds provided for waste management to Asian economies amounted to US \$1.45 billion spread among 20 economies covered in his outlook. This represents 37% of the world's total international funding for waste management programs. There are several ways to fund access to waste management in Asia including

- 1) direct charge via billing;
- 2) waste fee on top of property tax;
- 3) solely through property tax; and
- 4) general resources.

The economic instruments used to promote waste minimization and recycling include waste levies, tax breaks, container deposits and material controls. Not effectively managing this waste ultimately costs a developing Asian city much more than if it effective management had been attempted at the onset.

The environmental impact per unit of production is dropping significantly across all Asian economies. Economic instruments that promote resource recovery are not being widely adopted in Asia. The informal sector is predominant when it comes to source separation and recycling, particularly in the developing Asian economies. Financing is most often at the micro-level mobilizing the informal sector. Disposal charges and grants are the two most utilized options to mobilize funds within countries.

**Michikazu Kojima, Chief Senior Researcher, Interdisciplinary Studies Center, IDE-JETRO** noted that there are a number of bottlenecks in the recycling business including a lack of regulation defining the responsibility of the producer, consumer, and government for recycling; insufficient quality of recyclables; cheap natural resources; lack of information about materials, supply and demand; lack of knowledge of recyclables; no/poor segregation; low or no awareness of recycling; inefficiency in recovering materials; and the fact that landfills often remain the cheapest option. Mr. Kojima provided examples of different approaches in developing economies including waste banks in Thailand and Indonesia, **the importance of common standards for recycled products**, and the difficulty in implementing extended producer responsibility (EPR) in developing economies. In conclusion, he noted that by promoting recycling, the amount of waste destined to landfill can be reduced and that identifying bottlenecks in waste streams is one of the first steps to consider in developing appropriate policy.

### **Summary and Q&A**

The session established a clear link between land-based waste management and marine litter and provided evidence of the economic, environmental and health impacts of poor waste management systems. The problem of marine litter is not going away. Production of plastics is growing and plastic waste too often escapes from waste management systems and leaks into the ocean. Fifty percent of the waste leaking into the ocean is coming from five economies in Asia Pacific. Changing industrial standards to include more recycled products would help promote recycling. As a country's GDP grows, so does the sophistication of their waste management systems.

During the question and answer session, speakers clarified that, while in some areas of certain countries no money is spent on waste management (e.g. certain areas of India), others like Japan, Korea and Malaysia have prioritized waste management and do have robust systems in place. In countries that have significant problems with waste management, there are pilot projects that are operating well and others like Indonesia have started to make the move from open dumping to sanitary landfills in some areas.

### **Waste Economics and Investment Levels**

**Kate Clemans, Executive Vice President, C&M International** noted the conundrum that waste management is a priority for municipal governments, but is not on the radar of national government officials. She asked participants to think about what must be done to reconcile this disconnect and elevate the importance of waste management with national governments. Ms. Clemans also noted that first and foremost for municipal leaders waste management is a public health issue as a source of disease and breeding ground for vectors of infections.

**David Lerpiniere, Researcher and Consultant, University of Leeds** discussed the true costs of poor solid waste management including air pollution from open burning, increased incidence of disease, surface and groundwater quality impacts, flooding, pressure on land, ground contamination, greenhouse gas emissions, and lost resources. The cost of inaction is estimated at U.S. \$20-50 per capita/year vs the cost of effective solid waste management estimated at ~\$10 per capita/year. It's estimated that about \$30 billion in investment per year is needed globally for solid waste management (SWM) while the current amount of official development finance focused on SWM is about \$685 million. There are a number of challenges associated with financing SWM projects including operational costs; the perceived risk; municipalities struggle to raise capital because of low or nonexistent credit ratings; and SWM projects have institutional, technical, regulatory, environmental, and social dimensions complicating deployment. There are numerous sources of funding for SWM including capital markets, philanthropic sources, export credit agencies, sovereign wealth funds, commercial bank finance, official development finance, loans and grants. The role of development finance is financing infrastructure, capacity building, technical assistance, equipment and emergency assistance. In summary, Mr. Lerpiniere noted that the cost of inaction on the issue of SWM is substantially higher than the cost of providing effective SWM services. Current evidence suggests that the **external economic costs are at least 5 times higher than the typical cost of providing effective SWM**. Additionally, **development finance has a key role to play in creating essential services and infrastructure**, linking to essential capacity building and technical support. Small as well as large scale projects will be needed, supported through grants as well as loans.

**Ricardo Bayon, Partner and Co-Founder, Encourage Capital** noted that very little money is going into waste management. Investors are motivated by fear and greed (risk and reward) so the investment candidate must figure out how to modify the risk and reward of the investment. There are a number of barriers to investment in waste management in Asia including:

- 1) credit rating of counterparties;
- 2) rates of return of SWM projects are not often in line with their perceived risk;
- 3) other supporting infrastructure is not in place to accommodate greater waste management investment;
- 4) no one pays for SWM/poor enforcement of regulations that prohibit dumping; and
- 5) investors are not yet able to extract enough value from the waste itself (in part due to the very low cost of virgin materials).

In order to encourage additional capital to come, the community must bring in more revenue (consumers or producers to pay), change the risk-reward profile, utilize guarantees and capital stacking models. There is a need to think of investment in SWM as a vertically integrated process. How the waste is collected will have an impact on how it can be used in the future. In conclusion, Mr. Bayon noted that the inherent value of the waste is not enough to fund its own collection and disposal, but with the right infusion of funding,

solutions are possible. Waste-to-value technologies have great potential, but they are not getting the capital they need to get deployed at scale.

**Julia Bucknall, Acting Senior Director for Environment and Natural Resources, World Bank** noted that the only study to date in the Asia-Pacific region placed the cost of marine litter at over \$1.2 billion. The true cost it is likely much higher as good data is not available. Financing waste management projects is more difficult than energy or water projects. Municipal SWM is generally the responsibility of municipal authorities but is difficult to manage due to its low priority, low or no cost recovery, and lack of technical expertise in communities. Private sector participation can boost performance by focusing on the day-to-day operations while the public sector focuses on planning and management. **The success of private sector service depends on the political will for change, the skills of the public authority and mutual trust between all partners.** Risks in public-private partnerships (PPPs) include operational risks, demand risks, financial risks and political risks. She pointed out the role of DFIs: They can never meet the needs of financing in any sector – what’s important is to allocate their funding where most impact can be achieved. PPPs offer a way to scale the potential impact, but relationships are quite complicated,, especially in the waste sector. The advantages of PPPs include more flexibility in how the project is run, better access to technology and expertise, higher levels of efficiency and accountability, and lower and often higher quality service because of competition. The challenges can include a breakdown of essential public service if the project fails, potential for the violation of labor and environmental standards, and less transparent deals. In concluding, Ms. Bucknall noted that the benefits of SWM go way beyond the city and noted the projects the World Bank currently has in Indonesia.

**Mamoru Kondo, Chairman of Technical Committee, Japan Environmental Facilities Manufacturers Association (JEFMA)** provided an introduction to Waste to Energy (WtE) technologies and viewed them as being part of the recycling process. Some of the advantages of WtE technologies were presented including the favorable economic impact compared to landfills, production of energy, and ability to create jobs. In Japan, national bonds and subsidies cover about 60% of the costs, while municipalities cover about 40%. To make PPPs work a subsidy of about 50% of the project cost is often required.

### **Summary and Q&A**

There is clearly a need for government support. There are low-resource economies where the government contribution is small but DFIs can provide seed funds. However, there remains a need to shift the risk-reward equation to bring in more private capital. The World Bank noted that some of the activities conducted by the Bank include looking at contract management, looking for ways to lower costs through competition and including waste management into the broader urban planning discussions so that it becomes part of the overall city governance arrangement.

### **Key Barriers to Investment in Waste Management**

**Atsushi Kaneko, Principal Urban Development Specialist, Asian Development Bank** noted that funds are available, but solid waste management is tricky in that it is primarily a local government issue and DFIs typically engage at the national level.

**Julia Bucknall, Acting Senior Director for Environment and Natural Resources, World Bank** noted that the public aspects (enforcement of laws and contracts) has to function properly and

that there is a need for a social contract or social awareness of the issue. The World Bank often issues guarantees to help mitigate the risk for investors but has not done so yet with solid waste management – partly because of competing priorities and partly because the issue is primarily a municipal one and projects would need to be bundled to make them viable.

**Hermann Koller, Managing Director, ISWA** noted that there must be strong institutions to enable enforcement of the laws and combat corruption. There also needs to be a common understanding between national and municipal governments as well as **a base level of government support to provide at least minimal services, a legal basis and clear responsibilities, institution building and a market for secondary raw material.**

**Masako Ogawa, Senior Environment Specialist, GEF** described GEF’s grant and non-grant programs. She indicated that she would like to see more support for the informal sector to formalize, particularly for collection and separation activities.

**Reiko Hayashi, Managing Director and Head of Global Capital Markets, Bank of America Merrill Lynch Japan** described work the work that B of A Merrill is doing in green bonds, noting that last year \$100 billion in green bonds were issued and that green bond principles have been developed. The Bank of China has also raised money for waste management in China as has the Export-Import Bank of Korea. The World Bank was one of the first to issue green bonds. The Bank also noted that it currently has 320 waste management projects underway.

**Tatsunori Matsubara, JBIC** noted waste management is more complicated than other sectors, for example in WtE plants the waste supply is not stable. Possible solutions were discussed including various insurance mechanisms.

#### **Q&A Session**

Malaysia was cited as a successful example because of laws that were set in place that mandated municipalities to provide waste management at a minimum level of quality. The issue of being able to guarantee delivery of waste and the disconnect between political timelines versus infrastructure timelines was also discussed. One mechanism to succession proof or “mayor-proof” a deal is to involve the municipal lenders’ bank. The threat of suing municipalities or mayors if they engage in open dumping can also promote good behavior.

#### **Vertically integrated waste systems and innovative approaches to derive value from plastics**

**Steve Russell, Vice President Plastics Division, American Chemistry Council** opened the session recalling the work that the Trash Free Seas Alliance® had done to look at how to capture the most waste possible and how to maximize the value of the waste. This session was designed to look at vertically integrated systems that do just that and participants were asked to think how an integrated system would work in their community and what kind of communities would be best suited to participate in these waste management programs.

**Jill Boughton, President and CEO, Waste to Worth** began with some basic tenets including that 1) economic viability is critical, **profitability is made more likely if you manage the totality of the waste stream vs a single element of the stream, and success is more likely if you have a positive to neutral impact on the informal sector** and 2) in some ways it can be easier to introduce more advanced waste management technology in developing economies because



there is no formal, established infrastructure already in place. Vertical integration considers the entire waste stream and multiple outputs can help to decouple the risk from any singular market trend and can provide cost savings by minimizing duplicative operations and structures. When designing a waste management plan, developers need to start with the trash as the technology is only as good as the circumstance in which it is used. The developer also needs to know how much the municipality or province is collecting versus generating and whether a collection intervention is needed. In addition, the developer must also be familiar with the local sources of economic development (including off-take markets), population growth, weather patterns, and the nature of the informal sector. Ms. Boughton concluded with examples of business models currently underway in Angeles City and Dagupan in the Philippines.

**Taiyo Miyagi, Deputy Manager, Global Environment Business Development Department, Hitachi Zosen Corporation** explained how a project in Ho Chi Minh City was designed to take advantage of Japanese government financial support under the Joint Crediting Mechanism (JCM). A WtE project and an anaerobic digestion project to handle food waste were described. Some of the challenges included:

- 1) The division of responsibilities and risk sharing between the public sector and private sector, especially regarding the guarantee of the waste supply chain;
- 2) establishing a reliable environmental monitoring system (odor generated from the waste treatment facilities is currently a contentious issue);
- 3) lack of information relating to the sequence for applying for investment certificates and permissions managed by local government; and
- 4) lack of capacity building (technical and financial).

**Jeff Williams, Vice President of Industrial Development, Integrigo** described the technologies used to turn landfill bound plastics into railroad cross ties that outperform traditional wooden cross ties. They repurpose plastics: 3.5 - 4 million pounds of raw material from landfills. The composite cross ties last for more than 50 years, and they are fully recyclable at the end of their lifespan. Wooden ties typically last on 20 years on average before reaching the end of their product use lifecycle, and they cannot be recycled at the end. The ties provide an excellent example of a use for low value plastic that would not be used otherwise.

**Brian W. Moe, Vice President, Production & Supply Chain, Agilyx** presented on the technologies that the company is using to turn waste plastic into fuel and low value polystyrene into styrene monomers that can be returned to the petrochemical economy. Some of the considerations include:

- 1) having a sufficient supply;
- 2) optimizing the technology and process to maximize yield;
- 3) identifying customers; and
- 4) regulatory frameworks are often not in place to support the industry.

During the question and answer session it was noted that the model could actually be easier to deploy in the Asia-Pacific region and in particular developing markets because of the low cost of the feedstock and lower labor costs, esp. if the informal sector is engaged. **The biggest issue is the reliability of the feedstock.**

**Dr. Dickella Gamaralalage Jagath Premakumara, Senior Researcher, Institute for Global and Environmental Strategies (IGES)** noted that making waste management a priority will facilitate

**early progress to more than half of the Sustainable Development Goals (SDGs)** within the Post-2015 Development Agenda. Case studies in Surabaya, Indonesia and Matale, Sri Lanka were presented in which community residents were educated on separating and recycling materials through waste banks and compost was used in community gardens and sold at market. The challenges to community-based projects include:

- 1) the capital to start and scale up the projects;
- 2) integrating the project into the city's overall MSWM system;
- 3) cooperation vs competition with the informal sector; and
- 4) building awareness, knowledge and skills.

However, despite these challenges, small community-based projects can go a long way towards engendering more community activism.

**Andrew Almack, Founder/CEO, Plastics for Change** noted that, while 3.5 billion people don't have access to crucial waste management services, new technological developments are enabling new solutions. Consumers are increasingly concerned about how their choices affect the environment. More people have mobile phones than have electricity and, by 2025 75% of the global workforce will be the millennial generation. It is important not to neglect the small grassroots industries as collectively they can have an outsized impact. Technologies used in one sector can also be applied to others, as was done by taking lessons from the fair trade agriculture movement and applying those to the waste picker economy to help empower those in the informal economy to get a fair price for their efforts. Waste can be a resource to help those at the bottom of the pyramid improve their livelihoods.

### **Q&A Session**

The panelists described their top "wish" to improve waste management by

- 1) making waste management a priority;
- 2) ensuring the proper waste characteristics and securing a waste stream so that it can be sustainably used in treatment facilities;
- 3) making people aware of what is actually happening to their waste;
- 4) developing community-private partnerships; and
- 5) creating a structured system for increasing the demand for the recycled plastics.

In response to a question regarding what messages the meeting should convey to APEC Member Economies, the panelists noted that governments should not tackle the issue alone. Member Economies should actively seek help from the private sector and infrastructure development experts. Panelists observed that data in this sector is poor, thus having incentives to promote reporting would be extremely helpful to potential investors and developers.

### **Day 1 Synthesis**

Numerous speakers noted the broad range of stakeholders present at the meeting from waste management experts, ocean conservationists, technology experts and financing experts among others. The issue is complicated because unlike other infrastructure sectors, there is an informal sector that must be taken into account. There were discussions on community efforts that could be scaled up, for example waste banks and the community's ability to raise awareness among policy officials and other communities. The gravity of the problem and the impact on health, tourism and our oceans was covered. However, with a (modest) investment, it will be possible to reduce by 50% the amount of litter annually leaking into the ocean by 2025. The solutions must be environmentally friendly, but doing so can make them more expensive.

There are successful projects underway including those to convert waste into energy, but there is a need to identify the factors that led to their success.

**Some of the common challenges include security of contracts, a present disharmony of definitions, regulatory impacts, and political stability. Subsidies would help, but they can only be a part of the solution. The private sector must be properly incentivized to be involved in order to achieve the long-term goal of improved waste management in developing economies. Collection is viewed as the most difficult part to finance privately, and it is the area in the waste management stream where governments need to step in.** Waste management is currently not a high enough priority. Currently the value of waste often doesn't pay for its collection and treatment and therefore nothing will happen unless the cities pick up the collection costs. If municipalities cannot afford it, national governments should step in. Development finance is needed to help leverage other capital and help with guarantees and demonstration projects. **Trash must be viewed as a resource and commodity.**

### **Open Floor Discussion**

The APEC Business Advisory Council noted that capital is not the problem; the problem is the lack of bankable (investment-worthy) projects, especially since too many are too small to attract investment aside from other potential hindrances. Exploring the potential for bundling projects together in order to create a large enough product to attract investment was recommended. The challenges also result from issues with the legal, policy and regulatory environments as well as the capacity of governments to develop bankable projects. For example how guarantees and penalty clauses are used and how to structure risk between the public and private sector -- these problems are economy specific, there is no one size fits all and thus it is hard to have a regional approach. There is also a need to bring key stakeholders together including regulators along the value chains.

As in other sectors, there is a need to address the issue at the economy level. This is being done through the Asia Pacific Infrastructure Partnership (APIP) which is a collaboration between ABAC and the APEC Finance Ministers Process. APIP facilitates closed door, cabinet-level dialogues (normally hosted by finance ministers or vice ministers) and relevant stakeholders including other ministries, local government officials, heads of state-owned enterprises, the ADB and the World Bank. About 70 experts from the private sector are currently involved in the APIP including those from banks, legal experts, and credit rating agencies. The economy-specific dialogues also have a follow up mechanism and are coordinated with the capacity building activities offered by the DFIs. **The APIP mechanism could be used to address waste management** and ABAC would be willing to work with participants at this meeting to hold dialogues in interested economies.

One participant noted that if this group can come up with a model that works, the capital will rush in. **The participants also agreed that APEC Leaders should acknowledge waste management as a priority.** Other participants noted the importance of the "little guy" and how small grant money can be used to make a big difference as waste management is often a local issue. Participants noted the need to identify cities where pilot projects could take place and organize stakeholders including policy makers who can have an impact on the changes needed. The World Bank noted that there needs to be more of a link between solid waste management and the health of the oceans.

## **Day 2**

**Opening Remarks:** The previous day's discussion focused on the profound impact of waste management on health, tourism and the oceans as well as the need to prioritize waste management infrastructure in development financing, including by governments, and assure transparency and predictability in regulatory and policy systems.

### **Challenges to implementing waste management models - an operator's experience**

**Jill Boughton, President and CEO, Waste to Worth Innovations** presented a case study on the development of an integrated waste management system in a mid-sized city. The goal is to extract enough value from the waste to create an affordable, self-sustaining and effective system. Some of the constraints presented included

- 1) How to obtain funding from multiple sources with limited capital on hand;
- 2) how to ensure a consistent waste supply over the life of the project; and
- 3) how to protect contract agreements through political succession.

During the discussion it was noted that DFIs or sometimes even private companies can be a source of funding for the initial feasibility study, which too often operators or developers must fund themselves without any guarantee of being awarded a contract to recoup the cost. When it comes time to fund the actual project the developer or operator needs to determine if a local investor is needed. It was also noted that investors are attracted by a company that will engage in multiple projects over time and not just one project. To ensure a consistent waste supply, a combination of incentives and penalties usually works best. In order to succession-proof a deal it is important to come up with a legal construct that has other guarantors than the executive (mayor) such as a city or provision council. Additional challenges include dealing with long and complex feasibility approval processes, working with conflicting and ill-defined regulations, and a variety of funding gaps. The role of the development finance was emphasized.

### **Collaborative Multi-Sector Partnerships in Waste Management**

**Keefe Harrison, Executive Director, The Recycling Partnership** noted that marketplace pull alone will not deliver enough supply and that community specific interventions are necessary to maximize the potential of a recycling system. In the United States about half of the recyclables remain unrecovered, so the recycling partnership supports cities that want to add or improve recycling programs by providing grants, implementing education programs, helping to solve operational problems and bringing industry together. The elements that make the model successful are the reduction of risk, solutions that meet the needs of both the public and private sectors, and the ability to measure impact.

**Amado P. Blanco, Project Manager, Zoological Society of London (ZSL) – Philippines** set out to develop a new model that is self-funding, empowering and brings immediate benefits to local people by creating a community-based supply chain for discarded plastic fishing nets. Local communities are incentivized to collect and sell used nets, which are then recycled into yarn to make carpet tile. Generating buy-in from economically deprived communities is often a challenge and so social infrastructure is key. Village Savings and Loans Associations are used to provide communities with socio-economic benefits, access to savings, credit, and social safety nets. The work empowers communities and replenishes the ocean by turning waste into an opportunity. The Net-works model can be a blueprint for a new generation of business and innovative approaches to marine conservation. The key now will be scaling up and adapting the model to deal with other plastics.

**Satoshi Shigiya, Deputy Director General, Global Environment Department, Japan** presented on Japan's efforts to assist Pacific Island Countries through a Japanese Technical Cooperation Project on solid waste management including work on landfills; promoting reduce, reuse, recycle programs; human resource development; and disaster waste management. Some of the challenges in Pacific Island Countries include the small markets and small scale of PICs, lack of proper recycling techniques, lack of economic incentives (high shipping costs, low oil price, and fluctuation of raw material price), and lack of proper legislation and regulation.

**Steven Russell, Vice President, Plastics, American Chemistry Council** noted the links between the conference objectives and the work of the APEC Urban Infrastructure Network (UIN) including the need for governments to fully use their revenue base, develop local government skills, work with multilateral development banks and build structures to leverage government investment with private investment. As with waste management infrastructure, governance and transparency were noted as major cross-cutting issues within the UIN recommendations. Additionally, there is a need to encourage the flow of long-term finance from pension, insurance, sovereign wealth funds and private sector investors by removing constraints to international capital flow, encouraging development of debt and equity funds for infrastructure investment, developing project bond markets and loan pooling mechanisms, and supporting PPP models which are fair and transparent and share risk with private investors.

He observed that the Trash Free Seas Alliance is working on accelerating the development of local waste management, incubating and piloting waste treatment options and reengineering to minimize waste and promote reuse and recycling. The private sector can be a knowledge partner with its vast experience in value chains, distribution networks and material flow analyses, among others. The Closed Loop Fund is a social investment vehicle that can scale in order to achieve measurable progress through a US \$100 million fund that issues loans below market interest rate to support waste management activities and infrastructure. There are a range of private sector interests, some of which are represented at the meeting, and others (tourism, shipping, fisheries etc.) that were not. **Positive incentives are preferred to punitive measures, the private sector can contribute more than just money, and it's important to ensure a "level playing field" for both foreign and domestic companies. Companies have responsibilities to shareholders and activities that can also create value for shareholders will be more sustainable. Public sector commitment is essential.**

**Peter Jennings, President of Dow Japan and Korea, and Associate General Counsel** said that Dow recognizes the need for better waste management and has committed to be a leader in sustainability. He noted the importance of the 4<sup>th</sup> R or "recover" to complement efforts to reduce, reuse and recycle. Plastics provide tremendous value. The Environmental cost to society of replacing plastic use in the consumer goods sector is 3.8 times higher than from plastics. Dow is involved in a number of different initiatives and recently pledged US \$2.8 million to help address marine litter at the U.S. Department of State's Our Ocean conference. Dow's activities include research, Operation Clean Sweep, Materials Recovery for the Future to help in the recovery and sorting of flexible packaging, and the WBCSD ROW or Roadmap to Eliminate Ocean Waste to establish the business case to enable the private sector to become more involved. Dow is also working on de-polymerization technologies to convert used plastic

packaging into feedstocks for new polymers. Investment in waste and resource management including collection and processing will be critical and Dow is committed to being part of the solution. Investing in improved plastics recovery by continuing to support mechanical recycling programs and by commercializing depolymerization or chemical recycling technologies, can create value from materials that were previously considered low-value waste.

### **Q&A Session**

Participants noted that there is a real interest by industry to contribute to a collaborative effort and that they can bring more to the table when there is trust and the ability to work constructively together. Companies will invest in places where it is possible to partner with the governments versus places where there are acrimonious relationships and punitive measures being taken regularly. Participants also discussed how to integrate small and medium enterprises (SMEs) into the process and the importance of having one ministry principally in charge of waste management.

### **Reducing Risk – Draft Policy and Practice Recommendations**

**Ryan MacFarlane, Director at C&M International** moderated a discussion to generate feedback on the draft APEC Policy and Practice Recommendations (PPRs).

PPR #1 – “Set ambitious attainable targets” participants asked what the targets actually reference and suggested possible metrics to use. The need to clearly establish the link between waste management and oceans as well as the need to mention both municipalities and economy wide targets was also discussed. Participants agreed to keep the recommendations short and no specific changes were made.

PPR #2 – “Measure and reward progress” participants suggested the possibility of ranking economies in this area as it has been a successful tool in other areas such as the World Bank’s Doing Business Rankings. The need to be consistent and have standardized data points that are being collected was mentioned by several participants. One suggestion was to create a template to ensure that the data being collected is comparable. China specifically asked for the term “national” to be changed to “domestic” per APEC practice.

PPR #3 – “Determine shared terms” participants noted that consideration should be given to what defines the recyclability of certain products as there are cases where the economies doing the collection are not always aligned with stakeholders who could actually recycle the material. This creates significant impediments. There numerous issues around how economies define terms such as renewable energy and waste that can have significant impacts on trade and investment. There is a need to consider repurposed waste as a commodity.

PPR #4 – “Streamline decision making” participants agreed with the importance of this issue but noted that local governments do not always respect or adhere to a streamlined national body. Thus there is a need to consider how the system will actually work in practice and take lessons from APEC economies that have already made the change.

PPR #5 – “Increase funding and improve outcomes by financing all phases of integrated waste management systems” an economy noted that they would need to consider the

appropriateness of APEC recommending that individual economies increase funding for waste management. A question was asked as to whether or not the word “allocate” should be included in addition to, or in place of “increase” funding as many economies do not have dedicated funding for waste management. As a result, the recommendation was changed to “increase dedicated funding.”

PPR #6 – “Enable innovative, transparent funding approaches” a question was raised as to whether the recommendation should use the term “enable” or “promote” innovative, transparent funding approaches. No changes were made at the meeting.

PPR #7 – “Reward recycling and innovative, environmentally friendly waste treatment.” A suggestion was made to change the wording to “environmentally sound” rather than environmentally friendly to bring the recommendation in line with ISO standards. There also was a question of what was meant by reward and what the reward looks like. While it was agreed that the language is acceptable for now, the hope is that there will be more clarity as the initiative proceeds.

PPR #8 – “Incentivize entrepreneurial waste pickers” there was a question as to whether the language to “encourage the waste picker sector to assume new service roles” would be interpreted as institutionalizing or formalizing this sector. Given the subsequent language indicating that the interests of waste pickers should be protected and that they be allowed the opportunity, although not required, to act in an entrepreneurial way together with the formal sector, no changes were made. There also was a comment on involving waste industry associations in the focal economies.

PPR #9 – “Enforce strong environmental standards to guide innovation.” Participants agreed with the statement. The ADB noted that the statement is fine but in practice a strong economy-wide standard can sometimes hinder local governments from moving forward with solutions.

### **New approaches to funding and delivering waste management**

**Fraser Thompson, Director and Toby Brennan, Engagement Manager, Alpha Beta** provided an overview of some of the key themes from the previous two days and went over several topics including

- 1) new ways to increase and aggregate funding;
- 2) the importance of technology and project development;
- 3) how new approaches to funding delivery and incentives can better coordinate the value chain; and
- 4) how innovations in funding and delivery models can be trialed in APEC member economies to demonstrate their potential.

Some of the points raised during the discussion included the possibility of adopting a “stacked funding” model for waste management infrastructure, the need to consider the dynamics in each particular locale, and that de-risking by the local and central governments will be necessary. The next steps will be to further develop the design of the model and address some of the investment and operational questions that were raised.

## **Day 2 Synthesis and open floor discussion**

**Kate Clemans, Executive Vice President, C&M International** noted the role of the development banks guaranteeing the feedstock and the sanctity of contracts as key themes emerging. The day's presentations were reviewed as important contributions to the overall effort.

**Andreas Merkl, CEO, Ocean Conservancy** thanked the Japanese hosts and all those that had worked hard to put the conference together. The solution sets for rural areas will be different than those for urban areas but there are some **common themes including the need to commoditize the asset class**. There is a need for **standardization and common definitions**, to make it more modular and more investable. There is a need to **create the demand environment** to enable the technologies to advance and disseminate. APEC will be critical in helping to define the principles at a domestic and regional level. Going forward this will need to be a coordinated effort.

**Hiroshi Ono, Director, Policy Planning Division, Waste Management and Recycling Department, Ministry of Environment Japan** noted his hope that the Policy and Practice Recommendations will be endorsed at the highest levels of the APEC process. Japan will also share the results with the Asia Pacific 3R forum to be held in November this year. Japan noted in particular the need to set ambitious targets as well as the need to reward recycling and shared some of the experiences from Japan in helping economies in this area. Waste to energy offers significant advantages when combined with feed in tariff and other finance mechanisms. Japan also noted the importance of strong environmental standards.

Participants were asked what would be the most important thing for them to get involved in this effort. J.C. Parrenas representing ABAC noted that he would be taking this issue to the SFOM in Lima in October and would present it as a possible topic for the Asia-Pacific Infrastructure Partnership. Ricardo Bayon noted the need to explore financially viable business models in this space. Toby Brennan noted that the commitment from national governments to solve the problem will be very important.

In conclusion, State Minister Ito from Japan's Ministry of Environment noted his desire to do more to help advance these efforts and noted **his intention to work with Prime Minister Abe to make waste management infrastructure development a priority within APEC and take the results of the workshop to APEC Leaders**.