Chair's Summary

2014 IPLA Europe Forum on ~Enabling Conditions for Developing Effective Business Models and PPP in Waste Management Sector in Developing Countries

7-8 May 2014, IFAT 2014, Munich, Germany

Chair:
Hon. Mr. Ali Mohamed Alwi Al-Yezidi, Minister, Ministry of Local Administration of Government of Yemen

IPLA

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I. Introduction

1. The United Nations Centre for Regional Development (UNCRD) and International Partnership for Expanding Waste Management Services of Local Authorities (IPLA) – a Rio+20 partnership, with the support of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of Germany, Messe München International, GIZ/SWEEP-Net, International Solid Waste Association (ISWA), co-organized the 2014 IPLA Europe Forum from 7 to 8 May 2014 at the International Congress Centre, IFAT-2014, Munich, Germany.

2. The Forum was attended by thirty IPLA members and partners from sixteen countries (Austria, Brazil, Colombia, France, Germany, Italy, Japan, Lebanon, Mauritania, Netherlands, Russian Federation, South Africa, Sri Lanka, Sweden, Tunisia, Yemen), including representatives from local and central governments, regional and sub-regional organizations, academic and research institutions, non-governmental organizations (NGOs), the private and business sector, as well as international and UN organizations and professionals on waste management. See Annex 1.

3. The Rio+20 outcome – The Future We Want called for new and innovative public-private partnerships to enhance capacity and technology for environmentally sound waste management, including waste prevention. IPLA, which is a Rio+20 partnership, has been increasingly focussing on this aspect at local and municipal levels. With the theme of "*Enabling Conditions for Developing Effective Business Models and PPP in the Waste Management Sector in Developing Countries*", the objective of the 2014 IPLA European Forum was to discuss and explore various enabling conditions for the private and business sector to effectively engage themselves in developing countries, working towards sustainable waste management. With inadequate resources and institutional capacities, municipalities in developing countries of Africa, Asia, and Latin America, are

increasingly in need of both co-financing and technologies to solve their emerging waste problems.

4. The 2014 IPLA European Forum also provided a unique opportunity for IPLA members and partners to take stock of latest technological innovations and demonstrations in the field of waste management – collection, storage, separation, resource recovery, recycling, waste to energy, and various state of the art technologies for transforming waste into useful resources for a resource efficient and zero waste society, as demonstrated at IFAT 2014. IFAT is the world's leading trade fair for water, sewage, waste and raw material management.

II. Opening Session and Keynote Presentation

5. Opening the 2014 IPLA Europe Forum, on behalf of the host, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of Germany, Dr. Andreas Jaron, extended his warm welcome to all the participants of the Forum. He expressed full hope that participants would have fruitful discussions, while learning from Germany's experience in achieving such height in development and applying various innovative technologies in the field of waste management. He also highlighted how Germany is contributing globally to address various challenges in waste management. He further invited all the participants to witness the Federal Ministry's pavilion on German RETech Partnership at IFAT 2014 and learn how Germany could support various international cooperations and capacity building in the field of waste management.

6. Delivering an opening remark on behalf of Messe München International, Mr. Gerhard Gerritzen, Deputy Managing Director, welcomed all the participants. He thanked the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of Germany, GIZ/SWEEP-Net, and ISWA, for their valuable support in organizing the 2014 IPLA Europe Forum. As a host of the IFAT 2014, he shared that IFAT 2014 was much bigger than IFAT 2012, covering 230,000 square meters of exhibition space with more than 3000 participating companies, exhibitors from 58 countries, and 125,000 visitors from all around the world. He mentioned that the unique feature of IFAT was the display of a wide range of products and technological innovations, as well as services in the field of water, waste water, and solid waste management as a true reflection of the advancement of the environment industry. He finally concluded that it was a very opportune time to have this IPLA Forum organized at IFAT 2014.

7. In his opening statement, Mr. Markus Luecke, Chef de Mission, GIZ/SWEEP-Net, emphasized the importance of networking in the context of IPLA. He explained that networking is important while urbanization is continuing to take place and waste management is increasingly becoming a critical concern in emerging and developing

countries, especially in the context of sustainable urban development and the well-being of the local community. Highlighting the issues in the Middle East and the North African (MENA) region, he mentioned that economic growth and provision of employment are currently the key success factors in political transformation and democratization. In a green economy, emphasis is given on moving away from traditional and conventional ways of waste management of relying on end of pipe solutions to more efficient resource management that replaces the use of fossil resources through more innovative and cleaner production processes, as well as through change in consumption patterns. This would open new economic opportunities which were not explored before, especially in emerging and developing countries. It would require clear political commitment both at local and national levels, which should ultimately be translated into necessary administrative and legal actions, allowing the public and private sectors to develop and implement innovative and economic solutions through the sharing of knowledge and joint collaboration. With the support of the German Government through GIZ, SWEEP-Net was developed in the last five years, and as the IPLA Sub-regional Secretariat for MENA region, SWEEP-Net's objective is to develop and foster cooperation between local authorities, Maghreb and Mashreq, countries, and international partners that are committed to contribute towards sustainable development of the region.

8. Delivering the opening remark, Mr. David Newman, President of ISWA, appreciated the cooperation of both the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of Germany and Messe München International in hosting the IPLA Forum. Acknowledging ISWA's cooperation as a partner of IPLA, he mentioned that ISWA had round 1300 active registered members from 80 countries in the world. In reality, a good waste management in developing countries, where a German, Austrian or European models may not apply, is simply the collection and transportation of waste to waste management sites. This would pose a huge challenge as the waste volume is expected to be doubled in next fifteen years along with rapid urbanization, cautioned Mr. Newman before concluding his brief remarks.

9. The Chair of the Forum, H.E. Ali Mohamed Alwi Al-Yezidi, Minister, Ministry of Local Administration of Government of Yemen, extended his deep appreciation to host country, Germany, and all the co-organizers and supporting organizations in organizing the Forum with an objective to expand waste management services to local and municipal authorities. He expressed his satisfaction given the fact the IPLA Europe Forum was organized at IFAT 2014, which provided a good opportunity for all the participants to witness many advanced technologies in the field of waste management, including technologies to convert wastes into useful resources towards a zero waste society. Many European countries have advanced their waste management technologies as well as public-private-partnerships (PPP). Emphasizing the importance of the 3R (reduce, reuse, recycle) approach, he mentioned that many developing countries lacked such technical know-how to deal with the growing waste management problems. Given the UN estimates that more

than 70% of humanity will live in cities by 2050 and that cities are responsible for the consumption of more than 70% of energy and other resources while generating about 70% of carbon emissions, attention needs to be given on sustainable urban management. Mr. Alwi Al-Yezidi, also mentioned that Yemen is facing severe waste management problems. He finally expressed hope that the outcome of the Forum would benefit many developing countries, and establish fruitful cooperation with Germany, where waste management technologies are highly advanced.

10. On behalf of UNCRD/UN DESA, C.R.C. Mohanty, Environment Programme Coordinator of UNCRD, extended his deep gratitude to the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of Germany and Messe München International for hosting the 2014 IPLA European Forum. He also acknowledged the valuable support of GIZ/SWEEP-Net, and International Solid Waste Association (ISWA) in co-organizing the Forum. He also recognized the participation and contribution of key IPLA members and partners such as – South Asia Cooperative Environment Programme (SACEP), WASTE-The Netherlands, International Center for the Best Environmental Technologies (ICBET, Russia), University of Borås, Veoila, and Bogota Basura Cero and others. He mentioned that the Rio+20 Outcome – *The Future We Want* had called for sustainable and resilient cities as one of the areas of priority for sustainable development. It has also called for new and innovative partnerships to enhance capacity and technological interventions for environmentally-sound waste management, with waste prevention as the top priority. He mentioned that municipalities in low income and developing countries operate with a very limited budget, out of which a significant share is allocated for only waste collection, though only half of total waste is collected, and around one tenth is ultimately recycled. Growing urbanization, along with rapidly increasing volumes of waste and diversification of waste streams, with the emergence of new waste streams such as e-waste, hazardous wastes and chemicals, and plastics in coastal and marine environments have further compounded the challenges faced by the local authorities and municipalities. While it is expected that more than 70% of humanity will live in urban areas and cities, he urged for timely actions to address these problems with innovative policy options, technological interventions and adaptations, and multi-stakeholder partnerships. He further highlighted that developing countries in Africa, Asia, and Latin America were increasing looking for partnerships with private and business sectors to address these growing waste management problems.

11. Delivering the keynote presentation on behalf of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of Germany, Mr. Andreas Jaron shared Germany‘s experience on moving towards a resource efficient society through successful engagement of the private sector as a business model. He mentioned that most of German legislations, including environmental legislations, come from the European Union. With a rate of 450~500 kg per inhabitant per year, Germany generates about 333 million tons of waste per year, out of which around 71% is recycled. From municipal

waste, which is recycled up to 63%, only the minimum materials which are not recyclable or biodegradable go to landfills. At the same, Germany gives due importance to the avoidance of leachate and methane emissions from landfill sites. Germany also imports 7 million tons of hazardous waste, which are notified or disposal wastes. Concerning the export of secondary raw materials and non-hazardous wastes, Germany exports 25 million tons and imports 20 million tons, which implies Germany produces more secondary raw materials than it can actually use. With regard to waste management infrastructure, currently Germany has more than 15,000 waste treatment plants and facilities (160 waste-incineration plants, 633 waste-to-energy plants, 500 CP treatment plants, 30 hazardous-waste-incinerators, 2047 biological treatment plants, including composting facilities, 996 sorting plants, 1321 ELV-dismantling plants, 304 WEEE-dismantling plants, 120 soil treatment plants, and 2055 construction and demolition (C&D) recovery plants, among other).

12. Mr. Jaron further elaborated that such a huge number of waste management facilities are mainly financed through three major sources such as – (a) *waste generators* (charges and fees paid by waste generators based on polluter pays principle), (b) *markets* (secondary raw materials and energy resources (papers, plastics, metals, RDF, etc.) based on market prices), (c) *producers* (producers' responsibility to finance the waste management). The striking difference between many countries in the world and Germany is that it does not support the conventional idea of subsidies or full financial support given by the states and municipal authorities. This is one of the reasons why it is difficult to establish well managed and advanced waste management systems in many developing countries. Germany's core philosophy is to sustain the waste industry through polluter pays principle (PPP), which has ultimately helped Germany establish the waste management sector as an economic sector with high standards of labour input. There are more than 200,000 people employed in Germany's waste management sector with an annual turn over of about 40 billion Euros and an achievement of 20% GHG emission reduction (approximately 46 million tons per year).

13. In order to achieve high recycling rates, as well as cost savings, it is highly necessary to segregate and separate the waste at source from the beginning, which would ensure the increased use of clean and high quality secondary raw materials. Germany's green economy has integrated a circular economic approach with an objective of achieving ecological, climate, economic and employment benefits, among others, in line with EU obligations. Germany had achieved this step by step. In 1972, Germany had closed around 50 thousands dumpsites all over the country with the establishment of 450~500 centralized landfill sites. In 1986, Germany adopted the 3R policy, and in 1991 EPR policy was subsequently legislated to become the forefront of the Green Dot scheme of the European "Packaging and Packaging Waste Directive", a binding on all companies' manufacturers to recover their own packaging. In 2005, land filling was banned in Germany to increase material efficiency which ultimately contributed towards better

segregation of waste generated by private households and industries, and mass scale pre-treatment of left-over residues to recover and reuse them as secondary raw materials. These measures along with good enforcement have helped Germany achieve the highest recycling rate (more than 66%) among European countries. The fundamental to achieving such a high recycling rate is to efficiently separate wet (for biological treatment, such as composting and energy recovery, etc.) and dry wastes (for use as secondary raw materials or recyclable material).

III. Engaging Private Sector - Waste Business Opportunities and Constraints in Developing Countries

14. Delivering a background presentation addressing business opportunities and constraints in the waste sector of developing countries with reflections on the circular economy, President of ISWA, Mr. David Newman, mentioned that while waste had been the substitute for limited sources of energy, there were in fact enough energy resources such as nuclear, wind, solar, and ocean wave power, in addition to traditional sources of energy, to meet all the needs. It is not a question of whether we have enough energy, but rather a question of whether we can continue to use the current energy mix, which is predominantly fossil fuels, and resulting in the release of CO_2 emissions to the atmosphere. Waste management in the context of energy should not necessarily always be about waste as substitutes for missing energy resources, but rather about the need for clean energy resources. When it comes to limited primary resources, it is not only recycling that matters, but a need to send out messages across the world that the primary resources are indeed limited. As per FAO data, the global average loss in forest coverage over the last two decades is significant, while there have been considerable plantation efforts to substitute the depleted areas. At the same time, the price of pulp, a basic raw material for paper production, remained unchanged from 2008 to 2013 partly due to high recycling rates of paper wastes, mostly in Western Europe. When it comes to other resources that are recycled in waste streams such as aluminum, plastics, glass, and organics, there is the question of whether there is actually any shortage of these secondary raw materials. For instance, although 300 million metric tones of plastic wastes are put in world recycling market; 70% glass wastes are recycled in Western Europe; and 30-70% of the organic wastes are recycled across the world, the real shortages are mainly in terms of resources like copper (which is expected to run out in next 20 years), phosphates, and rare earth metals, etc.

15. Mr. Newman further highlighted that waste management was not solely for the sake of recycling, but rather for health, environment, keeping cities clean from pestilence, and improving the quality of life of citizens. Waste management is a policy driven by health and environmental concerns, and not by science, technology, finance or principle resource

values. More precisely, waste management is about health management, air emissions management, pollution control management, workers' health management, and safe and environmentally sound final sinks. Waste treatment is about destroying pathogens, not just creating new products. Recycling, which is only one answer to the problems, is a final sink and provides preventive solutions by avoiding disposal, reducing energy consumption, reducing trade in raw materials, and improving resource efficiency and autonomy on raw materials. In order for recycling to be effective, it needs to be of high quality as demonstrated by countries like Germany.

16. Despite good laws, regulations and recycling rates, about 40% of all waste is still currently disposed in the EU. In the EU, there have been good policies and measures in place, which include taxes and incentives, strategic policy planning and development, EPR (extended producers responsibility) schemes, feed-in tariffs for renewable energy and district heating by incinerators, landfill taxes and bans, strict EU penalties on non-compliant nations, and incentives for recycled products (green public procurement), etc. For instance in Italy, a penalty of Euro 250,000 per day is imposed for non-compliance of waste laws. If the EU continues with current policies and enforce them, by 2023, it will have eliminated landfills, recovered resources by 50%, and rests through energy recovery of about 40-50%.

17. Sometimes there is perception in developing countries that recycling would solve most environmental problems. If we analyze the recyclables that add real recycling value to EU economy, we would include mainly precious metals, iron and steel, copper, aluminum, and nickel. That implies almost 75% of the recycling industry has nothing to do with municipal waste streams. Europe's waste industry is not economically driven by recycling. Europe's waste industry is mainly driven by public health and environmental protection, taxes, and energy from waste, though often subsidized. For instance, recycling and material recovery in Europe largely happens due to subsidies or taxes, which costs approximately Euro 150~200 per capita per annum. In Germany, it costs each family about Euro 300 to Euro 350 per annum.

18. Europe's examples show that waste management costs are not covered by recycling, but by taxes and energy sales. Waste management cost is rather essential for public health service and environmental protection, hence people as well as the polluters, corporations, and companies must pay as they produce waste. There is a direct correlation between cost of waste management, income, taxes, and GDP per capita and the percentage of waste going into landfills. From EU's case, it is evident that a country with a GDP per capita more than Euro 45,000, tends to reach a stage of zero landfilling.

19. On the other hand, the cost of waste management is not properly understood in developing countries where the situation is very complex. Often the waste management in developing countries is characterized by little central strategic planning, few financial

services, absence of EPR schemes, no feed-in tariffs, no landfill bans or taxes, few government penalties, little enforcement, no incentives for recycling, and rampant open dumping. The problem is further exacerbated due to lack of awareness among the growing uneducated, urbanizing population. It is indispensable for developing countries to spend heavily on health and environmental protection with sound laws, regulations, and strategic planning in order for them to get rid of waste management problems. Waste is not a resource question, but a health emergency. It is important for developing countries to assess the costs of bad waste management such as the – a) health (epidemics, malaria, dengue, typhoid, cholera, respiratory diseases, black soot (or carbon) emissions, dioxin emissions, poisoning, etc.); b) environment (pollution of water resources, air quality, CO2 emissions, HFC emissions, resource extraction and depletion, etc.); c) economic (damages to tourism, urban quality (house prices), business investment, etc.); and d) social (waste scavengers, child labour, crime, urban degradation, etc.). There is a need to drive the message across the developing world that waste management is a public health priority. Establishing this priority would ultimately lead to greater political weight for waste matters; new political, social, and economic alliances; investments in waste infrastructures; taxes on waste (landfill, EPR, etc.); and incentives to invest (feed-in tariffs).

20. As there is no resource emergency for important waste streams, resource recovery alone will not be able to finance waste infrastructures. It is essential to establish a collective responsibility for waste management with everyone's contribution, including the poor's. In developing countries, there is a need for greater political will to enforce the polluter pays principle (PPP) on a national scale and for most waste streams.

21. Waste disposal becomes more expensive as recycling, composting, energy recovery become competitive in a Circular Economy. Currently, it may not be possible for developing countries to afford a Circular Economy, but still, they can focus on simplified solutions in the medium to long term to achieve the best possible results. Collection is the critical emergency. The experience of EU provides meaningful lessons on how developing countries could achieve the current situation in waste management by having progressively put in efforts over the last 30~40 years. Mr. Newman concluded his presentation by sharing what ISWA aims to do in collaboration with UNFCCC, WB, IPLA, CCAC, GPWM-UNEP, among others.

22. Some of the participants expressed reservations to the fact that economic demand for resources was not the driving factor for good waste management. Mr. Newman clarified that most of the resources recovered were at higher economic costs than the actual price of the materials. It is often difficult for developing countries to afford it. The very Europe-centric and sophisticated measures may be difficult for the developing countries to implement in reality. For instance, it is not the economics of composting that drives the

organics recovery, but rather from the environmental point of view, as organics are diverted away from the landfills.

23. Some participants argued that for developing countries like Yemen, Mauritania, and others, it is necessary to modify technological ambitions to meet their economic resources. While most people, even the most poor ones in low or middle income countries, may be willing to pay 1% of their household income for waste management, it is sometime not implemented due to political reasons. Therefore, the biggest dilemma is how to sustainably finance waste management in such countries, and whether it would be possible to manage the sanitary landfills with just 1% of household income in low income or 2% in middle income countries available as a structural form of financing.

24. Under climate financing, such as Green Climate Fund, lots of funding are promised by developed countries. Developing countries should exploit these opportunities by implementing sustainable waste management practices which can significantly contribute towards GHG mitigation, for instance, by diverting the organic fractions of the waste streams from the landfills. This provides a win-win prospect for both the climate and the resources.

25. As a part of the capacity building activities, GIZ/SWEEP-Net has initiated a number of analytical studies in cities of Middle East and Northern African (MENA) region to assess the cost of action and inaction in the waste sector. Along with the lack of proper administrative structures and institutional mechanisms, there are a number of misconceptions in the region regarding sustainable waste management, for instance, waste to energy (which very much depends on the characteristics and calorific value of the waste). In the case of Lebanon, the composting activities have not been fully successful although lots of resources are spent on separation and collection of organics. It is therefore important to do proper and prior assessment of the social and economic impacts of recycling activities.

26. Resource efficiency and waste management are not always high in the political agenda, while many countries around the world have become net importers of raw materials (fossil fuel, metals, timber, and other natural resources). In Asia, for instance, the rapidly increasing volume, changing characteristics of urban and industrial waste, rising population, increasing consumption and per capita waste generation have posed serious challenges for the sustainability of the region. The Regional 3R Forum in Asia and the Pacific has recognized that the resource-efficient economic behavior is important for the region because of its large population, population density, its growing dependence in sourcing natural resources from global markets, and the need to improve the material standard of living of its people. The goal of improving resource efficiency and reducing the waste and emission intensity for Asia-Pacific economies is gradually becoming a significant driver of government policies and programs. To this regard, waste

management needs to be linked to other policy domains, such as climate mitigation and adaptation, energy and water security, urban air pollution, and supply security of critical natural resources. In order for waste management to be effective, it should also be science driven.

IV. Engaging Informal Sector - Public-Private-Partnerships (PPP) Involving Informal Sector

27. Dr. Anne Scheinberg, Senior Adviser, WASTE-The Netherlands, highlighted various factors to be considered in building successful PPPs in the recycling sector in low and middle income countries. While PPPs in recycling are considered to be a strong example of environmental progress in Australia, Japan, Europe, North America, recycling is a source of global conflict, competition for recyclable resources, and economic struggle with informal recyclers in low and middle-income countries. It has always been a universal interest to identify a PPP framework to organize valorization which gives better results for people, the environment, and the economy; enables cities to divert 50% of waste from landfill to value chains; and provides jobs and resources for the (circular) economy.

28. There are a number of factors to know or analyze beforehand to build a successful PPP – (i) firstly, there is always a system, whether ideal or not, in place; either the existing system needs to be upgraded or to be fought against. For instance, in some villages of India, people wait for the monsoon to wash away the wastes; this primitive system may not be universally accepted, but at least there is a system; (ii) secondly, it is advisable to develop baseline information or a process to see the system through the eyes of the stakeholders; (iii) thirdly, whether most of the valuable materials in the local waste are already claimed or valorized; (iv) whether the informal or SMEs have a robust earning model so they can stay in business; (v) the wrong technology and PPP partner will result in the revenues not covering operating costs; (vi) the service chain and the value chain are different - PPPs in the service chain involve removing waste and PPPs in the value chain involve trading valuables; (vii) whether there is a reasonable willingness among the people to pay the fees or there is an expectation for the government to pay everything; in low and middle income countries, 2% of household income could be the maximum collection price; (viii) waste collection is always profitable, but would not cover transfer or disposal costs; (ix) value chains are private, secret, difficult to enter; and (x) informal recyclers often better know how to sell recyclables than city officials.

29. The next aspect is to consider the power of valorization frameworks. In most cases, either the government expects the private sector to pay them a large sum of money to do something or the private sector expects the government to pay, or both are true at the

same time. Therefore, it is sometime observed that facilities are built, but not operated properly. In the service chain (usually public sector domain) and the private value chain (usually private agricultural and industrial producers domain) recycling are two separate institutions, but they connect around disposal, treatment, reuse and sale of reusables or recyclables. The service chain includes households, collection, transfer and transport, where as the value chain includes separate collection, waste picking, small scale processing, junk shops, intermediate processor and exporter, and end-use or industrial production. It is easier get revenues from the service chain as even at a very small scale, the collection is quite profitable. Where as in the value chain, it is very complicated, private, difficult to enter, and the informal recyclers often better know how to sell recyclables.

30. Responding to the clarification sought by participants in the meaning of PPP, it was clarified that – (i) partnerships offer alternatives in which governments and private companies assume co-responsibility and co-ownership for the delivery of solid waste management services. Waste disposal is expensive – financially and in lost resources (substantial inputs of labour, material, energy, land resources for land filling, etc.); (ii) partnerships combine the advantages of the private sector (dynamism, access to financial resources and latest technologies, managerial efficiency, and entrepreneurial spirit, etc.) with social concerns and responsibility of the public sector (public health and better life, environmental awareness, local knowledge and job creation, etc.); (iii) partnerships (PPP) are indispensable for creating and financing adaptation measures towards resilient cities which in turn are more attractive for private investments; and (iii) partnerships provide win-win solutions both for the public utilities and private sector—if duly supported by appropriate policy frameworks. Such partnerships could lead to savings in municipal budgets where waste management usually consumes a large portion. The private sector, on the other hand, may use this opportunity to convert waste into environmentally friendly products and energy that could also serve as income generating opportunities, thereby shifting the roles of municipalities from being a 'service provider' to 'facilitator of service', by focusing its activity on planning and management, while a private company takes up the actual day-to-day operation.

31. Under a recycling PPP framework, the value chain "pulls" the materials for which there is real economic demand. Waste pickers, junk shops, and intermediate processors pass materials along the value chain to the end-users. The local authority benefits by having to dispose of fewer materials, but they often don't realize it. This is a case of private commercial activities generating positive environmental externalities. The tonnages diverted are seldom counted by the local authority and are therefore invisible.

32. For instance, in the Botswana case of value chain recycling, waste pickers are engaged to work on 14 regional sanitary landfill sites and sell to authorized, registered, private value chain businesses, who export to South African producers. The South African value chain

"pulls" the materials for which there is real economic demand. While the companies would like to engage more waste pickers, the trust between public and private sector is underdeveloped. In overall, there is clear space for more PPP activity around recycling and diversion of organic waste. Though the tipping fees are too low to drive these PPPs, the markets provide a potential revenue stream. In the case of municipal recycling in USA, the sphere of influence of municipality is very broad and includes a whole range of activities such as collection, separation, disposal, processing, marketing, etc., thereby shrinking the value chain sphere and marginalizing the role of informal private recyclers. The whole basis is that municipal investment in recycling equals the environmental and economic benefits over the long term (tons diverted away from landfill avoid disposal costs and save municipal money and recycling revenues partly offset operating costs). The system is sustained by taking full advantage of a larger supply of materials and the value chains invest over the long term in new end-use.

33. Similarly, in case of EPR recycling framework in the Netherlands, the invisible informal sector is completely outside of the system and the national government makes all the decisions. Municipalities charge one integral fee that covers the cost of all activities – composting, recycling, sweeping, disposal. Recyclables and compostables are banned from landfills. The government makes arrangements with producers for end-of life management, recycling, marketing. Local authorities are required by national law to offer source separation of organics and recyclables. The recycling is paid for by EPR point-of-purchase fees. Each tonne valorized saves the local authority money, thereby allowing more efficient collection and reducing risks. In the case of EPR in Costa Rica for e-waste, the value chain continues to function alongside the EPR collection channels with marginal involvement of the Government. The EPR decisions are usually made by a multi-stakeholder "technical committee" with full participation of producers. The collection system is voluntary for households and local authorities are free to co-operate with it or not. The E-waste system supports and co-operates with municipal and NGO recycling centres "centros de acopio." The recycling is paid for by the producers directly and through some type of point-of-purchase fees and each tonne valorized saves the environment.

34. In some other parts of the world such as in India, Brazil, Philippines, Egypt, and other middle-income countries, there is a framework of inclusive recycling in which the private sector mainly supports the municipality by taking over the responsibility of separate collection, disposal, etc. While the municipality has a very small role, the authorized waste pickers play an important role. In this framework, priced disposal is not (politically) possible. Valorization "centre of gravity" lies in the private value chain, without cost to municipalities or government. Each tonne valorized saves the household money, by avoiding collection and transport. Authorities gain positive externalities, benefits in terms of jobs, environment, and governance. Municipality shares responsibility through recognition, insurance, authorization, and support to the value

chain. Formal and informal recyclers invest in operations, keep materials revenues, and secure livelihoods.

V. Enabling Conditions for Scaling up International Partnerships and PPPs in Developing Countries

35. Prof. Hans Björk, Director of Waste Recovery, University of Borås, Sweden, presented a specific case of Borås based Waste Recovery International Partnership that involves four major partners and stakeholders - City Government of Borås, University of Borås, SP Technical Research Institute of Sweden, and Borås Energy and Environment, a company owned by city hall. As a vision for a sustainable future, the City of Borås aims to be a zero waste city free from fossil fuels. Borås has taken up many measures and actions to reach the present situation, including the state of zero land filling. Some of the major driving forces include EPR for paper and packaging wastes, complete landfill ban on organic and combustibles, and a very high tax on landfilling. Borås's closed loop or circular economic model integrates the waste and energy stream. Almost 99% of the household waste goes to either recycling or energy recovery. Borås's burnable waste is transformed into district heating, district cooling and electricity at Ryaverket, and today around 40,000 of Borås's inhabitants heat their homes with district heating. Similarly, Borås's biodegradable waste is transformed into biogas, and there are three biogas filling stations in Borås. Because of this, it has been possible to run all buses, garbage trucks, and many private cars by using biogas. There are around 80 unmanned recycling stations in Borås owned by FTI (the packaging and newspaper collection service).

36. Borås based Waste Recovery International Partnership offers an exemplary partnership model in which the City of Borås continues to promote and market green city; the University of Borås contributes in new research, knowledge, innovations, including support to international students; SP Technical Research Institute of Sweden contributes in research and innovations; and Borås Energy and Environment contributes in development of new business opportunities and new innovative products. As well, private companies are adjunct for specific projects. Through such experience, Borås has connected its local partnership model (PPP) to international partnership (IPPP) through Waste Recovery International Partnership covering a number of developing countries such as Indonesia, Brazil, Colombia, Viet Nam and others. For instance, some of the current partnerships and cooperation in Brazil include - cost effective production of biogas from organic waste; pyrolysis a method to recover metals and energy from e-waste that are landfilled; and Swedish-Brazilian eco-innovation cooperation for smart integrated waste management and recycling, among others.

37. Some of the important lessons learned from the local PPPs in Borås attach importance to public trust and trust among collaborators, open communications on the problems faced, smaller operational group to facilitate easier decision making, full political support, win-win strategy, and new business opportunities, among others. Similarly, in the context of Waste Recovery International Partnership, key lessons learned include the following – it is key to have similar organizations as partners; the partnership should facilitate knowledge transfer by sharing the best practices and achievements of Borås which would help the partner countries in developing waste master plans; the partnership should induce local collaboration and local development including new jobs; the partnership should be based on a win-win strategy; it is better to start with smaller projects; and partnerships should demonstrate clear results.

38. CRC Mohanty of UNCRD made a reference to the Surabaya 3R Declaration agreed by the Asia-Pacific countries at the 5th Regional 3R Forum in Asia and the Pacific, and highlighted the importance of multi-layer partnerships and coalition as the basis for the promotion of 3Rs (reduce, reuse, and recycle) towards a resource efficient and zero waste society. To this regard, the experience of Borås city serves as a good model of (triangular) cooperation between the government, private and scientific and research community. Though it is important for developing municipalities to replicate such partnership models, high investment costs have been the main hindrance as is seen from the case of Lebanon and other developing countries. Environmental consciousness should be the driving factor for such partnership models.

39. In case of Mauritania, the level of understanding is very different and waste management is not yet a priority in the political agenda. This is true in many other developing countries of Africa. It is important to have a champion city as a powerful demonstrator on sustainable waste management, sustainable business models through partnerships and their tangible benefits to influence other cities. Mr. Mohamed El Abd Sidi Mohamed, Mayor of City of Rosso in Mauritania made an announcement in the Forum to launch a "Food against Waste Collection" programme in his city.

40. Though informal sector integration in partnerships are very beneficial, health and safety condition of workers are often inadequate. Child labor has been an issue across many parts of the world. For instance, in Bogotá there is a very strong recycling association and they have organized themselves over last 15~20 years, but only one third of the informal sector involved are formalized. There is often prejudice around informal sectors. For example, in Europe a small farmer can easily get a bank loan, but an informal recycler can not even open a bank account.

41. Representative of ICBET, Russia, Mr. Valdimir Maryev, mentioned that political will was very key in engaging the private sector. For example, the Government of Moscow region has decided to close down 39 landfills to promote and build eco-parks, eco-

industrial parks, and eco-cities. Private sectors are now increasingly involved in these activities. He also further recognized the importance of building collaboration between cities for exchange of ideas and best practices in implementing PPPs.

42. In the case of service chain, national or private banks can also play an important role in financing the informal waste sector or recyclers. But it is not happening around the world due to lack of confidence in informal waste sector. It is important for banks to develop evaluating guidelines for the informal sector. IPLA could play an important role in fostering partnerships involving national or private banks.

43. Making an intervention, Dr. Thomas Rummler of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of Germany, introduced the Germany's country partnership towards circular economy. In cooperation with German RETech Partnership – there exists a network of German companies and institutions in waste management and recycling industry for the export of innovative technologies and the transfer of technical know-how. Germany is providing capacity building support to developing countries to move towards a circular economy. He finally invited all the participants to the Ministry's stand at IFAT 2014 to learn more about the technical cooperation between Germany and other countries.

VI. From Waste to Resource Management: Role of the Private Sector in Moving towards a Circular Economy

44. Mr. Gary Crawford, Vice President for Emerging Markets, Veolia, France, presented on the role of private sector in moving towards a circular economy. He briefly introduced Veolia, which partners with manufacturers, cities and local residents to make optimal resource management the foundation for a new approach to human progress, regional appeal and sustainable growth. He highlighted the challenges of rapid population growth and urbanization. Uncontrolled landfilling is still a common challenge in developing countries. By 2050, more than 70% of the population will live in cities, which would further complicate the whole waste management issue in terms of public health and environmental impacts.

45. The comprehensive policies and legislations in EU serve as a good framework for waste management. The EU legislative framework included specific targets (set by the landfill division) and directives regarding packaging waste and diversion of organic waste from landfills. The Framework Directive includes the Incineration Directive, the Landfill Directive, and Recycling Standards (in future) with specific targets in place for packaging waste, batteries, WEEE (with restriction of use), and end-of-life vehicles. The EU Directive stipulates the member countries to recycle at least 50% of their municipal waste, while implementing an extended producer responsibility (EPR) system to meet these

requirements. Member countries like Germany, Austria, Netherlands and Belgium, where very good measures were already in place even before these directives were issued, are recycling more than 50% of their waste. There are other countries that are still landfilling over 80% of their waste. While these countries are making good progress, there are still significant opportunities in the EU.

46. EU countries have developed the necessary infrastructure to meet the regulatory requirements and to maximize recovery of waste. Significant advancements have been made on integrated waste management facilities. The facilities include state-of-the-art sorting centers with increased industrialization to handle greater volumes and provide better quality output, either recyclables or refuse derived fuels. Also for non-recyclable wastes, energy recovery is prevalent which provides a partly renewable energy resource. There has been increasing development of Mechanical Biological Treatment (MBT) which combines a material recycling facility with a form of biological treatment, either anaerobic digestion or composting.

47. PPP have been instrumental in promoting the development of this infrastructure.

48. There is an increasing realization on the need for decoupling economic growth from resource use by moving from a linear economy to a circular economy. A linear economy is just a take-make-dispose economy starting from natural resource extraction to production, consumption, and disposal. The key drivers for circular economies are scarcity and increasing difficulty to extract natural resources coupled with a sharp increase in raw material prices and volatility since the year 2000. The circular economy framework provides many opportunities for closing the loop on products, components and materials by driving the value of waste as resources. Product redesign, eco-products and services, state-of-art technologies, new and innovative business models are integral components of a circular economy. For example, Veolia's mission is to design and deploy solutions for resourcing the world – developing access to resources, preserving resources and replenishing resources. Veolia's core activities combine three sectors - waste, water, and energy, which can be recovered in a circular economy as "secondary" resources that will gradually offset the increasing scarcity of natural "primary" resources, generating new opportunities for social and economic development that protect the environment.

49. There are many challenges to utilizing waste as resources in a circular economy. The private sector can play an important role in addressing these challenges and helping to close the loop. There are a number of promising areas in terms of applying state-of-the-art technologies in the waste and resource management sector. Several examples were cited, such as improved plastic polymer separation using optical and infrared sorting technologies, phosphorus recovery from wastewater, energy generation from biomass (forestry wastes), and building green homes from recovered waste materials. ,

50. It is recognized that the full economic prize that circularity offers can be realized through a joint effort by multiple players across business and research communities, supported by policy-makers and investors. What is needed is a large scale, multi-stakeholder collaborative initiative.

51. In a circular economy, waste management is not an end in the waste domain itself, but rather a need to be addressed more in a resource domain, and further in a broader dimension, linking with public health, natural and ecological assets, ecosystem services, freshwater resources, climate dynamics, energy security, and green jobs, among others.

52. But in some of the developing countries in the Northern African region such as Mauritania, under the government contract, the private sectors are engaged in simply waste collection and incineration, not for any reuse or recycle activities. This shows the remarkable policy, knowledge, and technological gaps across many developing countries.

53. Introducing IPLA and its vision, CRC Mohanty of UNCRD, presented updates on the various progresses made under IPLA. He highlighted the issue of rapid urbanization across the developing regions and the role of IPLA in addressing the complex waste management challenges the developing cities and municipalities are facing along with urbanization. More than 95% of urban expansion in the next four decades would take place in developing world, with Asia and African alone contributing to more than 86%. Over the next four decades, Africa's urban population will soar from 414 million to over 1.2 billion and Asia from 1.9 billion to 3.3 billion. Over the next four decades, India alone will add another 497 million to its urban population, 341 million to China, 200 million to Nigeria, 103 million to the US, and 92 million to Indonesia's urban population. In the context of moving towards a resource efficient and zero waste society, he highlighted some of the major Declarations among the IPLA members and partners such as the – Daegu Declaration for Moving towards Zero Waste (2011), Marrakech Declaration towards Greening the Waste Sector (2012), and Borås Declaration of the Private Sector on Moving Towards Resource Efficient and Zero Waste Societies (2013).

V11. The Way Forward

54. Considering the growing scarcity of raw materials and primary resources, the Forum recognized the critical need for countries and cities to move from linear to circular economy by effectively engaging the private and business sector, by bringing changes in product design and services, and by implementing innovative solutions and technologies for creating new secondary resources.

55. The Forum recognized the need to scale up PPP business models by involving central government authorities, municipal authorities, private and business sector, informal sector, and communities.

56. To this regard, in the concluding panel dialogue, which was moderated by CRC Mohanty of UNCRD, the panelists raised the following points in relation to PPP business models – (i) PPP is very much about the trust between the public and private sector; Need to work as Partners with mutual desire for a successful long-term relationship

    (ii) knowledge and technical capacity and their integration in business models is key to success of PPP projects; (iii) Universities and scientific and research institutions can play key role in PPPs in catalyzing required knowledge and expertise as evident in case of Borås based Waste Recovery International Partnership; (iv) there is a need for radical change in municipal set up and regulations to back up science based policy in waste management, which will ultimately contribute effective and scientifically credible business models; (v) it is important for municipalities to build institutional capacity to technical assess and evaluate what works or does not work for PPPs in a specific situation; (vi) in order to realize international PPPs, GDP per capita and local capacity could be important precursors to consider; (vii) it could be often helpful to have a local private partner to set the agenda for effective realization of a PPP; (viii) PPP should be demand driven, and a knowledge provider such as a university or a NGO could be a good mediator in a PPP; (ix) both North-South and South-South knowledge sharing or transfer are helpful for PPPs; and (x) finally, citizens' willingness to pay for waste services is key to every success of PPPs.

VIII. Technical Visit to IFAT 2014 and German Federal Ministry's pavilion on RETech Partnership

57. Participants took full benefit of visiting IFAT 2014, which is world's leading trade fair for water, sewage, waste and raw material management. Participants gained significant knowledge and learned latest technological innovations and advancements in the field of waste management – collection, storage, separation, resource recovery, recycling, waste to energy, and various state of art technologies for transforming of wastes into useful resources. Participants also visited German Federal Ministry's pavilion on German RETech Partnership at IFAT 2014 and learned various capacity building programmes and technical cooperation of the German Government in the field of waste management.

IX. Closing Session

58. The Chair of the Forum, H.E. Ali Mohamed Alwi Al-Yezidi, Minister, Ministry of Local Administration of Government of Yemen, thanked all the participants and IPLA members for sharing their valuable experiences in the areas of waste management. He recognized the advanced waste management system and technologies in European countries, in particular in Germany. Those knowledge and technologies have significantly contributed towards environmental protection and human security. However, the situation in developing countries is very difficult due to lack of such resources and technologies. He expressed his commitments to translate these success stories into actions in Yemen.

59. Delivering the closing remarks, C.R.C. Mohanty of UNCRD, expressed his sincere appreciation and deep gratitude to the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of Germany and Messe München International, and all co-organizers for their valuable support. He also thanked all the resource persons and panelists for their valuable feedback and technical input to the discussions. He urged more and more European private and business sector to join IPLA in expanding their waste management services in developing cities and municipalities. He finally expressed hope that the 2014 IPLA Global Forum would be successfully organized with the support of City of São Paulo and ISWA as an integral part of the 2014 ISWA World Congress, 9-11 September 2014.

60. On behalf of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of Germany, Ms. Barbara Neuhaus, mentioned that the Ministry was very honoured to host the 2014 IPLA Europe Forum despite the fact that many participants could not manage to join. She thanked all participants for their contribution and requested all participants to take full benefit of IFAT 2014 in learning many technical innovations in the areas of waste management.

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