



GOVERNMENT OF GUJARAT



Proceedings Report on Wastech International Summit & Expo 2014 4R's : A way to Sustainability

Date: 21st – 23rd November, 2014
Venue: Mahatma Mandir, Gandhinagar

Organizers



Knowledge Partners



Partner Countries

Partner State



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About the Seminar

Waste Management and disposal is becoming one of the key problems facing India today, since about 90% of waste is currently disposed of by open dumping and land filling. With the growing awareness of environmental effects caused due to unscientific waste disposal, there is a significant impetus on its effective management and handling. Industries which are able to manage their wastes in environmental friendly way become more competitive in global market. Moreover, the various challenges and demand of waste management evolved innovative and unconventional technologies and business opportunities.

With such an innovative concept, Gujarat Pollution Control Board (GPCB) jointly with Confederation of Indian Industry (CII) and KPMG and The World Bank as the Knowledge Partners organized “Wastech International Summit and Expo” on 21st – 23rd November, 2014 at Mahatma Mandir, Gandhinagar as a pre-summit event for Vibrant Gujarat 2015 Summit.

The Summit saw participation of around 19 International and 56 National speakers over the two days. The summit witnessed a wide participation of around 2300 delegates including policy makers, Government Officials, academic and R&D experts, technocrats, waste management and environmental professionals.

The 3-day International exhibition was also organized by GPCB in association with Radeecal Communications. Spread over 7000 sq. mtrs., around 105 companies, including 20 International companies, showcased their world class products, technologies and techniques at the Expo with a participation of around 5000 delegates over the three days.

Day 1 – 21st November 2014

Inaugural Session

Name	Organization	Designation
Smt. Anandiben Patel	Government of Gujarat	Hon’ble Chief Minister
Shri. Mangubhai Patel	Government of Gujarat	Hon’ble Minister for Forests & Environment
Shri. P. K. Taneja, IAS	Forests & Environment Department, Government of Gujarat	Additional Chief Secretary
Shri. K. U. Mistry	GPCB	Chairman

Shri. Kunjal Patel	CII	Chairman – Gujarat State Council

Welcome Address by Shri. P. K. Taneja, IAS, Additional Chief Secretary, Forests and Environment Department, Government of Gujarat

Welcoming all the dignitaries on the dais, Shri. P. K. Taneja, IAS, started by mentioning that the summit was one of the important pre-summit events of Vibrant Gujarat 2015. The 2-day Summit and the 3-day Expo based on the theme – 4R’s (Reduce, Recover, Reuse, Recycle): A way to sustainability – was an important topic considering the current global situation. He showed his gratitude towards the Hon’ble Chief Minister and Hon’ble Minister of State for gracing the event in spite of their busy schedules. He was very pleased with such a huge response from all the participants including the delegates from overseas. He stated that the department wanted the event to be a zero-waste event which will be the first of its kind.

Lighting of Lamp by the dignitaries on the dais

Distribution of chocolates to children on the occasion of the Hon’ble Chief Minister’s birthday

Special Address by Shri. Mangubhai Patel, Hon’ble Minister of State, Forest and Environment, Government of Gujarat

Shri. Mangubhai Patel started by mentioning that in order to progress and develop all have to work in an environmentally friendly manner. He insisted on co-operation in the Swachh Bharat Mission in order to fulfill the Hon’ble Prime Minister’s pledge to make India completely clean by the year 2019. He highlighted that Gujarat had undergone a lot of industrialization along with the concentrated efforts to protect the environment. He stated the fact that Gujarat co-processed about 23 lac tones of hazardous and non-hazardous waste in the last three years which saved the natural valuable resources and also reduced the Green House Gas emission in a large quantity. He mentioned that GPCB had taken the role of an Environment Doctor for the industries. He also urged the participants to implement the outcomes of the summit in their respective industries to reach the path of environment sustainability.

Video Address by Chief Guest Shri. Prakash Javadekar, Hon'ble Minister of State (I/C), Environment, Forests and Climate Change, Government of India

Shri. Javadekar showed his happiness that an event on waste management sector was organized as waste management has been an important topic for the Government of India. He insisted to change the nomenclature from waste management to resource recovery management to change the mindset of the people. He urged to get all the available technologies relevant to solid waste management and form a panel of scientists and researchers to decide the technologies best suited to India. He mentioned the need of a reliable solution provider for the sector and a decision support system for getting the best possible solutions to the problems. He stated a slogan – “Development without destruction and delays” – for an efficient and transparent process.

Release of GPCB Magazine – Environmental Action & GPCB Book

Launch of “GPCB e-Governance Mobile App: Paradigm Shift Towards Digital India and Mobile Governance”

Inaugural Address by Smt. Anandiben Patel, Hon'ble Chief Minister, Government of Gujarat

Smt. Anandiben Patel started by quoting Mahatma Gandhi's example that he used only the required amount of water for taking bath. She mentioned that the concept of 4R's was deeply ingrained in the Indian culture since long. She also stated that as Gujarat had been ahead in the industrial development and urbanization along with being a medical hub, the result was a large amount of bio-medical waste and e-waste which were being addressed in the best possible manner by taking comprehensive steps. She highlighted Gujarat had the highest ETP facilities in India and was first in TSDF's too. She also highlighted the fact that out of the 13 successful models relevant to environment which the Planning Commission had shortlisted, Gujarat topped the list of state including 5 models. Showing her happiness for launching of the mobile application, the Hon'ble Chief Minister mentioned that Gujarat was the first state to deploy m-Governance in waste management sector. She expressed her opinion that the technologies which suited the local needs needed to be researched. She appealed the audience to join the Swachh Bharat Campaign launched by the Hon'ble Prime Minister to ensure a litter free

India. She ended her address by inviting all the participants to Vibrant Gujarat 2015 Summit.

Vote of Thanks by Shri. Kunjal Patel, Chairman, CII Gujarat State Council

Shri. Patel thanked the Hon'ble Chief Minister and the Hon'ble Minister of State for their presence. He also thanked the Ministry of Environment, Forests and Climate Change, Government of India for extending their support to the Summit. He continued by thanking the Government of Gujarat and GPCB for organizing the Summit on such a large scale. He ended his concluding remarks by thanking all the partner countries and partner organizations.

Inauguration of Exhibition by Smt. Anandiben Patel, Hon'ble Chief Minister, Government of Gujarat and Shri. Mangubhai Patel, Hon'ble Minister of State, Forest and Environment, Government of Gujarat

Session - I: Waste and Resource Management - Changing Paradigms

Dr. Prasad Modak, Chief Sustainability Officer and Dean, IL&FS Academy for Applied Development

Topic - International Scenario on Waste Management

Dr. Modak started by throwing a light on the increasing consumption patterns of the human beings and the need to tame them. He mentioned the need of a rounded approach for the waste management sector. He stated that different countries had adopted different strategies to deal with the waste. He identified challenges such as the insufficient data problem, reduction in consumption, lack of realizing the opportunities, etc. He suggested ideas of promoting decentralized solutions, making databases, initiating education relevant to waste to resource management, promoting innovation in technologies, investing in documentation, etc.

Dr. Juergen Porst, Senior Advisor, Dr. Porst International Environmental

Topic - German Experience in Waste-to-Energy Solutions through Waste Incineration

Dr. Porst started by describing the current situation of the Municipal Solid Waste in India resulting in the negative environmental impact and health risks. He highlighted the issues and challenges pertaining to India along with the current system capabilities. This

was followed by describing the details about the waste-to-energy plants in Germany. He mentioned key benefits of small waste-to-energy plants such as easy operability, low maintenance costs, approved and patented products, low space requirements, etc. Dr. Porst then suggested certain waste-to-energy solutions typically for Indian cities.

Mr. Michel Buser, Managing Director, ecoSign – Environmental Consulting & Engineering

Topic – Waste Management Technologies – Indian Perspective

Mr. Buser started with a short overview of ecoSign which provides consulting and engineering services in industrial wastewater treatment & air pollution control. He presented the challenges in the chemical wastewater treatment. He focused on the need to have an overall approach for the effective treatment by avoiding and minimizing waste at source with the use of appropriate technologies. He suggested a combination of different technologies for the treatment of complex industrial wastewater.

Mr. Masao Yamada, President, DOWA Holdings Co. Ltd., Japan

Topic – Experience & Best Practices in Waste Management in Japan

Mr. Yamada started with a short overview about DOWA throwing a light on the company's base in Asia having environmental management and recycling businesses. He shared the municipal solid waste and industrial waste statistics and mentioned that a large part of e-waste was not considered as a 'Waste' in Japan, as it contained valuable metals, i.e. gold or copper, which could be treated and recovered by non-ferrous smelters. He concluded by saying that by utilizing Japan's 40 years of experience and knowledge, India could overcome environmental issues with much shorter time.

Mr. Roop Salotra, Member, CII National Committee on Environment & Advisor, SRF Limited

Topic – Indian Scenario on Waste Management

Mr. Salotra started with the regulations for waste management in India. Further, he highlighted the current scenario of the municipal solid waste and industrial wastes in India. He shared the initiatives towards the safe handling and disposal of industrial waste like fly ash utilization, co-processing of hazardous waste and red mud utilization. Moving ahead, he gave a brief on the current scenario on the issues and challenges for e-waste and plastics. He then suggested improvements such as segregation of waste, strict adherence to regulations, recording reliable data, improved research and

technology, etc. He concluded by mentioning the Swachh Bharat Abhiyan was an ideal platform to create mass awareness for waste collection and disposal.

Session – II: Integrated Water Management – Current Practices & Future Direction

Dr. T Nandy, Chief Scientist, SMS & Head – Wastewater Technology Division, National Environmental Engineering Research Institute (NEERI)

Topic – Advances in Waste Water Treatment

Dr. Nandy started by showing the existing scenario of wastewater management in India. He further focused on the factors affecting the selection and design of wastewater treatment systems. He threw a light on the improvements in wastewater treatment processes and advanced wastewater treatment technologies. He illustrated certain case studies. His recommendations included future technologies that allow discharge related problems to be reduced and research/academic institutes to come forward in development and testing of new concepts, technologies, and management structures for wastewater utilities.

Dr. Dieter Mutz, Director, GIZ-IGEP

Topic – CETP: Success factors for sustainability

Dr. Mutz shared his experiences of CETPs in India including their upgradation and modernization. He insisted that the fundamental or the basic thing should be to have a qualified and skilled staff in the CETPs. His conclusions included CETPs as a proven solution to treat wastewater, CETPs to be designed to respond to a changing quality of influents, choice of technology to consider local environment and requirements, consideration of National and International best practices and experiences and capacity building at all levels.

Mr. Masood Mallick, Managing Director, ERM in India

Topic – Managing Water Uncertainty and Risk: An Approach for Industry

Mr. Mallick started with a quote – “Water is the oil of the 21st century”. He shared certain statistics about the scenarios across the globe regarding water scarcity. Further, he focused on the operational and strategic challenges. He insisted on the need of a balanced risk based, strategic and an integrated approach to tackle the water uncertainty and risk.

Mr. Chris O'Neil, Director, Hydronumerics Pty. Ltd.

Topic – Future Water Resource Management through Integrated Modeling and Real-time Decision Support System

Mr. O'Neil shared the benefits of decision support systems like evidence-based decision making and strategic and operational scenario analysis. Further, he showcased certain real time management systems. He also threw a light on the government spending in these real time decision support systems.

Mr. Sanjay Sharma, Executive Director – Supply Chain, Hindustan Coca Cola Beverages Pvt. Ltd.

Topic – Water Cost Economics

Mr. Sharma started with an overview on the water scenario in India. He mentioned certain challenges in water availability and wastewater disposal. He explained the process of implementation of 4R policy on water conservation. He concluded by sharing the way forward for Hindustan Coca Cola Beverages Pvt. Ltd.

Parallel Session – II: Waste Management in Construction Sector

Ms. Mala Singh, Chairman & Managing Director, PEC Solutions Green Designs Pvt. Ltd.

Topic – Green Construction Management Approach

Ms. Singh mentioned that India generated about 60 million tonnes of waste every year with over 10 million tonnes being generated in the Metro cities. She showed her concern over the waste mismanagement resulting in the overflowing landfills which had become hazardous toxic sites resulting in environmental degradation and harm towards public health. She explained the Green construction approach in Green buildings defining through 5 ways – Sustainable Site Management, Water Efficiency, Energy Efficiency, Resource Optimization and Indoor environmental quality. She concluded by urging people to develop *Swacch manasikta* (clean mindsets) and undertake waste management strategies for a cleaner India.

Dr. Najeeb Zackeria, Managing Director, ABAD Builders Pvt. Ltd.

Topic – Solid Waste Management in Clean City Development

Dr. Zackeria started with an introduction about the CREDAI Clean City Movement (CCCM), the employment opportunities it could create and the social impact that CCCM had. He focused on the current CCCM activities such as source level composting of

biodegradable rejections. He also briefed about the CCCM initiatives for women empowerment, Biomedical waste and e-waste. He concluded by sharing the awards and recognition received by CCCM.

Session – III: Finnish Waste Management Know-How & Technologies

Ms. Kaisu Annala, Strategic Director, Cleantech, Ministry of Employment & the Economy, Finland

Topic – Finnish Cleantech for Circular Economy

Ms. Annala started with the waste management hierarchy and the need for the carbon neutral circular economy. She enlightened that clean technology was required to solve the global problems and to mitigate the consequences. She stated certain examples of waste management consortiums and clean technologies of Finland. She ended by showing comparisons of countries in the Global Cleantech Innovation Index 2014 which ranked Finland as the 2nd best country.

Mr. Vimal Vaghani, Founder & President, Vaghani Groups

Topic – A Waste to Energy: An Approach for Solution in Gujarat, India

Mr. Vaghani highlighted the solutions provided by the EVAK Ry and Vaghani Group consortium such as water purification, waste management, education and training, renewable energy, etc. He also mentioned details about the VMSS Green-Agro ecological park and Envi Grow Park. He gave examples of certain Finland companies providing waste management solutions.

Parallel Session – III: Development Partner perspectives on Issues in Industrial Wastewater and Land Remediation Management

Mr. A. S. Harinath, Senior Environmental Specialist, World Bank

Topic – Indian Initiatives in Contaminated Land Management

Mr. Harinath started with the waste management scenario in India, the disposal practices. He then shifted to the typical contaminants and the environmental impacts of contaminated sites. He shared the experiences of USA, Europe, Canada and China. He stressed upon the key issues and challenges and the remediation programs for India.

Address by Mr. Jiang/Ru Frank Van Woerden, Senior Environment Specialist, World Bank through video link

Topic – Lessons from Site Remediation and Industrial Pollution Management Programs in China

Address by Ms. Katelijn Van den Berg, Senior Environment Specialist, World Bank through video link

Topic – Drivers, Financial Structures and Institutional Arrangement Options for Site Remediation and Clean-up Projects

Day 2 – 22nd November 2014

Session – I: Innovative Approaches to Waste Management

Dr. John Tsanaktsidis, Senior Principal Research Scientist, CSIRO, Australia

Topic – Role of Flow Chemistry in Sustainable Chemical Manufacturing

Dr. Tsanaktsidis started by sharing a short overview about CSIRO. He moved on to the importance of chemical industry and its impact on the environment. He suggested improvements such as developing better chemicals processes, smaller plant footprint, safer processes and processing methods. He highlighted the key attributes and benefits of flow chemistry. He concluded by sharing certain case studies which focused on better chemicals processes.

Mr. Lars-Erik Kruse Pederson, Vice President, Environment & CSR, Cheminova A/S, Denmark

Topic – Management of Liquid Waste Disposal

Mr. Pederson started by sharing the initiatives on management of liquid waste disposal by Cheminova. He explained the functioning of the Biological-Chemical Waste Water Treatment Plant. He also threw a light on the recovery and reuse of the air through air treatment. He briefed about the central incineration of waste gases. He concluded that the need of the hour was moving from a linear economy to a circular economy.

Mr. Manjit Kahlon, Principal Consultant & International Business Manager, Ricardo-AEA

Topic – Integrated Solutions for Waste Management and Planning

Mr. Kahlon briefed about the company, its practice areas and the international projects. He stressed upon the issues such as illegal dump sites and inappropriate disposal of hazardous and medical waste. He suggested the need to develop an Integrated Waste Management Strategy (IWMS). He also demonstrated the collection, treatment and

disposal options of waste. He summarized that data was critical to underpin any strategy and the reports and guidance available across the globe should be utilized for an effective waste management strategy.

Parallel Session – I: Corporate Sustainability

Mr. Sunil Parekh, Director, Gujarat Narmada Valley Fertilizers Corporation Ltd. & Curator World Economic Forum

Topic – Corporate Sustainability – Past, Present & Future for Businesses

Mr. Parekh started by explaining about 3 major entities namely People, Planet and Profit that made up the World of Corporates. He then discussed about various corporate sustainability developments that had recently happened in India. He briefed about different factors that had helped to push developments in corporate sustainability. Moving forward, he identified the drivers for investing in corporate sustainability such as regulations, access to the capital etc. and explained the significance of each of them. At the end, he shared his views on the future of corporate sustainability and identified some suggestions to have an actual impact of Corporate Sustainability.

Ms. Neena Singh, Partner, Impact Assessment & Planning, ERM India Pvt. Ltd.

Topic – Role of CSR for Corporate Sustainability

Ms. Singh started by explaining about Corporate Sustainability and Corporate Social Responsibility (CSR). She highlighted various issues and challenges pertaining to CSR. This was followed by describing the CSR model and explaining the increasing internalization of externalities – Profit to Sustainability. This was followed by a discussion on the evolution of CSR in India. She then shared her suggestions on improving integration of CSR into sustainability such as a need to develop business and manage impacts, to communicate performance addressing issues etc. She finally concluded the presentation by sharing her views on how CSR should be taken forward.

Ms. Ashima Sushilchandra, Head – Responsible Care, BASF India

Topic – Driving Sustainable Solutions through Responsible Care

Ms. Ashima started with a short overview about the involvement of chemical industry in the responsible care program and explained about the safety taken in the entire Lifecycle of products. She then discussed advantages of responsible care such as reduction in rate of incidents, occupation disease reduction etc. She also briefed on how

responsible care can be leveraged for the business and discussed on the different objectives and topics such as environment protection, waste water protection, transparency in operations etc. She concluded by stressing on the importance of ensuring emergency response for goods transported.

Mr. Tony Paul Henshaw, Chief Sustainability Officer, Aditya Birla Centre

Topic – Corporate Sustainability – Comparing International & Indian Scenario

Mr. Henshaw started with some facts on the growth of human population. Further, he highlighted some global issues due to this rapid growth such as chemical pollution, Ocean acidification etc. He also mentioned that India will be one of the countries that will be hit the hardest by climate change and induced water scarcity. He then stressed on the fact that in order to have a sustainable planet some tighter standards needed to be implemented. Moving ahead, he gave a brief on the Aditya Birla Group sustainability model and its standards. He concluded by sharing the Aditya Birla Group Sustainability Vision to become the leading Indian conglomerate for sustainable business practices across its global operations by 2017.

Col. Raman Aiyer, Additional General Manager and Chairman, CSR Cell Gujarat State Fertilizers and Chemicals Ltd.

Topic – Corporate Sustainability Perspectives in Public Sector Undertakings

Col. Aiyer started by sharing his perspective on the term sustainability. He then touched upon using newspaper articles and reports, many important and related agendas such as scope of solar energy in india, e-waste etc. He also discussed various challenges faced in the management of domestic solid waste and industrial waste. He shared his suggestions on how an effective process can be followed to tackle the issues. He gave specific cases on initiatives taken on waste management by some companies such as Coal India, SAIL, BHEL etc. He then concluded by giving some suggestions on how to have an effective sustainability road map.

Mr. G. Udayabhaskar, Senior Vice President and Head, Corporate Environment, Reliance Industries Ltd.

Topic – Waste Management for Corporate Sustainability

Mr. Udayabhaskar gave some background behind waste generation. He then highlighted how Reliance industries developed a process to recover valuable chemicals and a flaking process to reduce the hazardous waste. He also mentioned various steps Reliance had taken for better waste recycling by taking examples from PET bottles recycling, LD slag

from steel industry. He then shared some policy and regulation driven success stories. He concluded by explaining Porter hypothesis and his views on whether our waste utilization and recycling support the hypothesis or not.

Session – II: Opportunities in Waste Management

Dr. Indrani Chandrashekharan, Former Advisor, Planning Commission

Topic – Sustainable Integrated MSW Management including Decision Support System

Dr. Indrani started by showing the current status of Municipal Solid Waste in the country. She showed comparisons between the centralized and decentralized processing of waste. She shared various technology options for the treatment and disposal of MSW such as bio-chemical waste to energy technologies, thermo-chemical waste to energy technologies, common regional sanitary landfill facility, etc. She briefed about the Decision Support System for Sustainable Integrated Solid Waste Management.

Mr. D. J. Yadav, CEO, Arvind Envisol Ltd.

Topic – Waste to Wealth

Mr. Yadav briefed about single effect evaporation, 4-effect multi-effect evaporation, mechanical vapor recompression evaporation, etc. He introduced a new evaporation technology by Arvind Envisol – polymeric film evaporation technology – which used low cost polymeric film as heat transfer media. He also shared the technology's typical application areas such as textiles, steel and metal, mining, food, chemical industry, etc.

Dr. Ramakrishnan Iyer, Head – Engineering, Ventana Cleantech

Topic – Waste Plastic to Hydrocarbon Fuels – Continuous Process

Dr. Iyer presented a global landscape of the waste plastic recycling followed by the Indian scenario. He gave a brief overview about Ventana's technology and its strengths. He showcased details about Ventana's experienced team.

Mr. Sandeep Mukherjee, Assistant Vice President, EMC LLP

Topic – Biomedical Waste Management – Challenges & Opportunities

Mr. Mukherjee started by questioning the ways to develop a rational charging model. He showed the results of the viability analysis of CBMWTFs done on the basis of the Net Present Value (NPV). He highlighted the details of the simulations performed and

the comparison of the existing and rational charges. He concluded that deep burials of waste were mostly unviable.

Parallel Session – II: Dutch Waste Management Technology

Mr. Job Glas, Head of Mission, Gujarat, Netherlands Business Support Office

Topic – Welcome & Overview on Dutch Waste Management Sector

Mr. Glas started by discussing about various situations and developments focusing on waste management. He discussed about the current positive state of the country highlighting the decrease in waste and enhanced treatment facilities. He then discussed about waste management development stages and scale of government. He also shared some policy and regulation driven success stories. He concluded by giving some recommendations to tackle issues related to waste management such as to have stringent environment standards, cooperation of municipalities, etc.

Mr. Sudeep Sangameawaran, Managing Director, Paques Environmental Technology India

Topic – Innovation in Integrated Waste Water Recycling System

Mr. Sangameawaran started with a short overview of Paques and its focus on Research and Development. He then shared some difficulties caused by the rapid growth in the population with a focus on water scarcity and growing energy demand. He shared his view that a close collaboration between technology, market and entrepreneurship could solve many problems. Moving forward, he shared his belief that innovation needs to be scaled up and that the translation from research scale processes to full scale industrial solutions was important. He concluded by discussing the factor that he thought was critical for an innovation to sustain in the industry.

Mr. Venkata Krishnan, Qua Vac B.V.

Topic – Environment friendly Vacuum; Waste Water Collection Systems

Mr. Krishnan started with a short overview on vacuum collection of waste materials. He then explained the working procedure behind the vacuum system and the various application areas of the system. He then shared some benefits of the system and mentioned various advantages of vacuum system over gravity system. This was followed

by a detailed discussion on various parts of the Qua-Vac vacuum system. He finally concluded the presentation by showcasing the geographical spread of Qua-Vac systems.

Mr. Suketu Shah, Director, Ox-Ive Environmental Management Pvt. Ltd.

Topic – Presentation on DIWALI Project (Dutch Indian Water Alliance for Leadership Initiative) Gujarat

Mr. Shah started with a short overview of water scenario in India and discussed on treated and untreated sewage in Tier I and II cities. He then presented facts on the market opportunity and the target market size. He then shared some problems faced for setting up of centralized system and discussed various advantages of a decentralized system. He then explained the details about the new urban sanitation system- “DIWALI”. He also shared some facts on the anaerobic fermentation technology. He concluded by comparing various technologies in water treatment.

Mr. Barry Royal

Topic –

Mr. Barry started by giving an introduction about the organization Royal Eijkelpamp and highlighted its global presence and focuses on soil and water research. He then discussed about the various offering of the Royal Eijkelpamp such as SonicSampDrill, Carefree solutions, In-situ soil coring kit. He then concluded by mentioning various advantages of its products.

Mr. Marten Van Der Wijk, Remediation Expert, Witteveen + Bos

Topic – 4 R’s – A Way to Sustainability

Mr. Van Der Wijk started by giving an introduction of Witteveen + Bos Company and Kadam Environmental Consultants. He then discussed about pollution control projects in India. He then talked about the 4R’s in the Dutch national effort to solve their soil and groundwater legacies. He stressed on the necessity for reliable data as a key factor for successful remediation. He concluded by sharing his idea of helping Indian remediation community to connect themselves with global communities.

Session – III: Financial Engineering for Waste Management Projects – Challenges & Innovations

Mr. Nukala Raghobabu, Senior Technical Advisor & Program Co-ordinator, GIZ – IGP

Topic – Existing Infrastructure – Retrofitting of Estate

Mr. Raghobabu started by showing his concerns over infrastructural challenges due to the lack of benchmarks and proper standards. He showed an example of the Industrial Park developed by GIZ which had proper waste management facilities. He highlighted the fact that industries could also have their respective infrastructural models best suited according to the needs. He insisted on the need to have proper training. He concluded by saying that investments were needed to be made in infrastructure as well as capacity building.

Mr. Sumeet Shukla, Investment Officer, South Asia – Public Private Partnership, International Finance Corporation

Topic – PPP Experience in Waste and Wastewater Management in Developing Countries

Mr. Shukla highlighted the PPP experience in the development of waste management projects. After a brief about International Finance Corporation (IFC), he listed the compilation of projects to which IFC had provided assistance to the governments under PPP framework. He urged about the need to have a sufficient business model in order to attract the private investors as only the government funding was not possible to complete certain large scale projects.

Mr. Alok Dayal, Senior Director – Credit & Environment Risk, IDFC Ltd.

Topic – Financing Opportunities and Challenges in the Renewable Energy Sector

Mr. Dayal started with an overview about IDFC and its experience in financing the projects of the energy, telecom and infrastructure sectors. He mentioned that the private sector involvement in the renewable energy sector had been on an ascent in the recent times. He highlighted the structural challenges that were needed to be kept in mind. He concluded by mentioning that IDFC has financed about 1800 MW of projects in the recent years.

Mr. A. K. Kapoor, Chief General Manager, SIDBI

Topic – Financing Cleantech Projects

Mr. Kapoor started by questioning the ways to green financing focusing on energy efficiency, renewable energy, waste management and innovation around those areas. He mentioned that SIDBI was trying to develop products and market players.

Parallel Session – III: E-waste Management

Prof Hsiao – Kang Ma, National Taiwan University

Mr. Lihkuan Lee – Program Director, Asian Productivity Organisation (APO), China Productivity Center (COE)

Topic – PET & E-Waste Recycling Technology

Prof Hsiao-Kang Ma started by explaining about technical services of APO, COE and evolution of Resource Recycling Management Policy. He then discussed about Resource Recycling in Taiwan and also covered E-waste recycling. Moving forward, he briefed about functions and operations of Recycling Management Fund. He also shared about the outcomes of deployment of recycling policies. He then talked about the current status of E-waste recycling and about various process that were involved in the recycling process. He also shared his opinion that innovation was the key for Eco-recycling of E-waste. He discussed about the urban mining and good practices and about Plastic/PET bottle recycling. At the end, he shared ways to tackle various issues in E-waste recycling.

Mr. Vijay Mandora, Chairman & Managing Director, ECS Infotech Pvt. Ltd.

Topic – Corporate E-Waste Disposal

Mr. Mandora started with a short overview of e-Waste and the ways in which people were disposing those wastes. He highlighted the issues and ill effects of processing e-wastes on Human health, air, water and soil. This was followed by a detailed discussion on the corporate sector's current disposal practices. He highlighted some responsibilities the corporates could take to handle the issue. He finally concluded the presentation by sharing his recommendations on what should be done to tackle issues in disposing e-waste.

Mr. Ravi Agarwal, Director, Toxic Link

Topic – E-Waste Processing- Saving Money & Environment

Mr. Agarwal started by giving some background on E-Waste. He then stressed that E-Waste was an environmental issue by discussing certain facts. He then briefed about the growing E-Waste economic opportunities. Moving forward, he talked about the

recycling market, its potential and some operational areas such as Revenue Model, business model etc. He concluded by mentioning some prerequisites in order to effectively exploit the market.

Ms. Preeti Tiwari, Business Development Manager, Attero Recycling Pvt. Ltd.

Topic – Sharing of Best Practices in E-Waste Recycling

Ms. Tiwari discussed about the process of disposing E-Wastes prior to the implementation of E-waste rules 2012. She then stressed on the fact that E-Waste had many negative implications and discussed about some social implications and ill effects on human health. Moving ahead, she gave a brief about the ATTERO Company and its various offerings. She then discussed some aspects related to E-wastes recycling such as disruptive technologies, carbon credits etc. She concluded by sharing some legal implications and best practices in E-Waste recycling.

Session – IV: Environment Governance – Role of ICT

Mr. Hardik Shah, Member Secretary, GPCB

Topic – Enabling E-Governance through ICT

Mr. Shah started by mentioning that the work in the coming times was expected to increase leaps and bounds which had resulted in the usage of ICT. He briefed about the various aspects of good governance. He also stated the needs and challenges of going through the transformation to move to e-Governance. He highlighted the benefits of the eXtended Green Node (XGN) mobile application. He also shared the positive effects of ICT on environmental governance by showing certain statistics.

Mr. Reepal Joshi, Director – Marketing, RQ Box Solutions

Mr. Joshi shared his happiness by mentioning that a lot of data regarding environment was shared publically to maintain transparency within the system. He explained the work that was done on real time monitoring of water pollution data. He shared the technology on ambient air monitoring.

Dr. J S Kamyotra, Director, Central Pollution Control Board

Topic – Enabling E-Governance through ICT

Dr. Kamyotra talked about the environmental conditions prescribed to the industries to comply with. He also showed his concern that the monitoring mechanism was very weak because of lack of manpower and resources. He mentioned the remedy to the previous

problem was the real time monitoring system. He also insisted on a greater utilization of real time monitoring system by mentioning the needs to use them. He concluded that any green industry had a market value and its own brand.

Parallel Session – IV: Co-processing of Waste

Dr. B R Naidu, Director, Central Pollution Control Board

Topic – Co processing: Hazardous & Non Hazardous Waste- Indian Scenario

Dr. Naidu started by sharing some facts on hazardous waste generation in India. Moving forward, he briefed about the present scenario of Hazardous Waste Management in India. He then shared his reasoning on why cement kiln should be used for co-processing of waste. He then talked about different types of co-processing and its subsequent benefits. He also discussed about the concept of co-processing of wastes in the Indian Cement industries and some related facts and information. At the end, he shared recommendations on ways to tackle various issues in Co-processing of wastes.

Dr. B Sengupta, Former Member Secretary, Central Pollution Control Board

Topic – Co processing of Waste in Cement Plants

Dr. Sengupta started with a short overview of the term “Co-processing”. He then discussed about the Cement kiln co-processing technology. He highlighted some important recommendations of Basel Convention Guidelines. He then shared some important principles in co-processing and requirements for undertaking co-processing. Moving forward, he highlighted some technical, financial and regulatory barriers and suggested an action plan for some most promising alternate fuels. He then proposed some amendments in hazardous waste management rules to boost up co-processing of waste in cement plant.

Mr. Somnath Bhattacharjee, Director, Institute for Industrial Productivity (IIP)

Topic – Co-processing of Waste for Sustainability in Cement Sector

Mr. Bhattacharjee started by giving some background on IIP. He then briefed about the guiding principles for having an appropriate thermal substitution rate in the Indian cement industry. Moving forward, he listed some attributes for shortlisting alternate fuels and then listed some alternate fuels based on those attributes. He concluded by suggesting some steps for effective waste management.

Mr. L Rajasekar, Executive President, UltraTech Cement Ltd.

Topic – Current Status and Future Facilitation for Increased Co-processing of Waste in Cement Industry – Cement Industry’s Drive for Clean India

Mr. Rajasekar started by discussing about the current scenario of the Indian cement industry. He then shared some details on hazardous waste generated in various segments and geographies. He then discussed the suitability of the cement kilns for burning wastes. He concluded by discussing some important steps that should be taken for an effective and increased co-processing of wastes in cement industry.

Mr. Ulhas V Parlikar, Deputy Head, Geo Cycle India

Topic – Enhancing sourcing of Waste & Raw Material

Mr. Parlikar started by giving some background on Geo Cycle. He then talked about co-processing and its benefits to the industry and community. Moving ahead, he gave a brief overview about some important aspects and facts associated with the treatment of wastes in the cement kiln. He shared the approach followed in Geo Cycle and some examples of Pre-processed and Co-processed waste. He then compared Incineration and Co-processing. He concluded by sharing certain steps that needed to be taken to ensure large scale use of environmentally friendly co-processing technology in Clean India Drive.

Valedictory Session

Mr. Susheel Kumar, Chairman, Central Pollution Control Board

Mr. Kumar mentioned that the participants would be very enthused as a lot of deliberations had happened over the two days. He mentioned that the idea of Corporate Sustainability was getting imbibed into the minds of the people. He congratulated the Government of Gujarat and GPCB for the fantastic initiative taken. He hoped that other states could also organize such events. He concluded by iterating the summit declaration -

My Commitment to Swachh Bharat:

“By leveraging advance technology, innovation and enablers (TIE) of Waste Management. Let us all protect the environment and March together towards clean India”.

Dr. K U Mistry, Chairman, Gujarat Pollution Control Board

After announcing the name of the winner of the slogan, Dr. Mistry insisted everyone to join the *Swachh Bharat Abhiyaan* by keeping all places clean.

Mr. Sunil Parekh, Director, Gujarat Narmada Valley Fertilizers Corporation Ltd. & Curator, World Economic Forum

Mr. Parekh started on a lighter note and appreciated the entire flow of the Summit and congratulated GPCB for making the event a huge success. He was pleased with the participation from the industry, academicians, government officials, etc.

The following were the key takeaways from the summit:

- Waste management sector – A huge business opportunity
- The agenda in all the policies decisions should be such that the positive correlation between the growth in the GDP of a country and the waste is minimized
- Need to look at resource pricing for natural resources
- Retrofitting of older industrial estates to make them according to modern standards
- Local manufacturing of renewable equipments
- Best practices to be adopted on a large scale from across the globe and a compendium to be made
- Operation of water treatment plants and effluent treatment plants through qualified operators
- Incentivize growth of sustainable technologies in Gujarat
- Informal sector to be involved while formulating the policies on waste management
- Set targets for reduction in the usage of energy, water and remediation of land
- Need to develop an Environment Index for Gujarat to track the development and progress every year
- Need of a Corporate Sustainability Act for Gujarat



Vote of Thanks by Mr. Hardik Shah, Member Secretary, Gujarat Pollution Control Board