

Municipal Wastewater Subcommittee Meeting
13 March 2013

Final Minutes

Summary

The Global Methane Initiative (GMI) Municipal Wastewater Subcommittee conducted an in-person subcommittee meeting during Methane Expo 2013 in Vancouver, Canada, on 13 March 2013. The meeting involved country updates from participants and a discussion of subcommittee activities for 2013. These activities include finalizing the sector fact sheet, developing country-specific action plans related to wastewater, and developing country resource assessments.

The Municipal Wastewater Subcommittee agenda is available in the [Methane Expo 2013 Municipal Wastewater Proceedings](#).

The Municipal Wastewater Subcommittee meeting was attended by 18 representatives from seven different countries: Canada, Dominican Republic, Finland, Japan, Mexico, Turkey, and the United States. A list of attendees is included as [Annex 1](#) to these minutes.

Presiding over the meeting was Municipal Wastewater Subcommittee co-chairs Federico Grullon (Dominican Republic) and Chris Godlove (United States).

Welcome and Introductions

Co-chair Chris Godlove (United States) began the meeting by welcoming everyone and stating that he was looking forward to a thorough update on current activities and a discussion on future planning for the sector. Mr. Godlove said that this meeting is a continuation of the good work that has taken place to date and welcomed an exchange of ideas and open dialogue.

Mr. Godlove introduced his fellow co-chairs, Elias Freig (Mexico) and Federico Grullon (Dominican Republic). Unfortunately, Mr. Freig was not able to make it to the meeting, but Mr. Grullon introduced himself and said that he was excited to be at the meeting and was looking forward to constructive dialogue.

Mr. Godlove invited each meeting attendee to introduce himself/herself:

- **John Willis (United States, Brown and Caldwell)** stated that he and his company have done lots of work with the Water Environment Research Foundation (WERF) on biogas use for cogeneration and fugitive methane emissions.
- **Mari Heinonen (Finland, Helsinki Regional Environmental Services Authority)** stated that she was happy to be at the meeting.
- **Adalberto Noyola (Mexico, National University of Mexico, Institute of Engineering)** indicated that he is working on anaerobic treatment for wastewater treatment facilities.
- **Erkan Karisli (Turkey, Ankara Greater Municipality)** stated that he was happy to be at the meeting.

- **Axel Schaefer (Canada, Greentech Avenue, Inc.)** indicated he is involved with supply methane storage technology.
- **Keizo Fukuzawa (Japan, Japan Institute of Wastewater Engineering Technology)** stated that he was happy to be at the meeting.
- **Makoto Shirasaki (Japan, Ministry of Land, Infrastructure, Transport and Tourism)** stated that he was happy to be at the meeting.
- **Rie Nishisako (Japan, Ministry of Land, Infrastructure, Transport and Tourism)** stated that she was happy to be at the meeting.
- **Michael Mondshine (United States, Science Applications International Corporation [SAIC])** indicated that he works in his company's Engineering Solutions Group on eco-district projects that involve recovery and use of wastewater methane.
- **Kim Domptail (United States, Tetra Tech)** stated that she was happy to be at the meeting.
- **Jose Luis Davila (United States, SCS Engineers)** indicated he has expertise on biogas end use and was involved with the La Farfana project in Chile.
- **Brandon Mangia (United States, Proactive Worldwide, Inc.)** stated that he is conducting industry research right now to figure out what customers need with respect to wastewater support.
- **Lai Ming-Shen (Taiwan, Environment and Development Foundation)** indicated that his company supports the Taiwan EPA and the ENERGY STAR program in Taiwan and is involved in some wastewater projects.
- **Matthew Reid (United States, Princeton University)** stated that he is a Ph.D. student interested in water/sanitation/biogas in developing countries.
- **Bill Toffey (United States, Mid-Atlantic Biosolids Association)** stated that he was happy to be at the meeting.
- **Miguel Franco (United States, Tetra Tech)** stated that he was happy to be at the meeting.

Mr. Godlove reviewed the minutes from the past two subcommittee meetings:

- [2 July 2012 \(Singapore\)](#) – main outcome was the confirmation of the subcommittee co-chairs and the approval of the Municipal Wastewater Subcommittee [Action Plan](#).
- [6 December 2012 \(Internet-based\)](#) – focus was on planning for Methane Expo 2013.

Mr. Godlove reviewed the [meeting agenda](#) and provided an overview of the goals for the subcommittee meeting and the technical sessions that took place the next day, which included:

- Opportunity to exchange information that can help guide the subcommittee's work.
- Identifying some action items that the subcommittee can focus on in 2013.

Mr. Godlove asked for attendees to second the agenda, which was granted, so the agenda was adopted.

Country Updates

Each Partner delegate was given an opportunity to present an update of the status of wastewater activities in their country:

Federico Grullon (Dominican Republic, National Council for Climate Change and Clean Development Mechanism) – [Presentation slides available](#). Highlights included:

- Wastewater treatment coverage in Dominican Republic is limited.
- Using wastewater methane could reduce 8,874 tons/year of methane emissions (186,354 tons CO₂e).
- Some existing incentives for renewable energy can facilitate wastewater biogas projects.
- Goals for the future include:

- Implementing Sanitary Sewer Master Plan of Santo Domingo – attempts to solve issue of lack of sanitary sewer treatment. Plan is for 25-percent coverage by 2020 in Santo Domingo (right now only 5 percent).
- Developing wastewater methane capture and use projects. Mr. Grullon identified two projects (Rafey and Tamboril Wastewater Treatment Plants).

Mari Heinonen (Finland, Helsinki Regional Environmental Services Authority) – [Presentation slides available](#). Highlights included:

- Wastewater treatment situation in Finland:
 - 80 percent of population connected to wastewater treatment facilities; other 20 percent have septic systems.
 - Wastewater treatment is typically combined biological organic material and nitrogen removal + chemical precipitation of phosphorus.
 - Finland has 18 wastewater treatment facilities with anaerobic digesters. Eight of the facilities have municipal sludge + biowaste combined digesters.
- Biogas production:
 - Annual production is 24 Mm³; 20.5 Mm³ is utilized.
 - Total electric production from wastewater biogas is 27 GWh.
 - Total heat production from wastewater biogas is 80 GWh.
- The main challenge to wastewater biogas use in Finland is that wastewater treatment facilities are rather small, making it difficult to generate large quantities of biogas for use.
- The Viikinmäki wastewater treatment plant is currently conducting [online measurement of process gases](#) for the plant.

Makoto Shirasaki (Japan, Ministry of Land, Infrastructure, Transport and Tourism) – [Presentation slides available](#). Highlights included:

- Wastewater treatment situation in Japan
 - Coverage is more than 70 percent; most plants use aerobic treatment.
 - Most of sewage sludge is used for cement material.
 - Anaerobic digesters are used in about 300 wastewater treatment facilities.
 - Approximately 70 percent of biogas generated is utilized.
- B-DASH project (Breakthrough by Dynamic Approach in Sewage High Technology) – Two demonstration projects”
 - Osaka City features:
 - Incentive solid-liquid separation can increase the raw sludge recovery rate.
 - Thermophilic digestion contributes to downsize of digester tank.
 - Smart power generation system can decrease the amount of purchased electric power.
 - Kobe City features:
 - The digester tank made of steel can reduce CAPEX and construction period..
 - Co-digesting sewage sludge with suitable biomass (food waste and wood biomass) contributes to increased generation of biogas.

Erkan Karisli (Turkey, Ankara Greater Municipality) – [Presentation slides available](#). Highlights included:

- Wastewater treatment situation in Turkey
 - 631 active wastewater treatment facilities.
 - Sewerage and wastewater treatment is compulsory for residential areas.
 - In 2012, 81% of the population had access the wastewater treatment.
- Turkey’s National Climate Change framework calls for increased use of biogas.

- New laws and regulations in Turkey encourage efficient wastewater treatment.
- Government provides financial and technical support for wastewater treatment projects.

Chris Godlove (United States, U.S. Environmental Protection Agency) – [Presentation slides available.](#)

Highlights included:

- U.S. methane emissions from wastewater were 16.3 MMTCO₂e in 2012 (2.4% of total U.S. anthropogenic emissions).
- Wastewater methane reduction/recovery/use initiatives include:
 - EPA voluntary programs.
 - Regulatory/voluntary efforts (state and local).
 - No specific program focused on wastewater, but wastewater has been the focus of some existing programs/initiatives (e.g., EPA CHP Partnership, EPA Office of Water).
 - Most efforts have been state or municipally driven.
- Barriers/challenges to wastewater biogas recovery and use include:
 - Inadequate payback/economics.
 - Lack of available capital.
 - Operations and maintenance complications and concerns.
 - Utility interaction.
 - Difficulties with air regulations or obtaining air permit.
 - Technical merits and concerns.
 - Inertia to maintain the status quo at wastewater treatment facilities.
- U.S. goals for GMI involvement:
 - Support technology transfer and knowledge sharing.
 - Identify potential partners and specific opportunities for emission reductions.
 - Work to identify and remove barriers to methane project development where practicable.

At the conclusion of the official Partner delegate country updates, Mr. Godlove invited other attendees to provide updates, thoughts, or comments.

Lai Ming-Shen (Taiwan, Environment and Development Foundation) volunteered and gave a presentation on behalf of Jin-Wei Tsai. The presentation focused on the present and future of emissions and reduction of methane in Taiwan. He stated that 19 percent of methane emissions in Taiwan come from the wastewater sector and summarized the Bali wastewater treatment plant project, which is co-digesting kitchen and other organic wastes to more efficiently use the facility's six anaerobic digesters.

Adalberto Noyola (Mexico, National University of Mexico, Institute of Engineering) provided the following points about Mexico:

- Mexico has almost 2,000 wastewater treatment facilities, but 75 percent of them are small.
- Mexico treats about 47 percent of collected sewage, but by the end of 2013 it will be 60 percent, as there is a new wastewater treatment facility being built in Mexico City. The new facility is a conventional activated sludge plant with digesters. The biogas from the digesters will be used to produce electricity.
- Anaerobic digesters in Mexico first appeared in the 1990s. Now, approximately 15 wastewater treatment facilities have digesters. Biogas is not used very often (it is usually flared), and only five facilities produce electricity.
- Most facilities are treated via activated sludge.
- Also have some small UASB reactors (approximately 200).
- Suggested that typical treatment pathways may not be the best for Mexico. Instead of activated sludge, it may be better to divert sludge directly to digesters (some pretreatment would be needed, however).

John Willis (United States, Brown and Caldwell) offered the following:

- Echoed the last point from Mr. Noyola about using digesters earlier in the treatment process as a way to reduce the amount of electricity needed for wastewater treatment plant operation.
- If this digestion process works, electricity requirement downstream can be cut by 50 percent.
- WERF has projects to make this work:
 - Anaerobic membrane bioreactor – can meet effluent requirement.
 - UASBs – they are used in LA because of warm climate and loose effluent requirements.
- WERF also looking at large scale de-ammonification (takes 2/3 less power and no carbon) – there is lots of research being done to figure out how this works.
- WERF has collaboration structure to leverage multiple sources of funding for projects including government funding.
- Encouraged anyone interested in participating in WERF's research to contact him.

Bill Toffey (United States, Mid-Atlantic Biosolids Association) suggested that the subcommittee establish common units for reference to flows, energy production, tons of water treated, and other measures.

Action Items for the Year

Wastewater Fact Sheet

Charlie Goff (ERG) provided an overview of the draft wastewater fact sheet. He stated that the purpose of the fact sheet is to provide a concise summary of the wastewater sector, describe opportunities for methane reduction and use, and discuss the activities of the Municipal Wastewater Subcommittee. The fact sheet can be used as a marketing/educational tool. Mr. Goff stated that the plan was to finalize the fact sheet in the coming month, and he welcomed comments and questions from the attendees.

Adalberto Noyola (Mexico, National University of Mexico, Institute of Engineering) pointed out that Table 1 should include direct anaerobic treatment as an option, saying that it should be considered in warm climates (e.g., Latin America, India) especially. Mr. Godlove asked Mr. Noyola to draft some text to be included in the fact sheet.

Mr. Godlove asked if anyone else had any other questions or comments. There were none. Mr. Godlove concluded the discussion on the fact sheet by welcoming attendees to submit additional project ideas or photos to include.

Resource Assessments

Mr. Godlove introduced Miguel Franco (Tetra Tech) to summarize resource assessments for the group. Mr. Franco's presentation was focused on the agriculture sector, but he pointed out that the process for developing resource assessments for the wastewater sector is exactly the same. Highlights of Mr. Franco's presentation include:

- What are resource assessments?
 - Resource assessments are national or regional in scope and:
 - Identify and characterize the potential for methane emission reductions.
 - Assess country market opportunities.
 - Identify the locations for opportunities.
 - Prioritize opportunities.
- What are the steps in developing a resource assessment?
 - Identify and assemble available statistical information.

- Conduct site visits and key interviews.
- Conduct detailed data analysis.
- What are the elements of a resource assessment?
 - Baseline data and selection criteria.
 - Sector and subsector characteristics.
 - Technical and financial analyses.

At the conclusion of the presentation, Mr. Franco asked for questions.

John Willis (United States, Brown and Caldwell) commented that IPCC factors are not accurate, and that there is a lot of good project experience as well as numbers available that need to be integrated with the IPCC guidelines.

Mr. Franco agreed with Mr. Willis but stated that the value of the IPCC guidelines is that they provide general guidelines that can be applied universally across all countries and that at a minimum, they allow for a standard comparison across countries. Mr. Franco also noted that the IPCC guidelines allow for the use of country-specific data to be used if available.

Mari Heinonen (Finland, Helsinki Regional Environmental Services Authority) commented that there should be some process to update the IPCC guidelines.

Mr. Godlove commented that resource assessments are a tool that U.S. EPA could support to help identify where the best opportunities for GMI involvement lie in the wastewater sector. He encouraged members to voice their opinions going forward.

GMI Sector Action Plans for Wastewater

Mr. Godlove mentioned that GMI Sector Action Plans for wastewater have been introduced in previous meetings. He stated that now that there is a [Subcommittee Action Plan](#), the next step is for subcommittee member countries to develop Sector Action Plans that address how each country plans to address wastewater methane emissions. These wastewater-specific action plans would then feed into the country's overall Country Methane Action Plan.

Mr. Godlove summarized the [GMI Sector Action Plan guidance document](#). Highlights included:

- The guide is intended to assist GMI Partners or other stakeholders in developing Global Methane Initiative Sector Action Plans, which ultimately should provide data and information that guides the development of an overarching Country Methane Action Plan.
- Action Plans can be useful tools in advancing project implementation, facilitating investment, and creating appropriate policy frameworks that support methane abatement, recovery, and use.
- The guide provides a list of suggested topic areas to include in a Sector Action Plan. The outline presented should be considered as a guide to help countries think about what elements to include within their plans – Partner Countries can include a higher or lower number of elements and are free to format their plans in a way that best fits their information. Suggested topic areas include:
 - Country Background and Overview of Methane Emissions
 - Characterization of Public and Private Sector Involvement
 - Challenges to Mitigation or Abatement of Methane Emissions
 - Activities to Promote Methane Mitigation and Abatement(internally and externally)
 - Policy, Market and Legal Drivers to Advance Methane Project Development
 - Country Priorities

- Additional Information – Emission Sources, Mitigation Potential, and Successful or Potential Projects

Mr. Godlove proposed that subcommittee members try to produce draft Sector Action Plans for wastewater to share at the next subcommittee meeting. He stated that U.S. EPA can provide comments/edits/review on Action Plans that countries produce.

Mr. Godlove asked if there were any questions or comments. There were none.

Coordination with the [Climate and Clean Air Coalition \(CCAC\)](#)

Mr. Godlove mentioned that at the last subcommittee meeting, members suggested that the subcommittee work collaboratively with CCAC. Mr. Godlove provided a description of the CCAC:

- CCAC started about 1 year ago with the support of six countries and the United Nations Environment Programme (Bangladesh, Canada, Ghana, Mexico, Sweden, United States).
- CCAC's focus is on short lived climate pollutants: methane, black carbon, and HFCs.
- CCAC's objectives are to address short-lived climate pollutants by:
 - Raising awareness of short-lived climate pollutant impacts and mitigation strategies.
 - Enhancing and developing new national and regional actions, including by identifying and overcoming barriers, enhancing capacity, and mobilizing support.
 - Promoting best practices and showcasing successful efforts.
 - Improving scientific understanding of short-lived climate pollutant impacts and mitigation strategies.

Mr. Godlove stated that CCAC is not specifically focused on wastewater methane but that the goals of CCAC complement the GMI Municipal Wastewater Subcommittee's goals. He also pointed out that wastewater methane could be a future focus of CCAC. Mr. Godlove said that the subcommittee would follow CCAC activities going forward and identify opportunities for collaboration with the subcommittee.

Mr. Godlove asked if there were any questions or comments. There were none.

Conclusion

Mr. Godlove thanked everyone for attending the meeting and asked attendees if there were any final comments or questions.

John Willis (United States, Brown and Caldwell) stated that installing operable flares is a low capital investment for wastewater plants with digesters that currently vent gas or that do not have operable flares. He stressed that this is something that the subcommittee could address, and that it would have a large impact on emission reductions but at a low cost.

Bill Toffey (United States, Mid-Atlantic Biosolids Association) concurred with Mr. Willis and said that through his work, he has discovered that a surprising number of U.S. wastewater facility operators say that their flares are not working properly, and that they are not able to allocate their biogas to beneficial use. Mr. Toffey also stated that there is no data or tracing mechanism either. He concluded by saying that wastewater agencies are dedicated to the environment, but that there is a lot more that they could be doing in terms of methane emissions.

Mr. Godlove thanked Mr. Willis and Mr. Toffey for their comments and agreed that this could be a good area of focus for the subcommittee.

Mr. Godlove concluded by saying there will be follow-up from this meeting and a notice about the next internet-based meeting that will be planned for the coming months.

Summary of Action Items Discussed at the Meeting

The meeting action items include the following:

- The next Internet-based meeting for the subcommittee will be planned in the coming months. Subcommittee members will be notified by email. Subcommittee members should contact the co-chairs with ideas for specific agenda items.
- The subcommittee will finalize the wastewater fact sheet in the coming months. Adalberto Noyola is invited to submit language about the option of direct anaerobic treatment for Table 1.
- Key focus for the upcoming year for all subcommittee members is to develop draft Sector Action Plans for wastewater.

Annex 1: Final Meeting Participation List

First Name	Last Name	Organization	Country	E-mail
Axel	Schaefer	Greentech Avenue, Inc.	Canada	axel.schaefer@greentechavenue.com
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