Biogas Subcommittee
28 October 2019
Wisconsin, United States

MEETING MINUTES

The Global Methane Initiative (GMI) Biogas Subcommittee Meeting was held on 28 October 2019 in Wisconsin, United States. Participants represented governmental, private sector, and non-governmental organizations, including GMI Partner Country delegates and Administrative Support Group (ASG) staff. Biogas Subcommittee and Project Network members actively contributed and presented on a variety of topics. Subcommittee and Project Network member presentations are available on the GMI Website.

A GMI-hosted International Panel was held on 30 October 2019 in Wisconsin, United States as part of the BioCycle REFOR19 conference. Biogas Subcommittee and Project Network members actively contributed and presented on Global Opportunities for Advancing Biogas. Subcommittee and Project Network member presentations are available on the GMI Website.

On 31 October 2019 members of the Biogas Subcommittee and GMI Project Network attended site tours of biogas facilities. They visited the GL Dairy Biogas Project, the Statz B Biodigester, and the Dane Country Landfill RNG Facility.

Annex I contains the list of attendees. A copy of the final agenda, which was approved by the Subcommittee, is included as Annex II to these minutes.

28 October 2019
Introductions and Welcoming Remarks

Mr. Nick Elger, Subcommittee Co-Chair, United States Environmental Protection Agency (United States), opened the meeting and provided welcoming remarks.

The agenda was reviewed and adopted.

ASG Updates and the Global Methane Challenge

Ms. Monica Shimamura, Director of GMI's ASG (United States), provided an overview of GMI and reviewed the Initiative's organizational structure, Partner Country locations, and accomplishments since 2004. Ms. Shimamura also delivered a GMI news update, which announced updates to the GMI website, a new mailing list, and the Global Methane Forum 2020, to be held from 23-27 March 2020 in Geneva, Switzerland.

Ms. Shimamura also discussed the Global Methane Challenge, a campaign undertaken by GMI to highlight organizations that participate in methane mitigation activities. She described the purpose of the Challenge, provided background information, and reviewed the benefits of participating. GMC submissions in the biogas sector were highlighted.

Global Methane Initiative Biogas Subcommittee Update

Mr. Elger discussed the Subcommittee's accomplishments in 2018, including participation in the Global Methane Forum in Toronto, collaboration with other organizations, development of the BioWATT tool, and outreach efforts through conference participation. Mr. Elger also reviewed ongoing 2019 activities such as the announcement of a new co-chair, the Subcommittee's support for the Global Methane Challenge, and geographic and technical areas of focus for biogas. Finally, future directions for the Subcommittee in 2020 were highlighted. Goals for the upcoming year feature development of a Biogas Toolkit, monitoring, reporting, and verification for biogas best practices, and new collaborative and outreach efforts.

Country Market Updates

Country Updates

Delegates from Argentina, Brazil, Canada, India, Mexico, the Caribbean, and the United States delivered updates.

- Mr. Jorge Hilbert, Subcommittee Co-Chair, (Instituto Nacional de Tecnología Agropecuaria- INTA) provided an overview of biogas actions being taken by INTA and other organizations in Argentina. He discussed current climate change and renewable energy policies in Argentina and reviewed national and subnational challenges. Mr. Hilbert presented data related to biogas projects and their success and reviewed a national biogas survey. Finally, Mr. Hilbert provided an overview of Biogas Done Right (BDR), a new proposal towards the sustainable development of biogas.
- Ms. Larissa Schmoeller Brandt (CIBiogas) gave an update on biogas potential by source in Brazil. She discussed the state of the Brazilian biogas market and informed participants that regulations are needed to ensure new infrastructure will be built beyond the coast. She gave an overview of future directions in the Brazilian biogas market and discussed the "New Gas Market", a federal program launched in 2019, which will spark competitiveness in the Brazilian gas industry and RENOVABIO, a national biofuels policy which encourages decarbonization. Ms. Schmoeller Brandt finished by reviewing the 2019 actions of ABiogas.
- Mr. Matthew Hamilton, Subcommittee Co-Chair, (Environment and Climate Change Canada -ECCC) provided an overview of Canada's current state regarding use and investment in renewable energy sources, noting that Canada is a leader in renewable energy and there are opportunities for biogas and RNG. He also discussed the challenges for biogas and RNG in Canada. Mr. Hamilton concluded by mentioning that ECCC is currently involved in several activities aimed at reducing methane emissions including landfill gas capture and utilization feasibility research, initiatives to prevent GHG emissions through diversion and prevention of organic waste, collaborating with international partners to address methane emissions, and the Canadian Agricultural Partnership investment.
- Mr. Vijay Bharti (Ministry of New And Renewable Energy-MNRE) reviewed methane emissions by source in India. He also discussed several policies that promote biogas in India. Policies discussed included the Waste to Energy Programme, the new National Biogas and Organic Manure Programme, the National Policy on Biofuels and Sustainable Alternative Towards Affordable Transportation, and galvanizing the Organic Bio-Argro Resources Dhan. India is investing in a national strategy to increase biogas production. Their strategy includes policy initiatives, capacity building, and public-private partnerships.
- Mr. Sunil Dhingra (The Energy and Resources Institute-TERI) provided an overview of the biogas market in India. He discussed the surplus of agriculture waste and the biogas technology potential of the waste. TERI assists GMI partners in India by providing technical, analytical, and capacity-building support to agricultural methane mitigation activities. A database on anaerobic digesters based on data from MNRE, SNAS, and project developers was also reviewed. Mr. Dhingra concluded with a discussion of challenges in the Indian biogas market.

- Mr. Pradeep Khandelwal (East Delhi Municipal Corporation-EDMC) discussed the current state of India's biogas market and its greenhouse gas emissions from solid waste disposal. He gave an overview of EDMC's emission reduction trajectories through municipal solid waste management. EDMC partnered with U.S. EPA and the Climate & Clean Air Coalition (CCAC) to prepare a SLCP mitigation work plan and has undertaken several activities in support of the plan including waste management system audits conducted by TERI and installation of new waste processing facilities.
- Mr. Roger Peniche Sala (Municipality of Naucalpan) provided an overview of opportunities for biogas in Mexico with cities as a key factor. He also reviewed six key steps to develop the biogas market. The Municipality of Naucalpan has partnered with U.S. EPA and CCAC's Waste Initiative to manage organic waste and recovery energy. They use mechanical-biological treatment to separate solid waste and to generate renewable electricity from biogas.
- Mr. Tom Frankiewicz (U.S. EPA) gave an overview of U.S. domestic voluntary action in the biogas sector. He presented the AgSTAR and Landfill Methane Outreach Program (LMOP) project maps and discussed information available to the agriculture and landfill energy sectors.
- Ms. Ana María Majano (Low Emission Development in Latin America and the Caribbean- LEDS/LAC) introduced her organization, LEDS Energy Working Group which is a demand-driven network comprised of sector practitioners from over 160 countries in the Latin America and the Caribbean region. They establish communities of practice, provide technical assistance and develop case studies and other resources. Ms. Majano mentioned the 2019-2020 thematic focuses, "Bioenergy and the circular economy" and "Integration for bioenergy into NDCs". LEDS will be hosting an Expert Dialogue on Bioenergy and Climate Ambition soon.

Biogas and Food Waste Pretreatment Spotlight: Denmark

Mr. Chris Voell (Danish Trade Council of North America) and Mr. Lars Ravin Nielsen (Gemidan Ecogi) discussed biogas growth and food waste pre-treatment in Denmark. Agricultural biogas plants dominate biogas production in Denmark. Mr. Voell introduced the Danish Biogas Model which can be used to produce organic fertilizer, RNG/biomethane, animal bedding, and food-grade CO_2. He also reviewed different types of biogas production facilities.

Mr. Nielsen provided an overview of his organization, Gemidan Ecogi A/S. Their Ecogi facilities can handle different feedstocks from residential, commercial, institutional, and industrial streams.

Finally, Biogas Go Global (BGG), a public-private partnership set out to accelerate U.S. biogas production through use of the Danish biogas model, was introduced. The initiative gathers industry experts, regulators, and academics int one partnership to ensure that knowledge is transferred across different sectors simultaneously.

Subcommittee Discussions

Biogas Toolkit

Mr. Frankiewicz gave a presentation on the GMI Biogas Project Development Toolkit, a resource that will serve as a roadmap for planning, implementing, and quantifying economic and environmental impacts of biogas projects. He mentioned that the Toolkit can be used to support national and subnational policy goals through a series of steps:

1. Collecting and analyzing data
2. Determining scope and project feasibility
3. Conducting technical assessments
4. Conducting financial assessments
5. Project implementation

6. Operations and maintenance
7. Project evaluation

Mr. Frankiewicz stated that GMI seeks to engage with its stakeholders to help users implement the toolkit. Members of the GMI Biogas Subcommittee will have the opportunity to provide feedback, pilot existing tools, and develop additional tools as needed.

Strategic Discussion: Goals and Objectives of the Biogas Subcommittee

Mr. Hamilton led a facilitated discussion on several specific discussion questions:

- *What is your role or connection to biogas – with respect to your sector or organization's mission?*
- *Do you currently participate in any other organizations to promote biogas – or methane capture and utilization from your sector?*
- *What, if anything, do you feel is missing from these organizations to promote biogas?*
- *Where do you see GMI and this Subcommittee being positioned to support biogas?*
- *What are some specific tools or resources that would help support this effort?*

Mr. Hamilton noted that the objectives were to: identify what value GMI can add to the Biogas community, grow the group, broaden the network and connect to similar organizations, and inform the GMI Steering Committee.

What organizations are delegates engaged with?
Responses included the United Nations Food and Agriculture Organization Global BioEnergy Partnership, Low Emission Development in Latin America and the Caribbean (LEDS/LAC), Ministry of New And Renewable Energy (MNRE), Indian Biogas Association, CI Biogas, International Energy Agency (IEA) (mapping biogas resources), German Corporation for International Cooperation (GiZ) (biogas standards), and Solid Waste Association of North America (SWANA).

What goals, targets and deliverables should the Subcommittee set?
Responses included: developing a GIS for biogas plants globally and evaluating the work around the world. There was also discussion of enlarging the scope of biotechnology to add to the reduction of CO_2 and other greenhouse gases with fertilizers and organic materials that are products from biodigestion. It was noted that the Global Methane Challenge does not set specific numerical targets; because GMI is a voluntary program, it looks at sector level targets. Aggregated targets set across multiple countries could be evaluated. There was also discussion of developing a toolkit for policy makers to bring together sectors for financing.

What is missing from GMI discussions?
Responses included that the focus of the group should be bringing people together to share technologies. There are similarities in technologies across sectors that could be applied to advance the sector. Lifecycle assessments of biogas applications could bring solutions across sectors. There was a discussion about the lack of training for operators; plants are being built with issues associated with design, construction, operations and maintenance. The skills gap was noted as a potential issue, with technology coming from developed countries and being implemented in countries where there is a need for specialized education.

What are barriers to cost and investment in biogas projects?
Responses included a balance of risk, the standardization of skills, and creating a demand through a coordinated effort on a larger scale. The participants discussed that government needs to play a role in creating the conditions for the market place for success. Development of a risk analysis tool to help gain financial backing was discussed. A suggestion also was made to rank technologies to reduce risk and to provide education on how to approach financial opportunities. There was also discussion of reaching across sectors and working

collaboratively with organizations to seek out synergy and not competition. One tool to engage financial institutions ranks technologies that entreats a group of independent reviewers to help companies decide which teams will lead. Mr. Hilbert noted a tool to certify technologies that was developed years ago for GMI.

What is the role of biogas in reducing greenhouse gas emissions?
It was noted that there should be a focus on the larger impacts to climate change and a focus on biogas as a way of reducing greenhouse gas emissions. Mr. Hamilton responded that the evaluation of the contribution of use of biogas beyond agriculture in reducing greenhouse gas emissions should be explored, noting that lifecycle analysis is a method to evaluate production and processes.

Mr. Hamilton concluded the meeting by reviewing next steps for action after the meeting and committed to with more regular communication with the Subcommittee members, including webinars.

Adjournment

Mr. Elger thanked attendees for their participation and concluded the meeting. The meeting was adjourned.

30 October 2019
BioCycle REFOR19 Conference, GMI-hosted panel discussion: Global Opportunities for Advancing Biogas.

Welcoming Remarks

Mr. Elger welcomed the participants to the GMI-hosted panel discussion.

Panel Discussion Presentations

- Mr. Hilbert discussed promotion of renewable energy in Argentina. He provided an overview of biogas actions being taken by INTA and other organizations. He also discussed current climate change and renewable energy policies in Argentina and reviewed national and subnational challenges. Mr. Hilbert presented data related to biogas projects and their success and reviewed a national biogas survey. Finally, Mr. Hilbert provided an overview of Biogas Done Right (BDR), a new proposal towards the sustainable development of biogas.
- Ms. Larissa Schmoeller Brandt (CIBiogas) gave an update on biogas potential by source in Brazil. She discussed the state of the Brazilian biogas market and informed participants that regulations are needed to ensure new infrastructure will be built beyond the coast. Ms. Schmoeller Brandt gave an overview of future directions in the Brazilian biogas market. She discussed the "New Gas Market", a federal program launched in 2019, which will spark competitiveness in the Brazilian gas industry and RENOVABIO, a national biofuels policy which encourages decarbonization. Ms. Schmoeller Brandt finished by reviewing CIBiogas and it's 2019 actions.
- Mr. Matt Hamilton (ECCC) gave a presentation on biogas in Canada. He discussed Canada's transition to a low carbon future and their greenhouse gas emissions by IPPC sector and economic sector. Canada is a leader in renewable energy and there are opportunities for biogas and RNG. Mr. Hamilton also discussed the challenges for biogas and RNG in Canada. Mr. Hamilton concluded by mentioning that ECC is currently involved in several activities aimed at reducing methane emissions including landfill gas capture and utilization feasibility research, initiatives to prevent GHG emissions through diversion and prevention of organic waste, collaborating with international partners to address methane emissions, and the Canadian Agricultural Partnership investment.
- Mr. Sunil Dhingra (TERI) provided an overview of the biogas market in India. He discussed the surplus of agriculture waste and the biogas technology potential it creates. TERI assists GMI partners in India by providing technical, analytical, and capacity building support to agricultural methane mitigation activities. A database on anaerobic digesters based on data from MNRE, SNAS, and project developers was also reviewed. Mr. Dhingra concluded with a discussion of challenges in the Indian biogas market.
- Ms. Ana María Majano (LEDS/LAC) introduced her organization, LEDS Energy Working Group. LEDS is a demand-driven network comprised of sector practitioners from over 160 countries. They establish communities of practice, provide technical assistance and develop case-studies and other resources. Ms. Majano mentioned the 2019-2020 thematic focuses, "Bioenergy and the circular economy" and "Integration for bioenergy into NDCs".

Panel Discussion

Mr. Elger led a panel discussion following the presentations.

How receptive are your countries to international developers in the Biogas Sector? Where would international developers start to support biogas projects?

- Mr. Hamilton (ECCC) responded that Canada has an open marketplace, noting that technologies are coming from more developed markets and there are many avenues for developers to engage but that

the government is not necessarily the best place to start. He noted the Clean Growth Tech Hub is the government's municipal sector center for supporting clean technology development; however, it primarily supports established technologies and is less likely to be interested in experimental projects. The private sector is more supporting of emerging technologies.

- Mr. Dhingra (TERI) stated that India has an open marketplace for technology from other countries. He noted that India is working with companies in Germany to bring new technology to the country. He stated that India is using the model for solar technology and infrastructure investment, with manufacturing capacity within the country. He noted that local manufacturers are working to scale up and grow business models. On the state level, contracts are required to be bid out which encourages partnerships with international developers
- Ms. Schmoeller Brandt (CI Biogas) responded that Brazil is less open to international development due primarily to taxes which forces Brazil to look for technological development internally. The biogas potential in Brazil is significant; however, the need for regulations and new infrastructure are barriers to market entry. The microgrid project serves as a pilot project for development of infrastructure and connecting rural areas.
- Ms. Majano (LEDS/LAC) noted that there are many programs in the Latin American and the Caribbean region trying to promote waste to energy. She suggests countries work with the Ministry of Environment, Energy and Agriculture to find out what programs might exist to encourage development and partnerships with international companies. She noted that there is a lack of understanding of the available technologies and a need for more information and training. She emphasized the need for the transfer of technology in the market, commenting that often suspicion of new technology can be a barrier to investment.
- Mr. Hilbert (INTA) noted that Argentina is not as open as Canada, and that it relies on technologies within the country. Argentina focuses on local renewable sources and local developers putting in place new projects. He noted that the Ministries of Energy and Agriculture are responsible for facilitating this process. He also noted challenges due to the variability of biogas.

How does each country sell digestate as a commodity?

- Mr. Hilbert (INTA) noted that Argentina has regulations that vary from state to state so it is difficult to sell digestate. There is a large opportunity but there is concern that digestate is not treated appropriately and it could potentially harm crops. He noted that the majority of digesters in Argentina are used for electricity generation. If biogas is evaluated solely on energy prices, it does not compete with other renewables; however, the full value of biogas is not in its energy potential alone -- the value of the digestate as a commodity should also be considered.
- Ms. Majano (LEDS/LAC) noted that digestate as a commodity varies across countries. In Costa Rica, for a small producer supported by a Brazilian company, the most financial benefit was to substitute the digestate for chemical fertilizer. The cost savings from using the digestate was significant. She noted that a business model needs to be developed for digestate and digesters separate from energy production.
- Ms. Schmoeller Brandt (CI Biogas) responded that in Brazil digestate is not sold or seen as a commodity; most digesters give the digestate back to the producers or use it for some other purpose. The primary obstacle to digestate being sold as a commodity is that there are no safety regulations for digestate. Without regulations, it is difficult to standardize and monetize the market. There are few companies that develop digestate for organic matter for fields.
- Mr. Dhingra (TERI) responded that India is working with developers and policy makers to address the issue of the standardization of digestate. The state is trying to develop standards for digestate and exploring options for other technologies including CO_2 recovery.

- Mr. Hamilton (ECCC) responded that Canada has not adopted biogas in mass. He noted there are revenues credits and sales of gas, but that natural gas is very inexpensive. Digestate is somewhat limited by application to land, in that the material must be stored. However, some facilities are taking measures to make certified fertilizers.
- Mr. Elger (USEPA) noted that in the U.S., the American Biogas Council is creating a digestate standard. He noted that the market is not in place and is currently in the pilot study phase. Studies indicate that digestate could be a good fertilizer. He also noted that refining the product for application and partnerships to distribute phosphorus are critical. One of the drivers in the U.S., especially in Wisconsin, is regulating water quality related to nutrient loading, particularly phosphorus.

Is biogas being incorporated into your country's climate policy?

- Mr. Hamilton (ECCC) responded that in Canada biogas is part of a national framework to address climate change. There are specific targets to reduce methane. He noted that the Clean Fuel Standards that are under development are likely to be a driver for further incorporation. There have also been large infrastructure investments from the Canadian government for portions of municipals facilities.
- Mr. Dhingra (TERI) responded that in India there are 10 gigawatts of energy being produced from biogas/waste. He responded that India is in the initial stages of recognizing the opportunity for biogas to reduce emissions. Biogas could help to reduce the reliance on fuel for transportation with a compressed gas source.
- Ms. Schmoeller Brandt (CI Biogas) stated that Brazil does not have specific goals that relate to climate change policy and biogas. However, the government is changing administrations and there are programs available to support biogas initiatives including a stock market for all renewable fuels. The government wants to open the renewables market for natural gas, which would drive down the costs for natural gas. The infrastructure investment might help bring biogas to the market.
- Ms. Majano (LEDS/LAC) responded that many Latin American Caribbean countries have renewable energy goals, but do not have specific targets although Ecuador and Cuba have specific targets for biogas. Countries are trying to link energy and climate policies and policy reviews occur every five years. There is a potential in the transport sector to make advances with renewable energy goals. Overall, within Latin American and Caribbean countries, renewable electricity generation is advanced, but transportation can be improved.
- Mr. Hilbert (INTA) responded that the agriculture sector in Argentina is the key player for reducing emissions; however, no specific goals for emissions reductions have been set. Priority is given to sectors and improvements are made on a sector-by-sector basis.

Mr. Elger closed the panel discussion by noting that there are similarities in the issues across the world. He stated that the need to share best practices and develop tools to help meet and implement goals will be critical to advancing Biogas technology and its role in reducing emissions globally.

31 October 2019
Site Tours

Members of the Biogas Subcommittee and GMI Project Network attended site tours of biogas facilities. They visited the GL Dairy Biogas Project, the Statz B Biodigester, and the Dane Country Landfill RNG Facility.

ANNEX I

Biogas Subcommittee Meeting Participants

Vijay Bharti	Ministry of New Renewable Energy, Government of India
John Christman	Hollowbrook Farms
Matthew Christman	Wisconsin Biogas Council
Nimmi Damodaran	Abt Associates
Sunil Dhingra	The Energy Resources Institute
Pentcho Dimitrov	BiogasWorld
Nick Elger	U.S. Environmental Protection Agency
Michael Escamilla	AMET
Tom Frankiewicz	U.S. Environmental Protection Agency
Charlie Goff	ERG
Matt Hamilton	Environment Climate Change Canada
Keith Henn	Tetra Tech
Kevin Hennessy	Minnesota Department of Agriculture
Jorge Hilbert	Instituto Nacional de Tecnología Agropecuaria
Pradeep Khandelwal	East Delhi Municipal Corporation
Joe Kramer	GDS Associates
Maxime Lemonde	BiogasWorld
Cole Lopez	AMET
Ana Maria Majano	Low Emission Development in Latin America and the Caribbean
Vanessa McKinney	U.S. Environmental Protection Agency
Roger Peniche	Municipality of Naucalpan de Juarez
Lars Ravn Nrleson	Gemidan Ecogi
Larissa Schmoeller Brandt	CIBiogás / Abiogás
Monica Shimamura	U.S. Environmental Protection Agency
Chris Voell	Danish Trade Council
Rebecca Zvoleff	Tetra Tech

GLOBAL METHANE INITIATIVE
Biogas Subcommittee Meeting
28 October 2019
Middleton, Wisconsin, USA
12:30 - 17:00

AGENDA

12:30-12:40	**Welcome and Opening of the Meeting; Adoption of the Agenda** *Subcommittee Co-Chairs:* *Matthew Hamilton, Environment & Climate Change Canada (ECCC) (Canada)* *Jorge Hilbert, National Agricultural Technology Institute (INTA) (Argentina)* *Nick Elger, U.S. Environmental Protection Agency (EPA) (United States)*
	Subcommittee Business
12:40 -12:55	**ASG Updates and the Global Methane Challenge** *Monica Shimamura, GMI Administrative Support Group (ASG)*
12:55-13:10	**Ongoing GMI Biogas Activities** Overview of technical, policy and outreach activities related to agriculture and waste sectors *Nick Elger, U.S. EPA*
	Country Market Updates
13:10 – 15:00	*Argentina* *Brazil* *Canada* *India* *Mexico* *United States* *LEDS LAC*
15:00 – 15:20	**Biogas and Food Waste Pretreatment Spotlight: Denmark** *Chris Voell, Danish Trade Council*
15:20 – 15:50	**NETWORKING BREAK**
	Subcommittee Discussions
15:50-16:10	**Biogas Toolkit** *Tom Frankiewicz, U.S. EPA*
16:10 – 16:50	**Strategic Discussion: Goals and Objectives of the Biogas Subcommittee** *Matthew Hamilton, ECCC*
16:50 -17:00	**Wrap-Up and Adjourn**