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Summary of the Global Methane, Climate and Clean Air Forum: 27-29 September 2022

When it comes to cutting emissions, the world needs to run “a sprint, a marathon, and an ultramarathon all at once.” As opposed to their infamous cousin carbon dioxide (CO₂), short-lived climate pollutants (SLCPs) only remain in the Earth’s atmosphere for a few years when emitted. However, their impact is much more intense in a shorter period than that of CO₂: their potential to warm the atmosphere can be between 80 to 1,500 times greater. Thus, acting to reduce SLCP emissions is as urgent as reducing CO₂, and requires the same level of international collaboration.

With that spirit in mind, the Global Methane, Climate and Clean Air Forum convened leaders around the theme of “a call to fast action,” to build up global ambition to rapidly reduce emissions from methane and other SLCPs, such as black carbon, hydrofluorocarbons (HFCs), and tropospheric ozone.

During the forum, participants heard from high-level officials and actors from both government and the private sector on a variety of themes focused around achieving fast climate action with respect to reducing SLCPs in the atmosphere. Sessions focused on, among others,

- outlining high-level policy, political, and scientific arguments for global ambition and action on methane and other SLCPs and defining a path forward;
- highlighting the actions of national policies in reducing SLCPs; and
- setting out perspectives on SLCP finance, including in the private sector.

Following each day’s high-level panel discussions, participants convened in technical sessions, which allowed them to delve deeper into specific topics related to SLCP management and mitigation. These were split into six thematic areas, namely: science, planning, and cross-cutting issues; air quality; agriculture and food systems; waste and wastewater; coal; and oil and gas. The forum also facilitated several site visits to case studies in the Washington DC area, including: an anaerobic digester; an advanced wastewater treatment plant; and the Prince William County landfill.

Convened by the Climate and Clean Air Coalition (CCAC) and the Global Methane Initiative (GMI), the meeting took place from 27-29 September 2022 in Washington DC, US, and convened almost a thousand participants, with approximately half joining in virtually.



John Kerry, Special Presidential Envoy for Climate, US, addresses participants virtually.

A Brief History of the CCAC and GMI

SLCPs include black carbon, methane (precursor to tropospheric ozone), and HFCs. These pollutants have a short-term warming influence on the climate, and, in many cases, are also harmful air pollutants that affect human health, agriculture, and ecosystems. Both the CCAC and GMI are international coalitions working to galvanize opportunities to reduce SLCP emissions.

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Climate and Clean Air Coalition

The CCAC is a voluntary international coalition of governments, international organizations, the private sector, and NGOs. It aims to: reduce SLCP emissions; avoid millions of premature deaths; promote food and energy security; and address near-term climate change.

The CCAC was established in February 2012 by Bangladesh, Canada, Ghana, Mexico, Sweden, and the US, together with the UN Environment Programme (UNEP). The CCAC currently has 154 State and non-State Partners consisting of 76 countries, 19 intergovernmental organizations, and 59 NGOs.

Governance Structure: The CCAC governance structure includes the Climate and Clean Air Ministerial, an Annual Meeting, a Board, a Scientific Advisory Panel (SAP), and several Hubs.

The Climate and Clean Air Ministerial is the CCAC's highest-level decision body and convenes annually. Consisting of Partner ministers and invited leaders, it guides strategy and the Coalition's framework.

The Annual Meeting convenes all Partners once a year to approve budget and oversight issues and review activities, as well as share the latest science and discuss challenges and barriers to implementing actions. The meeting also holds Partner- and Hub-focused sessions, SAP meetings, and a meeting of the Board.

The Board meets 2-3 times a year in an ad hoc fashion and consists of: two Partner co-chairs; up to 10 Partners; the SAP Chair; two intergovernmental organization representatives; and two NGO representatives. It undertakes regular consultations with the Coalition to inform decision making.

The SAP advises on scientific matters related to SLCPs, air pollution, and near-term climate change. Comprised of 20 scientific advisors, it conducts virtual meetings to respond to questions from the Board and the Annual Meeting.

Hubs bring together actors across levels to tackle cross-cutting issues and challenges. Present Hubs include: a Strategic SLCP Planning Hub, which focuses on supporting countries to integrate SLCPs into climate, clean air, and development plans and policies; and Sectoral Hubs for each key emitting sector of SLCPs (agriculture, brick production, cooling/HFCs, household energy, oil and gas, transport/diesel, and waste).

The CCAC Secretariat supports the Coalition's activities, and is hosted by UNEP's Economy Division in Paris, France.

Global Methane Initiative

The GMI is an international public-private initiative that works towards cost-effective, near-term methane abatement, as well as the recovery and use of methane as an energy source. It focuses on the sectors of biogas (including agriculture, municipal solid waste, and wastewater), coal mines, and oil and gas systems.

It is guided by its Steering Committee and three Subcommittees, the latter of which each focus on one of the sectors outlined above. A Project Network consisting of representatives from industry, the research community, financial institutions, state and local governments, and other expert stakeholders participate in capacity-building and technology transfer activities.

Beginning as the "Methane to Markets Partnership" in 2004, the GMI was established when 14 national governments formally committed to reduce methane emissions from key sectors. In 2004, the US pledged USD 53 million over an initial five-year period. As of 2022, the initiative has 46 Partner Countries and over 700 Project Network members.

Recent Meetings: On Thursday, 3 June 2021, [A Call to Action on Methane: an international dialogue hosted by the GMI](#) was held. This event aimed to: raise international awareness of the critical need to reduce methane emissions; emphasize opportunities for international leaders in industry, finance, and government to take action to reduce methane; and celebrate the recharter of the GMI for another 10 years.

Global Methane, Climate and Clean Air Forum Report

During the morning sessions, participants attended high-level plenaries, which focused on key issues related to scaling up the mitigation of SLCP emissions. The afternoon sessions consisted of parallel technical sessions along six themes, including: science, planning, and cross-cutting issues; air quality; agriculture and food systems; waste and wastewater; coal; and oil and gas.

Opening Plenary: A Call for Fast Climate Action

Welcoming participants on Tuesday during the opening of the Forum, Tomás Carbonell, Deputy Assistant Administrator, Office of Air and Radiation, US Environmental Protection Agency (EPA), and GMI Steering Committee Vice Chair, opened the meeting and welcomed participants by reminding them that the meeting's theme is "a call to fast action." He underlined that reducing methane is a clear "win-win" for the environment and the economy.

Janet McCabe, Deputy Administrator, US EPA, discussed her country's "whole of government" approach to emission reductions. She outlined numerous examples of this approach, including the recently passed Inflation Reduction Act, which will provide resources for the EPA to reduce emissions in oil and gas, waste, and agriculture, among others.

Speaking via video link, John Kerry, Special Presidential Envoy for Climate, US, highlighted a "new consensus" on the need to reduce methane and other SLCPs, and the Global



Tomás Carbonell, Deputy Assistant Administrator, Office of Air and Radiation, US EPA, and GMI Steering Committee Vice Chair



Janet McCabe, Deputy Administrator, US EPA

Methane Pledge launched at the 26th session of the Conference of the Parties to the UN Framework Convention on Climate Change (UNFCCC COP 26) in 2021. He pointed to an upcoming Global Methane Assessment report, which notes that, without the Global Methane Pledge, methane emissions will increase by 2030. He stressed the need for “everyone—particularly government, industry, and banks—to join [the Pledge] in taking action.”

Henry Kwabena Kokofu, Executive Director, Ghana Environmental Protection Agency, highlighted that Ghana is aware of the risks of doing nothing and that implementing actions across sectors is a national priority. He noted that his country has committed to reducing methane emissions by 2030 and incorporating traditional knowledge in Ghana’s climate change plans.

Speaking via video, Steven Guilbeault, Minister of Environment and Climate Change Canada, said Canada is committed to achieving its 2030 methane reduction pledge. Stressing a holistic approach based on science, he recognized that tackling methane is a global issue.

Catherine Stewart, Climate Change Ambassador, Canada, underlined that Canada is proud of its methane reduction leadership. She noted Canada recently launched a holistic methane strategy to reduce emissions by more than 35% by 2030 compared to 2020 levels, particularly for the gas, oil, agriculture, and waste sectors.



Martina Otto, Head of Secretariat, CCAC

Martina Otto, Head of Secretariat, CCAC, stated that joint efforts and methane action must be taken “right” now given the narrow window to achieve the goals of the Paris Agreement on climate change. She also reminded participants of several initiatives funded by the CCAC Trust Fund, especially on methane source sectors. She also announced the CCAC’s open Call for Proposals.

Marcelo Mena, Chief Executive Officer, Global Methane Hub, Chile, pointed to: collaborative ventures between Chile and Canada; the Race to Zero programme; and collaboration between NGOs in China as examples of the need “to collaborate, not to compete.”

Donald Moore, Executive Director, Global Dairy Platform, described the “pathways to dairy net zero,” stressing that the industry must consider emerging as well as developed economies.

Caitlan Frederick, Co-Chair, Fast Action on Climate to Ensure Intergenerational Justice, reminded participants of the importance of youth in decision spaces and to better engage youth in their discussions.

Speaking via video link, Juergen Voegelé, Vice President for Sustainable Development, World Bank, outlined World Bank projects to scale up methane emissions work, including by developing sectoral and whole-of-economy reports.

The Science and Practice of Fast Climate Action

Cécile Siewe, Acting Associate Assistant Deputy Minister, Environmental Protection Branch, Environment and Climate Change Canada, and Chair, GMI Steering Committee, moderated this session on Tuesday.

Science Briefing on the Latest on Methane and SLCPs: Participants heard from scientists from the CCAC SAP, who discussed the soon-to-be published CCAC report, Global Methane Assessment: Baseline 2030.

Drew Shindell, Nicholas Professor of Earth Science, Duke University, and SAP Chair, outlined the report’s main messages, including that:

- reducing methane emissions is critical to slow warming, and can deliver net decarbonization benefits a decade earlier than compared to baseline;
- achieving the low end of the Global Methane Pledge target would lead to a reduction of 150 megatonnes of CO₂ equivalent; and
- reducing methane has co-benefits in health, crops, labor, and energy security.

In the following panel discussion, Gabrielle Dreyfus, Chief Scientist, Institute for Governance and Sustainable Development, outlined that the only mitigation strategies that can deliver in the near term include cutting methane and other SLCPs.

Lisa Emberson, Professor of Environmental Science, University of York, discussed ways in which mitigating methane will enable the meeting of CO₂ targets.

Desiree Plata, Assistant Professor, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, underlined the need for socioeconomic and



V.K. Tiwari, Additional Secretary, Ministry of Coal, India, and GMI Steering Committee Vice Chair

behavioral assessments to maximize the impact of SLCP mitigation policy.

Policy and Planning Highlights from Countries: V.K. Tiwari, Additional Secretary, Ministry of Coal, India, and GMI Steering Committee Vice Chair, stated that India is making progress in many areas to reach zero emissions by 2070, including through measures in the energy, agriculture, gas, and coal sectors.

Ange-Benjamin Brida, Ministry of Environment and Sustainable Development, Côte d'Ivoire, noted his country developed its first SLCP National Action Plan in 2019 and recently updated its Nationally Determined Contribution (NDC) to include SLCPs.

Vigdis Vestreng, Senior Advisor, Norwegian Environment Agency, presented examples of successful measures on black carbon reduction in the transport, agriculture and food, waste, and oil and gas sectors. She highlighted the need to act simultaneously with respect to clean air and climate change in the short- and long-term.

Panel Discussion and Reflections: Peter Dery, Director of Climate, Ministry of Environment, Science, Technology, and Innovation, Ghana, underscored policy reforms, technology transfer, infrastructure improvement, resource mobilization, and capacity building as necessary steps to reducing emissions.

Glynda Bathan-Baterina, Deputy Executive Director, Clean Air Asia, said the need to work on similar assessments on air pollution is clear, and subnational governments must be fully engaged. She welcomed the support provided to countries to develop national plans, submit updated NDCs, express training needs, and conduct assessments at the national and subnational levels.

Alice Alpert, Senior Scientist, Environmental Defense Fund, drew attention to the importance of constructing national methane inventories. She stressed that inventories must incorporate direct measures data to inform strategy design accurately.

Policy and Planning to Achieve Fast Climate Action

Ani Dasgupta, President and Chief Executive Officer, World Resources Institute (WRI), moderated the Wednesday morning plenary. Introducing the panelists, Dasgupta spoke of the Global



Ani Dasgupta, President and Chief Executive Officer, WRI

Methane Pledge as “the momentum [and] the spark” that has enabled fast action on SLCPs.

Cécile Siewe, Environment and Climate Change Canada, and GMI Steering Committee Chair, outlined Canada’s strategy for reducing methane and SLCP emissions, including capturing and recuperating methane. She noted her country’s engagement in the GMI remains a “top priority.”

Noting SLCPs must “be at the heart” of climate strategy, Ali Zaidi, Deputy White House National Climate Advisor, US, praised the momentum building on reducing emissions, including the recent ratification by the US of the Kigali Amendment to the Montreal Protocol. He highlighted the US approach, including: a national methane strategy; a methane emissions reduction programme in the recent Inflation Reduction Act; and a focus on climate-smart agriculture to reduce methane and nitrogen emissions.

Stressing that methane is “a critical piece” of the climate action puzzle, Mahmoud Mohieldin, UN Climate Change High-Level Champion for Egypt, underlined that his country is tackling climate change by adopting a “holistic approach.” He discussed, among others:

- the need to focus on implementation and translate pledges into solutions;
- the importance of regional perspectives in emission reductions, especially in smaller countries;
- the challenge of understanding the impacts of mitigation measures on smaller communities; and
- the importance of external finance for countries that need it.

He also noted that UNFCCC COP 27 will focus on food and agriculture for sustainable transformation.

Pradeep Yadav, Ministry of Forests and Environment, Nepal, indicated that Nepal submitted an NDC in 2020 and is implementing a climate change policy up to 2029 to set the path to become zero emissions by 2045. In 2021, he noted, Nepal joined the Methane Pledge.

Policy and Planning: Ani Dasgupta, WRI, moderated this panel. Fred Krupp, President, Environmental Defense Fund, stressed the importance of having plans, targets, and transparency to reduce emissions. He mentioned that good results depend on



Andreas Ahrens, Head of Climate, IKEA Group

high standards, underscoring the importance of measurement, reporting, and verification (MRV).

Andreas Ahrens, Head of Climate, IKEA Group, highlighted IKEA’s “realistic” approach and the considerations involved in a product’s life cycle. He noted the importance of having green partners, incentives, and subsidies to reduce emissions and use cleaner energies.

Eric Haxthausen, US Trade and Development Agency, emphasized his agency’s “very aggressive” approach to tackling climate change, including methane emissions.

Pacífica F. Achieng Ogola, Ministry of Environment and Forestry, Kenya, said Kenya’s simultaneous implementation of its climate change action plan and fulfilment of its NDC, and its long-term climate change strategy will act as an accelerating mechanism towards action.

The ensuing discussion explored such topics as: the sometimes-nebulous boundaries between oil companies and governments; the need for technical and financial assistance for countries in the Global South; the importance of a proper project design in achieving financing; how to operationalize concept notes into projects; and how to achieve a systemic shift in the way companies address emission reductions and climate change.

Putting Development in the Lead: Food Security, Health and Poverty Alleviation Benefits

Martina Otto, CACC, moderated the session on Wednesday, and opened by noting the measures and technologies to address SLCPs are known and implementable, but “cannot happen on their own.”

Briefing on the CCAC Africa Assessment: Johan Kuylensstierna and Kenza Khmosi, SAP, provided a preview of the CCAC Africa Assessment that will be released at UNFCCC COP 27 in November in Sharm el-Sheikh, Egypt. The report considers both the CCAC’s usual 30-year time horizon, as well as the African Union’s Agenda 2063, in its assessment. Khmosi said all measures are already being implemented in Africa.

They described some of the report’s key findings, which include that:

- if nothing is done to mitigate SLCPs in the region, there will be significant risks to public health and economic development;

- there is quantified evidence that tackling pollution and climate change in Africa will have environmental, social, economic, and health benefits; and
- while climate change in Africa is largely driven by global emissions, implementing measures in the region can significantly reduce local climate change impacts.

Kuylensstierna noted the report was well-received in its pre-release to African environment ministers, who urged further development and implementation of the 37 measures proposed in the assessment. He argued this shows a sense of ownership from regional stakeholders that will lead to political commitments across the African region.

Khmosi explained that most of the measures described in the assessment are already well-known, covering sectors like transport, energy, agriculture, and waste management. She cautioned that challenges remain in ensuring their implementation.

In considering how the stakeholder community will take the assessment forward, both noted that African countries will need the full support of the international community.

Policy and Planning Highlights from Countries: Pacífica F. Achieng Ogola, Ministry of Environment and Forestry, Kenya, indicated Kenya has been advancing work on SLCPs without an action plan, but that with the CCAC’s support, development of an action plan is underway and finalized is expected soon.

Jose Abraham Ortinez Alvarez, Instituto Nacional de Ecología y Cambio Climático, Mexico, explained his country began measuring and improving emissions inventories 20 years ago with the US EPA’s support. Now, with the CCAC’s support, inventories have been updated and used to inform the NDC.

Siwaporn Rungsiyanon, Director of Transboundary Air Pollution, Pollution Control Department, Thailand, mentioned her country has air quality management experience but historically did not link it to climate change. With CCAC support, she said Thailand expects to improve links between air quality and climate change and generate new data on SLCPs and other greenhouse gases (GHGs).

Panel Discussion on Implementation: Following presentations, Martina Otto, CCAC, moderated this panel discussion.



Kenza Khmosi, SAP

Shonali Pachauri, SAP, stressed that implementation work should also consider where benefits are being realized and who benefits most in order to ensure a just and equitable transition.

On realizing the Sustainable Development Goals (SDGs), Janine Kuriger, Head of the Global Programme Climate Change and Environment, Swiss Agency for Development and Cooperation, urged that work on SLCPs be integrated into both countries' NDCs and their work on SDGs. She gave the example of work being undertaken as a collaboration between Switzerland and other countries, including China, Mexico, and India, to implement programmes around clean air through knowledge building, good practices, and policy development.

Lawrence Mashungu, Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement, Zimbabwe, spoke about the importance of building a low-emissions development strategy across his country, and the challenges involved in bringing together different ministries to discuss integrated assessments of agriculture, water, and energy. He underlined the importance of livestock for both food security and livelihoods.

Concerning securing “win-win-win” strategies, Martial Bernoux, Food and Agriculture Organization of the UN (FAO), underlined the importance of inclusivity and of consulting as large a group of stakeholders as possible. He highlighted the UNFCCC COP 27 Presidency's upcoming Food and Agriculture for Sustainable Transformation initiative, which is the result of a multi-stakeholder consultation and includes youth, farmers, and the financial sector.

High-Level Plenary: Financing Fast Climate Action

Helen Mountford, President and CEO, ClimateWorks Foundation, opened this Thursday morning plenary by reminding participants that financing towards methane abatement constitutes less than 2% of total climate finance flows—“not yet enough” compared to what is needed.

In a keynote address, Rachel Kyte, Dean of the Fletcher School of Law and Diplomacy, Tufts University, stressed the importance of reducing SLCP emissions as a “fast decarbonization sprint while we run the deep decarbonization marathon.” She reminded participants that “peace is a



Rachel Kyte, Dean of the Fletcher School of Law and Diplomacy, Tufts University

precondition to meeting net zero,” noting the world must prepare for the reconstruction of Ukraine. She explained that current technology has made clear the ways in which methane leakage has been drastically underestimated in the oil and gas sector, and that this data should be used as leverage for “different conversations” with the industry regarding the integrity of their net zero pledges. She raised the question of how to support countries that have not yet signed onto the Global Methane Pledge, noting mid-size companies from developing countries have largely been abandoned by the financial and development community.

Warning that the concept of net zero is “at risk at the moment,” she criticized the disconnect between the USD 130 trillion under management from companies with net zero pledges and the comparatively low levels of development finance. She suggested “radical transparency” driven by SLCP data would be essential to reclaiming the integrity of net zero pledges. She called for multilateral development banks (MDBs) to take more risks to invest in partners that can pivot towards clean energy.

Marcelo Mena, Global Methane Hub, explained that “methane produced is energy lost.” He called for collaborative efforts to reduce emissions, for example, the need for better mitigation technologies in the agriculture sector.

Jennifer Sara, Global Director for the World Bank's Climate Change Global Practice, underlined the Bank's commitment to reducing methane emissions, as well as the need to engage in systemic efforts to reduce them. She highlighted the need to change regulations accordingly and help countries create their own win-win strategies, promoting resilience while reducing pollution and increasing local incomes. She pointed to a case study of a paddy rice and methane World Bank project with Viet Nam, the UK, and India as an example of the importance of understanding farmers' practices to promote resilience, reduce pollution, and increase incomes.

Mark Bowman, Vice President for Policy and Partnerships, European Bank for Reconstruction and Development (EBRD), said demonstrating the benefits of taking action is easy because methane emission reduction results are tangible. He explained that while, historically, EBRD has helped countries with gas, oil,



Jennifer Sara, Global Director for the World Bank's Climate Change Global Practice

and infrastructure programmes, it is now trying to broaden its approach and scope from energy to waste and agribusiness.

In the subsequent discussion, panelists spoke about the need to address fossil fuel subsidies, as well as the role of carbon pricing and carbon markets in potentially generating economic benefits from methane reductions in developing countries. Mena raised the point that projects to support operational expenditures, such as including methane inhibitors in cattle feed, could be more applicable globally than large projects currently funded by MDBs.

Securing and Leveraging Financing

Chandra Shekhar Sinha, World Bank, facilitated this session on Thursday.

Bella Tonkonogy, US Director, Climate Policy Initiative, highlighted that methane emission reductions are essential during this decade in order to achieve the 1.5°C goal. She indicated that methane abatement solutions are underfunded considering their climate change mitigation potential. She explained that less than 2% of climate finance targets methane, whereas the Paris Agreement goal is ten times as much. She outlined conditions needed for progress on methane finance: a strong enabling environment; incorporating methane emissions in the private sector's net zero goals; and measuring and reporting methane emissions.

Bala Bappa, Federal Ministry of Environment, Nigeria, said while Nigeria has policies to achieve the Paris Agreement targets, climate finance remains small. He identified the national budget, support from international donors, the NDC Partnership, and the private sector as financial sources for climate action in his country.

Kevin Massy, Head of Climate, Equinor, stressed the importance of avoiding methane emissions in the first place by using the best possible technology in project design. He highlighted that national regulations are a significant driver towards incorporating methane measures for the private sector.

Manfredi Caltagirone, International Methane Emissions Observatory, UNEP, stressed that building transparent systems is essential to build trust with the fossil fuel industry. He argued that, for fossil fuel transparency to be effective, it must focus on



Janine Kuriger, Swiss Agency for Development and Cooperation

reducing emissions, as well as show where mitigation action must focus in the short term.

Examples of Successful Financing Approaches in Other Sectors: One joint presentation focused on a climate-smart agriculture (CSA) project between Switzerland and Ghana involving internationally transferred mitigation outcomes (ITMOs).

Janine Kuriger, Swiss Agency for Development and Cooperation, explained that bilateral agreements between countries involving carbon markets according to Article 6.2 of the Paris Agreement (ITMOs) can enhance climate action and unlock early mitigation actions, thereby enabling countries to reach their net zero goals.

Peter Dery, Ministry of Environment, Ghana, described lessons learned from the project, including that: carbon trading can be used as an “entry point” to help people adapt to new technologies; and an established framework of methodologies for trading is essential before creating a carbon market.

Henry Kwabena Kokofu, Ghana EPA, outlined lessons learned from the CSA project, notably that

- using carbon trading as an entry point to enable adaptation to technology is possible;
- an established national regulatory framework must be in place before creating a carbon market; and
- established methodologies and standards, such as the Clean Development Mechanism, can be useful to developing the carbon market.

Jay Waldvogel, Senior Vice President, Dairy Farmers of America, discussed lessons learned from developing the Global Dairy Platform. He noted that while injecting additional funding into an established value chain can lead to rapid action, working with developing value chains is more difficult, because basic transportation and storage infrastructure often need to be built up first in areas like rice and livestock.

Speaking via video, Gonzalo Muñoz, High-Level Climate Champion for UNFCCC COP 25, mentioned the importance of addressing food waste in reducing emissions. He highlighted the importance of organic waste segregation at the source, which ensures it will eventually become raw materials for other



Manfredi Caltagirone, International Methane Emissions Observatory, UNEP



Gonzalo Muñoz, High-Level Climate Champion for UNFCCC COP 25, speaks via video.

processes. He welcomed the retail sector's proactive steps on waste management actions.

Panel Discussion and Reflections: Carolina Urmeneta, Circular Economy Program Director, Global Methane Hub, explained that the Hub is working to have more emissions reductions, MRV, and transparency policies to leverage finance in the energy, agriculture, and waste sectors.

Johan Kuylenstierna, SAP, mentioned that countries supported by CCAC are developing their national action plans and measures, as well as prioritizing measures for SLCP emission reductions. To finance those actions nationally, he suggested, countries should involve ministries of finance and those related to the emissions sources from the beginning. He pointed out that not all countries have the capacity to access the funds, so capacity building and technology transfer remain necessary.

Hilen Meirovich, Head of Climate Change, Inter-American Development Bank (IDB) Invest, explained that the tools to quantify specific methane emission reductions are often not in place but are under development. She noted that the Bank had sometimes seen some resistance from local businesses to engage with emission reductions, especially if national regulations or mandatory action plans to reduce emissions are absent.

Concluding the panel, Mountford reiterated the importance of awareness raising and capacity building for methane reduction opportunities across the scientific, economic, and social benefits. Many participants agreed on the need to bring more transparency into their numbers, and to continue to pressure MDBs towards ambitious work.

Technical Sessions

10 Years of Integrated Assessments – Lessons Learned and Good Practice: Nathan Borgford-Parnell, Science Affairs Coordinator, CCAC, opened this session on Tuesday by outlining its purpose: to assess the current impact of the CCAC's integrated assessments, and to provide a chance for discussion on next steps and future assessment projects.

Johan Kuylenstierna, SAP, provided an overview of the history of CCAC regional assessments, which have included Latin America, the Asia-Pacific region, and Africa. He said the assessments reveal that improving air quality can have positive

health impacts for regions, as well as mitigate climate impacts affecting regions.

Graciela Raga, SAP, discussed the Latin American Assessment, which proposed measures such as implementing more efficient mobility in cities, including: through bus rapid transit; implementing improved vehicle technology such as particle filters; and eliminating high-emission vehicles.

Tatsuya Hanaoka, SAP, National Institute for Environmental Studies, Japan, discussed the work of introducing a scoping study for the economic benefits of SLCP mitigation. He outlined the study's three subject areas: the cost of inaction; the role of early and drastic actions in making mitigation feasible; and avoiding overshoot pathways.

In the subsequent discussion, participants shared views on what they considered to be areas for improvement or further study in performing assessments. These included, among others: the importance of showing the integrated and multiple benefits of clean air; the need for social science assessments that consider behavioral change; including the co-benefits of sustainable development, justice, and equity; and how to break down the silos between air quality and climate change policy.

Scaling Up Soot Free Buses: Opening the session on Tuesday, Jim Blubaugh, US EPA, recalled that the CCAC Heavy-Duty Vehicles & Engines Hub aims to stop black carbon emissions through four components: cleaner fuel and vehicles; stationary sources; marine emissions; and green freight.

Francisco Posada, International Council on Clean Transportation, shared three case studies of soot-free solutions developed in Johannesburg (South Africa), São Paulo (Brazil), and Jakarta (Indonesia). He concluded that the CCAC's work on soot-free buses has informed cities' decision-making processes to adapt fleets, noting that policy, procurement, and contracting changes are needed to achieve net zero goals in the future.

Beatriz Cardenas, WRI, focused her intervention on the importance of building air quality impact indicators as key information for decision makers in order to support scaling up soot-free buses. She also shared details of the [Clean Air Catalyst](#)—a global partnership for accelerating clean air solutions in Indore (India), Jakarta (Indonesia), and Nairobi (Kenya)—the findings of which concluded that transportation is the main source of pollution in Indore and Jakarta.



Beatriz Cardenas, WRI

In discussions, some questions were raised regarding: the sensitivity analysis of battery-electric bus adoption; potential partners to support the transition; and how combining air quality indicators with tax developments could help clean fuel and vehicle implementation move forward.

National Planning on SLCPs: This session took place on Tuesday. Chris Malley, Stockholm Environment Institute (SEI), outlined the progress made by countries using the CCAC's National Planning for Action on SLCPs (SNAP) toolkit, noting: the inclusion of SLCPs in NDCs has almost doubled; an increasing number of countries are committing to actions with SLCP benefits; and full implementation of methane-focused mitigation measures could achieve the Global Methane Pledge goal of 30% emission reductions by 2030.

John Henry Melo, Ministry of Environment, Colombia, noted some of his country's recent milestones, including the creation of a black carbon inventory, as well as including a goal to reduce black carbon by 40% in Colombia's NDC. He highlighted continued challenges in replacing diesel vehicles in the government's fleet with electric vehicles and analyzing the gap between ambition and implementation.

After providing an overview of his country's SLCP plan, Bala Bappa, Ministry of Environment, Nigeria, noted the lack of capacity in its subnational workforce as an ongoing challenge.

Ismael Ajmal, Ministry of Environment, Maldives, discussed recent initiatives in reducing SLCPs, including reintroducing shared transportation mechanisms, such as buses, in city centers. He highlighted future ambitions to build a national roadmap for electric mobility.

Pablo Fernandez Marrero, Ministry of Environment, Uruguay, shared lessons learned from reassessing the national black carbon inventory, especially in the residential sector.

Stressing the severe impacts of air pollution on youth, Juan Castillo, Pan American Health Organization, discussed his organization's work to advance integrated regional planning on SLCPs, air quality, and health in the Central American Integration System.

Heavy-duty Vehicles and Engines - Aligning National Green Freight Programmes: Buddy Polovick, US EPA, moderated this session on Tuesday.



Ismael Ajmal, Ministry of Environment, Maldives

Fernanda Cabañas, Agency of Sustainable Energy (AgenciaSE), Chile, presented the "Giro limpio" programme, the goals of which include improving the freight transportation sector's energy efficiency, reducing cost, increasing competitiveness, and reducing GHG emissions and other local pollutants that affect people's health.

Samantha Pettigrew, International Council on Clean Transportation, presented the SmartDriver course, aimed at reducing fuel consumption and polluting emissions, and improving road safety through driving techniques to enhance driver performance.

The discussion addressed how to develop driving courses, how to take into account the socioeconomic realities of drivers, and possible incentives to apply lessons learned during the courses.

Closing the Air Quality Gap: On Wednesday, Michael Brauer, University of British Columbia and SAP, presented the [2021 World Health Organization Global Air Quality Guidelines](#). He stressed that air quality management measures on their own are insufficient to achieve climate goals, but that accelerating climate action can address air quality challenges.

Luis Carlos Belalcazar, National University of Colombia, Bogotá, and SAP, discussed the growing impact of the Amazon's wildfires in South America. He explained that air pollution produced in remote Amazonian areas impact air quality and health in many northern South American cities.

Pallavi Pant, Health Effects Institute, presented the Global Burden of Disease from Major Air Pollution Sources, a global comparative risk assessment on air pollution and its risks. She noted major sources of fine inhalable particulate material vary substantially by country and region.

Kaspar R. Daellenbach, Paul Scherrer Institute, said particle air pollution causes nearly nine million premature deaths per year globally. He presented two ongoing large-scale projects on air quality: Clean Air project India and Clean Air project China.

Gary Kleiman, Orbis Air LLC, presented a brief review of political instruments addressing air pollution, including from UNEP, C40 Cities, the US Agency for International Development, and the World Bank. He concluded that implementing air quality, climate, and health regulations can jointly harness win-win opportunities.



Shonali Pachauri, CCAC Scientific Advisory Panel, moderates the technical session on 'Closing the Air Quality Gap.'

Participants discussed, among others: the potential necessity of a nitrous oxide assessment; the origin of the concept of black carbon and how it has been used; which pollutant source is more important; and how to use the collected pollution information to take action.

Tools for Measurement and Estimation of Agricultural Emissions: On Wednesday, participants in this session heard from a variety of presenters on tools and new projects for agricultural emissions, particularly livestock and rice.

Martial Bernoux, UN FAO, presented an overview of reporting mechanisms and requirements under the UNFCCC. He noted regional capacity for reporting agricultural emissions remains unequal, with the Asia-Pacific and Africa “lagging behind” in their reporting capacity.

Bernoux also spoke to the new generation of GHG accounting tools, including those which can: run different methodologies from the Intergovernmental Panel on Climate Change; run in complex dimensions compatible with country levels; and support countries in planning and achieving their climate commitments.

Jason Tauzel, Environmental Defense Fund, presented the [MethaneSAT](#) tool, a satellite-based platform to provide quantitative data on methane emissions from agriculture. He explained the tool will complement available satellite tools by providing mid-scale area mapping.

Nick Elger, US EPA, provided an overview of the GMI’s Biogas Toolkit, which helps to plan or implement biogas projects and to quantify economic and environmental impacts.

Ole Sander, International Rice Research Institute, outlined the tools available from his institute to measure rice emissions: SECTOR, a GHG calculator for rice production; CF-RICE, a carbon footprint calculator for rice value chains; and MapAWD, which assesses the suitability of alternate wetting and drying practices.

Joanne Hall, University of Maryland, outlined the challenges in measuring emissions from crop residue burning, notably small fires and fields, and managed landscapes. She presented the upcoming Global Cropland Area Burned Product tool, which aims to resolve these issues.



John Tauzel, Environmental Defense Fund, presents on MethaneSAT - Data to action for agriculture.



Jack Okamuro, US Department of Agriculture

Karen Smyth and Gareth Salmon, Livestock Data for Decisions, stressed that, while many tools for measuring emissions exist, high-quality input data are essential.

Best Practices in Scaling Mitigation from Paddy Rice: Jack Okamuro, US Department of Agriculture (USDA), opened the session on Wednesday by noting rice’s role as an important staple food crop but also a significant source of anthropogenic methane.

Nghia Tran, Viet Nam, presented on Viet Nam’s roadmap to reduce methane emissions, which includes a sectoral mitigation target of 130 megatonnes of CO₂ equivalent of methane by 2050, and focuses on efficient irrigation infrastructure and converting cultivation for more effective use of rice land.

Michele Reba, USDA, discussed efforts to integrate alternate wetting and drying in rice cultivation in the United States. She pointed out the challenge of balancing production needs with reducing methane and stressed the need to look at the problem from a systems level.

A spokesperson from AgResults discussed the lessons learned from trialing best practices via a “pay-for-results” competition in Viet Nam, which set up a prize based on technology packages distributed to farmers. He reported that the competition helped increase the visibility of sustainable technologies such as improved seed varieties or water management, but challenges remained in setting reduction targets in advance.

Shailendra Mishra, Olam Agri, discussed alternative wetting and drying rice cultivation trials conducted by Olam in Thailand and India, noting the practice encouraged root growth and led to a reduction in methane emissions.

Katie Nelson, International Rice Research Institute, discussed a project aimed at incentivizing low-emission practices through a voluntary carbon market. She explained that the project measured methane reductions and applied established carbon credit methodologies from the Kyoto Protocol’s Clean Development Mechanism.

Climate and Clean Air Solutions and Guidance for Private Sector Engagement: This session took place on Wednesday. Marcelo Mena, Global Methane Hub, highlighted that a net zero world must also include zero air pollution. He stated that

methane reductions will contribute to air pollution reductions and thus must be a priority.

Andreas Ahrens, IKEA Group, recalled that IKEA launched a practical guide for clean air at home for customers and, with SEI and CCAC, has developed standards for companies to measure outdoor air pollution and the impact of their actions.

Addressing the forum virtually, Elini Michalopoulou, SEI, presented the Air Pollution Emission Inventory Guide for Business, developed to fill a void in measuring air pollution in the private sector.

A discussion panel with speakers from the US State Department, the European Commission, the Clean Air Fund, IKEA, and Siemens exchanged views on: the importance of involving the private sector in air pollution, climate change, and health solutions; the importance of cross-sectoral approaches; and the need for visionary leadership.

Solid Waste Management - Policies to Incentivize Solutions and Finance for Implementation: This session took place on Thursday Speaking via video, Albert Magalang, Department of Environment and Natural Resources, the Philippines, discussed his country's framework for sorting and processing solid wastes. He detailed its incentives schemes for minimizing waste, which include fiscal and non-fiscal incentives, such as financial assistance and grants.

Brooks Shaffe, Center for Clean Air Policy, presented a case study of the Nationally Appropriate Mitigation Action project which took place in Peru. They detailed some of the barriers involved in developing methane reduction projects, including that a lack of technical knowledge and expertise on methane reduction technologies can slow down municipal developments.

Magda Correal, IDB, presented case studies in Colombia and the Dominican Republic on integrating the management sector in public-private partnerships and using tariffs to incentivize recycling.

Anja Schetje, German Agency for International Cooperation, and Åsa Bergéus Rensvik, Swedish Environmental Protection Agency, presented shared lessons from waste management in Germany and Sweden, respectively. They noted the importance

of establishing a robust financing system to ensure methane mitigation services function effectively.

Giulia Ceccarelli, World Biogas Association, emphasized that national governments can contribute significantly to ensure a market exists for recuperated biogas.

Wastewater: This session covered the use and recuperation of wastewater methane to produce energy in a variety of settings, from industrial outfits in developed countries to projects in developing nations.

Anne Braghetta, Stantec, discussed what her consultancy firm identified as opportunities available to municipalities for capturing methane from wastewater, noting a "sludge to energy" approach can reduce emissions, generate energy, produce economic benefits, and help manage waste streams.

Michael McWhirter, Stantec, compared an anaerobic digester setup in the United States with a smaller case study in Kenya, noting the potential for converting waste to energy is high in both contexts.

José Velasquez, Advanced Engineering and Environmental Services (AE2S), presented the results of feasibility studies for producing electricity through biogas in Kazakhstan. He explained that many opportunities are available in Kazakh cities but that the treatments to produce solid products that can be turned into energy are not cost-effective at this time.

Rogelio Verduzco, Tetra Tech, said while the cost-effectiveness of methane capturing is a barrier to developing the market for it at scale, public-private partnerships can help secure financing while aligning with the principles of a circular economy.

Implementing & Financing National Climate and Clean Air Planning: On Thursday, Ange-Benjamin Brida, Ministry of Environment and Sustainable Development, Côte d'Ivoire, explained his country's NDC includes a commitment to reduce up to 58% of black carbon, 30% of methane, and 20% of HFC emissions by 2030.

Bala Bappa, Federal Ministry of Environment, Nigeria, shared his country's experience in implementing its NDC, which includes SCLP and mitigation measures across many sectors.



Albert Magalang, Department of Environment and Natural Resources, the Philippines



Ange-Benjamin Brida, Ministry of Environment and Sustainable Development, Côte d'Ivoire

He welcomed the support received from the UN Development Programme in this regard.

José Abraham Ortíz Alvarez, Instituto Nacional de Ecología y Cambio Climático, Mexico, explained that his country began the integrated implementation of SLCP and climate change strategies in 2019. He highlighted the importance of having air quality, climate change, and SLCP integrated inventories.

Mouna Benbarek, Ministry of Energy Transition and Sustainable Development, Morocco, indicated that her country’s NDC commits to reducing GHG emissions by 45.5% by 2030. The measures proposed intended to reduce SLCPs, GHGs, and atmospheric pollutants across transport, agriculture, industrial, waste, energy, and other sectors.

Jose Andreu, World Bank, presented an overview of the Climate Emissions Reduction Facility Trust Fund, which provides climate finance in three pillars: natural climate solutions, sustainable infrastructure solutions, and green fiscal and financial solutions.

Aligning Agriculture with Net-Zero Action Plans: On Thursday, Charlotte Morton, World Biogas Association, presented two case studies on biogas implementation to generate electricity: one in Denmark, which used animal manure and other agricultural by-products; and another in Brazil, using manures from large-scale pig production.

Tim Searchinger, WRI, recalled that the world will need to produce 45% more food per hectare, so increasing feed conversion efficiency is essential. He spoke against the broad expansion of biogas production, arguing that digesters are extremely expensive, can leak, and require an extensive land footprint.

Jay Waldvogel, Dairy Farmers of America, explained his organization’s pathway to “dairy net zero,” which aims to systematically enhance climate action in global dairy systems.

Bill Hohenstein, USDA, shared a number of the USDA’s climate-smart commodities projects on rice, dairy, and soil carbon sequestration.

Thiv Sophearith, Ministry of Environment, Cambodia, presented his country’s 2021 Long-Term Strategy for Carbon Neutrality, which outlines the vision of a carbon-neutral economy by 2050. He said major reductions can be achieved by reducing methane-intensive rice and livestock production, promoting composting, and producing biogas.

Upcoming Meetings

Pre-COP 27: This preparatory meeting ahead of the annual UN Climate Change Conference provides countries with an informal setting to discuss and exchange views on key political aspects of the negotiations. **dates:** 3-5 October 2022 **location:** Kinshasa, Democratic Republic of Congo **www:** www.drcprecop27.medd.gouv.cd/en/

Chatham House Climate Change Conference: Chatham House will convene its annual meeting one month ahead of COP 27 on the theme “Delivering a climate resilient future.” **dates:** 4-5 October 2022 **location:** London, England, UK and online

www: www.chathamhouse.org/events/all/conference/climate-change-2022

34th Meeting of the Parties to the Montreal Protocol: MOP 34 will be preceded by two associated meetings: Bureau of the Thirty-Third Meeting of the Parties, and the sixty-ninth meeting of the Implementation Committee (ImpCom69). **dates:** 31 October - 4 November 2022 **location:** Montreal, Canada **www:** www.ozone.unep.org/meetings/thirty-fourth-meeting-parties

UN Climate Change Conference (COP 27): The annual UN Climate Change Conference seeks to accelerate global climate action through emissions reduction, scaled-up adaptation efforts and enhanced flows of appropriate finance. **dates:** 6-18 November 2022 **location:** Sharm El-Sheikh, Egypt **www:** www.cop27.eg

Climate and Clean Air Ministerial: The CCAC Ministerial will meet on the sidelines of COP 27. **date:** 15 November 2022. **location:** Sharm El-Sheikh, Egypt **www:** www.ccacoalition.org/en/events

Glossary

CCAC	Climate and Clean Air Coalition
CO2	Carbon dioxide
COP	Conference of the Parties
CSA	Climate-smart agriculture
EBRD	European Bank for Reconstruction and Development
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organization of the UN
GHG	Greenhouse gas
GMI	Global Methane Initiative
HFC	Hydrofluorocarbons
IDB	Inter-American Development Bank
MDB	Multilateral development bank
MRV	Measurement, reporting, and verification
NDC	Nationally Determined Contribution
SAP	Scientific Advisory Panel
SDGs	Sustainable Development Goals
SLCPs	Short-lived climate pollutants
SEI	Stockholm Environment Institute
UNEP	UN Environment Programme
UNFCCC	UN Framework Convention on Climate Change
USDA	US Department of Agriculture
WRI	World Resources Institute