

SUMMARY OF THE CLIMATE AND CLEAN AIR COALITION TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS (CCAC) 20TH WORKING GROUP MEETING AND SCIENCE-POLICY DIALOGUE: 25-27 APRIL 2017

Organized by the Ministry of Environment of Chile and the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC), the 20th meeting of the CCAC Working Group took place from 26-27 April 2017 at the Crowne Plaza Hotel Santiago, in Santiago de Chile, Chile. 120 participants from Partner States, international organizations and civil society attended the meeting. The meeting was preceded by a Science-Policy Dialogue, held on 25 April. Site visits took place on 28 April.

The main objectives of the Working Group included: setting priorities for 2017 and 2018 to ramp up efforts to reduce short-lived climate pollutants (SLCPs), especially black carbon; planning for the 2017 High Level Assembly (HLA); following up on previous HLA commitments; deciding on future funding for initiatives; and showcasing and inspiring action to access financing for projects and the CCAC Trust Fund. The Working Group was structured around keynote presentations, panel discussions, breakout groups, and plenary discussions.

The goals of the dialogue included: sharing the latest scientific knowledge on SLCPs; identifying areas where the scientific community can support CCAC partners in implementing recommendations and commitments on methane, black carbon and hydrofluorocarbons (HFCs); and identifying knowledge gaps and needs for integrating SLCP actions into science-based robust policymaking. The dialogue was structured around panel sessions and breakout groups.

On 28 April, participants visited various sites including: a landfill gas project; a vehicle certification and control center; a waste water treatment plant; Chile's national air quality analysis center; and a rural area with a heat stoves replacement programme. Web coverage of selected site visits can be found on the IISD RS website: <http://enb.iisd.org/climate/ccac/wgspd20/28apr.html>. This report contains a summary of the science-policy dialogue followed by a summary of the working group meeting.

A BRIEF HISTORY OF THE CCAC

The CCAC is a voluntary international coalition of governments, international organizations, the private sector and non-governmental organizations that aims to: reduce emissions of SLCPs; 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 UN Environment. It is open to countries and non-state actors, and currently has 113 Partners consisting of 52 country Partners and 62 non-state Partners.

SLCPs include black carbon, methane (precursor to tropospheric ozone) and HFCs. These pollutants have a near-term warming influence on the climate, and, in many cases, are also harmful air pollutants that affect human health, agriculture and ecosystems. The CCAC's objectives include raising awareness of the impacts and transformative mitigation strategies of SLCPs. It also seeks to: enhance and develop new national and regional actions; promote best practices and showcase successful efforts; and improve scientific understanding of SLCP impacts and mitigation strategies.

INITIATIVES: The CCAC works on 11 initiatives, of which seven are sectoral and four cross-cutting. Its seven sectoral initiatives include:

- Agriculture;
- Bricks (mitigating SLCPs and other pollutants from brick production);
- Diesel (reducing black carbon emissions from heavy-duty diesel vehicles and engines);

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- HFCs (promoting HFC-alternative technology and standards);
- Household energy (reducing SLCPs from household cooking and domestic heating);
- Oil and Gas (accelerating methane and black carbon reductions from oil and natural gas production); and
- Waste (mitigating SLCPs from municipal solid waste (MSW));

The CCAC has four cross-cutting initiatives on: financing mitigation of SLCPs; regional assessments; supporting national action planning on SLCPs (SNAP); and health.

GOVERNANCE STRUCTURE: The CCAC governance structure includes the HLA, the Working Group, the Steering Committee, the Scientific Advisory Panel (SAP) and the Secretariat.

The HLA consists of ministers of state Partners and heads of non-state Partners, and meets at least once a year to provide strategic guidance and leadership to the CCAC, including setting policy, taking stock of progress and initiating future efforts. The Working Group includes focal points from each CCAC Partner, and convenes at least twice a year to oversee activities.

The Steering Committee composed of the two CCAC Co-Chairs and up to six state partners, two representatives of international organizations and two NGO representatives. The Steering Committee meets monthly to provide oversight support and recommendations to the HLA and the Working Group. The SAP consists of 15 scientists, including, ex-officio, the UN Environment Chief Scientist. The CCAC Secretariat is hosted by UN Environment in its Economy Division in Paris, France.

RECENT MEETINGS: The 8th HLA convened in Marrakech, Morocco, on Monday, 14 November 2016, in parallel with the 22nd session of the Conference of the Parties (COP 22) to the UN Framework Convention on Climate Change (UNFCCC). The Assembly addressed the implementation of the Paris Agreement, seeking to take advantage of the growing momentum to reduce SLCPs, proposing specific action on methane in the oil and gas sector, and on black carbon in the transport sector, as well as by the development national black carbon inventories.

REPORT OF THE CCAC SCIENCE-POLICY DIALOGUE 2017

OPENING

On Tuesday morning, 25 April, Drew Shindell, Duke University and SAP Chair, opened the CCAC Science-Policy Dialogue. Laura Gallardo, Center for Climate and Resilience Research, Chile, stressed the need for better communication by scientists and policymakers. Gallardo emphasized the need for mutual respect and communication between these communities and the importance of learning in the process. She underlined Chile's progress, noting that the Minister of Environment is a scientist and highlighting the creation of a new Ministry of Research. She underlined the importance of promoting local capacities and strengths.



Drew Shindell, SAP Chair

SHORT-LIVED CLIMATE POLLUTANTS SCIENCE AND POLICY RELEVANCE

This session summarized the latest scientific research on SLCPs based on the content of the 2017 CCAC-SAP Annual Science Update and the 45th session of the Intergovernmental Panel on Climate Change (IPCC 45).

Marcelo Mena Carrasco moderated the session. He underscored the importance of integrated climate and air pollution policy, highlighting black carbon emissions from biomass and diesel use in Chile. He said focusing on short-term pollutants provides tangible benefits to countries, as well as climate co-benefits. He outlined policy measures in Chile to reduce wood burning in homes and to promote clean cars such as clean vehicle exemption from traffic restrictions. Mena Carrasco emphasized the importance of public perception.

Markus Amann, International Institute for Applied Systems Analysis (IIASA), and SAP member, presented a meta-analysis of relevant literature on SLCPs. On methane, he underscored a steady increase in emissions, as well as evidence that methane's global warming potential may be up to 25% higher than previously thought.

On black carbon, Amann said expected declines by the end of the century can be greatly accelerated through policy intervention. He hoped the Kigali Amendment to the Montreal Protocol would help curb the dramatic increase in F gas emissions. He stressed that SLCP emissions from oil, gas and agriculture are underestimated, and outlined mitigation technologies for methane and black carbon.

Shardul Agrawala, Organisation for Economic Co-operation and Development (OECD) and SAP member, highlighted the economic consequences of outdoor air pollution, summarizing an OECD assessment that projects the global and regional impacts up to 2060. He said non-market impacts are 10 times greater than market impacts. Agrawala underscored that premature deaths, a non-market impact, are projected to rise from 3 million globally in 2010 to 6-9 million in 2060.



(L-R): **Marcelo Mena Carrasco**, Minister of the Environment, Chile; **Shardul Agrawala**, SAP; **Iris Adriana Jimenez Castillo**, INECC, Mexico, and **Markus Amann**, IIASA

Iris Jimenez Castillo presented on the IPCC 45 meeting held in Guadalajara, Mexico in March 2017. She noted a proposal by Mexico, Kenya and Chile for the IPCC to consider an expert meeting on short-lived climate forcers (SLCFs). She highlighted countries' interest in addressing SLCPs, noting that at least 31 nationally determined contributions (NDCs) include SLCPs.

In the ensuing discussion, participants raised issues including the economic costs of air pollution, the consideration of black carbon by the IPCC, and the participation of scientists from Latin America in the IPCC.

SCIENCE MEETING POLICY NEEDS – OUTCOMES OF THE SAP EXPERT WORKSHOP ON METRICS AND INVENTORIES

This session was divided into two parts. In the first part, panelists addressed each of the five recommendations from the Expert Workshop on Metrics for Evaluating and Reporting on Methane and Black Carbon that took place in March 2017, including metrics for near-term climate, health, agriculture and economics, and valuations, as well as the CCAC's role in developing black carbon inventories. In the second part, the panel addressed opportunities, barriers, and science or policy gaps to put those recommendations into practice.

The first panel was moderated by Fernando Farias, Ministry of the Environment, Chile. Johan Kuylenstierna, Stockholm Environment Institute (SEI) and SAP member, reported on the SAP workshop, including the following recommendations: substances should be reported as individual species in emissions inventories; absolute global temperature change potential (AGTP) and yield loss are useful metrics for agriculture; premature mortality metrics should follow World Health Organization (WHO) methods; and direct and indirect costs should be assessed.

Drew Shindell presented a new scientific paper supporting the use of mean AGTP as a metric for reducing SLCPs enough to slow warming by 0.5°C over the next 25 years. He stressed the advantage of this metric for measuring progress and incentivizing early action, giving the example of Mexico's methane emissions reduction.

Carlos Dora stressed the importance of health impact assessment methods in order to support actions that prevent SLCPs. He also highlighted the need for policy scenarios to give people an image of what they would gain with policy changes.

Harry Clark, New Zealand Agricultural GHG Research Center, and SAP Member, highlighted, among other things: SLCP effects on agriculture; the metrics for emissions and responses;



(L-R): **Fernando Farias**, Ministry of Environment, Chile; **Drew Shindell**, SAP Chair; **Johan Kuylenstierna**, SAP; **Carlos Dora**, WHO; **Tami Bond**, University of Illinois, US, and **Harry Clark**, SAP



(L-R): **Julie Cerqueira**, US State Department; **Drew Shindell**, SAP Chair; **Andrés Pica**, Ministry of Environment, Chile; **Vigdis Vestreng**, Norway Environment Agency; **Moses Jura**, Ministry of Environment and Natural Resources, Kenya; **Tami Bond**, University of Illinois, US; and **Johan Kuylenstierna**, SAP

knowledge gaps in metrics for ozone; impacts on soil carbon; responses to aerosols and black carbon; and interactions between SLCPs.

Gary Kleiman, World Bank, spoke on the valuation of impacts, highlighting that: valuation of impacts requires methodologies that consider the full causal chain, from emissions to impacts; imperfect social cost metrics can be developed by the CCAC as a basis for establishing financeable projects; and the CCAC should conduct a market assessment to identify which attributes for these metrics are desired by participants or donors.

Tami Bond, University of Illinois, provided a reality check for measurements and inventories, stressing that: inventories must be seen as an ongoing management tool; inventories are a tool to communicate between different systems and people; most measurements are difficult and “difficulties are a science lesson” and should be shared; and building capacity is essential.

The second panel was moderated by Julie Cerqueira, US State Department. Drew Shindell underscored the concept of the “Pathways to the Target” approach, noting that climate change needs to be reduced in the short term as well as in the long term. Shindell emphasized that long-term climate targets do not provide incentives for action on SLCPs. He proposed an additional goal of slowing climate change by half in the next 25 years. On metrics, Shindell highlighted mean AGTP as the most practical to use.

Vigdis Vestreng, Norway Environment Agency, presented on inventories and metrics as a basis for policymaking. She explained the process for the preparation of the Norwegian emission inventory, underscoring the need for internationally agreed methodologies and definitions for black carbon. Vestreng said the cost of measures to reduce SLCPs is greatly reduced when health considerations are taken into account.

Andrés Pica, Ministry of Environment, Chile, underscored green taxes in his country, including a carbon tax on electricity generation and pollution taxes on cars and electricity generation. Pica outlined a sustainable heating programme to address wood burning emissions, highlighting actions such as environmental education, stove technology, insulation and clean fuels.

Moses Jura, Ministry of Environment and Natural Resources, Kenya, outlined his country’s Climate Change Act, noting it had been developed with participation of all stakeholders. He underscored the MRV+ system that combines the Measuring,

Reporting and Verification (MRV) of greenhouse gas (GHG) mitigation activities with the Monitoring and Evaluation of adaptation activities.

Presentations were followed by a discussion with participants. Among others, participants raised issues including: best way to address ozone precursors in near-term frameworks; inclusion of existing measures in NDCs; best ways to work with cities on SLCPs; whether to consider separate reporting systems for SLCPs; methodologies; and financial incentives for technology transfer. Participants also discussed metrics, including the use of GTP, GWP and aggregate metrics for short- and long-lived climate pollutants, as well as inclusion of regional aspects.

BREAKOUT GROUPS

Participants divided in five breakout groups focusing on: the Pathways to the Target approach; integration with the IPCC and Sustainable Development Goals (SDGs); linking with national development plans and NDCs; economic valuations and financing; and metrics for Francophone partners. The groups then reported to plenary in a session moderated by Graciela Binimelis de Raga, National Autonomous University of Mexico (UNAM) and member of SAP.

On the Pathways to the Target approach, the group noted that countries have different priorities, such as climate change or air pollution. Pathway approaches were emphasized as a tool for optimizing air pollution and climate policies and avoid win-lose situations. The group stressed having a pilot to inform the 2017 HLA, as well as identifying opportunities to pull already existing data, such as the UNFCCC’s methane reporting data.



Participants during the breakout group on the Pathways to the Target approach



Participants during the breakout group on better coordinating and integrating with the IPCC and SDGs processes

On better coordinating and integrating with the IPCC and SDGs processes, the group defined the challenge of considering both long- and short-term goals in those processes. Noting IPCC governance, the group said inclusion of other climate forcers in the IPCC Guidelines is likely to take time. The need to seek avenues other than the IPCC was stressed, including, for instance, the clean air scientific community and processes with already developed methodologies and protocols on black carbon and aerosols. The group proposed that SAP should work on creating a repository of available methodologies, guidelines and institutions working on those topics.

On linking the recommendations of the SAP workshop to countries' NDCs and development plans, the group noted that many countries already integrate SLCPs in NDCs, including for sector-specific actions such as cookstoves and agriculture. The group suggested it would be useful to provide guidance to countries preparing NDCs on how to integrate SLCP and GHG contributions in a coherent manner. The group emphasized the importance of social co-benefits, and the need to systematically

assess those co-benefits. The group stressed that NDCs provide a multi-level approach opportunity to address persistent implementation gaps and look at packages of changes.

On next steps for SLCP economic valuations and financing, the group provided recommendations on health, agriculture, ecosystems and socio-economic impacts. On health, the group highlighted the need for quantification and valuation of additional health end-points, including premature mortality, from market and non-market perspectives. On agriculture, the group suggested expanding valuation beyond crop measurement and including trade and substitution considerations. The group stressed the need to value critical ecosystem impacts, and to measure distributional effects at the geographic and socioeconomic levels.

The Francophone group on metrics highlighted the difficulties in evaluating black carbon. The group emphasized the need for capacity building to help include SLCPs in national policies. The group underscored the creation of South-South networks.



Participants during the breakout group on metrics for Francophone partners



(L-R): Johan Kuylenstierna, SAP; Graciela Binimelis de Raga, SAP; Eric Zusman, IGES; Leslie Cordes, GACC; and Henning Steinfeld, FAO

SHOWCASING METHODOLOGIES OR TOOLS FROM COALITION INITIATIVES THAT WILL CONTRIBUTE TO THE INVENTORY

Graciela Binimelis de Raga opened the panel session on measurements, emissions factors, policy guidance or other relevant tools developed from Coalition initiatives that will contribute to methodologies and inventories on SLCPs.

Johan Kuylenstierna presented an interactive demonstration of the Long-Range Energy Alternatives Planning (LEAP) – Integrated Benefits Calculator (IBC) tool. He explained that the LEAP-IBC tool allows the development of emissions scenarios using activity data and emissions factors. Kuylenstierna showed how the LEAP-IBC tool first calculates emission inventories, then uses these emissions to estimate the atmospheric concentrations of some SLCPs, and finally calculates the impacts on human health, vegetation and climate.

Leslie Cordes, GACC, presented three tools for helping policymakers advance the clean cooking sector: the Household Air Pollution Intervention Tool (HAPIT) that allows the estimation of health benefits of household energy interventions; the Clean Cooking Catalogue, a global database of cookstoves; and the Fuel Analysis, Comparison, and Integration Tool (FACIT), developed to measure the full life-cycle costs of fuel use. She stressed that these tools provide a better understanding of policy options and that they are not limited to policymakers but can also inform the work of practitioners.

Eric Zusman, IGES, presented the Emissions Quantification Tool (EQT) for the municipal solid waste (MSW) sector. The EQT applies the life cycle assessment approach and takes into the account emissions and savings of both GHGs and SLCPs. He stressed that the EQT is simple to use and gave the example of Rayong, a municipality in Thailand, where the tool has been implemented since 2015 through a capacity building programme.

Henning Steinfeld, FAO, presented the Global Livestock Environmental Assessment Model (GLEAM), a spatially explicit model developed by FAO to improve understanding of livestock production and its use of natural resources, and support policymaking processes. He gave three examples of the model's application: the spatial distribution of dairy cattle in Ethiopia; calculation of methane from enteric fermentation worldwide; and impact assessment of enteric methane emissions intensity of beef production.

In the ensuing discussion, participants raised issues relating to: the actual use of the LEAP-IBC tool by policymakers; limited acceptance of cookstoves by consumers in some regions and

countries; and the limits of calculating emissions from animals without considering the living environment beyond the supply chain, especially the action of bacteria.

FOLLOW-UP ACTION AND CLOSING

Drew Shindell emphasized test-driving scenarios on the Pathways to the Target approach. He said one way to bring information into the international arena is to specifically talk about SDGs, including the non-climate SDGs. Johan Kuylenstierna highlighted assessing data quality, for example on emission factors. Graciela Binimelis de Raga reiterated her enthusiasm to work for SAP. Noting lack of consensus on metrics, Markus Amann emphasized the need for agreed metrics to establish targets and quantify success. Shonali Pachauri, IIASA, underscored the need to consider impacts and distributional effects at the aggregate macro-level. Shardul Agrawala, said economic assessments should be multipronged and take a deeper dive into morbidity impacts. He stressed that economics and financing should be addressed separately.

Rita Cerutti, Canada and CCAC Co-Chair underscored that good science is needed for good policy, emphasizing the importance of the SAP's work. She closed the dialogue at 6:07pm.

REPORT OF THE CCAC 20TH WORKING GROUP MEETING

OPENING SESSION

On Wednesday morning, 26 April, Marcelo Mena Carrasco, Minister of Environment, Chile, and CCAC Co-Chair, opened the 20th meeting of the CCAC working group. He said climate



Marcelo Mena Carrasco, Minister of Environment, Chile, and CCAC Co-Chair

change has strong impacts in many sectors in Chile and that the CCAC is particularly important for developing countries. He stressed that the CCAC is a platform that can connect people and organizations that usually work in silos. He highlighted the CCAC's work with the IPCC and OECD.

Mena Carrasco stressed the importance of economic incentives for reducing



Participants during plenary

emissions, giving the example of the success in reducing NO_x emissions in Chile. He announced a new differentiated system for cars in Chile, based on a new performance standard.

Rita Cerutti, Canada and CCAC Co-Chair, welcomed new Partners Costa-Rica and the Asian Development Bank, as well as three new observers.

REPORT FROM SCIENCE-POLICY DIALOGUE AND POLICY ACTION TO ADVANCE SLCP REDUCTIONS

Drew Shindell, Duke University and SAP Chair, presented the last scientific updates on methane and black carbon, and reported from the Science-Policy Dialogue. He outlined the preliminary actions for the SAP following the dialogue: use and further development of current metrics and their follow-ups; a 'road test' to propose near-term metrics with countries that can provide emissions data; further analysis of the links between SLCPs and the SDGs; and briefing on distributional impacts and co-benefits of SLCP measures.

Shindell highlighted the preliminary action items to be discussed by the working group, including: options for a body serving as a clearing house for black carbon inventories, metrics and emissions factors; establishment of a task team to explore the Pathways to the Target approach; and analysis of the links between SLCPs and NDCs.

On metrics, Norway highlighted net effects that include warming and cooling components. She highlighted the lack of international definitions of black carbon. Finland stressed regional metrics. The International Union of Air Pollution Prevention and Environmental Protection Associations (IUAPPA) proposed separating tropospheric ozone from other SLCPs given its non-linear properties. Noting that fugitive methane emissions are not the same as enteric emissions because the first are unwanted accidental emissions and the second are the necessary byproduct of a societal good, the Global Research Alliance on Agricultural Greenhouse Gases (GRA), supported by Australia, urged thorough consideration, cautioning that metrics could have unintended perverse outcomes on food security. The Institute for Global Environmental Strategies (IGES) stressed the linkages with metrics for waste management and agriculture.

The US, Norway, IGES and others emphasized pilot testing GTP metrics. The Philippines said pilot testing should include other countries participating in the supporting national action planning on SLCPs (SNAP) initiative and consider the use of metrics in less than ideal conditions. Drew Shindell noted that GWP is the default metric in the UNFCCC but is not part of the agreement. He said consideration of Pathways to the Target approach can be done separately from agreement on a new near-term metric.

Sweden emphasized synergies with the Arctic Council's work on black carbon and methane. With Finland, he proposed that the Arctic could be used for testing metrics, noting that black carbon has a large impact in the region.

Colombia defined SDGs as permeating all other agendas. Chile underscored SLCPs as a bridge between the SDG and climate agendas. The WHO noted the role of SLCPs in SDG indicators, particularly for cities, health and energy. Underscoring the importance of integrating SLCPs in NDCs, Morocco emphasized the NDC Partnership launched in Marrakech.

On inventories, Norway stressed the role of robust national institutional and data exchange systems. The US said inventories need an institutional home, and proposed the Convention on Long-Range Transboundary Air Pollution (LRTAP). She urged balancing the need for inventories using robust methodologies (Tier 2) with the need for inventories even if using simpler methodologies (Tier 1). Colombia and Chad emphasized capacity building and technical capacity. The US suggested that the LRTAP could hold workshops for non-LRTAP countries. Markus Amann noted that LRTAP can only cover countries that are members of the UN Economic Commission for Europe (UNECE). The Institute for Governance & Sustainable Development (IGSD), IGES and GRA said they would like to be part of the policy task team. Bangladesh and Chile underscored the co-benefits of addressing SLCPs.

Uruguay noted its work to include black carbon in residential sector inventories. Costa Rica highlighted the country's focus on reducing SLCPs from diesel use and MSW. UN Environment highlighted the inclusion of SLCPs in the Emissions Gap report. The working group adopted the proposed next steps on metrics and inventory development.



Hayden Montgomery, GRA, and, Valentin Foltescu, UN Environment



(L-R): Graciela Binimelis, UNAM; Shonali Pachauri, IIASA; and Alan Silayan, the Philippines

INCREASING POLICY ACTIONS TO REDUCE BLACK CARBON & OTHER SHORT-LIVED CLIMATE POLLUTANTS AND TO LEVERAGE FINANCE AT SCALE

Alan Silayan, the Philippines, moderated the session. Juan Ladron De Guevara, Sustainability and Climate Change Agency, Chile, described the agency's main mission as facilitating technology adoption for small and medium enterprises and territories through dialogue, technical and financial support, and road map design and implementation. Regarding SLCP actions, he gave the examples of his country's emission reductions in, among others swine production, wood heating, and small metallurgy and smelter plants.

Iris Jimenez Castillo, National Institute of Ecology and Climate Change (INECC), Mexico, highlighted the inclusion of black carbon in her country's NDC. She outlined that the main reason for this inclusion was the co-benefits in terms of climate and air pollution action. She also highlighted the proposition of Mexico, Chile and Kenya at the last IPCC meeting, recommending work on robust methodologies for SLCPs.

Dany Drouin, Department of Environment and Climate Change, Canada, presented Canada's policy on greenhouse gases (GHGs) and SLCPs, outlining national and international activities. He focused on his country's SLCP strategy, stressing the significant financial commitments made to cooperate with developing countries in reducing their SLCP emissions.

Christian Mueller, Federal Ministry of the Environment, Germany, noted his country's financing of international climate initiatives, stressing the importance of SLCP-targeted projects. He also stressed the creation by Morocco and Germany of the NDC Partnership to help developing countries create and implement their national climate plans to meet commitments.

Romina Piccolotti, IGSD, discussed philanthropic efforts to support rapid implementation of the Kigali Amendment and catalyze energy efficiency gains. She presented the Kigali Cooling Efficiency Program (K-CEP), stressing the different actions of that programme: funding for capacity building, especially for countries of the Kigali Agreement's

fast phasedown group; integration of energy efficiency in the Agreement's implementation; and provision of access to energy-efficient cooling.

Moldova noted its national activities on SLCPs despite the lack of specific legal requirement. She expressed interest in joining metric testing for black carbon. Chad emphasized inclusion of black carbon in national communications and strategies, as well as finance for black carbon activities. Switzerland highlighted a diesel initiative. IUAPPA stressed the need for policy frameworks to enable addressing SLCPs at a larger scale. The European Commission (EC) noted the need to identify options that address both SLCP and energy emissions, such as electric cars. Several countries stressed the importance of the Kigali Amendment to the Montreal Protocol and urged early ratification.

OVERVIEW OF KEY ACCOMPLISHMENTS SINCE 2012

The Secretariat provided a brief summary of the CCAC's five years of existence, highlighting its growing constituency, initiatives and impact (WG/APR2017/04). She identified challenges such as achieving transformational change, catalyzing action, and leveraging finance at scale. She said the CCAC had US\$78 million in pledges, most of which has been used.

ZOOM-IN ON INITIATIVES: FOCUS ON AGRICULTURE

The session was moderated by Victoria Hatton, Ministry of Environment, New Zealand. She introduced the theme, stressing the central role of agriculture in reducing GHG emissions, and the conflicts between this goal and food security. She invited participants to consult and discuss document WG/APR2017/06 on Agriculture Initiative proposals for the 2017 HLA.

Walter Oyhantcabal, Ministry of Agriculture and Fisheries, Uruguay, presented on his country's NDC and commitment to a low-carbon growth agenda by setting ambitious targets for livestock. He explained that Uruguay, a "livestock country", has put in place a national information system allowing traceability of cattle herd emissions. He also stressed the efforts in evolving from IPCC Tier 1 to Tier 2 methodology for assessing methane and N₂O emissions. Oyhantcabal outlined Uruguay's strategy for



Walter Oyhantcabal, Uruguay

reducing emissions intensity through improved productivity in beef production systems and cited a new project for this strategy: the Climate Smart Livestock Management Platform.

Sultan Ahmed, Department of the Environment, Bangladesh, presented the National Action Plan for the reduction of SLCPs, emphasizing actions in the agriculture sector, focusing on rice paddies and livestock management. He outlined actions and barriers for several initiatives: aeration of flooded rice paddies through Alternate Wetting and Drying (AWD) irrigation techniques; and control of emissions through digestion of manure from cattle and poultry. He proposed including references and goals relating to rice paddies and AWD in the 2017 HLA communiqué.

Timothy LaSalle, International Cryosphere Climate Initiative (ICCI), underlined supporting alternatives to open agricultural burning, emphasizing the benefits for food security, health and the climate. He presented the accomplishments of CCAC Open Burning Phase 1 and the objectives of Phase 2, stressing the need to address several persistent myths around open burning.

Henning Steinfield, Food and Agriculture Organization of the United Nations (FAO), made a presentation on enteric methane emissions from ruminants, stressing that it was the largest source of methane from human activity (30%). He highlighted that emissions can be reduced by between 22% and 33% while increasing production with the transfer of existing technology to target countries.

In the ensuing discussion on Agriculture Initiative proposals for the 2017 HLA (WG/APR2017/06), New Zealand, Australia, Costa Rica, Ireland, Norway, Kenya, Uruguay and the US supported the featuring of agriculture at the HLA. New Zealand and Ireland stressed their appreciation of a voluntary approach through providing several options, while the US cautioned against making too many options available. Australia stressed the need to acknowledge differences between regions and countries. Uruguay and Ireland cautioned against duplicating initiatives. Kenya asked the secretariat to produce a policy brief for helping ministries to commit, and Norway made the case for adding crosscutting topics such as biogas, linking agriculture with other sectors.

ZOOM-IN ON INITIATIVES: FOCUS ON MUNICIPAL SOLID WASTE INITIATIVE

The panel session was moderated by Alice Akinyi Kaudia, State Department of Environment and Natural Resources, Kenya. She introduced the session by highlighting her country’s actions to manage MSW. Faced with strong urbanization and a sharp increase in resource consumption, Kenya addressed waste treatment as bringing co-benefits in terms



Alice Akinyi Kaudia, State Department of Environment and Natural Resources, Kenya

of health and air pollution. She highlighted the establishment of a ban on plastic bags and catalyzed funding for managing landfills via the World Bank and a partnership with Durban, South Africa.

Alan Silayan, the Philippines, presented on reduction of methane and black carbon from MSW. He outlined the steps in the reduction strategy: reduce at source, separate, treat separated waste, collect, control and, in some cases, use the resulting biogas. He stressed the role of some cities as leaders and examples, and the role of a national system for monitoring, reporting and verification (MRV) of city achievements.

Ricardo Cepeda-Marquez, C40 Cities Climate Leadership Group, recalled that the MSW Initiative aims to have 50 cities committing to implement action plans by 2020, and mobilizing others to follow, reaching 1000 cities using the tools of the CCAC. As achievements, he cited 33 city assessments, 10 work plans, and 105 actions to strengthen institutions. As challenges, he identified access to financing, and implementation and scalability of initiatives.

Waldo Ceballos, City of Viña del Mar, Chile, presented the three phases of his city’s waste initiative: a waste data



Waldo Ceballos, City of Viña del Mar, Chile

assessment; a work plan for the management of MSW; and an implementation plan and financing strategy for the construction of an organic waste management plant – a first in Chile. He said the project is partnered with the city of Stockholm, Sweden. The partnership aims to replicate that work in other Chilean cities.

Gary Crawford, International Solid

Waste Association (ISWA), presented five potential 2017 HLA commitments in relation to the MSW initiative (WG/APR2017/07). He cited different ways to get involved in the initiative.

During the ensuing plenary discussion on these commitment proposals, Canada and Australia supported featuring MSW at HLA. Costa Rica asked for feedback on challenges in managing MSW for small municipalities. Mexico asked for information on emissions-factor methodologies at local level. The Netherlands stressed their achievements in MSW and desire to become more involved in the initiative. Sweden proposed cross-sectoral themes like biogas, as did the International Council on Clean Transportation (ICCT). Norway stressed the importance of public-private partnerships, while Peru stressed the need for national-level acknowledgment of the work carried out at local level.



Marit Viktoria Petersen, Norway, and Carlos Dora, WHO

ZOOM-IN ON INITIATIVES: FOCUS ON CITIES AND SUB-NATIONAL ENTITIES

Marit Viktoria Pettersen, Ministry of Foreign Affairs, Norway, moderated the session. She highlighted the results of the UN Habitat III Conference that took place in October 2016, which she noted included SLCPs, and acknowledged the importance of including local governments and local actors. Viktoria Pettersen drew attention to the summary document on CCAC city and sub-national level actions (WG-APR2017-08).

Carlos Dora, WHO, described the Urban Health Initiative (UHI) noting UHI seeks to create demand for actions that reduce SLCPs and promote health, including through: access to knowledge on health benefits and costs of inaction; training health workers; communication and engagement; and tracking policy change. Dora highlighted successful implementation in Accra and opportunities in Nepal. He noted UN Habitat and International Centre for Integrated Mountain Development (ICIMOD) engagement.

Ray Minjares, ICCT, underscored that only 20% of new buses sold globally are soot free. He said the diesel initiative aims for commitment from cities to shift procurement practices for acquisition of new buses. He described the diesel's initiative engagement in capacity building and market information provision at the local level.

Gianni Lopez, Mario Molina Center, underscored lack of clean fuel harmonization, particularly diesel, as a key challenge for clean buses and black carbon reduction. He emphasized the Euro 6 standard, as well as growing interest for electric buses.

Marcelo Mena Carrasco stressed air pollution abatement as a priority in Chile, with the goal of implementing local plans in 14 cities by 2018. Maria Eliana Vega, Ministry of Environment, Chile, explained the Breathe Life Campaign in the City of Talca, noting a great reduction in bad air days in just 3 years. Vega underscored the use of communication tools to reach the population, including data transparency, visual traffic-light color displays, and word coding.

In the ensuing discussion, participants discussed, *inter alia*: availability of clean fuel and clean fuel infrastructure; cross-sectorial approaches; data sharing; the role of air pollution in local elections; forest fires; and showcasing successful urban air pollution initiatives during the HLA.

OPENING OF DAY 2

Eduardo Bitran, Executive Vice-President, Chile Production Development Corporation (CORFO), gave an introduction to his country's strategy for moving towards a more sustainable economy. He stressed the dependence of Chile on a few energy intensive industries and the particular role of house firewood heating in air pollution. He outlined three components of the strategy: solar energy, smart agriculture, and industrialized wood building construction.

INITIATIVES – FUNDING

The Secretariat provided a presentation on the status of the Trust Fund, noting that US\$6.6 million remain available, with US\$7 million more pledged until 2022. Sweden pledged 2 million Swedish crowns to the CCAC. Co-Chair Cerutti noted Steering Committee recommendations on three full proposals and 12 concept notes for funding (WG/APR2017/10-14). Steering Committee members presented their recommendations on the funding allocations based on the proposals received from initiatives.

On the Bricks Initiative, IUAPPA noted that the biggest mitigation potential is in Asia, and proposed showcasing Colombia as a model case. Mexico emphasized sharing experiences in the region and availability of financial resources. On the Diesel Initiative, Chile explained the global strategy to introduce low-sulfur fuels.

On the Household Energy Initiative, the US underscored work on improved cookstoves. Global Alliance for Clean Cookstoves (GACC) underscored data collection. Norway said it looked forward to future revised proposals on data collection.

On the Waste Initiative, the Philippines underscored the goal of reaching 1,000 cities by 2020. Center for Clean Air Policy highlighted the need for city-level technical assistance, as well as national policy frameworks that facilitate action at the local level.



Participants follow the discussions

On the Finance Initiative, Kenya emphasized supporting the development of proposals for the Global Environment Facility (GEF) and Green Climate Fund (GCF), with a focus on helpdesk and capacity building options. Chad asked for clarification as to whether the GEF and GCF proposals are by countries or the CCAC.

On the Health Initiative, Canada stressed the Breath Life campaign to reduce air pollution in cities. Finland, Moldova and EC said financial support should be increased for this initiative. WHO explained that a project in Kathmandu would proceed and looked forward to future CCAC participation.

On the SNAP Initiative, the Netherlands underscored joint sectoral initiatives for black carbon inventories and NDC support. Chad stressed capacity building. On the Oil and Gas Initiative (WG/APR2017/12, WG/APR2017/13), ClimateWorks Foundation outlined recommendations on proposals for regulatory support, Oil and Gas Methane Partnership staffing, and methane studies.

On the Agriculture Initiative (WG/APR2017/11), IUAPPA stressed reducing enteric methane for food security and livelihoods. GRA, supported by New Zealand, highlighted the catalytic and leveraging role of this initiative. The EC said budget allocated to this initiative may be too high because it supports win-win projects.

Ethiopia and Australia supported the Steering Committee's decisions. Norway said the next round should emphasize co-financing. Partners approved the Standing Committee's recommendations on funding.

Task Team members explained the process and experiences of the proposal review. Members highlighted, *inter alia*, the importance of demonstrating transformative impact, consulting with partners with sufficient time for meaningful feedback, and having clear exit strategies.

BREAKOUT GROUPS ON SELECTED INITIATIVES AND OTHER PRIORITY TOPICS

Rapporteurs from each of the four breakout groups summarized the key findings and recommendations for consideration in the future development of initiatives.

GROUP ON FINANCE: Julie Cerqueira, US State Department, stressed that the discussion focused on opportunities and barriers to resource mobilization, and that a concrete step to further address this issue would be to hold a finance day at the September 2017 CCAC Working group meeting. She outlined key takeaways identified by the group: a lack of overall strategy on finance; the need for a dedicated person with finance experience to develop a strategy; recognition that financing is initiative-specific; the need for political signals that can unlock financing; the need to link with financing forums and leaders, with greater involvement of Finance Ministers; commitments for SLCPs at G7 or G70 forums; more visibility of SLCPs at the GCF and GEF; and the need to work on a whole-system approach, allowing SLCP projects to be less siloed.

GROUP ON SNAP/INSTITUTIONAL STRENGTHENING/NDCs: Amanda Curry Brown, US Environmental Protection Agency (EPA), presented the main findings of the group on SNAP and NDCs. She noted that a central point raised was about sharing experience and best practices among countries on NDC implementation and SLCP inclusion, especially regarding: communication and coordination efforts between ministries and stakeholders; better understanding on how to include SLCPs in NDCs and identify emission reductions from SLCP mitigation; and identification of plans where co-benefits have been achieved. The group also highlighted the importance of awareness raising and communication, especially with high-level decision-makers, and



A view of the room during the breakout group on SNAP/Institutional Strengthening/NDCs

the success of fact sheets for doing so. Curry Brown explained that the group raised the issue of CCAC engagement in the UNFCCC, suggesting that the CCAC become an active observer and identify pathways to achieve its objectives.

GROUP ON HEALTH & CITIES/SUB-NATIONAL:

Carlos Dora summarized the discussions in the breakout group on health & cities/sub-national. He highlighted two main points: first, the need to better respond to processes that go beyond the UNFCCC and other international conventions. Dora stressed the opportunities in various fora to target cities for inclusion of air pollution and SLCP reduction actions. He underlined the need to identify these targets, which could also include the private sector and philanthropy actors.

Secondly, Dora highlighted the scaling of activities, with a stronger engagement in parts of the world not yet covered by CCAC actions. He stressed specific points relating to the need for an analysis and indicators of success in policy change at the local level, linked with health benefits, saying this could be a tool for communicating on SLCPs with cities. Finally, he underscored the importance of bringing leadership and identifying champions in the health sector.

GROUP ON HOUSEHOLD ENERGY: Jane Metcalfe, ICCI, presented the points highlighted by the breakout group on household energy. She stated that the CCAC's specialty was black carbon and that helping to design black carbon mitigation policies was a priority. She also highlighted other actions, *inter alia*: setting minimum efficiency and emissions standards (using the ISO norm) for funding cookstove and heat stove projects, using the Clean Cooking Catalog; establishing standards and labeling for cookstoves and heat stoves, thus making the CCAC a driver for the market; promoting awareness of clean technologies and fuels; and addressing gaps in knowledge to inform smart mitigation policies.

Metcalfe stressed necessary synergies with urban health through awareness raising and behavioral change, waste through biogas, and agriculture. She highlighted the need to scale up political support for clean cooking and lighting in the NDC mechanism and SDG process.

2016 HIGH LEVEL ASSEMBLY FOLLOW UP

Working Group Co-Chair Cerutti said the objectives of the sessions are to: discuss and share results inspired by the Kigali Amendment to the Montreal Protocol and by the 2016 Marrakech communiqué; and decide how to report back to the 2017 HLA on 2016 Marrakech actions (WG/APR2017/15). She highlighted Canada's



Rita Cerutti, Working Group Co-Chair

and Chile's call to get at least 30 ratifications of the Kigali Amendment by the Montreal Protocol's 30th Anniversary in November 2017.

Romina Picolotti, IGSD, said the Kigali 28th Meeting of the Parties (MOP 28) decision on energy efficiency adopted the same language as the CCAC Vienna Communiqué and that some countries have already submitted their energy efficiency reports to the Montreal Protocol.

Canada, Germany, Australia and Colombia said they are in the process of ratifying and/or preparing legislation for the implementation of the Kigali Amendment, and that they are making progress on actions from the Marrakesh communiqué.

Sweden stressed the framework of action for black carbon and methane of the Arctic Council. The US, Japan and Australia proposed following the Arctic Council templates for reporting on these SLCPs.

On the approval of the proposed modality for reporting back on 2016 HLA commitments (WG/APR2017/15), Germany and Australia suggested shortening the letter to the ministers to obtain more replies from them. The document was approved with Germany's modifications and with addition of some guidance for countries to report back on progress.

2017 HIGH LEVEL ASSEMBLY PLANNING

During this session, the Working Group discussed the focus, structure, date and venue for the 2017 HLA. Co-Chair Cerutti introduced the draft ideas for the 2017 HLA (WG/APR2017/16).

Many countries supported the suggested HLA focus topics of agriculture and waste. The Netherlands noted that in some countries these issues have separate ministers. The US, with others, suggested streamlining the HLA agenda. Canada suggested that discussions on finance could include high-level representatives from development banks and the business community.

The Secretariat introduced a proposal to hold a CCAC Climate and Clean Air Award. Canada, Australia, Germany, Sweden, Chad, EC and others supported the award. Kenya said it would be good to stress health and other co-benefits as criteria for the award. Germany emphasized the short-term agenda. The Partners agreed to launch the award.

On the venue and date, Partners agreed to hold the 2017 HLA in Bonn, in conjunction with UNFCCC COP 23. The Netherlands suggested other venues should also be considered for future HLAs.

Co-Chair Cerutti introduced the agriculture (WG-APR2017-06) and waste (WG-APR2017-07) proposals for 2017 HLA commitments. On agriculture, the US, Germany, Canada and Norway opposed a dedicated fund. Costa Rica, New Zealand and Uruguay said agriculture emissions are a priority issue.

New Zealand highlighted agriculture inventories. Mexico highlighted overlap with other initiatives. Peru noted the importance of adding emissions from land-clearing forest



(L-R): **Alice Akinyi Kaudia**, Kenya; **Marcelo Mena Carrasco**, Minister of the Environment, Chile; **Helena Molina Valdes**, Head of CCAC Secretariat, and **Rita Cerutti**, Working Group Co-Chair

burning. The US suggested an estimate of black carbon reductions achieved by the CCAC. The EC questioned whether it was too early for ministerial-level consideration of SLCP emissions from agriculture.

On waste, IGES suggested using broad language that covers the diversity of waste management systems in different countries. The US sought feedback on markets for organic methane avoidance. Sweden noted the similarity between proposed goals of 50% food waste reduction by 2030 and SDG goals.

COALITION GOVERNANCE MATTERS AND CLOSE OF THE MEETING

The Secretariat provided an update (WG/APR2017/18) describing the key strategies of the 5-year strategic plan, including: catalyzing action, mobilizing support, leveraging finance at scale, and enhancing science and knowledge. She identified Secretariat core functions including: to support governance and SAP; partner engagement; initiative support coordination; communication; and trust fund management.

Co-Chair Cerutti announced new Steering Committee members, with Liberia replacing Cote d'Ivoire and Switzerland replacing the Netherlands. She announced that Alice Akinyi Kaudia, Kenya, would replace Marcelo Mena Carrasco as Co-Chair. She noted Chile would stay in the Steering Committee as a member. Co-Chair Akinyi Kaudia and former Co-Chair Marcelo Mena provided closing remarks. The meeting adjourned at 5:34pm.

UPCOMING MEETINGS

UN Climate Change Conference – May 2017: The conference includes the 46th sessions of the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation, as well as the 3rd part of the 1st session of the *Ad Hoc* Working Group on the Paris Agreement **dates:** 8-18 May

2017 location: Bonn, Germany **contact:** UNFCCC Secretariat **phone:** (49-228) 815-1000 **fax:** (49-228) 815-1999 **email:** secretariat@unfccc.int **www:** <http://unfccc.int>

1st International Conference on electric mobility and public transport: The conference will showcase the latest technologic improvements in the field and the opportunities and challenges of developing public transport services with electric bus fleets. Organized by the Center Mario Molina, Chile, with SOFOFA, CORFO, CCAC, Euroclima and ENEL. Under the Auspice of the Chilean Ministry of Transport and the Finnish Embassy **date:** 10-11 May 2017 **location:** Santiago, Chile **contact:** Constanza Aguilera **phone:** (+56) 2 247 9650 **email:** caguilera@cmmolina.cl **www:** <http://cmmolina.cl>

10th Arctic Council ministerial meeting: Minister-level representatives from the eight Arctic States will convene to review and approve work completed under the two-year US Chairmanship to improve sustainable development and environmental protection in the Arctic. This meeting is hosted by the US **dates:** 11 May 2017 **location:** Fairbanks, AK, USA **contact:** Arctic Council Secretariat **phone:** + 47 77 75 01 40 **email:** acs@arctic-council.org **www:** http://www.arctic-council.org/index.php/en/events/calendar/g-3-dlgcc7f4e1o920o171gve67kik_20170511

Montreal Protocol OEWG 39: The 39th Session of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer will be preceded by the 58th meeting of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol, to be held on 9 July and a workshop on safety standards relevant to the use of low-GWP alternatives to HFCs, to be held on 10 July. **dates:** 11-14 July 2017 **location:** Bangkok, Thailand **contact:** Ozone Secretariat **phone:** +254-20-762-3851/3611 **fax:** +254-20-762-0335 **email:** ozone.info@unep.org **www:** <http://ozone.unep.org/en/meetings>

HLPF 5: The fifth session of the High-level Political Forum on Sustainable Development, convening under the auspices of the UN Economic and Social Council, will be held under the theme “Eradicating poverty and promoting prosperity in a changing world.” As decided in UN General Assembly resolution A/70/299, HLPF 5 will conduct in-depth reviews of the implementation of five SDGs. **dates:** 10-19 July 2017 **location:** UN Headquarters, New York **contact:** UN Division for Sustainable Development, Department of Economic and Social Affairs **www:** <https://sustainabledevelopment.un.org/hlpf>

46th Session of the IPCC: The IPCC will meet to discuss, *inter alia*, the outcome from the Sixth Assessment Report (AR6) scoping meeting, including the outlines for the AR6 working group reports, and the programme and budget. The 54th Session of the IPCC Bureau will meet prior to IPCC-46. **dates:** 6-10 September 2017 (TBC) **location:** Montreal, Canada **contact:** IPCC Secretariat **phone:** +41-22-730-8208/54/84 **fax:** +41-22-730-8025/13 **email:** IPCC-Sec@wmo.int **www:** <http://www.ipcc.ch>

CCAC Working Group Week: The CCAC Working Group will convene for a week of work (more information soon on CCAC website) **dates** 25-29 September 2017 **location:** OECD, Paris, France **contact:** James Morris, Partnership & Programme Officer, CCAC Secretariat **phone:** +33-1-44-37-14-73 **fax:** +33-1-4437-14-74 **email:** James.Morris@unep.org **www:** <http://ccacoalition.org>

CCAC HLA: The CCAC HLA and the preparatory session of the CCAC Working Group will convene on the margins of UNFCCC COP 23 **date** TBC November 2017 **location:** Bonn, Germany **contact:** James Morris, Partnership & Programme Officer, CCAC Secretariat **phone:** +33-1-44-37-14-73 **fax:** +33-1-44 37-14-74 **email:** James.Morris@unep.org **www:** <http://ccacoalition.org>

UNFCCC COP 23: During COP 23, parties will meet to, *inter alia*, continue preparations for entry into force of the Paris Agreement. **dates:** 6-17 November 2017 **location:** Bonn, Germany (chaired by Fiji) **contact:** UNFCCC Secretariat **phone:** +49-228 815-1000 **fax:** +49-228-815-1999 **email:** secretariat@unfccc.int **www:** <http://unfccc.int/>

Joint Vienna Convention COP 11 and Montreal Protocol MOP 29: The Vienna Convention COP 11 and Montreal Protocol MOP 29 (30th Anniversary of the Montreal Protocol) will take place in 2017 in Montreal, Canada. **dates:** 20-24 November **location:** Montreal, Canada **contact:** Ozone Secretariat **phone:** +254-20-762-3851 **fax:** +254-20-762-0335 **email:** ozoneinfo@unep.org **www:** <http://conf.montreal-protocol.org/>

3rd Meeting of the UN Environment Assembly (UNEA): The third meeting of the UN Environment Assembly (UNEA 3), will be held from 4-6 December 2017 on the theme “a pollution free planet”, with the high-level segment taking place on 5-6 December **dates:** 4-6 December 2017 **location:** Nairobi, Kenya **contact:** Jorge Laguna-Celis, Secretary of Governing Bodies **phone:** +254-20-7623431 **email:** unep.sgb@unep.org **www:** <http://www.unep.org/unea>



On Friday, 28 April, delegates participated in site visits showcasing Chile's activities on clean air

GLOSSARY

AGTP	Absolute global temperature change potential
AWD	Alternate Wetting and Drying
CCAC	Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants
COP	Conference of the Parties
CORFO	Chile Production Development Corporation
EC	European Commission
EPA	US Environmental Protection Agency
FAO	Food and Agriculture Organization of the United Nations
GACC	Global Alliance for Clean Cookstoves
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	greenhouse gas
GRA	Global Research Alliance on Agricultural Greenhouse Gases
GTP	global temperature change potential
GWP	global warming potential
HFC	hydrofluorocarbons
HLA	High Level Assembly
ICCI	International Cryosphere Climate Initiative
ICIMOD	International Centre for Integrated Mountain Development
IGES	Institute for Global Environmental Strategies
IGSD	Institute for Governance & Sustainable Development
IIASA	International Institute for Applied Systems Analysis
INECC	Institute of Ecology and Climate Change Mexico
IPCC	Intergovernmental Panel on Climate Change
ISWA	International Solid Waste Association
IUAPPA	International Union of Air Pollution Prevention and Environmental Protection Associations
K-CEP	Kigali Cooling Efficiency Program
LRTAP	Convention on Long-Range Transboundary Air Pollution
MOP	Meeting of the Parties
MRV	monitoring, reporting and verification
MSW	Municipal Solid Waste
SAP	Scientific Advisory Panel
SDG	Sustainable Development Goal
SEI	Stockholm Environment Institute
SLCF	short-lived climate forcers
SLCP	short-lived climate pollutants
SNAP	supporting national action planning initiative
UHI	Urban Health Initiative
UNFCCC	United Nations Framework Convention on Climate Change
WHO	World Health Organization