MWP Global Dialogue Submission
August 2025

The Arab Group is pleased to share its views on suggested topics to be discussed at the global dialogues in 2025 under the Sharm el-Sheikh mitigation ambition and implementation work programme (MWP).

Background

As per decision 4/CMA4, the MWP should encompass broad thematic areas critical for scaling up mitigation ambition and implementation this decade. This includes all sectors covered in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, thematic areas from the IPCC AR6 Working Group III report, and relevant enabling conditions, technologies, just transitions, and cross-cutting issues. In this context, the Co-Chairs announced the topic for the sixth global dialogue: "Enabling mitigation solutions in the waste sector, including through circular economy approaches."

Principles

The MWP must adhere to the principles outlined in the mandate, as per decision 4/CMA4:

- Facilitative, non-prescriptive, and non-punitive.
- Respectful of national sovereignty and national circumstances.
- Reflective of the nationally determined nature of nationally determined contributions (NDCs).
- Focused on providing a platform to share best practices, experiences, and voluntary actions without imposing new targets or goals.

The dialogues should avoid policy prescriptions or mandates that infringe on Parties' nationally determined pathways. Instead, they should facilitate implementation through the Investment-Focused Event, with a focus on developing countries.

Introduction

The waste sector plays a significant role in global greenhouse gas (GHG) emissions, particularly methane (CH_4). According to the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6), waste management activities, especially landfills, are responsible for approximately 64 million tons of CH_4 emissions annually[1]. Inadequate waste management not

[1] J. G. Canadell *et al.*, "Global carbon and other biogeochemical cycles and feedbacks," in *Climate Change 2021: The Physical Science Basis*, IPCC AR6 WG I, Cambridge Univ. Press, 2021, pp. 673–816, doi: 10.1017/9781009157896.007.

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only drives emissions but also results in the loss of valuable resources. Despite this, mitigation in the waste sector remains underleveraged worldwide. Circular Carbon Economy (CCE) and Circular Economy (CE) approaches present scalable and systemic solutions that can reduce emissions while delivering broad co-benefits, including enhanced climate adaptation and sustainable development outcomes.

Proposed Subtopics

1. Advancing Circularity Approaches, particularly the Circular Carbon Economy in the Waste Sector

The circular economy (CE) offers opportunities in the waste sector by promoting resource efficiency, material recovery, and waste minimization. It promotes sustainable value chains and reduces pressure on landfills. However, while CE models typically focus on material flows, they have largely fallen short in addressing the emissions generated throughout product life cycles and waste management processes.

In this context, the Arab Group underscores the importance of introducing the **Circular Carbon Economy (CCE) as a subtopic**. The CCE provides a robust, holistic, and comprehensive framework that integrates all emission management pathways, which are reduce, reuse, recycle, and remove, into a coherent strategy for managing emissions across all sectors, including the waste sector. The CCE provides a unique opportunity, enabling countries to pursue mitigation strategies that actively manage and reduce emissions while addressing wastes, making it a highly suitable topic for the sixth dialogue.

The CCE approach aligns with the latest findings of the IPCC, which emphasize the importance of combining emission reduction strategies with carbon management solutions[2]. For example, Biogenic waste (e.g., food waste, wood waste, etc.) can be used to generate energy. When linked to carbon capture, utilization and storage (CCUS), negative emissions can be achieved, forming a carbon dioxide removal (CDR) technology known as BECCS (Bioenergy with Carbon Capture and Storage). CDR is an essential technology under CCE that contributes to the “remove” part of the CCE, and it aligns with the findings of the IPCC Synthesis Report (AR6) that outlines the unavoidable role of CDR and carbon management in achieving the goals of the Paris Agreement[2].

In short, the CCE provides a tangible framework of how emissions management can deliver co-benefits beyond mitigation, supporting economic resilience, and contributing to broader sustainable development objectives.

[2] IPCC, *Summary for Policymakers [P.R. Shukla et al., eds.]*, in *Climate Change 2022: Mitigation of Climate Change*, Contribution of Working Group III to the Sixth Assessment Report, Cambridge Univ. Press, 2022, doi: 10.1017/9781009157926.001.

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2. Waste Management Systems and Infrastructure

Addressing waste management systems and infrastructure is essential for enabling meaningful and sustained mitigation outcomes in the waste sector, particularly in developing countries, where limited infrastructure continues to restrict the deployment of climate solutions.

This sub-topic highlights both a persistent barrier to mitigation and a practical opportunity to achieve multiple co-benefits. Strengthening waste management infrastructure would not only contribute directly to reducing greenhouse gas emissions but would also advance sustainable development.

3. Waste to Energy

Waste-to-Energy (WtE) plays a critical role in climate change mitigation by reducing greenhouse gas emissions from the waste sector. Methane from landfills can be significantly reduced when organic waste is diverted to WtE facilities such as incinerators with energy recovery or anaerobic digesters. Also, energy produced through WtE is estimated by the IPCC to be as much as 5–13 EJ annually with current systems already delivering over 1 EJ per year[3]. Within the waste sector, these technologies are among the most cost-effective mitigation options available, with the potential to abate 30–50% of projected 2030 emissions at costs below $20 per ton of CO_2-eq[4].

Furthermore, WtE enhances adaptation and resilience, especially in urban settings. By reducing the volume of waste sent to landfills and preventing blockages in drainage systems, WtE contributes to greater climate resilience against extreme weather events like floods.

4. CCUS and CDR Approaches

Carbon Capture, Utilization, and Storage (CCUS) and Carbon Dioxide Removal (CDR) approaches are emerging as valuable extensions to traditional waste management systems, offering the potential to transform the waste sector into a source of negative emissions. In Waste-to-Energy (WtE) plants, CO_2 generated during the combustion of municipal solid waste can be captured using post-combustion technologies such as amine scrubbing or oxy-fuel combustion. This captured CO_2 can either be permanently stored in geological formations or utilized in the production of construction materials or synthetic fuels.

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[3] J. Bogner *et al.*, "Waste Management," in *Climate Change 2007: Mitigation of Climate Change*, IPCC AR4 WGIII, Cambridge Univ. Press, 2007.

[4] IPCC, "Technical Summary," in *Climate Change 2022: Mitigation of Climate Change*, AR6 WGIII, Cambridge Univ. Press, 2022, doi: 10.1017/9781009157926.002.

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In parallel, biological waste treatment systems such as anaerobic digestion offer additional CCUS opportunities. Biogas produced from organic waste contain a high concentration of CO_2, which can be efficiently separated during the upgrading process to biomethane. This captured CO_2 is a low-cost target for utilization or storage. On the CDR side, pyrolysis of organic waste into biochar provides a stable form of carbon that, when applied to soils, sequesters carbon over long timescales while improving soil quality. Similarly, biomass-based WtE systems combined with carbon capture enable the waste sector to generate negative emissions, especially when combusting biogenic fractions like food and paper waste.

Integrating these technologies into existing waste infrastructure, particularly in regions already investing in WtE and biogas systems, offers a strategic pathway to scale their climate benefits. With proper policy support and inclusion in national climate strategies, CCUS and CDR in the waste sector could make a meaningful contribution to long-term decarbonization and net-zero targets.

5. Behavior and lifestyle

Sustainable waste management and mitigation efforts should also be supported by changes in public behavior and lifestyles. Achieving meaningful and lasting emissions reductions in the waste sector requires motivating societies to adopt more sustainable consumption habits, reduce overconsumption, and improve resource efficiency. This includes promoting sustainable consumption practices inspired by positive local experiences, cultural values, and traditional knowledge.

The levels of public awareness, basic understanding, and technological capacity for sustainable waste practices remain at different stages between developed and developing countries, with each country facing its own distinct challenges. It is important to enhance public awareness and increase the public acceptability of sustainable practices through education, outreach, and practical community initiatives.

6. Enabling conditions

Developing countries face limitations that constrain their ability to fully implement advanced waste management systems and emissions management measures. Therefore, achieving meaningful mitigation outcomes in the waste sector requires addressing the disparities between developed and developing countries in line with the principles of equity and CBDR.

6.1 International Cooperation

International cooperation is a cornerstone for unlocking mitigation opportunities in the waste sector for developing countries. The exchange of knowledge, best practices, technical expertise,

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and experiences is vital for supporting developing countries and ensuring they have the opportunity to fully contribute to and benefit from mitigation efforts in the waste sector.

6.2 Means of Implementation

The provision of sufficient means of implementation from developed to developing countries is central to enabling developing countries to unlock the full mitigation potential of the waste sector in line with their national circumstances and in accordance with the provisions of the UNFCCC and its Paris Agreement.

Many developing countries face financial constraints, limited technical capacity, and gaps in institutional expertise that hinder the advancement of effective mitigation strategies in the waste sector. Without dedicated financial support from developed countries, the practical implementation of mitigation actions will remain limited, regardless of national ambition. In parallel, addressing the technology gap through enhanced technology development and transfer is essential to equip developing countries with the tools needed for sustainable waste management. Capacity building forms the foundation of this effort, enabling countries to plan, implement, and sustain mitigation measures over the long term. Strengthening all three areas which are finance, technology, and capacity is critical to support developing countries in transitioning to a more sustainable waste sector.

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