



# Examining health and climate impacts of solid waste management in Accra, Ghana

## Background

Accra is the capital city of Ghana, with a population of 2.3 million within its municipal solid waste collection zones. Accra's solid waste challenges include diseases and respiratory impacts related to waste dumping and waste burning close to residences, with heightened risk from toxins around an e-waste recycling site.

Government data and household surveys indicate that diseases likely attributable to insufficient environmental sanitation are common in the city, although households are not aware there could be a link between the waste management system and their illnesses. One third of the population does not receive waste collection services. Increased pollution and reduced waste collection are worse in low-income communities. Local and national laws and regulations exist related to sanitation, environment, and waste, but monitoring and enforcement are not robust.

## Baseline

WHO study authors entered data on Accra's waste management system, assuming no major changes would be implemented, into the Solid Waste Emissions Estimation Tool (SWEET). SWEET was developed by the U.S. Environmental Protection Agency under the auspices of the Global Methane Initiative. To establish the baseline, study authors reviewed and collected information from government, academic, and industry



U.S. Environmental Protection Agency

data sources. This included interviews and observations at waste management sites where published data was insufficient.

## Alternative Scenarios

The three alternative scenarios included ceasing open burning, increasing composting and recycling, and capturing methane from landfills. For each scenario, the authors entered into SWEET a start year and amount or percentage change, such as decreasing the burning of household and informal sector waste to zero by 2025.

## Modeled Results

Projecting to 2050, the SWEET results for all climate-forcing pollutants (in CO<sub>2</sub>e) indicated that the most significant emissions reductions compared to the baseline would come from ceasing open burning (50% reduction). Moderate reductions would come from capturing landfill gas (19% reduction), and negligible reductions would come from composting and recycling.

Then the authors used emissions results from SWEET for the ceasing open burning scenario to estimate pollutant concentrations for PM<sub>2.5</sub> and input those values in WHO's AirQ+ software to determine health benefits. AirQ+ projected that through the year 2030, ceasing open burning would result in 120 avoided deaths.

## Using the Results

The results provided quantitative evidence for the authors to recommend that Accra prioritize a ban on burning waste along with increased waste collection capacity to avoid the worst public health outcomes. More broadly, the WHO recommended that Accra build political commitment to consider health impacts in solid waste management, improve regulation enforcement, and conduct education and outreach about waste and health.



Launched in 2004, the Global Methane Initiative (GMI) is an international public-private initiative that advances cost-effective, near-term methane abatement and recovery and use of methane as a clean energy source.

For more information, see the report "Solid Waste Management in Accra, Ghana" (2021) from the World Health Organization's Institutional Repository for Information Sharing.