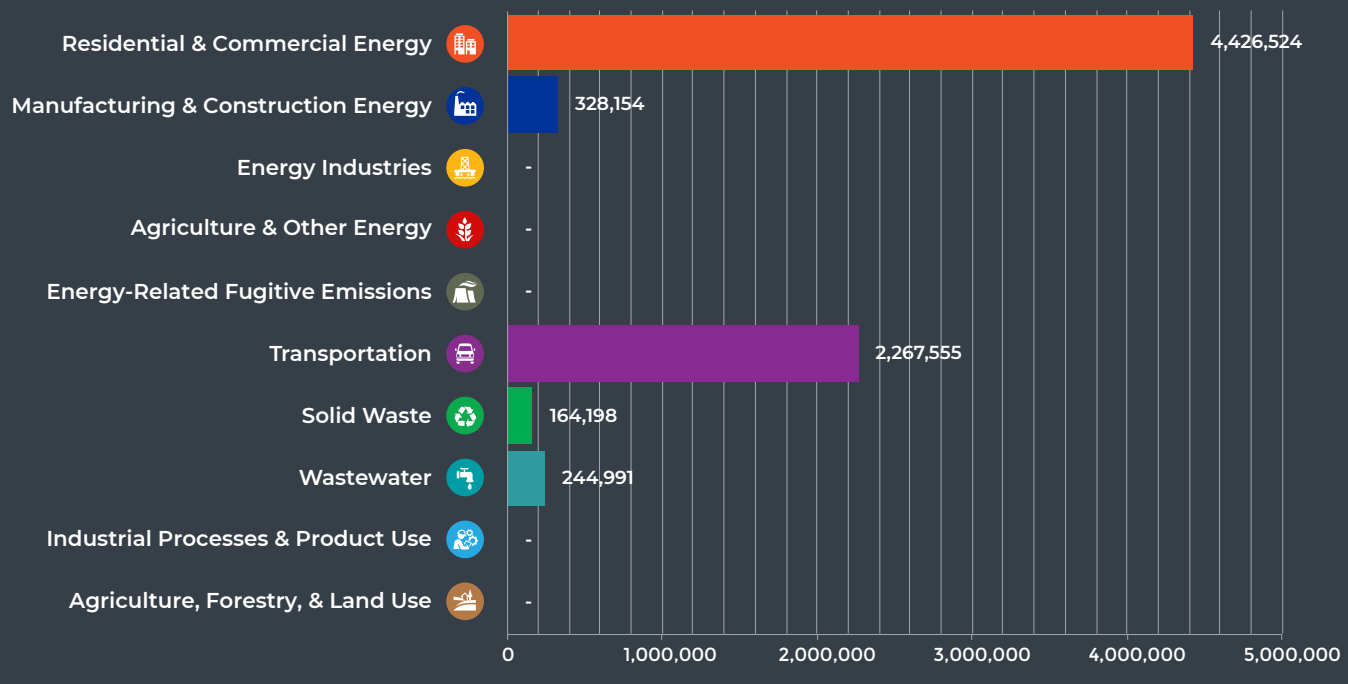
AMMAN'S EMISSIONS INVENTORY

Amman completed its first city-wide inventory of greenhouse gas emissions for the year 2014 using the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories[5]. A city-wide GHG inventory enables cities to measure their overall emissions and understand what level of emissions different activities within the city contribute to the overall amount. This helps cities to better target actions that can reduce emissions.

Amman's 2014 inventory measured the city emissions at just over 7.4 million tons. This is similar to the total emissions of cities such as Paris, Philadelphia, and Washington, DC. However, on a per capita basis, Amman's emissions are much lower than these cities at roughly 2.1 tons of CO_2e per person. Without action, emissions are projected to double by 2030, and would reach almost 40 million tons by 2050.

The inventory shows that the two sectors that contribute the most to emissions are stationary energy and transportation. According to the inventory, 64 percent of Amman's emissions came from the stationary energy source category (residential and commercial buildings), and 31 percent from transportation. More specifically, the largest sub-sectors of emissions were electricity in buildings, and on-road transport.

HIGHEST EMITTING SECTORS BASED ON 2014 GHG INVENTORY



[5] The city encountered challenges in obtaining data for the emissions inventory and for the CURB scenario modeling tool. Thus, proxy data was used to fill the data gaps. This is a common exercise, as most cities do not have complete data sets for all sectors. The emissions data is used here for directional planning, and is not an exact measurement.

THE MAKING OF A NEW AMMAN: TRANSFORMATION UNDERWAY

The journey to a more sustainable future for Amman has already begun. The city has encouraged sustainable development for a decade, starting with the Amman Green Growth Program. In this context, it has taken decisive action in a few key areas that are essential to reducing emissions. These projects demonstrate the types of changes the city will need to make in order to achieve its 2050 vision. These planned actions are expected to reduce emissions by approximately 20 percent below a baseline scenario by 2030. This is a good start, but more needs to be done to achieve the city's vision.

Taking Action to Improve Amman and Fight Climate Change

TRANSPORTATION • Improvements include the planning and building of the city's first rapid bus transit system, as well as improving the transportation and mobility network.

ENERGY EFFICIENCY • Improvements include enhancing street lighting efficiency with a light-emitting diode (LED) street bulb program and incentivizing green building with a green building density bonus.

WASTE • Improvements include managing waste based on the "4Rs", that is, reduction, reuse, recycling, and recovery, as well as creating fossil fuel free energy in the Al Ghabawi waste to energy facility.

AMMAN'S PATH TO **ACHIEVING VISION 2050**

THE FIRST MILESTONE: A 40 PERCENT REDUCTION BY 2030

As part of its membership with C40 Cities, Amman has committed to delivering a GHG emission neutral[6] and climate resilient city by 2050. The city also committed to creating a plan and a pathway for reaching that target, with an interim target of a 40 percent reduction over the 2014 baseline by 2030.

The core of this Plan is the commitment to reduce the city's emissions to near-zero in the future. As such, this commitment will drive the transformational shifts, including the scope of those projects and policies that are identified within the plan. To achieve near-zero emissions, per person emissions need to be kept at or below current levels, which have been estimated at approximately 2.1 tons/person/year. Amman is still a developing city, and currently per person emissions are comparatively low. However, as a rapidly growing city, the challenge will be to achieve economic growth for the expanding population, while barely growing per person emissions.

AMMAN'S FIRST CLIMATE ACTION PLAN

This is Amman's first climate action plan and, indeed, a first in the region. The Plan establishes the 2050 vision, commits to a near-zero emissions target and sets a pathway with major pillars of action. Amman has been implementing climate actions that improve service delivery and reduce emissions for over a decade. This Plan builds and expands on those smaller-scale projects. It is the first step in Amman's formal climate action planning process. The next step will be to design a process for implementation of the actions that achieve the main pillars of the Plan. A process for implementation will identify the human and financial resources, the policies and regulations, and the governance and financing structure needed to implement key actions.

Amman will continue to evaluate and increase the scope of its action plan in accordance with future guidance from C40, as well as the experience of other cities attempting to reach near-zero emissions by 2050.

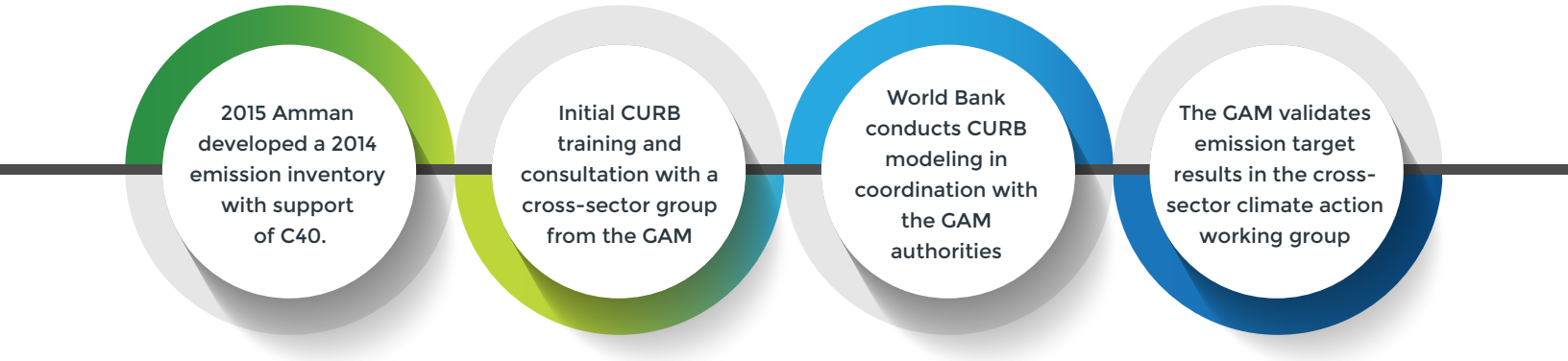
[6] C40 Cities is currently producing research on the level of acceptable offsetting that can occur under a near-zero emissions plan. Currently C40 defines "GHG emission neutral" or near-zero carbon as 0.01tCO_2e/person, as noted in the Glossary.

MODELING A PATHWAY TO VISION 2050 AND INTERIM TARGETS

Amman used a scenario planning tool called CURB to identify and prioritize low-carbon infrastructure and GHG reduction actions that would set the city on a path to achieving its 2050 vision. Data from the 2014 emissions inventory was used in the creation of the model to set the city's baseline emissions. CURB is an excel based model that uses city emission inventory data to project future emissions and suggest actions for reduction. The analysis presented here comes from the CURB model, and it helped Amman to shape its 2050 vision and action plan. The tool was developed in close coordination with the departments and units that manage infrastructure projects and policies in the Greater Amman Municipality, the government formed a technical working group that input data to the model. The actions that are selected to create the scenario are based on discussions with these departments and also reflect actions that the city is already taking.

The baseline scenario is a "business as usual" projection that estimates what emission levels would be in the future with no emission reduction actions taken. The baseline uses Amman's 2014 emissions inventory data, as well as future population and economic growth rates to project emissions. Actions were then selected in the tool for each sector to build a scenario that would reduce emissions below the baseline emission projections.

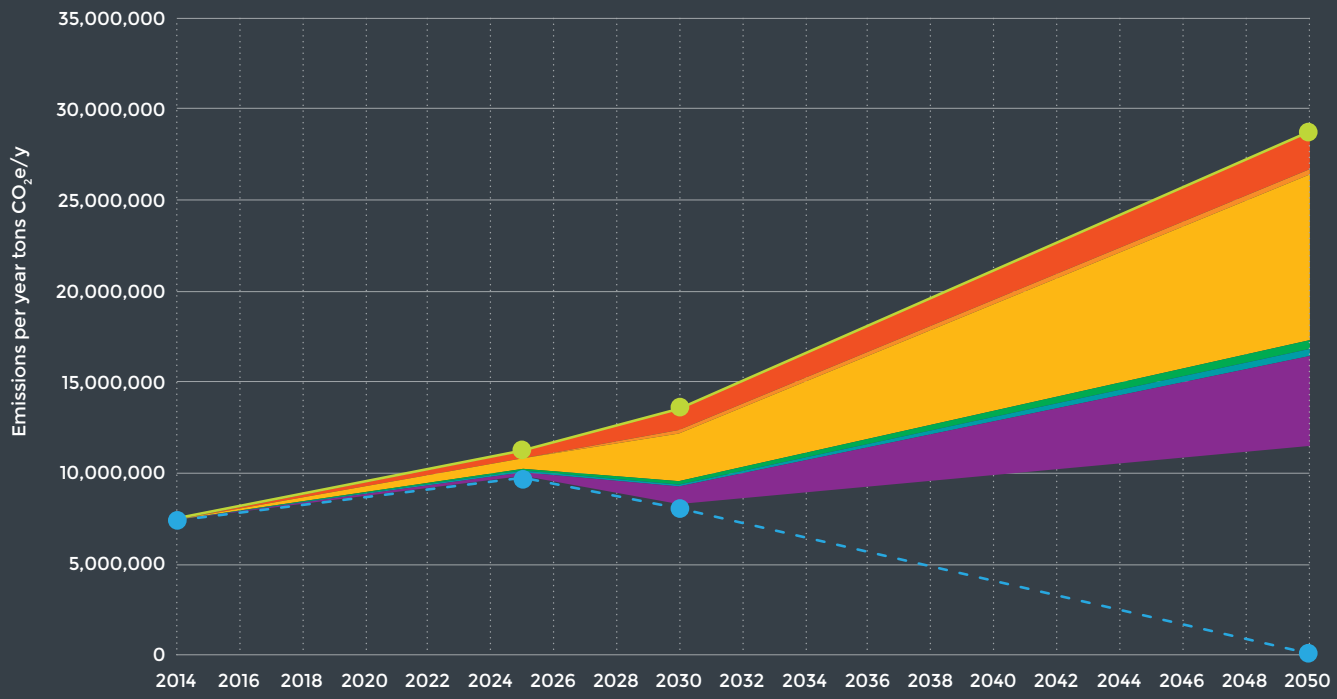
DEVELOPING THE AMMAN PLAN



The CURB model is not designed to account for more complex land use planning scenarios that can achieve significant emission reductions over time. Instead, the tool is limited to actions pertaining to buildings, energy sources, transportation, waste, and wastewater. In 2017, a World Bank Group led team worked with Amman to model green growth scenarios that considered land use changes. It identified the opportunities for cross-sector planning and land use actions. The outputs from these two modeling approaches, along with consultations with all the GAM departments, identified the priority areas of action that need to be addressed to achieve the Amman 2050 Vision.

It should be noted that carbon sequestration activities were not modeled for Amman. Future iterations of this climate action plan could explore the level that urban forestry and other carbon sequestration actions could play in helping Amman achieve drastic emission reductions.

AMMAN EMISSIONS TRAJECTORY AND TARGET 2014-2050



- National/Regional Actions (All Sectors)
- Private Building Energy
- Municipal Building & Public Lighting
- Electricity Generation
- Baseline Forecast
- Solid Waste
- Wastewater
- Transportation
- Carbon Sequestration
- Target Trajectory

2030 EMISSIONS LEVELS

13,000,000	Baseline Forecast
40.0%	Target (% below 2030 baseline level)
8,000,000	Allowable Emissions
40%	Achieved reduction

2050 EMISSIONS LEVELS

28,000,000	Baseline Forecast
99.5%	Target (% below 2050 baseline level)
140,000	Allowable Emissions
11,500,000	Achieved with Actions
11,360,000	Achievement Gap