

Assumptions being made for 2030 Projection

Base year for projection: 2019

Sources of emissions	Scenario settings
Public Electricity Generation	Emission caps Adopted the allocation of emission allowances under the Ninth Technical Memorandum Fuel mix Coal:<15%; Natural gas: >55%; Renewable energy & Zero-carbon energy: ~30% Locally generated electricity Dropped by around 5% as compared with 2019 after considering the population projection data and the medium-term target of reducing the electricity consumption of commercial and resident buildings in the Hong Kong's Climate Action Plan 2050
Road Transport	See <u>Annex A</u>

Sources of emissions	Scenario settings
Navigation	<p><u>OGVs (contributing 50% PM2.5 and 42% of NOx of Navigation sector)</u></p> <ol style="list-style-type: none"> 1) Activity level depends on Vessel Arrival Number (VAN) entering or transiting Hong Kong, VAN for 2019 vs 2030 by and large the same 2) assuming 2,000 VAN (4%) of OGVs will use Liquefied Natural Gas (LNG) in 2030; remaining 96% calls will use 0.1% S fuel <p><u>RVs (contributing 12% PM2.5 and 28% of NOx of Navigation sector)</u></p> <ol style="list-style-type: none"> 1) Activity level: assuming 0.2% VAN growth in RVs, excluding Macau ferries, based on port statistics from Marine Department; a drop of 83% on VAN of Macau ferries based on ferry schedule captured from website in early 2022 2) Measures: 5% VAN of PRD ferries and 5% VAN of River Trade Vessels will use LNG, remaining 95% calls of PRD ferries and River Trade Vessels will use 10 ppm Marine Light Diesel (MLD) 3) Macau ferries keep using 10 ppm MLD <p><u>LVs (contributing 38% PM2.5, 30% NOx and 81% VOC of Navigation sector)</u></p> <ol style="list-style-type: none"> 1) Activity level: Class 1a, 3 and Government Vessels assumed no growth while other classes of LVs applying projected rate of change making reference to MD's port statistics. 2) Measures: <ul style="list-style-type: none"> ➤ 14 in-harbor ferries turn electric ➤ 47 outlying island ferries turned hybrid by 2030. Out of the 47 new vessels, all will be equipped with Tier III engines (i.e. 80% NOx cut compared with traditional ones); 29 will be hybrid assuming 15% cut in overall emissions; 2 will be constructing with lightweight materials assuming a total 30% cut in overall emissions. ➤ All newly bought OBEs after 2027 would meet USEPA emission standards. ➤ Fuel for all LVs will be 10 ppm MLD since 2025
Civil Aviation	<p>Based on Three Runway System Environmental Impact Assessment report and Hong Kong International Airport Masterplan 2030,</p> <ol style="list-style-type: none"> 1) projected total air traffic movement (ATM) figures reached 602,000 in 2030, i.e. +43% when compared with 2019; 2) fleet mix distribution is in line with IATA's forecast trend; 3) emission factors are assumed as the same as in 2019 for the aircrafts.

Sources of emissions	Scenario settings
<p>Other combustion</p>	<p>Other combustion included emissions from Industrial Sector, Commercial Sector, Residential Sector, Non-road Mobile Machinery (NRMM), Asphalt mixing, Cement Production, Towngas Production, Sludge Treatment, Landfill Gas Flare, Incineration, Cigarette smoking</p> <p>Major contributors:</p> <p>NOx</p> <ol style="list-style-type: none"> 1. NRMM (48% emission of total “Other combustion”; among which, construction is the biggest source accounting for 76% of NRMM) 2. Cement production (19% emission of total “Other combustion”) <p>PM2.5</p> <p>NRMM contributed 48% PM2.5 emission of total “Other combustion”. Construction is the biggest sector among NRMM, accounting for 74% of NRMM part.</p> <p>Assumptions for NRMM - construction</p> <ul style="list-style-type: none"> - Activity level: emission increased by 6% when compared with 2019, taking construction employment rate as surrogate - Due to tightening of emission standards of newly supplied regulated machines, the cumulative regulated machines with (Stage IV) available in 2030 increased when compared with 2019. <p>Assumptions for cement production</p> <ul style="list-style-type: none"> - Activity level: emission increased by 6% when compared with 2019, taking construction employment growth as surrogate
<p>Non-combustion</p>	<p>Non-combustion contributed 18% PM2.5 and 53% VOC of total emissions in 2019, excluding hillfire emission</p> <p>PM2.5</p> <ol style="list-style-type: none"> 1) Emission from brake, tyre and surface was the largest source, contributing 67% of non-combustion PM2.5 source; 2) Emission from brake, tyre and surface assumed increasing with VKT.

Sources of emissions	Scenario settings
	<p>VOC</p> <ol style="list-style-type: none"> 1) Considered VOC emissions from VOC containing products, including architectural paint, vehicle refinishing paint, marine paint, printing ink, consumer products, adhesive and sealants, fuel and pesticides. 2) Major contributors: Consumer products and total paint, accounting for 44% and 26% of NCVOC respectively before considering the new control measures. 3) Activity level: <ol style="list-style-type: none"> a) Consumer product – increased by 8.4% when compared with 2019, according to population growth and no. of vehicles b) Total paint – increased by 5.6% when compared with 2019, according to the increase in number of manual workers engaged at construction sites 4) New Control Measures on Non-combustion VOC from 2024: <ol style="list-style-type: none"> a) <u>Impose VOC limits on 7 types of cleaning products</u> Estimation of 287 tonnes VOC reduction by imposing legal limit on the affected cleaning products b) <u>Further tighten VOC limits on 22 types of regulated architectural paints under the VOC Regulation</u> Estimation of 567 tonnes VOC reduction through tightening the legal limit of the affected architectural paints