



Guidance on target setting and emissions inventories for the Climate-neutral and Smart Cities Mission

1 Overview

The ambition of the Climate-neutral and Smart Cities Mission is for 112 Mission cities to reach climate-neutrality by 2030, going beyond the European Union's target of climate neutrality by 2050. **Climate neutrality means achieving absolute or net zero green-house gas emissions**, to be realised mainly by cutting emissions, investing in green technologies, and protecting or enhancing the natural environment.

To have an accurate picture of the effort required to bring emissions to net zero in 2030 and where to take action, a good understanding of the current level and sources of emissions is required. Ideally this is based on a recent and comprehensive greenhouse gas (GHG) inventory not older than 2018, in line with the Mission's climate neutrality definition (see [Cities Mission Info Kit for cities](#)). For sectors and sources for which an accurate quantification of emissions is currently missing, cities can work with estimates. Gaps in the availability of data should not lead to delaying action planning processes and cities are encouraged to move forward with their planning and implementation of emission reductions while compiling a comprehensive GHG inventory.

The ambition outlined by the Mission is to limit residual emissions to those which are very difficult or impossible to mitigate by 2030. These remaining emissions have to be compensated via carbon sinks and/or credits to reach a net-zero emission balance by 2030.

One way of expressing the level of residual emissions is indeed to compare their magnitude to a given baseline. The reference the Commission gave was that cities should strive for keeping the residual emission to less than 20% from a recent baseline. That is an orientation, meant to express that emissions should be reduced as much as possible, minimizing the magnitude of what is compensated at the benefit of reduction at the source. The focus is not on the percentage reduction from a given emission baseline, but on the nature of residual emissions still present in 2030 and whether these are truly unavoidable or hard to abate in the given local context.

Furthermore, Mission cities have to present a credible strategy for how they plan to compensate their residual emissions to achieve a net-zero emission balance. This requires a good understanding of the absolute level of emissions still present in 2030 (for further information on possible ways of compensating emissions please consult the Info Kit). Any exclusions of sectors or emission sources covered by the Mission's climate neutrality definition, as identified in the Call for Expression of Interest, have to be explicitly acknowledged, justified and quantified to the extent possible. Gaps in current emission inventories should not motivate the exclusion of sectors, sources or activities from the city's climate neutrality target.

While a net-zero target does not require a baseline year by definition, many cities have so far typically expressed their climate ambition as a percentage reduction from a given baseline year. It is not an issue if a city wishes to express their climate-neutrality target as a percentage reduction from a given baseline year, even if this baseline year is not recent. What matters is the commitment to keep residual emissions to the minimum possible and the commitment for net-zero in 2030 (i.e. to compensate any emissions still remaining in 2030).

In short:

- The starting point for a city to plan for the required emission reduction in the Climate City Contract (CCC) is its current level of emissions which have to be brought to net-zero by 2030. The city's most recent **GHG inventory, where available from 2018 or more recent**, should be the reference for quantifying the emissions gap to be tackled in the CCC.
- Gaps in the inventory should not lead to exclusions of those sectors, sources or activities, but steps should be outlined in the action plan to fill the gaps over time.
- Regardless of the emission inventory used as basis for the initial planning of the CCC, by December 2024 a city should have completed an inventory that covers all scopes, sectors, and gases listed in the Info Kit (replicated below in section 3), ideally concerning the accounting year 2022 as it coincides with the start of the Mission.
- In addition to the current level of emissions, past emission reduction trends will help provide the context for the remaining trajectory to net-zero and the required levels of ambition; cities are encouraged to present this information in their CCCs.
- It is not an issue per se if a city wishes to express their target as a percentage reduction from a given baseline year because that is the reference point for its climate ambition, as long as there is the commitment to limit residual emissions to those which are very difficult or impossible to mitigate by 2030 and to compensate any residual emissions to reach a net-zero emissions balance by 2030. In any case, the city should present a recent inventory as outlined above (i.e. this will typically be a different/more recent inventory than the one used for target-setting).

2 Process

- (a) Assess the data availability on your current emissions, including city-wide GHG inventories (or - in case of geographical exclusions - an inventory which coincides with the geographical boundary of your climate-neutrality target). Note any differences between your existing GHG inventory (i.e., sector coverage, scopes, and gases) and the requirements under the Cities Mission. If your most recent inventory has gaps,

present the best estimates possible from the data available. This will serve as quantification of the emissions gap to be addressed in your CCC.

- (b) Data provision: The Mission Platform, NetZeroCities, is collaborating with two reporting platforms, MyCovenant and CDP-ICLEI Track, to complement CCC submissions with GHG inventories. For cities which have previously disclosed to these platforms, GHG inventory data including baseline emissions inventories and all emissions inventories from 2018 onwards will be shared. When uploading your CCC on the NetZeroCities Portal, you will have the option to specify the reporting platform you would like to transfer the data from, or to upload your latest GHG inventory as a separate file.
- (c) Complete a GHG inventory by December 2024 to have a comprehensive view of emissions. This inventory should be compiled according to the Cities Mission requirements (where available from 2018 or more recent, and ideally choosing 2022 as accounting year). If particular emission source sectors (such as AFOLU or IPPU) or specific greenhouse gases are not covered by your latest GHG inventory, you will need to include them in this inventory.
- (d) Assessing a 'business-as-usual' scenario (i.e., GHG emissions in 2030 without the Mission) can be useful to determine the scale of emission reductions required to achieve climate neutrality while accounting for population growth, increasing GDP etc.
- (e) An assessment of the level and composition of residual GHG emissions in 2030 (i.e., those emission sources which will not be feasible to eliminate) will be necessary, including the reasons for them being unavoidable or hard to abate within the 2030 timeframe. Cities have to outline a strategy for addressing those residual emissions as part of their net zero commitment (using carbon sinks or credits) in 2030 and beyond as part of the Climate Neutral Action Plan.

3 Sectors, Scopes, and Gases

The following GHGs should all be included in terms of carbon dioxide equivalent (CO₂e):

- Carbon Dioxide (CO₂)
- Methane (CH₄)
- Nitrous Oxide (N₂O)
- F-gases (hydrofluorocarbons and perfluorocarbons)
- Sulphur hexafluoride (SF₆) and
- Nitrogen trifluoride (NF₃).

Table 1. The sources and sectors of GHG emissions which should be included in a city’s GHG inventory for the purposes of the Mission.

| | Direct emissions (Scope 1) | Indirect emissions (Scope 2) | Out-of-boundary emissions (Scope 3) |
|-----------|--|--|---|
| Buildings | Emissions from all buildings, facilities and permanent infrastructure / equipment (collectively referred to as ‘stationary energy’ and including public, private, residential and industrial sectors) within the city boundary (excluding EU ETS registered facilities) ³ . | Emissions from outside the city boundary due to the use of grid-supplied energy (electricity or district heating/cooling) within the city boundary | Not applicable |
| Transport | Emissions from on-road and rail (as a minimum) transport within the city boundary ¹ , disaggregated by municipal fleet, public transport, private and commercial transport. | Emissions from outside the city boundary due to the use of grid-supplied electricity used to charge electric vehicles | Recommended by 2030 |
| Waste | Emissions from waste generated and managed/sent to landfill within the city boundary. | Not applicable | Emissions from waste generated within the city boundary but managed/sent to landfill outside the city boundary. |
| IPPU | Emissions from GHGs used in, or as a by-product of industrial processes and products (if present / significant) ² | Not applicable | Not applicable |
| AFOLU | Changes in GHG emissions from any changes in land use giving rise to (sources) or sequestering (sinks) emissions (if significant) ² | Not applicable | Not applicable |

- ¹ Emissions from other transport sub-sectors such as off-road transport, waterborne navigation, etc. should be included if significant. It should be noted however, that emissions associated with these sub-sectors will have to be abated by 2030.
- ² An emission source can be considered insignificant if the size of emissions is smaller than any other sub-sector that shall be reported. In addition, the combined emissions from all sources that are considered insignificant should not exceed 5% of total emissions that shall be reported. For example, if all the emissions sources that shall be reported amount to one million tonnes of CO₂e, the total emissions of all insignificant sources cannot exceed 5% of that, i.e., 50 000 tonnes of CO₂e. (see GCoM 2019)
- ³ Considering that the shift from fossil fuels to biomass is often one of the first measures proposed by local authorities to achieve climate neutrality, it is important that biomass energy is associated with zero emissions only if the net gains are equal or superior to the net losses, meaning that the CO₂ emissions to the atmosphere due to the end-user consumption are entirely compensated by the CO₂ removal on the productive land, and that this has been certified.¹

Developing an accurate GHG inventory is a valuable process to determine where action is needed. However, even with a diligent and robust process and data sources, exact calculations of real-world GHG emissions are difficult and subject to significant margins of error. As such, cities should try to achieve a reasonable level of due diligence, based on real world activity data reflecting city-specific details, aligned on the same timeline (i.e., a calendar year) where possible. Where 'real world' data is difficult to collect/compile, proxy data (e.g., national or regional emissions) or assumptions may be needed. A detailed analysis of the key emission sectors is necessary (i.e., stationary energy/buildings, on-road transport and waste generation/treatment), while less granular estimates may be sufficient for understanding less significant sources of GHG emissions (i.e., off-road transport, waterborne navigation, etc.).

¹ Article 29 of the Directive (EU) 2018/2001 (also known as Renewable Energy Directive or RED) lays down sustainability and greenhouse gas emissions saving criteria for biofuels, bioliquids and biomass fuels.