

Climate Leadership at the Local Level: Global Impact of the Compact of Mayors



About This Study

The Compact of Mayors is a global coalition of cities and towns. Supported by city networks, they pledge to reduce local greenhouse gas (GHG) emissions, enhance their resilience to climate change, and transparently report and track their progress. This study demonstrates the impact of this leadership by estimating the collective impact of Compact of Mayors cities. The analysis covers all cities and towns committed to the Compact of Mayors as of November 23, 2015 — 360 cities from all continents and regions across the globe. Figure 1 to the right shows the distribution of these cities (please refer to the Compact of Mayors website for the complete list of cities). They represent over 340 million people or 8.7% of the 3.9 billion global urban population, and emit 2.08 gigatonnes carbon dioxide equivalent of greenhouse gases (GtCO₂e), nearly 5% of global emissions.

Key Messages

- Commitments already made through Compact of Mayors cities and towns can deliver half of the global urban potential greenhouse gas (GHG) emissions reductions available by 2020.
- Potential urban emissions reductions in 2030 are equivalent to nearly 25% of the “gap” between national pledges made in advance of the 2015 Paris Climate Summit and the “2- degree” scenario.
- Greater ambition today, spurred by local government pre-2020 climate actions, creates a pathway for significant future impact

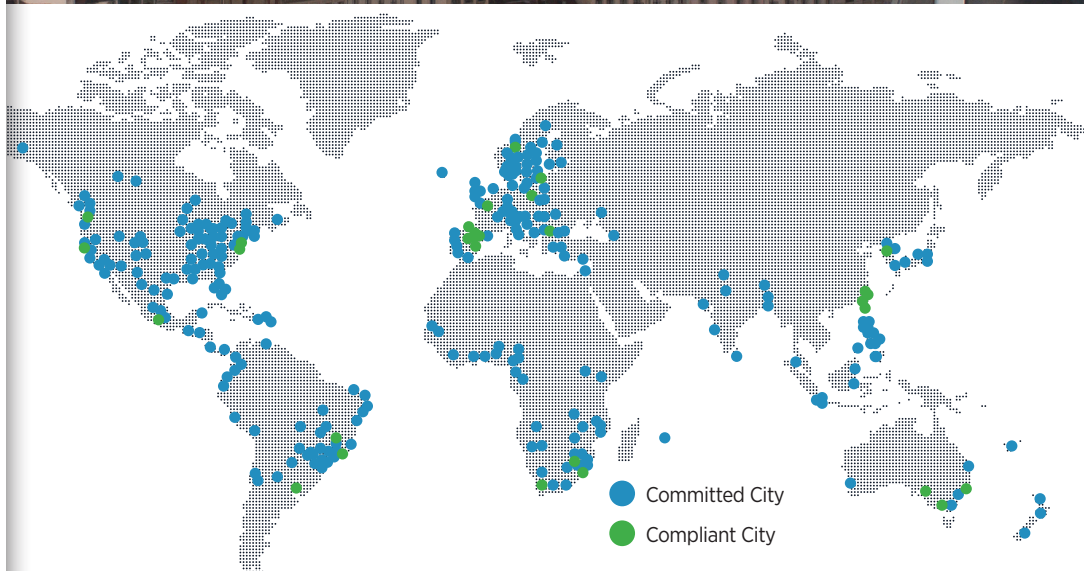


Figure 1: Compact of Mayors Cities

Compact Committed City: Each city committing to the Compact agrees to:

- Measure its greenhouse gas emissions and climate risk using an international standard
- Set data-based targets to reduce emissions and address risk
- Plan to address climate change
- Report on all these efforts publicly and annually

Compact Compliant City: Cities that have already met all of these requirements in 2015. Compliance is confirmed annually.

Compact of Mayors cities are leading the fight against climate change in every region across the globe. Their potential to cut emissions in 2030 is significant, ranging from 11 MtCO₂e per year in south and west Asia to 172 MtCO₂e per year in North America.

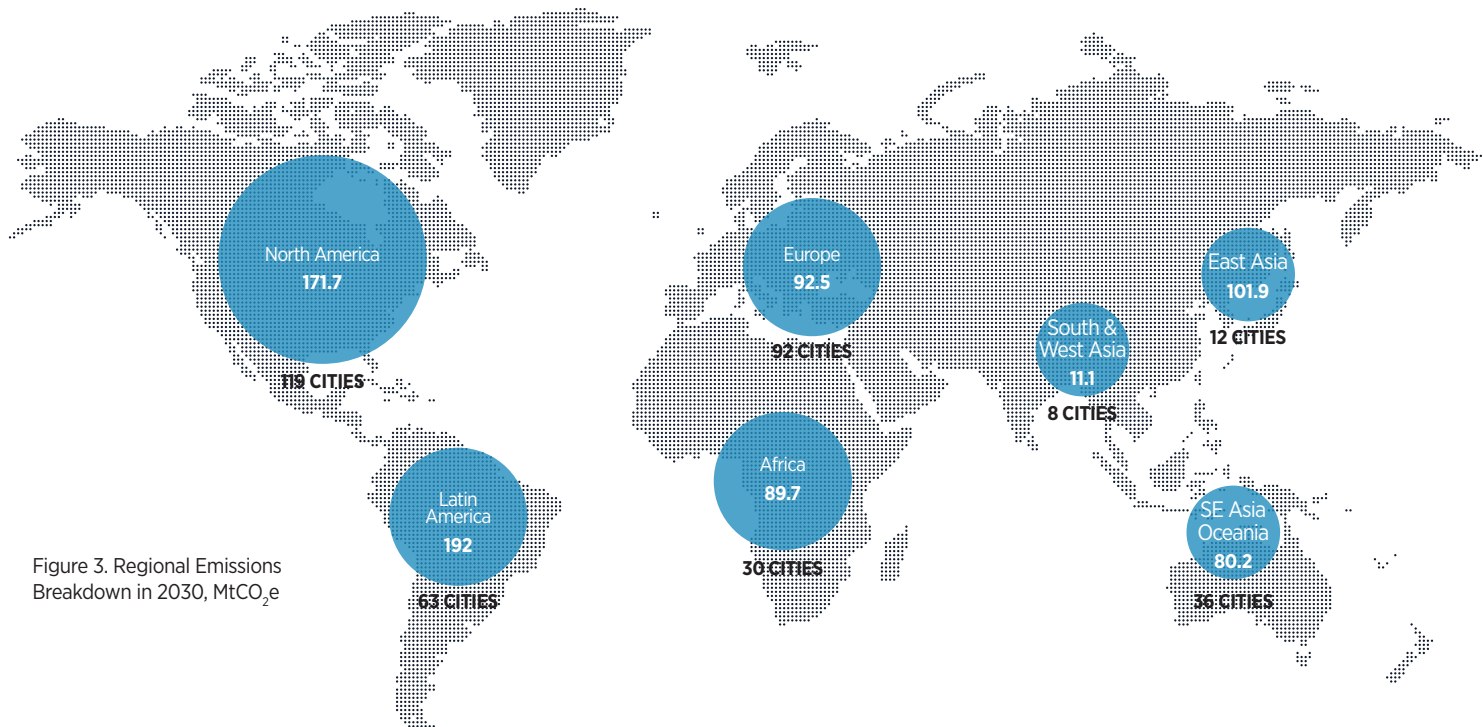


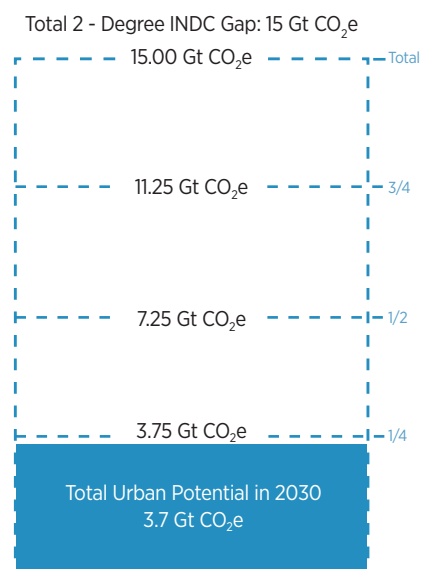
Figure 3. Regional Emissions Breakdown in 2030, MtCO₂e



Annual potential for global urban action is equivalent to 25% of the “2-degree gap” in 2030.

There remains a gap between the emissions level required to meet a 2 degrees centigrade threshold of global warming above pre-industrial levels and the pledges made to date by national governments through their “Intended Nationally Determined Contributions” (INDCs). Notably, the potential for global urban GHG emissions mitigation in 2030 is 3.7 GtCO₂e annually.⁵ This potential is equivalent to roughly 25% of the gap between the pledged INDCs and the 2-degree emissions scenario, as identified by the United Nations Framework Convention on Climate Change.⁶

Figure 4. Diagram of the 2-degree gap with INDCs. Stack diagram of the gap compared to city potential.



⁵ Global urban potential is as reported in the Stockholm Environment Institute’s “Advancing Climate Ambition: Cities as Partners in Global Climate Action” report

⁶ For more details on INDCs, please see the UNFCCC report “Synthesis report on the aggregate effect of the intended nationally determined contributions”

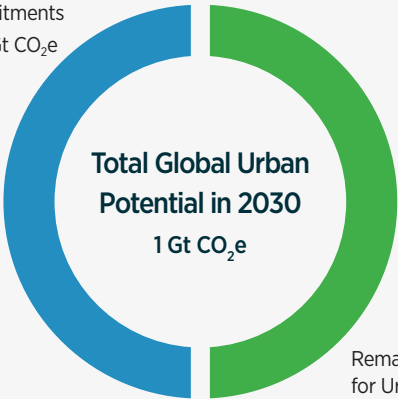
The 360 cities committed to the Compact of Mayors today can deliver over half of the world's 2020 potential urban emissions reductions.

Over the last 20 years, local governments have demonstrated accelerating leadership in tackling climate change, yet the collective impact of this action had not yet been clearly quantified.¹ Launched in 2014, the Compact of Mayors for the first time recognizes all of the city efforts currently underway. The Compact helps cities consolidate and compare their climate actions by creating a framework for consistent and transparent public reporting of greenhouse gas emissions data, tracking climate hazards and risks, and encouraging strategic plans to address both. This data-driven platform, similar to the one used by nations as they create national climate plans, will help direct resources and policies to better support and accelerate local climate actions. **The 360 Compact of Mayors committed cities (as of November 23, 2015) can realize over 50% of the 2020 global potential for urban GHG emissions reductions.**²

Figure 2: Annual Urban Emissions in 2020



GHG Reductions
from Compact
commitments
0.50 Gt CO₂e



Remaining Potential
for Urban Action
0.50 Gt CO₂e

	2020	2030	2050
Global urban potential for actions under current city authority (GtCO ₂ e) ³	1.0	3.7	8.0
Annual emissions reductions from Compact of Mayors cities below BAU levels (GtCO ₂ e)	0.50	0.74	0.95
Cumulative emissions reductions from BAU (GtCO ₂ e) ⁴	2.64	9.06	26.59

Local leaders around the world are making strong commitments to fight climate change, and the Compact of Mayors is providing an outlet to showcase those ambitions. Analysis shows that the 360 cities already committed to the Compact can reduce their GHG emissions by 0.50 GtCO₂e per year from business-as-usual (BAU) levels by 2020, and by 0.74 GtCO₂e annually by 2030. The cumulative emissions avoided account for more than 9 GtCO₂e over the period from 2010 to 2030.

¹ The fifth IPCC Assessment Report identified a lack of consistent and verifiable assessment of city impact: https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_full.pdf

² The analysis of Compact of Mayors commitments as compared to urban GHG emissions reductions is derived from “Advancing Climate Ambition: Cities as Partners in Global Climate Action,” which calculated the emissions mitigation potential of cities based on actions in those three areas where municipal control over energy use and emissions is greatest: buildings, transit and waste management.

³ Global urban potential is as calculated in “Advancing Climate Ambition: Cities as Partners in Global Climate Action.”

⁴ Cumulative emissions are calculated from 2010.

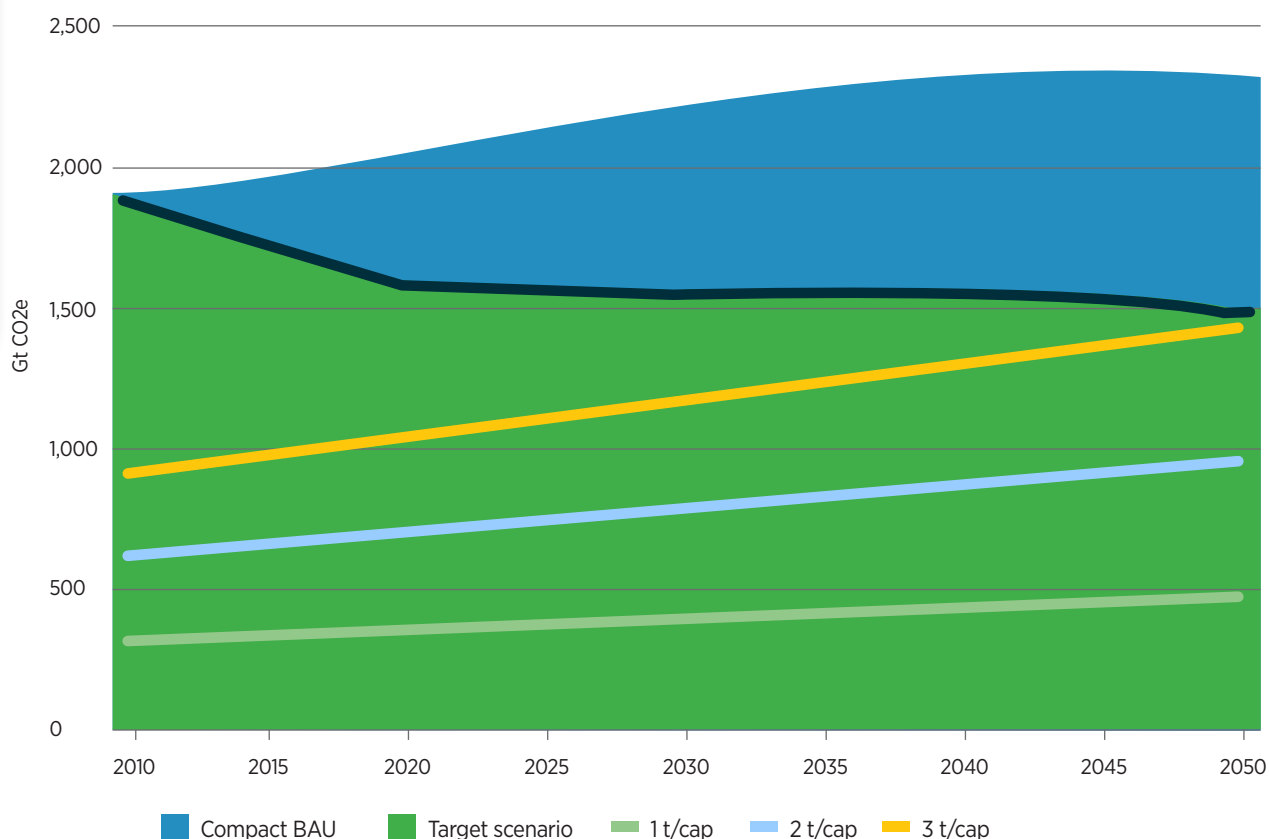
Greater ambition today opens the pathway for significant future impact.

The negotiations underway in Paris at the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) are important in setting national emissions reduction targets from 2020 onwards, but emissions of carbon dioxide, the most prevalent GHG, accumulate in the atmosphere for many decades, if not centuries. This means that each additional ton of avoided emissions today provides cities and nations additional time to tackle the climate challenge and reduces the need for costlier interventions tomorrow. Cities are already leading efforts to cut emissions today, well in advance of the INDC window.

Analysis of Compact business as usual emissions (BAU) projections suggest that in 2030 the average city resident will emit 6.0 tCO₂e per year (see BAU emissions in Figure 6). If Compact cities continue to cut emissions at their present level of ambition by 2030, the average emissions for each resident would drop to 4.2 tCO₂e per year (see Compact commitment estimates in Figure 6).

Ambitious city action has even greater potential to reduce emissions. Many cities are already committing to targets equivalent to only one or two tons of emission per resident. If all Compact cities took on similar efforts, the impacts would be significant: A two-ton average per capita would cut emissions by 17% below business as usual, and a one ton average per capita would cut emissions by 33%. (See 1-ton and 2-ton analyses in Figure 6 below).

Figure 6. 2010 - 2050 annual emission levels under different levels of ambition



Key Terminologies

- **Business-As-Usual (BAU):** A BAU scenario is a projection of cities' future GHG emissions assuming no specific action is taken to cut emissions.
- **Target scenario:** A target scenario is a projection of the cities' future GHG emissions based on established GHG emissions targets or on likely reduced emission levels for cities that have not yet reported targets.
- **Annual avoided emissions:** The difference between BAU scenario and target scenario in a given year
- **Cumulative avoided emissions:** The aggregate amount of all annual avoided emissions for a given number of years

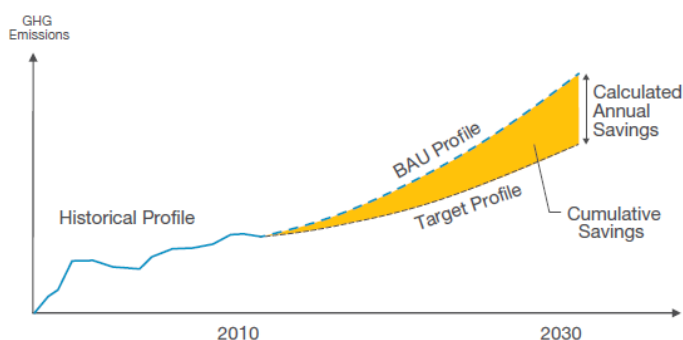
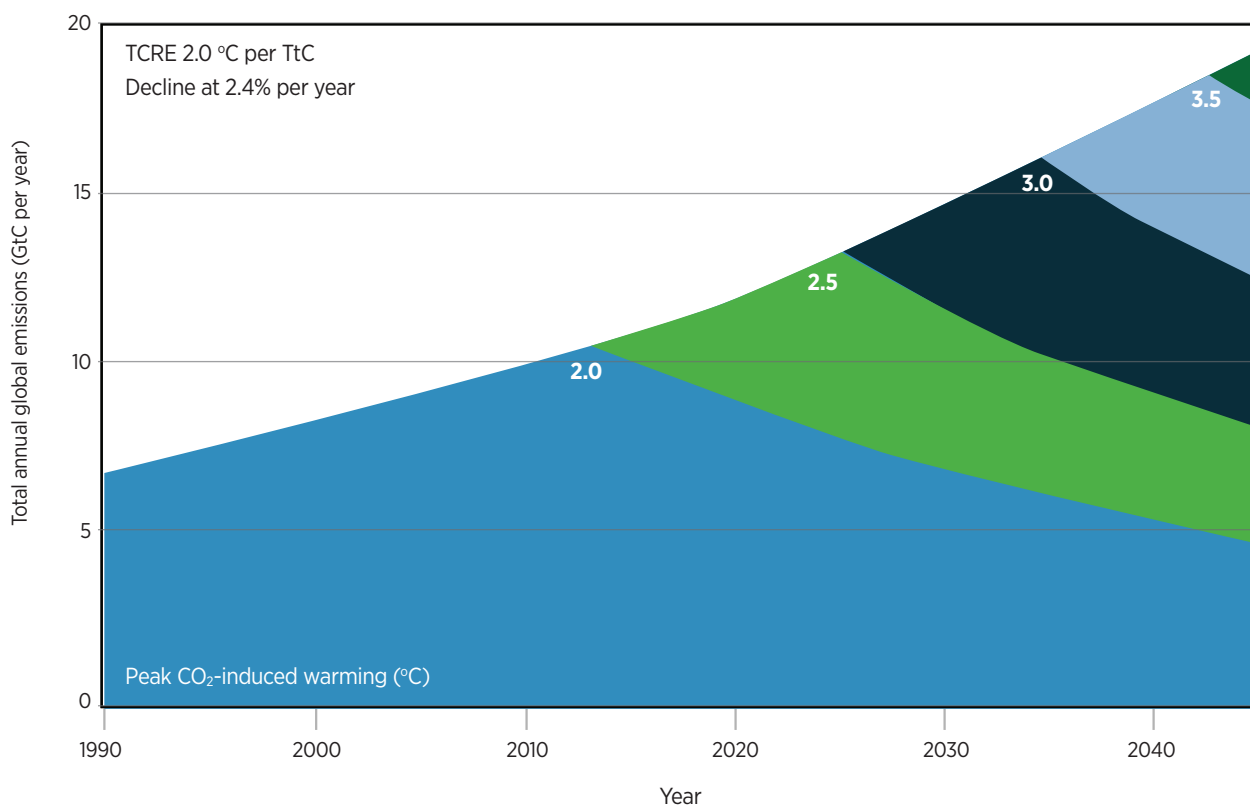


Figure 5: Peak emissions scenarios under delayed action



As indicated in the chart above, limiting peak warming to two degrees above pre-industrial levels means reducing carbon dioxide emissions by 2.4% per year from 2015 (blue). Delaying emissions mitigation by a decade, until 2025, means the same rate of cuts would result in 2.5 degrees of global warming (green). Delayed action will, therefore, make it more difficult to prevent the worst impacts of climate change, as staying below two degrees would require much faster and deeper emissions cuts.⁷

As noted earlier, cities that have committed to the Compact of Mayors as of November 23, 2015, can contribute half of all 2020 annual global urban emissions mitigation potential (see Figure 1). **The sooner cities scale up their climate actions, the greater room there will be for additional emissions cuts in 2020 and beyond.**

⁷ Stocker & Allen (2013) – Impact of delay in reducing carbon dioxide emissions



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Contributors – Compact of Mayors
Management Committee

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For further information, including a technical note that details
the methodological approach and an interactive infographic,
please go to www.compactofmayors.org

About Compact of Mayors

The Compact of Mayors is a global coalition of mayors and city officials committing to reduce local greenhouse gas emissions, enhance resilience to climate change and track their progress publicly. It is an agreement by city networks – and then by their members – to fight climate change in a consistent and complimentary manner to national efforts.

- The Compact collects the significant climate action data that cities are already reporting in a consistent, transparent manner and makes that data available in a single place.
- The Compact builds on existing cooperative efforts, partnering with other initiatives to better measure and communicate the impact of city action.
- The Compact represents the greatest opportunity to bring attention to, and quantify, city action, both in the lead-up to Paris and beyond.

WWW.COMPACTOFMAYORS.ORG