SYNERGY SOLUTIONS 2025

Linking Climate and Health Action In Cities

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Key Messages

Cities are critical arenas for synergistic climate and health action.
Urban areas contribute the majority of global greenhouse gas emissions and face acute health challenges from pollution, heat stress, and sedentary lifestyles. However, they also concentrate resources and governance capacity for transformative action.

Four main pathways offer high-impact co-benefits.
These include (1) air pollution reduction from fossil fuel phase-out, (2) dietary shifts to plant-based diets, (3) increased physical activity through active travel, and (4) resilient urban forms that reduce heat exposure and enhance well-being.

Air pollution reduction yields immediate and massive health benefits.
Replacing fossil fuels with clean energy could prevent up to 1.2 million premature deaths annually by 2040, with up to 4.7 million saved if measures against black carbon and methane are adopted.

Shifting to plant-based diets improves health and cuts emissions.
Plant-forward diets could prevent 10–11 million premature deaths yearly; cities can provide health food environments and change procurement in public cantines.

Active mobility investments reduce disease burden and emissions.
Infrastructure promoting walking and cycling can cut emissions, improve cardiovascular health, and reduce mortality—e.g., Bogotá's cycling network saves ~300 lives annually.

Urban design must balance compactness and green infrastructure.
Compact cities reduce car reliance and energy use but can constrain green space. Well-planned designs (e.g., green corridors, rooftop gardens) can resolve this tension.

Building retrofits enhance thermal comfort and health while reducing energy demand.
Insulation, ventilation upgrades, and clean cooking solutions lower respiratory disease rates and improve mental well-being, especially among low-income populations.

Sustainable waste systems offer climate and health co-benefits.
Landfill gas capture, composting, and recycling reduce methane emissions and improve sanitation, benefiting informal workers and urban hygiene.

Nature-based solutions mitigate heat and promote mental health.
Increasing urban tree cover to 30% could prevent over 2,600 heat-related deaths each summer in Europe and reduce mental health risks by 9–11% globally.

City-scale actions must be tailored to local conditions.
Health benefits are highest in regions with high baseline pollution or inactivity (e.g., India, China). Policymakers must adapt interventions to demographic and geographic contexts.

Cross-sector coordination and data sharing are essential.
Integrated climate-health governance and open-access platforms can support local decision-making and maximize co-benefits.

National and international support is vital for urban leadership.
Financial and technical backing enables cities—especially in the Global South—to implement synergistic strategies. Citizen science can bridge data gaps and enhance accountability.

Executive Summary

Cities are at the epicentre of climate challenges and public health opportunities. Urban areas, home to over half the global population, generate the majority of greenhouse gas emissions while facing heightened exposure to air pollution, heat stress, and chronic disease. Yet they are also uniquely positioned to deliver synergistic climate-health benefits due to their dense populations, governance capacity, and infrastructure concentration.

This report presents a framework for realizing co-benefits through urban action across four key pathways: (1) phasing out fossil fuels to improve air quality; (2) promoting plant-based diets to enhance public health and reduce emissions; (3) supporting active mobility and public transport to increase physical activity; and (4) designing resilient urban form to mitigate heat and foster well-being.

Evidence shows that climate interventions such as renewable energy adoption and traffic electrification can prevent millions of premature deaths annually. Dietary shifts could avert 10–11 million deaths per year, and cities can a major role by changing procurement for cantines and providing health food environments. At the same time, cycling infrastructure and building retrofits can reduce cardiovascular and respiratory illness at scale. These actions also help curb emissions and support adaptation.

However, urban interventions must anticipate trade-offs. Compact cities reduce emissions but may constrain green space unless planned inclusively. Urban greening offers mental health benefits and thermal comfort, but species choice and spatial allocation must align with local ecological and social contexts.

Effective implementation demands institutional coordination, anticipatory governance, and inclusive planning. Policy coherence across transport, housing, food systems, and waste management enables cities to leverage synergies, reduce costs, and amplify public benefits.

National and international support is essential. Cities in the Global South face disproportionate vulnerabilities and limited capacity. Finance, technical assistance, and shared knowledge platforms can unlock their leadership in co-beneficial climate-health action. Citizen science and participatory planning can bridge data gaps and build public trust.

This report urges urban leaders to prioritize integrated policies, invest in interventions with proven health and climate returns, and embed equity in every step of the policy cycle. This requires close coordination between climate and health officials within and beyond municipalities. A city that protects its climate and public health not only survives but thrives—ensuring well-being, sustainability, and justice for all.

Introduction

Cities are at the epicentre of both climate challenges and health opportunities. Rapid urbanization, coupled with high energy use and transport activity, has made urban centres predominant contributors to greenhouse gas emissions, while simultaneously exacerbating health issues such as those from exposure to air pollution, heat stress, and sedentary lifestyles. However, these challenges present a unique opportunity: actions to mitigate climate change often have near-term and measurable health co-benefits (such as increased life expectancy) as well as reducing the risks of climate change in the longer-term. For example, replacing fossil fuel energy sources with renewables not only reduces carbon emissions but also improves air quality, primarily preventing cardiovascular diseases and cognitive decline, such as dementia, and contributing to the reduction of respiratory illnesses. Similarly, switching to active transport like walking and cycling lowers emissions and simultaneously enhances physical activity, reducing the prevalence of non-communicable diseases such as diabetes, and obesity.

Cities have a specific capacity to drive transformative changes through integrated policies – often specific to places - that address both climate and health outcomes. For instance, retrofitting buildings for energy efficiency through improved insulation and ventilation can reduce emissions while improving indoor air quality and thermal comfort, reducing respiratory illnesses. Transportation policies encouraging public transit and active travel not only cut down emissions but also reduce noise pollution and - often but not always - road injuries, while promoting healthier lifestyles. Nature-based solutions, such as urban greening and enhancing access to parks, help combat urban heat islands and provide mental health benefits, alongside improving local air quality (depending on the species of trees: some trees produce allergens and volatile organic compounds (VOCs) that are ozone precursors; they can also trap pollutants). This indicates that urban interventions, minimising trade-offs, can yield synergistic benefits that extend across multiple sectors.

Cities stand to gain immensely from adopting a joint climate-health agenda – and there is opportunity to capitalise on health benefits of urban climate action in the upcoming special report of the IPCC on cities (Creutzig et al., 2025). Urban populations are particularly vulnerable to the adverse effects of climate change, such as heatwaves, flooding, and pollution. By prioritizing interventions that yield adaptation and mitigation (co-)benefits, cities can enhance public health, reduce healthcare costs, and increase resilience against climate impacts. Moreover, cities that champion these strategies can serve as models for scalable solutions, driving innovation and fostering international collaboration. Emphasizing these co-benefits enables cities to position themselves as leaders in a sustainable, equitable transition to a healthier, low-carbon future.

Pathways of Health Co-Benefits of Climate Action in Cities

Based on the Lancet Pathfinder Commission report and the broader literature, four key pathways linking climate action with health benefits are outlined with strong evidence and quantified impact assessments: (1) reduction in air pollution through the phase-out of fossil fuels, (2) transition to healthy, sustainable diets, (3) promotion of active travel and public transport; (4) and modifications towards heat resilient urban form (Figure 1).

1. REDUCTION OF AIR POLLUTION VIA FOSSIL FUEL PHASE-OUT.

Air pollution from fossil fuels is a major global health hazard, contributing to about 5 million premature deaths annually (Lelieveld et al., 2023). Phasing out fossil fuels, especially coal, reduces ambient concentrations of $PM_{2.5}$, NO_2, black carbon, and tropospheric ozone — pollutants linked to ischaemic heart disease, stroke, chronic respiratory conditions, and diabetes. Modelled estimates indicate that achieving Nationally Determined Contributions (NDCs) in nine countries could prevent approximately 1.2 million air pollution-related premature deaths annually by 2040. For example, decarbonising electricity generation in India could yield reductions of up to 182 years of life lost (YLL) per 100,000 people annually — an order of magnitude higher than comparable interventions in the EU, due to higher baseline pollution levels. Specific co-benefits include up to 4.7 million fewer deaths from ambient air pollution if measures targeting short-lived climate pollutants (SLCPs) CH_4 and black carbon are fully implemented, alongside an estimated reduction in global average temperature of 0.5°C by 2050. In addition, clean cookstoves are a critical intervention particularly in low-income settings, achieving the highest potential median health co-benefits of all reviewed actions. These technologies reduce 1279 YLL per 100,000 people annually, primarily through improved household air quality, though their GHG mitigation benefits are relatively modest

2. INCREASED CONSUMPTION OF HEALTHY, SUSTAINABLE DIETS.

Shifting to predominantly plant-based diets — low in red meat and dairy, high in fruits, vegetables, and whole grains — has dual benefits: reduction in diet-related non-communicable diseases (NCDs) and decreased agricultural emissions. The EAT-Lancet Commission estimates that adopting such diets could prevent 10–11 million premature deaths annually by 2040. In Brazil, the city of Belo Horizonte implemented a municipal food security program promoting plant-based diets, which reduced food-related emissions and improved diet-related health outcomes among low-income populations (FuturePolicy, 2020). In the Pathfinder umbrella review, dietary interventions showed the highest health co-benefits among all sectors aside from cookstove interventions (which is however only relevant to those using polluting fuels), with median reductions of 306 YLL per 100,000 people per year. These dietary shifts could also halve agricultural GHG emissions and reduce deforestation by 20% between 2030 and 2050. However, care must be taken to address potential micronutrient deficiencies (e.g., B-12, calcium, zinc) particularly in low-income contexts.

3. INCREASED PHYSICAL ACTIVITY THROUGH ACTIVE TRAVEL AND PUBLIC TRANSPORT.

Inactivity contributes to approximately 3.2 million premature deaths globally each year (World Health Organization, 2020). Promotion of active transport (walking, cycling) and public transit enhances physical activity and reduces NCD burden, especially cardiovascular diseases (Jarrett et al., 2012; Woodcock et al., 2009). In urban contexts, infrastructural and economic pricing instruments are the most feasible and cost-effective ways to raise physical activity levels (Table 1). However, the full mitigation potential

TABLE 1. Comparison of active mobility promotion instruments on CO_2 emissions reduction and health/public health impact (life expectancy, mortality, or related indicators). Based on (Creutzig et al., 2022, 2012; Filigrana et al., 2022; Javaid et al., 2020; Kraus and Koch, 2021; Liotta et al., 2023)

Instrument Type	CO_2 Emissions Impact	Health/Life Expectancy Impact	Illustrative Example
Behavioral (Campaigns, Nudges)	**Low direct impact.** Can lead to small reductions in car use (often a few percent at best) if widely adopted. Typically insufficient alone to significantly cut emissions citywide.	**Low to modest.** Improves awareness and physical activity for some individuals, but population health change is minor without environmental changes. Small gains in fitness; limited measurable change in life expectancy citywide.	e.g. A workplace "Bike-to-Work" challenge that increases cycling among employees by 5%, yielding slight CO_2 savings and fitness improvements in that group.
Infrastructure (Bike lanes, Ped Zones)	**High impact.** Enables substantial modal shift from cars to active modes. Protected bike lane networks have cut emissions by thousands of tons annually in cities. Potential for ~5–20% urban transport CO_2 reduction with extensive network.	**High impact.** Large increases in physical activity and safety. Reduces chronic disease and extends life expectancy. Can prevent hundreds of premature deaths annually in a city due to exercise and fewer crashes.	e.g. Bogotá's 368-mile protected bike lane network: ~22,000 tons CO_2 less per year, ~300 lives saved per year from increased exercise. Copenhagen's cycling infrastructure: 1.1 million fewer sick days/yr and €1 health benefit per km cycled.
Economic (Subsidies, Pricing)	**Medium to high impact.** Pricing disincentives (like congestion charges) can cut inner-city traffic emissions ~10–20%. Subsidies (e.g. e-bikes) can replace significant car travel (participants cut driving ~30–40%). Scaled-up, these measures meaningfully reduce CO_2 (e.g. >0.5 tonne/year per person switching a daily car trip to bike).	**Moderate to high.** Mode shifts improve health via more active travel and less pollution. Notable improvements in cardiovascular fitness for those switching to walking/cycling; some reduction in pollution-related diseases citywide. Effect on life expectancy is positive (e.g. congestion charge led to safer cycling and better air, preventing injuries and illnesses).	e.g. London's congestion charge: traffic 21%, cycling +43%, notable emission cuts and cleaner air. An e-bike rebate program in Canada: participants drove 48 km less per week (30% drop), increasing physical activity; cost \$190–720 per ton CO_2, more cost-effective than EV incentives.
Social Norm (Events, Community)	**Low direct impact.** Temporary car-free events reduce emissions locally (e.g. lower daily pollution levels) but traffic often shifts elsewhere. Long-term emission effects are indirect, via influencing policy/behavior.	**Moderate (locally high).** Events like open streets get tens of thousands active, improving fitness and social well-being. Regular participation can yield health benefits (weight loss, better blood pressure) for individuals; contributes to social change that supports health.	e.g. Kigali's Car-Free Sundays: ~10,000 people exercise in the streets twice a month, promoting fitness and health. Bogotá's weekly Ciclovía: significant caloric expenditure by ~1 million participants; cost-benefit ratio ~4:1 in healthcare savings.
Policy/Regulatory (Urban planning, Car restrictions)	**High impact (when comprehensive).** Policies can produce sizable CO_2 reductions by discouraging car use and enabling compact, active urban form. Integrated policies in some cities projected to cut transport CO_2 ~20%. Specific measures (car bans, low-emission zones) typically yield a few percent CO_2 drop each but together drive deep reductions.	**High impact.** Safer streets (lower speeds, fewer cars) reduce fatalities – a direct life expectancy boost. Cleaner air and more daily exercise from active-friendly urban design significantly lower rates of chronic disease. Benefits accrue over long term; can save thousands of lives annually in megacities through reduced pollution and accidents.	e.g. Strict car-free historic centre in Ghent, Belgium: increased walking/cycling, lower emissions, zero pedestrian deaths. Low Emission Zone in London: NO_2 pollution –53% in a year, encouraging active travel and preventing pollution-related deaths. High-density, transit-oriented development in Curitiba, Brazil: higher transit/walk share, lower per capita CO_2 and better public health indicators than other Brazilian cities.

depends on systemic shifts that displace car use, not just small modal substitutions. Actions in India, where the burden of physical inactivity and air pollution is high, showed the greatest health co-benefit intensity, up to 60 YLL per 100,000 people per year. The Ciclovía program in Bogotá — weekly car-free street closures for recreational activity — achieved a health cost-benefit ratio of 3.23–4.26 from increased physical activity, with an annual cost of only $6 per capita, showing strong returns for active travel investment (Montes et al., 2012).

4. URBAN FORM PLAYS A ROLE IN SHAPING CLIMATE RESILIENCE AND HEALTH OUTCOMES

Urban design plays a critical role in shaping both climate resilience and health outcomes. Expanding green and blue infrastructure — such as trees, parks, green roofs, and water bodies — can reduce the urban heat island effect, enhance climate adaptation, and improve public health. Vegetation provides natural cooling, filters air pollutants, and supports mental well-being, while compact and connected neighbourhoods (e.g., "15-minute cities") foster active lifestyles and social cohesion. Modelled estimates from 93 European cities indicate that increasing tree cover to 30% could reduce average summer urban temperatures by approximately 0.4°C and prevent around 2644 heat-related deaths per year (Iungman et al., 2023a). In Ahmedabad, India, the municipal cool roof program lowered indoor temperatures by

FIGURE 1. Overview of actions that produce both climate mitigation, adaptation and health benefits in cities.

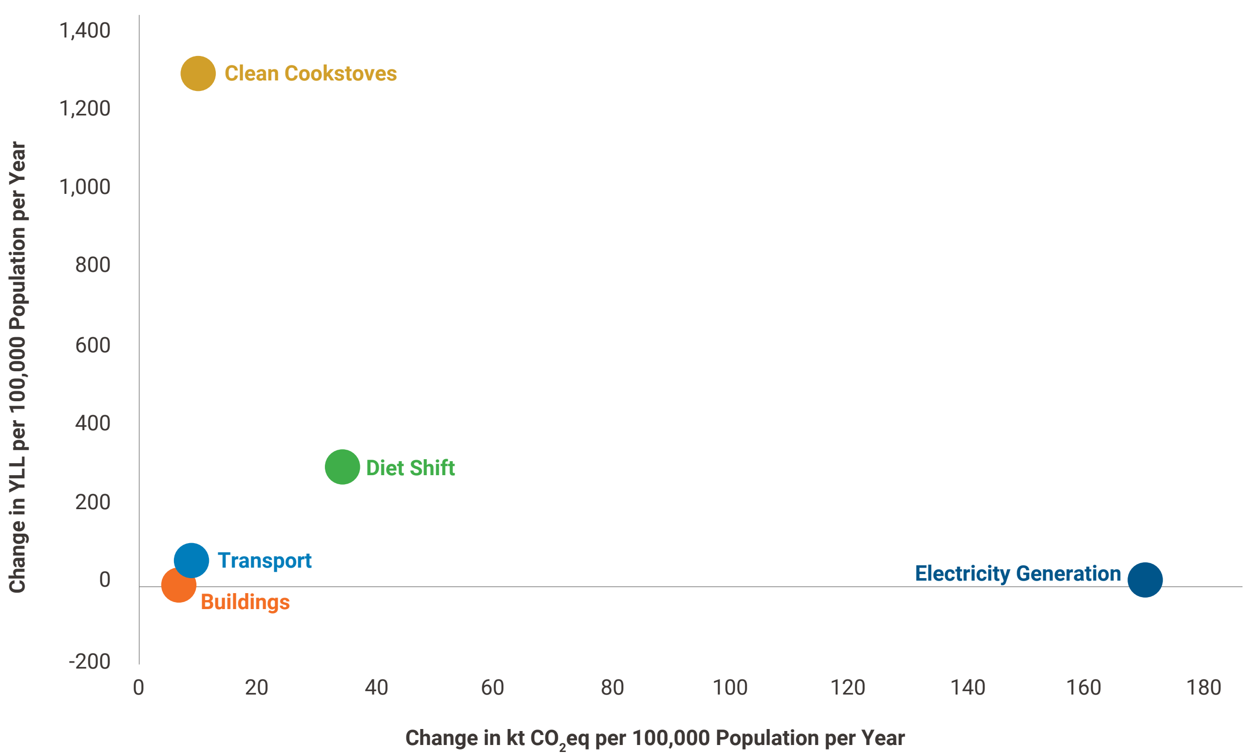
	Reduction of Air Pollution	Promotion of Healthy, Sustainable Diets	Increased Physical Activity	Urban Form
Climate interventions	• Transition to clean energy (e.g., wind, solar) • Low-emission zones and vehicle bans • Electrification of transport and heating	• Promote plant-rich, low-emission diets • Develop urban food strategies • Reduce meat and dairy in public procurement and retail offerings	• Investment in walking & cycling infrastructure • Car-free zones, BRT, and public transit • 15-minute city designs	• Expand green infrastructure (e.g., street trees, parks) • Preserve and connect blue spaces (e.g., rivers, wetlands) • Implement compact, mixed-use urban layouts (e.g., 15-minute cities)
Health mechanism	• ↓ $PM_{2.5}$, NO_2, O_3 exposure • ↓ Respiratory diseases, CVD and dementia • ↓ Premature mortality	• ↓ Red and processed meat consumption • ↑ Intake of vegetables, legumes, whole grains • ↓ Obesity, diabetes, heart disease, colorectal cancer	• ↑ Daily physical activity • ↓ Non-communicable diseases (e.g., CVD, diabetes) • ↑ Mental health and well-being	• ↓ Urban heat island effect • ↓ Heat-related illness and mortality • ↑ Mental wellbeing and physical activity • ↓ Air pollution through mode shift and vegetation
Example	India: Decarbonising electricity generation could prevent up to 182 years of life lost (YLL) per 100,000 people annually	EAT–Lancet diet shift: Could prevent 10–11 million premature deaths per year globally	Bogotá, Colombia: The Ciclovía program — weekly car-free street closures for recreational activity — achieved a health cost-benefit ratio of 3.23–4.26 from increased physical activity	Ahmedabad, India: Cool roof program reduced indoor temperatures by 1.5–2°C and prevented heat stroke during extreme events

up to 2°C and was associated with reduced cases of heat stress and heat stroke during extreme temperature events (Vellingiri et al., 2020). These examples underscore how urban form interventions can produce substantial health co-benefits while also supporting climate mitigation and adaptation goals.

While electricity generation from clean renewable sources and dietary shifts feature prominently for their dual climate and health benefits, the evidence highlights the importance of local context. For example, regions with high pollution levels, like India and China, show markedly greater health co-benefits than areas with cleaner air. This also points towards tailoring mitigation strategies that prioritize both health and climate outcomes to particular geographies and contexts.

Comparative insights reveal important synergies and trade-offs. Dietary shifts, for instance, provide balanced and substantial benefits across both health and climate metrics as well as reductions in biodiversity loss, land use change, freshwater use and other environmental benefits. Clean cookstoves bring potentially large health gains but small reductions in emissions of GHGs, although reductions in black carbon, a short-lived climate pollutant, may be large (randomised trials on health gains have shown disappointing results for various reasons including stacking of energy sources whereby inefficient stoves continue to be used alongside more efficient stoves for cultural reasons). Electricity generation actions, particularly the transition to renewables, offer the highest potential for climate mitigation but demonstrate regionally variable health outcomes. Hence, local conditions and implementation scales determine the effectiveness of mitigation actions and scale of health co-benefits. Figure 2 summarizes the main quantitative findings of key strategies.

FIGURE 2. Benefits of sectoral action for climate and health. Adapted from Whitmee et al., 2023. Note that this overview hides many context-specific insights.



Synergies Between Climate and Health in Urban Sectors

How effective are what kind of urban interventions? Here we summarize evidence of synergetic city-scale interventions in five urban sectors — transport, buildings, waste, food, and urban form — and analysing both mitigation and adaptation efforts. Table 2 provides a systematic overview on key interventions.

TABLE 2. Summary of urban sectoral action and realized benefits in terms of climate change mitigation, air quality and health improvements. Estimates are from city-wide studies.

Sector	Key Actions	CO_2e Reduction (%)	Air Pollution Reduction	Illustrative Example
Transport	Traffic control, car sharing, public transport	10-74% (traffic control), 30-70% (car sharing)	Substantial (up to 74% for PM10 in some cities), $PM_{2.5}$ reduction with direct health benefits	Mortality reduction: 5-31% in specific areas; PA increase: ~12-50%
Buildings	Energy efficiency improvements, renewable energy	27-100 (renewable energy, inc)	Improved indoor air quality (mixed evidence)	Improved thermal comfort reduces morbidity; mental health: 10-20% improvement
Food	Sustainable diets, urban agriculture	22-30% (dietary shifts)	Limited data	Mortality risk reduction: ~1-19% (diet shifts)
Waste	Recycling, energy recovery from waste	Mixed (recycling, waste-to-energy)	Lower emissions for composting/anaerobic digestion compared with landfill	Respiratory risk reduction for composting (specific metrics not available)
Urban Form	Walkability, green spaces, density enabling public transit	Modest to medium reductions (active travel), CO_2 sequestration of trees	Up to 60% PM10 reduction in green spaces	Increased PA: ~10-75 min/week; injury reduction: up to 44% in children

TRANSPORT: MORE PUBLIC TRANSPORT, MORE CYCLING, LESS CARS, AND ACCELERATED ELECTRIFICATION

Across diverse intervention types – from pricing policies to infrastructure investments – the peer-reviewed evidence consistently shows synergistic benefits for climate mitigation and public health.

For example, ***congestion charging*** in cities like London, Stockholm, and Singapore achieves meaningful traffic reductions of ~10–20%, corresponding to lower CO_2 emissions (e.g. −16% in central London) and improved air quality. Health-wise, congestion charges primarily result in improved road safety (fewer crashes resulted in up to 30–40% reductions of injuries within charging zones) and secondarily in health outcomes (e.g. London noted 1888 life-years gained from cleaner air (Green et al., 2016), while Stockholm reported nearly 50% fewer child asthma attacks (Simeonova et al., 2019)). Effectiveness hinges on strong enforcement and alternative transit options to carry displaced travellers, leading to lower CO_2 emissions and improved air quality (Green et al., 2016; Chamberlain et al., 2023).

Parking pricing reforms, though less extensively studied, have shown evidence to reduce vehicle travel (SFpark cut cruising VMT ~25%) and associated emissions (estimated of 13% CO_2 decline in pilot areas) (Joy and Schreffler, 2015). By discouraging driving, it likely improves air quality and safety; however, direct health data are scarce. Parking reforms address a structural car-use incentive, so their impact may unfold gradually and citywide. They are a promising support strategy that amplifies the effects of other measures (e.g. making a congestion zone effective beyond its cordon) (Chamberlain et al., 2023).

Developing ***public transport infrastructure*** is one of the most powerful tools for co-benefits. New BRT or rail lines demonstrably reduce emissions (Mexico City BRT: ↓$PM_{2.5}$ (Bel and Holst, 2018), NOx; multi-city metros: −11% CO_2) by shifting commuters away from private vehicles. Health benefits include better air quality (less exposure of CO; benzene and $PM_{2.5}$ ranging between 20% and 70% (Wöhrnschimmel et al., 2008)) and increased physical activity (transit passangers often meet exercise guidelines by walking to stops). Importantly, public transit improves road safety by reducing car volume and organizing traffic: case studies show 50% or greater declines in crash injuries on transit corridors. To maximize benefits, transit investments should be coupled with policies to incentivize ridership (affordable fares, good coverage, disability access) and ensure clean transit technology to avoid emissions from old vehicles.

Expanding ***active transport (cycling) infrastructure*** provides exceptionally large health gains via physical activity (of middle aged and older people) and also contributes to emissions reduction by replacing car trips. Cities that built extensive bike lanes have observed significant modal shifts (e.g. +48% cycling with pop-up lanes) and modest but non-trivial CO_2 reductions (≈1–2% in a few months, more over years) (Mueller et al., 2015). The health advantages of cycling infrastructure yield high returns: reductions in all-cause mortality, improvements in cardiovascular health, and enhanced mental health. For example, open street initiatives in some Latin American cities have been credited with preventing hundreds of deaths annually through exercise (Velázquez-Cortés et al., 2023). There is also evidence of improved mood and reduced stress when people switch to active commutes. The main caution is safety – the infrastructure must be designed to protect users. When done properly, cycling/walking initiatives are a win-win, addressing the sedentary lifestyle epidemic while cutting fuel use and pollution (Kraus and Koch, 2021). Recent findings from the International Transport Forum (ITF) highlight that ambitious low-carbon transport policies not only reduce emissions but also yield substantial health benefits. Specifically, investing in infrastructure for active mobility such as walking and cycling can significantly increase physical activity levels and reduce cardiovascular disease and other sedentary-related health risks, while shifting away from car dependency lowers exposure to harmful air pollution (ITF, 2025).

The implementation of ***electrification and low-emission zones (LEZ)*** directly targets tailpipe emissions, thereby reducing urban air pollutants and mitigating climate emissions (especially if the grid is green). Empirical results show significant pollution declines post-implementation, with health benefits ranging from fewer hospital visits (asthma, COPD down ~10–20%) to improved well-being (Beshir and Fichera, 2025; London Mayor's Office, 2023). Electrifying public transit and commercial fleets in megacities with dirty air can yield enormous public health improvements (thousands of lives saved annually in places like Delhi or Beijing, per modelling studies). While the climate benefit of electric vehicles (EVs) depends on power generation, the high efficiency of electric motors and the global rapid transition to renewable energy (Creutzig et al., 2017) make vehicle electrification a climate win. Additionally, reduced noise from EVs can enhance urban mental health. Air pollution benefits are more ambiguous as tyre and brake PM pollution from EVs are higher compared to fossil fuel powered vehicles because the former are heavier on average although they use regenerative braking which reduces emissions, and tailpipe emissions are vanishing. Overall, the evidence base for direct health benefits of electrification (e.g. sick leave reduction, anxiety reduction) is growing, affirming that clean vehicle policies are “smart policy that protects health, saves money, and improves quality of life”.

Several themes emerge across these interventions. First, nearly all interventions (except perhaps parking, indirectly) reduce ambient air pollution, which is strongly linked to cardiovascular disease and cognitive decline, such as dementia, in addition to respiratory illness. Cities implementing these policies often see drops in NO_2 and $PM_{2.5}$ that meet or exceed WHO guidelines, yielding measurable health dividends. Second, mode shift and physical activity are crucial. Policies that successfully shift people from cars to public transit or active modes have a compounded benefit: reducing emissions and increasing exercise. This combined effect is evident in scenarios like replacing a car commute with a bike commute – CO_2 drops and the person gets healthier. Third, traffic safety tends to improve when car use is reduced or calmed. Fewer vehicle-kilometres travelled and slower speeds (due to traffic management or dedicated lanes) generally mean fewer crashes, benefiting pedestrians, cyclists, and drivers alike. However, care must be taken to mitigate any risk transfers (e.g. more cyclists → ensure cycling is safe). Fourth, mental health and well-being are increasingly recognized co-benefits. Whether through reduced stress (less congestion, less noise) or through the mood-enhancing effects of exercise and clean air, many interventions improve self-reported quality of life. For instance, London’s experience showed happier, less anxious residents after clean-air zones were in place (Beshir and Fichera, 2025).

BUILDINGS: BETTER INDOOR AIR QUALITY

Improving indoor air quality (IAQ) in buildings can reduce occupants’ exposure to pollutants while also cutting climate emissions, especially when interventions target polluting fuel use or inefficient ventilation.

Clean cooking fuel programs (residential – Global South) confer climate mitigation benefits by cutting black carbon and CO_2 emissions. Within a single winter, this transition averted an estimated 6,000+ premature deaths by reducing $PM_{2.5}$ pollution, while also cutting ~10 million tons of CO_2 emissions. Replacing solid biomass stoves with clean fuels is a prominent co-benefit strategy. For example, the multi-country HAPIN trial (Guatemala, India, Peru, Rwanda) provided liquefied petroleum gas (LPG) stoves to half of 3,200 households and achieved a >50% reduction in fine particulate ($PM_{2.5}$) exposure in intervention homes (median ~35 μg/m³ vs ~70 μg/m³ in controls). However, despite this large IAQ improvement, the trial observed no significant differences in health outcomes (e.g. infant pneumonia incidence, birth weight) between LPG and traditional stove users over 1–2 years. This unexpected result, echoed by earlier cookstove trials, suggests that extremely high pollution reductions or longer follow-up may be needed to realize measurable health gains, pointing to the importance of complementary measures (ventilation, behaviour change) in solid-fuel-to-LPG interventions.

Further, ***mechanical ventilation and filtration upgrades*** (residential/institutional) improve IAQ (by diluting indoor pollutants) without forfeiting energy efficiency if done with modern systems. Improving indoor air quality in buildings can reduce occupants’ exposure to pollutants while also cutting climate emissions, especially when interventions target polluting fuel use or inefficient ventilation (C et al., 2022; Coggins et al., 2024; Rajagopalan et al., 2024). Replacing gas stoves with electric induction stoves halves indoor NO_2 levels (Chervonski et al., 2025).

Comprehensive residential retrofits (multifamily housing – Europe) often target insulation and air-sealing for climate reasons, but they can influence IAQ positively or negatively. A study in social housing in Ireland evaluated apartments before and after major energy renovations (upgraded insulation, airtightness, etc.). It found a paradox: thermal comfort improved post-retrofit, but IAQ worsened in some units, with higher CO_2 and humidity in living areas and bedrooms. Homes that added mechanical ventilation maintained better air exchange, whereas under-ventilated retrofitted flats experienced issues like condensation and mold (noted in ~50% of surveyed social homes). This demonstrates that climate-driven envelope upgrades must be paired with ventilation strategies; otherwise, trapping heat can also trap pollutants.

Interventions to improve indoor thermal conditions (warming cold buildings or cooling hot spaces) can save energy (mitigating emissions) and prevent illness by reducing exposure to temperature extremes and dampness. Several large-scale studies since 2020 provide quantitative evidence of co-benefits.

The overall impact of ***home insulation and heating retrofits*** (residential – temperate climates) is hard to evaluate, but examples point to notable benefits New Zealand's nationwide Warm-Up NZ program offers a key example. In a retrospective cohort analysis covering ~205,000 retrofitted houses (and ~1 million residents), researchers linked housing intervention data to health records. Using a difference-in-difference design with matched controls, they found that adding insulation in uninsulated homes led to a 10% reduction in new chronic respiratory disease diagnoses relative to controls (odds ratio ~0.90) (Fyfe et al., 2020).

Hospitalizations for respiratory conditions (like asthma exacerbations) also declined: one analysis showed 9.3 fewer hospital admissions per 1,000 people in insulated homes versus controls. Notably, children under 15 in insulated homes had an even greater reduction (~15% lower odds of developing respiratory illness), emphasizing the particular benefits for vulnerable young occupants (Fyfe et al., 2020). These improvements are attributed to warmer, drier indoor conditions after insulation, which reduce mold and prevent cold-air triggers of bronchospasm. In terms of climate change mitigation, the insulated homes require less heating energy, contributing to lower carbon emissions. The same NZ study also tracked medication use: insulated households had 4% fewer respiratory medication dispensations for symptom relief, and homes that received both insulation and a heat pump (efficient heater) saw a 7% reduction (Fyfe et al., 2022). Thus, pairing insulation with clean, efficient heating yielded the largest health gains. Similarly, a UK evaluation of an "affordable warmth" retrofit program in low-income communities noted improved self-rated health and reduced asthma symptoms when heating and insulation were upgraded, especially among those previously in fuel poverty (Liddell and Guiney, 2015).

In tropical and arid regions, interventions for ***cool roofs and passive cooling*** (residential - hot climates) that lower indoor heat can prevent heat-related illness while cutting cooling energy demand. One emerging strategy is applying high-reflectance "cool" coatings to roofs in informal urban settlements. Early results from pilot trials (e.g. in India and Burkina Faso) show that reflective roof paint can lower indoor daytime temperatures by ~1–2°C in tin-roofed dwellings (MacNaughton et al., 2018). By reducing indoor heat gain, cool roofs also decrease any use of electric fans or AC, yielding energy and emission savings in hot cities. According to detailed urban climate models, cool roofs can reduce heat-related mortality by up to 32% (Simpson et al., 2024). Although detailed quantitative health outcomes (e.g. heat related cardio-vascular incidences) from building cooling interventions are scarcely reported in recent literature, broader epidemiological data show that extreme heat exacerbates cardiovascular and mental health issues, and providing access to cooling or cooler buildings is protective. Thus, climate adaptation measures in buildings (insulation against heat, ventilation, shading) can directly save lives during heat waves while also reducing energy consumption for cooling.

Integrated "deep retrofits" (commercial/institutional buildings) that include building management systems, lighting upgrades, and envelope improvements have shown co-benefits in occupant comfort and even productivity. For instance, a post-occupancy evaluation of a green-certified office building found that after retrofit, employees reported significantly higher satisfaction with thermal conditions and lighting, correlating with self-reported productivity gains. Although energy savings (e.g. >20% reduction in building energy use) were the primary aim, these studies note ancillary benefits like fewer sick days or improved cognitive function in well-ventilated, daylit offices. In hospitals, energy retrofits (improved lighting, upgraded insulation, better ventilation systems) have been suggestively linked to improved patient comfort and even faster recovery times in some cases (Hendron et al., 2013). While quantifying patient health outcomes is complex, one review noted that retrofitting practices can reduce energy demand in hospital buildings and enhance IAQ simultaneously, potentially lowering hospital-acquired infection risks (Zhang et al., 2024). These institutional examples underscore that comprehensive building upgrades can create healthier environments for occupants (patients, workers, students) while reducing operational emissions.

Beyond physical health, building environment improvements can affect mental health and overall well-being. A number of studies point to co-benefits in terms of stress, mood, and social outcomes:

Poor housing (cold, damp, polluted) is associated with psychological distress, so upgrades often yield mental well-being benefits. In a Welsh energy efficiency trial, although no short-term change in SF-12 scores was seen, there were significant gains in subjective well-being and reductions in social isolation after homes received insulation and heating improvements. Residents reported feeling less financial stress about energy bills and were more likely to host friends, suggesting improved mental and social health via a warmer, more comfortable home environment (Grey et al., 2017). Another study from Indonesia used a quasi-experimental design to examine mental health before and after a clean cooking transition. It found that households switching from biomass to clean cooking fuel had a 2.9% lower risk of depressive symptoms (measured by the Center for Epidemiologic Studies Depression Scale – CES-D), with even larger depression reductions (3–5% lower risk) among women and urban residents. This indicates that removing the burden of smoky fires (and perhaps freeing time from fuel gathering) can modestly improve mental well-being in low-income settings (Sumiyati and Hartono, 2025). Moreover, a systematic review on older adults' housing found consistent links between clean energy access and better mental health – seniors using clean heating/cooking fuels had significantly lower rates of depression than those in homes burning wood or coal (Sharifi et al., 2024). Hence, mental health as a crucial co-benefit of interventions like electrification of cooking and heating, alongside their climate benefits, especially also in the Global South.

Biophilic and environmental design, including elements like natural light, greenery, and low noise levels in buildings, have been tied to positive mental health outcomes. For example, the introduction of green walls and indoor plants in offices and schools (an intervention to improve indoor environmental quality) has been shown in some studies to reduce self-reported stress and anxiety among occupants while slightly reducing building cooling loads by providing shading/humidity control. One 2021 controlled study reported that workers in offices retrofitted to meet the WELL Building Standard (which emphasizes air, light, and comfort features) experienced higher environmental satisfaction and perceived creativity compared to their baseline offices (Ildiri et al., 2022). Although such outcomes are subjective, they align with broader evidence that improving lighting and acoustic comfort, providing views of nature, and maintaining better air quality can support mental well-being and cognitive function. These improvements often come with energy-efficient design. For instance, maximizing daylight reduces reliance on electric lighting (mitigating emissions) while also elevating mood and alertness. Similarly, reducing indoor pollutants and CO_2 through ventilation not only lowers health risks but can improve cognitive performance ("mental energy"), as documented in studies of students and office workers.

The mental health co-benefits of building interventions often depend on ***socioeconomic and contextual factors***. Several studies emphasize that socioeconomic stressors modulate outcomes. For example, low-income families gain disproportionate mental relief from fuel poverty interventions – in the Welsh program, those who no longer had to "choose between heat or eat" reported less worry and improved mental well-being (Grey et al., 2017). In New Zealand, Māori and Pacific Island households saw greater reductions in hospital admissions after insulation, which researchers attribute in part to previously higher stress and health burdens from poor housing (Fyfe et al., 2020). These findings suggest equity-focused retrofits can yield both physical and mental health co-benefits, narrowing health disparities. Climate zone is also important: in tropical regions, removing heat stress (through passive or active cooling) can prevent not only heat stroke but also the irritability and aggression linked to high temperatures. Ensuring access to cooling in urban heatwaves (e.g. via community cooling centers or efficient AC in public housing) has been associated with lower anxiety and improved sleep among elderly residents, a mental health boon that parallels reductions in heat-related mortality. Understanding the local climate and population is crucial in maximizing co-benefits for a comfortable and healthy indoor environment which act as a foundation for mental well-being.

WASTE: FROM LIABILITY TO ASSET

Improving basic waste collection and ending practices like open dumping and burning is a fundamental step: studies show it reduces disease incidence and eliminates major sources of methane and toxic smoke. Building on that foundation, interventions such as source separation of waste enable higher recycling and composting rates, which cuts GHG emissions and yields cleaner, safer communities (particularly benefiting informal waste workers in the Global South). At disposal sites, implementing landfill gas capture is proven to dramatically curb methane emissions while also removing harmful pollutants from the air. Managing the organic fraction through composting and anaerobic digestion emerges as a key climate strategy, often turning a city's biggest waste liability into a climate asset (negative emissions) and concurrently improving environmental hygiene and fuel security. Waste-to-energy incineration offers volume reduction and controlled destruction of waste, but its climate merits depend on context and it requires top-tier pollution controls to ensure health protections – otherwise, it can undermine both climate and health goals. Finally, circular economy approaches that prioritize waste reduction, reuse, and material recovery show great promise in achieving deep emissions cuts and a range of co-benefits, from cleaner neighbourhoods to green job creation and environmental justice.

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Across these interventions, certain themes stand out. First, integrated strategies yield the greatest co-benefits – for example, combining organics diversion with an open burning ban, or pairing recycling programs with public health outreach (such as information campaigns about the benefits of recycling), amplifies positive outcomes. Second, local context matters: solutions must be tailored to a city's waste composition, economic capacity, and social structure (e.g. recognizing the role of informal sectors). Notably, studies from Africa, Asia, and Latin America highlight the importance of governance and financing in the Global South, where the need for improvement is highest but resources are often limited. Innovative funding (such as climate finance or carbon credits for methane reduction) and community engagement are often key to success. Lastly, the reviewed evidence underlines that climate and health objectives in waste management are mutually reinforcing. Interventions that reduce GHG emissions – whether by capturing methane, avoiding virgin production, or preventing biomass burning – almost invariably also cut air and water pollutants or improve sanitary conditions (Scharff et al., 2024). This alignment provides a compelling rationale for policymakers: investments in more sustainable waste systems can pay off doubly by protecting the planet's climate and the immediate well-being of its people. The challenge going forward is to accelerate the implementation of these proven interventions, scaling them up and adapting them where needed to ensure that cities worldwide can enjoy the cleaner, healthier, and lower-carbon future that sustainable waste management makes possible (Reis-Filho et al., 2025).

URBAN FORM: COMPACT URBAN DEVELOPMENT

Planning for compact, low-sprawl urban form is associated with reduced GHG emissions and health gains. Densely developed, transit-oriented cities curb vehicle travel, cutting fuel use and air pollution while encouraging walking. An ecological analysis of 370 Latin American cities found that certain urban landscape and street design profiles were linked to jointly better environmental and health outcomes. For example, city forms with higher connectivity and less fragmentation tended to have lower per-capita carbon emissions and lower burdens of non-communicable disease illustrating "co-benefits" in a Global South context. Likewise, China's national low-carbon city pilot program, which included urban planning and pollution controls, led to significant declines in urban mortality rates, especially in cities with higher baseline pollution. A quasi-experimental study of 106 Chinese cities (2006–2019) showed that implementing low-carbon policies (any policy that reduced city-level GHG emissions) reduced ambient air pollution and was causally associated with a drop in all-cause mortality. These health benefits were most pronounced among vulnerable urban populations, indicating improved health equity (Lin, 2025). Compact development can reduce emissions from housing and transport. However, recent evidence suggests that compact high-density cities may also face serious challenges, including higher air pollution, intensified urban heat, and increased mortality (Nieuwenhuijsen, 2024). Therefore, planning must also ensure safe infrastructure (e.g. traffic calming, protected bike lanes); without it, increased density or active travel could raise injury risk in some contexts. Overall, evidence from rapidly urbanizing regions underscores that curbing sprawl and integrating land use with sustainable transport can achieve synergistic reductions in carbon emissions and chronic disease incidence.

URBAN FORM: URBAN GREEN SPACES AND NATURE-BASED SOLUTIONS

Expanding green space in cities offers climate adaptation and mitigation benefits while supporting both mental and physical health. Vegetation cools urban heat islands, sequesters carbon, and can buffer floods, all of which help cities manage climate risks. A 2023 modelling study of 93 European cities found that increasing tree cover to 30% could lower summer urban temperatures by ~0.4°C, preventing roughly one-third of heat-related deaths (2,644 out of 6,700 deaths in one summer) (Iungman et al., 2023b). This highlights how green infrastructure can save lives during heat waves by reducing thermal exposure. Greenery also improves air quality modestly (through pollutant deposition) and provides spaces for recreation. Crucially, numerous studies document mental health benefits. Access to parks, trees, and other green space has been associated with lower stress, depression, and anxiety in urban populations. A comprehensive meta-analysis of 59 studies (global, through 2023) quantified a significant protective effect: exposure to green space was linked to about a 9% reduction in the odds of developing any psychiatric disorder (odds ratio ~0.91) and specifically lower odds of depression (OR ~0.89) and anxiety (OR ~0.94) (Zhang et al., 2024). Benefits were also observed for dementia, schizophrenia, and ADHD risks (Zhang et al., 2024). These mental-health gains stem from multiple pathways: nature contact can relieve stress, improve mood, encourage social interaction, and promote physical activity. Physical health co-benefits are evident as well: greener neighbourhoods tend to encourage walking and have been associated with better cardiovascular outcomes and lower all-cause mortality in many studies (Iungman et al., 2023b; Zhang et al., 2024). In sum, urban greening – through parks, street trees, green roofs, etc. – is a climate adaptation strategy that delivers substantial health co-benefits, including reduced heat stress, improved mental well-being, and enhanced physical activity, and a mitigation strategy when trees sequester carbon (Rodriguez Mendez et al., 2024). These findings apply globally; notably, fast-growing cities in the Global South with scarce green cover stand to gain even more in both climate resilience and public health by investing in urban greening.

Urban form is a dimension where climate change mitigation, adaptation and health come together. However, there are also crucial trade-offs. Compact cities are optimal for reducing energy use in housing and mobility, and for inducing modal shift away from automobility to public transit and active mobility. However, compact cities limit the space for providing green infrastructure. Importantly, compact urban environments often face spatial constraints that lead to tensions between competing uses of public space (Nieuwenhuijsen, 2024). The same limited area may be needed for pedestrian access, cycling infrastructure, green space for climate adaptation, or social and commercial activities. For example, the allocation of space for bike lanes or cafe terraces can reduce room for trees or shaded public seating, and vice versa. These trade-offs require careful planning and participatory decision-making to ensure that public space serves inclusive, multifunctional purposes that benefit both health and sustainability. Strategies to ameliorate this trade-off can be at micro- and at macro scale. At micro-scale, compact urban environments can green facades and roofs, and use trees for shading bicycle lanes. At macro-scale cities can be designed in star-shaped form, like Curitiba, enabling rapid access along public transit lines while keeping green infrastructures in the space between public transit lines (Pierer and Creutzig, 2019).

CITIES' SELF-PERCEPTION OF CO-BENEFITS

It is instructive to compare the analysis of effective co-aligning health and climate action with the self-perception of cities. Cities are aware of health co-benefits of climate action. An analysis of the CDP-ICLEI questionnaire of cities (Anton et al, in review) shows that most cities report health co-benefits of their climate actions, focusing on improved air quality, improved mental well-being, and better physical health (Table 3). Importantly, the transport and – to a bit lesser degree - the afforestation and land use (AFOLU) sectors were those with most reported health co-benefits (Anton et al, in review).

TABLE 3. Self-reported co-benefits of mitigation action by cities as identified in the CDP-ICLEI questionnaire (Anton et al., in review).

Health co-benefits	
Improved air quality	972 (36.8)
Improved mental wellbeing/ quality of life	346 (13.1)
Improved physical health	309 (11.7)
Improved road safety	232 (8.8)
Improved preparedness for health service delivery	239 (9.1)
Reduced health costs	172 (6.5)
Reduced health impacts from extreme heat or cold weather	125 (4.7)
Reduced premature deaths	83 (3.1)
Increased food security	72 (2.7)
Reduced disaster/disease/contamination-related health impacts	67 (2.5)
Improved public health	21 (0.8)

GENDER INEQUALITY AND MARGINALISED GROUPS' HEALTH RISKS IN URBAN CLIMATE

Climate change in urban environments amplifies existing social inequalities, disproportionately affecting marginalized groups by exacerbating their health risks and reducing their adaptive capacity (Reckien et al., 2017; Women, 2024). These vulnerabilities are shaped by a complex interplay of socioeconomic status, gender norms, access to resources, and institutional discrimination, all of which are intensified in the context of urban climate hazards (WHO, 2014). Gender inequality further compounds these risks: women and gender-diverse people in cities often have less access to resources, decision-making power, and adaptive infrastructure. They bear disproportionate caregiving burdens during and after disasters, face greater threats to their reproductive health, and are at increased risk of violence. Gendered barriers to healthcare mean that climate adaptation and mitigation strategies that are not explicitly gender-responsive may inadvertently deepen existing disparities (UN Women, 2024; WHO, 2014).

A central driver of health inequity is urban heat islands. Marginalized groups are more likely to live in hotter areas due to historical patterns of segregation, underinvestment, and lack of green infrastructure (Anjum and Aziz, 2025). These communities often reside in poorly insulated or substandard housing, lack access to air conditioning, and have limited financial means to cope with heatwaves, resulting in higher rates of heat-related illnesses and mortality (Hsu et al. 2021). The risk is compounded for outdoor workers, such as those in construction or informal sectors, who are disproportionately drawn from low-income and minority backgrounds and face hazardous working conditions as urban temperatures rise (Chaudhry, 2024).

Air pollution also disproportionately affects marginalized populations. These groups are more likely to live near highways, industrial areas, or other pollution sources, and climate change exacerbates air quality problems through VOC and allergens. Higher rates of asthma, cardiovascular disease, and respiratory illness are well-documented among communities of color and low-income households — conditions that are further aggravated by limited healthcare access and pre-existing health disparities (Berberian et al., 2022).

Marginalized urban residents are furthermore unequally impacted by extreme weather events (e.g. storms, flooding) due to more likely living in flood-prone or poorly drained areas, often in informal settlements or aging housing stock. When disasters strike, these populations face greater barriers to evacuation, shelter, and recovery. Floods can lead to outbreaks of waterborne diseases and mold-related respiratory illnesses, with long-term consequences for children's development and adult health (Islam and Winkel, 2017; Zhu et al., 2024).

Advancing equity and inclusion in urban climate and health policy requires a deliberate focus on dismantling the processes that perpetuate health disparities for marginalized groups.

Recommendations

In summary, cities can take the following actions to realize benefits in health and climate, following the three pathways, and integrated action via urban form.

Active travel. Cities should prioritize infrastructure supporting walking, cycling, and efficient public transportation, affordable and accessible as far as possible for disabled people. Key actions include expanding networks of safe bike lanes, creating pedestrian-friendly urban zones, and implementing car-restriction policies. These initiatives simultaneously reduce greenhouse gas emissions, enhance physical activity, lower chronic disease rates, and improve mental health (Nieuwenhuijsen, 2020).

Air quality. Improving urban air quality requires stringent policies to reduce traffic emissions, shift towards electric vehicles powered by renewable energy, and implement clean-air zones. It also entails clean cooking standards to combat indoor air pollutions, and regulation of wood burning. Enforcing WHO-aligned air quality standards can rapidly reduce respiratory and cardiovascular diseases, significantly lowering premature mortality rates alongside cutting emissions (Khomenko et al., 2021). While reducing urban air pollution brings significant health benefits, it is important to distinguish between pollutants in terms of their origin and mitigation strategies. NO_2, primarily emitted from traffic and combustion sources, tends to be highly concentrated in urban areas and responds well to local interventions such as low-emission zones and electrification (Lelieveld et al., 2015). In contrast, $PM_{2.5}$ often has substantial regional and long-range transport components, originating from agriculture, biomass burning, and industrial activities outside of cities. This implies that urban air quality planning must be complemented by coordinated national and transboundary efforts to address regional pollution sources and maximize health gains (WHO, 2021). Importantly, also the building sector (regulation of wood burning) as well as green infrastructure (trees can clean air but also indirectly increase ozone levels or trap bad air) play an important role in improving urban air quality.

Plant-based diets. Promoting shifts towards predominantly plant-based diets can reduce urban greenhouse gas footprints significantly. Actions include public awareness campaigns, integrating sustainable diet standards in city procurement policies, and providing monetary or regulatory incentives, but also training, for restaurants and food outlets (C40, 2022). Dietary transitions simultaneously lower emissions, reduce chronic health risks, and enhance urban food system resilience (Willett et al., 2019).

Heat-resistant urban form. Cities should adopt urban designs that adapt to heat, such as increased tree coverage, green roofs, reflective surfaces, and enhanced urban green spaces. These nature-based and reflective solutions decrease urban heat islands, reduce heat-related morbidity and mortality, and contribute to local climate mitigation by lowering energy demands for cooling (Iungman et al., 2023b). Urban green spaces can reduce temperatures for pedestrians by up to 12°C, albeit tree species and specific locations must be adapted to the local and geographical context (Li et al., 2024).

As an overarching topic, the underlying mechanisms that sustain health inequities among marginalized populations need to be addressed. Effective strategies begin with embedding justice and inclusion at every stage of climate action planning, ensuring that marginalized communities are not only consulted but are genuine partners in decision-making (C40, 2019). Furthermore, cities might develop and regularly monitor equity indicators (e.g. access to green space, housing quality, air quality, and health services) disaggregated by race, gender, income, and other axes of vulnerability (C40, 2019). Institutionalizing equity checks, such as screening matrices and impact assessments, throughout the policy cycle helps maintain accountability and ensures that interventions address the intersectional nature of vulnerability (Swanson, 2021). Building capacity among city staff and community organizations through training in equity and participatory methods is also crucial for sustaining inclusive governance (C40, 2019). Collectively, this ensures addressing not only consequences of urban climate actions but also the root causes of health disparities among marginalized and gender-diverse groups.

Both higher level entities and citizens can be crucial actors in support of urban action at the climate-health nexus. National governments and international organization can support municipalities in advancing these strategic actions for maximizing co-benefits and fostering healthier, more sustainable urban environments, especially via finance. In turn, citizens and citizen science can play a vital role in advancing urban climate and health agendas, particularly in the Global South where data gaps and resource constraints often limit formal monitoring systems. Community-led initiatives, such as participatory heat mapping, air quality monitoring using low-cost sensors, or neighbourhood-level biodiversity tracking, enable residents to generate locally relevant data, raise awareness, and co-develop context-specific solutions. What matters most is that municipalities see the opportunity in jointly fostering health and climate action in also bringing higher well-being for their citizens.

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About the Expert Group on Climate and SDG Synergy

CO-CONVENED BY

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United Nations Framework Convention on Climate Change

This report is part of the *Synergy Solutions 2025* series, comprising three Thematic Reports and will contribute to the final Synthesis Report, which will be launched in September 2025. Together, this constitutes the 2025 edition of the Global Report led by the Expert Group on Climate and SDG Synergy.

The Expert Group was co-convened by the United Nations Department of Economic and Social Affairs (UNDESA) and the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat in May 2023, and has evolved from an original composition of 14 experts to its current collaboration between 17 renowned experts from diverse thematic and geographic backgrounds. The Group provides up-to-date analysis and recommendations on how to tackle climate and SDG action in synergy, based on scientific evidence and innovative approaches. Its experts are composed as follows:

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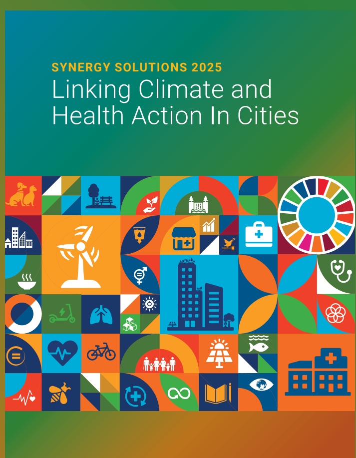

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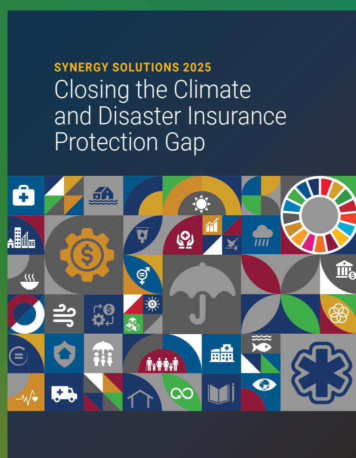

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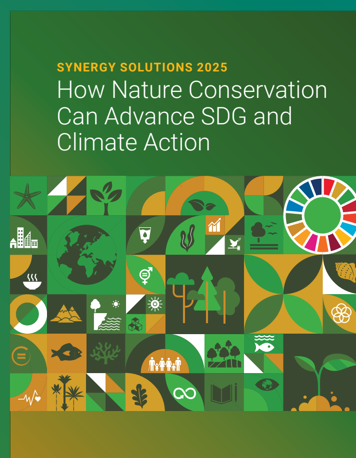

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