

Building on Cities to Deliver a Green and Just Recovery

BloombergNEF and C40 Cities

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BloombergNEF



Foreword

Building on Cities to Deliver a Green and Just Recovery

September 2021

Over the past eighteen months, the world has faced a historic challenge. The impact of the COVID-19 pandemic has been felt everywhere – and cities have been hit especially hard.

Today, as vaccination rates go up and countries begin to reopen, cities have a unique opportunity. Just as they have been on the frontlines of this pandemic, they can now help lead the economic recovery. But it's critical that their recovery efforts help us fight another crisis that is already here: climate change.

The good news is: The same steps that build strong economies and create good jobs – creating more green transportation networks, energy efficient buildings, and clean energy systems, for instance – also fight climate change and improve public health.

It's only natural for cities to lead the fight against climate change. They're where most of the world's people in the world live and work, and they're also economic engines and hubs for innovation. But they can't do it alone. It's critical that national governments work in hand-in-hand with cities, support them, learn from them, and empower them.

This report highlights the many ways cities are pioneering ambitious climate solutions – such as expanding walking and cycling networks, accelerating the adoption of electric vehicles, and building resilient energy systems – and how they can be scaled at the national level. It also showcases the best ways for national governments to unlock the power of cities, as the European Union is working to do, and join with them so that these solutions can be scaled as part of their economic recoveries

We have a long road ahead to rebuild the global economy, and much more needs to be done in the fight against climate change. But these are not separate challenges. To succeed in one area, we must succeed in the other, too.

I'm very optimistic we can do it. If we embrace the urgency of this challenge – and chart a bold, sustainable path forward – we have the opportunity to create a better future for our children and grandchildren. And cities will play a pivotal role in making that possible.



Michael R. Bloomberg

UN Secretary-General's Special Envoy for Climate Ambition and Solutions
Founder of Bloomberg LP and Bloomberg Philanthropies
C40 Board President

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Executive summary

As countries gradually reopen and plan for a post-pandemic recovery, cities face a unique opportunity accelerate progress towards climate, equity, health and energy transition goals. This report considers how cities and national governments can successfully deliver a green and just recovery, with a focus on G7 countries. It is crucial that both national governments and the EU make funding available to cities and create supportive policy frameworks. Supporting city leadership can help national governments to achieve a quick and efficient absorption of funds and deliver on a green and just recovery sooner.

Summary of report findings:

- In this report, BloombergNEF and C40 Cities identify eight pathways to accelerate a green and just recovery in cities. We highlight best practices for governments to deliver on these pathways, based on proven city-level solutions from case studies.
- We use an evaluation framework to assess how each pathway can best contribute to a green and just recovery in cities, based on three focus areas – jobs, health and energy transition. The highest scoring pathways included greening and growing public transport, greening buildings, deploying low-carbon energy and future-proofing for net-zero.
- City-level policy makers can deliver a green and just recovery by:
 - Prioritizing considerations for equity and inclusivity
 - Targeting job creation to key local green sectors
 - Act in the short term, while planning long-term net-zero pathways
 - Connecting and aligning national and city incentives to decarbonize
 - Sustaining investment signals beyond the recovery
 - Focusing on transparency and information sharing
- National-level policy makers can support cities' recoveries by:
 - Maximizing engagement with cities
 - Establishing good governance and transparent practices
 - Focusing on the accessibility and simplicity of funds, and delivering them for a sufficient duration
 - Paying attention to local considerations

By the numbers

\$267bn

National stimulus across the G7 aligned to the pathways of this report

A third

Proportion of aligned national stimulus going to public transport – the largest of the pathways

83%

Of G7 population living in cities in 2020

Pathways for accelerating a green and just recovery in cities

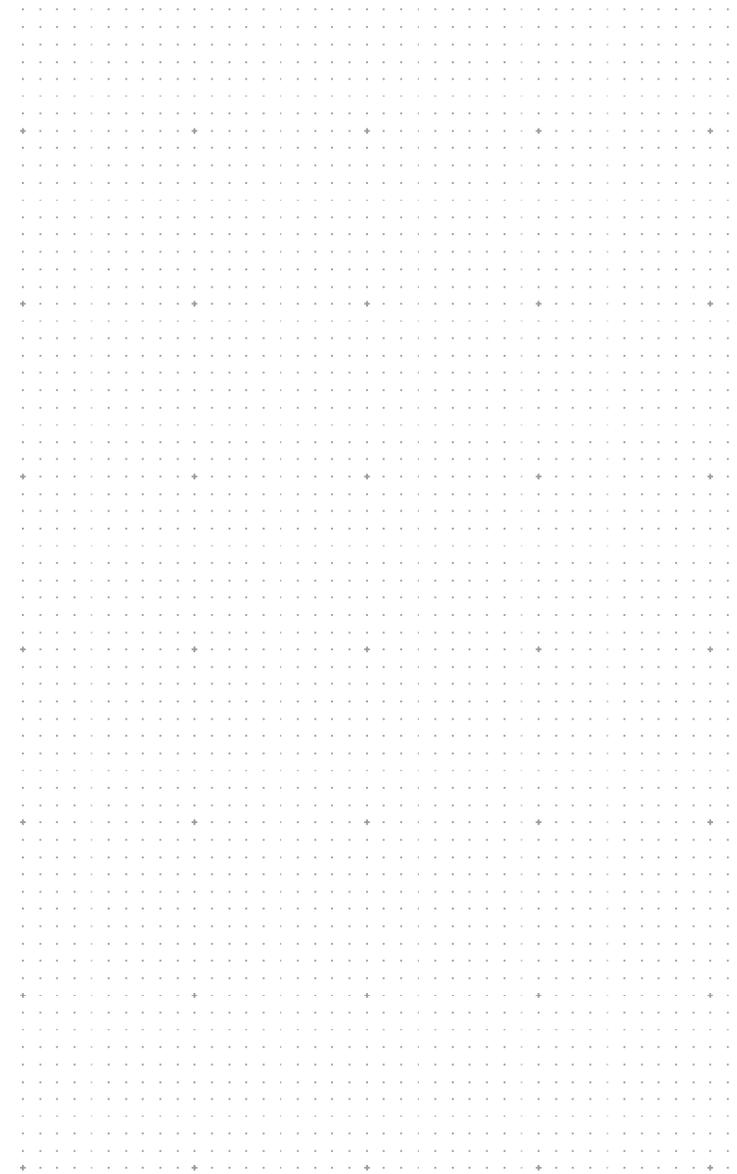
Pathway to a green and just recovery	Jobs		Health			Energy transition			
	Speed	Quality	Sustainability	Air pollution	Physical activity	Other benefits	Clean	Cheap, reliable	Target alignment
Walking and cycling	Fairly strong	Positive	Fairly positive	Strong	Strong	Fairly positive	Strong	Strong	Strong
Greening and growing public transport	Fairly strong	Fairly strong	Fairly strong	Strong	Fairly positive	Fairly positive	Strong	Strong	Strong
Accelerating electric vehicle adoption	Neutral	Positive	Positive	Strong	Positive	Positive	Strong	Fairly strong	Strong
Widening charging infrastructure availability	Positive	Positive	Fairly strong	Positive	Fairly positive	Fairly positive	Fairly strong	Strong	Strong
Greening buildings	Fairly strong	Strong	Strong	Neutral	Neutral	Fairly positive	Strong	Fairly strong	Strong
Low-carbon energy supply	Fairly strong	Fairly strong	Fairly strong	Fairly strong	Neutral	Neutral	Strong	Strong	Strong
Clean electricity deployment	Positive	Positive	Fairly strong	Fairly strong	Neutral	Neutral	Strong	Strong	Strong
Future-proofing for a net-zero energy system	Fairly strong	Strong	Strong	Fairly positive	Neutral	Fairly positive	Fairly strong	Strong	Fairly strong

Impact on green and just recovery: **Strong** Positive Neutral

Source: BloombergNEF, C40 Cities.

Introduction

National recovery policy and cities



Pathways to accelerate a green and just recovery in cities

BloombergNEF and C40 Cities have identified eight pathways to accelerate a green and just recovery in cities. These pathways form the basis of this report. We have analyzed case studies that represent a strong example of cities delivering on each pathway (for case studies, [jump to next section](#)). We use these case studies to identify and highlight best practices for cities and national governments to deliver on a green and just recovery.

Summary of pathways for accelerating a green and just recovery

Sector	Pathways for accelerating a green and just recovery in cities	
Transport	 Improving walking and cycling	Improving walking and cycling routes and infrastructure in cities can deliver strong public health benefits by encouraging activity, and boost jobs through route construction and measures such as cycle share programs. It can also improve access to mass transit.
	 Greening and growing public transport	Public transport networks are an essential part of cities, improving accessibility and reducing the number of trips using private vehicles. Greening and growing these networks can contribute to job growth, access to jobs and a sustainable recovery for mass transit systems.
	 Accelerating zero-emission vehicle adoption	Decarbonizing tailpipe emissions from vehicles that operate within cities can deliver immediate health and climate benefits. Electrification of transport alongside power system decarbonization can also help governments to meet climate goals faster.
	 Widening charging infrastructure availability	The deployment of public charging infrastructure is crucial to accelerating electric vehicle adoption in cities, particularly for private passenger vehicles and small commercial fleet operators. Charge point growth and maintenance also creates job opportunities.
Buildings and energy	 Greening buildings	Greening the building stock can be achieved through energy efficiency retrofits to lower energy demand, and measures targeting fuel switching. Energy efficiency programs can also be labor-intensive and improve equity outcomes, for instance by reducing energy poverty.
	 Expanding low-carbon energy supply	The adoption of low-carbon energy supply – particularly using efficient heating systems like heat pumps and district heating networks – will be vital to decarbonizing buildings in cities. Installations can create new industries, opportunities for reskilling and improve air quality.
	 Growing clean electricity deployment	Clean electricity supply on-site, as well as off-site procurement, sends a signal for demand for green electricity in cities. The deployment of rooftop PV, for example, can accelerate a green and just recovery by supporting local jobs and decarbonizing power supply.
	 Future-proofing for a net-zero energy system	A net-zero energy system will need to accommodate high volumes of renewable electricity and high volumes of electrification. Cities can help future-proof systems by planning local grid capacity in advance and prioritizing solutions for flexibility.

Overview of national stimulus policy

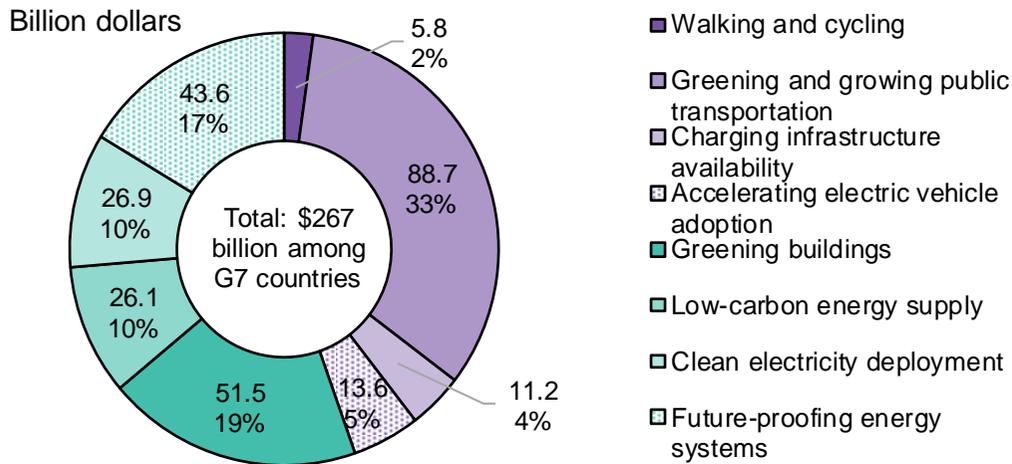
Why now?

National governments have allocated trillions of dollars in stimulus since the onset of the pandemic. Typically, stimulus measures over 2020-2021 have focused on liquidity support to businesses and income support to households. As countries gradually reopen and seek a post-pandemic recovery, a refocusing on targeted industrial and labor market policies is likely. This is where the opportunity to deliver a green and just recovery is opening. National governments have promised billions of dollars to boost green industries and jobs but must ensure the funds' equitable distribution and compatibility with net-zero emission goals. Cities are central to the successful delivery of these stimulus pools, which should aim to boost city-level climate and job objectives.

Stimulus priorities of national governments during Covid-19 pandemic phases

Economy-wide lock downs	Gradual reopening	Post-pandemic recovery
Stimulus measures focus on supporting household income and to businesses running into liquidity issues because they cannot operate (e.g. stimulus checks, tax measures, emergency loans, debt restructuring).	Continued liquidity support to households and closed businesses. Introduction of benefits to businesses that can resume activity to accelerate recovery. Support the restructuring of industries that are facing a challenging long-term outlook. Begin ramping public investment, targeting job creation and measures to ensure a green recovery.	Phase out targeted liquidity support, refocusing on social protection system. Scale public investment and long-term financing for strategic industries with a focus on green sectors, and use labor market policies to support job growth to boosted sectors. Review tax benefits to start levying industries benefiting the most from the recovery to improve fiscal balance.

Total national stimulus available across the G7, by green and just recovery pathway



Across the G7 countries, BNEF has tracked over \$267 billion in stimulus that can advance the pathways in this report for accelerating a green and just recovery. The largest recipient sectors are for public transport, particularly rail networks, and green buildings due to their potential for rapid job creation. This also addresses the pandemic's impact on public transport.

These national stimulus programs create an opportunity for cities to take a central position in delivering a green and just recovery across the G7, and worldwide. Cities can either directly or indirectly leverage national stimulus funds to accelerate progress to their own decarbonization, health, equity and green jobs goals, and help national governments to achieve quick and efficient absorption of funds.

Many national stimulus programs are designed at the national level and only a small share of funds target cities directly. Most EU funds are also not directly available to cities. National governments and the EU can still work to ensure cities' access to funds to implement a green and just recovery across all levels of government.

Source: BloombergNEF, National Government announcements, IMF Fiscal Monitor.

Routes for cities to access national stimulus funds for a green and just recovery

National Covid-19 stimulus funds can benefit cities through three main routes: direct allocation to local government budgets, applications for funds earmarked for specific areas, and funds available to urban residents and companies. Cities with a clear plan for a green and just recovery are in a better position to access funds that require an application or eligibility assessment, or are earmarked for this purpose.

Flow of public revenues: how cities can access resources for a green and just recovery



Key: —> Funding direction - -> Alternative funding route

Source: BloombergNEF, C40 Cities.

Pathways and case studies

Accelerating a green and just recovery in cities

Scoring the pathways

BNEF and C40 used an evaluation framework in this report to assess how, and in what ways, each pathway can best contribute to a green and just recovery in cities. The framework is based on three focus areas – **jobs**, **health** and **energy transition**. To guide the scoring, we use the selected case study as a representative example of each pathway.

Summary of scores for each pathway, based on selected case study

Pathway	Jobs			Health			Energy transition		
	Speed	Quality	Sustainability	Air pollution	Physical activity	Other co-benefits*	Clean	Cheap and reliable	Target alignment
 Walking and cycling	Fairly strong	Positive	Fairly positive	Strong	Strong	Fairly positive	Strong	Strong	Strong
 Greening & growing public transportation	Fairly strong	Fairly strong	Fairly strong	Strong	Fairly positive	Fairly positive	Strong	Strong	Strong
 Accelerating electric vehicle adoption	Neutral	Positive	Positive	Strong	Positive	Positive	Strong	Fairly strong	Strong
 Widening charging infrastructure	Positive	Positive	Fairly strong	Positive	Fairly positive	Fairly positive	Fairly strong	Strong	Strong
 Greening buildings: loan scheme	Strong	Strong	Strong	Neutral	Neutral	Positive	Fairly strong	Fairly strong	Strong
 Greening buildings: new build standards	Positive	Strong	Strong	Neutral	Neutral	Fairly positive	Strong	Fairly strong	Strong
 Low-carbon energy supply	Fairly strong	Fairly strong	Fairly strong	Fairly strong	Neutral	Neutral	Strong	Strong	Strong
 Clean electricity deployment	Positive	Positive	Fairly strong	Fairly strong	Neutral	Neutral	Strong	Strong	Strong
 Future-proofing for a net-zero system	Fairly strong	Strong	Strong	Fairly positive	Neutral	Fairly positive	Fairly strong	Strong	Fairly strong

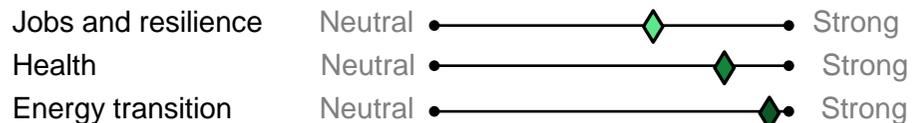
Impact on green and just recovery: Strong Positive Fairly positive Neutral

Source: C40, BloombergNEF. Note: Speed and sustainability evaluate job creation in long and short run. *Other health benefits includes reduced noise and comfortable homes

Transport: Walking and cycling



Potential to accelerate a green and just recovery in cities



Pathway overview

Investments in walking and cycling infrastructure lower emissions by reducing the number of short car trips and can deliver direct health and exercise benefits to city residents. In addition, both cycle sharing schemes and the construction of walking and cycling infrastructure can create new jobs across the value chain.

Example case study: Paris, France

Paris' new cycling infrastructure extends out to the periphery. The city created 650km of cycle paths in 2020 and early 2021 by reallocating road space from cars, including a number of pop-up cycle paths, to help citizens move around their city when lockdown measures began to ease. This is a continuation of 'Plan Velo', a 150-million-euro plan over 2015-20 aimed at transforming Paris into a cycling capital. Paris has also encouraged residents to use the national government's 50 euros grants for bicycle repairs and it offers up to 500 euros cash benefit for purchasing electric and cargo bikes.

Benefits of accelerating this pathway

Jobs	Health	Energy transition	Equity and inclusivity
Potential for ~2,000 jobs in shared cycle scheme, repairs, cycle lane construction and cycle rack deployment. ^[1]	Dedicated cycle paths can reduce exposure to road pollutants by up to ~50% and promotes physical activity ^[2]	The number of bicycle trips in Paris doubled over 2004-19 ^[3] . This results in a reduction in road transport and CO2 emissions.	Plan actively with cycle associations. Policy design should be participatory and include a variety of residents.

Impact on green and just recovery: **Strong** Positive Neutral

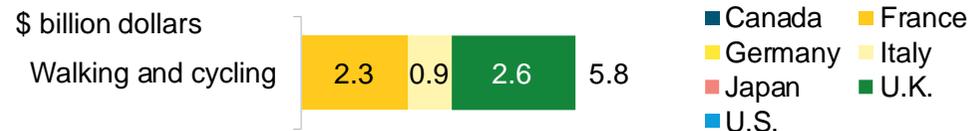
Further resources: [Prioritising cyclists and pedestrians for a safer, stronger recovery](#), [How to build back better with a 15-minute city](#)

Source: C40 Cities, BloombergNEF, Paris Carbon footprint 2018. Note: City transport emissions and share of cycling for 2015 and 2020 are estimates.

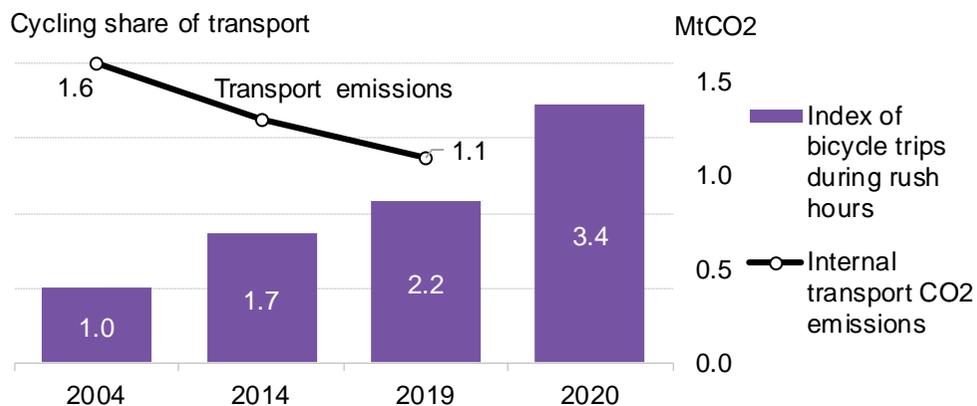
Best practices for a green and just recovery

- **Engage with residents and prioritize key concerns.** The mayor's office polled residents to consult them on the cycling plan. Respondents emphasized road safety concerns, which were subsequently prioritized.
- **Consider health impacts holistically.** Cycling promotes physical exercise and adds no emissions, but needs to be part of a wider plan for reducing road traffic in order to successfully tackle air pollution.
- **Layer local measures with national support schemes.** Paris' bike share scheme complements the new cycling infrastructure by increasing utilization, generating revenues and improving accessibility. This, layered with national targeted subsidies like France's grants for bike repairs and electric bicycle purchases further improves affordability.

G7 national recovery stimulus total for pathway



Impact of Paris cycling infrastructure



Transport: Greening and growing public transport

Pathway overview

Public transport networks have been financially hit by low utilization rates during the pandemic. However, supporting the growth and decarbonization of public transport can improve urban accessibility and improve air quality, as well as create long-term jobs in construction, operations and maintenance. Greening and growing public transport networks can reduce emissions directly through vehicles with zero tailpipe emissions, and indirectly through modal shifts, lowering the number of journeys taken by private cars.

Example case study: Jakarta, Indonesia

Jakarta has procured 100 zero-emission buses (3% of Tansjakarta's fleet) ahead of its target for 10,000 electric buses in service by 2030 (83%). Bus operators finance the buses and depot chargers, and the city pays them back at a fixed rate per kilometer of transit operation. Infrastructure for charging e-buses along routes was also introduced to support deployment, and the city's total bus fleet has been expanded to help reduce traffic from private vehicles.

Benefits of accelerating this pathway

Jobs	Health	Energy transition	Equity and inclusivity
Strong potential for job creation as routes are expanded, e.g. installing charge points, driving buses and route administration.	Electrification and increased public transport availability can reduce local air pollution, and can encourage walking en-route.	Directly lowers tailpipe emissions from vehicles, but must be coupled with measures to decarbonize the electricity grid itself.	Attention was paid to reducing air pollution in poor areas, accessibility for vulnerable groups and affordability.

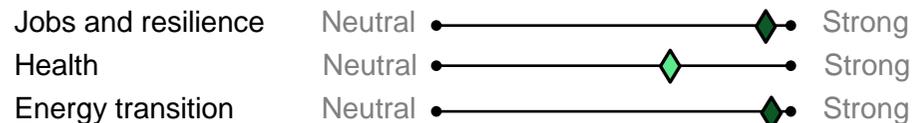
Impact on green and just recovery: **Strong** Positive Neutral

Further resources: [Zero-Emission Bus Charging Systems: Insights from Jakarta](#), [How To Drive a Modal Shift From Private Vehicle Use To Public Transport](#)

Source: C40 Cities, BloombergNEF, Transjakarta^[5].



Potential to accelerate a green and just recovery in cities



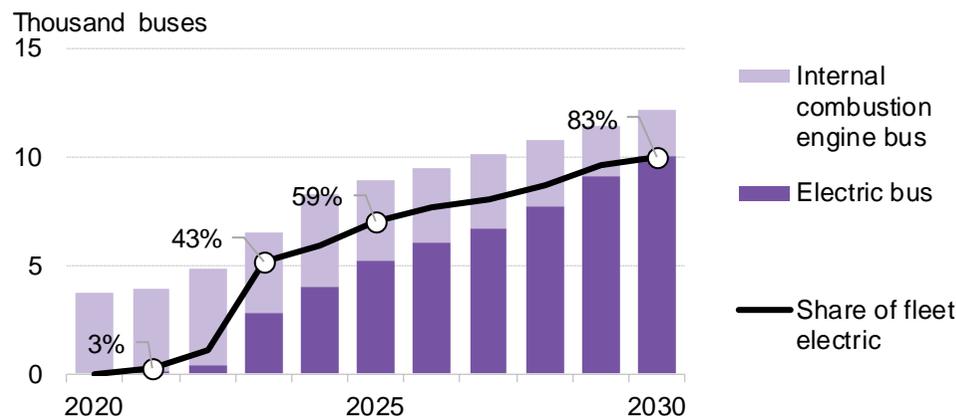
Best practices for a green and just recovery

- **Align job creation with national industrial priorities.** Cities, national authorities and industry can collaborate on upskilling initiatives to support industries targeted under labor market policy. Jakarta's target for e-buses is strongly aligned to Indonesia's goal for 20% of domestic vehicle production to be electric by 2025.
- **Set long-term targets to signal investment opportunities to public and private stakeholders.** Jakarta wants to make sure that public transport accounts for 60% of all trips by 2029, up from 32% in 2019, and that 84% of its fleet is electric by 2030. This sets a signal for the adoption of green public transport. Cities can attract additional investment by setting such long-term targets and a plan for their delivery, for example Jakarta received U.K. international aid funding.

G7 national recovery stimulus total for pathway



Jakarta bus fleet deployment plan by drivetrain



Transport: Accelerating electric vehicle adoption

Pathway overview

Electric vehicle (EV) adoption is already picking up in many cities, but the pace must accelerate to meet climate targets. Particular benefits can be achieved by electrifying high-mileage fleets like taxis, ride hailing, municipal fleets and delivery vehicles. Cities can enable faster EV adoption through policy, for example driving and parking permissions for zero-emission vehicles, zero-emission freight and loading zones, or zones with charges linked to vehicle tailpipe emissions.

Example case study: London, U.K.

London's ultra-low emission zone (ULEZ) has enforced a mandatory fixed daily charge on heavily polluting vehicles within central London since April 2019, expanding to Inner London in October 2021. The charge ranges from around £12.50 to £100 per day for non-compliant vehicles. Fully-electric, hydrogen and hybrid vehicles are exempt, as are petrol and diesel cars that meet certain standards (e.g. Euro 4 for petrol cars). The ULEZ is complemented by a congestion charge, in addition to direct incentives for electric vehicles such as free on-street parking and EV charging.

Benefits of accelerating this pathway

Jobs	Health	Energy transition	Equity and inclusivity
Measures to accelerate EV adoption can create quality jobs across the value chain, e.g. charging installation.	Directly lowers local air pollution levels and traffic, improving conditions for cycling and walking.	Cities can lead by example, creating enabling environments for EVs and a gradual shift to a cleaner vehicle fleet.	Stakeholders were widely consulted. The most vulnerable groups qualify for exceptions or discounts on charges.

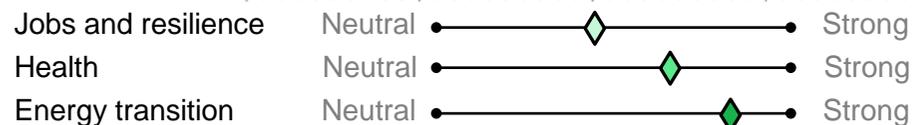
Impact on green and just recovery: Strong Positive Neutral

Further resources: [London - Charging Zones to Promote ULEVs](#)

Source: C40 Cities, BloombergNEF, Mayor of London's Office.



Potential to accelerate a green and just recovery in cities



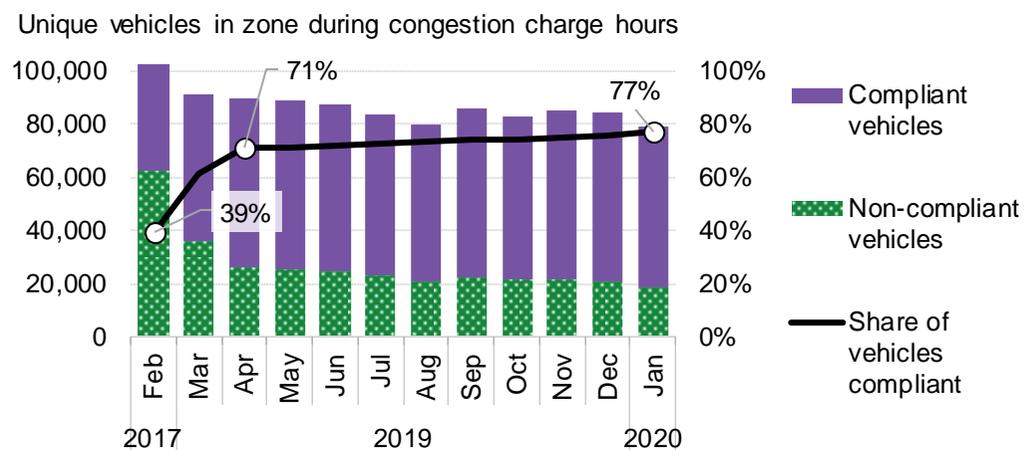
Best practices for a green and just recovery

- Gradually expand initiatives over time.** The London ULEZ has expanded by geography and is expected to increase in stringency over time, improving its effectiveness in a gradual manner.
- Align incentives across measures.** London's ULEZ exempts newer internal combustion engine vehicles, but the combination of the scheme alongside congestion charging and other policies deliver a powerful set of incentives for taxis and commercial fleet operators to electrify.
- Put social benefits first.** London's ULEZ has helped to improve local air quality, and ULEZ revenues are reinvested in transport network improvements, enabling the redistribution of benefits.

G7 national recovery stimulus total for pathway



Compliant and non-compliant vehicles accessing London's ULEZ



Transport: Widening charging infrastructure availability

Pathway overview

Wide availability of public electric vehicle (EV) charging infrastructure can support EV adoption in cities and enable the decarbonization of private and commercial vehicles. Strategically located charging infrastructure is also required to facilitate the electrification of public transport networks.

Example case study: Seattle, Washington, U.S.

To accelerate EV adoption in the private car fleet, Seattle is installing 20 fast-charging stations with local utility, Seattle City Light. As of July 2021, 16 chargers of 50kW were installed and several more are at community feedback stage. The chargers use 100% renewable electricity, and can fully charge most passenger EVs in 30 minutes. Charging rates vary over time, on average at \$0.33/kWh during the day and \$0.20/kWh at night. Seattle aims to phase out new sales of internal combustion engines and for 30% of the light-duty vehicle fleet to be electric by 2030.

Benefits of accelerating this pathway

Jobs	Health	Energy transition	Equity and inclusivity
Likely to directly add new jobs, as an estimated third ^[6] of EV-related jobs will be in charger maintenance in the long-term.	EV chargers can support EV adoption which helps to lower air pollution and noise levels.	Cities can help to deliver on national infrastructure goals, while also boosting the electrification of transport locally.	The program reduced inequalities by city departments' collaboration and wide community engagement

Impact on green and just recovery: **Strong** Positive Neutral

Further resources: [Seattle - Finished with Fossil Fuels](#), [City Electrifies Vehicles](#)

Source: C40 Cities, BloombergNEF, Seattle City Light, U.S. Department of Energy.



Potential to accelerate a green and just recovery in cities



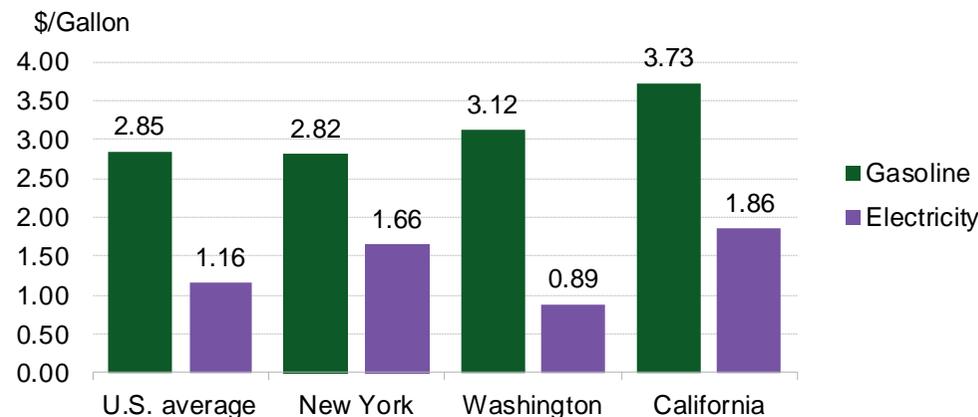
Best practices for a green and just recovery

- Harness data for transparency.** Seattle created an online mapping tool for the public to be able to track planning applications and deployment of public fast-charging stations (including charger tariff details). This improved transparency and awareness of the program.
- Use city initiatives to attract national funding.** Seattle aligns with the U.S. government's target of 500,000 public chargers by 2030. Washington state supported Seattle's fast charger projects with \$1.8 million, and federal funding is available for high way chargers^[7].
- Provide clear, accessible information for residents.** Seattle provides clear information about where chargers can be found, a cost calculator for electric vehicles and links pages for to state-level EV subsidies.

G7 national recovery stimulus total for pathway



Fuel costs per gallon in 2021 for a typical passenger car



Buildings and energy: Greening buildings

Pathway overview

Buildings are often the largest source of emissions in cities due to high usage of energy for power, heating and cooling, and require policy support to accelerate their decarbonization due to economic and social barriers. Efforts to green the building stock should focus on fabric first, prioritizing energy efficiency measures to lower overall energy demand from the sector, and combining with measures to directly cut emissions such as swapping to low-carbon heating supply.

Example case study: Seoul, South Korea

Seoul implemented a loan program for commercial and residential building retrofits. The scheme offers loans for up to 100% of the cost of eligible energy efficiency measures with preferential terms, at low interest rates repayable over eight years (rates are 0% in 2021, down from 0.9% in 2020). The program is open to building owners and tenants, contractors and energy service companies. Eligible measures include installation of efficient lighting, insulation for windows and walls, energy efficient HVAC and waste heat recovery.

Benefits of accelerating this pathway

Jobs	Health	Energy transition	Equity and inclusivity
Expected to add 205 new direct jobs by 2026. Partnerships with energy service and construction material suppliers also boosts jobs.	Better-insulated properties can be less prone to moisture, keep residents warm and reduce noise pollution.	Energy use was cut 7-10% per year in buildings benefitting from the loans. This leads to lower emissions.	Reduced energy poverty and enabled residents to secure loans for retrofits who otherwise might not have access to private loans

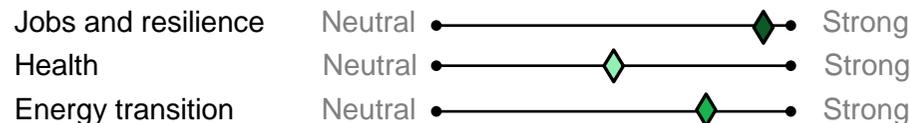
Impact on green and just recovery: **Strong** Positive Neutral

Further resources: [Innovative Programmes for Existing Building Energy Efficiency](#)

Source: C4O Cities, BloombergNEF, Seoul Metropolitan Government City Council and Budget Office.



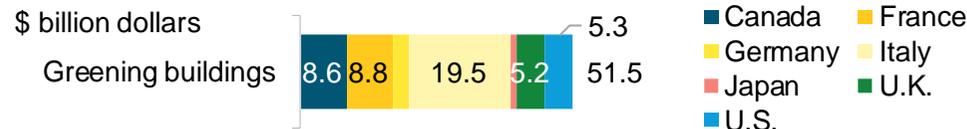
Potential to accelerate a green and just recovery in cities



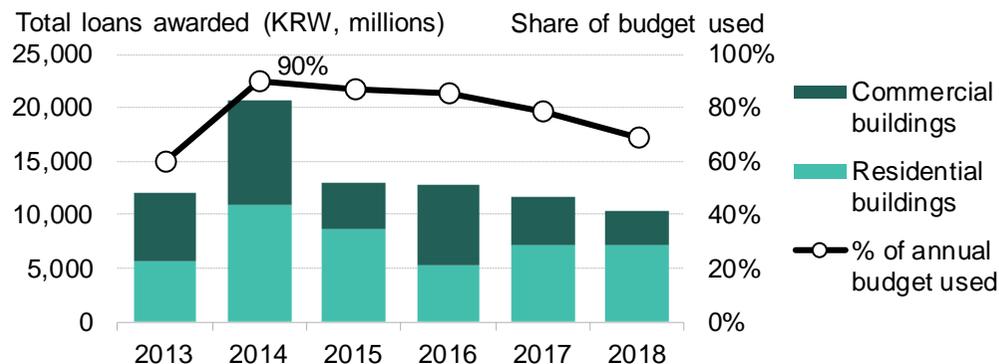
Best practices for a green and just recovery

- Use monitoring and evaluation to quantify and optimize impact.** Seoul Metropolitan Government analyzed energy consumption patterns of energy-intensive commercial buildings and disclosed this data, to enable monitoring of the impact of measures.
- Boosting access to finance can support job creation.** Seoul combined a low-cost loan scheme with partnerships across the construction sector, helping to boost local jobs.
- Start out with budgetary focus on measures with biggest equity impact.** Seoul's building retrofit program started with a focus on social welfare facilities and schools.

G7 national recovery stimulus total for pathway



Loans awarded for energy efficiency under Seoul's building retrofit program



Buildings and energy: Greening buildings

Pathway overview

Buildings are often one of the largest sources of emissions in cities, and need multiple approaches to accelerate their decarbonization due to economic and social barriers. Emissions standards for new buildings can greatly reduce building-related emissions and future-proof any new builds, and standards are easier to implement for new builds than for existing buildings.

Example case study: Vancouver, Canada

Vancouver launched its Zero Emissions Building Plan in 2016, with a focus on decreasing the emissions intensity of new buildings to zero by 2030. Vancouver has estimated that most new builds need to adhere to zero emissions standards by 2025, to set city on course to reach its net zero target by 2050. The city set energy efficiency standards for new commercial buildings that are linked to greenhouse gas emissions. A new by-law for new zero emission residential space and water heating enters into force in 2022.

Benefits of accelerating this pathway

Jobs	Health	Energy transition	Equity and inclusivity
The plan builds expertise in zero-carbon buildings. Construction investments and number of jobs have grown.	The ZEB building code contributes to a comfortable healthy indoor environment	The carbon intensity of new buildings in Vancouver has decreased by 43% from 2007 to 2017 ^[9]	Building codes should be implemented thoughtfully to maximize cost benefits

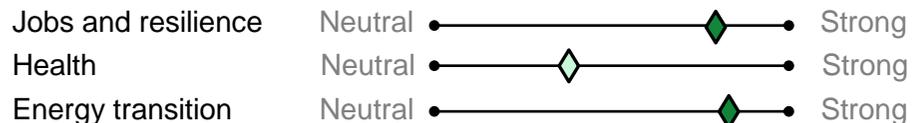
Impact on green and just recovery: **Strong** Positive Neutral

Further resources: [Cities100: Zero Emissions From New Buildings](#)

Source: City of Vancouver, C40. Note: 2019 emissions intensity of new buildings shown in graph is estimated.



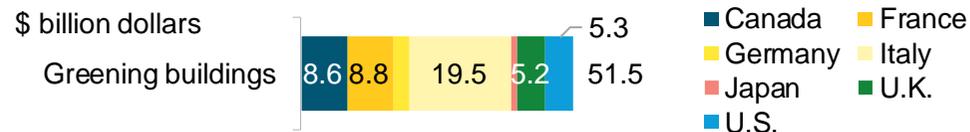
Potential to accelerate a green and just recovery in cities



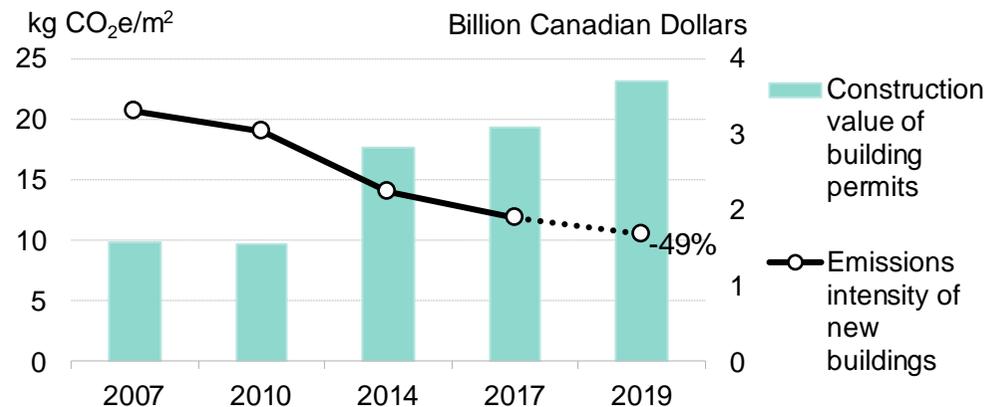
Best practices for a green and just recovery

- **Take a proactive approach.** Most buildings built today will still be used in the 2050's. The sooner new buildings achieve near zero emissions, the fewer buildings there will be that require costly and challenging deep energy retrofits to achieve net-zero targets by 2050.
- **Collaborate with industry on new policy and develop knowledge centers.** The construction industry needs time to adapt to new standards, and a strong local know-how can aid policy development.
- **Go from voluntary to regulatory measures over time.** Vancouver provided incentives by relaxing regulations for Passive House standard buildings since 2018, preparing for mandatory standards from 2022.

G7 national recovery stimulus total for pathway



New buildings' emission intensity vs. construction investments



Buildings and energy: Low-carbon energy supply

Pathway overview

Cities with high reliance on individual gas boilers for heating can achieve lower emissions and cost-efficient heating by building out a district heating network. When industrial surplus heat is available, this can be fed into the district heat network and provide a cheaper low-carbon heat source than electrification.

Example case study: Rotterdam, the Netherlands

Rotterdam is undergoing an unprecedented transition from individually heated houses to city-wide district heating, with increased efficiencies and emissions reductions. The city is rolling out the changes in stages, and aims to identify other upgrades that can be achieved simultaneously, such as sewage and building maintenance. The district heat started with six pilot areas, and the expansion plan is evolving flexibly, as some areas might prefer electric heating over district heat. The district heat networks are developed by companies owned jointly by local governments and private companies.

Benefits of accelerating this pathway

Jobs	Health	Energy transition	Equity and inclusivity
Home insulation and district heat could generate ~450 new jobs by 2030, and city initiatives ensure adequate workforce training	Rotterdam expects to see a 10% reduction in NOx as a result of the transition from gas boilers to district heating ^[10]	Clean heating will cause 900,000 tons less CO2 per year in 2050 (base year 2016) ^[10]	Plan aims to roll out the cheapest form of low-carbon heat. Interest-free loans help low-income homes to connect

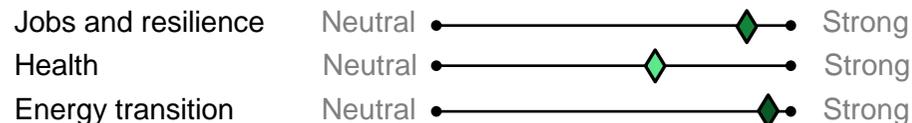
Impact on green and just recovery: **Strong** Positive Neutral

Further resources: [Cities100: Rotterdam - Strategic Transition to a Clean Heating Network](#)

Source: C40 Cities, BloombergNEF, Global District Energy Climate Awards



Potential to accelerate a green and just recovery in cities



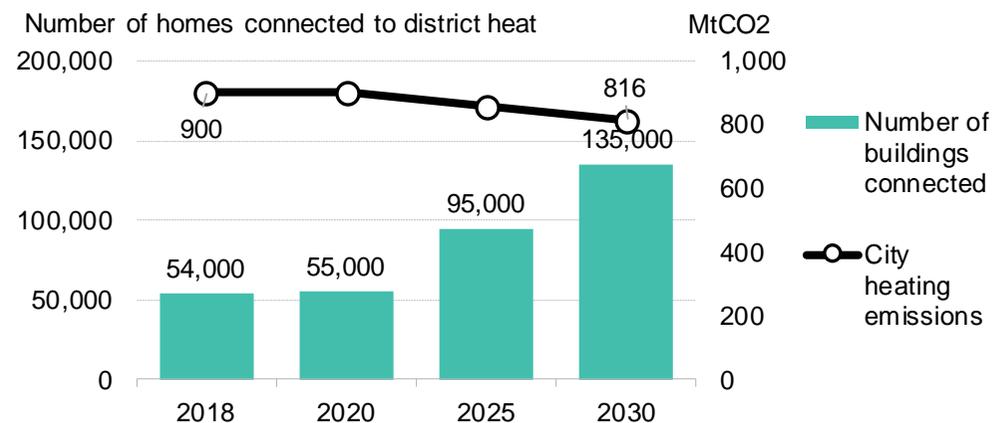
Best practices for a green and just recovery

- **Align with wider net-zero strategies:** Rotterdam has a net-zero target for 2050. National regulations limiting new build's connections to the gas grid also gave a push to Rotterdam's heating plan.
- **Least-cost and local approach:** The city commissioned expensive studies into finding the cheapest low-carbon heating option for each neighborhood. A varying mix of heat sources, such as locally abundant industrial surplus heat, can provide cost-efficient heating.
- **Support residents to spread costs:** Regional and national schemes to help home-owners finance the cost of needed retrofits and district heat connection costs are actively being developed in Rotterdam.

G7 national recovery stimulus total for pathway



Rotterdam residential district heat network expansion: net-zero aligned scenario



Buildings and energy: Clean electricity deployment

Pathway overview

Cities can accelerate the transition towards zero-carbon electricity consumption by committing to use only renewable electricity in buildings managed by the city. Cities can also encourage private buildings to do the same, using measures like rooftop solar installations and renewable energy power purchase agreements.

Example case study: Yokohama, Japan

Yokohama has set a goal for 100% renewable electricity consumption in the city by 2050. A first step towards this ambition was for the city's new city hall building to shift to procuring 100% renewable electricity in 2020, and 18 other public office buildings will follow suit by 2025. The power purchase agreements through the Yokohama City Green Energy Procurement System provide a valuable income stream for small-scale rooftop solar systems, as the feed-in tariffs for many systems expire after 2020. The plan will also encourage local power utilities to grow their renewable energy capacity.

Benefits of accelerating this pathway

Jobs	Health	Energy transition	Equity and inclusivity
New jobs in rooftop solar panel installations as Yokohama aims to procure 10% of electricity from within the city	The measure can decrease air pollution, as renewable electricity replaces fossil generation, such as coal in Japan.	The shift to renewable electricity in the new city hall resulted in annual CO ₂ savings of ~5,800 tons ^[11]	City-led project with limited resident input. Third-party-owned rooftop solar model cuts upfront costs and gains accessibility.

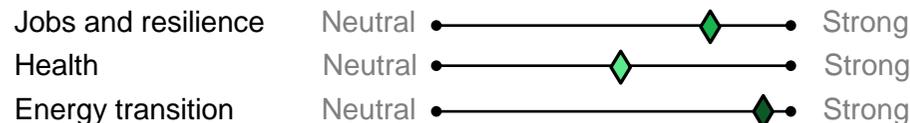
Impact on green and just recovery: **Strong** Positive Neutral

Further resources: [C40 case study: 100% Renewable Energy at Yokohama City Hall](#)
[Yokohama City Strategy on the Use of Renewable Energy](#)

Source: C40 Cities, BloombergNEF, Yokohama City Council.



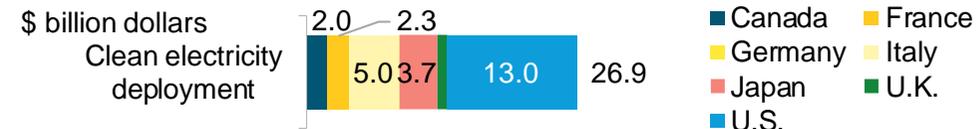
Potential to accelerate a green and just recovery in cities



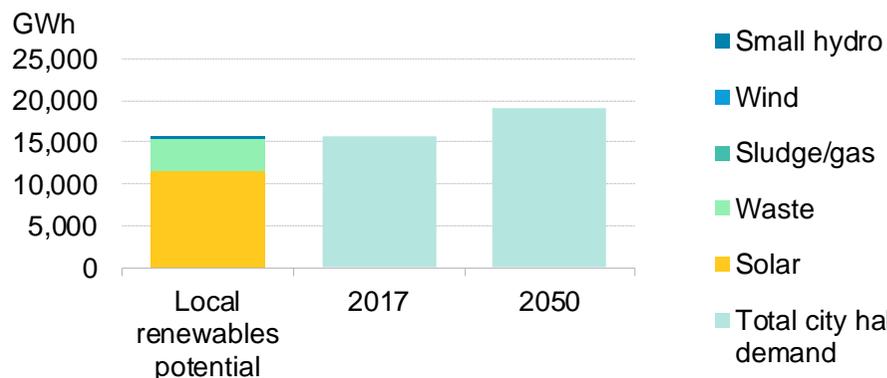
Best practices for a green and just recovery

- **Set an example to support growth of new sectors locally:** providing additional income to small, local renewable energy producers boosts capacity build-out, creates jobs and encourages entrepreneurship.
- **Ensure variety of sources for renewable power procurement:** benefits to the local economy can be larger if the procured electricity is partially produced locally, and a mix of renewables technologies mitigates the risks of weather-dependent renewables production.
- **Ensure equitable financing and permitting for small-scale local renewables projects:** for example a third party owned model for households installing rooftop solar can lower capital costs and electricity costs, with the potential to reduce energy poverty.

G7 national recovery stimulus total for pathway



Local renewable generation capacity could fulfil most of the city halls power demand, but only 10% of total city demand



Buildings and energy: Future-proofing for net zero

Pathway overview

Heating and transport are increasingly powered by clean electricity, while a larger share of electricity is produced from distributed sources like rooftop solar panels. To prepare for this future, local electricity grids need to plan ahead and adopt smart grid management technologies with increased flexibility.

Example case study: Milan, Italy

Milan developed a Sustainable Energy Management System for the Porta Romana district in 2015, including smart grids and internet connected street lighting and 60 electric vehicle chargers. The system collects near real-time data from the electricity distribution grid and can aid long-term grid development plans. Part of the European Sharing Cities project, Milan has developed a mobility services platform, facilitating car sharing and EV charging. As Milan plans to fully electrify its bus fleet by 2030, smart demand management technologies will be utilized to optimize charging of the bus fleet.

Benefits of accelerating this pathway

Jobs	Health	Energy transition	Equity and inclusivity
Most jobs in related building retrofits. Support for smart city innovation likely has a positive impact on employment.	Few direct health impacts but project supports transport/heat electrification and energy efficiency which lowers air pollution	Future proofing the electricity system is a crucial enabler of the energy transition	Measures were co-designed with citizens and many targeted social housing. Mobility solutions gained poorly connected areas

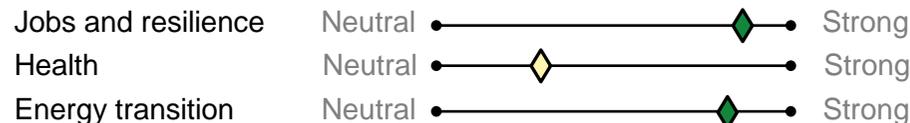
Impact on green and just recovery: **Strong** Positive Neutral

Further resources: [City of Milan: Milano Data Driven](#), [C40: Milan's Network of Public Transport Going Full Electric by 2030](#), [Sharing Cities Smart Booklet](#).

Source: BloombergNEF. Note: Hourly load profile based on the U.K. and Germany.



Potential to accelerate a green and just recovery in cities



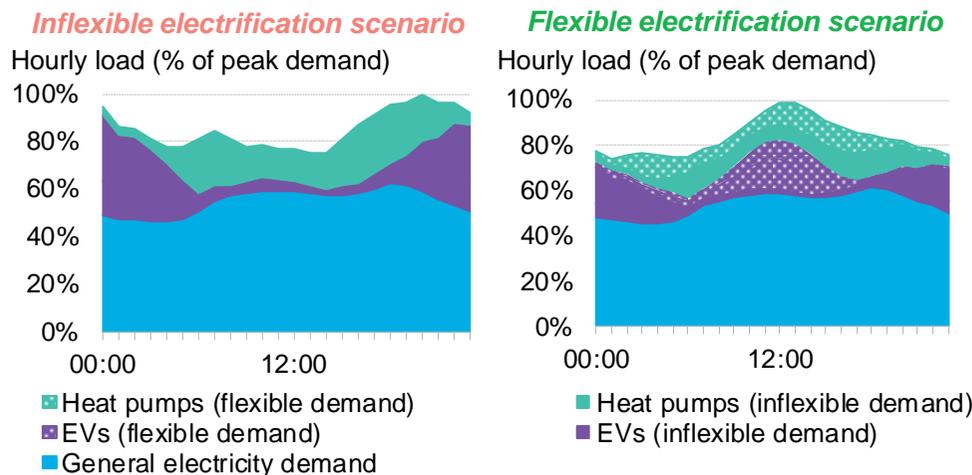
Best practices for a green and just recovery

- **Facilitate or encourage collaboration between stakeholders:** demand management initiatives can be led by cities, utilities, grid operators or electricity consumers, but a coordinated approach is required and city involvement is desirable.
- **Prioritize data sharing and interoperability standards:** Milan's interoperability plan and open data portal has enabled more transparent planning and management of the city's electricity needs.
- **Unlock flexibility:** power systems with high volumes of renewable energy and high levels of electrification require local flexibility, for example to maximize use of solar generation in the middle of the day. Cities can help to unlock this needed flexibility at the distribution level.

G7 national recovery stimulus total for pathway

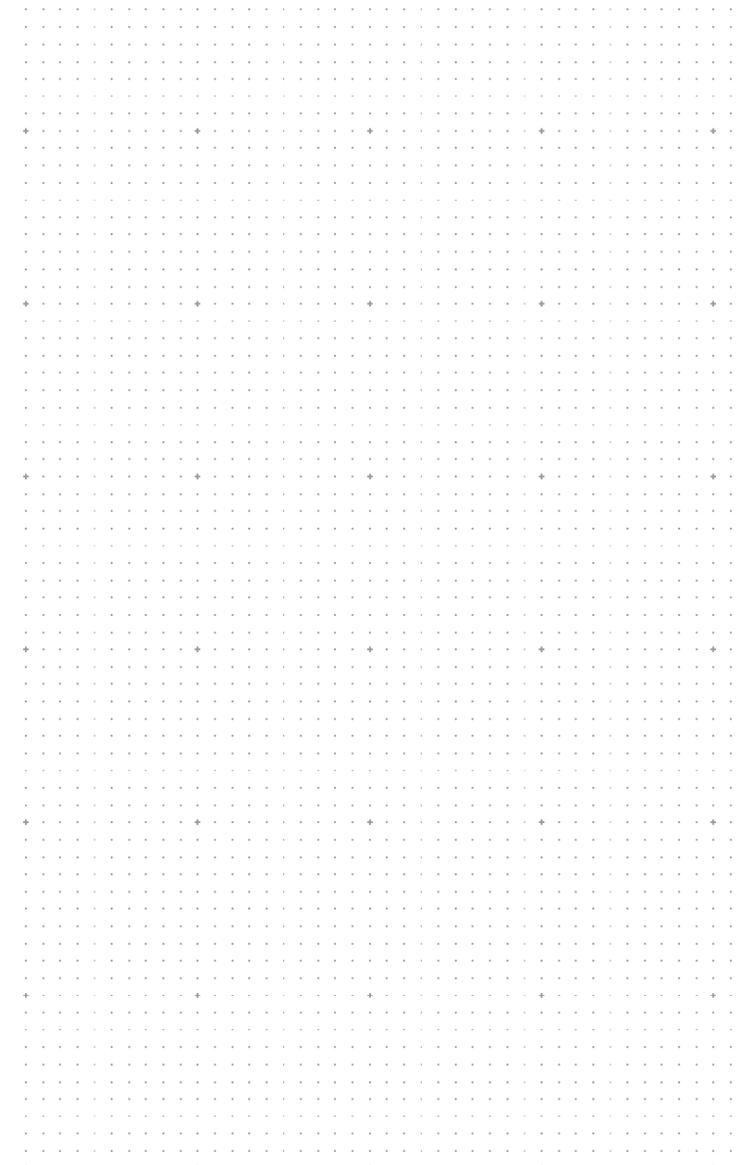


Illustrative hourly electricity load on a typical winter day, 2050



Best practices

Recommendations for a green and just recovery



Best practices for cities to accelerate a green and just recovery

In this report, we highlight eight pathways for cities to accelerate a green and just recovery and explored case studies to illustrate how cities can deliver on these pathways through tried-and-tested solutions. From this, we have identified six common best practices – detailed below – that can help guide policy makers to deliver successful recovery programs that contribute towards a green and just recovery in cities.

What cities can do to deliver successful policies for a green and just recovery

1. Prioritize considerations for equity and inclusivity

By placing social benefits at the heart of recovery initiatives, cities can maximize local impacts and ensure residents' buy in. Cities should engage with residents on an end-to-end basis, consulting on new initiatives and ensuring transparent monitoring and evaluation. Policy makers should take a holistic approach to equity and inclusivity considerations, including the distribution of benefits, for example on health and jobs.

- **Put social benefits and equity impacts first.** Measures can begin with a focus on areas likely to have the biggest equity impact, for example by focusing on lower-income households and publicly-owned buildings. Equity impacts can also be boosted by re-reinvesting program revenues back into local sectors and green infrastructure where possible.
- **Engage with residents during implementation, and prioritize key concerns and local needs.** Cities must ensure that residents' needs and concerns, particularly those of marginalized groups, are considered, with a holistic approach to the distribution of impacts across health, equity and inclusivity outcomes.

2. Target job creation to key local green sectors

Job creation in green industries will be a core part of successful recovery policy, and cities can facilitate national green industry priorities. Cities can help to direct job creation to local installers, facilitate dialog between employers, workers and government, and support reskilling from fossil fuel sectors. Where possible, cities should align job creation to green industries that are needed to deliver on national decarbonization goals.

- **Nurture growing local renewable energy sectors.** Cities can maximize benefits to the local green economy by procuring locally where possible. Boosting demand to local installers can also encourage job creation, and the longer-term reskilling of labor from non-green sectors.
- **Align job creation with national industrial priorities.** Cities can focus support to green industries that are a priority under national labor market policy. This alignment can help cities to access additional resources for their initiatives.
- **Boosting access to finance can support job creation.** Improving consumers' ability to enact measures such as energy efficiency upgrades can stimulate demand and create jobs rapidly.

3. Act in the short term, plan for long-term net-zero pathways

Recovery measures should be coordinated with longer-term efforts to fully decarbonize cities. This means ensuring that efforts to boost green jobs and local health align with broader measures needed to quicken the pace of the energy transition in cities. The eight pathways identified in this report offer key areas for policy makers to focus on as a starting point to their local long-term decarbonization plans.

- **Align recovery measures with wider net-zero strategies and ensure a balanced approach across technologies and sectors.** Cities should aim for new measures to kick start or accelerate the long-term decarbonization of energy use and transport networks. Programs should drive the most cost-effective solutions and deploy a balance of renewable energy technologies suitable for the local conditions.
- **Ensure equitable financing and permitting for small-scale local renewables projects.** Cities can ensure a balance of programs that benefit communities and local residents at the small scale, alongside larger programs targeting carbon-intensive commercial and industrial activities.

Source: C40 Cities, BloombergNEF.

Best practices for cities to accelerate a green and just recovery

In addition to prioritizing equity and inclusivity, delivering targeted job creation, and long-term planning for a net-zero economy (discussed on [Slide 20](#)), good governance practices are also key for the successful delivery of measures to accelerate a green and just recovery.

What cities can do to deliver successful policies for a green and just recovery

4. Connect and align incentives to decarbonize

Cities should aim for green and just recovery measures to align with and connect to related national and regional policies and incentives. That means ensuring that policy is consistent, and reinforces the signals required to drive up demand for low-carbon and renewable energy technologies. It also means reassessing existing policies that might contradict or weaken the impact of new measures.

- **Cities can aim to layer local measures with national support schemes where possible, and align incentives across measures.** Combining and layering programs can create a more powerful signal for a green and just recovery. Setting in place measures that encourage consumers to make use of existing national subsidies is particularly valuable.
- **Use city initiatives to attract national funding, prioritizing based on resource availability.** Cities can help drive the use of national-level stimulus funds. Much of this stimulus will be available over a limited period, so cities can play an important role in leveraging national resources quickly and efficiently.

5. Sustain investment signals beyond the recovery

Cities should aim to generate investment signals for a long term green and just transition to a low-carbon economy, beyond the recovery period. Investment signals can include ambitious target setting, green public procurement, and environmental regulations and standards that increase in stringency of time.

- **Set long-term targets to signal investment opportunities to public and private stakeholders.** Cities can attract additional investment by setting such long-term targets and a plan for their delivery. Consistent long-term policies bolster investor confidence.
- **Aim for the impact of funds to extend beyond recovery phase, and gradually expand initiatives over time.** Plan for recovery funds to kick-start changes in the economy that are aligned with a long-term target, such as net-zero by 2050. Increase the scope and stringency of sector specific targets over time to encourage continuous innovation and growth of new sectors, e.g. the electric vehicle charging sector.

6. Prioritize transparency and information sharing

Information sharing can work to educate residents, evaluate policies and aid coordination between different levels of government. Cities should make use of their contact points with residents and ensure that residents are well informed about new measures. This can also improve uptake of financial support schemes provided by national governments.

- **Make transparency and information sharing a priority.** Openly sharing grounds for decisions can increase trust, reduce corruption and aid overall policy success. Useful channels are city webpages, newsletters and media.
- **Use monitoring and evaluation to quantify and optimize impact.** Harnessing data and mapping tools makes it possible to track progress. Open data tools can also involve citizens in decision making, and raise awareness about benefits such as dropping pollution levels.
- **Provide citizens with guidance and education.** City level emissions are often tied to resident everyday choices. Education and guidance about national support schemes can nudge residents into low-carbon practices, e.g. cycling.

Source: C40 Cities, BloombergNEF.

Best practices for national governments to support a green and just recovery in cities

National governments will play a central role in the direction of the economic recovery and clear policy will be crucial for a green and just recovery. They should work with cities, building on existing local best practice and scaling up action to the national level. Although cities can lead the way in developing more ambitious targets than those set by governments, national policies give powerful signals and deliver a wider impact. Therefore the development of ambitious green and just recovery plans by national governments will be essential. The outcomes of these plans can only be fully realised by collaborating with cities.

What national governments can do to enable a green and just recovery in cities

1. Engage in active dialogue with cities

- **Consult local governments.** City-level implementation of national policies can determine the overall success of many initiatives.
- **Recognize that cities can lead a green and just recovery,** and can demonstrate concepts that can work on a national level.
- **Adopt agile decision making and be flexible** in adapting national policy to city level initiatives can allow cities to move faster towards a green recovery.

2. Employ good governance and transparent practices

- **Invest in good governance and effective channels for communication and information sharing,** between different levels of government. National governments can also help to connect initiatives across cities, share best practices and improve efficiency.
- **Transparently disclose standards and practices to residents,** to increase trust and reduce risk of corruption. End-to-end stakeholder consultations and publicly-available information about the implantation process are key.

3. Focus on accessibility and simplicity of funds, with sufficient duration

- **National governments can allocate budget directly to cities or earmark green recovery funds for cities.** This can include enabling cities to apply directly for funds under national programs.
- **Prioritize simplicity and flexibility.** There is substantial value in stimulus measures being both simple to deliver and flexible enough to accommodate local needs. Governments should also aim to set clear, simple eligibility criteria for funding, but avoid strict technology lock-ins.
- **Commit funding for a sufficient duration.** Job markets need time and policy stability to evolve, and cities can benefit from implementing programs in stages.

4. Pay attention to local considerations

- **Set clear targets that can apply to a variety of local variations,** such as a national net-zero target with interim carbon budgets and sector-level emissions targets.
- **Empower cities** with the authority to implement local measures, such as building efficiency standards for buildings and low-emission zones, to support a green and just recovery
- **Commit sufficient funding to cities** that are hit hard by the pandemic and structural changes from the energy transition. For example, this could be a vital component to facilitating a green and just transition in regions historically dependent on fossil fuel-based industries.

Source: C40 Cities, BloombergNEF.

G7 recommendations

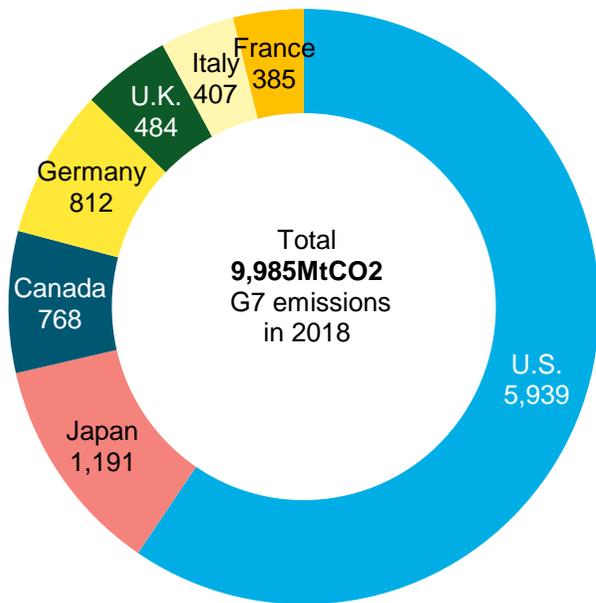
Best practices for a green and just recovery

Delivering a green and just recovery with cities across the G7

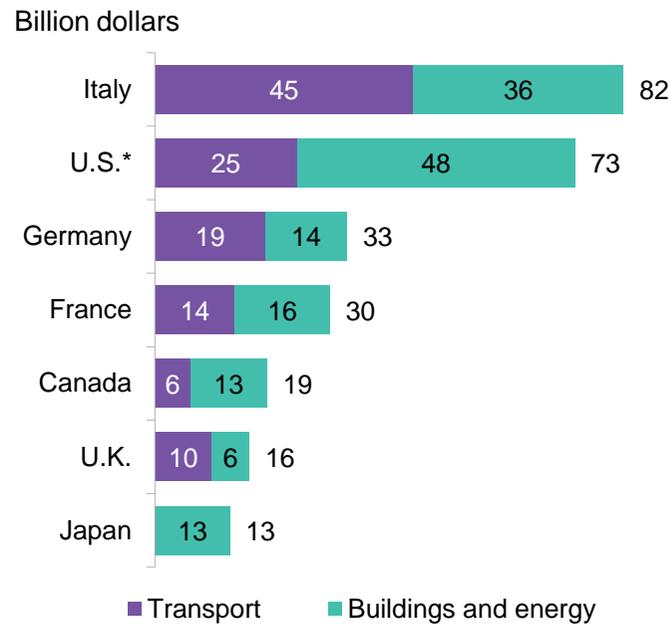
National stimulus funds aligned to the green and just recovery pathways are equivalent to 1.2% of national 2020 GDP on average across G7 countries. As such, governments are already making resources available that can contribute in cities, but ambition is varied. EU countries and Canada are at the forefront of a green recovery, with the highest proportions of pathway-aligned stimulus relative to the size of their economies despite their relatively lower national carbon emissions. Meanwhile Japan and the U.S. have the highest emissions across the G7, and lag on green stimulus. Japan's green stimulus is targeted at innovation, whereas the U.S. is focusing on infrastructure.

Italy, France and Germany make up 54% of G7 stimulus, but only 16% of G7 emissions. These EU member states are leading the way with pathway-aligned stimulus representing 1.8% of their total GDP, but must prioritize the successful and efficient deployment of funds alongside targeted engagement with cities. The U.K. falls behind other European countries with stimulus representing just 0.6% of GDP.

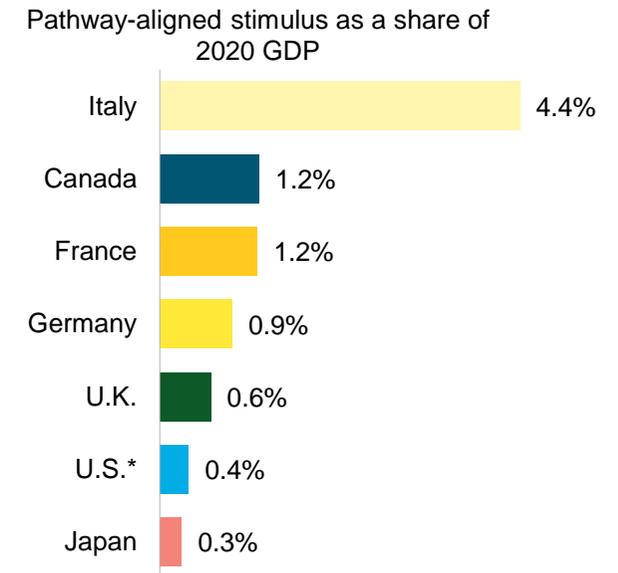
G7 emissions in 2018, by country



Stimulus aligned to pathways in the G7



Stimulus as a share of 2020 national GDP



Source: BloombergNEF [Scoreboard](#), C40 Cities, World Bank, UNFCCC. Note: *Assumes that at least 50% of the \$128 billion of pathway-aligned green funds proposed in the U.S. Infrastructure Bill will be allocated, as the bill has not been approved by the House of Representatives at the time of writing. U.S. stimulus could reach 0.4-0.6% of GDP, depending on the final version of the proposed Infrastructure Bill.

Delivering a green and just recovery with cities across the G7

This section highlights actions and focus areas for policy makers across the G7 – from the city level to national – to collaborate to deliver a green and just recovery. A snapshot of the national policy framework in each country is included, based on BloombergNEF’s 2021 Zero-Carbon G20 Scoreboard, alongside a set of actions for governments.

National government metrics used for this analysis:

Targets and plans assessed in G7 policy

- **Net-zero target:** an economy-wide target date to achieve net-zero greenhouse gas emissions is set by the national government.
- **Carbon budgets:** interim budgets are set by the national government.
- **Sector-specific targets:** sectors have individual or targeted emission reduction targets set by the national government.
- **Just transition plans:** the national government has a just transition plan or resources, particularly to support the phase out of fossil fuel sectors.
- **Green and just city funds:** the national government has dedicated resources to a green and just transition for cities.

Sector indicators assessed in G7 policy

- **Clean and flexible power:** clean energy auctions, renewables portfolio standards, incentives for flexible resources, fossil fuel phase out plan
- **Zero-emission transport:** zero-emission vehicle purchase subsidies, deployment targets, fuel economy standards, biofuel blending mandate
- **Low-carbon buildings:** incentives for energy efficiency (including appliances), building energy mandates, upfront capex subsidies for heat pumps
- **Industrial decarbonization:** carbon pricing on industry, incentives for energy efficiency, hydrogen strategy, incentives for carbon capture, subsidies for renewables or electrification
- **Circular economy:** landfill bans, extended producer responsibility programs, recycled content laws

Italy

% population (2020)

71% in cities 29%



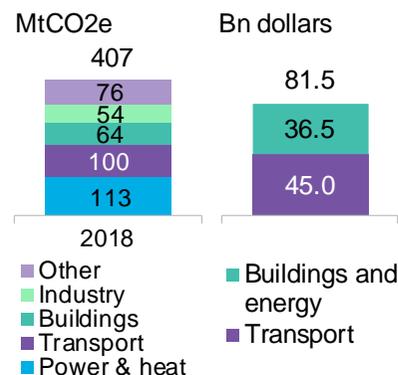
Current policy support:

Net-zero target	2050	Clean and flexible power	Strong
Carbon budgets	No	Zero-emission transport	Strong
Sector-specific targets	Some	Low-carbon buildings	Mixed
Just transition plans	Some	Industrial decarbonization	Mixed
Green and just city funds	Yes	Circular economy support	Strong

Key actions for a national green and just recovery

Italy can accelerate the pace of its energy transition by unlocking permitting constraints to renewable energy projects and planning the transition from natural gas used in power, heat and industry. The government can develop green jobs particularly in renewables, energy efficiency and public transport with its recovery package – which is the largest of all EU member states.

Emissions, green stimulus



Key actions to boost a green and just recovery with cities:

1. Engage cities in ensuring successful uptake and transparent spending of EU green recovery funds.

Key actions with the EU:

1. Create structured engagement with cities for the delivery of recovery plans for the delivery of EU Green Deal and Renovation Wave goals for buildings.
2. Strengthen policy framework.



Source: BloombergNEF Scoreboard, C40 Cities, World Bank, UNFCCC.

Policy key:

Ambitious & legally binding Mixed Lacks implementation plan/No policy

Delivering a green and just recovery with cities across the G7

France

Current policy support:

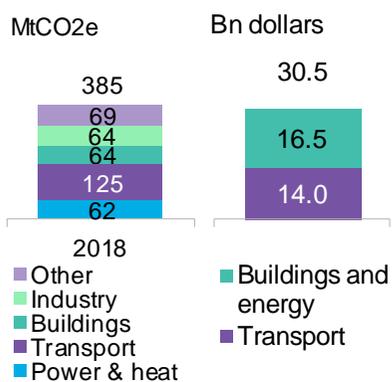


Net-zero target	2050	Clean and flexible power	Strong
Carbon budgets	Yes	Zero-emission transport	Strong
Sector-specific targets	Yes	Low-carbon buildings	Strong
Just transition plans	Yes	Industry decarbonization	Strong
Green and just city funds	Some	Circular economy support	Mixed

Key actions for a national green and just recovery

France already has a co-ordinated set of national targets and strategies to deliver on the 'green' component of its recovery – with abundant incentives such as clean energy auctions, a funded hydrogen strategy, and support for zero-emission transport. Recovery funds are well spent on decarbonizing transport systems as this sector is the biggest contributor to emissions.

Emissions and funding



Key actions to boost a green and just recovery with cities:

1. Make city funds available to bottom-up initiated green projects in addition to dedicated public transport funds.

Key actions with the EU:

1. Deliver increased CO2 reduction targets for road vehicles to align with EU 2050 net-zero pathways.
2. Ensure national emissions targets align to EU goals and are delivered on.



Germany

Current policy support:

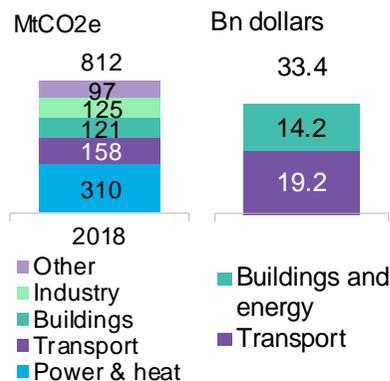


Net-zero target	2050	Clean and flexible power	Strong
Carbon budgets	Yes	Zero-emission transport	Strong
Sector-specific targets	Yes	Low-carbon buildings	Strong
Just transition plans	Yes	Industrial decarbonization	Strong
Green and just city funds	Some	Circular economy support	Strong

Key actions for a national green and just recovery

Germany has comprehensive national policies for a green and just recovery, but still faces a major challenge over this decade to meeting its targets. The current 2038 phase-out deadline for coal will keep its significant fleet of emission-intensive plants online for two more decades. Faster deployment of low-carbon heating systems of buildings will be crucial to climate goals.

Emissions and funding



Key actions to boost a green and just recovery with cities:

1. Engage with cities to use national recovery and resilience funds for deep retrofits and clean heating.

Key actions with the EU:

1. Accelerate coal phase-out with a strong focus on growing renewables generation and just transition efforts.
2. Engage automotive industry to back the aim of zero-emission transport.



Source: BloombergNEF Scoreboard, C40 Cities, World Bank, UNFCCC.

Policy key:

Ambitious & legally binding Mixed Lacks implementation plan/No policy

Delivering a green and just recovery with cities across the G7

U.K.

Current policy support:

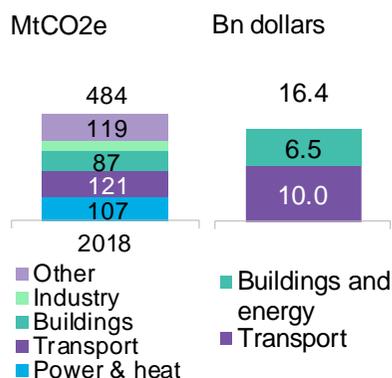


Net-zero target	2050	Clean and flexible power	Strong
Carbon budgets	Yes	Zero-emission transport	Strong
Sector-specific targets	No	Low-carbon buildings	Mixed
Just transition plans	No	Industrial decarbonization	Mixed
Green and just city funds	Some	Circular economy support	Strong

Key actions for a national green and just recovery

The U.K. has already demonstrated how to cultivate green industrial jobs as the second-largest offshore wind market in the world. However, the country can accelerate progress to a green and just recovery, and its net-zero target, with improved incentives for energy efficiency retrofits and low-carbon heating installations in the building stock.

Emissions and funding



Key actions to boost a green and just recovery in cities:

1. Increase funding, resources and the development of innovative financing mechanisms for cities.
2. Improve incentives for decarbonizing the building stock via retrofits and low-carbon heating, with high gains for climate, jobs and health outcomes.
3. Initiate a green and just phase out of natural gas use in energy supply and networks.

Japan

Current policy support:

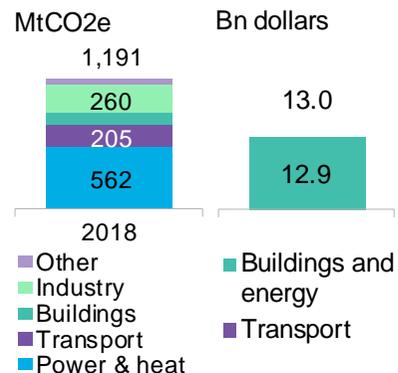


Net-zero target	2050	Clean and flexible power	Mixed
Carbon budgets	No	Zero-emission transport	Strong
Sector-specific targets	Yes	Low-carbon buildings	Strong
Just transition plans	No	Industrial decarbonization	Strong
Green and just city funds	No	Circular economy support	Strong

Key actions for a national green and just recovery

Japan's goals for zero-emissions buildings and policy support for zero-emission vehicles, energy efficiency measures and heat pumps are strong. But the country still needs to accelerate the level of ambition on measures such as carbon pricing and coal plant closures. City strategies will be central to a green and just recovery, but the national strategy is missing some detail.

Emissions and funding



Key actions to boost a green and just recovery in cities:

1. Increased support for renewable energy in cities, alongside carbon pricing and the development of an ambitious timeline for coal plant phase-out by 2030 at the latest.
2. More concrete support for transition to decarbonized transport in cities.
3. Grow and develop the green finance market to unlock further opportunities for a green and just transition.

Source: BloombergNEF Scoreboard, C40 Cities, World Bank, UNFCCC.

Policy key:

Ambitious & legally binding Mixed Lacks implementation plan/No policy

Delivering a green and just recovery with cities across the G7

U.S.

Current policy support:

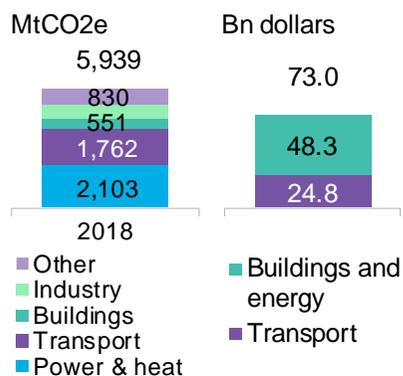


Net-zero target	No	Clean and flexible power	Mixed
Carbon budgets	No	Zero-emission transport	Mixed
Sector-specific targets	No	Low-carbon buildings	Mixed
Just transition plans	Some	Industrial decarbonization	Mixed
Green and just city funds	Some	Circular economy support	Weak

Key actions for a national green and just recovery

The U.S. needs more state- and federal-level support for its transition, as overall cheap natural gas, gasoline and diesel mean that heat pumps and electric vehicles often struggle to compete economically. With a wide variety between states, the federal government can help align policy in a coherent framework. This is crucial for EV, clean power and just transition policies.

Emissions and funding



Key actions to boost a green and just recovery in cities:

1. Ensure adequate funds are accessible to cities for climate action, and include climate criteria in city recovery funding.
2. Ensure programs and resources are available for electrification in buildings and transport, prioritizing affordability and those most affected by pollution.
3. Rapid phase out of remaining coal and initiate phase out of natural gas as part of a green and just transition.

Canada

Current policy support:

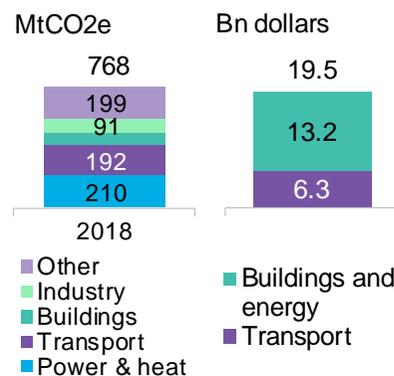


Net-zero target	2050	Clean and flexible power	Strong
Carbon budgets	No	Zero-emission transport	Strong
Sector-specific targets	Some	Low-carbon buildings	Mixed
Just transition plans	Yes	Industrial decarbonization	Strong
Green and just city funds	Some	Circular economy support	Mixed

Key actions for a national green and just recovery

Canada has an ambitious set of targets for its energy transition, but must strengthen policy support across all sectors to be on track for net zero by 2050. That includes a strategy for decarbonization of buildings through deep retrofits, and phasing out fossil fuels from electricity production. Strong support for regional green policy in high emitting provinces, like Alberta, is also needed.

Emissions and funding



Key actions to boost a green and just recovery in cities:

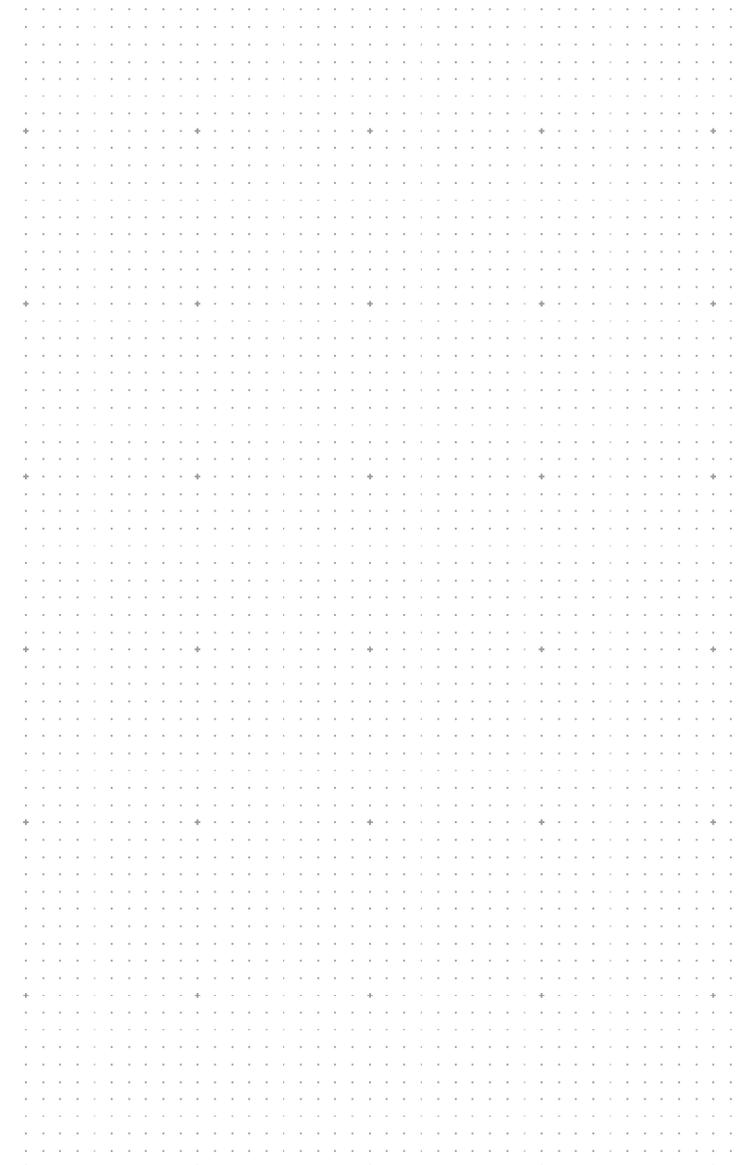
1. Accelerate building retrofits in cities and scale zero-emission building codes to all provinces.
2. Adapt sustainable transport solutions to local needs. Focus on public transport where viable and other modal shift options for car-reliant cities.
3. Accelerate 2030 coal-phase out program and initiate phase out of natural gas in heat and power production.

Source: BloombergNEF Scoreboard, C40 Cities, World Bank, UNFCCC.

Policy key: Ambitious & legally binding Mixed Lacks implementation plan/No policy

Appendix

Building on Cities to Deliver a Green and Just Recovery



References and further resources

Walking and cycling: Paris

Primary sources

- C40 (2016) *Cities100: Paris - Transport Policy Curbs Air Pollution* ([link](#))

Footnotes

1. World Health Organization (2014) *Unlocking new opportunities: Jobs in green and healthy transport* ([link](#))
2. Airparif, (2021) *Webinaire Plans Air et accompagnement des collectivités* ([link](#))
3. Union Cycliste Internationale (2020) *Paris Embraces Cycling for All* ([link](#))

Greening and growing public transport: Jakarta

Primary sources

- C40 (2019) *How to drive a modal shift from private vehicles to public transport, walking and cycling* ([link](#))
- C40 (2012) *A 12.9 km Bus Rapid Transport System Built in Just 9 Months at a Cost of \$2 Million/km* ([link](#))
- ITDP (2019) *Transjakarta: A Study in Success* ([link](#))

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4. The Jakarta Post (2017) *Indonesia Aims for Market Share of Electric Cars to Reach 20% by 2025* ([link](#))
5. Transjakarta (2020) *Transjakarta bus fleet* ([link](#)), The Jakarta Post (2020) *Transjakarta wants 10,000 electric buses in service by 2030* ([link](#))

Widening charging infrastructure availability: Seattle

Primary sources

- C40 (2017) *Cities100: Seattle - Finished with Fossil Fuels, City Electrifies Vehicles* ([link](#))
- Seattle Department of Transportation (2019) *Electric Vehicle Charging in the Public Right-of-Way* ([link](#))
- Seattle City Light (2021) *Electric Vehicles* ([link](#))

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6. European Association of Electrical Contractors (2018) *Dramatic job creation finding in e-vehicles study* ([link](#))
7. Washington State Wire (2020) *Cities awarded funding for electric vehicle charging stations* ([link](#)), Washington State Department for Transportation (2021) *Zero Emission Vehicle Infrastructure Partnerships* ([link](#))

Accelerating electric vehicle adoption: London

Primary sources

- C40 (2016) *C40 Good Practice Guides: London - Charging Zones to Promote ULEVs* ([link](#)) C40 (2019) *How road pricing is transforming London – and what your city can learn* ([link](#))
- Mayor of London's Office (2020) *Central London Ultra-Low Emission Zone: Ten-Month Report* ([link](#))

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Primary sources

- C40 (2017) *Urban Efficiency II: Seoul - Building Retrofit Program Loan Scheme* ([link](#))
- C40 (2017) *Urban Efficiency II: Seven Innovative City Programmes for Existing Building Energy Efficiency* ([link](#))
- Seoul Metropolitan government (2020) *Seoul Provides Low-Interest Loans Up to KRW 4 Billion for Zero Energy Buildings* ([link](#))

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8. Seoul Metropolitan City Citizens' Council and Budget Office (2013-2021) *Loan Support for Building Energy Efficiency Projects* ([link](#)) ([link](#)) ([link](#)) ([link](#))

Greening buildings: Vancouver

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- C40 (2017) *Cities100: Vancouver - Zero Emissions From New Buildings* ([link](#))
- City of Vancouver (2021) *Zero Emissions Buildings* ([link](#))
- Pembina Institute (2016) *A Blueprint for Quality Buildings and Green Jobs for B.C. and Beyond* ([link](#))

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9. City of Vancouver (2021) *Green Buildings* ([link](#)), *Statistics on Construction Activity* ([link](#))

Low-carbon energy supply: Rotterdam

Primary sources

- C40 (2017) *Cities100: Rotterdam - Strategic Transition to a Clean Heating Network* ([link](#))
- Municipality of Rotterdam (2021) *Rotterdam Heat Transition Vision* ([link](#))

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9. Cities 100/C40 (2017) *Cities 100 Report* ([link](#))

Clean electricity deployment: Yokohama

Primary sources

- C40 (2020) *100% Renewable Energy at Yokohama City Hall* ([link](#))
- City of Yokohama (2020) *Yokohama City Strategy on the Use of Renewable Energy* ([link](#))

Footnotes

10. Open Yokohama (2020) *Realization of Transition to 100% Renewable Energy at New Yokohama City Hall Building* ([link](#))

Future-proofing for a net-zero system: Milan

Primary sources

- C40 (2019) *Milan's Network of Public Transport Going Full Electric by 2030* ([link](#))
- EU Sharing Cities (2021) *Milan Profile* ([link](#))

References and further resources

G7 recovery funds overview

C40: *Mayors' Agenda for a Green and Just Recovery, 2020* ([link](#)).

C40: *The Case for a Green and Just Recovery* ([link](#))

C40: *The Case for a Green and Just Urban Recovery in Canada* ([link](#))

BloombergNEF: *2021 Zero-Carbon G20 Scoreboard available to BloombergNEF clients* ([web](#) | [terminal](#)) and *Executive Summary available to public* ([link](#)).

BloombergNEF: *Climate Policy Factbook* ([link](#))

National recovery plans

Italy

Ministry of Economy and Finance: *National Recovery and Resilience Plan, 2021* ([link](#))

France

Ministry of Economy, Finance and Recovery: *National Recovery and Resilience Plan 2021* ([link](#)) and *France Recovery 2020* ([link](#))

Germany

Federal Ministry of Finance: *National Recovery and Resilience Plan 2021* ([link](#))

U.K.

Department for Business, Energy and Industrial Strategy: *Ten Point Plan 2020* ([link](#))

Japan

Ministry of Economy, Trade and Industry: *The Basic Policies for the Project for the Green Innovation Fund, 2021* ([link](#)) and *Outline of METI's support measures* ([link](#))

USA

The White House: *Bipartisan Infrastructure Deal, 2021* ([link](#))

Canada

Government of Canada: *Just Transition Consultation* ([link](#))

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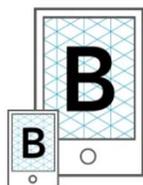
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