

Renewables in Cities 2019 Global Status Report

COP25, Madrid, Spain
UNFCCC Side Event

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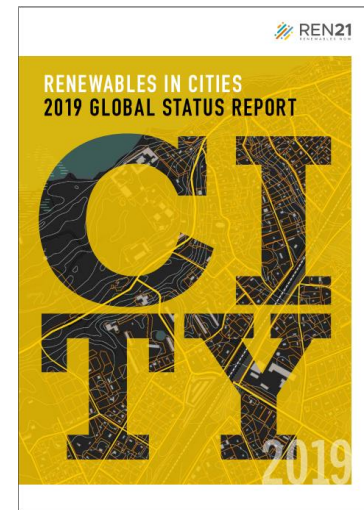
6 December 2019

Renewables in Cities 2019 Global Status Report

First annual stocktake of renewable energy in cities

The report features:

1. Cities in the Renewable Energy Transition
2. Drivers for Renewable Energy in Cities
3. Urban Policy Landscape: Targets and Policies
4. Urban Renewable Energy Markets
5. Mobilising Finance and Enabling Business Models
6. Citizen Participation



380

experts contributed to the REC-GSR, working alongside an international authoring team and the REN21 Secretariat



61%

of contributors are new members of the REN21 Community, indicating the attractiveness of this focus on cities in the energy transition



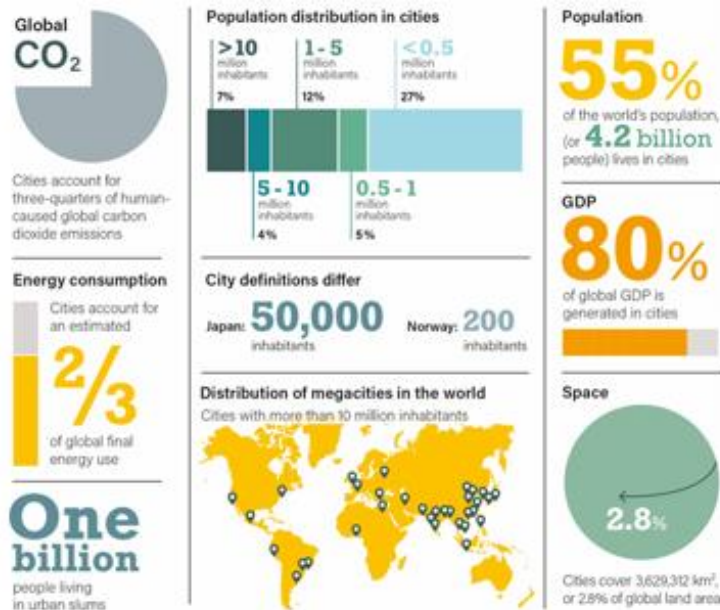
More than

50

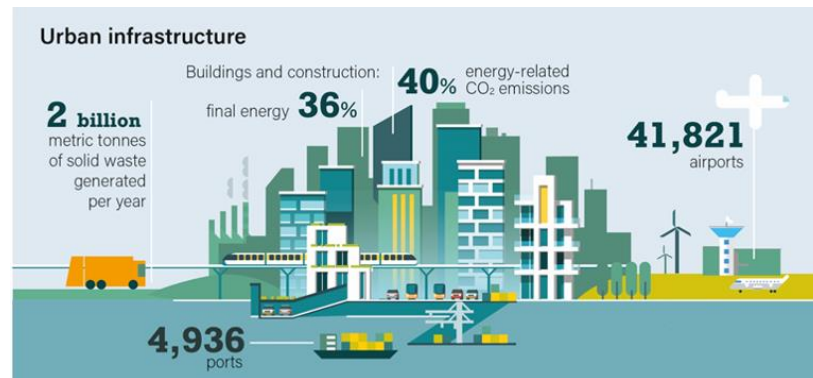
interviews were conducted with city or sector-specific experts from around the world

Cities in the world

Bring cities to the energy debate, the energy debate to cities



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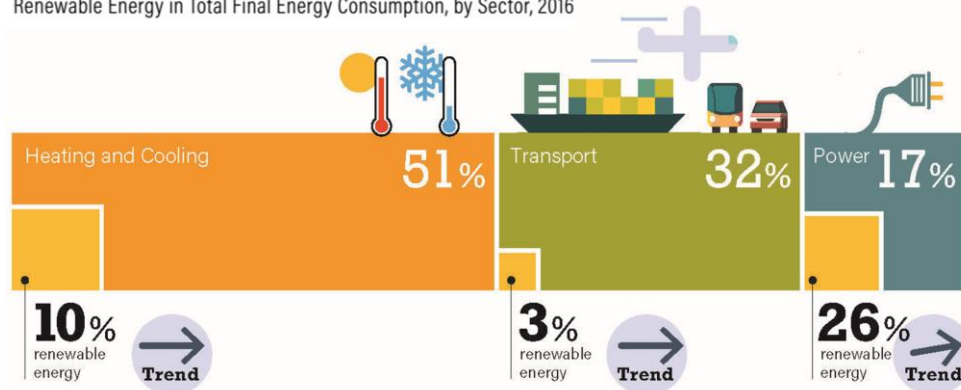
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Beyond power

Over 80% of demand for heating, cooling and transport

- Globally, around 26% of electricity is renewable
- Renewables lagging behind in heating, cooling and transport
- **Heating and cooling**
 - approx. 50% buildings / 50% industry
 - local markets
- **Urban transport:** 40% of final energy in transport sector

Renewable Energy in Total Final Energy Consumption, by Sector, 2016



Note: Data should not be compared with previous editions of the Renewables Global Status Reports. Electricity also supplies final energy demand in the heating and cooling sector (71% in 2016), and transport sector (11% in 2016). Source: Based on OECD/IEA.

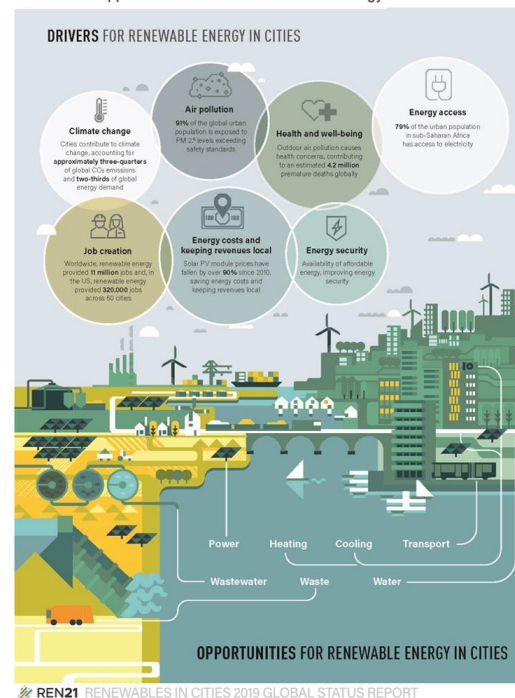
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Drivers for renewable energy

Cities pursue renewables to meet a range of objectives

- Climate change
- Ensuring healthy living environment - addressing air pollution
- Reducing municipal costs
- Economic development
- Local jobs
- Energy security
- Access to energy

Drivers and Opportunities for Urban Renewable Energy



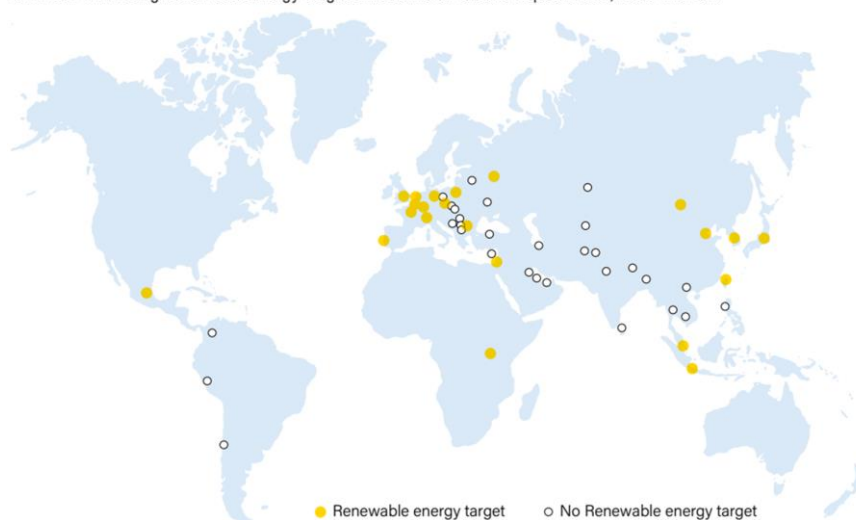
Cities have a direct responsibility for their residents

Air Pollution – a driver for renewable energy

Outdoor air pollution drives renewable energy uptake in cities

- Outdoor air pollution:
~ **4.2 million premature deaths**
- 9/10 people worldwide regularly exposed
- High economic cost:
 - OECD: USD 1.8 trillion
 - BRICS: USD 3 trillion
- Almost **half of the world's most polluted capital cities** have a renewable energy target
- In 2019, **35 cities : air pollution reduction targets** and clean air policies

Overview of Existing Renewable Energy Targets in the Most-Polluted Capital Cities, As of Mid-2019



Cities have ambitious targets, not only in the power sector

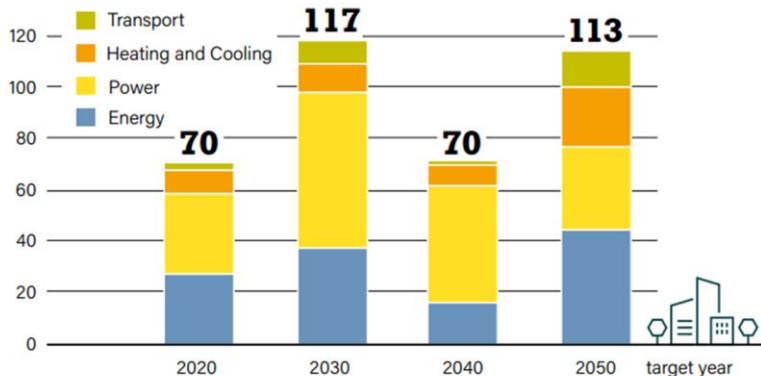
Target and vision setting for municipal operations and city-wide energy

Ambition tends to be:

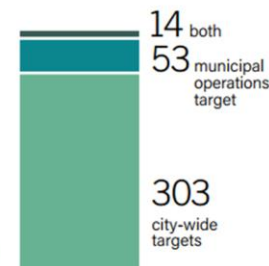
- **Higher:** cities target larger shares of renewables than national counterparts
- **Broader:** cities also set targets in heating, cooling and transport sectors
- **250 cities** worldwide have adopted some form of **100%** renewables target

100% Renewable Energy Targets in Cities, As of Mid-2019

Number of 100% targets
(10 year period aggregate)



370 targets in over
250 cities

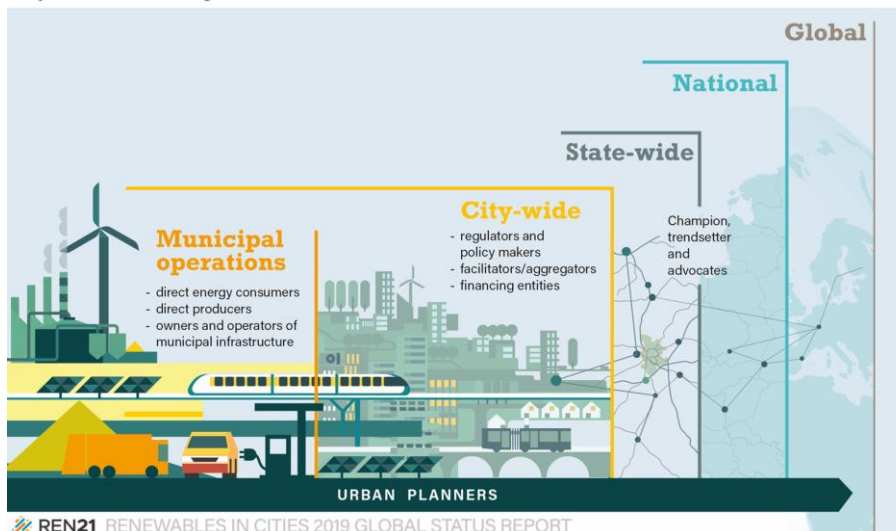


Note: By mid-2019, 370 targets in over 250 cities have been identified. In addition, several 100% target exist in villages as well as provinces around the world. Data included in this figure were compiled by REN21, ICLEI and The Global 100% Renewable Energy Platform with material provided by a variety of stakeholders, including CDP, CAN, C40, IRENA, Sierra Club, Renewable Cities (2018); and may not be comprehensive.

Cities' Multiple Roles in the Energy Transition

Role in decarbonising municipal operations and city-wide energy use

City Roles in Advancing Renewables Across Different Levels of Governance



	Municipal	City wide	State/ Provincial	National
Target setters	■■■	■■■	■■	■
Energy consumers	■■■	■■	■■	■
Energy producers	■■■	■■	■■	■
Owners & operators of infrastructure	■■■	■■■	■■	■
Regulators & policy makers	■■■	■■■	■■	■
Facilitators/aggregators	■■■	■■■	■■	■
Financing entities	■■■	■■■	■■	■
Urban planners	■■■	■■■	■■	■
Champions, trendsetters and advocates	■■■	■■■	■■■	■■■

■■■ Direct city influence

■■ "Secondary" city influence

■ Marginal city influence

Policies and actions in municipal operations

Advancing renewable energy in municipal operations

- Procuring renewable energy for consumption of municipal operations
- Scaling-up renewable generation on public buildings (e.g. Solar PV, solar thermal)
- Integrating renewable energy in district energy networks and switching municipal fleets to biofuels and EVs
- Using municipal waste and wastewater to generate biogas, biomethane



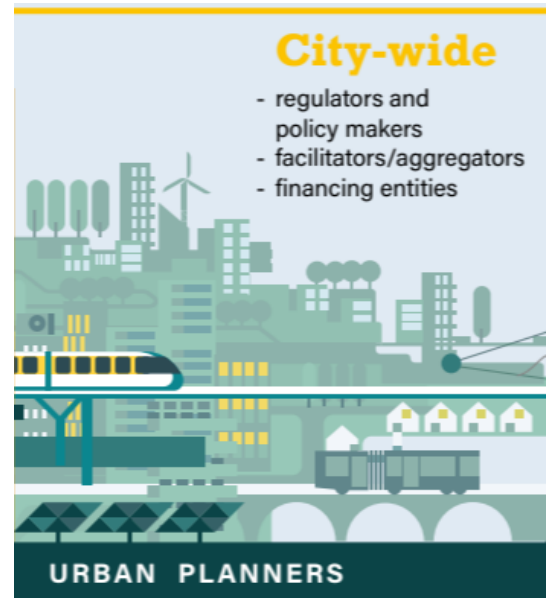
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Cities leading by example, shifting to renewables in municipal operations

Beyond municipal operations

Cities are using regulatory policies to advance renewable energy city-wide

- Regulators and policy-makers: creating environment for **city-wide** renewable in power, heating and cooling
 - Building codes requiring zero-emissions
 - Solar power mandates
- Facilitating renewable deployment for other actors in urban environment (businesses, citizens, communities, places of worships, urban delivery companies)
 - Raising awareness about RE benefits
 - Contribute to knowledge sharing and dialogue



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Beyond the city

Cities are champions for renewable energy at the global scale

- Champions, trend setters and advocates at the national level
 - Pushing for higher ambition
 - Proving the viability of renewables
- Inspiring and learning from other cities worldwide, organisation city networks



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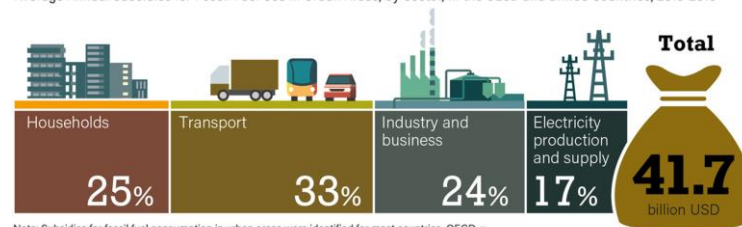
Cities cannot advance the transition to renewable energy transition alone

Multi-level governance

Cities need the support from national governments to realise renewable energy

- City power and authority over energy issues
 - is often limited, in particular in Asia, Latin America and Middle East
 - cities cannot achieve sustainability alone
- Conflicting/unsupportive national policies
 - building codes, vehicle regulation
 - national fossil-fuel subsidies

Average Annual Subsidies for Fossil Fuel Use in Urban Areas, by Sector, in the OECD and BRIICS Countries, 2015-2016



Note: Subsidies for fossil fuel consumption in urban areas were identified for most countries. OECD = Organisation for Economic Cooperation and Development; BRIICS = Brazil, Russian Federation, India, Indonesia, China and South Africa. A further USD 27.7 million in subsidies in urban areas of the selected countries goes to fossil fuel use in social and public services (too small to be included in figure).

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Cities cannot advance renewable energy transition in isolation

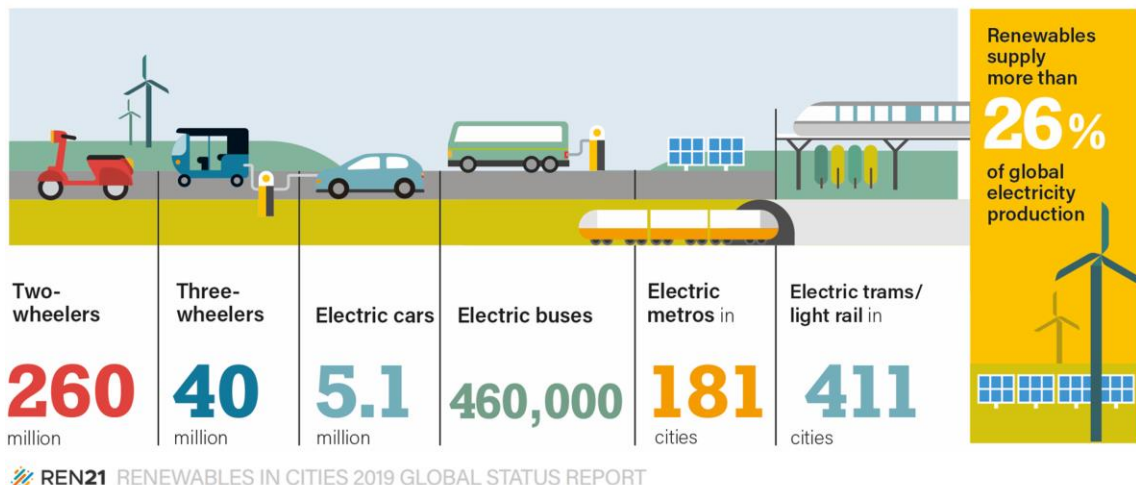
Urban Renewable Energy Markets

Urban markets: Electric vehicles in cities

Electrification of urban transport beyond metros and light rails

- **Transport electrification is expanding rapidly**
 - Increased 11% globally in 2018
- **Emergence of new forms of e-mobility**

Global Electric Vehicle Markets, 2018



Citizen Participation

Citizen engagement key for the energy transition

Citizens can actively shape the renewable energy infrastructure of their cities

- **Consumer choice:** choosing among suppliers and switching to green
- **Prosumers:** households/businesses generating renewable energy
- **Community renewable energy projects:** not only a rural phenomenon but have also emerged in cities
- **Participatory governance** is important to gain public trust



Public support in cities is important to drive the energy transition outside city boundaries

In conclusion

Cities and renewable energy – taking advantage of each other

- Renewable energy in cities
 - Nature of renewable energy empowers cities to become key players in the energy transition
 - Renewables offer cities the opportunity to achieve a wide range of objectives: air pollution, economic growth, etc
- Cities in renewable energy
 - Various roles: target setters, energy consumers & producers, policy makers and regulators, facilitator, etc.
 - Advancing renewable energy in all end-use sectors



From an energy consumer to a change agent of the energy transition

In conclusion

How to take advantage of the opportunities

- Strengthen data on renewable energy in cities
 - Inform decision makers
 - Change historic perception
 - Bridge cities and energy debates
 - Track advancement
- Align policies across the national, sub-national and local level
- Empowering cities: increase the awareness of their role in the energy transition



Better data to inform decision makers in all relevant sectors

Contribute to the *Renewables in Cities 2020 Global Status Report*

Become part of a community to advance renewable energy in cities

Contact us to get involved!

re_cities@ren21.net

www.ren21.net/cities

Do you want to be involved?

In early 2020, REN21 will conduct a survey in preparation for the 2020 edition. This survey will collect input to further develop this new report series. If you would like to contribute to the process, please sign up here or e-mail us at re_cities@ren21.net.

QUESTIONS?

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