RENEWABLE ENERGY TRANSITION – MULTI-STAKEHOLDER APPROACH

RENE21: the only global renewable energy multi-stakeholder community

INTERGOVERNMENTAL ORGANISATIONS
ADB, APERC, ECREEE, EC, GEF, IEA, IRENA, IsDB, RCREEE, UNDP, UN Environment, UNIDO, World Bank

GOVERNMENTS
Afghanistan, Brazil, Denmark, Dominican Republic, Germany, India, Mexico, Norway, Republic of Korea, South Africa, Spain, UAE, USA

NGOs
Club-ER, CLASP, CCA, CAN-I, CEEW, Energy Cities, FER, Global 100% RE, GFSE, GWNET, Greenpeace Intl, ICLEI, ISEP, IEC, JVE, MFC, SLoCaT, Power for All, REEEP, REI, SCI, WCRE, WFC, WRI, WWF

INDUSTRY ASSOCIATIONS
AMDA, ARE, ACORE, APREN, ALER, CREIA, CEC, EREF, GOGLA, GSC, GWEC, IREF, IGA, IHA, RES4Africa, WBA, WWEA

SCIENCE & ACADEMIA
AEE INTEC, Fundacion Bariloche, Higher School of Economics (Russia), IIASA, ISES, NREL, SANEDI, TERI

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COLLABORATION ON THE ENERGY TRANSITION – ADVANCING KNOWLEDGE AND DEBATES

RENEWABLES IN CITIES
GLOBAL STATUS REPORT

Debates
Knowledge
Network and Community

Global Status Report: yearly publication since 2005
Regional Reports
Global Futures Reports
Thematic Reports

RENEWABLES IN CITIES
GLOBAL STATUS REPORT

23-25 October 2019

REN21
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Network and Community

WHAT WE DO

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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
Cities in the world

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

Cities have a direct responsibility for their residents
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**
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
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
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
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
Global Solar Markets
Renewable energy continues to grow

Global reach of renewable power

- Total global capacity rose 8% in 2018: 2,378 GW capacity including hydropower
- 181 GW of renewable power additions led by Solar PV with 100 GW (55% of new additions)
Power sector leading

Renewables supply more than 26% of global electricity

● For the first time, more electricity was from solar PV than bio-power

● Strong growth in renewable generation, but rising electricity demand (up to 4% in 2018) makes it challenging to achieve larger share
181 gigawatts of renewable power added in 2018

Around 55% of these new additions were solar PV

- Added in 2018:
  - 100 GW of solar PV
  - 51 GW of wind power
  - 20 GW of hydropower
  - 10 GW of bio-power, CSP and geothermal power

- 2018 was the 4th consecutive year that more than 50 GW of wind power was added
Solar PV capacity additions pass 100 GW mark in 2018

- Solar PV capacity additions were more than 100GW for the first time
- Cumulative capacity: 505GW an increase of 25% from 2017

Solar PV Global Capacity and Annual Additions, 2008-2018

Note: Data are provided in direct current (DC). Totals may not add up due to rounding.

Source: Becquerel Institute and IEA PVPS.
Solar PV now fastest growing energy technology worldwide
Around 55% of these new additions were solar PV

- Solar PV is the fastest growing energy technology, and in an increasing number of countries
- 11 countries added more than 1GW in 2018
- 32 countries had cumulative capacity of at least 1GW
Growth rate slows for solar water heating capacity additions

- Cumulative global operating capacity for solar water heating collectors increased 2% to reach 480 GW\textsubscript{th}
- The majority of this capacity is glazed collectors
- The 2018 increase of 8 GW\textsubscript{th} is the smallest in the last ten years

Note: Data are for glazed and unglazed solar water collectors and do not include concentrating and air collectors.

Source: IEA SHC.
More markets report solar thermal sales increases in 2018

- Globally, 33.3 GWth of solar thermal capacity was added in 2018
- China accounted for 74% of gross additions, with 24.8 GWth
- Annual installations rose in 10 of the world’s 20 largest markets
Urban Renewable Energy Markets - Focus: Solar PV and Solar Thermal
Renewable power in cities

Cities are increasingly shifting to renewable power use

- City governments and other actors are shifting to renewables for power consumption
  - applications: street/indoor lighting, appliances, cooking, etc
  - contracting their renewable electricity supply via PPAs
- More than 100 cities use at least 70% of renewable power (2017)
- Renewable power consumption in cities also depends on regional/national power mix
Beyond renewables in power consumption
Solar PV as an opportunity to become decentralised electricity producers

- Renewable energy activity in cities has focused on distributed solar PV:
  - Adapted to resource availability and potentials: main renewable energy technologies are currently rooftop/building-integrated solar PV
  - Cumulative distributed solar PV installation totalled 213 GW (2018)
- Municipal governments have become active in distributed renewable energy generation
  - Public buildings: schools, administrative buildings, etc
  - Drivers: reducing costs, showing leadership, increasing local awareness
Urban solar markets: beyond municipal governments

Important role of other urban actors in scaling up renewables

- Private solar PV installations have also increased in cities, facilitated by favourable policies and financial or tax incentives
- Other urban actors are also producing renewables:
  - Many large corporations have scaled up their use of renewable electricity from solar PV
  - Places of worship
- Obtaining data on distributed solar PV is difficult
Street lighting

Solar-powered street lighting helps to reduce municipal energy costs

- Municipal public lighting can account for up to 40% of municipal electricity budget
- Sales in solar powered street lighting reached 3.8 million cumulatively in 2017: almost half in Asia and the Pacific
- Energy efficiency: large potential for future savings in developing and emerging economies
Solar thermal markets in cities
An opportunity for local heat generation

- Solar thermal can provide low-temperature heat for water and space heating
- **Stand-alone system:** typically on building facades and rooftops
- Municipal building codes facilitate the use of solar thermal systems in cities, e.g. Barcelona
- Overall data on urban renewable heat capacity and generation is lacking, but numerous examples exist:
  - Kyiv: installed solar water heaters at preschools and nurseries
  - Belo Horizonte: 3500 solar water heating systems installed in flats

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Solar thermal systems
Role: target and vision setting, for municipal operations and city-wide energy

- **District heating and cooling networks** mostly in Europe, China and North America
  - **Biomass** sources account for around 95% of renewable energy
  - **Geothermal** is increasing
  - **Solar thermal**: 339 large-scale systems, the majority within Europe

In Europe, 6,000 district heating systems supplied around 12% of EU heat demand
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

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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

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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!

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QUESTIONS?

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