

SCALING UP RENEWABLES IN CITIES: OPPORTUNITIES FOR MUNICIPAL GOVERNMENTS



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Integrated planning enables cities to pursue ambitious renewable energy targets

Cities are responsible for 65% of global energy demand. Their contribution will therefore be crucial in accelerating the world's transition to a sustainable energy future. Given continued urban population growth – including the migration of some 80 million people from rural to urban areas each year – the importance of cities continues to rise.

Renewable energy solutions for buildings, transport and other urban systems will be especially crucial to ensure energy security, fulfil climate commitments and secure social benefits for all urban residents. Fortunately, successes are already being achieved.

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To examine ongoing challenges and highlight effective solutions in this regard, the International Renewable Energy Agency (IRENA) has collaborated with ICLEI (Local Governments for Sustainability)¹ and the German Agency for International Cooperation (GIZ) to produce a new set of case studies that review crucial aspects of the urban energy transition. The selected cases highlight local policy instruments – including public procurement, ordinances, mandates, and pilot projects – with a focus on ensuring reliable energy supply and on the building and transportation sectors.

As drivers of change, cities assume a multitude of roles, including decision-making, planning, giving key authorisations, managing assets, operating local energy suppliers and providing guidance or models for the public to follow. Municipalities can encourage, enable, measure and regulate the shift to new energy technologies and inform the debate on the necessary changes before turning them into relevant policies (IRENA, 2016).

Renewable energy procurement, for instance, helps municipalities meet rising electricity demand. To address the challenge of electricity shortages, **Cape Town, South Africa**, is deploying solar photovoltaic (PV) rooftop installations on municipality-operated buildings and purchasing renewable electricity both from small-scale embedded generation and independent renewable power producers. Cape Town has also initiated a campaign to raise public awareness of energy efficiency.

Ordinances and mandates are common policy tools that may be employed to encourage more sustainable building construction; for example, they can set minimum requirements for the share of renewable energy in a building's overall energy consumption or establish specific energy efficiency targets. A solar thermal ordinance adopted in **Rosario, Argentina**, has resulted in the installation of considerable numbers of solar water heaters on both new and upgraded municipality-owned buildings. Meanwhile, the municipality is partnering with various stakeholders from academia, civil society and the state government to provide dedicated training and loan options to expand installations. This has led to widespread use of solar water heaters throughout the community. On average, households have reduced their energy costs for hot water by 80%, compared to the cost of conventional water heaters. Following this successful implementation in Rosario, the market for solar water heaters is expanding across the different provinces of Argentina.

¹ ICLEI was founded in 1990 as the International Council for Local Environmental Initiatives.

Pilot projects have shown that powering local transport systems with renewables can be cost competitive. In **New Delhi, India**, the government-owned Delhi Metro Rail Company (DMRC) has commissioned 20 MW_p of solar rooftop installations on metro stations and other buildings. Solar electricity is expected to cost less than the power supplied to DMRC by distribution utilities. The solar deployment will result not only in financial savings but also create 34 jobs per installed MW. With a 50 MW_p target, solar PV is expected to allow the Delhi Metro Rail system to become climate-neutral by 2021.

Integrated planning enables cities to pursue more ambitious renewable energy targets. **Malmö, Sweden**, for example, was sourcing all energy for municipal operations (such as city-owned buildings, city vehicle fleets and city-owned power-generation assets) from renewables by 2015. By 2016, renewables accounted for roughly one quarter of energy use within the municipality as a whole, putting the city on track to reach 100% by 2030. **Vancouver, Canada**, meanwhile, has committed to sourcing 100% of its energy consumption from renewables by 2050. Vancouver integrates its renewable energy targets within existing sectoral strategies, including its Zero Emissions Building Plan, the Neighbourhood Energy Strategy, and the Transportation 2040 Strategy. In 2016, Vancouver achieved a 30% share of energy derived from renewable sources.

Reliable public lighting improves safety and navigation in cities but also contributes to local energy consumption and GHG emissions. **Sydney, Australia**, has substantially benefitted from measures to introduce energy efficient public lighting, which previously accounted for one third of municipal electricity consumption. Since the publication of an initial IRENA/ICLEI case study of Sydney in 2013, the replacement of conventional light bulbs with energy-efficient LED street lights has resulted in annual savings of USD 1.3 million in electricity and maintenance costs, as well as in saving 2.8 million kilowatt hours of electricity use.

IRENA also co-operated with ICLEI to produce an earlier set of case studies on renewable energy policy in cities (IRENA and ICLEI, 2013). Those cases examined renewable energy industries in Dezhou, China; strategies for the use of renewable sources in Chemnitz, Germany; emission reduction and waste-to-energy development in Belo Horizonte, Brazil; efficient street lighting in Sydney and in Nagpur, India; solar water heater mandates in Sao Paolo, Brazil; and earlier target development in Malmö.



Cities are drivers of change, taking on decision-making, planning and public guidance roles in the shift to new energy technologies

Ambitious renewable energy strategies can contribute significantly to enhancing the quality of life in cities through lowered costs, as well as reduced air pollution and carbon emissions. Turning successful pilot projects into well-defined roadmaps requires adequate policy support, strategic partnerships with public shareholders and development of the necessary technical capacity. A clear roadmap also demonstrates strong political commitment.

Furthermore, engagement with community stakeholders through consultations and awareness campaigns is essential. However, because they do not always have the requisite regulatory authority or the financial wherewithal, in many cases municipal actors also need to co-ordinate their efforts with regional and national levels of government.

These case studies offer a detailed review of the different approaches that municipal authorities can adopt to achieve progress. While each city faces particular challenges and opportunities, they share a common need for swift action. Avoiding climate disruption, reducing dangerous air pollutants and securing adequate energy supplies are immediate requirements that leave no time for delay.

The promotion of renewable energy, together with greater energy efficiency, offers practical solutions to these problems. As the experiences highlighted here confirm, however, those solutions work best when they are informed by pro-active consultations with the urban community and emphasise the socio-economic benefits for all residents.



Renewable energy, together with greater energy efficiency, offers practical solutions

References

IRENA (2016), *Renewable energy in cities*, International Renewable Energy Agency, Abu Dhabi, www.irena.org/-/media/Files/IRENA/Agency/Publication/2016/IRENA_Renewable_Energy_in_Cities_2016.pdf.

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Further references are cited within each case study.

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