

# SCALING UP LOCAL CLIMATE ACTION IN SUPPORT OF THE PARIS AGREEMENT: A GUIDE FOR LOCAL AND REGIONAL GOVERNMENTS

ICLEI manages the Solutions Gateway, an online platform providing guidance on a wide range of possible solutions, illustrated by case studies. This platform is tailor-made for subnational governments, considering their typical responsibilities and spheres of influence. It aims to guide cities, towns and regions into selecting suitable measures for low-to-no emission and resilient development. Materials are developed by experts, peer-reviewed and based on proven practices and technologies. These growing range of solutions and replicable case studies address different sectors – from waste to energy – but also key topics such as governance and financing.



A Solution is a potential measure for consideration, outlining the enabling and multiplying factors and likely outcomes. These may be on policy, regulation, governance, capacity building, awareness raising, stakeholder engagement, etc.



A Solutions Package is a group of Solutions clustered to generate synergies and optimize results and long term impacts.



A case study is an example of implementation of a measure, to inform and inspire. Many cases also include replication potential analysis.

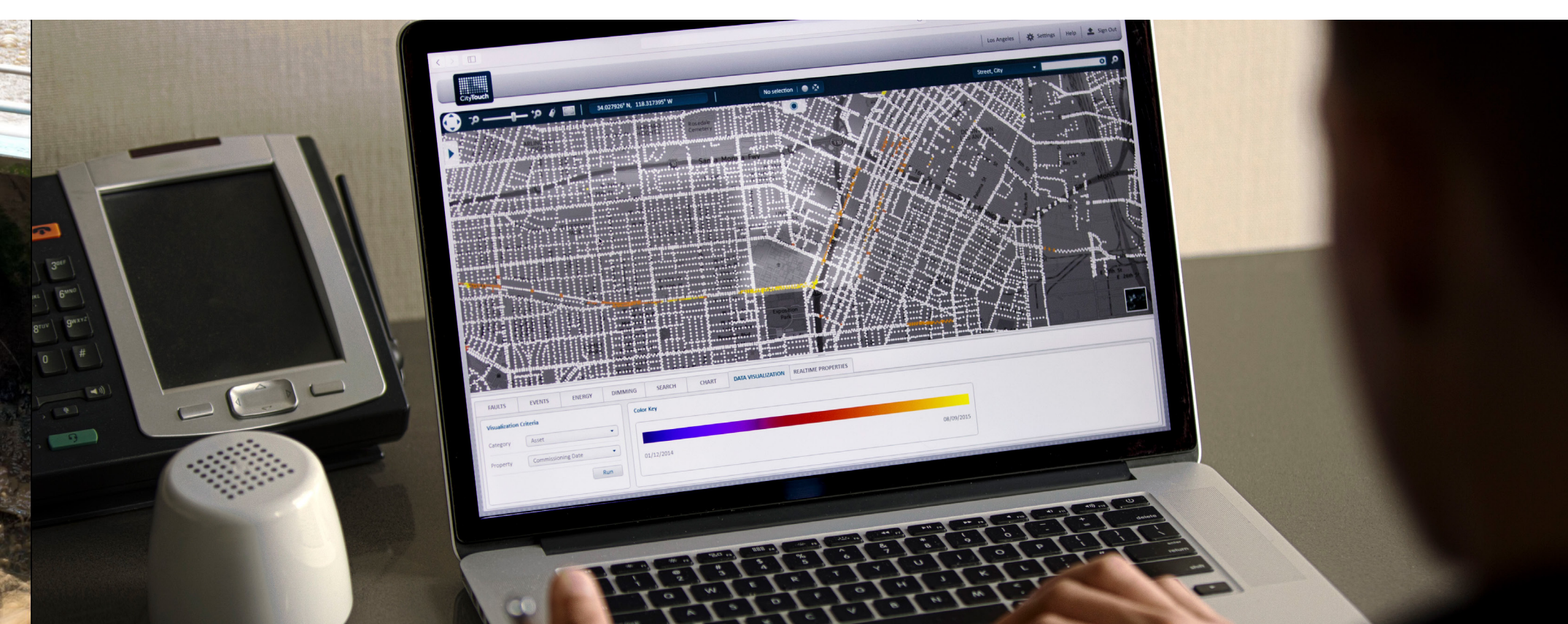


## ENERGY

- Solutions Package on District Heating / Cooling:** These systems can deliver economies of scale in terms of capital, energy, and maintenance costs - helping to reduce GHG emissions and optimize systems efficiency.
- Exemplary Case study – Milan, Italy:** Improving the district heating system with renewable energy and energy efficiency. Through expansion and enhancement of the network water heating system, the city of Milan between the year 2006 and 2009 was able to:
  - Add an additional 98,000 inhabitants to the district heating network, through extending the network by over 45 kilometers,
  - Generate 455 Megawatt (MW) of thermal power,
  - Reduce CO<sub>2</sub> emissions by 30,500 tonnes per year, based on average CO<sub>2</sub> emissions from substituted boilers, and also lower Particulate Matter (PM) by 3 tonnes per year for diameters 10 millimeters or less.
- Solutions Package on Solar Hot Water:** Deployment of solar heating systems gives access to sustainable energy using local renewables (solar energy), reduce fossil fuel consumption and GHG emissions, and increases energy efficiency by using modern technologies.
- Exemplary Case study – Betim, Brazil:** Solar heaters in low income housing has produced energy and financial savings. Implementing solar heaters in a pilot project for low-income housing in Betim, Brazil, resulted in a 25% power average consumption reduction, with an average decrease in electricity bills by 57% among the households who participated. With these savings in utilities, low-income families were able to significantly increase their disposable household income.

## TRANSPORT

- Solutions Package on Sustainable Urban Transport:** Complementary solutions to increase the offer and sustainability of urban transport and mobility approaches, with the co-benefits of reducing GHG emissions and improving air quality.
- Exemplary Case Study – Sydney, Australia:** Due to a strategic approach to incorporating sustainable urban transport, the City of Sydney has seen:
  - As of October 2016, 5% more people bicycling across surveyed areas as compared to October 2015, making a 98% increase since 2010,
  - Over 7000 people commuting daily to work in the city center by bicycle,
  - As of November 2016, around 32,439 city residents and businesses as members of a car sharing company,
  - 650 on-street parking spaces assigned to car sharing vehicles.
- Solution: Transit-Oriented Development (TOD):** Urban development that emphasizes public transport, cycling, and walking, through a high-density urban fabric of mixed land use and human-scale design.
- Exemplary Case Study – Curitiba, Brazil:** By implementing TOD, Curitiba has achieved the following milestones:
  - Reduced travel times and private vehicle use,
  - Bus Rapid Transit (BRT) is used by 85% of Curitiba's population with the ability to carry 10,000-20,000 passengers in a single lane at one time,
  - Between 1970 and 2000, the Human Development Index (HDI) for the city has risen from 0.7 to 0.8, and
  - The Municipal Urban and Sanitation Company of Curitiba supplies a fleet of 1,368 buses, carrying over 1.7 million passengers per day.



## WATER & WASTE MANAGEMENT

- Solutions Package on Sustainable Waste Management:** With complementary solutions and through Integrated Solid Waste Management (ISWM), issues related to sustainable waste management are addressed through an organizational, technical, and financial perspective.
- Exemplary Case Study – Medellín, Colombia:** Improved solid waste management has provided the city with significant reductions in waste generation, recovering 13.5% of total waste generated in 2013. This marked an improvement on the 12.2% received in 2011 and 2012, and prevented 665 tons of waste from reaching the La Pradera landfill.
- Solutions Package on Turning Waste into Energy:** Methods to extract energy from waste/wastewater to replace fossil fuels, and avoid the release of greenhouse gas (GHG) emissions into the atmosphere, and also ensure that waste and wastewater are collected and properly treated.
- Exemplary Case Study – Almada, Portugal:** The biogas (produced in wastewater treatment plants) cogeneration recovery system of Portinho da Costa WWTP covers roughly 40% of the energy needs of the facility, equivalent to about 550 MWh per year. In regards to environmental benefits, the energy savings from this system translate into a reduction of 180 tons of CO<sub>2</sub> – a decrease of 40% in GHG emissions per year.
- Solutions Package on Resource-efficient Urban Water Supply:** Methods for maximizing efficiency of drinking water to reduce expense and resource consumption of water transport, treatment, and distribution.
- Exemplary Case study – Nagpur, India:** Through an extensive audit and overhaul of water supply infrastructure, the city of Nagpur received the following improvements:
  - Pumping efficiency increase of up to 80-85% (up from a previous maximum efficiency of 64%)
  - Annual monetary savings amounting to 16 million INR (250,000 EUR)
  - A total increase in water supply by 40 MLD
  - Annual energy savings of over 9.7 million kilo watt-hours (kWh)

## INFRASTRUCTURE

- Solution: Smart City Infrastructure:** Networking and intelligent control implementation that enhances the performance of the system that is applied to with real-time monitoring and management.
- Exemplary Case Study – Buenos Aires:** Since 2013, the City of Buenos Aires has retrofitted 91,000 lights in its streets and parks with light emitting diodes (LEDs) and deployed a smart management system of all public lighting. As a result the City has seen:
  - Energy savings of more than 50%, saving 80,200 MWh (Megawatt hours) of electricity over three years (from 2013 to 2016), and 54,300 MWh in 2017,
  - Estimated increase in energy savings up to 60,100 MWh in 2018, and further grow to an average of 66.100 MWh of electricity per year between 2020 and 2024,
  - Considerable CO<sub>2</sub> emissions reduction, and enhanced lighting services, improved visibility, and reduced light pollution, and
  - Annual cost savings estimated at more than 6 million USD by 2018, and around 11.8 million USD by 2019.