

CITY ENERGY EFFICIENCY TRANSFORMATION INITIATIVE



Helping Cities Improve Services, Enhance Competitiveness, Achieve Cost Savings, and Reduce Environmental Impacts through Energy Efficiency

Urbanization is a cornerstone of sustainable development. Currently, more than half of all people live in an urban area. By 2050, the world's urban population will increase to 64 percent, with 94 percent of that increase occurring in developing countries.

Rapid urbanization, however, has led to massive demand for energy to power economic activity, expand basic infrastructure, and deliver municipal services. Cities now consume about two-thirds of the world's energy, and are responsible for about 70 percent of the world's GHG emissions. Energy efficiency can offer practical, cost-effective solutions to expand and improve urban services, while contributing to cities' efforts to be more competitive and address climate change.

Additionally, much of the growing population of developing country cities is poor—nearly one-quarter of the urban population lived on less than US\$1.90 a day in 2012. Energy efficiency can also free up resources to improve services to the urban poor.

The World Bank's **City Energy Efficiency Transformation Initiative (CEETI)** is a technical assistance program with an initial budget of US\$9 million. Led by the World Bank's Energy Sector Management Assistance Program (**ESMAP**), the initiative provides support to help cities identify, develop, and mobilize financing for transformational investment programs in urban energy efficiency. It includes three main components: (i) financial and technical support; (ii) capacity building and e-learning; and (iii) knowledge creation and exchange.

The initiative builds on ESMAP's extensive work on urban energy efficiency, including its Tool for Rapid Assessment of City Energy (**TRACE**) used in nearly 70 cities to help quickly identify potential energy efficiency improvements, target underperforming sectors, and prioritize interventions. Other efforts include knowledge products on various urban energy efficiency topics and issues, as well as technical assistance on improvements in



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water systems (Uruguay), city-wide energy efficiency diagnostics and pre-feasibility studies in buildings and public lighting (Rio de Janeiro), financing of energy efficiency recommendations (Gaziantep), building retrofits (Shanghai), and landfill gas recovery (Tianjin).

Under the initiative, cross-sectoral teams from across the World Bank Group work hand-in-hand with local and national governments to provide:

- Diagnostics and assessments of city energy use and energy efficiency potential
- Advice on policy, regulatory, and institutional reforms

"Cities have always been the engines of economic growth; now they hold the key to a sustainable future. Cities today have a unique opportunity to become global engines of green growth by choosing energy-efficient solutions for their infrastructure needs." Axel van Trotsenburg, Vice President, East Asia and Pacific Region, World Bank



The Energy Sector Management Assistance Program (ESMAP) is a global knowledge and technical assistance program administered by the World Bank. It provides analytical and advisory services to low- and middle-income countries to increase their know-how and institutional capacity to achieve environmentally sustainable energy solutions for poverty reduction and economic growth. ESMAP is funded by Australia, Austria, Denmark, Finland, France, Germany, Iceland, Lithuania, the Netherlands, Norway, Sweden, and the United Kingdom, as well as the World Bank.

- Training and capacity building to enhance understanding of urban energy efficiency and its delivery
- Knowledge exchanges to share and disseminate experiences and good practices
- Development of energy efficiency investment programs and support for project preparation

To further broaden CEETI's reach, a series of public e-learning modules is being finalized, featuring different municipal sectors where energy plays an important role (e.g., public lighting, water supply). In addition, an [Energy Efficiency Project Resource Center](#) has been developed, in cooperation with Energypedia, to provide practitioners from around the world with documents not widely available or easily accessible (e.g., sample terms of reference, contracts, surveys, and questionnaires; examples of economic and financial analysis; training material; methodologies and protocols; case studies).

Additional knowledge products range from Mayoral Guidance Notes on urban energy efficiency, to lessons learned from city energy diagnostics, and to insights from public lighting project experiences.

RESULTS

Through grant allocations, CEETI is supporting technical assistance work in nearly 30 cities in Brazil, China, Egypt, Indonesia, Kyrgyz Republic, Macedonia, Mexico, Morocco, South Africa, and Ukraine. The grants target cities where there is a high potential for ambitious urban energy efficiency programs, a commitment to move ahead with such programs, and a mandate to implement them. These programs cover a broad spectrum of urban sectors including: lighting, water and wastewater, buildings, power and heat, waste management, industry, and transportation. Together, these programs will contribute to transformational impacts in cities' energy use and to their sustainable development. For instance:

BRAZIL. ESMAP support began with energy efficiency prioritization in two cities, resulting in focused efforts on the public lighting and buildings sectors. In the **public lighting sector**, pre-feasibility studies encouraged Sao Paulo and Belo Horizonte to implement LED lighting using public-

private partnerships. ESMAP support is now directed at procurement preparation for the replacement of 900,000 lighting points in these cities, which will be expanded to the rest of the country. In the **buildings sector**, ESMAP support is focused on 2,000 schools in Rio de Janeiro and Belo Horizonte where pre-feasibility studies are examining rooftop solar panels combined with energy efficiency measures inside schools.

MEXICO. ESMAP supported city-level energy diagnostics in Puebla and Leon, which has been expanded to 30 municipalities across Mexico. With this foundation, the Energy Ministry (SENER), with help from the Bank, is designing and implementing a national municipal energy efficiency program to support their long-term energy strategy. ESMAP now supports detailed energy audits in three key energy-using municipal sectors (street lighting; municipal buildings; and water and wastewater) in six municipalities.

IFC's EDGE Green Building Market Transformation Program. ESMAP supports EDGE's global knowledge infrastructure (i.e., certification and governance protocols, software design tool, training materials, a global IT platform), and implementation of a voluntary green building certification system in South Africa. EDGE target markets include: Johannesburg (South Africa); Shenzhen (China); Mandaluyong (Philippines); Jakarta, Surabaya, and three other cities in Indonesia; Ho Chi Minh and Da Nang (Vietnam); Chennai, Bangalore, and Ahmedabad (India); Rio and Sao Paulo (Brazil); Lima (Peru); Panama City (Panama); San Jose (Costa Rica); and Bogota, Medellin, and Cartagena (Colombia). Initial estimates indicate the EDGE Program will achieve within seven years: GHG abatement of 14 million tCO₂e per year; green investment catalyzed of about US\$150 billion by Year 7; and annual energy savings of 21,400 GWh and water savings 129 million m³.

UKRAINE. ESMAP performed city-level energy diagnostics (with TRACE) to develop investment priorities in Kiev, Ternopil, and Kamianets-Podilskyi. Public buildings were prioritized and will be the focus of pre-feasibility studies and financial analyses to be undertaken in these cities. As a follow-up measure, the Association of Energy Efficient Cities of Ukraine agreed to pilot TRACE 2.0 in a fourth city and train 50 to 60 city representatives in deploying the tool. Additionally, the World Bank will support the City of Ternopil in establishing a local ESCO following recent legislative changes.