ENERGY TRANSITION

Leading energy transitions can be complex and investment-heavy, especially for industrial legacy cities due to their historical reliance on carbon-based and extractive industries. However, these cities recognize that their pathway to a more sustainable future will be powered by clean energy. To ensure that the shift to low-carbon and renewable energy takes place, local governments need to comprehend the challenges and historical barriers they face. At the same time, by collectively using policy levers and innovative actions – industrial-legacy cities are already building momentum and support for their energy transition visions.

KEY MESSAGES

- Energy transitions provide a clear pathway for industrial legacy cities to move towards a more sustainable future. These cities have the opportunity to become front-runners in energy investment and innovation whilst also creating a healthier and more prosperous future their citizens.
- Industrial legacy cities face specific challenges when attempting to transition their energy systems due to aging energy infrastructure and building stocks, energy inequality among residents as well as a need to change policies and conditions in energy systems so that they can support the expansion of renewables and investment in new economic sectors.
- Cities need to create a clear vision for their energy transitions and set clear, ambitious goals that can be followed through with actions led or supported by local governments.
- Industrial legacy cities can utilize existing tools, incentives and infrastructure to increase energy-related investment.
- Strong partnerships and community engagement will be vital components for achieving a successful energy transition.

A VISION OF A SUSTAINABLE ENERGY FUTURE

Energy transitions provide a clear pathway for industrial legacy cities to move towards a more sustainable future. These cities view their transitions towards sustainability as a catalyst for a **new wave of investment leading to** the renewal and replacement of aging energy systems with advanced technologies and efficient infrastructure that will improve service delivery, limit transmission losses and decrease carbon emissions.

Energy transitions hold the potential for **a new chapter of economic growth**. The clean energy industry is growing and evolving rapidly, creating green-job opportunities and fostering local investment in a forward-looking economic sector. Industrial legacy cities are strategically positioning themselves as hubs for new energy technology development and sustainable manufacturing. Existing industrial infrastructure, investment incentives and initiatives that provide renewable energy production, installation and maintenance training to local residents make industrial cities attractive locations for companies to invest in.

Energy transitions offer the **promise of healthier and more sustainable urban environments**. By expanding their use of renewables and energy innovation such as electric cars or low-emission heat sources, industrial legacy cities are making rapid progress in reducing their GHG emissions and curbing air pollution.

ENERGY TRANSITIONS NEED TO OVERCOME MULTIPLE SYSTEMIC CHALLENGES

To implement a comprehensive and integrated shift towards new clean and renewable energy sources, local governments need to tackle the full spectrum of energy-related challenges, particularly the challenges intensified by their industrial pasts.

Upgrading old buildings and infrastructure

Many industrial legacy cities face a need to update and maintain aging infrastructure, including an older building stock, which negatively impacts the overall energy efficiency. In many cities, these infrastructures were built several decades or even a century ago at the height of urban industrial growth. Due to de-industrialization and subsequent economic recessions, infrastructure systems in industrial legacy cities often suffered from severe under-investment and no longer meet energy efficiency requirements of a low carbon economy. Moreover, rapidly growing cities in China which still followed an industry-driven development model often see newly-built infrastructure becoming outdated at an accelerated pace.

Rising energy bills and lack of investment

Economic decline in industrial legacy cities has also led to **rising energy burdens on residents** – where low-income households spend a much higher percentage of their incomes on energy compared to an average-income household. Rapid job-loss and limited alternative employment opportunities for workers following the closure or relocation of industries can easily lead to rising inequality and poverty. This results in an increase in the number of households impacted by the energy burden. In addition, necessary upgrades and renovations to save energy require costly upfront investment that is too high for many for homeowners. Meanwhile, existing subsidy and support schemes can be complicated to navigate. Local governments aiming to promote new energy solutions will need to prioritize affordability of renewable energy solutions and easy access to energy efficiency programs to ensure that the opportunities and benefits arising from the transition can be distributed more equitably among residents.

Fostering a low emissions economy

Industrial legacy cities developed on the back of fossil-fuel energy systems. Shifting energy supply to low carbon renewable sources in many cases requires the development of new physical systems, business models, policies, procurement processes and regulations. Starting to develop and put these mechanisms in place can be a long learning process for cities. Air pollution also remains an issue in many industrial legacy cities, be it for electricity generation and industrial processes as seen in Shijiazhuang, residential heating like in Katowice, or transport-related emissions seen in many more industrial cities around the globe. Successful energy transitions will need to reduce harmful energy-related emissions.

BUILDING ENERGY TRANSITION MOMENTUM AT THE LOCAL LEVEL

Energy transitions can be a daunting task for local governments even without the additional challenges inherent to their industrial pasts. Setting strong examples and fostering collaborative action – cities in the Urban Transitions Alliance have showcased how a multi-faced approach is essential for implementing a city-wide shift to a clean energy future.

Setting clear commitments and goals

Announcing an energy transition target publicly helps to create impetus and transparency for local governments' actions. Public pledges also increase awareness and encourage active local participation accelerating a city-wide energy transition. Targets in Urban Transitions Alliance cities include 100% renewable energy commitments, CO_2 reduction targets as high as 95% compared to 1990, ambitious energy-efficiency and building refurbishment targets as well as projects for municipally-owned solar arrays aimed at exponentially increasing local renewable production. More importantly, industrial legacy cities need to commit to divesting from fossil-fuel use and investment, coal-production and fossil-fuel intensive industries.

Increasing access to incentives, support and assets

Local governments need to make the most of the tools they have at their disposal to propel their energy transitions forward. To start, municipalities can use multi-level climate action to their advantage by increasing awareness of public subsidies and incentives for renewable energy investment and energy efficiency building renovations provided by national, state-level governments or even non-state actors. Maximizing the use of these programs can provide additional financial support for local investment projects. Many of the Urban Transitions Alliance cities have set up advisory programs and information portals where local residents can access clear information on these resources.

Local governments can also make city-owned assets available for energy transition projects. Old industrial factories, rooftops of municipal buildings and vacant lots are just some of the under-utilized resources cities can be made available to expand renewable energy infrastructure. Essen encourages community investment initiatives by providing access to school rooftops for citizen-led solar array investment in residential neighborhoods while Gelsenkirchen turned old industrial buildings into a solar-science park.

Engaging in partnerships and supporting community initiatives

Local governments are also not the only active drivers of sustainable energy transitions. Implementing new energy solutions or even upgrading older energy infrastructure requires collaboration among all impacted stakeholders. Local governments can also utilize their energy transitions to bring new actors into the mix in order to generate new ideas that have a more sustainability focused-lens.

Across the Urban Transitions Alliance cities there are examples of strong local actors leading ambitious energy initiatives including resident associations, non-profit organizations, start-ups and forward-thinking companies. Cities that amplify the role and voices of these change agents by including and supporting their actions within overarching energy plans will ensure that the energy shifts are both efficient but also equitable. Pittsburgh has set up a partnership with Carnegie Mellon University for the Smart Data Utility Project. Dortmund on the other hand included residents as key partners when designing the city's energy transition Masterplan.

ENERGY TRANSITION

BEIJING E-TOWN'S ENERGY TRANSITION MASTERPLAN

Beijing's Economic-Technological Development Area (known as E-town), has already spent RMB 250 million (USD 41 million) on changing all its coal-driven generators to gas-driven ones, to reach its goal of cutting 38,000 tons of coal consumption. The establishment of coal-free zones is now a trend in China, but E-town aims for an unprecedented shift. The development area plans to replace all three power plants in the area, reducing sulfur dioxide emissions by an estimated 300 tons and nitrous oxide emissions by 70 tons. Six districts near the city center hope to be coal-free by 2020, with electricity and natural gas accounting for more than 90% of total energy usage in the city.

CINCINNATI - A CITY'S ROADMAP TO RENEWABLE

Cincinnati has been actively pursuing its goal to cut emissions by 80% by 2050 and achieve 100% renewable by 2035. Since 2006, the city has achieved an average annual carbon emission reduction of 2%. This has been accomplished through a number of city-led initiatives, support mechanisms and incentives. The city now has 1.8 MW of renewable generation on city facilities, and implements a city-wide Energy Aggregation Program that purchases 100% green energy for 80,000 households while simultaneously reducing participants' energy bills by 10%. The Solarize Cincinnati initiative boosts local solar production by bulk buying solar panels for residential homes and business premises leading to 20% savings on retail prices. As of January 2018, Cincinnati purchases 100% green energy for all city-owned facilities. This action was able cut the local government's carbon emissions by 9.1%.

KATOWICE – ENERGY ACTION TO SAFEGUARD THE ENVIRONMENT

Taking urgent action on air quality and carbon emissions, Katowice has started to implement energy initiatives in line with the EU's 2020 climate and energy package. Katowice's Low-carbon Economy Plan outlines the energy transition strategy with a focus on increasing energy efficiency and improving energy management expertise. Actions include subsidies for low-emission heat sources, increased regulation on the incineration of waste and non-authorized fuels and plans to update bus fleets with new ecological units. The city has also announced that it will retrofit 21 urban buildings to become more energy efficient by the end of 2019.