Stakeholder Insights

Primer for the Environmental Defense Fund: Hyperlocal Air Quality Monitoring Workshop

September 25, 2018

Smog Descends upon the City: View south from the Empire State Building on November 24, 1966
Source: Neal Boenzi photograph in Dwyer, Jim. “Remembering a City Where the Smog Could Kill.” *New York Times* 1 Mar. 2017: A22.

Post Carbon City-State: Envisioning a Cleaner, Self-Sufficient, and Eco-positive Manhattan
Source: Terreform ONE

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About

Terreform ONE [Open Network Ecology] is a nonprofit architecture and urban design research and consulting group that promotes smart design in cities. Through our comprehensive projects and outreach efforts, we aim to illuminate the environmental possibilities of cities across the globe. We operate as a unique laboratory of specialists with diverse disciplinary backgrounds that explore and advance the larger framework of socio-ecological design. The group develops innovative concepts and technologies for local sustainability in energy, transportation, infrastructure, buildings, waste treatment, food, and water. These novel research endeavors are derived from the interface of technology, design and synthetic biology.

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Executive Summary.

The upcoming workshop is motivated by a pressing problem: too many people are suffering and dying from avoidable harm from air pollution. Even with recent commitments, the world is not on a trajectory to act fast enough to avoid the worst consequences of climate change. Significant barriers remain to collect and act on the hyperlocal insights that could inform these critical actions.

The good news is that new technology and analytic tools could enable ambitious new action and more rapid, widespread impact. Recent advances in Houston show the potential for public fleets to collect highly resolved air pollution data driving their regular routes, with less than five minutes of driver time per day. A statistical analysis of over a million connected vehicles demonstrated that just 10 to 20 vehicles could map 50% to 70% of a city.

In order to withstand the complex environmental, economic, infrastructural and social demands that population growth, expected to reach 11.2 billion by 2100[1], places on our rapidly urbanizing environments, cities, companies, social entrepreneurs and technological innovators have been developing novel ways to transform and advance the processes, procedures, and performance of our cities. Taken together, these new systems and interventions compose what is often called a “Smart City”. While shades of nuance and varied definitions certainly exist, our collective understanding of this concept generally refers to the urban integration of information and communication technologies (ICT) and Internet of Things (IoT) which enable real-time data-driven decisions that make for a safer, healthier, more efficient, engaged and sustainable city.

More importantly, what is a key component to design, build, and maintain a data-driven "smart city" of the near future: Cross-sector Collaboration. In a National League of Cities report analyzing trends in smart city development, four out of the five cities highlighted engaged in both private and university partnerships for the development and implementation of their initiatives[2].