Observations

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3 Ways Cities Can Become More Sustainable

With the majority of the population moving into urban centers in coming decades, the actions of city planners now could create a better future for us all. But how?

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By Chan Heng Chee on July 9, 2018

Credit: Miguel Navarro Getty Images

On June 20, visiting the U.S., I watched intense rains flood Westmoreland County, in western Pennsylvania, on the morning TV news, wondering if I could fly out of Washington, D.C., as planes soon would be grounded because of the weather system in the East. I saw cars washed away, and damaged buildings and homes. Upon return to

my home in Singapore, I faced consecutive days of heavy rains causing flash floods in a city-state that had, until then, handled flood control quite successfully. I read of the Mumbai monsoon heavy rains and floods, with trains delayed and four people dead in 24 hours.

All of these recent events were nature reminding us that global warming has altered the climate. The rains are more intense in some areas, and in other areas, not at all.

This very palpable reality should bring us to focus in a timely way on building a sustainable future. The World Cities Summit 2018, July 9 through 11 in Singapore, a regular event, focuses this year on "Livable and Sustainable Cities: Embracing the Future through Innovation and Collaboration." I am speaking at the Springer Nature "Science and the Sustainable City" summit, which is co-located with the World Cities event, on July 11, and has a special focus in connecting researchers with practitioners to help tackle the challenges faced by cities. I head a project on "The Future of Cities" in the Lee Kuan Yew Center for Innovative Cities and have worked on the topic of "Asia's Future Cities: Sustainable, Liveable, Loveable?"

So we ask ourselves again: What does it mean to be sustainable—and what do cities have to do to be more sustainable?

The standard definition came from the U.N. Commission on Environment and Development (1987), which cast sustainability as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." But that view was soon seen to be insufficient. Moving forward a few decades, it has become clear that the fundamental problem of promoting economic growth and at the same time protecting the environment was simply not adequately addressed in the original definition. It also has become evident that poverty and the basic needs of large swathes of population globally have seen little improvement and may be getting worse. In addition, as the world's populations increase and are migrating relentlessly into cities and megacities, one does not have to be an alarmist to see crises—or should I say, catastrophe—ahead if we do not learn how to create sustainable urban centers.

The U.N. Sustainable Development Goals, or SDGs, launched in 2015 to succeed the Millennium Development Goals, were designed to provide a road map to help countries and cities achieve integrated sustainable growth by 2030. They list 17 goals, emphasizing climate action, innovation, sustainable consumption, elimination of poverty, and creation of peace and security.

In addition to the SDGs, in 2017 the World Economic Forum publicized the Arcadis Sustainability Index 2016, which listed the world's most sustainable cities. The index ranked cities according to three dimensions: people, planet and profit. This ranking could be viewed as social sustainability, environmental sustainability and economic sustainability. Each dimension carried a sub-index. For instance, the people pillar measured quality of life, health education, and work-life balance. The planet pillar took into account green factors like energy consumption, renewable-energy share and green spaces. The profit pillar looked at business environment and economic health, including ease of doing business and connectivity. Sustainable cities balanced the three, though none achieved that balance evenly.

The top 10 sustainable cities, in rank order, were Zurich, Singapore, Stockholm, Vienna, London, Frankfurt, Seoul, Hamburg, Prague and Munich. Eight of the 10 were

European and two Asian. Three were German. What pushed these cities to become sustainable? And can others follow?
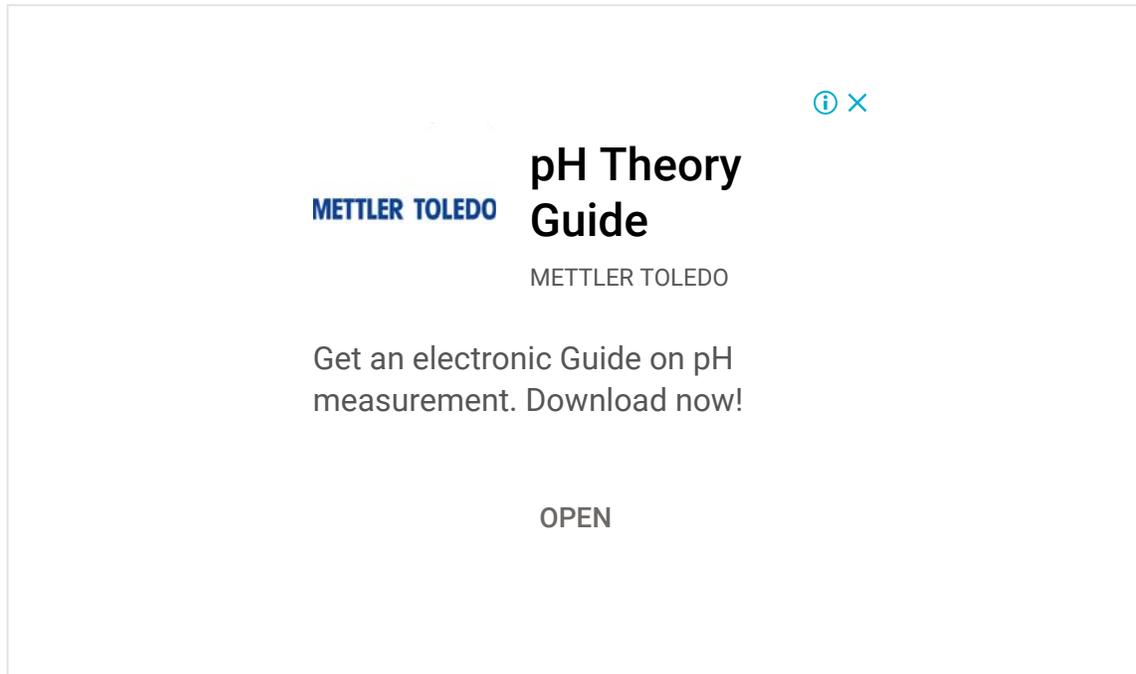
All were cities in small or medium-sized states. Country size is not the sole determinant of success, but small states and middle-sized states suggest there are fewer layers of government to work through. It is easier to experiment and carry out innovation.

In the case of Singapore, sustainability is existential. As a city-state without resources, and one that has to buy water from neighboring Malaysia, Singapore has learned to move along the path of sufficiency by turning water into a renewable resource through a combination reverse osmosis, desalination and water conservation. From water deficiency, we who live in Singapore have turned water into a resource and asset.

The Singapore water achievements required mutltiple steps: involvement of the public through education was instrumental, by teaching schoolchildren that water is precious; then harnessing laws and regulations, pricing and monitoring; and also nudging the users to adjust their behavior to achieve results.

German cities are said to be among Europe's greenest. One wonders if the the chance to rebuild from scratch at the end of World War II, after the bombings and destruction of German cities, did help German planners to try something new. But Germans have a long history of using legislation to direct and implement sustainable development. German buildings use 20 percent less energy than other European counterparts and they are more energy-efficient, though others may use better renewable resources. It is also said that water use is less than in other European cities. The high price of water and monitoring may help.

It seems clear that if countries or city leaders have a vision and a desire to implement the vision, that is half the battle to becoming sustainable. Mayors in Latin America, in Curitiba, Medellín and Bogotá have succeeded in bringing change to sustainable lifestyles in their cities. Curitiba was a standout example starting with a determined mayor, Jaime Lerner, who persisted to implement his vision and pioneered the Bus Rapid Transit (BRT). Bogotá, too, began with the determination of one mayor, Antanas Mockus, who set out to change the mindset and attitudes of the citizens. Bogotá then became a model of civic-minded sustainable urban planning. Medellín, through the efforts and commitment of the public, private and citizen sectors, has turned from "the most dangerous city in the world," according to *Time* magazine, to "the most innovative city in the world," according to the Urban Land Institute.

Bearing in mind that no two cities are the same, I offer three big ideas that can help cities to be more sustainable.

First, city leaders and planners must begin with a vision. Lee Kuan Yew, Singapore's first prime minister, had a vision of a "green" city in the 1960s, long before it was fashionable to be green. He knew housing a dense population meant high-rise living. He did not want a concrete jungle. Lee Kuan Yew suggested planting trees, covering concrete overhead bridges with creepers and cleaning up the Singapore River. City planners now further this vision by creating parks all over the island, building park connectors and turning park lakes and ponds into potential catchments, creating a beautiful and sustainable environment. In Seoul, in the first decade of this century, then-Mayor Lee Myung-bak became known for creating a green oasis in the middle of a bustling city. He converted an elevated freeway, which had been built upon an old river, back into a waterway in the Cheonggyecheon project. Though controversial, this project is seen to be reducing the urban heat-island effect, limiting air pollution and moving the public from cars to public transport; and it is a much-used public space.

Second, institutional structures must be present or created to coordinate and implement policies. Singapore, again, is a good example of establishing an institutional structure and framework, with agencies geared to produce enabling legislation and implement urban design plans. The Ministry of National Development works with its agencies such as the Urban Renewal Authority and the Housing and Development Board, and the Ministry of Environment and Water Resources conceives and implements plans for water and energy sustainability. Singapore adopts a "Whole-of-Government" approach, which allows for coordination and a national vision to facilitate a sustainable city. Zurich, the world's number one sustainable city, has a monitoring system for sustainable development with 21 criteria used by political decision makers, the bureaucracy and citizens to mark their progress. The city produces a sustainable development report that started in 2004 and is updated every four years.

Third, policy leaders, you should know that you are not alone. Cities can learn from the experiences of other cities. The C40 Cities Climate Leadership Group, connecting dozens of the world's large cities, was set up specifically to fight climate change and to help cities help each other, by providing equipment, innovative ideas and advice based on experience. Today, many forums exist where best practices can be shared.

With political will, vision and peer-to-peer learning, cities can leapfrog to a more sustainable future.

The views expressed are those of the author(s) and are not necessarily those of Scientific American.

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Credit: Chan Heng Chee