

VIEWPOINT

**BENJAMIN HORTON**

# To Combat Climate Change, Cities Need Critical Environmental Intelligence



**Benjamin Horton, Director of the Earth Observatory of Singapore at the Nanyang Technological University, says city leaders must stay focused on long-term climate action by understanding, communicating and making decisions based on sound climate science.**



## Determining the rates, mechanisms and geographic variability of sea-level change is a priority science question for the next decade of ocean research.



In 2018, international climate action was revitalised when activist Greta Thunberg began her weekly protests in front of the Swedish parliament for the government to meet its carbon emissions target under the Paris Agreement. Thunberg's protests went viral on social media and news organisations picked up on her call to action. This has since inspired a worldwide movement, pushing climate action up the public agenda.

There is increasing awareness of the looming impact of climate change on the environment and human life as we know it. One key focus has been on rising sea levels, an area of research I have been engaged in for 25 years. Rising seas increase the vulnerability of cities and the associated infrastructure that line many coastlines around the world because of flooding, coastal erosion, degradation of coastal habitats and salinisation of surface and ground waters.

The challenge of climate change is immense, yet the solution has been clear for more than two decades: governments must take aggressive action to curb greenhouse gas emissions. The World Economic Forum's 2020 Global Risks

Report highlights that the "failure of climate change mitigation and adaptation" is the number one risk by impact and number two by likelihood over the next 10 years.

There is great urgency to climate change initiatives like those under the 2015 Paris Agreement, where nearly all United Nation member states pledged to reduce their carbon emissions as soon as possible and do their best to keep global warming below 2°C, while pursuing efforts to limit it to a 1.5°C increase above pre-industrial temperatures.

However, maintaining public attention on climate change and sustaining the necessary measures to curb it have been tough. Perhaps the consequences of human-driven climate change seem abstract, technical or too far in the future for continual attention. With a 24-hour news cycle, the priorities of city leaders are easily diverted to the latest issues and more immediate crises.

Even now, as the world battles the COVID-19 pandemic, there are concerns that climate change might be put on the political back-burner, or that short-term fixes to aid recovery from

the pandemic may have adverse environmental consequences, like stimulating the economy through subsidies for fossil fuel-heavy industries.

However, as UN Secretary-General Antonio Guterres recently emphasised at the launch of the World Meteorological Organisation's State of the Climate report, "it is important that all the attention that needs to be given to fight this disease does not distract us from the need to defeat climate change."

How do we sustain the momentum of climate action over the long-haul? I would argue that it starts with giving individuals and city leaders critical environmental intelligence and data. Scientists recognise that only by understanding the physical processes driving global and regional changes can we predict the impact of rising seas. City leaders must recognise that this intelligence does not just belong to the realm of scientific research. They must themselves know, communicate and make sound decisions based on what is uncovered.

For instance, our research at the Earth Observatory shows that the amount of sea-level rise will vary from place to place, based on rates of land subsidence and uplift, the strength of ocean currents and the force of gravity.

For city leaders, this means that they need to have robust and dynamic local projections of the impact of climate change and rising sea levels, specific to *their* city.

Coastal cities, especially, need to invest in the science of sea-level rise—by funding institutions, scientists and research programmes. This is the only way our leaders can possess the environmental intelligence and data they need to plan ahead and take measures to meet the challenge of climate change.

Besides sea level change, the trend towards more frequent extreme weather events, such as droughts, wildfires, heavier rains and storms, underscores how important it is for cities to enhance their understanding of and ability to predict and manage climate risks.

This holds true even during a crisis like the COVID-19 pandemic, which has stalled scientific fieldwork and may even start to affect the monitoring of the climate. This is a dangerous situation. As Petteri Taalas, secretary general of the World Meteorological Organization, warns in a Guardian article, "the COVID-19 pandemic poses an additional challenge and may exacerbate multi-hazard risks at a single-country level. Therefore, it is essential that governments

pay attention to their national early warning and weather-observing capacities despite the COVID-19 crisis.”

If anything, the notable falls in air pollution, due to city lockdowns around the world to curb the virus, demonstrate that collective efforts can have a significant, positive impact on the climate. While city leaders must address urgent priorities such as COVID-19, they should also remain focused on climate change mitigation.

At the Asian School of the Environment and the Earth Observatory of Singapore, we are urgently investing in the science of sea-level rise. Determining the rates, mechanisms and geographic variability of sea-level change is a priority science question for the next decade of ocean research.

City leaders, too, must see this as a priority. Only when armed with critical environmental intelligence about sea-level and weather changes can they keep the heat on climate action—instead of the planet. 🌍



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