

Preface

People know something is seriously wrong. At the end of 2019, unprecedented and out-of-control wildfires burned outside Los Angeles. Blazes were ravaging the Amazon. Australian wildfires, born from drought and searing temperatures above 40°C (over 110°F), raged. The world watched as thousands of people fled their homes, millions of acres of eucalyptus forest were destroyed, and hundreds of thousands of animals lost their habitat. Koala bears were given bottled water from passing humans, their only chance of survival. An estimated one billion more animals were not so lucky.

At the same time, in another part of the world, there were unprecedented floods in Jakarta. Scores dead and tens of thousands of people were displaced. It's the second such disaster in a few years, in a capital city that is sinking – literally. It is so serious that the president of Indonesia has announced that the capital must be moved. As of December 31, 2019, Jakarta, the heart of a region of 30 million people, had a population estimated at 10.8 million.

And then there is Houston, Texas, the world capital of the oil industry. On Friday, August 25, 2017, Hurricane Harvey, a storm of extraordinary intensity, made landfall. Over the ensuing four days, a year's worth of rain fell on Houston – as much as fifty inches. The flooding was massive and unprecedented. Estimates were a trillion gallons of rainfall, which seems impossible to picture because

it is so much. In a major rainfall event of this size, the land cannot absorb the water – it is like a sponge that is full. Nor can the human systems. They are built for normal, predictable events that happen every fifty or one hundred years. This was a once-in-five-hundred-years storm.

People know about the wildfires and about Hurricane Harvey. What they might not know is that the extreme drought and hot weather in Australia that create the conditions for out-of-control wildfires are now happening every year. They also might not know that in 2015, 2016, 2018, and 2019 Houston also had severe flooding events, two more of which were at the threshold of a once-in-five-hundred-years storm. What was once rare has become normal.

As of mid-2020, the world is in the midst of a global pandemic, COVID-19. While the science is still developing, it seems clear that the impact of COVID-19 has been far more serious in places with significant air-quality issues – typically caused by pollutants and processes similar to those that are causing climate change. In addition, there is evidence that environmental destruction – which worsens climate change – contributes to the increased risk of global health challenges, such as Ebola, MERS, and now COVID-19. At the same time, extreme weather events have not disappeared: in May, for example, extreme rainfall in Michigan caused a dam to burst and the massive flooding of Midland, a town of more than forty thousand people. The precipitating event was a once-in-five-hundred-years storm – the second within the last five years.

Scientists have been warning us about such events for a very long time – a changing climate has the ability to devastate people and nature. And the potential consequences are serious indeed. In Africa, for example, predictions are that the loss of arable land could cause tens of millions of people to become migrants – climate migrants. Where will they go? We have already seen the world struggle to cope with refugees from Syria. How can our political systems handle tens of millions of migrants? Where will they live? What will they eat?

The knowledge of the serious consequences of climate change brought scientists and governments together in 1988 in Toronto, Canada – where I live – for the Toronto Conference on the Changing Atmosphere. The conference did not quite reach agreement on a path forward, but it helped spur the international community to address climate change. In 1992, the United Nations Framework Convention on Climate Change was entered into, which came into force as a binding treaty agreement on March 21, 1994, by which time a sufficient number of nations (now 197) had ratified the treaty. The framework set nonbinding limits on greenhouse gas emissions for the signatory nations and agreed on a process – known annually as a conference of the parties (or COP) – to find ways to implement the treaty. In 1997 in Kyoto, Japan, the parties were successful in agreeing to a protocol that set limits for developed countries – generally speaking, as a first target, to reduce by approximately 6 per cent by 2012 based on 1990 levels of greenhouse gas emissions, followed by further reduction commitments. Subsequently, inter-governmental action, except for Europe, waned – Canada, under a right-wing, pro-oil government, abandoned the Kyoto Protocol; the United States never ratified it.

Against this backdrop, twenty years of negotiations through a series of COPs passed. Twenty years. In 2015, led by the United States and China, nations finally reached agreement at COP21 in Paris on a program of action against climate change. It was generally known at the time that the agreement was not strong enough – but most advocates believed that the fact of agreement could help build momentum for the necessary change. There was euphoria then – but today, five years later, we know that events have not upheld that optimism.

The latest science is clear, and daunting. The likelihood of dangerous climate change is accelerating. The conclusions of both the Intergovernmental Panel on Climate Change and the United States National Climate Assessment are definite: climate change is human caused. Its implications on human life and on nature are exceptionally serious. And the measures currently undertaken by national governments are woefully insufficient to hold overall

average temperature increases to 1.5 degrees, the scientifically determined threshold past which serious risk to planetary health occurs. The United States has announced a planned withdrawal from the Paris Accord, and even the actions of Canada, who led the charge in Paris for a high ambition of a 1.5 degree limit to global heating, are not remotely sufficient to contribute to its share of the necessary reductions in greenhouse gas emissions.

Those facts should not be news to many. It has been clear to anyone who sees the news that the world is heating faster than originally expected, and that national governments are not taking the need to act nearly seriously enough. People sense this. Some are discouraged; others are angry at the elected officials who seem to listen too much to the fossil fuel lobby and not enough to science. Their feelings are understandable – but there is another story – one that gives reasons for hope.

That story is what is happening in the world's major cities, where activist mayors of different political backgrounds are taking bold and effective actions that are dramatically reducing greenhouse gas emissions.

Why Cities?

“Why cities?” is a question I am often asked. And to someone who has spent more than thirty years involved in municipal politics, it's a question that makes little sense, because to me it is obvious why cities are acting on climate change: because they can. And they must.

First of all, the world is now more urban than not – and this is a relatively recent change. In the first decade of this century, for the first time in the history of human civilization, urban populations surpassed rural. From the beginning of civilization, humans were predominately rural agrarian populations – but no longer. And the trend to urbanization is only growing more pronounced as populations in China and India move to urban areas from rural. The world is getting increasingly urban, and this century will be defined by this historic change.

City governments have different structures and powers in different countries. But there are significant similarities. Almost always they are responsible for planning – for setting a future vision for the city and making the rules about what types and sizes of buildings can be built and where. Where will industry go? Commercial buildings like offices and shops? Single-family houses? Apartments? Parks? Schools?

This power to set where and how buildings will be built is often accompanied by the power to regulate or the ability to influence the type of building to be built through building codes. These codes set the material and other standards for the buildings and are detailed and powerful as they set the rules for an entire industry.

There is one other crucially important thing about the responsibility for planning – by law, city governments are required to consult with residents about the city plan (in Canada these are called official plans – the overall vision for the city – this term will be used here for convenience) and individual development applications. As a result, city governments have developed robust resident engagement processes that give local residents a very real say over decisions that affect their lives and their neighborhoods. There is a lively, robust, and extremely healthy local democracy, in which the voices of local residents are heard, and they can and do participate in decisions made by city hall – well beyond planning. One of the results of this healthy local democracy is that elected members of city council tend to be grassroots politicians, who regularly engage and listen to people and vote with the expressed wishes of their constituents at the forefront of their minds.

Furthermore, the responsibilities of cities lead to a direct and obvious connection to environmental issues. Cities are responsible for parks. For trees. For housing. For public transportation. For water and sewers. Waste management. For income support, economic development, and public health. Often for schools and education as well – in short, for the services that affect people's everyday lives the most. And many of these responsibilities have a significant impact on the environment – or allow the city to have a significant impact on the environment, if it chooses. For example, public health authorities

will have a responsibility for air quality as poor air is a significant health issue. Clean water and waste management have direct links to environmental issues; as a result, cities have for a very long time been responsible for and acted against environmental challenges.

The final point is of tremendous importance: in most of the world cities have a directly elected mayor or governor, ultimately having overall responsibility for the city government – for its plans, policies, and actions. The role of a mayor can be instrumental and transformative for a city; because of the dual responsibility for both the development and detailed implementation of policy, there is a tremendous potential for effective action by city governments. And there is a history of such actions – we take sewers and clean water for granted in North American cities, but sewers originally were a public health response to significant outbreaks of disease, particularly in low-income communities, resulting from the use of open sewers for human waste. A history of activist policies combined with effective actions (often with social justice implications) is embedded in the history and DNA of cities.

Mayors and Climate Change

Why are mayors interested in climate change? First of all, many simply recognize the moral, ethical, and practical urgency in addressing climate change. Others are smart politicians who listen to the voters. But most of all, the mayors of the world's great cities are acting on climate change because they must. Cities are already experiencing the impact of climate change, and unlike national governments, mayors cannot wait to act. Mayors have a unique combination of the compulsion to address this issue – because of their residents' expectation of action – and the ability to act.

Cities that have been hit by super storms, such as Houston, New York, and New Orleans, do not have the luxury of debating whether climate change is real. The mayors of those cities needed to lead both the reconstruction that was necessary after hurricanes Harvey, Sandy, and Katrina and the building of cities that in future

will be far more resilient in the face of storms. Right now, we are seeing an increase in the frequency and severity of storms that is almost indisputably a result of climate change. In this context it is completely understandable that mayors, faced with the significant financial and human cost of these storms, would support initiatives to mitigate greenhouse gas emissions in order to address the underlying causes that are so seriously impacting their cities.

Cities in different countries, provinces, and states have different powers and abilities, but mayors have one thing in common: the history and expectation of action. City governments tend to be less driven by ideological differences and are more practical: responsibilities such as overseeing new development, construction of parks, water and sewers, transportation, housing and other services for low-income residents all require that mayors act, and act in an effective way. While politicians from different political backgrounds might choose to address those challenges with different solutions, a mayor cannot simply pass legislation and then do nothing – residents of cities demand and expect real action.

This background has led to cities being unique incubators of interesting ideas and actions on climate change. At this moment in the world's history this catalog of actions is critical. It is clear that the measures taken to date by national governments are insufficient to meet the collective challenge of climate change. Indeed, some reports suggest that the current levels of action by governments will lead to a four-degree temperature rise by the end of this century, with resulting disastrous changes to the global climate and serious impact on human life, the forced resettlement of tens of millions of people due to desertification and crop loss, the necessity to rebuild cities to deal with sea-level rise and the increasing severity and frequency of storms, not to mention significant impact on nature.

If we are to build on the accord reached in Paris and hold global average temperature rise to 1.5 degrees, it is critical that we start today. And this is where the leadership of global mayors and cities matters the most. Because if we are to solve climate change, we need to start making changes now. The actions of the leadership of the world's great cities show us how.

Lowering Emissions through Clean Energy, Buildings, Transport, and Waste

Studies by the C40 Cities Climate Leadership Group have shown that about 70 per cent of the world's greenhouse gas emissions can be attributed to cities, predominately in four areas: the generation of electricity, the heating and cooling of buildings, transportation, and solid waste. The good news is that in each of these areas actions are taking place today that are making a dramatic difference in local greenhouse gas emissions, and taken together these actions can make a very real difference globally. The bad news is that these initiatives have not yet spread at the pace and scale needed.

It's the thesis of this book that by replicating the best and most effective ideas already implemented in at least one city, and by doing so at scale and pace internationally, we can make a significant leap forward in mitigating greenhouse gas emissions and put the world on a path to 1.5 degrees. None of the ideas discussed in this book require radical new technologies that are yet to be invented. All have been implemented somewhere and, if implemented broadly across a significant number of cities, will help to dramatically reduce greenhouse gas emissions. For me, this is an exciting prospect and gives hope that we can collectively address this unique challenge.

The book answers the question "What do cities need to do?" The first requirement is to have a plan, and [Chapter 1](#) will discuss examples of the best city plans, what they do, and how they came about. In Los Angeles, Mayor Garcetti's bold Green New Deal plan starts with the five zeroes – a zero-emission power grid; zero-emission buildings and transport; zero waste and zero waste of water. It starts aggressively now, with longer-term goals for the most complicated challenges. All of the plans we see address the four areas mentioned above – how we generate our electricity, how we can heat and cool our buildings efficiently, transportation, and how we manage our waste – and try to do so in a way that is fair to the least well off in each city. Leaders include New York City, with its aggressive law mandating the reduction of carbon in existing buildings (and creating job-training programs for the boom in retrofitting work that

will follow), and Shenzhen, China, where all transit vehicles and all taxis are powered by electricity – today. There are examples from the developing world too – such as how Accra, Ghana, has dealt with emissions from waste in a way that addresses public health and the environment, and that also works for the most disadvantaged in their society.

By addressing each of these areas with bold policies, leading cities are making significant progress. At least thirty-five cities can now say they have peaked emissions, and it is estimated that at least fifty major global cities will have climate plans consistent with the goals of the Paris Accord by the end of this year or early 2021. Unlike national governments, cities don't just talk – they act.

I believe there is significant potential to achieve exactly what is set out in this book because it is logical, affordable, and real. Most of all, it will be achieved because what each of these mayors has in common is that their actions to reduce greenhouse gas emissions are helping their cities be better, more interesting, more economically successful, and more socially equitable places to live. Mayors are elected to achieve these goals in cities around the world. I'm optimistic we will see these actions happen, both because they are possible and because voters will continue to support mayors who want to create those kinds of livable, prosperous, and inclusive cities.

I've had a unique opportunity to be inspired by this global leadership of my fellow mayors for nearly two decades. My wish is that readers will be equally inspired.

