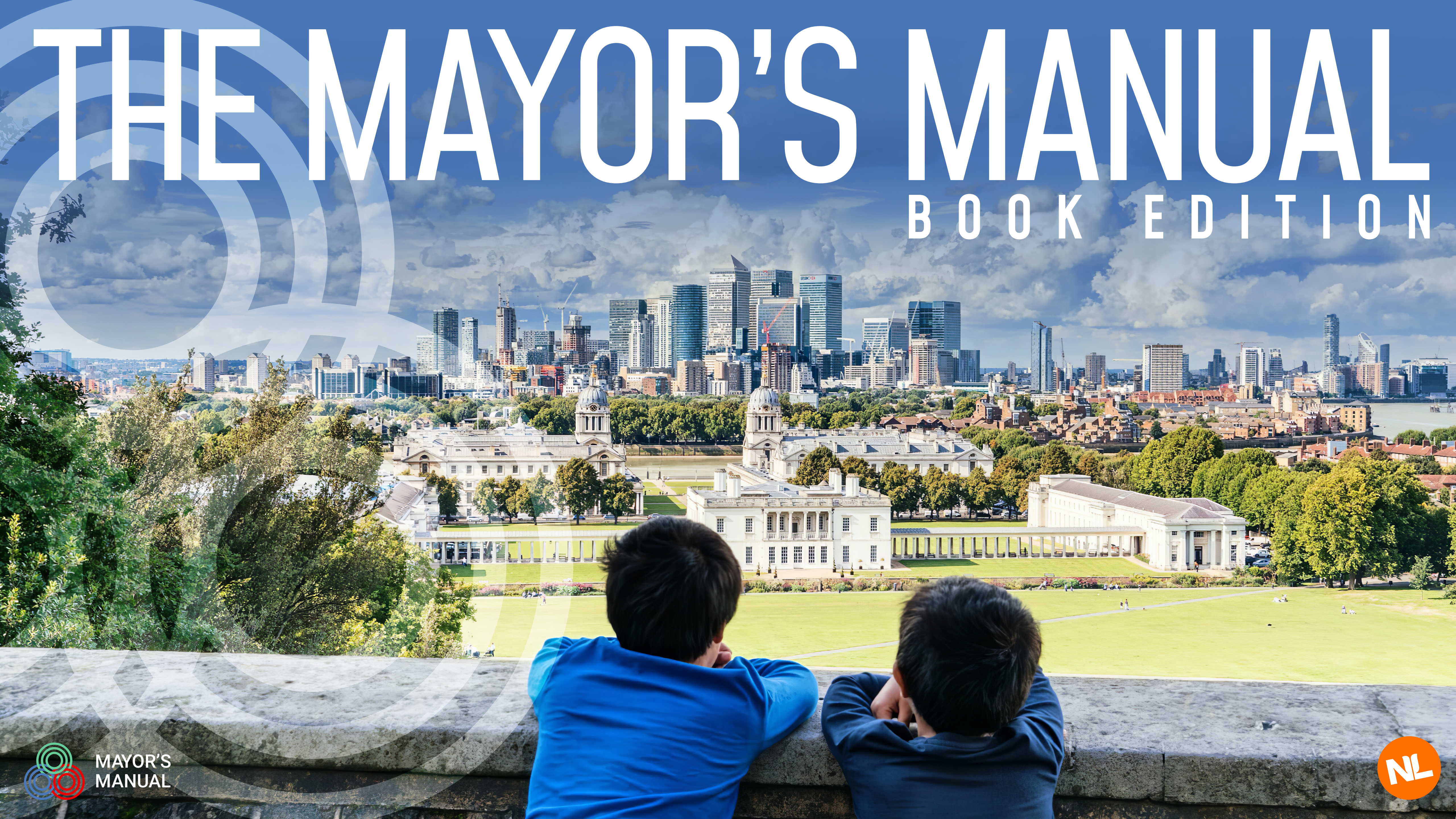


# THE MAYOR'S MANUAL

BOOK EDITION





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# PREFACE



# PREFACE



*Introduction about metropolitan challenges of our time by **Prof. Dr. Eveline van Leeuwen**. As Scientific Director of the Amsterdam Institute for Advanced Metropolitan Solutions (AMS Institute) and Professor of Urban Economics at Wageningen University and Research, she studies the economic and social interactions among local, regional and urban processes to determine the impact of these interactions on wellbeing and happiness.*



The time is now! The time to make a difference while it is still possible. The time to make a difference while it will still have a significant impact. An impact not only on our lives and the lives of our children, but on the lives of future generations who will walk this place we call home.

We are in a lucky but difficult position. For the first time in history, we have the ability to predict rather accurately the impact that our actions and decisions will have on the environment, our communities, and economy now and in the future. In theory, we also have the ability to act on this information. But like a deer caught in the headlights, we are unable to veer away from the impending disaster.

Some of us, though, are passionate environmental advocates who choose to adopt a different lifestyle, experiment with new business models, start conversations, launch campaigns, and join forces to forge a new path toward a more sustainable and inclusive future.



# PREFACE

Cities have always been a hub for knowledge spillover, innovation, and urban buzz thanks to the diversity of people and stakeholders and the perfect scale of space and political clout. Cities like San Francisco, Stockholm, Amsterdam, Singapore, and Vancouver are leading the charge in sustainable and inclusive movements and are often seen as shining examples for other cities and countries to follow.

***“We call on all mayors to use their powers and capacities to mobilize their cities and towns, public and private institutions, and SMEs, and to encourage their citizenry to join us in our mission to transition to a sustainable and inclusive future.”***

So, in this contribution to the Mayor’s Manual, we call on all mayors to use their powers and capacities to mobilize their cities and towns, public and private institutions, and SMEs, and to encourage their citizenry to join us in our mission to transition to a sustainable and inclusive future. The time is now!

But what does a sustainable and inclusive future mean? What does it mean in Amsterdam, Bogota, or New York? What does it mean for the majority and

minority populations in those cities? What does it mean for their hinterlands? To address these questions, the AMS Institute and the City of Amsterdam have organized a series of podcasts<sup>1</sup> featuring researchers, policymakers, and entrepreneurs who share their insights and recommendations on different relevant topics with our mayors. This contribution draws upon these dialogues and is meant not only to inspire, but also to provide actionable recommendations for urban sustainability and inclusivity.

How can we (re)design cities to achieve zero waste, sustainable construction, energy-neutral homes and buildings, electric public transportation, and smart grids? How should we address the challenges of achieving food and nutrition security and healthy urban food environments, a changing climate, inequality, and the loss of biodiversity? How can we guarantee safety in both physical and cyber space? How will the next generation of urban engineers address urban challenges? And what can mayors across the globe learn from their approach, vision, and ambition? I hope and trust that this Manual will be a catalyst for the much-needed change we want to see.

**Professor Eveline van Leeuwen**

*Scientific Director of the Amsterdam Institute for Advanced Metropolitan Solutions (AMS) and Professor of Urban Economics at Wageningen University and Research*

<sup>1</sup> To listen the podcasts visit [www.mayorsmanual.org](http://www.mayorsmanual.org)

A street scene in Amsterdam featuring a row of colorful, multi-story buildings with gabled roofs and many windows. The street is paved with cobblestones. In the foreground, there are several large planters filled with yellow tulips. A black street lamp is visible on the left side of the street.

# INTRODUCTION TO THE MAYOR'S MANUAL

*Sacha Stolp (Program Director Future Proof Assets, City of Amsterdam) and her cohost Kenneth Heijns (Managing Director of the AMS Institute) aim to inspire you to accelerate global urban transitions through the Mayor's Manual Podcast. Together with knowledge institutes, corporate and government changemakers, leaders and decision-makers, they discuss and explore new ideas and concepts for implementing and scaling up urban transitions.*



SS



KH

**The name Mayor's Manual is a reference to the importance of cities and the governing bodies that are led by mayors.** Today, over 50% of the global population lives in cities, a figure that is projected to top 7 billion by 2050. By then, not only will mayors across the world be responsible for the safety, welfare, wellbeing and prosperity of their citizens, but also for ensuring that our cities are circular, smart, energy-neutral and climate-adaptive. Listen to the Mayor's Manual Podcast on Spotify, Apple Podcasts or Google Podcasts.

Imagine sitting at the kitchen table with a cup of coffee, talking about the immense urban challenges we face and what we should do to address them. A dialogue with wonderful business community members, scientists, public servants, students, and a host of other likeminded people and organizations. Nothing fancy. But every time you do, without exception, you find you learn something new: a new perspective, a new insight, a new idea, a new fiercely attractive solution, a new talent, a new partner, a...



# INTRODUCTION TO THE MAYOR'S MANUAL

We have had many such conversations at the kitchen table on the second floor of the AMS Institute in Amsterdam. And in 2020, we decided to start recording these conversations. Because why keep these insights to ourselves when we have a platform to share them with the world? So, we did just that and wrapped up each podcast episode by asking: what would you like to include in the Mayor's Manual? What pressing and important advice do you have for cities around the globe?

And so, the Mayor's Manual grew to the current iteration that is before you. This has been an amazing journey to share with Maartje Molenaar, Jaleesa



Schaap, Scipio Kok and Yashar Yari, and we couldn't have done it without the help of the Netherlands Enterprise Agency (RVO), Ministry of the Interior and Kingdom Relations of Netherlands, the AMS Institute, and the City of Amsterdam. We will continue on this journey because we firmly believe that it enhances the quality and scale-up of the much-needed urban innovations. We thank all the guests we had on the podcasts and look forward to all of those we will meet in the future.

*“Because why keep these insights to ourselves when we have a platform to share them with the world?”*

Sacha Stolp - Program Director of Future Proof Assets

One last thing. To quote Thomas Edison, work is 99% perspiration and 5% inspiration. One might think this book falls squarely in the 1% category. But what use is inspiration if we don't turn it into perspiration, into something that works and makes our world a better place? So much to do and so little time... we need to innovate our socks off!

Kenneth & Sacha





# LETTERS TO THE MAYOR





# LETTERS TO THE MAYOR

## SMARTCITY EXPO WORLD CONGRESS



16-18 NOV 2021 | BARCELONA & ONLINE

*This Mayor's Manual offers recommendations – in the form of essays and quotes – from leaders representing the government, knowledge institutes, and the industry. The recommendations are addressed to current and future mayors, mayors as individuals and as representatives of their city and residents, mayors of cities in the Netherlands and beyond and, above all, mayors as guardians of cities that in the decades to come will be called home by two-thirds of the world's population.<sup>2</sup>*

### The Five Domains

The Mayor's Manual Smart City book edition covers five domains that have been selected by the Dutch Enterprise Agency for the Smart City Mission to the Smart City World Expo Congress 2021. The domains represent the Dutch Smart City network and its innovation climate.

Five guest writers were invited to reflect on these domains from their professional perspective in an essay addressed to the mayor, using quotes from the podcast series.

### About the Editorial Team

Before presenting the letters that reflect on these domains, we'd like to share some insights by the editorial team of the Mayor's Manual Podcast. Last year, we hosted over 50 leaders on the podcast. They all shared valuable insights from their professional perspective. Despite the diverse topics

<sup>2</sup> <https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html>



## LETTERS TO THE MAYOR

discussed at the kitchen table, there were also recurring themes that formed a common thread across the episodes. The opportunity for each and every one of us to write a letter to mayors based on this common thread was too good to pass up. That's why we'd like to invite you to read the letters to the mayors - and really to anyone who has the ability to impact the future of our cities - and hope that they will inspire you to take action.



### *Sustainable Building & Energy* by **Friso Klapwijk**

Today, climate change adaptation, mitigation, and energy transition go hand-in-hand. Our focus is forward-looking as we develop solutions that are designed to achieve zero waste, sustainable construction, energy-neutral homes and buildings, and smart grids.



### *Green & Smart Mobility* by **Serge Hoogendoorn**

Futureproofing our mobility systems involves developing technologies that promote accessible, green, effective, inclusive, and affordable mobility for all while enhancing the quality of life in urban areas.



### *Safety & Digital Infrastructures in Smart Cities* by **Thijs Turel**

As cities and city systems become increasingly digitized, they rely heavily on secure digital infrastructures for their safety. How can we transition to a safe and smart society?



### *Future Cities* by **Jan Jorrit Hasselaar**

Cities across the globe are experiencing a population surge in the face of growing challenges. How can cities find a way forward while balancing the need for technical solutions with the need for change in culture, behavior, and mindset?



### *Next Generation* by **Nina Bohm**

The next generation of urban engineers plays a vital role in society as they have the ability to address challenges from a fresh perspective, without placing too much focus on potential problems and conventional solutions. What lessons can we learn from the next generation of urban engineers in addressing the current challenges we face?



# LETTERS TO THE MAYOR

The Sustainable Development Goals (SDGs) are a collection of 17 global goals adopted by the UN as a “blueprint to achieve a better and more sustainable future for all”. The goals address the world’s most pressing global issues, such as climate change and inequality. By propagating the knowledge and expertise our guests brought to our kitchen table, we want to do our share in helping achieve the SDGs. Each letter therefore offers recommendations that contribute to achieving specific SDGs. The SDGs are indicated by the icons displayed below the letters.





# LETTER 1: ENVISION A BOLD FUTURE



# LETTER 1

Discovering the common thread with **Jaleesa Schaap** and **Scipio Kok**, both **Strategic Advisor Future Proof Cities at City of Amsterdam** and **Maartje Molenaar, MSc MADE Alumni (AMS Institute)**, editorial team and hosts of the *Mayor's Manual Podcast*. Three young urban engineers who are committed to building better cities by researching, sharing, and putting into practice their knowledge of innovative solutions.



JS



MM



SK

October, '21

Dear Mayor,

Do you remember when you were in your twenties? Fresh out of school, stepping into a world of possibilities and looking forward to whatever the future might bring you. Filled (hopefully) with passion and ambition. Do you remember what vision you had for the future?

Dear Mayor, it's us, the young urban professionals of today, the 20-something city dwellers with an interdisciplinary background. The systems thinkers with an affinity for collaboration and an acute awareness of the planetary boundaries we, inhabitants of this world, seem so intent on neglecting. After watching from the sidelines for so long, we're ready to roll up our sleeves and help build a better world.



# LETTER 1: ENVISION A BOLD FUTURE

Dear Mayor, it's us, the editorial team of the Mayor's Manual. What we see is a future of uncertainties. Thinking about our children and the generations to come, we commit ourselves to build a better future, together with you and all stakeholders involved – the industry, public authorities, knowledge institutes, and any other city dweller who aspires to make a difference.

After a year of producing, editing, and hosting our podcast, we believe that storytelling has the power to shape and change our world. Last year, we ventured on a journey to meet leaders representing various disciplines who shared their insights and lessons with us. Insights regarding their vision for the future and practical solutions that would help accelerate urban transitions. And now, dear Mayor, we'd like to share with you the lessons and insights we picked up on our travels. We'd like to take you on a journey to the city of the future, as shared with us by our guests.

*“After a year of producing, editing, and hosting our podcast, we believe that storytelling has the power to shape and change our world.”*

## **Connected & Interwoven**

One of the things we've learned over the past few months is that urban challenges and solutions are deeply connected and interwoven. The future of food security depends on digitalization of labor; the circular economy is not possible without smart mobility and regenerative urban agriculture, and the success of smart mobility depends on our ability to achieve genuine and inclusive citizen engagement.

We believe that seeing our future city as a collection of interconnected and interdependent subsystems, and understanding the challenges they face, is key to creating this bold future we envision. As such, our vision starts with what we consider to be the most essential subsystem. It represents the scale at which we believe most systems can be sufficiently adjusted while ensuring manageability at an urban scale: neighborhood communities.

## **We Live in Neighborhoods, Not Cities**

Our future city is in many ways decentralized. Future generations will live in neighborhoods with strong, local networks of social infrastructures created by engaged, community-building citizens. Together, we foster deep social cohesion to boost prosperity and resilience in times of crisis. We can expect to see increased incidences of complex crises such as cyberattacks, resource



## LETTER 1: ENVISION A BOLD FUTURE

depletion, and extreme climate events with catastrophic outcomes. Moreover, in the neighborhoods of the future, we participate in decision-making processes where all voices are heard, and differing views are encouraged and used to advance everyone's understanding of each other's values. Together, we create a shared vision and build support for cultural and systemic changes that drive urban transitions.

Where possible and feasible, we buy, sell, and consume locally produced goods. Food, for instance, is grown along the city border - in vertical, protein or local food farms. Not only will this approach shorten the food supply chain, it also reconnects the consumer with the producer and (re)engages the citizenry with the food production process. Another key advantage is that it ensures fair prices for farmers and promotes a self-sufficient city that is less dependent on food import. We also buy and share locally produced energy and minimize energy transport movements by matching local supply with local demand. As a result, our power grid is more resilient due to the minimal loss of energy and resources.

Lastly, we reuse resources to close urban water, food, and raw material loops. In this circular neighborhood, there is no such thing as waste.

*“We hope to see our children live in cities that are welcoming and safe for all living beings and that they can look to the future with hope, optimism, and ambition.”*

### **We Have New Business Models**

Apart from being circular, our economy is one in which ownership and profit are redefined. Consumers share ownership of products and goods with other consumers and producers. This means shared mobility. In other words, your washing machine is on a long-term lease, but your underwear is still your own... at least until you send it back to the producer to be recycled! For producers, ownership is cradle to cradle, giving them long-term responsibility and an incentive to develop high-quality sustainable products. Investment models shun profitmaking, instead focusing on decent return on investments and true cost of ownership. The latter involves judicious use of resources to ensure that they are available for future generations. Where project development is concerned, for instance, this means that biodiversity loss and rainwater wastage have financial implications while biodiversity gains and rainwater usage offer investment opportunities.



# LETTER 1: ENVISION A BOLD FUTURE

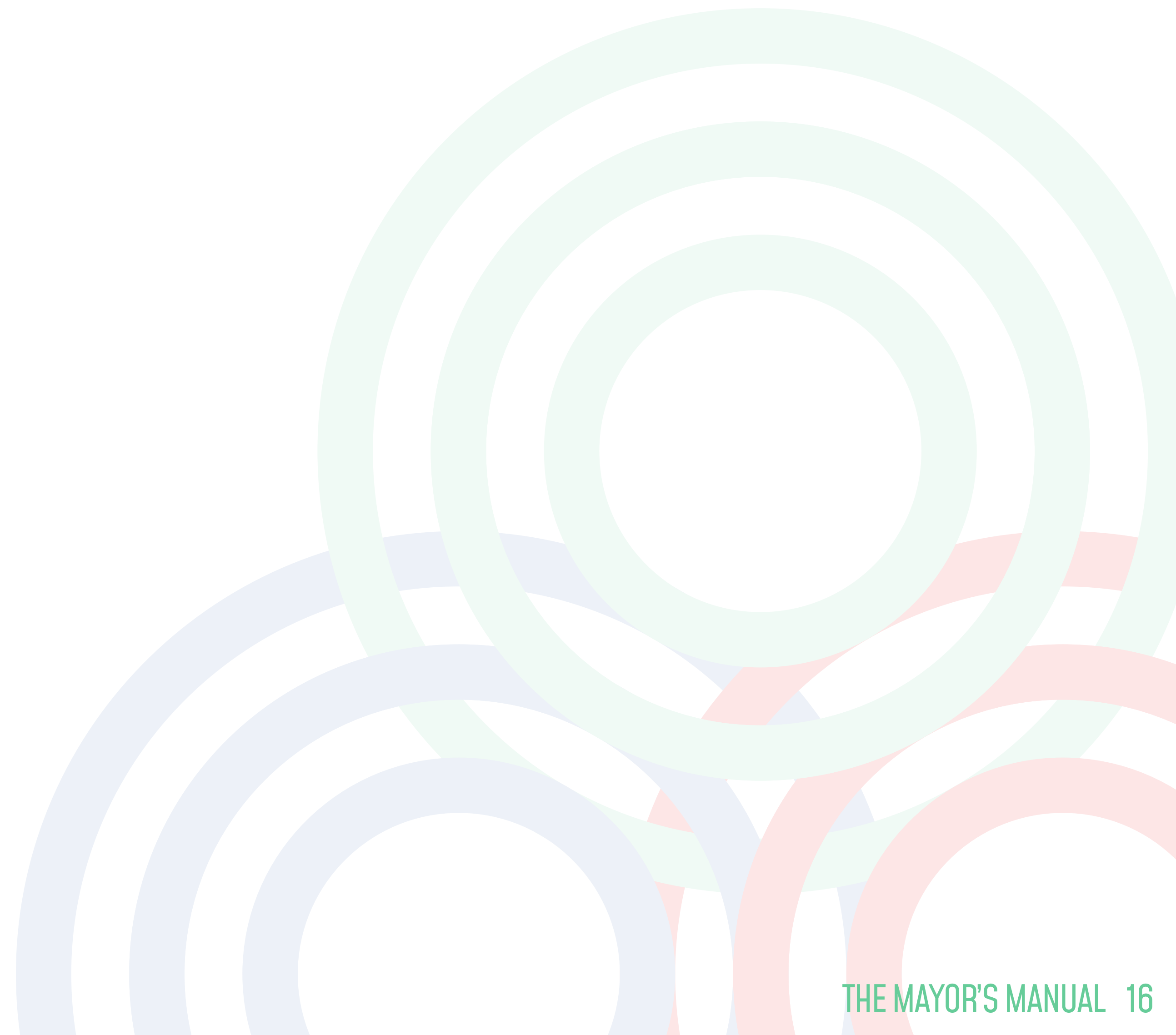
## In Closing

Unfortunately, we believe that we are currently on a path that does not lead to this bold vision for our future. While we trust our capacity to develop effective technical solutions, we are all too painfully aware of the challenges we face in achieving social acceptance for such solutions, and behavior and mindset change. We hope to see our children live in cities that are welcoming and safe for all living beings and that they can look to the future with hope, optimism, and ambition. We hope that their mayors eschew traditional indicators like GDP and economic growth and instead measure the prosperity of their cities through new indicators such as social cohesion and resilience, public wellbeing, biodiversity, and individual autonomy and inclusiveness. If we decide to use these indicators today, future generations will benefit from the fruits of our actions rather than bearing the burden of our inactions.

Best regards,

Jaleesa Schaap, Scipio Kok and Maartje Molenaar  
The Editorial Team of the Mayor's Manual Podcast

*The recommendations in this letter  
contribute to the following  
Sustainable Development Goals:*







## LETTER 2

*'Challenge us to think about the future,' says **Friso Klapwijk**, director of **the Dakdokters B.V. and MetroPolder**. In his work, he looks for innovative and actionable solutions for the hectares of unused and lifeless urban roof surface.*



October, '21

Dear Mayor,

Congratulations! Your city is growing and most likely more successful than twenty-five years ago. And yet, never a dull moment! Your plate is full due to terrorism threats and daily updates about an ongoing pandemic, while long-term challenges demand a profound reimagining of our cities.

Challenges such as the adverse effects of climate change, rising temperatures, prolonged periods of drought, and the increasing occurrence of power grid overload require smart solutions. The old infrastructure is failing, while the current level of pollution obstructs new projects. This might not be included in your daily updates, but the challenges are real.

I can still remember the completion of the last structure in the Delta Works project twenty-five years ago, back when I was still a civil engineering student.



## LETTER 2: SUSTAINABLE BUILDING & ENERGY

The general buzz across the Netherlands was the same everywhere you went; we are ready. The transformation of the country was complete, and we were safe and ready for a new century of success. It didn't motivate me to study harder, though. Obviously.

But today we realize that we have a lot to rethink. We are far from ready. Our infrastructure is not equipped for a changing climate, our carbon footprint needs to be dramatically reduced, and our residents are crying out for more green space. These themes have become a daily headline. There is no time to babysit, we need to rethink and rebuild smarter.

Luckily, we also have a history of rethinking our status quo. We have proven that, led by mayors and civil engineers, we have been able to achieve great things that still influence urban development today. In 1859, the English visionary engineer Joseph Bazalgette designed and built a sewer network that would put London on the map as the city of the future. The network aided in the elimination of diseases that until then had reduced the average life expectancy of Londoners to thirty-five years. Thanks to this infrastructure, the overwhelming stench slowly began to dissipate and enabled the city to flourish again. The other cities in the world followed suit.

How disastrously impactful, though! It was literally a linear way of thinking. We built a network of pipes and canals. Treated rainwater as waste, not as a valuable resource. Later, we built our cities for cars and centralized our energy network. Produce turned into waste, turned into landfill, or incinerated to fuel our insatiable appetite for energy.

***“We need to start thinking local and circular, just like nature does.”***

Today, we recognize the fallacy of that model. We need to start thinking local and circular, just like nature does. And that is exactly what we've been doing; we are rethinking our water systems, redefining the value of rainwater as a cooling agent for the city, and harvesting rainwater instead of allowing it to run off into the sewer system, where it would be contaminated and rendered useless. We see the value of our rooftops for energy production and as aesthetic private gardens with a view. We connect heating and cooling to local smart grids. We build roads from waste. We'd rather see tree lanes than highways. We'd rather buy a bike than a car.



## LETTER 2: SUSTAINABLE BUILDING & ENERGY

Whether it is on energy, carbon, water, waste, pollution, or biodiversity recovery, our cities can lead by example. We have the brains, the knowledge, the money, and the global networks with which we can exchange information and learn from each other faster than ever before. But we need leaders who are willing to make significant investments. Upgrade our buildings to use heat, power, and water more efficiently, rebuild our infrastructure for a circular economy, soften and green our public areas. All of this is expensive but necessary. This is not a simple return on investment model; this is do or die.

*“There is no time to babysit, we need to rethink and rebuild smarter.”*

Plans to build a serious sewer network in London were nothing new when Joseph Bazalgette designed his vision for ridding the stench in London. Prior to being elected chief engineer in 1855, others before him had designed systems and prepared investment plans. All to no avail, until the Great Stink in 1858 so overwhelmed the city that it prompted politicians to take legislative action and provide funding for reforming the sewer infrastructure. Bazalgette began building less than a year later. And in 1875, after the completion of the Chelsea Embankment, the city of London was profoundly changed within 20 years.<sup>3</sup>

<sup>3</sup> The Great Stink occurred in the summer of 1858 during which the hot weather exacerbated the hideous stench of human excrement and industrial waste that was present on the banks of the Thames. It led to a host of waterborne diseases that claimed the lives of more than ten thousand Londoners.





## LETTER 2: SUSTAINABLE BUILDING & ENERGY

As it often does, it took a disaster to mobilize for change, but the quick response was only possible because a vision and plan were already in place. We, your army of civil engineers, are preparing plans, creating greener designs for our public areas, developing renovation concepts for energy-efficient buildings. We design smart hubs and nature-inclusive buildings and build smart grids for energy and rainwater harvesting. But we are constrained by our current political system, which is focused more on the present or even the next tweet, while our work consists of long-term plans that will have a lasting impact for society.

***“We have the brains, the knowledge, the money, and the global networks with which we can exchange information and learn from each other faster than ever before. But we need leaders who are willing to make significant investments.”***

Dear Mayor, I’m pinning my hopes on you. As I write this letter, I realize the uniqueness of your position. You simultaneously fulfil the role of father and mother for your citizens; not as a politician but as someone who truly cares for his/her citizens. As you take care of us today, will you challenge us to think about tomorrow? Please give us, your secret army of engineers, the necessary signal: rethink our city and put plans in place so that when the next disaster strikes, we can hit the ground running.

We might need to await a disaster, but we will make sure we have the plans ready. I am looking forward to what we will build over the next 25 years!

Kind regards,

Friso Klapwijk

Entrepreneur in the Circular Economy, Civil Engineer

*The recommendations in this letter contribute to the following Sustainable Development Goals:*





## QUOTES ON SUSTAINABLE BUILDING & ENERGY



**Boris Zeisser** - Architect-Director of Natruified Architecture, Director of Evergreen Building Development BV

*To the Mayor's Manual, I would like to contribute a piece about nature. To me, a city should be built from materials found in nature, such as parks and green spaces with trees and flowers, and rivers and canals. Roads and buildings should blend seamlessly with the natural environment, with buildings using biobased materials, like wood, bamboo, reed, or flax to negate the impact of harvesting on the natural environment. Landscape elements, like green roofs, green walls, greenhouses, trees, and flowers, should be integrated into buildings to encourage biodiversity and provide a habitat for birds and insects. In other words, a well-balanced city for all living beings.*



**Rob Alberts** - Head of Sports Centers and Sports Parks at the City of Amsterdam

*For sports in the cities, we develop synthetic turf sports fields that collect excess stormwater from heavy rainfall events and recirculate it back into the fields for cooling during dry periods. This means that the mechanical properties of the synthetic surface must remain good to ensure adequate sport functionality, such as shock absorption of impacts exerted by athletes, i.e., jumps and landing movements, but also ball bouncing. But taking care of our climate is*

*also critical to the existence of flora and fauna and artificial grass can sometimes get very hot, which cannot be good for the plants, animals, and people in the community. With our climate-adaptive sports fields, we believe we have developed a great sports field product for all users, including flora and fauna, that can offer many benefits in an urban environment.*



**Tim van Hattum** - Program Leader of Green Climate Solutions at Wageningen University & Research

*Climate change has a significant impact on cities. Nature-based solutions are promising solutions that enhance the resilience of cities to the effects of climate change and improve the quality of life for millions of urban dwellers. To raise awareness about and support for large-scale implementation of nature-based solutions, it is important to visualize a nature-based future for cities across the globe. Co-creating and co-designing the desired future for cities together with experts and local stakeholders will put nature-based solutions higher on the urban agenda.*



## QUOTES ON SUSTAINABLE BUILDING & ENERGY



**Hanneke van der Heijden** - Strategic Advisor  
at Rotterdam Circulair

*The environmental impact of how, what, and how much we consume is immense. As mayor, you have the ability to help citizens change our collective overconsumption by creating space for local entrepreneurs that offer business models that thrive on 'use longer', not 'buy more'. But so long as fast fashion and fast food dominate our cities, it will be difficult to change consumer behavior. I would also urge you to seize the opportunity to create a holistic circular economy. Connect circularity to regenerative ecosystems, for example, by planting edible forest gardens to support food production, increase biodiversity, create green urban spaces, store water, cool the city during the summer, and improve soil quality. They are also a wonderful educational resource for the community.*



**Joke Dufourmont** - Program Developer for Circularity  
in Urban Regions

*Make circularity easy for people, unavoidable for the industry. To that end, address the two key consumer groups that will be involved in achieving the circularity goals: your municipal organization and your residents. Support the market for circular products and services through circular public procurement for the municipal*



**Paco Bunnik** - Lead Urban Designer, City of Amsterdam

*Habitat for people, flora and fauna. The key to creating such a habitat is shared responsibility. In Amsterdam, we share knowledge and experiences with government agencies, cities, public and private organizations, academia, and residents. Our expertise in integrated water management, green policy, waste and energy management, integrated sustainable spatial planning, and other domains can be valuable in other urban areas. We have a responsibility to take care of one another and give back to our local and global communities: international policy based on reciprocity.*

*organization and public services. Use the innovation and purchasing power of the municipality to create demand where it matters; the bulk material flows in infrastructure and construction, as well as the most precious materials in electronics. Make circular consumption the easy choice for your residents through core municipal processes such as licensing policy, awareness raising, spatial planning and public infrastructure. Circularity becomes the more obvious choice when it expands opportunities for local entrepreneurship, health, social capital, public space, and employment.*



## QUOTES ON SUSTAINABLE BUILDING & ENERGY



**Lidwien Besselink** - Senior Consultant on Underground Space, City of Amsterdam

*The impact of future developments, such as climate adaptation, energy transition, and circular economy, is not yet known, but one thing is for sure: underground space will become more and more congested. There is increased pressure on underground space, and with increasing developments and ambitions, we are seeing more development underground. The tasks in the public and underground space are so significant in scale and complexity that the subsurface increasingly preconditions what happens above the ground. Looking for novel solutions with the various stakeholders allows leeway for coordinating the tasks and developing an integrated design for the public space and subsurface. Design-driven research can help us find comprehensive solutions that cut across multiple tasks and through hierarchies and sectoral priorities.*



**Gijsbert Cirkel** - Senior Hydrology Researcher at KWR

*My advice to the mayor: I would advocate an integrated approach in which excess stormwater is stored and used for irrigating trees and landscapes, active urban groundwater level management, and cooling underground infrastructures such as potable water mains. These mains are increasingly exposed to heat due to climate*



**Jorine Noordman** - Nature-Inclusive Design and Construction Specialist at the Engineering Department of the City of Amsterdam

*Nature inclusiveness should be front and center in our thinking as nature is the root of all life. We are nature, nature lends itself to making our city adaptive, livable, healthy, and happy. We must claim space for a robust foundation to make our cities-in-transition amenable to change. The city must be designed as an ecosystem where ecosystem services are key to creating a healthier lifestyle that sustains us as part of the ecosystem. A city in which we are increasingly returning to our natural habitat in an innovative and sustainable way. To live in a natural environment and not destroy it by our ignorance of what nature has already designed. Think like mother nature, work together in symbiosis.*



## QUOTES ON SUSTAINABLE BUILDING & ENERGY



**Amber Huizinga** - Head of Development  
at Aedes Real Estate

*The inevitable and necessary changes needed in the building sector to adapt to climate change inherently require regulatory flexibility. I believe it is important to assign a qualified individual or team within the City to oversee the affairs of each department and identify the irregularities that are sometimes overlooked by the specialists. I see this as a permanent position/team (e.g. a sustainability director) that has the authority to fast-track projects that address pressing issues such as climate change and biodiversity, challenge outdated rules, and see the overall benefits of projects beyond simply which department is best suited to implement them.*



**Bas van Beers** - CEO at Empowered Energy Builders

*The main responsibility of mayors across the world is to transition their cities into livable cities, where circular and sustainable renovation and new development go hand in hand. New development is driven by speed and money, while renovation is slow and costly. By combining the two at scale, you can make great strides in the city. In doing so, however, be critical of large-scale systems. Focus on regional and community systems such as cold district heating networks that connect buildings through maximum*

*utilization of hydrothermal energy and solar panels. The same also applies to circularity. Reuse all demolition, renovation and building waste locally to the extent feasible. Leverage farming practices to create large swaths of green space and improve the quality of life and productivity in the city. If you combine farming, energy and building waste flows, you can transform every city into a livable place where local initiatives create opportunities for greater engagement and emancipation. The obstacles preventing us from achieving this are not the lack of knowledge, money or ambition, but rather all the existing systems that operate in silos that do not work together and have separate revenue models and separate interests. Mayors and their staffs can bring these silos together to work effectively as a team. And the City itself can set a good example by purchasing, developing, building and operating in a circular and sustainable way.*



*Professor dr.ir. Serge Hoogendoorn gives lectures on Smart Urban Mobility at TU Delft. In his essay for the Mayor's Manual, he talks about the future of sustainable mobility and examines the potential of smart urban mobility based on his studies on the theory, models, and simulations of traffic and transportation network.*



September, '21

Dear Mayor,

Clear skies, no air pollution, no traffic noise and fewer traffic accidents... Notwithstanding the dramatic impact that Covid-19 has had on our society, the pandemic has clearly exposed the significant impact of daily commuting on the world we live in. And now, as I am writing this letter only weeks after many of the restrictions have been lifted, the impacts of traffic - in terms of congestion, noise, and air quality - are seemingly back to their pre-pandemic levels. And just to put this in the right perspective, even without taking into consideration the long-term impact of emissions on our climate, around twelve thousand people die of air pollution each year. This is comparable to the number of annual deaths due to Covid-19 in the Netherlands.

Contrary to predictions by many mobility experts, the demand for mobility has turned out to be very resilient: employers are keen to get their people



## LETTER 3: GREEN & SMART MOBILITY

back in the office, and employees are just as eager to return for the camaraderie and sense of team spirit that working in a shared environment with coworkers can provide. Even if it means wasting precious time commuting, significantly increasing the adverse impact of commuting on the planet and losing the level of productivity that comes with working from home.

*“For one, non-mobility is an option!”*

So, did we “waste a good crisis?” Well, one could argue that we were unable to capitalize on some of its silver linings, like the considerable reduction of the commuting impact on our living environment due to the high percentage of the workforce working from home. That said, we did learn a lot about the mobility system’s ability to respond to and recover from a large disruption. I believe these lessons will turn out to be very valuable for the future and will - at least to an extent - guide us in our quest to make our transportation systems sustainable. Allow me to explain.

For one, non-mobility is an option! A substantial number of people can, in principle, work from home, but they choose not to, unless incentives are provided, both for employers and employees. For decades, the theory has been that when commuters adjust to new ways of commuting, novel ways of working, etc., it encourages them to change their habits, their commuting

patterns, and so on. The vast amount of data collected pre-, during and post-pandemic measures appears to support this theory. To that end, I believe we need to revisit this concept and many of the other theories about activity-travel behavior to allow for better, evidence-based theory and policymaking, and for a more effective deployment of Smart Mobility solutions. Are temporary grants for the use of public transportation effective, or do we need to provide more permanent (dis)incentives?

We can also conclude that mobility management is very effective! Transportation scientists have claimed for decades that reducing the peak demand for commuting by a few percentage points will have an exponential impact on congestion, and consequently on emissions and pollution, in and around our cities. This claim has turned out to be prescient, especially in light of the data reported since the beginning of the coronavirus outbreak. Traffic data suggests that congestion levels have remained consistently low for an extended period due to lower (car-based) commuting flows.

But clearly, congestion is not the only factor at play in ensuring sustainable transportation. In this respect, we have also observed how sensitive sustainable public transportation use is to factors that reduce commuter comfort or sense of safety, or more generally, the image of public transportation. While the demand for commuting by car has bounced back to pre-



## LETTER 3: GREEN & SMART MOBILITY

pandemic levels, public transportation use has not. The latter has potentially severe societal effects as it impacts our ability to make (urban) transportation greener. In conjunction with other sustainable commuting options (e.g. bike sharing, micro-mobility, walking), smart public transportation is crucial as it provides the backbone for a system that has limited impact on the environment, provides accessibility to the general public, and has a limited spatial footprint. In an era where urban space is such an extremely valuable

commodity, we need to rethink if we want to use such a large share of space on transportation infrastructure. I believe that a shift toward these transportation options requires a more holistic, user-centric approach, where the needs - and not just the commuting needs! - of residents and visitors play a central role. I am convinced that this is only possible through direct involvement of the citizenry, and by showcasing the implicit tradeoffs (e.g. between commuting efficiency, climate, livability, impact on available





## LETTER 3: GREEN & SMART MOBILITY

urban space to work, recreate, and live, use of scarce resources, including energy) we are making when catering to high demand for commuting by personal cars.

Smart Mobility and ICT have the potential to make public transportation and other sustainable commuting options more attractive for commuters and, as such, can support the transition toward a green transportation system. However, we must ensure that specific - usually vulnerable - groups are not excluded from participating in socioeconomic activities due to digital exclusion. Again, there are many valuable lessons we can learn from the Covid-19 crisis, which has left people with limited access to a variety of digital services particularly vulnerable to social exclusion.

***“While the demand for commuting by car has bounced back to pre-pandemic levels, public transportation use has not. The latter has potentially severe societal effects as it impacts our ability to make (urban) transportation greener.”***

We live in an era with unprecedented opportunities for investing in technological innovations that go beyond the electrification of vehicles, digitization of traffic management systems, smart mobility hubs, or Mobility-as-a-Service apps. While in our connected society it is easy to feel overwhelmed by the amount of data available today, artificial intelligence, deep learning, and agent-based modeling provide amazing tools for creating order in the data chaos and establishing causal links across policy interventions, citizen behavior, and short-run and long-run system responses. This approach presents not only new avenues to evidence-based policymaking but also a great opportunity to include residents in the decision-making processes and cocreation of the city’s multimodal transportation system. Residents involved in these processes will have a vested interest in seeing their decisions come to fruition. I believe that the creation of a digital twin of your city and the use of virtual and augmented reality to create an immersive experience for residents and stakeholders will prove invaluable in garnering support for major future investments and for optimizing the design of a sustainable multimodal transportation system. In doing so, it is pivotal to consider investing in both transportation and critical infrastructures, such as power grid, communications, logistics, and city distribution infrastructures. The digital twin could serve as an interactive platform where major stakeholders can collaborate on addressing some of the significant challenges your city is facing.



## LETTER 3: GREEN & SMART MOBILITY

Like most crises Covid-19 has taught us some very valuable lessons. While we may not have been able to maintain some of the positive side-effects, the data will help us to set-up a narrative showcasing the mechanisms in mobility in relation to its impacts of society and the environment we live in. Let's not let this opportunity go to waste!

Best regards,

Professor Serge Hoogendoorn  
Distinguished Professor of Smart Urban Mobility  
Delft University of Technology

*The recommendations in this letter  
contribute to the following  
Sustainable Development Goals:*





## QUOTES ON GREEN & SMART MOBILITY



**Pepijn Kok** - Manager at KWS Construction

*My suggestion from a business perspective is to invest in electric mobility hubs that benefit everyone. The hubs should be well-organized for citizens, mobility users and systems through innovative solutions. It should be possible to locate hubs underground to use the current power grid and aboveground with innovative solutions. This will allow us to create safe and clear solutions with relatively little inconvenience to society.*



**Rogier Pennings** - Energy Hubs & Mobility Hubs Expert, Stevin Technology Consultants

*Our public space and infrastructure are under pressure. There is growing demand for charging infrastructure on mobility hubs, however, the many different stakeholders - with their different interests and timelines - present an organizational challenge. Today's short-term stakeholder-specific solutions can lead to long-term societal issues. The important question is: how can we solve this dilemma? We need to put every stakeholder in the proper societal perspective. We've applied this to Energy Hubs, and they serve as a great example for a new way of thinking... and doing!*



**Dr. Niels van Oort** - MSc/Co-Director of Smart Public Transport Lab at Delft University of Technology

*If we want to make a transition to a more sustainable and livable city, we should focus not only on developing cleaner vehicles, such as electric cars and buses, but also and even more on promoting the use of sustainable modes such as active modes and public transportation. Walking, biking and public transportation, individually or in combination, could significantly contribute to climate goals, addressing health challenges and enabling a space-efficient and livable city. However, to encourage a shift to these modes, we would need a user-centered design, high-quality infrastructure, services, and facilities. This will allow urban transportation systems to contribute to effective mobility, an efficient city, the economy, the environment, and equity.*



# LETTER 4: SAFETY IN URBAN REGIONS & DIGITAL INFRASTRUCTURE



# LETTER 4

Learn how data-driven innovations can safely be integrated into our urban infrastructures, by **Thijs Turel, Program Manager of the Urban Data and Intelligence Program at AMS Institute**. In his role at the Responsible Sensing Lab, he explores the ways in which data-driven innovations can improve urban life while respecting public values such as autonomy, privacy, and transparency.



October, '21

Dear Mayor,

Cities depend on infrastructures, like water and sewer systems, gas and power networks, roads, and communications systems. All of these make city life possible. But these infrastructures are no longer just physical hardware, they are digitizing rapidly into connected digital-physical systems. Even the food system is rapidly transforming into a data-driven component of the urban infrastructure, with urban vertical farms being developed in the city.

*“A well-known paradox holds that the more reliable an infrastructure is, the more we rely on it, and the less prepared we are when it starts failing. Yet the risk of failure is becoming ever more likely, due in large part to digitization.”*



## LETTER 4: SAFETY IN URBAN REGIONS & DIGITAL INFRASTRUCTURE

Digital systems allow us to measure, analyze and manage the use of our infrastructures, enable predictive maintenance and more efficient management of scarce capacity. Cities will become adaptive to changing circumstances and needs. Sluices, traffic signs, route and destination signs, smart grid management systems, charging infrastructure and bridges will be operated dynamically and provide residents with sets of changing constraints and opportunities. We increasingly rely on these digital systems for our infrastructures to function.

A well-known paradox holds that the more reliable an infrastructure is, the more we rely on it, and the less prepared we are when it starts failing. Yet the risk of failure is becoming ever more likely, due in large part to digitization.

***“Apart from failure, the digital security of urban infrastructure can be broken down into two major components: protection against intruders (cybersecurity) and protection of citizenry from authorities using smart infrastructures. For lack of a better word, let’s call this protection from Big Brother.”***

### **Risks of Failure**

Our infrastructures are exposed to a myriad of risks that could cause them to fail at any time. The hours-long global outage of Facebook, Instagram, and Whatsapp on October 4, 2021, which left billions of people with no access to the social media tools, should serve as a stark warning to all of us as to how disrupting a longer outage could be. Apart from failure, the digital security of urban infrastructure can be broken down into two major components: protection against intruders (cybersecurity) and protection of citizenry from authorities using smart infrastructures. For lack of a better word, let’s call this protection from Big Brother.

### **Cybersecurity**

Cyber threats are on the rise and becoming more sophisticated in their capabilities to cause widespread destruction and mayhem. There is a growing threat of ransomware criminality, such as the 2021 Colonial Pipeline attack, which caused fuel shortages across the US East Coast in May 2021. Bad faith state actors are also stepping up their cyberattacks as illustrated by the attack on Ukraine’s power grid in 2015 - likely by Russian hackers - which left 230,000 people in the dark.

Whether for criminal or political reasons, the Netherlands appears to be an attractive target because of its affluence and world-class knowledge industry.





## LETTER 4: SAFETY IN URBAN REGIONS & DIGITAL INFRASTRUCTURE

Yet, according to a warning published by the Dutch Cybersecurity Council, it does not have a solid digital defense system in place. That said, it also does not help that it is dependent on other countries for technology. While this may not be surprising for a small country, the same cannot be said for the European Union, which lacks serious contenders for basic digital capabilities, such as data storage, processing, communications and even critical hardware components. Imported hardware components like 5G cores and drones are suspected of having back doors to foreign governments.

Given all this, the question should not be if but when a critical infrastructure will fail.

### **Protection from Big Brother**

The second component of the term digital security refers to the protection of the citizenry from authorities using smart infrastructures. Authorities - often unintentionally - can harm their citizenry by using digital means. Even in seemingly strong democracies like the Netherlands, where the childcare benefits scandal illustrated how this can occur at scale. Reporting on the scandal suggests that the algorithmic risk assessment systems used by the Dutch Tax and Customs Administration factored heavily in its decision to unjustly criminalize large numbers of households in the Netherlands, accusing them of subsidy theft.

Authorities sometimes use digital tools that are available to them beyond their mandate, which I'm inclined to attribute to authority overreach. In one example, Dutch law enforcement used license plate recognition systems to identify drivers' faces, while in another example, the traffic movements of T-Mobile customers, obtained from cell phone location data, were shared with Statistics Netherlands agency CBS.

These incidents seem relatively harmless. However, reports on China's surveillance of the Uyghur minority remind us what can happen when an authoritarian regime rises to power. The risk of authoritarianism currently seems remote in a West-European context. But knowing that the decisions we make today create the city of the future, we have a moral obligation to think about and mitigate the long-term risks.

### **Three Potential Solutions**

Protection of public infrastructures from intruders and protection of the citizenry from these smart infrastructures are two different problems. But luckily, there are three potential solutions that could address both problems.



## LETTER 4: SAFETY IN URBAN REGIONS & DIGITAL INFRASTRUCTURE

### Physical Limitations

The first solution would require designing physical capability limitations for smart systems. Unlike software limitations, physical capability limitations cannot be changed by over-the-air updates. This applies to both the data collecting components (i.e. sensors) and the motion control components (i.e. actuators).

Collectively, these components would prevent the misuse of collected data. The principle of data minimization should be expanded. Rather than not collect data, sensors should have the capability to collect relevant data only, while communication modules should be designed to send limited data (e.g. using LoRa technology instead of 5G). An illustrative example is the millimeter-wave sensor used for crowdsensing, which does not record personally identifiable information. Actuators - such as traffic lights - could be physically limited to prevent certain scenarios, such as programming traffic lights to turn green at the same time.

Building in physical checks and safety measures will not improve the business case for smart city applications, which rely on real-time remote control. But if this could prevent a city-wide traffic light hack, wouldn't it be a worthwhile solution to explore? We should resist the temptation of quick savings and efficiency wins and look at the bigger picture.





# LETTER 4: SAFETY IN URBAN REGIONS & DIGITAL INFRASTRUCTURE

## Design Smart Infrastructures for Oversight

The second solution I would like to suggest designing smart infrastructures for oversight. If a smart city system does not perform as it should due to intruders or authorities overstepping their mandate, who would know? Very few people, as is the case today. This places the burden of protecting the citizenry from harm on the shoulders of a small number of people. We need to democratize our options for oversight by designing smart infrastructures so they can be easily monitored. As such, oversight could be assigned to larger groups of people who understand how these systems perform. Democracy requires transparency and understandability of digital systems.

## Internet Outage Drill

The third and final solution is to put in place an internet outage drill plan. We are all familiar with fire drills. They are meant to prepare us for the unlikely but possible scenario of a high-impact fire event. As mentioned earlier, it is hard to imagine that some critical urban infrastructures will not fail at some point in the years ahead. Knowing this, we should do everything we can to prepare for it. However, there are any number of things that could go wrong, how can we prepare for all of them? A single critical point of failure is internet connectivity.

So, as a general exercise in preparedness, why don't we shut down the internet in Amsterdam for one day every year? This would allow us to use the fallback options that were available in the pre-internet era. So, we'll still have bank notes, remember how to read a map, have a couple of candles somewhere and won't panic when our smart devices black out. The socioeconomic costs will be substantial. But if it leads to better preparedness and less panic in the event of an actual crisis, the benefits might outweigh the costs.

Thijs Turel

*The recommendations in this letter contribute to the following Sustainable Development Goals:*





## QUOTES ON SAFETY IN URBAN REGIONS & DIGITAL INFRASTRUCTURE



**Jake Blok** - CEO & Co-founder of iYYU.com

*Imagine a society where people feel safe in the physical world, but unsafe in a connected and online world. The question, 'What kind of city do you want to be?', presents an opportunity for adopting technology and digitization for human wellbeing. Accelerate the pace of transparency into personal data handling in the city. Consider this in all the agreements you enter into with organizations and/or when you grant permits. Provide more options for citizens connecting to and/or logging on to city platforms, especially in the public space. When I make online payments, I have a good number of options. When I log on to or sign up on city platforms, I do not. Consider promoting login and self-authentication options for users. Digitization presents an opportunity for creating a positive effect on the Return to the Individual. Consider adding this concept in the validation process in technology decisions. And consider making all youth a Chief Technology Officer. How can we as a society be strong if an individual can be threatened at any time and place, faster and more effectively than ever before? I would suggest that you not only manage the physical assets but also take into consideration the amount of time a citizen spends online in the public space. Conduct more studies on how citizens use the digital infrastructures in the city. Human dignity is the driver of a modern society.*



**Henk de Jong** - CEO of PBLQ

*Faced with the urgency of now, every city should develop the full range of data skills for a chief data office and train policymaking units on the impact and potential of data. Moreover, the city should focus on developing an adequate data infrastructure (fiber optics and 5G) on a granular level to prepare itself for the integrated transition to climate adaptation and energy, mobility, e-health, and the dominance of digital platforms. This may very well be the decade of the technology-intensive city.*



**Titus Venverloo** - MSc MADE Alumni

*Technology has always been a driver of change in cities, yet municipalities often have little knowledge about the important role it plays. For example, failure to understand the consequences of the rapid adoption of the automobile or camera surveillance has deteriorated public health and chipped away at the trust that is so fundamental for livable cities. This is why municipalities should experiment and prototype with digital technologies, because without those living labs, cities will fail to fully understand and leverage the potential of these emerging sensing capabilities.*



## QUOTES ON SAFETY IN URBAN REGIONS & DIGITAL INFRASTRUCTURE



**Tanaquil Arduin, MSc and MPA** - Chief Data Officer / Head of the Center of Expertise for Data and AI City of The Hague

*The challenges of modern cities are tough: aging population, affordable housing, public safety and so on. Urban tech and the use of data and AI seem to be a solution to at least some of these challenges. Privacy, interpretability and human-centered data and AI should be at the heart of data-driven organizations. The mayor's interest and involvement will help us make the necessary transition to a responsible, data-driven organization. This requires leadership that facilitates a clear data strategy supporting the fundamentals of privacy, ethics, and information security. Mayors can support the organization by paving the way, pushing forward toward the unexpected and removing barriers by connecting the different perspectives of urban tech.*



**Ard van de Kreeke** - CEO of GROWx & Growy

*The food we consume has usually traveled many miles to reach our table, likely leaving a hefty carbon footprint in its wake and - in many cases - deforestation, overfishing, and social injustice in other parts of the world. Plus, our health has been significantly compromised by the current food system. The food system needs to be overhauled if*



**Mark P. Haaksman** - Senior Business Development Manager, Royal Haskoning DVH Digital

*Dear Mayor, it is our fervent hope that your Mayor's Manual will result not only in an open-source 3D Digital Twin of your city but also in a platform on which public and private sectors can develop technology for quantifying the cascading effects of disruptions based on the same information. This will provide measurable data regarding the real effects of climate events - such as flooding or heavy rainfall - on all relevant assets. The same platform, if provided with (near-)real time data, can be used to manage your city's operations, prepare a predictive asset management plan, and simulate your future ambitions.*

*we want a sustainable food system for healthy people, animals, and planet. The solutions are there; grow nutrient-rich, healthy, and clean produce on organic waste. Harness science and biotechnology for sustainable production of vitamin-rich greens. Outsource all production to automated, data-driven vertical farms to help keep our crops affordable and accessible for local urban consumers, and our food and cities clean.*



# LETTER 5: FUTURE CITIES



# LETTER 5

Explore the power of hope for a better future for cities with **Jan Jorrit Hasselaar, Economist and Theologian, and coordinator of the Centre for Religion and Sustainable Development at the Vrije Universiteit Amsterdam.**



October, '21

## Cities of Hope

Dear Mayor,

It's very quiet in my street. It used to be filled with noise from large crowds of student protestors gathering outside my window to demand action on climate change or from planes flying to and from Amsterdam Schiphol Airport every five minutes. But all that changed when we were hit by a pandemic that caught us all off guard. Its ripple effects swift and intense, starting with a lockdown that saw schools and universities closing, students staying with their parents or at their off-campus accommodations. Schiphol's runways turning into aircraft parking lots. All because of a tiny virus, which for all its size and long names - SARS-CoV-2, coronavirus, COVID-19 - was able to accomplish what no strike or agreement could: a sharp reduction in CO2 emissions.



## LETTER 5: FUTURE CITIES

During the first wave of Covid-19, Femke Halsema, mayor of Amsterdam, brought together a group of prominent thinkers at her residence to advise her on the crisis. A key question that dominated every meeting was: how can we reopen our cities safely, while improving the wellbeing of our citizens and addressing the pressing issues of our time like climate change, housing shortage, unsustainable food system, increasing inequality, and deep polarization within society? How can we create perspective in the face of a radical uncertain future? In the book “Na de quarantaine (2020) [After the Quarantine],” which was the result of these meetings, Halsema argues for a hope-based policy with a vision for addressing these questions.

***“Hope is not found in a faraway future, a promised land, but in the land of the promise that people create with one another in the midst of radical uncertainty. In this land of promise, people learn how to make space for one another.”***

But what is hope? According to cultural critic Terry Eagleton, hope “... has been a curiously neglected notion in an age which, in Raymond Williams’s words, confronts us with “the felt loss of a future”” (Eagleton, 2015, p. xi). In our everyday lives, hope is a word we use glibly, like, I hope the sun shines

tomorrow. This makes hope a passive virtue that is easily confused with optimism. We need a deeper understanding of hope. The late Jonathan Sacks, a leading British intellectual and advisor to several British prime ministers, was a prominent thinker on hope. During his lifetime, Sacks developed an articulated and proven understanding of hope, derived from the ancient narrative of the Exodus. Standing in a long tradition, Sacks argues in his work that hope is about future tense. It is a journey between the present, with its shortcomings and pain, and the promised land. Hope is not found in a faraway future, a promised land, but in the land of the promise that people create with one another in the midst of radical uncertainty. In this land of promise, people learn how to make space for one another.

At middle schools and universities, we teach our students about the two coordination mechanisms that govern our society: state and the market. However, Sacks argues that there is a third mechanism available for coordinating our societies: a politics of hope. A politics of hope is about people or parties of different political and ideological persuasions or interests setting out on a journey to learn how to accept shared responsibility for a shared future. Throughout their journey, they come to understand their own views and interests, and allow themselves to open up and gradually start something new and liberating in the midst of a radical uncertain future. Their differences are no longer a source of polarization as it often is on



## LETTER 5: FUTURE CITIES

contemporary issues like climate change, housing shortage and unsustainable food system. Rather, differences become a source of renewal. The three forms of governance - state, market, and politics of hope - are not at odds with one another and can instead bolster each another, if designed well.

*“The journey is long because the perceptions we live by are part of the problem.”*

Where to find hope? Hope is already there. When we look around us, we see countless people responding to the call to take responsibility for a shared future. But let's not be naïve. There are also many conflicting interests and dead ends, and as COVID-19 has shown us, fatigue, selfishness, opportunism, and indifference can easily replace acts of hope and solidarity. Thus, it would be helpful if not necessary to have something that fosters hope, trust, and solidarity. A politics of hope highlights two institutions that protect and encourage relationships that make space for one another. First, there is the covenant. The covenant is a bottom-up exchange of promises between two or more people who promise to take responsibility for a shared future. A covenant does not mean that everyone agrees with one another. In fact, they can have starkly different and disagreeable views, like the director of an environmental NGO and the CEO of an oil company. Second, the key to a politics of hope is a workplace of hope, or a public Sabbath to use the terms







## LETTER 5: FUTURE CITIES

of the Exodus narrative. Such a workplace consists of four dimensions. First, the workplace is a place that celebrates utopia, the promised land, in the present. Second, a workplace of hope is a neutral space in the public domain that values differences among the participants. Third, the workplace fosters, protects and strengthens relationships that make space for one another by listening and holding off judgement. Fourth, the workplace promotes the development of meaningful relationships between people not only through objective knowledge and statistics, but also through music, poetry, breaking bread together, and art. Sacks' politics of hope challenges us to create inclusive workplaces of hope in our communities.

*“We need a deeper understanding of hope.”*

Schools and universities were shut down. Schiphol's runways were turned into parking lots. But now that cities are reopening, we need to create a politics of hope on pregnant questions like climate change, housing shortage, unsustainable food system and increasing inequality. The politics of hope derived from the work of Jonathan Sacks is not a naive invitation to a better post-COVID era, a Promised Land. It doesn't see hopeful change as a wonder drug or a quick fix that will miraculously produce results overnight. It sees hope as a journey in which people gradually learn to include the excluded, such as the climate, people in areas affected by climate change, farmers,

young people and so on. The journey is long because the perceptions we live by are part of the problem. We, with our perceptions of ourselves and other people, are part of the problem. But we can also become part of the solution because hope is not beyond our grasp. The only thing we have to do is to respond to its call. As Amanda Gorman so eloquently recited at the inauguration of Joe Biden on January 20, 2021:

For there is always light,  
If only we're brave enough to see it  
If only we're brave enough to be it  
**That our cities may become cities of hope.**

Jan Jorrit Hasselaar

Economist & Theologian – Amsterdam Centre for Religion & Sustainable Development (Vrije Universiteit Amsterdam)

*The recommendations in this letter contribute to the following*

*Sustainable Development Goals:*





## QUOTES ON FUTURE CITIES



**Sem Roefs** - Director of MijnStadstuin (MyCitygarden) - Ecological Innovation Lab for Urban Farming

*Mayors across the globe should create a space in their cities where residents can learn, grow, and have meaningful and much-needed conversations about food. This will create a more social and climate-resilient city; urban farming enhances health and happiness, creates stronger communities, improves biodiversity, and strengthens climate adaptivity, while providing meaningful work and boosting local value chains. The spaces can range anywhere from 1 m<sup>2</sup> up to several hectares.*

*"The best time to plant a tree was 20 years ago.*

*The second best time is now."*

*Chinese Proverb*



**Melina Scholefield, P. Eng** - Executive Director, Metro Vancouver Zero Emissions Innovation Centre

*In cities today, innovation, adaption, and reinventing our approach to meeting community needs and the needs of the natural systems that connect and sustain us is more critical than ever. Embracing values and practices that invest in leadership and organizational culture shifts that enable innovation and change is an untapped resource in many communities. Let's be open to reframing our challenges and turning them into opportunities. Let's shift our mindsets from scarcity to doing what we can with what we have. Let's abandon the idea of impossible to make new ideas possible. Finally, let's try, do, learn, adapt, and collaborate together as communities to make a difference.*



## QUOTES ON FUTURE CITIES



**Alexandra Almaral** - Founder of The Shift Initiative and Behavioral Change Consultant

*To create deep human connections and a strong sense of belonging in the future of our cities, one of the key elements that should be top of mind in the Mayor's Manual is a sincere attempt to perform periodic reality testing to avoid groupthink beyond the typical bubble of purely political interests. Engaging in meaningful and courageous discussions with citizens from all walks of life can help promote an honest dialogue that encourages differing viewpoints, challenging the status quo, room for creative thinking, change and innovation. So, perhaps one of the key questions that I believe should be posed in the Mayor's Manual is: how can I make sure that my opinion is challenged on a regular basis?*



**Thera Rohling** - Program Director of Sustainable Urban Delta at Priva

*In centuries past, the first cities were built on fertile land as people grew food and settled in communities. Today, cities are displacing food production to more remote locations. City planning is geared toward concrete, steel, asphalt, and technology, but not food production. And this needs to change! A food-producing city is a livable city that creates new connections at social, ecological, and economic levels. Bring food production back to your city to secure sufficient and healthy food for your citizens and embrace the power of food as it builds communities, provides more green space, balances water and, helps reduce our carbon footprint.*



## QUOTES ON FUTURE CITIES



**Alexander Laarman** - Program Developer at Metropolitan Food Systems AMS Institute

*Reliable supply of (fresh) food is a major priority for cities - a fact that has become abundantly clear during the Covid-19 pandemic. Cities are enriched by a multicultural population, each with their own culinary heritage, where traditional dishes and ceremonies are important aspects for the wellbeing of citizens. The city potentially can be a food producer, offering a varied portfolio ranging from kitchen gardens to high-tech (vertical) farms for the (regional) food supply. We need to challenge the mix of social connection, high-tech food, and (regional) food supply, if we want to develop a sustainable and inclusive food system for cities of the future that supports the health and wellbeing of citizens.*



**Brian Schmitt** - Project Manager at MetroPolder Company

*Much like a mule, cities can be stubborn. To get a city (mule) moving, there are three approaches you can take: Talk (Dialogue), Carrots (Incentives) & Sticks (Regulations). Mayors must be adept in using all three to meet the needs of their constituents. When reinventing our cities to cope with climate change, the approach is the same. Engage in dialogue to learn from others who've been there before you and discuss the vision*

*of a resilient future. Foster innovation with incentives and highlight successful projects. Reward your first movers, while building a common language around the strategy. No one will be caught off-guard when the time comes to set ambitious regulatory standards, and the impactful targets will be a short step up for all stakeholders. In short, listen, reward innovation, and set ambitious standards. Let's get our cities moving!*



**Ernst Klaver** - Advisor on Sustainable Water Management

*In response to the question, 'What should be included in the Mayor's Manual?' I would say: We should build better, more resilient cities. As our cities grow and deal with the impacts of climate change, we need smarter and more connected solutions to address the five big challenges in climate resilience: flooding, droughts, heat stress, groundwater depletion and surface water pollution. But we can't do this alone, we need to work closely with city planners, architects, engineers, and many others.*



# LETTER 6: VOICES OF THE NEXT GENERATION



# LETTER 6

*Learning from future urban engineers with **Nina Bohm, PhD candidate at Delft University of Technology**. In her research, Nina examines how engineering students learn in transdisciplinary learning environments and living labs.*



### Living Lab Miniseries

*The living lab students have demonstrated how meaningful dialogue can be combined with meaningful action. The variety of challenges addressed, from homelessness to hydrogen infrastructure, shows how broadly applicable the method is. Combining co-creation, research, experimentation and evaluation offers new opportunities for truly inclusive participation and collaboration with interdisciplinary teams.*

October, '21

Dear Mayor,

The city is a mirror. In its reflection you can see society progress. You might have to look carefully as the movements are slow. A city is tough and surly. City-building is therefore more a process of experimenting than a process of radical change. It takes effort and many hands to create movement in a city. This might be the reason why the oldest cities like Venice, Rome, or even the inner city of Amsterdam, appeal to us the most. They've been molded by the hands of many generations. Now, the next generation of urban dwellers is facing new challenges. The challenge of transitioning cities to a sustainable



## LETTER 6: VOICES OF THE NEXT GENERATION

future. Adapting cities to extreme weather conditions, transforming the energy consumption and flow through the city, and facilitating the development of a circular economy, to name a few. How does the next generation of urban engineers approach these challenges? And what can you learn from their visions, ambitions, and approaches?

In my letter to you, I explore these questions by telling you about the students at MSc MADE<sup>4</sup> (Metropolitan Analysis, Design, and Engineering). I will introduce them to you, pass on their recommendations, and tell you what we think about the education this generation requires. Because if there is one advice that I would like to give you, it is to listen to the young and inexperienced, and learn from the wisdom of the next generation.

*“Because if there is one advice that I would like to give you, it is to listen to the young and inexperienced, and learn from the wisdom of the next generation.”*

*“Whether it is to look beyond city boundaries to close loops, or the disciplinary boundaries to find comprehensive solutions, we all need to look beyond the practices that we know. It takes courage and risk to do so.”*

### **About the Next Generation of Urban Engineers**

Engineers are problem solvers. A specific kind of problem solver who has a deep passion for making ‘things’. You might think of engineers as the people who build our bridges, computers, and spaceships. But who is building our cities? The building of cities happens in everyday human interaction as much as it happens on city drawing boards. The next generation of urban engineers knows how to monitor and understand the city and its interactions and will ultimately find a way to put in place strategic interventions to steer a city into new directions. They are ambitious and sometimes even impatient about the direct impact they want to make, but they’re also modest about their voices being one among many.

<sup>4</sup> The two-year joint MSc MADE degree program is a collaboration between the University of Technology Delft and Wageningen University. The program is located in the center of Amsterdam at the AMS Institute, where students, researchers and city builders crosspollinate on a daily basis.



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### Their Recommendations to You

The next generation of urban engineers comes from a wide range of backgrounds with diverse interests and ambitions. In the podcast miniseries on Living Labs<sup>5</sup>, students share their stories about experimenting for change in the city of Amsterdam. The uniqueness of their perspective lies in the neutrality of their position. In many city-building processes, people step into roles that are clearly defined by the organizations they represent: cities, design agencies, housing corporations, or public transportation companies. The student's view is not affected by organizational responsibilities, but open to differing perspectives. In their stories, I recognize three common recommendations that would be helpful to any mayor. I highly recommend that you listen to the stories in your own time so that you can use the recommendations that would be most applicable to your city.

Students in almost all Living Labs call for experimenting. So, their first recommendation to you is to find ways to test the innovations that are essential to transforming the cities we live in. Their second recommendation to you is to listen to civil society. Meaningful and honest dialogue with the people that are most affected by a changing city is an essential component of almost any sustainability transition. Students are optimistic about looking for the unexpected, but hesitant about participating in something they feel is

<sup>5</sup> The Living Lab course is a six-month project where students work on a real-world challenge within the Metropolitan Area of Amsterdam.





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not genuine: be open to the unexpected. Their third and last recommendation involves crossing boundaries. Whether it is to look beyond city boundaries to close loops, or the disciplinary boundaries to find comprehensive solutions, we all need to look beyond the practices that we know. It takes courage and risk to do so.

### **The Education they Require**

Can we teach courage? We can certainly look for the kind of education that puts students in a position to act upon it. Within MSc MADE, we use Living Labs to help students become comfortable with the complexities of sustainability transitions. Because they are asked to act on the change they would like to achieve, their projects take the form of what we call urban acupuncture: tiny but powerful interventions in the city's existing system. This kind of education, which puts young people in the position to experiment on the city, might be a model that could be applied at a larger scale than this specific higher education program.

The future is unknown and, to a large extent, unknowable. But one thing we can be sure of is that there will be next generations. It is not only our responsibility to pass on this world, these cities, but to allow the next generations to take part in shaping the cities they want to live in. Let the city become a reflection of their future.

Nina Bohm

PhD candidat at Delft University of Technology

*The recommendations in this letter contribute to the following Sustainable Development Goals:*







## QUOTES ON VOICES OF THE NEXT GENERATION



**Annie Berendsen** - Project employee,  
Team Economic Homelessness, De Regenboog Groep

*Dare to explore unconventional ways of working together with stakeholders that are directly involved in the day-to-day practices of the city and find a way to come up with much needed solutions. In order to solve complex challenges, it is crucial to work interdisciplinarily. One of the core responsibilities for the mayor should be to ensure that different policy areas and stakeholders are communicating and working together. Where it concerns economic homelessness, it is up to the municipality to bring together all the parties involved in the urban context. This will lead to new perspectives and innovative ideas.*



**Diederik van Hasselt** - MSc - MADE Alumni / Metropolitan Innovator and Physicist - Open to Work

*Dear Mayor,  
How and from where will your city get its green hydrogen?  
As industry cannot be decarbonized without green hydrogen as the feedstock; they will be the first sector to lay a claim on locally produced green hydrogen. It's likely that no hydrogen will be left for the mobility and built environment sectors. So, dear Mayor, if your city wants to use green hydrogen to heat homes and fuel the public*



*transportation system, start thinking about your import and distribution options: Do we need a Pan-European transport corridor that extends to Saharan regions? Can we retrofit our natural gas network, or is new infrastructure necessary? Surely, hydrogen will be available someplace, it's just a matter of getting it home.*

**Brian van Laar** - MSc Student, Metropolitan Analysis, Design and Engineering MSc MADE

*One of the biggest challenges mayors face today is the lack of affordable housing, and housing shortage in general. Although the shortage in most cities is in part due to the 'general' shortage in the housing stock, another phenomenon is also at play: the lack of circulation in the housing market. An adequate housing supply includes a housing stock that meets the needs, income, stage in life, and lifestyle of each target group. Right now, due to the lack of circulation, this adequate housing supply is constrained. My advice to mayors across the world is to stimulate the circulation in the housing market, by identifying the specific housing profiles of your citizens, and use co-creation to come up with area-specific instruments that improve the flow in the housing market.*



## QUOTES ON VOICES OF THE NEXT GENERATION



**Carolina Jimenez Bertoli** - MSc Student, Metropolitan Analysis, Design and Engineering (MSc MADE)

*Power generated from renewable sources is crucial but not sufficient for decarbonizing our energy system. In this context, green hydrogen is vital to filling the gaps in future challenges that will likely be encountered in a carbon-free economy. Thus, this calls for implementing a Geographic Information System (GIS) for the hydrogen market that will contribute to efficient energy management in urban areas. The tool can be used, among other things, to identify the potential supply and demand areas and levels, determine the best location for the infrastructure based on gas production, distribution, and storage, and prepare a comprehensive plan for trading the surplus (export) or shortage (import) at local, national, and regional levels. On the other hand, the socio-technical aspect is key to developing a truly effective GIS tool. Taking the latter into consideration, I would further suggest incentivizing stakeholders to participate in the co-creation of this tool to make it more inclusive and democratic.*



**Jelle Burger** - MSc MADE Alumni and Project Officer of the Resilient Delta Initiative (TUD/EUR/EMC)

*Urban challenges do not stop at city borders. Urban challenges and solutions scoped within existing municipal borders tend to externalize the (negative) effects to other municipalities, regions, and countries. The most prominent example is the transport of used resources ("waste") to dump sites outside the city. My advice would therefore be to "look beyond your borders" to find comprehensive solutions to urban challenges.*



**Klaas Tromp** - MSc Student, Metropolitan Analysis, Design and Engineering MSc MADE

*In many cities across the Netherlands there is friction between the Municipality and residents. Municipalities are typically resistant to change in a city. Although it might seem hard, it may be time to let go of that resistance. Engage and involve the citizenry early on in the change process. Or even better, encourage them to take the initiative and facilitate them with appropriate resources to achieve the change they want to see. Citizens are more capable than you think, and if you guide them instead of control them, it might lead to wonderful outcomes for our cities.*



## QUOTES ON VOICES OF THE NEXT GENERATION



**Merel Schonagen** - MSc MADE Alumni and Sustainable Spatial Development Consultant

*The housing shortage has led to congestion, overly high rental and purchase prices, and inadequate housing in the market. To take a first step in achieving a more inclusive market with adequate housing for every Dutch resident, mayors should look beyond (re)building houses and improve the 'flow in the housing market'. Since every municipality has unique characteristics, so do its residents. Thus, using general categories like 'starter homes' and 'senior citizen homes' to identify the housing needs of residents is not enough. Instead, specific housing profiles need to be defined for matching (existing) (policy) instruments to the housing needs and requirements of residents. This would allow mayors to ensure that the right instruments are used in the right place and enable residents to find adequate housing.*



**Lauri Schippers** - MSc MADE Alumni and Trainee in Climate Adaption at the Province of Utrecht

*The impact of novel innovative solutions on cities should, by necessity, be tested - and if possible quantified - in order to determine their performance and reliability. All too often, novel innovations are implemented in pilot projects that are not properly*

*monitored or evaluated. The changing climate, however, demands urgent action to make cities climate-adaptive and future-proof. Knowing what innovations are most effective for a certain area is an important first step in achieving this. Given that many of the cities across the world have a similar climate profile, we have a great opportunity to share the results of our respective pilot projects and learn from each other's experiences. We can then harness the knowledge gained to scale up the implementation of climate adaptation measures and other innovations. To that end, my recommendation to mayors across the world would be to create and implement a monitoring system for pilots and other innovations and make the ensuing results publicly available.*



**Abel Hemmelder** - Sustainability Coordinator at Artis Zoo

*Every mayor should appreciate the complexity of interconnected mechanisms that is endemic to an urban area. To create a truly sustainable city, the mayor should move from theory to (urban) living labs to test out innovations in the field rather than on paper. Get out there and create! By doing so, the mayor will become the builder of a futureproof and livable city.*



**CALL TO ACTION AND  
CLOSING WORD**

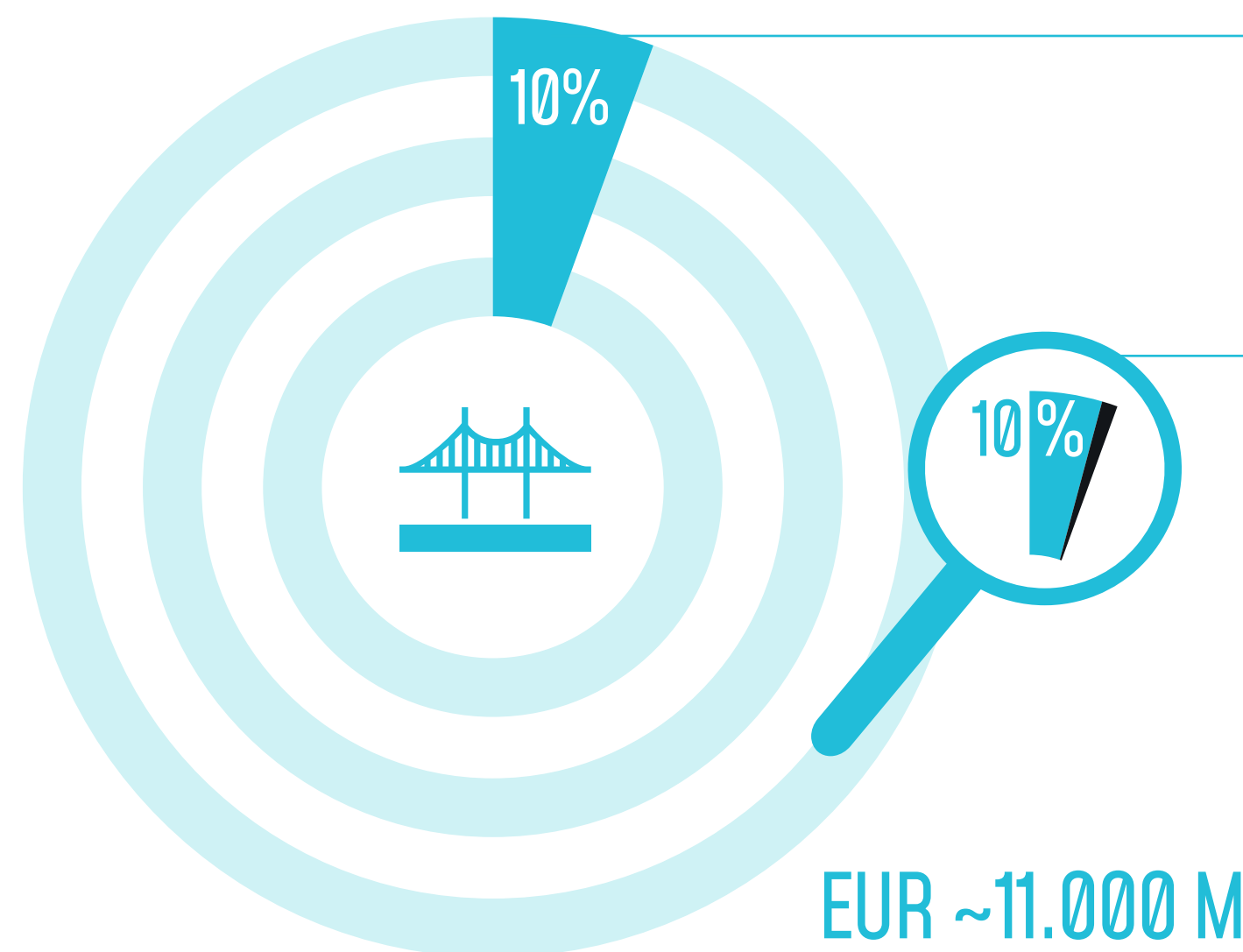


# CALL TO ACTION AND CLOSING WORD

If we continue to abuse our natural resources like we do today, we will not have any left for the future. That is why we must develop capabilities to innovate systematically. But how do we do that? We do that by allocating 10% of our annual urban spending to innovation. This requires parties to work closely together, bear the risks together and learn together. We must learn to trust each other and create a safe space dialogue. This will provide the city with a permanent innovation infrastructure with a digital twin; climate-

adaptive and circular solutions; business cases, job market innovations, new standards and knowledge that is vitally important to the world. And give entrepreneurs an opportunity to turn their new ideas into a global business case. So, dear Mayor, citizens, companies, researchers and all other urban leaders of our time: Our cities can't wait. We have to think big, be courageous and take bold action!

## ANNUAL SPATIAL PLANNING BUDGET



### 10% of the spatial planning budget

The 10% idea is constituted around the rationale that asset owners, such as cities and provinces, use 10% of the projects and space set aside for their regular maintenance and replacement programs for innovation initiatives and enter into innovation partnership agreements with industry and knowledge institutes

### 10% budget, time, and energy

- Within these projects, 10% of the budget, time, and effort is committed to innovation investment (1% of the total budget). With a total annual budget in the Netherlands of EUR 11,000 million, this translates into an annual innovation investment by asset owners of EUR 110 million
- This investment is also matched by the two other components of the triple helix





### Podcast Hosts

Exploring solutions for urban challenges at the AMS Institute kitchen table with **Sacha Stolp, Program Director of Futureproof Assets for the City of Amsterdam,** and **Kenneth Heijns, Managing Director of AMS Institute.** Two leaders dedicated to building strong Triple Helix partnerships for futureproof cities.



### “You just listened to the Mayor’s Manual Podcast”

A year of conversations, laughter, amazement, exploration, and discovery is behind us. We would like to thank Jaleesa, Scipio, Maartje, Yassar, and all our guests at the kitchen table, not only for embarking on this amazing adventure with us, but also for sharing in the experience as travel companions. Looking back, you sometimes forget just how much effort went into it. How you thought that putting together a book about your journey would involve nothing more than including the right station and the shortest or most beautiful route to that wonderful destination. What you didn’t realize was that in order to discover all that beauty, it was essential to get lost and take the wrong road while wandering past the wrong places.

That’s why we hope you don’t see our story as just a travel guide filled with beautiful places, but rather that it inspires you to embark on a journey of your own. That there’s no such thing as getting lost or taking a wrong turn, they’re



## CALL TO ACTION AND CLOSING WORD

just part of the journey and the exploration. Most people you meet are decent, have cool, surprising and new stories and insights. That's what makes traveling so much fun. Unpredictable, wild, and a thousand times more amazing than the pictures you checked out online before setting out on your journey.

***“Together with industry, new partnership, government, and knowledge institution leaders, we are creating a new story: a living narrative. As it turns out, we have the knowledge, capabilities, and resources to act. And with the right mindset, skills, and confidence, we have everything we need for a hopeful future.”***

Transition is a journey, and it doesn't come without chaos. It scares and excites us, but it is necessary if we want to ensure our safety and the safety of our children. If we want to give ourselves and our children the freedom of clean air, and a life without fear of drought, extreme rainfall, and sweltering heat. A world where there is enough for everyone.

***“Transition is a journey, and it doesn't come without chaos. It scares and excites us, but it is necessary if we want to ensure our safety and the safety of our children.”***

Let's take big steps now. The leaders we have spoken to over the past year have long started the journey. Together with industry, new partnership, government, and knowledge institution leaders, we are creating a new story: a living narrative. As it turns out, we have the knowledge, capabilities, and resources to act. And with the right mindset, skills, and confidence, we have everything we need for a hopeful future. This is our collective living narrative and we're happy to share it with you. In the hope that you also will pass it on and share it, and that we all will then share and embrace it. Because if we do, soon there'll come a day when we don't know any different, it will just be our living narrative.

Thank you all so much!

Kenneth & Sacha



# COLOPHON

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