wood.

A Wood viewpoint

A new reality for urban mobility

Equipping cities for a resilient future by embracing change
and adopting smart solutions

Our new reality

The world requires more sustainable and connected urban mobility options than ever before, as cities manage pandemic recovery, climate impacts and resource constraints. To achieve that, we need city and transportation leaders who embrace change, focus on smart solutions and equip urban areas for an unknown future.

Mobility is about connecting people to the places that enable us to live to our potential – workplaces, schools, housing, goods and services – through sustainable infrastructure, innovative technology and an improved user experience. In our world of frequent disruption, constant change and ongoing uncertainty, navigating the current and predicting future trends for urban growth and smarter mobility presents both immediate challenges and a host of exciting possibilities.

According to the World Economic Forum's annual Global Risks Report published in January 2020, climate change topped the 2020 global risk agenda with economic risks disappearing from the top five factors. The ongoing pandemic shows that these and similar predictions can change in an instant, with infectious diseases and economic downturn now key risks in 2020 and beyond just since the report was published.

The significant change reinforces the importance of transportation authorities, operators and developers giving wide consideration to global risks within their own local context. A good handle on how cities and regions are vulnerable to these risks, as well as an open mind to re-imagine and retrofit systems and technology, will help maintain a stable flow of people and goods in changing conditions.

Four concepts of smart mobility should be top of mind for all transportation stakeholders as a framework for defining and analysing intelligent solutions:

Connected - Enhancing quality, efficiency and performance of urban services through integrated planning and innovation in customer service and technology.

Sustainable - Meeting the needs of the present without compromise to future generations and our planet.

Resilient - Maintaining continuity through all economic, pandemic and other catastrophic shocks and stresses.

Liveable - improving quality of life, public health outcomes, safety, health and well-being of people and communities.

By applying our current global backdrop of uncertain pandemic recovery, unpredictable economies and shifting social trends to these concepts, we realise our vulnerabilities and identify opportunities for our new reality.

World Economic Forum top 5 global risks in terms of impact (5-year outlook)

2016	2017	2018	2019	2020
Climate action failure	Weapons of mass destruction	Weapons of mass destruction	Weapons of mass destruction	Climate action failure
Weapons of mass destruction	Extreme weather	Extreme weather	Climate action failure	Weapons of mass destruction
Water crises	Water crises	Natural disasters	Extreme weather	Biodiversity loss
Involuntary migration	Natural disasters	Climate action failure	Water crises	Extreme weather
Energy price shock	Climate action failure	Water crises	Natural disasters	Water crises

■ Economic ■ Environmental ■ Geopolitical ■ Societal

Wood viewpoint: A new reality for urban mobility

Connected

In response to the disruption to the economy, daily life and the flow of people and goods, we have seen transit buses deliver groceries to vulnerable residents in Canada, drones deliver COVID-19 test kits in rural Ghana, and e-bikes used for restaurant food delivery in Europe.

As economies reopen, the movement of people and goods will likely become more responsive and integrated, with an emphasis on public safety and leveraging customer-facing technology in new ways. More than ever, transit users expect real-time information on service-level adjustments, physical distancing, travel conditions, and public health alerts. The pandemic is also carving out heavier demand for mobile app-based curbside pick-up and door-to-door deliveries, and contactless payment. Capturing and utilising real-time user data is key to adapting service levels and infrastructure capacity to align with demand in the new normal.

Key in connectivity, however, is not just the technology solution and ability to capture and understand data, but the willingness of society to embrace digital technologies and sacrifice data. The pandemic may facilitate a shift here also, as seemingly minor changes like digital virus tracing on mobile phones could be a sign that society is willing to accept a loss of privacy where benefits clearly outweigh the negatives, and this technology penetration could spread into other aspects of urban life.

Sustainable

Two weeks after European nationwide lockdowns were announced in March 2020, measurements from the European Space Agency's Sentinel-5P satellite revealed that nitrogen dioxide (NO_2) pollution in some cities fell by as much as 60% compared to the same period in 2019. This decline demonstrates what a difference turning off major urban pollutant sources in industry and transport can make. It challenges businesses and governments to consider what can be done differently to reduce our reliance on automobiles and manage our global average temperature through the reduction of greenhouse gas emissions, as called for in the Paris Climate Agreement (COP21).

Throughout the pandemic, we have seen a spark in more sustainable urban mobility practices in some cities and regions. Milan, long challenged with some of the highest air pollution levels in Europe, is working to convert 35 kilometres of streets to support cycling and walking, and other cities are following suit. China's government is making sure plans for electric vehicles stay on track despite restricted production by several other countries due to pandemic lockdown.

Although relaxed rules around curb uses for delivery trucks to reduce traffic congestion is not a new concept for many, we are seeing more municipalities implement flex zones to make more efficient use of space for deliveries and the public. We have also seen last-mile deliveries introduced in Padova, Italy, for example, reducing inner-city deliveries by over 1,200 km per day.

There's no single answer to efficient urban transport that achieves a greener future. This is an opportunity for public and private organisations to come together with proposals that promote more sustainable mobility for local municipalities. Transportation organisations must work with leading cities in smart infrastructure development to leverage collective global expertise and draw upon knowledge from global institutions such as the World Health Organisation, World Economic Forum and city sharing organisations such as the Global Resilient Cities Network to build sustainable infrastructure we need today for tomorrow.

Resilient

Global transit officials are facing the worst economic crisis in decades with commuter transport seeing up to 90% decrease in ridership in some cities and requesting billions of dollars in government bailout. Consumer trade and logistics industries have experienced supply shocks with disruptions of goods from China and demand shocks with an increased shift to e-commerce deliveries.

It's not clear how these services will recover: we need to accept disruption and uncertainty as our new normal and be ready with resilient solutions to adapt to fires, floods, droughts, pandemics, or whatever comes our way.

Our transportation systems are often fragmented and provide inequitable access. Our supply chains are overly reliant on international export and extended travel. To build more economic resilience, we need to rethink operating and business models to reconcile the added costs of improving public health and safety with profitability and, in the case of transit, subsidy gap. We need to also rethink how we allocate urban road space between motorised transport, and growing public demand for protected, safe and wider spaces for active mobility and outdoor enjoyment.

Liveable

The pandemic has had an enormous impact on how we travel, consume, work, socialise and communicate. As cities and regions flatten the curve of pandemic cases and testing, tracing and screening becomes more prevalent, public transit, shared mobility services and shopping will start to resume. We need to accept that public and personal health will play a larger role in shaping mobility than before the outbreak.

Benefits, as well as drawbacks realised from home working and online shopping for goods and services will inform the extent of communities returning to shared transportation and physical stores. Digital solutions will often fill the gap in physical user experience, accelerating the shift of integrating technology into every area of a business. It requires transportation leaders to embrace a new digital vision to reflect changing customer expectations and quickly adapt their organisations to new operating models. True success lies in an organisation's ability to make customer and employee lives better through seamless experience and operations using digital technology.

During nationwide lockdowns, the European Space Agency's Sentinel-5P satellite revealed that nitrogen dioxide (NO_2) pollution in some cities fell by as much as 60%.

Setting a new direction

By unlocking urban mobility solutions and ensuring people and goods get to their destinations safely, we empower cities to be future ready now.

Rapid response solutions

What should cities and their transportation planners consider in the short-term as quick, affordable measures to promote effective physical distancing with smart mobility practices? The following key opportunities can help offset the impact of COVID-19:

Creating a network of open streets for active mobility
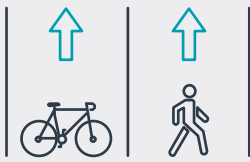
Repurposing motor vehicle lanes and on-street parking for walking and cycling mobility with a focus on routes that support essential workers.

Redefining curb lanes for physical distancing
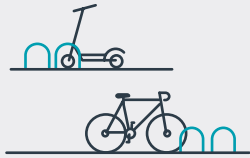
Transforming curb lanes and replacing static on-street parking spaces with pick-up and delivery zones, stands for bicycle and scooter parking and larger areas for queuing.

### Updating goods movement strategies for increased distribution

Rethinking goods and movement strategies to reflect safe 24/7 distribution, instant consumer fulfillment and relaxed on-street parking restrictions for trucks and delivery vehicles.

Integrating sustainable practices for safe public transit

Implementing physical distancing guidelines in every point of a journey and rescoping transit services to suit demand of essential workers.

Helping users find their way
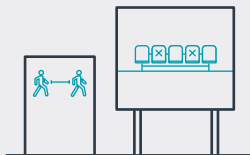
Producing signs to support workers and users in navigating and embracing new ways of mobility.

woodplc.com/news/blog/Pandemic-safe-mobility-response

Future ready mobility strategy

The following questions can help agencies and communities begin to shape their journey of reimagining and creating mobility plans that enhance physical and digital connectivity while fostering long-term resiliency:

- How am I leveraging digital technology to model new demands and reshape city networks?

- Am I tuned in to global mobility trends and do I have the right people to deliver smart infrastructure?

- How do my cost models, budgets and funding strategies align with new goals of all stakeholders and allow for flexible adjustments and better tracking of spend?

- Do my plans incorporate disruptive scenarios, incident preparedness and climate impacts?

Capturing and utilising real-time user data and incorporating societal preferences of home working and health and safety is key to adapting service levels and infrastructure capacity to align with new demands.

Wood viewpoint: A new reality for urban mobility

With deep experience in smart mobility projects, we help authorities, developers and operators adapt and build resilience to move communities forward.

By leveraging our experience, offerings and partnerships, we work with clients and stakeholders to unlock the following the solutions:

Capture real-time data and model new demands to reshape city networks

Determine future travel growth for movement of people and goods by collecting real-time origin/destination and volume data for all modes using mobile integration and tracking apps. Use dynamic adaptive demand models to shape multi-modal integration and connected mobility solutions. Incorporate changing societal attitudes and preferences of home working, public space, physical activity, and health and safety.

Accelerate digital technology to support remote working and operations

Develop connected worker and operations solutions to support global collaboration, data collection, analysing and monitoring of transportation assets and networks, progress and testing of built infrastructure, and problem solving in real time on computers and mobile devices.

Bring concepts for transportation systems and networks to life

Use digital twins to develop virtual reflections of engineering designs, processes and flows of manufacturing and distribution hubs, as well as integrated multi-modal networks for shared public transportation and independent active users. Capture data with sensors and monitor health of assets using artificial intelligence. Test how new networks stand up to shocks and stresses to achieve resilience.

Establish external partnerships to stay connected to global mobility trends

Work with public and private mobility as a service (MaaS) providers for safe, efficient and innovative ways to integrate multiple transport services into single, on demand platforms and enhance user experience. Leverage relationships with leaders in smart cities and international organisations for more global planning perspectives.

Align new skills, structure and tools to deliver smart infrastructure solutions

Determine new multidisciplinary skill sets, talent recruitment strategies and specifications, team structures, and people and project management tools to foster success.

Create innovative funding and investment strategies

Align with new direction and goal of government transportation investment. Review funding tools and models that rely on revenue generated from users and new demands, versus national or municipal income tax.

Develop agile cost models

Consider new demands, critical service and access to essential items, along with costs and benefits associated with moving people and goods to rethink how we invest and subsidise transport systems and supply networks. Focus on integrated yet shorter transportation networks and supply chains for flexible and resilient options. Demonstrate and maximise value with improved tracking of spend, allowing for adjustments.

Design solutions for a resilient future

Identify and prepare for disruptive risks and incidents to sustain today's mobility demands while working to protect future assets, operations and supply chains. Design and implement plans and protocols that integrate a range of potential and realistic shocks and stresses to mitigate, respond, adapt, and recover from the unknown.

Integrate climate impacts into mobility networks

Assess and plan for climate impacts in the lifecycle of projects across portfolios. Identify assets, activities, operations, and supply chains that must be protected and connected. Reduce carbon impacts to ensure viability, reduce risks and drive value.

Wood is a strategic partner to Global Resilient Cities Network (GRCN)

Together we continue to shape the global resilience movement by developing innovative technologies and creating smart infrastructure solutions for the urban areas that need it most. Our combined resources, experience and expertise to create scalable solutions for cities is addressing their most complex urban resilience challenges.

Wood viewpoint: A new reality for urban mobility

Contact us:

To find out how you can achieve sustainable recovery with your mobility projects, please **connect with us**.

John Howe
Transportation Advisor
T: +1 647 884 4802
E: john.howe@woodplc.com

Peter Hall
Director of Sustainable Infrastructure
T: +1 207 272 2153
E: peter.j.hall@woodplc.com

Lean more:

Read more about how we reimagine resiliency to transform how we respond and reshape what lies ahead:

🧭 **woodplc.com/sustainable-recovery/reimagine-resiliency**

About Wood:

A trusted partner for global transportation authorities, developers, and operators in bringing urban mobility projects to life.

We partner to develop strategies and solutions for sustainable and connected urban mobility allowing communities to be future ready, now. With deep experience in smart mobility projects, we help communities be digitally enabled to adapt to new demands, re-imagine, and retrofit systems.

By harnessing the power of ingenuity and disruptive technology, our collaborative teams provide integrated solutions to future-proof projects that help our clients and benefit society. Our focus on smart and agile solutions from the early stages of project planning through to operation and maintenance, allows for tailored solutions and flexible adjustments to enhance movement of people and goods while meeting social goals and building economic resilience.

Our capabilities include:

- Dynamic travel demand modelling and scenario planning
- Real-time data capture and analysis
- Mobility planning, design, engineering and construction
- Virtual testing and optimisation of transportation networks
- Remote working and operations solutions
- Emergency response planning and crisis management
- Climate impact and resiliency assessment and planning
- Funding, investment and cost strategies
- Organisational structure and capacity building

Wood is a global leader providing engineering, technical and project services for energy, industry, and the built environment. We provide performance-driven solutions throughout the asset life cycle, from concept to decommissioning.

woodplc.com   f @Woodplc   in Wood   🐦 @Woodplc   ▶ Wood