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HIGH-LEVEL 14th REGIONAL ENVIRONMENTALLY SUSTAINABLE TRANSPORT (EST) FORUM IN ASIA

18-20 OCTOBER 2021
Tokoname City, Aichi, Japan

A Non-motorized Urban Future for Climate Resilient Cities

(Background Paper for EST Plenary Session-2)

Final Draft

This background paper has been prepared by Justin Hyatt, Nidhi Vinay, Debra Efroymson and Piper Hollier, Carfree Cities Alliance for the 14th Regional EST Forum in Asia. The views expressed herein are those of the author only and do not necessarily reflect the views of the United Nations.

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BACKGROUND PAPER

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1. INTRODUCTION

A wise person once said: “everything happens twice – first in the imagination and then when it is acted upon.” This also applies to the various future scenarios of our cities. It is worth considering that our capacity to imagine the future we want, and to develop a coherent vision, is an essential steppingstone for getting there.

Will our future cities look more like Los Angeles and Jakarta, with thousands of motorists losing their temper while stuck in traffic? Or will our cities be more like Amsterdam and Copenhagen, where bicycle bells make a cheerful background noise while strollers walk down leafy promenades?

Since cars entered cities over a hundred years ago, planners and transport officials have struggled to accommodate their seemingly endless need for space and movement. On-street parking, parking structures, wider roads, flyovers, highways, elevated expressways. Businesses contributed petrol stations, repair shops, automotive supplies. Policies mandated parking in buildings; shopping malls were built surrounded by enormous lots. Without any particular consideration to the consequences, our cities were remodeled to meet the needs of the car. Perhaps more significantly, the very idea of transport was reconfigured, placing cars at the center of mobility.

Missing in the process was a focus on what the automobile was meant to provide, and initially, to some extent did (for the elite few, before it became affordable to the masses): safe, convenient, rapid door-to-door transport. Also missing was a discussion on the collateral effects of a car-based system, which by now have become all too clear: road crashes, air pollution, other pollution, congestion, noise, the need for vast amounts of space and money, social isolation, and an ever-worsening climate crisis.

It would be wise to take a step back and consider what an ideal transport system could deliver. Not just safe, convenient, rapid door-to-door transport, but also a system compatible with clean air, quiet surroundings, and strong communities. And a transport system more affordable, efficient, and environmentally friendly than the car-based system. When we look at those goals, it becomes obvious that a car-centric system is the most inefficient and the least able to meet the above criteria. As we will see throughout this paper, an urban mobility system built around walking, cycling, and public transit, with the car relegated to the fringes, would deliver all those goals and more.

In comparison to the automobile, walking and cycling have multiple benefits for cities and their residents. Walking and cycling require far less space than car-based transport. They require little investment to create good infrastructure. They do not generate pollution or noise. They are an extremely efficient way to move people over short and medium distances, requiring little space and thus not producing congestion. They require little to no terminal capacity (parking). They are affordable not only for governments, which need invest comparatively little in infrastructure, but also for the user. Walking and cycling provide significant health benefits: according to health experts**,** people need to be physically active for at least 30 minutes a day – a goal that is difficult for much of the population to achieve unless active transport is the norm. Walking and cycling also help create safety and sociability in cities, contributing to strong communities where people know and interact with fellow residents.

Two parallel trends are occurring in cities worldwide. Cities that traditionally relied on walking and cycling for transport have made a major shift towards adopting motorized transport in recent decades, with the resulting congestion, pollution, and crashes. This trend is notable throughout much of Latin America, Africa, and particularly in the lower-income cities in Asia. A simultaneous trend is for cities to begin reclaiming quality of life for their residents by controlling and reducing the use of the automobile and other motorized vehicles and instead prioritize walking, cycling, and rail-based public transit or BRT. This is particularly noticeable in Western Europe, parts of Latin America, and higher-income cities of Asia such as Singapore and Hong Kong.

With the two different trends yielding such different results, a tremendous array of organizations have sprung up around the world, from international groups to local walking /cycling clubs, demanding a better use of public funding and public space. Such as demanding for safe bicycle paths, instead of a new highway, better use of public streets as safe spaces for children to play and gather (Carfree Sunday, Ciclovia, etc), and more recently and necessarily addressing pollution and air quality in the midst of a climate emergency.

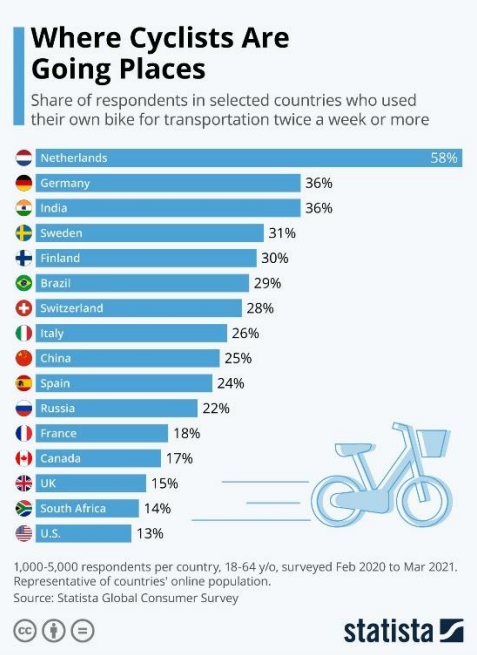


Figure 1 – Cycling across the globe

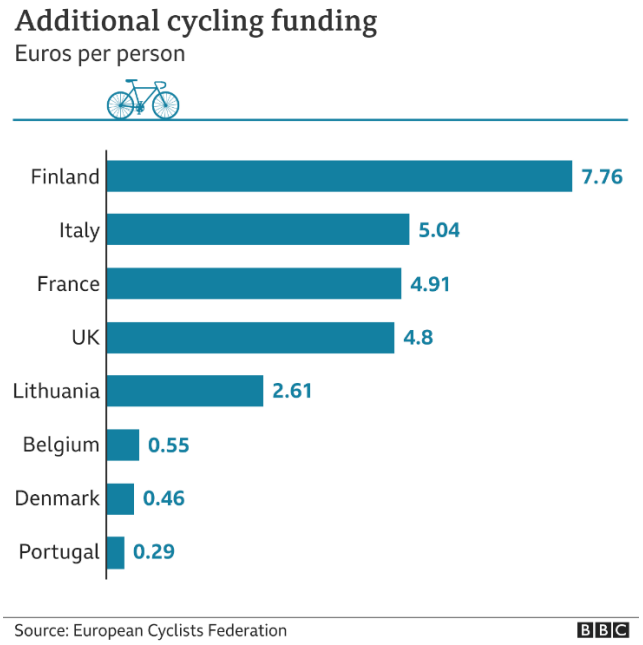


Figure 2- Investing into cycling, Europe

Some of the established international groups working to create better cities include the *European Cycling Federation, the International Federation of Pedestrians, SLOCAT, CODATU, BYCS, HealthBridge's livable cities program*, and various others that encourage dialogue and debate such as the *Walk21 conference, Velo-City, Foro Mundial de la Bicicleta (World Bicycle Forum), and Ecocity Builders*.

Similarly addressing the need for less car-dependent lifestyles is *Local Futures* focusing on local economies and reducing the need for long-distance travel, the degrowth movement, and those

promoting Gross National Happiness and other alternatives to the neoliberal model of economic growth that lies at the heart of transport systems based on cars and fossil fuels.

2. COVID-19 AND TRANSPORT

It would hardly be an overstatement to say that the Covid-19 pandemic has catapulted the world to a precarious place and brought us all to a crossroads. People the world over have recognized that humanity needs to re-examine the path it is on and make essential decisions about its future course. *Prior to Covid-19, car journeys across Europe represented 47% of all urban passenger journeys. Public transport represented 21% of journeys. Active transport comprised the remainder: walking (25%) and cycling (7%).*

In a report by the *New Nature Economy Project,* published by the World Economic Forum (WEF) in 2020*,* there was a keen perception of the importance of decision-making when looking towards post-pandemic scenarios:

> "We are reaching irreversible tipping points for nature and climate. If recovery efforts do not address the looming planetary crises, a critical window of opportunity to avoid their worst impact will be irreversibly lost. Decisions on how to deploy the post-Covid crisis stimulus packages will likely shape societies and economies for decades."

However, it appears that many national governments have not heeded this warning and have continued to pour capital into fossil fuel projects. Data from *Energy Policy Tracker*, a research effort run by several civil society groups, determined that of the initial bailouts (spent or earmarked by mid-2020) by governments of the G20 nations, **only one-fifth** of them went to reducing greenhouse gas emissions, while the remaining four-fifths of the $151 billion total bailouts supported fossil fuel projects.

Likewise, while the *International Energy Agency (IEA)* has called for the immediate discontinuation of any new fossil fuel exploration or extraction to meet the Paris climate goals, national governments, including the EU, have balked on doing this.

Yet there are many leaders who have seen the writing on the wall and have realized that now is the time to act. Carlos Alvarado Quesada, president of Costa Rica, said:

> **"***We must use the coronavirus crisis as an opportunity to reset humanity's relationship with nature. [My country] has shown that the transition to a carbon-neutral, nature-positive, economy brings greater prosperity and jobs. It's time to mainstream this model***."**

While there are many dimensions of humanity's interaction with the planet that require a course correction, the transport sector, and urban mobility as a segment of that sector, is one of the most

significant places where change needs to happen at a fundamental scale, and all over the planet. The good news is that what is good for the health of the planet is also good for cities and local economies, neighborhoods, and residents. Doing the right thing on the macro scale will greatly benefit those who are at the receiving end on the micro scale.

The next section looks at some examples of bold moves taken by a number of cities since the start of the corona virus pandemic. These are situations where cities saw the opportunity to explore and experiment, in order to come up with both short-term solutions for social distancing and travel, and long-term improvements for sustainable mobility.

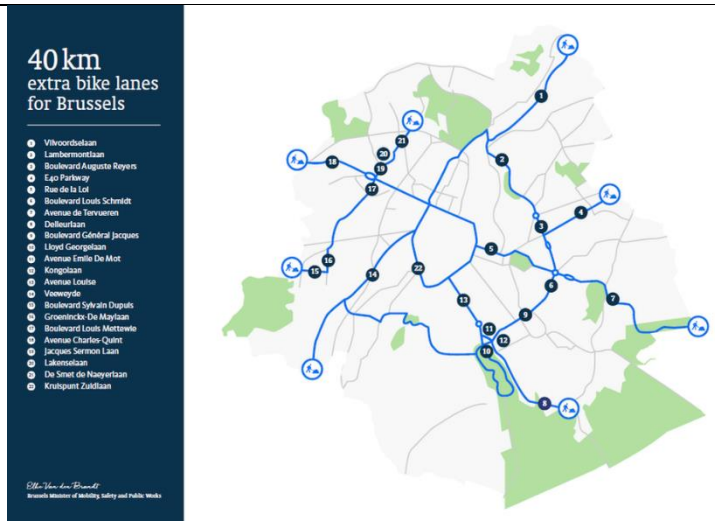
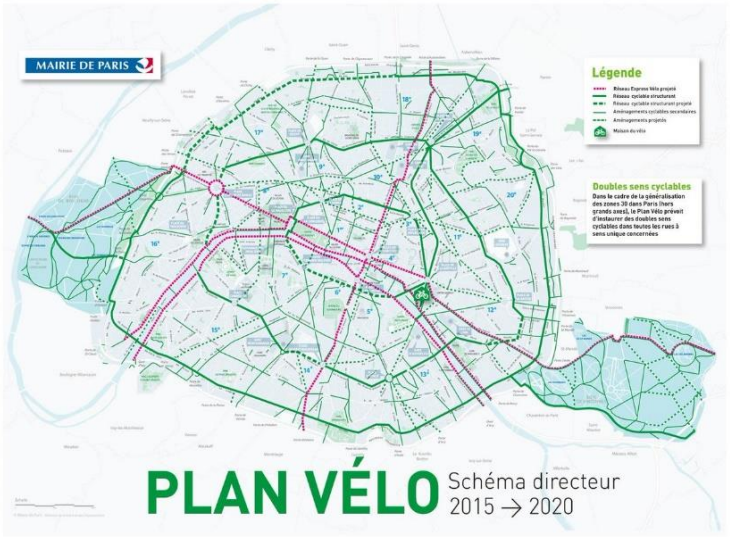
Pedaling through the pandemic – Snapshot of global efforts

Milan – One of the first cities to respond with transformational steps was Milan. During a hard lockdown, the northern-Italian city saw motorized traffic drop by up to 75% while air pollution also plummeted. Officials hoped they could steer the city in a new direction and announced 35 km of streets to be transformed during the summer, while expanding citywide walking and cycling space incrementally.

Figure 3 - New Bike lanes, Milan

London's mayor, Sadiq Khan, announced programs of creating new pedestrian streets, while mentioning the ongoing challenge to "eradicate air pollution permanently."

In Budapest, Hungary, under the guidance of a newly elected progressive mayor, new bicycle lanes were added to the main ring road ("körút") – something that the local bicycle activists always dreamed of but didn't think they would live to see. The new bike lanes run parallel to the world's busiest tram route.

In Brussels, Belgium, the entire inner city (the "diamond") would be traffic-calmed and pedestrians and cyclists would be given priority.	 *Figure 4 - New cycling routes, Brussels*
Paris, France deserves special mention, as it had already been on track to become a less car-based city, thanks to the pioneering mayor Anne Hidalgo. Her **Plan Veló** promised to make every street cycle-friendly by 2024 and remove 72% of the city's on-street car parking spaces. She and the city's transportation department made use of the crisis to speed up already existing plans.	 *Figure 5 - Plan Velo, Paris*
In Bogotá, Colombia, mayor Claudia López closed 117 km of streets to cars to make cycling and walking easier during the lockdown. Many of these streets were already closed on Sundays for Ciclovía; López extended the closure to weekdays and added another 80 km of cycle lanes to the city's already extensive cycling network.	 *Figure 6 - Bogota's Cycling routes*

The Slow Streets movement in the United States: Since April, cities like Oakland, Minneapolis, Washington, DC, and New York City have seized the opportunity to transform their public spaces by converting them to "Slow Streets" – spaces that give pedestrians and cyclists more space to practice social distancing while being outdoors. Oakland, California, has set aside 74 miles (119km) of its streets – that's 10% of its entire grid – just for recreation. Likewise, Lake Street in San Francisco was converted into a Slow Street, as an emergency response program to allow for more socially-distanced essential travel.

Figure 7 - Pedestrians walk along Lake Street, one of the designated Slow Streets in San Francisco on 4 May 2020. - Douglas Zimmerman/SFGate

The Slow Streets movement takes advantage of the key fact that most trips within cities are short. Data that was collected before the pandemic indicates that many trips made by car are short: 46% of vehicle trips in the US are less than 5 kilometers, while in England, ca. 60% of trips at or under 3 kilometers are made by car. If short distance trips can be made enjoyable, convenient, and comfortable by walking and cycling, this may provide the biggest opportunity to decongest the city, leading to evaporation of heavier traffic and rapid drops in pollution.

There are many more cities, from Kampala, Uganda to Oakland, California, where governments made use of a novel situation to put in place new policies to transform the urban environment, allowing non-motorized transport more space. It is still too early to know which of these cities will continue with this momentum to create positive and lasting change.

A key finding has been that cities that already had progressive mayors and other leaders or a demonstrated interest to make their city more sustainable were quicker and more willing to take on sustainable change.

Beyond Covid – Climate Risks, Urban Resilience, And Mobility

The world received a major shock in the winter of 2020 when the Covid-19 pandemic emerged. Suddenly economic goals took a backseat to the need to keep people alive and healthy. Desperate efforts like lockdowns, closures of schools and universities, and a major shift towards remote work and learning were quickly adopted to cope with sweeping fear. While for some time cities worldwide looked deserted and the sound of silence lingered in the air, a slow yet drastic and positive change took over. The air began to clear up and pollution levels dropped, while the health of the environment bloomed. As more and more people transitioned to working and studying at home, cooking for themselves and dining indoors, another development occurred: life in cities slowed down. Traffic congestion disappeared, along with it noise pollution and anger too. Instead, families ate, danced, exercised and spent more time together.

Covid-19 has been devastating to livelihoods and to human health, but it has also shown that it is possible for governments around the world to make difficult, unpopular decisions in the face of a major crisis.

Many have adjusted to working remotely, and many larger organizations are anticipating a hybrid work arrangement for their employees. While students have been eager to return to class, they too might be able to study at least partly remotely. People are willing to make major changes in the face of major threats.

As the climate crisis continues to make itself felt in the form of scorching heat, violent storms, severe flooding, and devastating forest fires, the real question has become: are the comparatively simple changes mentioned above enough to help get us through a much bigger crisis? On the positive side – If we can do it for Covid, can we do it for climate? It should be easier to convince people and governments to make significant lifestyle changes to diminish future threats. The following contain several critical points for reflection.

An example of collective will: Ozone depletion efforts

The international response to the ozone crisis has illustrated the potential of a unified global response. With terrifying holes in the ozone layer, governments took the crisis seriously, as they knew that public education was not going to be enough. They passed and enforced strict policies to ban the use of ozone-damaging CFCs. As a result, the holes have been mended, and the policies helped to slightly lessen the climate crisis.

Climate reality and risks

It is becoming evident that the effects of climate change are vastly different compared to those of the pandemic. This has been manifest in the form of severe weather events ranging from unusually hot

autumn days to catastrophic floods like those in Germany and elsewhere in Europe this last year. The actual reality is pretty grim for many cities globally. According to the World Economic Forum's Global Risk Report 2019, around 90% of all coastal areas will be affected by varying effects of climate change. Three-quarters of all European cities will be affected by rising sea levels, and more than 90 US coastal cities are already experiencing chronic flooding – a number that is expected to double by 2030. More than 340 million people live in deltas in cities such as Dhaka, Guangzhou, Ho Chi Minh City, Hong Kong, Manila, Melbourne, Miami, New Orleans, New York, Rotterdam, Tokyo, and Venice.

Cities in the tropics and the global south are expected to suffer severe forms of drought, famine, irregular rains, water scarcity, crop and food production shortages, and more. What needs to be done to correct the course and ensure that global temperatures stay stable? How fast does this need to be done? What if the climate crisis could be dealt with at the same level of urgency as the Covid-19 pandemic? The escalating climate crisis demands a comprehensive, swift, and courageous set of actions.

Bigger and bolder visions for resilience

Cities world over are developing extensive climate adaptation and mitigation strategies in the hope of building resilience. Some are a little bolder than just preparing for the rains, and through this paper we will highlight some of these visions and how they are closely linked to sustainable mobility. Across the Netherlands, cities like Rotterdam are converting ponds, garages, parks and plazas into part-time reservoirs. They're also revitalizing neighborhoods and improving equity to build social resilience to future water threats. The beauty of these kind of visions is awareness of the complexity of urban environments and the seriousness of the issues to face. And then accepting that nature needs to be given space – that means integration, and incorporation.

Complexity of transportation

An important aspect of the transport problem is that it needs to be addressed at multiple levels. Any individual city may take strong steps to make its city more livable through mixed uses and a focus on bringing destinations closer, so that people travel less, while rewarding gentler modes of transport. But if that city is on the receiving end of a major highway, people will arrive at the city expecting to drive. When national governments invest in rail rather than highways, stop subsidizing petrol, create rail-based systems for freight delivery, and encourage a prioritization of the local economy and local affairs, then it becomes easier for regional and local governments to take appropriate steps to tame the transport system and thereby reduce crashes, pollution, congestion, and all the other problems associated with car-based systems. Best of all, these changes would also dramatically decelerate the climate crisis.

3. LEADING THE WAY IN SUSTAINABLE TRANSPORTATION

Opportunities in sustainable transport

Options for sustainable transport can be quickly summarized: they involve the use of public transport, walking, and cycling. Practical urban mobility systems that rely exclusively on these three pillars are not only feasible, but actually exist in a select number of cities.

While the importance of public transport to the life of a healthy city is indisputable, active mobility is closer to the focus of this paper. Suffice it to say that public transport is commonly considered the backbone of any urban transport system, and public transport requires last-mile connectivity which can most efficiently be provided through better infrastructure for walking and cycling.

Walking and cycling are vital components of mobility because of their ease of use. Persons without major physical handicaps can reach any destination in a small or medium size city by either of these modes. Most barriers do not relate to the modes themselves, but rather to the urban environment – such as congestion or dangerous traffic levels or a complete lack of amenities.

The reality of what is possible can be witnessed directly in the city of Copenhagen, Denmark. In 2020 the modal share of cycling was 26% while the modal share of walking was 30%, for a combined percentage of 56% of trips made without burning fuel. In cities where cycling is just being discovered (or rediscovered), modal share might hover around 1-2%. Perhaps even more telling, trips within Copenhagen by bicycle for work or education are at a phenomenal level of 56%.

Even though Copenhagen can boast such incredible numbers, there is still appetite for more. The city has a plan in place to further reduce automobile transport, from the current 31% of trips down to 25%. This is an important point. While many cities have gradually begun to implement bicycle-friendly improvements (some faster than others), many still miss a crucial component – allocating the proper space and environment for active mobility.

In the 20th century, a dramatic saturation of available city space by automobiles took place. As a result, cities suffered from a perpetual rush hour. This created an uncomfortable realization for anyone sober enough to stare the facts in the face: if people are sincere about taking action on the climate emergency or just making the city more livable, then specific steps must be taken to limit automobile use, automobile infrastructure, and driving habits. With limited space, accommodating all modes is simply not feasible. And when there isn't enough space for both bicycles and cars, it does not make sense to eliminate the smaller vehicle.

Unfortunately, many cities have chosen to try to have it both ways: bring some improvements for cycling while continuing to cater to the automobile. Examples of this are when a bicycle path is painted on a sidewalk, which diminishes the space for pedestrians, but does nothing about the allocated road space for cars. In the long run, this leads to pedestrian-cyclist conflicts, unsafe situations, frustrated bicycle users, and just as much driving, pollution, and congestion.

Any city that aspires to have cycling and walking conditions like in Copenhagen or Amsterdam has every chance to do so. But they also need to sign up for a diet – an automobile diet. Changing the

breakdown of travel behavior is known as modal shift: a planned and conscientious process of getting people to drive less and cycle or walk more (or take the bus or train).

Amsterdam is a good case in point. In its "*autoluw*" program (translatable as "car-lite") it foresees the gradual elimination of thousands of centrally located, on-street parking spaces. Other cities have also taken direct steps to reduce automobile infrastructure. Oslo, Norway has a program that foresees a certain number of car parking spaces removed every year, street by street, likely following the successful example of Copenhagen, which eliminated 2-3% of its downtown car parking spaces each year for decades. Ljubljana, Slovenia has pedestrianized virtually all of its downtown, as a part of its Sustainable Development Strategy (2020). Other cities use high parking charges, congestion fees, licensing restrictions, and other measures to reduce car use while encouraging use by better modes.

A later section of this paper will give an overview of specific actions that can be taken and measures needed in order to create the right conditions for active travel to flourish in any city. Before diving into details, it is important to understand that a detailed plan to increase opportunities for active travel must be accompanied by plans to disincentivize car use. Furthermore, a timeline to carry out those actions, with very concrete goals and key indicators, is essential.

If a city does embark on the path to greater sustainability by encouraging more cycling and enabling foot traffic with better access, amenities, and destinations, and limiting automobile access – or removing it entirely where appropriate, then such a city can also expect improvements in air quality and in the health, happiness, and well-being of citizens. More foot traffic and better bicycle access to shops is virtually a guarantee that more customers will visit. The city itself will become more competitive, attracting talent and increasing its economic potential. All these changes translate into greater resilience, which in turn means that the city and its citizens are better prepared for emergencies and can reduce the potential fall-out of economic, political, or ecological insecurity.

EXAMPLES FROM ASIA

In 2018, Asian towns and cities were home to 54% of the world's urban population. Therefore it is of utter necessity for them to become more walkable. The most walkable areas have mixed land use. These integrate commercial, recreational, educational, and residential areas with public transport hubs; they are interconnected with extensive walkable networks.

The following examples are taken from the South Asian and East Asian regions. Some of them can be categorized as Covid responses, while others predate Covid. Yet all of them demonstrate the uptake of sustainable practices in the field of transport and urban design in Asia. There are many more examples than could be given in this section.

Singapore: While this city state is known for its pioneering congestion charge as well as for the fact of being an extremely modern and clean place, it has also taken steps to implement NMT strategies, as the following photos illustrate.

Figure 8 – A woman cycling past a row of shared bicycles parked outside Our Tampines Hub. (Photo: Facebook/Baey Yam Keng)

Figure 9 – A path in Tampines, identified in 2009 as Singapore's first cycling town. (Photo: Facebook/Baey Yam Keng)

India: Multiple cities rise to the challenge of cycling and pedestrianization

While the economy in general has been suffering under Covid-19, the bicycle business has been booming. Multiple stores in the country recorded a 300–600 per cent spike in bicycle sales since lockdowns were lifted, All India Cycle Manufacturers' Association informed that the sale of bicycles had increased by 25 per cent in just one month.

Pune Municipality (India) enshrined walking design in their 'Urban Street Design Guidelines' (2016), using it to transform pedestrian environments.

Figure 9 - Chennai walking plaza

The Streets for People Challenge is an initiative of the Smart Cities Mission, Ministry of Housing and Urban Affairs (MoHUA), Government of India, to inspire cities to create pedestrian-friendly streets through quick measures in response to Covid-19.

Figure 10 - Church Street , Bangalore

The Chandni Chowk neighborhood in Old Delhi went through a surprising transformation from being a highly congested and polluted area to being renovated and turned into a pedestrian zone.

Vietnam: Carfree street events

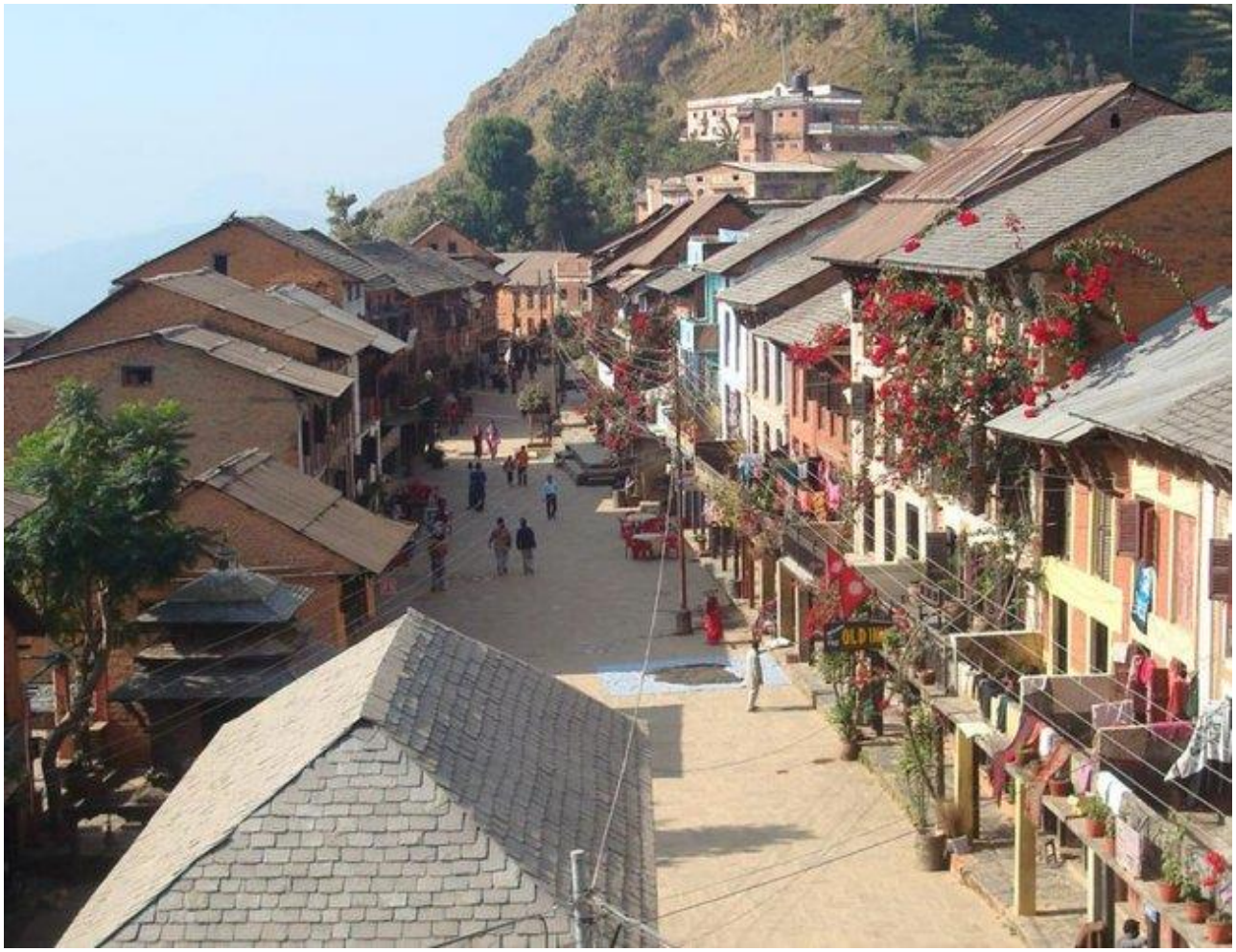
Cities in north, south, and central Vietnam all organize regular carfree street events. Hồ Chí Minh City has a City Book Pedestrian Street on Nguyễn Văn Bình Street in District 1. The popular event converts a street into a book lovers' zone, complete with book stalls, tables, and chairs – but minus traffic. The street has a special space for children, and display areas for family books, reference books for students and teachers, and books for business.

In Hanoi, since September 2016 a number of streets around the central Hoan Kiem Lake are closed to traffic from 7 pm Friday evening all the way through to Sunday night at 2 am in the summer (and from 6 pm through 2 am in the winter). The pedestrian street is immensely popular, with 3,000 to 5,000 people visiting during the daytime and 15,000 to 20,000 in the evening, which is also a boon for local cafes, restaurants, and shops. A number of events are organized throughout the weekend, including games, cultural events, and carnivals.

The central Vietnam city of Hoi An has been listed second among the top ten carfree cities in the world. The ancient part of the city is entirely carfree and only allows motorcycles for specific periods during the day. At other times the core city is free of all motorized vehicles, making it a delightful haven for tourists and locals alike. The city has also installed a bike share system and plans a bicycle lane to connect the city to a popular and beautiful beach nearby.

Nepal: urban heritage and carfree design

The small town of Bandipur, located between Kathmandu and Pokhara, is a superb example of ancient Nepalese urban heritage in the carfree context. While many cities in Nepal that modernized eventually allowed motorized transport to take over their ancient core, Bandipur maintains to this day a carfree center, with an attractive street surface and picturesque buildings. Other Nepalese cities have expressed interest in re-introducing a pedestrian core or are in the process of transformation.



Bandipur, Nepal

The Republic of Korea: Ecomobility World Festival

In 2013, the town of Suwon, 30 kilometers south of Seoul, pioneered the Ecomobility concept, which was initiated by ICLEI, by adopting the “one neighborhood, one month, no cars” experiment. During one month, the selected neighborhood moved by means of ecological forms of mobility, mainly NMT and shared electric vehicles. Private cars were not used throughout this period. The experiment was very popular, and many measures outlasted the organized festival. This and later Ecomobility festivals demonstrated the usefulness of temporary measures that have the ability to convince citizens and visitors by experiencing the improvements first hand.

Suwon, The Republic of Korea

4. ALIGNING WITH THE SUSTAINABLE DEVELOPMENT GOALS (SDGs)

If there’s anything that the last decade has shown, it is that achieving the SDGs is now closely bound to the interdependencies of different sectors of development and how they manage climate impacts. However, a non-motorized model of development is the only one that can not only help reach many of the SDGs but also function as a vital platform to permit the successful take-up and rollout of several necessary environmental and climate safe solutions.

Good health, gender equality, clean water and sanitation, decent work, economic growth, reduced inequalities, climate action, and even life on land are some the different areas that can positively gain through a non-motorized/carfree approach. Let’s look at some of these opportunities.

SDG 3 – Ensure healthy lives and promote well-being for all at all ages

- ***3.4 - By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being***
- ***3.6 - By 2020, halve the number of global deaths and injuries from road traffic accidents***
- ***3.9 - By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination***

The quality of the living environment and access to safe transportation go hand in glove. Global deaths and injuries from road accidents and the number of deaths from hazardous chemicals and from contamination of air, water, and soil can be addressed through the discontinuation of a car centered growth trajectory and the adoption of safe and sustainable alternatives.

Covid-19 has halted and even reversed progress in health, but the overall impacts of the pandemic and of living in confined environments has only yet to unfold. Lifestyle changes and the fear to venture outdoors has placed the world in a perpetual state of lockdown, while working from home adds to both physical and mental stress. Global studies indicate that since the onset of Covid many have complained about issues with eyesight, anxiety, poor posture, overweight, and heart and respiratory issues, as well as physical and mental exhaustion. Children have been especially affected, with lack of access to safe open spaces for physical activity and play, affecting their cognitive development.

Urban environments built to support the movement of people and active lifestyles, such as carfree streets, parks, local markets, community gardens, lakes and ponds, and mini urban forests, can provide the needed opportunities to safely rejuvenate as well as to interact within neighborhood communities, and thus will promote well-being.

SDG 5 – Achieve gender equality and empower all women and girls to economic opportunities

- ***5.2 – Eliminate all forms of violence against all women and girls in the public and private spheres including trafficking and sexual and other types of exploitation***
- ***5.5 – Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic, and public life***

The socioeconomic impacts of the Covid-19 pandemic have adversely affected recent progress on gender equality: violence against women and girls, and increased care work at home is affecting women disproportionately. Especially in underdeveloped nations, there is a steep gap between the genders regarding equal access to affordable mental, physical, and economic opportunities, partially because of unequal access to safe transportation. Covid-19 further added to this by stripping the safety and hygiene of public transport, leaving marginalized and vulnerable persons with few good options.

But the global crisis gives the world a chance to reshape and rebuild systems, laws, policies, and institutions that can advance gender equality. Similarly, focusing on non-motorized development can promote local economic and social progress and access to local health, welfare and community

support, thereby delivering a multifaceted approach to achieving gender equality and empowerment of women and other marginalized citizens.

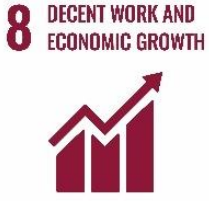
SDG 6 – Ensure availability and sustainable management of water and sanitation for all

- ***6.1 - By 2030, achieve universal and equitable access to safe and affordable drinking water***
- ***6.3 - By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally***
- ***6.4 - By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity***
- ***6.5 - By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate***
- ***6.6 - By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers, and lakes***

It is almost certain that cities and towns around the world will experience severe water scarcity, partly due to uncontrolled urban migration and inefficient use of water resources, but also due to the changing climate. Climate adds a strong dose of unpredictability, overturning patterns in rainfall and recharge of underground water systems. Climate disasters also pose the threat of polluting local water tables. This compounds the challenge of cities to reach the goal of ensuring equal access to water and sanitation.

It is essential to rethink what accessibility means at the city scale. If water and sanitation were to directly address neighbourhoods and communities through local water aquifers and storage wells, rain gardens, and water harvesting systems, it would be feasible to set in place a secure water management system. But doing so would mean reallocating and redesigning space at the neighbourhood level. Ecological solutions like bio-swales and retention ponds need a lot of land to function effectively, and that can be achieved by taking back land currently reserved for automobiles. Populations in developing countries will especially benefit if the environment around them encourages access to a continuous supply of water – also addressing the aspect of equity.

SDG 8 – Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all



- ***8.3 - Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity, and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services***
- ***8.4 - Improve progressively, through 2030, global resource efficiency in consumption and production and endeavor to decouple economic growth from environmental degradation, in accordance with the 10-year framework of***

programmes on sustainable consumption and production, with developed countries taking the lead

- *8.5 - By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value*
- *8.9 - By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products*

Economic growth and work opportunities are in for a major change, as the pandemic has shown. Many services have turned to virtual platforms and have shifted focus to making consumption accessible and easier, that is adopting supply and delivery.

But, at the same time, local businesses and small-time retail outlets, vendors, and local farmers have suffered the most. Going forward it is extremely important that cities ensure an environment conducive to fostering local economic opportunities and to localising economic growth. Looking inwards at community and neighbourhood economic resilience, cities the world over can achieve full and productive employment and decent work for all.

A basis for this kind of local growth is needed and can be achieved only through a supportive landscape – public space, green space, markets, community centres, open weekend vegetable markets, skill development centres, supported with safe, sustainable, and affordable transport infrastructure.

SDG 11 – Make cities and human settlements inclusive, safe, resilient, and sustainable

- *11.2 - By 2030, provide access to safe, affordable, accessible, and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons*
- *11.5 - By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations*
- *11.6 - By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management*
- *11.7 – By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities*
- *11.b - By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all level*

To create truly sustainable cities that are resilient and inclusive means to address all that is currently unsustainable – polluting transport systems, tragic road safety, poor accessibility, poor air quality, lack

of public space, and the often-lacking presence of an NMT-based model of urban mobility. Much of the content of this paper is reflected in SDG 11.

SDG 13 – Take urgent action to combat climate change and its impacts

- ***13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries***
- ***13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.***

What does resilience and capacity building mean, in a world that is marked by overconsumption and an inexorable drive to destroy natural habitats? The current mode of urbanisation is latched onto an outward trend of expansion, engulfing whole areas, in particular due to the demands that transportation brings with it. However, if the trend of reckless expansion could be curbed, then the need for excess infrastructure for roads, bridges, highways, parking, tolls, and much more would be greatly reduced. For example, the paved and impermeable surfaces that absorb heat and prevent drainage of rainwater could then be replaced by climate-friendly surfacing. There would be more space for nature – allowing it to expand and contract, and to sink and rise. Space for percolation, space to breathe, space to cool.

To ensure a broad acceptance of the need for climate mitigation and adaptation, more hands-on and experimental spaces need to be fashioned, closer to homes, closer to neighbourhoods, closer to schools, integrated with daily urban infrastructure.

SDG 15 – Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

- ***15.1 - By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains, and drylands, in line with obligations under international agreements***
- ***15.2 – By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally***
- ***15.3 - By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought, and floods, and strive to achieve a land degradation-neutral world***
- ***15.4 - By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, to enhance their capacity to provide benefits that are essential for sustainable development***

Between urban and peri-urban spaces, cities engulf landscapes without any concern for how the land and its ecosystem contributes to the overall wellbeing of its surroundings. This leads to many of the issues linked to biodiversity loss – desertification, soil runoff, pollution of water well, and even flooding.

Development in mountain towns is a huge cause of degradation of ecosystems around them – including the cause of many landslides as terrains are bulldozed for the creation of highways and roads. Similarly large parts of forests are destroyed in the name of connectivity – when clearly the only connection that is being planned for is the movement of heavy vehicles and pollution.

Sustainable mobility and a carfree model of urban living, focused on slow modes of travel and localisation, can be the catalyst to increase reforestation and conservation of landscapes and ecosystems. Permeable surfaces and sensitive urban greenery can benefit not only the environment but also the mental health and wellbeing of citizens.

5. A COLLABORATIVE PROMISE: The 2030 Aichi Declaration on Environmentally Sustainable Transport – Making Transport in Asia Sustainable (2021-2030)

By 2030, it is projected that Asia will be home to half of the global population, somewhere in the range of 4.9 billion people. Most or a majority of people will live in cities. Many of these cities are still being built, are only being planned, or have not even been conceived. Other cities are still quite underdeveloped. The impacts this will have on global carbon emissions is something the world should be extremely concerned about.

While carbon emissions as previous stated arise from many urban and industrial factors, cities in Asia will face a different kind of challenge – the effects of severe air pollution from urban transportation alone.

This challenge has driven the creation of the 2030 Aichi declaration, which is a noble initiative to bring together leading cities in Asia to make a conscious effort towards transforming urban transportation. The declaration has outlined bold strategies and goals to address and tackle vehicular emissions.

The six goals include: *working towards low carbon transport and environmental sustainability, conscious efforts to reduce deaths due to road accidents, investing in economic sustainability by prioritizing more funds towards mass public and freight transportation, and improving rural mobility and access to economic opportunities there by also decongesting major urban agglomerations. Two additional goals are focused on equal and continued access to sustainable mobility and national and regional transport*.

The declaration is the first attempt at breaking down the transport sector into its many different and complex components.These range from land use, integrated transport planning, and improving transport efficiency to looking at cross-sectoral funding and financing arrangements that give sustainable transportation a fair chance against the motorized threats of the streets and roads.

There are strategies to explore and assess the circularity of mobility systems – such as the use of public bicycle systems – while also incorporating inclusiveness in both the gender category and the informal sector category.

The declaration also addresses the much-needed removal of fuel subsidies and the implementation of mechanisms to penalize unsustainable transport.

6. BEST PRACTICES IN TRANSPORT PLANNING

This section covers a number of best practices in planning for better pedestrian amenities, more cycle-friendly cities and good overall mobility management and design. These serve as the basis and are further augmented by suggested action points in the Chapter 7: The Way Forward.

Pedestrian amenities

Design and infrastructure that encourage walking falls into these categories: safety, access, comfort, and recreation.

In cities where automobiles are still present, pedestrians are among the most vulnerable population groups, daily facing risk to life and limb by the automobile. Within the pedestrian population, children (to the extent they are even allowed pedestrian privileges) are the most vulnerable population. It is incumbent on every mayor, planning office, and transportation department to ensure the utmost safety for children.

The safety of pedestrians is determined by having protected physical space for pedestrians to use, without forcing them, by means of abrupt change in style or infrastructure, to be suddenly exposed to traffic, or to finding themselves in a confusing or unclear situation. Above all, the predictability of movement should be a given, where pedestrians can easily gauge their forward movement and know how to interact with the infrastructure, while simultaneously car drivers can predict the movement of pedestrians and can easily avoid putting pedestrians at risk.

While the detailed design solutions are beyond the scope of this article, the general principle should be understood: pedestrians need to have protected spaces to walk on, with any barriers to their safety removed. This means that intersections should be clear of impediments to seeing – thus car parking at intersections can never be permitted. Fast moving car traffic should be avoided in general, while ample and clearly visible space for crossing roads at grade should be provided at frequent intervals. Pedestrian bridges, which are unpleasant for pedestrians and send the message that the roads belong to the cars, should be avoided. For nighttime, well-illuminated spaces, using pedestrian-oriented rather than car-oriented lighting is a must. Sidewalks and footpaths should be level, avoiding curb cuts that facilitate car use while impeding pedestrians.

Pedestrian access means that all destinations can be reached easily by foot. Everything from train stations and transit stops to public institutions, shopping, schools, educational institutions, offices, and more: all these need to be easily and safely reachable by foot. Proximity and accessibility should therefore feature prominently in the planning stage of important destinations or buildings. For instance, the proliferation of shopping centers on the outskirts of cities (where real estate is less expensive) has been one of the biggest contributors tp sprawl and motorization. In those cases when there is no choice but to put a certain destination well outside of town, Transit Oriented Development (TOD) principles should be applied, which foresees public transport access as well as bicycle paths.

Amenities that enhance comfort and recreation are universally loved. Cities that have parks, woods, and greenways to stroll in greatly enhance urban livability. Sidewalks, plazas, and parks need park benches and even park tables and various types of public furniture. In hot climates, extra overhead shading will protect against the scorching sun, while rainy climates can benefit from cover against the rain. The ubiquitous arcades of Bologna, Italy protect against both. Pavement should be porous so as to counter the heat island effect, while the design of public space should be made attractive and colorful. Porous surfaces and more greenery will also help reduce urban flooding, thereby contributing to climate resilience.

A healthy city has many places of contact with nature. People benefit directly by being in close proximity to nature. A large admixture of green and plant life, including flowers, bushes, and trees, will bring to life the whole area.

One unfortunate trend in many cities is the tendency to cover every inch of ground in concrete. This involves an environmentally harmful process of extraction and construction, and it removes humans by a further degree from the natural world.

Bicycle amenities

As with better planning and design for pedestrians, so also the design requirements to facilitate cycling are only touched on in principle in this paper. Detailed descriptions are available elsewhere. For starters, safe cycling conditions for all can be facilitated by protected bicycle lanes. These need to have a smooth surface, be clearly visible and differentiated from other road allocations, be protected from motorized traffic and contain clear signaling and safety provisions at intersections. Bicycle lanes should not be installed on sidewalks, as this only leads to conflict with pedestrians and usually necessitates less direct transport flows.

Protected bicycle lanes have a particularly important role to play both for the safety of cyclists and for the inducement for the wider population to cycle. Studies show that in the absence of protected bike lanes, it is predominantly adult males who will venture by bicycle into mixed traffic. This means that all other potential riders are discouraged from cycling.

There are also different requirements for different street types. While protected bicycle lanes are highly useful on medium- and heavily-trafficked roads, streets with mild to no automobile traffic do not need bike lanes. Such streets only need visual cues and reminders that bicycles are welcome and a part of the transportation mix. For the sake of a continuous network of bicycle routes, painted lanes can connect to protected bike lanes on busier streets. The key in neighborhood traffic management and design is to ensure that automobiles travel at slow speeds and follow the principle of being a “guest” – from the “auto te gast” signs in Dutch cities: “automobiles are guests” and therefore must behave considerately towards other road users.

Other important amenities for cyclists involve abundant secure bicycle parking facilities, where bicycles are unlikely to be stolen. Just as for pedestrians, there should be easy and direct access to important

destinations, including public institutions, academic institutions, offices, shopping, and more. The transportation department responsible for programming traffic lights needs to pay particular attention to guaranteeing that cyclists are not disadvantaged by the traffic light system – if cyclists going at average speed have to wait at a red light at every single intersection, this will only serve to disincentivize cycling.

A final point related to planning and design for both cycling and walking is that new infrastructure should always be tested out in a pilot project phase and with temporary measures, before making permanent changes. A provisional bicycle path is cheap and quick to install, allowing for immediate use by cyclists, and providing a feedback loop framework for fine-tuning the infrastructure to the needs of the city and population using it. Trying out new infrastructure or traffic improvements is also the best way to allow unconvinced users to try a new system before it is permanent. This provides a level of reassurance – if anything doesn't work or is unpopular, there is still time to make adjustments before permanent infrastructure is installed.

Intermodality and mobility management

Rounding out the picture of better planning for active mobility, we need to consider mobility management and touch on the advantages of planning for intermodality. The latter term implies the ease of combining multiple modes of transport in one trip. One example is cycling to the train station, parking your bicycle there, and then traveling by train. In some North American cities, the use of bike racks on buses is popular, which greatly increases the distance that cyclists can easily travel. Bike rental schemes or public bike systems enable short trips all over the city, but they also provide an important puzzle piece for many – the last mile approach for those who arrived from further away. They also reduce the user's concern about bicycle theft.

Effective mobility management of a city will involve a multi-pronged, multi-agency approach, one that provides a proactive policy framework, efficient and sustainable services, and provision of essential infrastructure, as well as Transport Demand Management (TDM).

Running contrary to the belief that traffic will always increase and must be catered to, TDM instead looks at reducing unnecessary trips. TDM thus involves the management of transport user behavior, providing incentives and inducements that should lead to a more sustainable transport system.

TDM and mobility management have numerous points of leverage. Dominating these are well-managed infrastructure provision and associated tweaks, along with financial tools and incentives. Infrastructure for active travel should be attractive and inviting – otherwise people will not use it, or use it only begrudgingly. Residents will quickly realize whether a city has properly invested in quality infrastructure for walking and cycling, or that this was only an afterthought. This is why it is extremely important at the planning and budgetary stage to ensure that only quality projects will be invested in.

There are numerous potential financial incentives. Only a few examples are given here. For starters, the true cost of driving and parking are rarely paid entirely by the users themselves. Hidden subsidies

often cover additional costs, which means that motorists have an incorrect perception of the true cost of their mode of transport. It would dramatically "level the playing field" to charge automobile users more realistic prices, in part by ending fossil fuel subsidies and by acknowledging the true value of urban real estate. Higher fuel prices combined with higher parking fees and possibly also an environmental add-on tax will mean that the relative costs of public transport and driving will be far more realistic. Even with the current subsidies for driving still in place, many drivers erroneously believe that the costs they directly incur are less than they actually are. The price at the pump will always be only a fraction of the total costs of driving.

Where parking is still offered, removing parking places in the city center is by far the best place to start. Increasing parking fees and charging entry fees are potent tools to limit city center access by car. The success of the congestion charge schemes in Singapore, London, and Stockholm attests to this fact, while many cities have successfully discouraged car use through charging high prices for parking. Meanwhile, numerous other cities have introduced or entertained schemes like the congestion charge or designations of Low Emission Zones (LEZs).

Another planning tool, short of the complete removal of cars from the city center, is the circulation plan. This has been carried out successfully in Groningen, Netherlands and in Ghent, Belgium. A circulation plan divides the central areas into zones, putting up barriers for drivers to access other zones directly, requiring that they instead use the longer route on the periphery of the central area. Pedestrians and cyclists can easily move between zones. Canberra, Australia likewise makes it easy for people to travel downtown by foot and bicycle through special shortcuts, while forcing motorists to take much longer routes. This is an additional way to disincentivize all but the most essential trips from being done by car.

The best and quickest way to radically reduce automobile trips is to fully pedestrianize downtown areas. This can be done in an incremental manner by first removing parking lanes, then creating pedestrian streets and entire pedestrian zones. It should be remembered that the "loss" of automobile access will be compensated greatly by the "gain" of attractive space for pedestrians – residents and visitors alike. In every documented pedestrianization case, this has resulted in great improvements to the quality of urban living conditions. Shopkeepers also benefit, as far more people can access the area when streets are no longer clogged with cars. Even those who are initially skeptical will become persuaded by the new conditions once they experience the improvements. The vast majority of urban dwellers will benefit from and come to appreciate carfree zones.

7. THE WAY FORWARD

Lessons learned from tobacco control

Genuinely sustainable transport systems cannot be created until the role of fossil fuel companies and car manufacturers in lobbying governments for car-based systems is understood and countered. The tobacco control movement has been successful in reducing the power of the tobacco industry by negotiating for an international treaty, the WHO Framework Convention on Tobacco Control. The FCTC includes Article 5.3 on industry interference, which directly addresses the lobbying practices of the tobacco industry and its effects on national laws and policies. A similar mechanism may be needed to prevent the ongoing lobbying by the fuel and automotive industry. It is also helpful to understand the role of fossil fuel companies such as ExxonMobil in burying climate science and actively funding climate denial, despite knowledge of climate change since at least 1970.

It is not enough to give people a "choice" about whether or not to drive while creating car-based systems that make it very difficult to achieve necessary mobility without a car. Urban planning that creates separate zones for residences and businesses necessitates travel. Likewise, the design of mixed use cities, and particularly the newer model of 15-minute cities, enables and rewards shorter trips. This concept works well with traditional architectural features such as those present in Nepal,

People respond to the environment in which they live. Where travel by car is the norm and is encouraged, people will go into debt to purchase a car and use it even for very short trips. Where various measures are in place to make it more difficult to use private motorized transport, but where walking, cycling, and public transport are prioritized, people will respond accordingly. National, regional, and local plans and policies are thus all vital to creating a sustainable transport system.

The good news is that there is a lot that policy makers and local decision makers can do to facilitate the transition to sustainable transport practices, including better walking and cycling amenities, efficient public transport, and various measures to reduce the use of motorized vehicles.

Action points for local stakeholders and governments

For decision-makers and heads of transport departments, it is refreshing to realize that there are literally hundreds of different measures that can be effectively orchestrated in a city to nudge it in the right direction.

At the starting point, a matter of the heart deserves consideration: the best place to begin for any leader is to engage in auto-reflection. Does he or she have the absolute and sincere will to see meaningful change come to their community? Leaders and decision-makers who are dedicated to the well-being and present and future best interest of their constituency (meaning everyone, from the youngest to the oldest, richest to poorest) will have the opportunity to make a difference. Such decision-makers are in desperate need in many places, and often in short supply.

Improve urban design. Several good practices for pedestrian and cycle planning have already been covered in a previous section. Implementing these should be a minimum goal in every city, with the immediate dividends being safer and fairer mobility options for all.

Promote active travel. Directly promoting and encouraging the population to engage in active travel will help in the modal shift to these forms of transport. It will also have the effect of helping to build a healthier population. This translates directly into citizens becoming happier, kinder, and healthier. In other words, tangible results include fewer sick days at work, less of a burden on the health system, and even less social discord and conflict.

End fossil fuel subsidies. Subsidies that make fuel cheaper for the customer or enable automobile users to not actually pay the full price for owning and operating a vehicle end up costing the entire community, making it harder for sustainable modes of transport to prosper.

Redeploy parking spaces. A good example for moving away from subsidies is to discontinue parking spaces downtown. It has been proven that parking fees almost never reflect their actual cost to the community. See reports by Donald Shoup. It will benefit every city immensely to remove parking in the central areas. Not only will this allow for better use of those spaces, it will also discourage car use to the center. This is an area that requires bold leadership, as it is also a fact that a vocal part of the population will protest loudly at such moves.

Reduce the volume of driving. It is imperative to reduce the numbers of vehicles that pass through the city every day. A calmer city with less space devoted to driving is a much better city to live in. Many options exist. Providing high quality public transport and safe conditions for walking and cycling are a must. Removing parking and easy access to downtown destinations by car is equally important. Set up a plan of gradually increasing the area of pedestrian streets and pedestrian zones. Establish new parks and parklets throughout the city. Where roads still carry several car lanes, redesign road space to include wider sidewalks, ample bicycle lanes, bus lanes, green medians, or any mix of the above. Freeways within the city should be discontinued immediately and replaced by surface transit options, such as street cars, light rail, and bicycle lanes.

Make use of the principle of traffic evaporation. This refers to a proven effect that happens when a certain corridor (bridge, street, intersection) is made off limits to car use. While initially people fear that this will create chaos on the neighboring streets, what happens over time is that the overall area is traffic calmed. Lots of trips “evaporate,” which means that they are replaced by other modes of transport or may even be scrapped altogether. Understanding how this principle works is helpful for decision makers in being able to see through a policy change.

Start with pilot projects. It is highly advantageous to introduce changes in a temporary format, with structures that are cheap and quick to implement. Communication with the local residents explains this as a trial period, where everyone has the chance to see for themselves. Doing it this way will help remove the fears associated with the change, since it is understood that it can be easily reversed. It

will also save the city money, since any possible modifications can be done more easily once the design has been tested by real users.

Work with the residents. Even though many projects have a target audience in mind, namely the local users, these are often not consulted with, or have been included in a rather superficial manner. Local knowledge and ideas will always be of particular help in a transformation project. There is no reason to fear local input, since their active involvement will only lead them to identify with and support the projects or changes introduced. On the other side, locals will be able to help point out weaknesses of a given plan that might have otherwise gone unnoticed or discovered too late and resulted in an expensive failure.

The prospects for carfree cities

While a lot of this document has listed the many benefits and possible routes towards more sustainable cities, this has concerned mostly existing cities. It needs to be remembered that new cities are being built and others are being planned. According to some predictions a majority of buildings and structures that will exist in 2050 have not even been built yet.

Policy makers and authorities who have oversight of urban development, urban expansion, or the creation of new cities would do well to heed the urgent warning: the only way to avoid a catastrophe of environmental degradation and the detrimental effects of human activity and population clusters will be via a large-scale paradigm shift in planning. This needs to deliver a fundamental rescaling and revising of the functionality of urban fabric and spatial topography.

If there will be no brakes applied to unfettered growth, then the construction of new and wide roads all over the planet, as well as their use by millions of automobiles, including the vast space allocations they require, will be tantamount to slamming a huge wrecking ball into the earth, over and over again. The utterly destructive course of this path needs to be properly understood to realize that this model of development in the history of urban transportation is fully outdated and needs to be put to rest.

J.H. Crawford is the incontestable authority on carfree cities. He has authored the books *Carfree Cities* and *Carfree Design Manual*, taking cues from existing compact urban form and existing carfree cities like Venice, Italy and Fes al-Bali, Morocco. His design proposals for new city construction apply the best technical and conceptual information available concerning sustainable urban design. The books demonstrate in great detail how to design and plan for carfree cities, including solutions for everything from daily mobility needs to freight, emergency vehicles, and coexistence with ecological principles in a healthy environment.

The fact that several new development projects have included carfree design attests to the fact that this is a viable and attractive option, and one that could gain in traction in the future, in particular as humanity comes to grips with the frailty of the ecosystem and the urgent need to respond to the climate emergency. Among the projects already started or under construction, Masdar city in Abu Dhabi can be considered an early prototype, while newer plans exist for Neom city in Saudi Arabia and also for

the planned carfree city in Shenzhen, China. These may be just a sampling of the projects to come, and it should be stressed that a truly sustainable city built along the lines of carfree design require paying close attention to detail and to the provisions of an active and healthy population, based on active travel and proximity to nature.

The **Carfree City Alliance** is currently exploring the possibilities for planned new town development in Nepal, holding out hopes that the government of Nepal will be susceptible to the proposals and suggestions for carfree cities. It is the believed that once a number of projects become realized, the sheer attractiveness and range of advantages will become so obvious that it will become gradually easier and easier to convince governments to engage with this model.

Meanwhile, it is also hoped that forward-leaning cities can embrace the model and push the envelope in terms of carfree living. We already have an indication of carfree conversion from numerous cities, including Pontevedra, Spain, which made a splash by going carfree to a great extent.

The way forward is in no way pre-determined. The choices that cities make today will affect their functions and liveability, as well as the liveability of the planet, for many decades to come. Getting there will require bold leaders and other determined and courageous individuals, but also a consensus among practitioners and the wider population, that liveable and sustainable cities in the future need to be fought for and insisted upon, even in the face of huge obstacles or the overcoming of powerful opposition. The successes on the scale of streets and cities will lead to a large win on the planetary scale.

7. **CARFREE CITIES ALLIANCE (CCA) OVERVIEW – CORE AREAS OF ACTIVITY**

The Carfree Cities Alliance (CCA) is an international network of individuals and organizations calling for improved urban environment through the adoption and integration of sustainable practices, focused on people's lives rather than movement of motorized vehicles. While many organizations acknowledge that urban transportation systems are in need of reform – proposing the substitution of conventional vehicles with electric ones as a general solution – CCA takes the position that creating truly livable cities requires immediate shifts away from unsustainable lifestyles, especially the automobile culture. CCA advocates for a comprehensive transition towards use of non-motorized transport and reallocation of car-dominated spaces to provide lively civic areas and pedestrian amenities that cater to the health and safety of citizens.

CCA's theory of change necessitates working with a wide array of stakeholders to bring about the needed holistic and organic transformation. Having diverse opinions and experiences at the table is important to create positive change. Immediate steps may be undertaken to deliver a bold and optimistic vision: a sustainable society with a cleaner environment, improved health, and greater well-being for all. Such steps – be they micro improvements, pilot projects, or the introduction of new designs and amenities – are key to the long-term uptake of sustainable practices. Allowing urban dwellers to try out new situations and see first-hand the numerous advantages will help to build the broad support needed to enact even larger transformations.

Build Back Better Cities Campaign

Our global campaign challenges cities to think innovatively about ways to transform urban areas and transportation infrastructures both short- and long-term. Short-term measures will bring immediate change to areas that are congested, polluted, and dangerous with interventions such as intersection improvements, pedestrian refuges (such as traffic islands), pop-up bike lanes, and full pedestrianization of streets and squares. These kinds of measures support the long-term transition to livable cities by acting as steppingstones and facilitating experimental phases while opening up a perspective on possible future scenarios.

The CCA global campaign combines advocacy with on-the-ground action. The campaign involves collaboration with allies in cities throughout the world. CCA has linked up with partners who have strong ties with local communities and thus reflect important local knowledge. These partners are likewise well positioned to engage with city administrations through technical and advisory support.

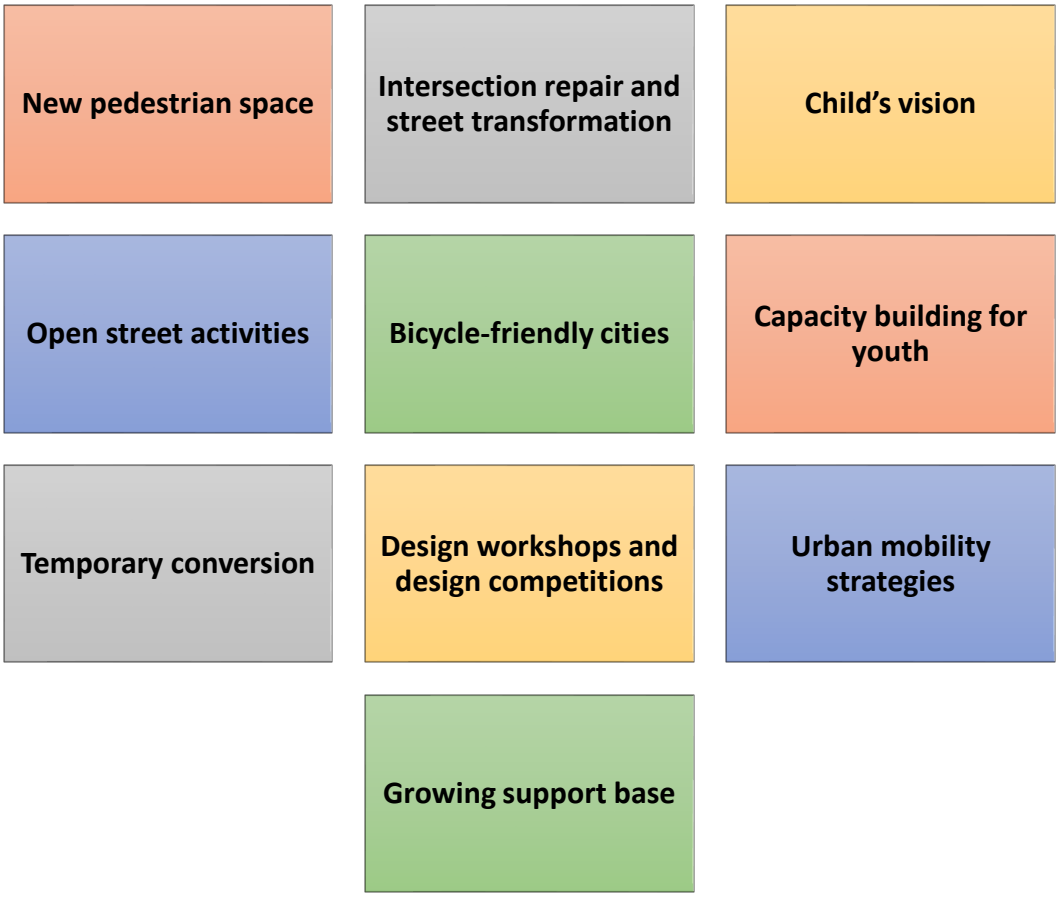
Campaigns are being rolled out at present in the following locations, with additional countries to be added in the future: Bangladesh, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Czech Republic, Egypt, India, Kenya, Nepal, Nigeria, South Africa, and Sudan.

Transformational projects and activities

CCA has developed an innovative approach and structure for implementing transformational projects in cities by showcasing the possibility of sustainable, resilient cities and communities. Our focus is on a gradual replacement of motorized traffic with environmentally friendly transport and an equity-based approach to healthy community building.

Each campaign location includes activities and projects as listed below. Our local campaign partners take the lead in determining the course of action and principal focus for their area, with support from CCA and CCA's strategic partners.

The goal of implementing individual actions and activities is to secure early community impact while highlighting the possibilities of further and more ambitious steps, creating and sustaining an appetite for positive change within the wider population. Broad-based support will be crucial to be able to move on to successive levels of a paradigm shift in urban planning, mobility, and ecology.



New pedestrian space – Where cars previously dominated the space, exclusive pedestrian zones and pedestrian priority areas are created for immediate use. Possible conversion types include pedestrian streets, downtown carfree zones, parklets, and other reclaimed space. These may be temporary or permanent conversions or start off as temporary but then gain strong enough support to later make them permanent.

Intersection repair and street transformation – Intersection improvements and safety design features amount to a major win for locals, with new opportunities for efficient travel, active lifestyles, and civic/social cohesion. Pedestrian refuges such as traffic islands and a wide variety of traffic-calming measures will make a neighborhood more livable and safer. Likewise, pop-up bike lanes and other improvements for cycling can provide immediate wins and demonstrate the potential for more extensive and more permanent interventions them permanent.

Child's vision – Children should be treated as real stakeholders in a city's functioning. We include the needs of children in planning by means of experiences and focused events that cater to children, with creative sessions allowing children to dream big and speak out. Their messages and ideas are conveyed directly to decision-makers and the public.

Open street activities – Events and festivals are designed to allow for cultural expression and gatherings, which often take place in areas that are otherwise dominated by traffic.

Bicycle-friendly cities – When cycling becomes a major mode of transport, urban residents gain an affordable, safe, and attractive way to access opportunities including education, employment, and social connectivity. This can be achieved through planning, interventions, bicycle rides, and events that promote bicycle usage and increase ridership. When cycling becomes "cool," a shift is underway from driving to cycling, demonstrating a growing public demand for bicycle-friendly cities.

Capacity building for youth – Championing the rights of ethnic or linguistic minorities while building environmentally-aware and socially-oriented community groups helps to develop a strong youth civic movement. Youth are encouraged to discuss global issues such as climate change and the sustainable development goals (SDGs). Next, the avenues of civic participation and meaningful community and worldwide engagement are highlighted, providing youth with tangible opportunities for involvement and leadership.

Temporary conversions – Connecting to intersection repair (see above), temporary street or parking space conversions make space for parklets: plants, flowers, reclining chairs, and street furniture. Locals get a chance to try a completely new way of experiencing and benefiting from spaces that the city has to offer.

Design workshops and design competitions – Workshops and competitions can inspire creative thinkers and promising professionals such as budding architects, urban designers, artists, and inspired dreamers to come up with new and innovative ideas and solutions for improving their city.

Urban mobility strategies – Based on comprehensive and inclusive planning principles that reflect ecological awareness and the SDGs, a strategy for a sustainable mobility system can be put in place to serve as a base for a sustainable city. A fundamental feature of the inclusive planning approach is to ensure the widest possible level of stakeholder engagement.

Growing support base – Building community and empowering advocates are crucial for gaining widespread awareness and support. Media coverage, community events, and kindling topophilia – the love for and attachment to a local place – will ensure that the issues that matter gain the prominence they deserve.