REVOLVE

QUARTERLY INSIGHTS INTO A CHANGING WORLD

N°45 | Fall 2022



How Accessible Is Your City?

Improving urban mobility to achieve more resilient cities. p.10

Prague Going Carbon Neutral p.18 Cycling Vacation Anyone? p.26
India's Climate Adaptation Now p.68 Social Circular Economy p.76

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Transforming Mobility Mindsets

In 2020, energy production comprised the most EU greenhouse gas emissions at 30%. However, transportation comprises 27% of EU emissions and rising, making it a sector with huge potential as governments strive for net zero.

This issue explores how we can make the mobility transition a reality. This starts with our cities, which account for 23% of transport emissions. Here, urban mobility policies can unlock huge emission savings, while also increasing cities' livability. Just this summer we visited Prague to learn more about how local and regional governments are working to reduce the impact of population growth on city services, and more specifically on transportation to meet its carbon-neutral ambitions.

Meanwhile in Brussels, citizen engagement projects are working to change how we think about mobility, challenging the status quo that often leaves cities' poorest and most vulnerable residents in the most congested and polluted areas.

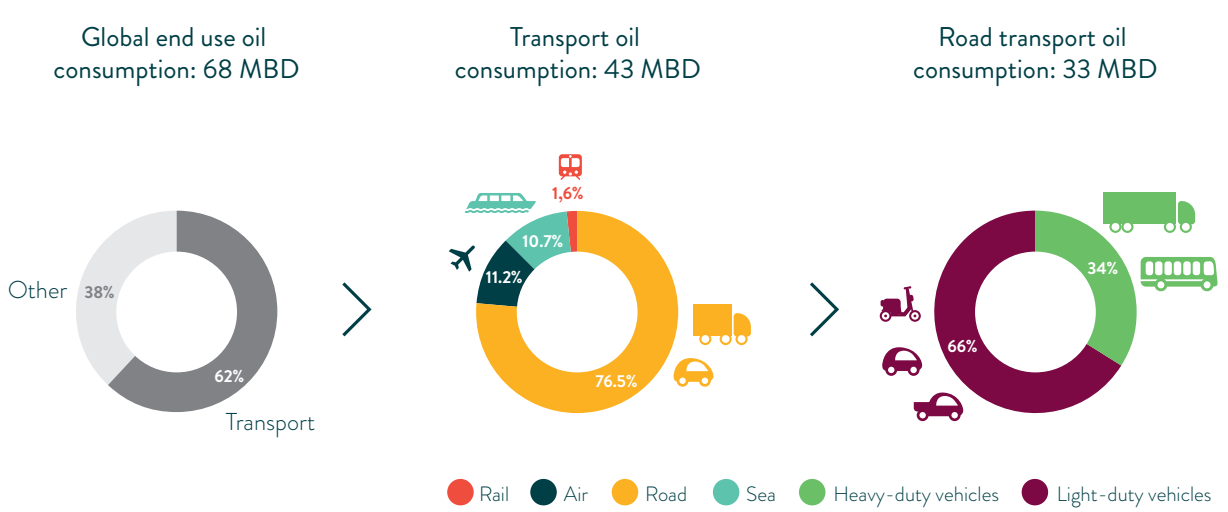
But rethinking how we travel does not need to stop at our day-to-day mobility. EuroVelo shows how this can extend to the way we think about tourism, swapping four wheels for two and exploring Europe's growing international bike-route network.

Yet as much as we can do – as both individuals and communities – to reduce carbon emissions, these steps can only go so far in mitigating the effects of climate change. As we have seen in Europe and across the world, the natural disasters caused by climate change are already having severe impacts.

In the Middle East, temperatures are rising at twice the global average, increasing the strain on water resources. While an unusually cold and wet season in Pakistan and India has seen devastating floods take the lives of thousands. We explore both these cases, and how residents are adapting to conditions – from optimizing water-reuse to more resilient disaster management programs – revealing why climate adaptation is not just for the future, but something that must be embraced now.

Thanks for revolving with us,

The Editorial Board



Source: UITP Better Urban Mobility Playbook

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Mobility

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To date, REVOLVE has planted 261 trees in reforestation projects in Roupage (BE) in 2020, Stoumont (BE) in 2021, and Martouzin (BE) and Zaragoza (ES) in 2022.



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Cover image:

Man on race bike in San Francisco, USA.

Photo: Paolo Cipriani / iStock

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CERT. NR : 53520-2208-1002

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REVOLVE Group is dedicated to communicating sustainability. With offices and staff in Barcelona, Brussels, Lisbon, Mumbai, and Vienna, we publish an international magazine (ISSN 2033-2912) that compiles the 'best of' from our online content in quarterly issues focusing on water (winter), ecosystems (spring), energy (summer), and transport (autumn) with the circular economy as a recurrent theme. To subscribe, order back issues, or discover all our publications, including our country and industry reports, visit: **revolve.media/shop**

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Making the Mobility Transition a Reality

WRITER: **LINDA GAASCH**

MEMBER OF THE LUXEMBOURG CITY MUNICIPAL COUNCIL AND MEMBER OF THE EUROPEAN COMMITTEE OF THE REGIONS (THE GREENS)

Cities and regions are ready for modal shift, but serious support is needed at all levels.

This summer was marked by burning forests, heat waves and droughts and impending water scarcities. Climate change is heavily impacting all of us. One area where we can rapidly decarbonize is urban transport. Transport accounts for nearly 30% of the carbon emissions within the European Union (EU), more than 70% of the EU population live in cities, and 23% of the EU's transport greenhouse gases come from urban areas.

The European Commission has put forward the new EU Urban Mobility Framework to shape the urban mobility of the future and proposes a reinforced focus on Sustainable Urban Mobility Plans (SUMPS), which aim at solving transport related problems in urban areas more efficiently, and develop a more harmonized approach across the EU. Our current transport system is far from sustainable: There are 44 road deaths per million inhabitants on average across the EU, air pollution is linked to more than 300,000 premature deaths per year, and congestion costs €270 billion per year at EU level. Not only do we need to decarbonize fast, but we also need to fundamentally rethink our approach to mobility.

Active mobility such as walking and cycling comes at very little cost while generating significant environmental and societal benefits, including in terms of public health. There are also benefits for the local economy as pedestrians and cyclists shop closer to their homes. But we need to reconsider how space and funds for different transportation modes are allocated. Promoting infrastructure such as protected bike lanes or making cities pedestrian-friendly requires little in terms of investment while facilitating alternative, emission-free modes of transport. Real citizen participation is key when designing the streets of the future. When (re)designing public spaces, all citizens should be consulted, including



Illustration by Dariana Guevara / REVOLVE

families with children, young and elderly, and people with disabilities, to ensure inclusive streets by design.

To get where walking or cycling cannot take us, European cities need well-functioning, accessible and affordable public transport systems. The overall capacity of public transport needs to be increased, both in terms of geographical coverage and increased frequencies, to accommodate the expected increase in passenger volumes. We must urgently counter the chronic underinvestment in public transport witnessed over recent decades. But not at the cost of users! Public subsidies have the potential to support green public transport services and encourage modal shift. And while extending the offer of green public transport, the polluter-pays principle should be applied to non-sustainable modes of transport. In 2022, it is unacceptable that a journey by train, tram or by bus can still cost more than an equivalent journey by plane or car, at a time when we are already experiencing the dramatic consequences of climate change. The current geopolitical crisis should urge us to do more, not less, to reach the EU's transport decarbonization objectives. To seriously incentivize modal shift, we need public subsidies consistent with decarbonization, an EU-wide exchange of best practices on the affordability of public transport and an analysis on the feasibility of implementing a free public transport system across the EU.

With the "Climate-neutral and Smart Cities Mission," the EU Commission has started a giant pilot project involving 100 cities. This is a great start – but let's not stop there. Cities and regions are ready to make modal shift happen. But they need support – financially, technically, and strategically – from the EU level, and backing from their citizens, to make the mobility transition a reality.[i]

[i] Decarbonizing transport is a pillar of the CoR flagship initiative 'Green Deal Going Local' that places cities and regions at the heart of the EU transition towards climate neutrality.

Linda Gaasch is rapporteur on the CoR opinion "The New Urban Mobility Framework" which is scheduled to be adopted in the CoR plenary session in October 2022.



Solutions for Better Urban Mobility

WRITER: **ANNE MORDRET**

How to address the massive mobility challenges that abound in cities? UITP answers.



1

Goal: to have the most liveable cities possible for all people who choose to call them home. This should always be the aim of those who advocate for better, and more sustainable urban mobility. At the International Association of Public Transport (UITP), we work with our global membership in more than 100 countries to advance the agenda to best achieve that vision.

For all of us with a vested interest in advancing urban mobility, we know that more needs to be done when it comes to delivering on this aim. The number of people choosing to live in cities will increase in the coming years; our cities will need to keep adapting to best serve their needs and answer mobility demands. By sharing ideas, research and insight, we can keep moving the urban mobility agenda forward. After all, collaboration is the key to finding the best solutions to the problems we face collectively.

Whether it be through publications, projects, events, Committees or Working Groups, UITP and our global membership know that we can create a lasting impact on the conversation around public transport and active mobility, if we work together.

A perfect example of that is through our publication: the Better Urban Mobility Playbook.

This unique publication, created with the insight of UITP experts and members, is a guide designed to support the sector by identifying challenges, specific solutions with concrete actions, and successful practices from our community. Public transport is known for its strength of community, and by giving this publication to the sector, it can be used for cross-party discussions, for urban transport strategies, and even as a benchmark to grade a city's performance.



To download the Better Urban Mobility Playbook, visit:

www.uitp.org/publications/better-urban-mobility-playbook

The Playbook is a tool for governments and local decision-makers to build better urban mobility and achieve inclusive, resilient, and sustainable cities.

A tool for cities to produce results

The 2021 Better Urban Mobility Playbook is an update from the Better Mobility Report, which UITP first published over 20 years ago. A much-needed and long-awaited update, the Playbook is a tool for governments and local decision-makers to build better urban mobility and achieve inclusive, resilient, and sustainable cities.

At almost 80 pages, the Playbook is set out in sections, detailing in a synthetic way, the background, the challenges, the solutions and cases, and the conclusions to where we currently stand. The Playbook exists as an advocacy tool for our cities, and the plan is to keep it as a living document, updating it on a more regular basis with case studies from our members.

SOLUTIONS TO REACH A



DESIGN CITIES AROUND MASS PUBLIC TRANSPORT, AND ACTIVE MOBILITY

- Governance & planning
- Densification
- Mobility regulations
- Funding

OPTIMISE ROAD AND STREET MANAGEMENT

- Space regulation
- Active mobilty
- Private car charges
- Parking policies

INNOVATIVE AND EFFICIENT PUBLIC TRANSPORT SYSTEMS

- Accessibility & inclusiveness
- Quality & attractiveness
- Multimodal alternatives
- Integrated mobility
- Mobility hubs
- Clean energy modes
- Data sharing & digitalisation

There's much work to be done, and as our cities keep growing at an unprecedented rate together with demand for mobility, the socio-economic divide is wider than ever with the repercussions of climate change being undeniable. With these challenges, we are actively looking for solutions. And the solutions are there in sight…

Today, our cities account for 70% of carbon emissions the majority of which come from the transport and energy sector alone, and road vehicles account for around 75% of transport emissions. Approximately 90% of urban inhabitants breathe air containing pollutants exceeding the World Health Organisation's recommendations. 30% of EU population suffer from noise pollution which impacts mental health. About 15% of the population, or one billion people, suffers from a disability and by 2030, more than 46% of people over the age of 60 year will have disabilities.

Our cities are the epicentre for innovation, economic growth, and social well-being. Successful cities are those with high interactions, where people can have ease of access to basic services, jobs, schools, leisure activities and businesses. Moving towards sustainable cities is a huge collective effort that can only be achieved with strong political leadership and courage.

Building more efficient urban mobility systems

National and urban policy-makers must now face the consequences of more than 70 years of urban development around unsustainable, private, and individual mobility, including urban sprawl, traffic congestion, air and noise pollution, road accidents, social segregation and much more. Although more awareness exists to the challenges we face, problems are only going to get worse unless we tackle the climate crisis with a serious sense of urgency. Public transport is a known solution to climate change if we harness its capabilities.

Over the last two decades, many positive changes in our cities have occurred. Investments in public transport systems have been impressive and undeniable. New metro lines have opened across the globe, bus rapid transit systems have developed worldwide, and pedestrians and cyclists are taking back the streets with more access to dedicated space, without cars, than ever before. Plans have been put in place in many cities to implement the right mechanisms to

CITIES ARE CONFRONTED WITH NEW CHALLENGES

PLANET



- Air pollution
- CO_2 emissions
- Noise
- Increasing ecological footprint

PEOPLE



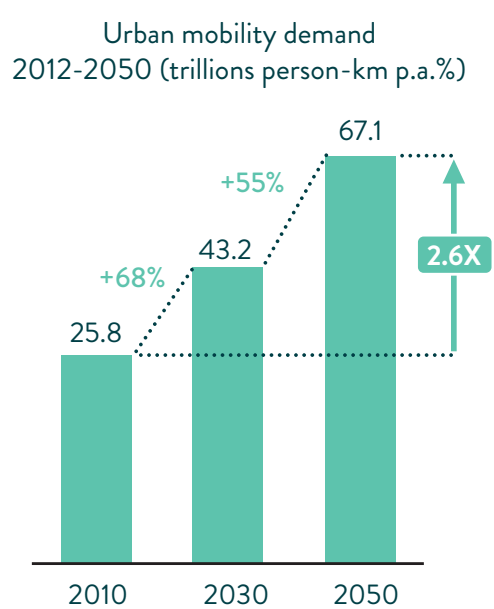
- Traffic chaos
- Traffic security
- Congestion
- Decreasing quality of life and inconvenience

PROFIT



- Overloaded infrastructures
- Insufficient public transport capacities
- Increasing motorisation
- Limited parking places

URBAN MOBILITY DEMAND EXPLODES





SIX STEPS TO DECARBONISE PUBLIC TRANSPORT

The roadmap below sets a broad policy pathway to public transport decarbonisation and is grouped into six components. The components are based on experience from delivering action on the ground and should be seen as an overarching common framework.

01 ENHANCED FINANCIAL SUPPORT FOR URBAN SUSTAINABLE TRANSPORT

Shift finance towards low carbon and resilitent public transport priorities, alongside incentives

02 LOW CARBON SOLUTIONS ARE PROMOTED & ENCOURAGED

Work with stakeholders to develop/encourage robust implementation strategies and targets

03 BETTER POLICY DESIGN & LAND USE FRAMEWORKS

Integrate transport/urban planning policies & tools to achieve local, national & international goals

04 IMPROVED MULTI-MODAL EFFICIENCY

Adapt ASI stratgies to encourage compact, connected, coordinated & resilitent cities based on public transport

05 SCALING UP LOCAL/NATIONAL R&D ALONGSIDE SUPPLY CHAINS

Integrate climate & SDG goals alongside innovation development chains/strategies

06 SCALING UP CLEAN VEHICLES & OPERATIONS

Advance the update of low/zero traction and non-transport solutions alongside clean energy

support and manage mobility systems, and many cities are now also integrating land-use and mobility planning.

But changes are not happening fast enough to reach international climate agreements. UITP believes that our new Playbook will be a helpful tool to support cities in reaching the Sustainable Development Goals with clearer guidance on better urban mobility.

Cities must keep playing a central role in transforming society and reaching international climate targets. With the transport sector being one of the biggest consumers on oil, representing 65% of global oil consumption, public transport, active mobility, and complementary services are the easiest and quickest solutions to reducing global emissions. But this is not a case of "build it and they will come". Yes, we need investment, but we also need coordinated land-use and mobility planning, public-private cooperation, and data sharing strategies to make sure transport is integrated into everyday life, keeping passengers at the very heart.

Lasting change for society

The public transport sector continues to face impressive redefinition, with digitalization, automation, electrification, and energy changes bringing the sector into a more modern future. Solutions that were once deemed a distant futuristic vision have now become a well-established reality. There is greater emphasis towards healthy living, prioritising walking and cycling, the natural neighbours of public



1. Fuel cell bus in Cologne, Germany. **Photo:** Van Hool
2. Autonomous shuttle in Hafencity, Hamburg, Germany. **Photo:** Phuoc Anh Dang
3. Biking lane in Paris, France. **Photo:** Hans Ott

Infographics: Urban Mobility Playbook 2021. UITP



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transport, and improving public space for the needs of all residents.

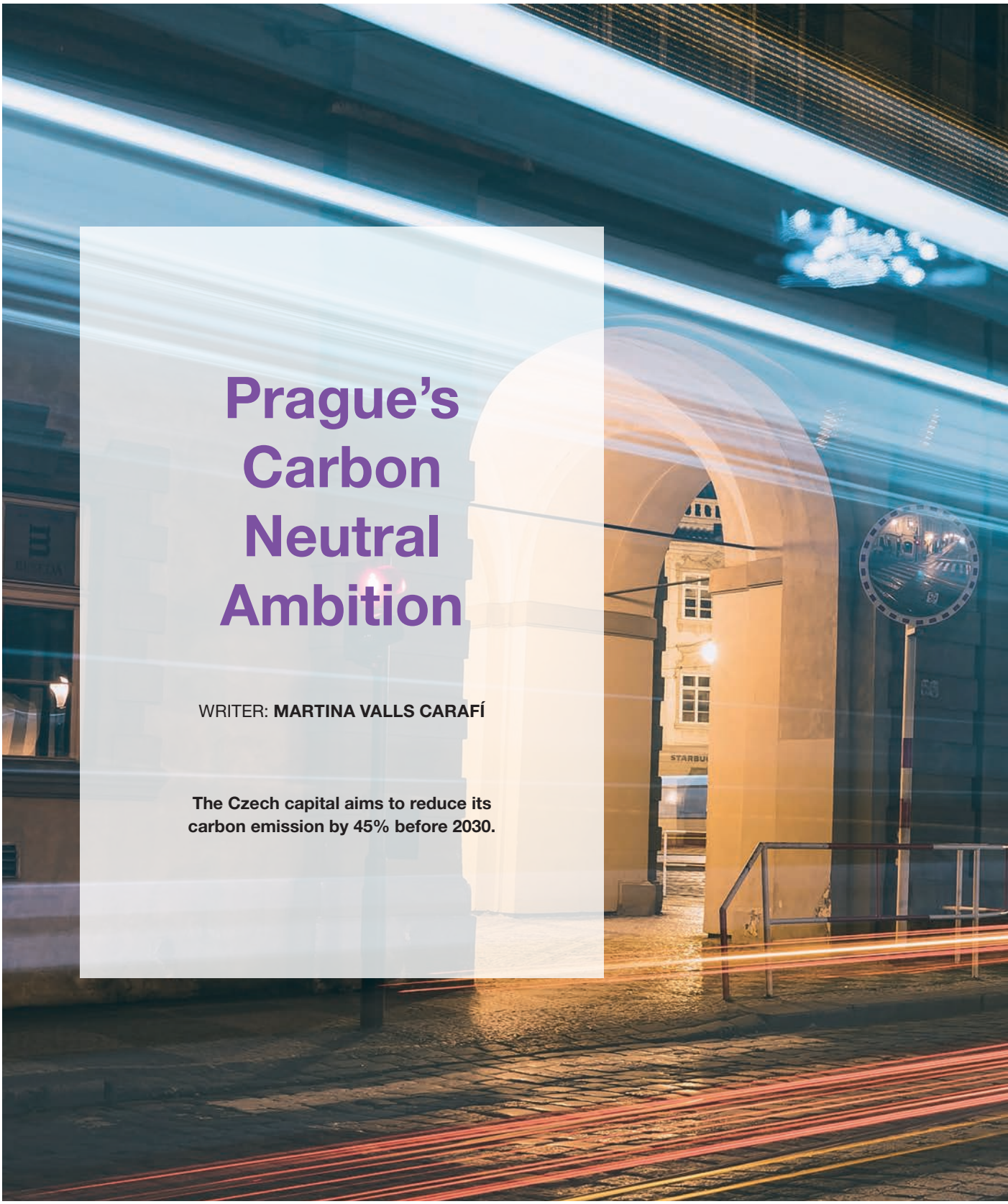
With much at stake concerning the climate crisis, national and city governments need all the support they can get when it comes to building cohesive, strong governance and policies related to sustainable, inclusive cities.

Our cities need to focus on improving the alternatives to the car and giving more space to walking, cycling and public transport, while disincentivizing all aspects of car use. This approach is win-win, as less cars in urban areas means more space for the public realm, business, and more sustainable mobility.

We know that COVID-19 has hit our cities hard, and public transport is not unique in being a sector impacted by the global pandemic. Behavioural changes in terms of mobility, digitalization and e-commerce, and home working, do bring new challenges to cities which might need to reinvent themselves. The increase of car use in many cities is a warning sign that must be taken seriously so as not to recreate the mistakes of the past.

In serious times, solutions are sought after. The Better Urban Mobility Playbook is a gift to the public transport sector – one if used wisely, can be a tool to provide solutions to the ongoing problems our cities face. Challenges can be met, and outcomes can be achieved.

At UITP, we work hard each and every day to make the vision of sustainable urban mobility for all a reality. We will continue to support our members and wider transport community in ensuring public transport remains the backbone of our cities. ●



Prague's Carbon Neutral Ambition

WRITER: **MARTINA VALLS CARAFÍ**

The Czech capital aims to reduce its carbon emission by 45% before 2030.



1

Transport is responsible for almost a quarter of Europe's greenhouse gas emissions, and it is the main cause of air pollution. In 2016, with the aim of reducing emissions while ensuring the growing mobility demand of citizens and commodities, the European Commission adopted the European Strategy for low-emission mobility. The strategy highlights that the transportation industry has not had the same progressive drop in emissions as other sectors. And, given the impact caused by the war in Ukraine and the overdependence on Russia in the energy sector, this is the moment to speed up this transition towards more self-sufficient transportation.

The strategy underlines three key action priorities that cannot be fulfilled without concurrently addressing the concerns of energy security and affordability:

1. Increasing the efficiency of the transport system by making the most of digital technologies, smart pricing and further encouraging the shift to lower emission transport modes.

2. Speeding up the deployment of low-emission alternative energy for transport, such as advanced biofuels, electricity, hydrogen and renewable synthetic fuels and removing obstacles to the electrification of transport.

3. Moving towards zero-emission vehicles. While further improvements to the internal combustion engine will be needed, Europe needs to accelerate the transition towards low- and zero-emission vehicles.

In 2020, the 27 EU member states obtained roughly 5% of their total energy from renewable sources, with a goal of increasing that percentage to 40% by 2030. After Russia's invasion of Ukraine, the goal was increased to 45%. Germany, whose primary sources of coal, natural gas, and oil were Russia, brought forward its goal of 100% renewable power by more than a decade, now targeting 2035.

To achieve such an ambitious strategy, cities and local authorities also play a crucial role. Cities account for 23% of all transportation-related greenhouse gas emissions and are home to more than 70% of EU residents. As urban areas have continued to grow, local governments have increasingly had to take on additional duties relating to the delivery of essential services within cities. However, financial and institutional assistance has not always kept pace with this growth in responsibilities. To help the European Union reduce greenhouse gas emissions (by at least 55% by 2030 and by 90% by 2050, as part of the European Green Deal), cities need to be supported in this endeavor.

In July 2022, representatives of the EU regions and cities from the Committee of the Regions (CoR) gathered in Prague in the Commission for Territorial Cohesion Policy and EU Budget (COTER) conference to discuss investments in decarbonization and modernization of public transport in the continent. "One of the greatest environmental challenges is mobility, and sustainable mobility will be shaped by cities," said Zdeněk Hřib, the mayor of Prague, who hosted the conference.

During the two-day congress, mobility and transportation infrastructure were identified as major areas where collaboration between the European Committee of the Regions and the European Commission should be strengthened. "Policies are created in Brussels but must be implanted at

the local and regional level," said Jose Manuel Ribeiro, mayor of Valongo, Portugal, and member of the Party of European Socialists (PES), reinforcing the idea that multi-level governance is key to advance towards carbon neutrality. Hřib also stated that "EU funding is very important for sustainable mobility, particularly, for local and subnational government to achieve these well-established targets."

Czech capital to EU example

Last year, the Czech capital – now hosting the presidency of the Council of the European Union (EU) – shared its future climate goals under the 2030 Climate Plan. The city aims to reach climate neutrality by 2050. The plan has four main pillars: sustainable

"One of the greatest environmental challenges is mobility, and sustainable mobility will be shaped by cities".

Zdeněk Hřib, Mayor of Prague



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energy and buildings, the circular economy, adaptation measures, and sustainable mobility.

In an interview with REVOLVE, Hřib indicated that the city council wants Prague to reduce mobility demand and invest in public transportation using EU funding. They intend to expand tram lines, construct a new metro line, and deploy low-emission buses, among other things. These are only a few projects inspired by other European cities like Vienna and Copenhagen.

Prague aims to lower the use of fossil fuels in transport within the territory by at least 25% compared to 2010. To do that, the 2030 Climate Plan encompasses some core priorities:

Priority 1

Increasing the attractiveness, capacity, and effectiveness of public transport

Despite having one of world's best public transport systems, 30% of people prefer to use private vehicles. The construction of new metro line D, the development of the tramway network and the more intensive involvement of trains in the public transport system will significantly increase capacity, making it a more attractive option.

Priority 2

Increasing the attractiveness, capacity, and effectiveness of non-motorized transport

Due to lack of infrastructure and public support, cycling makes up only 1% of all transport trips during a standard working day. Prague has a long-term budget dedicated for the development of pedestrian and cycling infrastructure.

Priority 3

Reducing the intensity of inner-city motor vehicle transport

The intensity of motor vehicle transport increases every year. There are parking fees in selected parts of the city, nevertheless motorized transport is almost always free of charge within the city territory. Thanks to incentive measures, like an appropriately set charging system, the volume of motor vehicle transport is gradually being reduced.

Priority 4

Exchanging conventional fuel vehicles for low and zero-emission options

Zero-emission vehicles still form a very small part of the public transport fleet. City organizations have begun to modernize their fleets with battery powered or hydrogen powered vehicles. Along with the development of electromobility, a dense network of charging stations will be built in the city.

Priority 5

Supporting the transformation of air transport towards sustainability

In the last decade, Prague Airport recorded an increase of passengers and currently is preparing further development to strengthen its position as a major transport hub in Central Europe. The target is to see air travel in Prague reduce CO2 emissions by 15% in comparison to 2010. Favorable fees for carriers using aircraft with a low carbon footprint will be offered to encourage travelers to use these services.

Source: Prague Climate Plan 2030

Prague's aspirations go beyond the 2030 Climate Plan. The Czech city has implemented the Smart Prague concept which is inspired by the world renowned Smart Cities concept, the use of the latest technologies for transforming the capital into a better living space. One of the six indicators that comprise Smart Prague is dedicated to Mobility of the Future.

The main mobility challenge identified in Prague has been the growth of the population and its surrounding areas, which has, in turn, increased the demand on transport, thus causing traffic congestion. The aforementioned condition also poses environmental concerns: air pollution, high noise levels, traffic accidents and the degradation of public spaces in the city with low priority for pedestrians and cyclists.

Cities account for 23% of all transportation-related greenhouse gas emissions and are home to more than 70% of EU residents.



3

To overcome such situations, the Smart Prague plan proposes several strategic projects to improve the quality of life of Prague's inhabitants by utilizing modern technologies and to make the city management easier. Some of the projects include: the development of electromobility and infrastructure; shared electromobility; ecological buses; intelligent transport; and self-driving vehicles.

Another major mobility difficulty stated during the conversation with Zdenk Hřib was how to communicate the importance of the mobility shift to people. Hřib stated that the best way to solve it is to invest in public transportation, make it appealing to the public, and deploy smart technology.

Even though every European city faces a variety of different challenges, local and regional authorities have implemented solutions that tackled social, environmental and political challenges at the same time. Mayor Zdenk Hřib highlighted Prague's primary projects and encouraged conference delegates to tour the city's main sustainable mobility initiatives, with the goal of inspiring other cities to follow Prague's lead. Hřib insisted that "the EU funding will help the country boost the sustainability of public transport which will, in turn, reach the European Climate goals." ●



4

1. Prague summer night amazing long exposure lights. **Photo:** Jan Valečka
2. Prague Mayor Zdeněk Hřib in the welcoming session of the two-day EU conference in Prague, Czech Republic. **Photo:** Committee of Regions
3. Public transport. Prague, Czech Republic. **Photo:** Young-Kyung Kim/ Unsplash
4. Tram in front of the Dancing House. Prague, Czech Republic. **Photo:** Zsombor Buttyán / Unsplash

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Move Into **THE FUTURE**



Cycling: The Tourism of Tomorrow

WRITER: **MARTA ORIHUEL AYUSO**

Cycling tourism offers endless possibilities for slow travel and emission-free sightseeing.



1

We live in unprecedented times in which we are rapidly reaching the point of no return for the planet. The tourism and transportation sectors have important roles to play in reducing our environmental impact and cycling tourism can make a significant contribution here if it is supported on the European, national and local levels.

At the European Cyclists' Federation (ECF), we believe that there is no way forward to address climate change and reach a decarbonized future without substantially more cycling. As world leaders are meeting at COP27 in Egypt, we look at how more cycling can help the tourism sector not only reduce its carbon emissions, but also encourage biodiversity regeneration and resilient communities.

"Europe will not achieve its 2030 goals without urgent action during the next 10 years to address the alarming rate of biodiversity loss, increasing impacts of climate change and the over-consumption of natural resources." This is the stark warning laid out in the European Environment State and Outlook Report (SOER 2020) reminding us that we must act fast and effectively if we are to combat the climate crisis.

One of the biggest threats for biodiversity loss is climate change, and one of the major causes of climate change is biodiversity loss (as forests have the capacity to act as natural carbon sinks). To reverse this vicious cycle, actions towards decarbonization and biodiversity restoration must be developed hand-in-hand.

In June 2021, the UN Decade on Ecosystem Restoration, a global rallying cry to heal our planet, was launched to prevent, halt and reverse the degradation of ecosystems worldwide. Rethinking the way we move has an important role in addressing biodiversity loss. Transport causes 24% of global GHG emissions and is a big cause of the pollution and environmental degradation that threatens biodiversity. It has also been estimated that tourism contributes 8% of global GHG emissions. Considering this crossover, there's simply no way we can address climate change and think of a decarbonized future without changing the way we travel.

Unsustainable travel patterns and carbon-based transport are not only threats to the planet and its environment, but also to the well-being of societies and communities. The negative impact of tourism models that do not acknowledge the limited capacity of natural resources and the undesirable impacts on local communities, were present long before the pandemic.



2



3

An over-consumption of resources and an increase in pollution stresses ecosystems, forcing them to lose their capacity to recover. Not to mention the other side effects felt by communities, as unsustainable tourism can reduce the overall quality of life in places (such as over-crowded touristic areas or the over-pricing of housing).

Reimaging the way we travel

Is it now possible to use the opportunity of a 'recovering' tourism sector to reimagine the way we travel? Is it possible for tourism to reduce its detrimental environmental and social impact in order to generate positive ripples by restoring life and ecosystems, supporting the creation of vibrant communities and boosting local economies?

To reimagine the way we travel in the Decade on Ecosystem Restoration, a good place to start is to travel in the greenest, smartest and most inclusive way possible. At ECF, we are working to increase the global levels of cycling with the conviction that it has the capacity to blend in with achieving a decarbonized, healthy, inclusive and green future. One of our flagship initiatives is EuroVelo, the European cycle route network: 17 long-distance cycling routes that cross and connect the European continent. EuroVelo is a 'living' initiative that, when completed, will total 90,000 kilometers spanning over 42 countries.

We believe that with the multiple crises the planet is facing that there is an opportunity for change. The shifting in travelling patterns during the pandemic has supported the increase of cycling and cycling tourism in Europe. According to data collected at ECF, based on the monitoring data of EuroVelo route usage in partnership with Eco-counter, we can confirm the global trend that cycling and cycling tourism is booming – the latest figures show increases in usage between 10-45% for the year 2022 so far, compared to the same period in 2019. Travel behavior is also shifting, tourists are looking for more authentic experiences; outdoor activities, exploring rural areas and domestic traveling are also on the rise.

We want to take advantage of the momentum that cycling tourism is experiencing right now and the related opportunities it can have in bringing life to rural communities promoting them as cycling destinations, and in encouraging a 'slow' tourism, which

1. EuroVelo 1 - Atlantic Coast Route, Norway. **Photo:** EuroVelo
2. EuroVelo 19 – Meuse Cycle Route sign integrated in the national cycling signs in The Netherlands. **Photo:** EuroVelo
3. 'Véloroute du Vignoble d'Alsace' – EuroVelo 5 – Via Romea (Francigena), France. **Photo :** INFRA - ADT
4. EuroVelo 1 – Atlantic Coast Route, Portugal. **Photo:** EuroVelo

Transport causes 24% of global GHG emissions.

Source: IEA



4

can take care of the local communities and their environment.

Promoting more cycling tourism will help us change the way we travel and support biodiversity protection and restoration during our holidays. If we have more cycling in the global agenda, it will improve conditions to get more people engaging with everyday cycling and leisure.

Cycling is a safe and healthy option that benefits us as individuals in many ways. Its benefits go beyond physical exercise: the feeling of freedom, reconnecting to nature, and life-changing adventures are just some examples of how travelling by bike can contribute to a feeling of well-being, improving our social, physical and psychological health.

Cycling tourism can repurpose unused infrastructure, improve rural connectivity, bring life to remote areas and boost local economies. Especially when combined with public transport, cycling tourism can also notably reduce the carbon footprint of the tourism sector and can therefore bring us closer to a decarbonized future. This way of travelling helps to disperse tourism flows, extend the holiday season and access natural areas with a minimal impact. It has the capacity to support the regeneration of ecosystems and it is aligned with regenerative travel principles.

Integrate cycling routes in Europe's TEN-T

The EU's Trans-European Transport Network (TEN-T) is the bloc's flagship transportation policy coordinated by the European Commission together with national governments. TEN-T consists of a primary network of roads, railway lines, inland waterways, ports, maritime shipping routes, airports and railroad terminals. Unfortunately cycling is not included in the network.

Including cycling in the network would improve the connectivity, efficiency and sustainability of TEN-T across the continent. It would also unlock access to new funding for cycling projects.

The new text that will define the EU's trans-European transport core network development for 2030 is under revision and ECF is recommending amendments to the revision proposal presented by the European Commission in December 2021. In its position paper, ECF strongly recommends that cycling be properly integrated in TEN-T to promote active mobility and achieve positive modal shift towards sustainable transport.

Including EuroVelo, the European cycle route network, within the TEN-T would

GPX Tracks now available on EuroVelo

On 21 November 1997, EuroVelo, the European cycle route network, was launched in Logroño, Spain. Back then the EuroVelo initiative was a mere vision of a dream to connect Europe by bike. But fast forward to the present, 25 years later, it is now a network of long-distance cycle routes criss-crossing and uniting the European continent, with over 90,000 km of cycle routes of which 64% are ready to use.

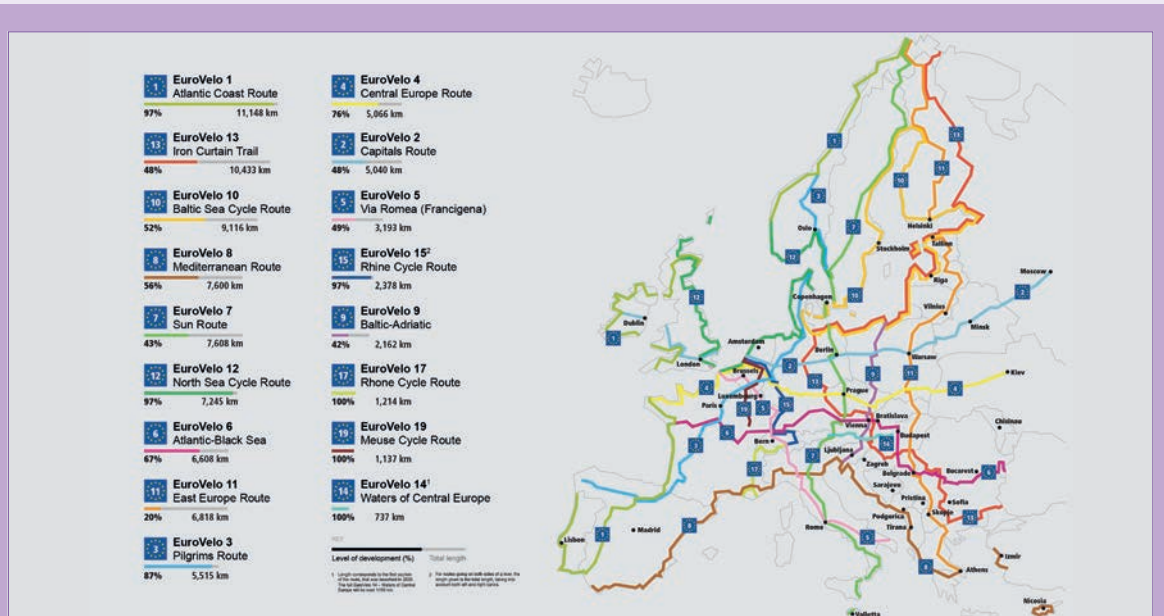
One of the original aims of developing a European cycle route network back in the late 1990s consisted of fostering the potential of such a network to lay the foundations for developing cycling tourism in Europe, and generate positive impacts for economies, society and the environment.

EuroVelo is a living project. Every year the overall quality of the network improves and new sections are realized, thanks to a coordinated effort between the network of National EuroVelo Coordination Centres and Coordinators (NECC/Cs), developing and communicating the routes at the national level, and the ECF's EuroVelo Management Team working at the transnational level. Every three years, partners can also apply for new extensions to be added to the network.

25 years after the launch of the EuroVelo network, the EuroVelo website added a much-requested feature: the ability to download the GPX tracks of EuroVelo routes.

Given that EuroVelo is a living project, not all sections of the network are fully developed so far. This is one of the reasons why GPX tracks of the routes were not available for download on www.EuroVelo.com until now. A lot of coordination has been needed to find the best way to share the tracks of a 90,000 km cycle network still in development and subject to change over time.

But now, the GPX tracks download button is finally available on EuroVelo route pages and stage pages. GPX tracks can be downloaded either for developed sections only, or for the full EuroVelo route or stage (only the developed sections can be downloaded for the routes crossing France, Portugal and/or Spain). Downloaded tracks are made of shorter sections (the suggested "daily sections") of about 50 km. For each of them, the "route development status" is indicated in the track segment's name: route sections can be certified, developed with EuroVelo signs, developed according to national standards, under development or at the planning stage. When downloading EuroVelo GPX tracks it is required to read the disclaimer, which includes a description of the development statuses as well. More information on how to plan a cycling trip using EuroVelo GPX tracks can be found in www.eurovelo.com.



go a long way to securing cycling's rightful place as an effective climate solution. TEN-T infrastructure development projects are often hugely-missed opportunities to develop cycling infrastructure alongside other infrastructural investments at a fraction of the entire cost of the project.

If cycling is not recognized, it is often the case that such large infrastructure projects negatively impact local cycling networks. For example, a ring road creating a barrier between suburbs and the city center, or a railroad upgrade cutting towns in half. The opposite can also be true: well-developed cycling routes can encourage the development of surrounding local networks. There are many more benefits to including a partially developed cross-border long-distance cycling network with EuroVelo that can support the needed change of travelling patterns. You can learn more about them and find out how you can add your support towards getting more cycling in the TEN-T at www.ecf.com/what-we-do/ten-t-eurovelo-and-cycling.

Changing the way we travel brings us closer to achieving the UN Sustainable Development Goals (SDGs) through rethinking tourism, developing sustainable mobility and encouraging a slow form of travel that leaves a positive impact on communities. Travelling by bike is a key activity for achieving the 'tourism of tomorrow' – a tourism that cares for communities and territories and respects the limits of the planet.

The chance to act is now, and an impactful solution is just two wheels away. Hop on your bicycle on your next holidays and discover EuroVelo. Allow yourself to explore territories through new lenses and keep growing the movement to change the way we travel.

25 years of EuroVelo
the European cycle route network





From source to generation, from grid to consumer, the boundaries of the sector are blurring and this evolution is being shaped by established players, external disruptors, innovative start-ups and the increasingly engaged end-user.

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CITIES INSPIRED BY PEOPLE





Montana boasts over 50 natural hot springs.

VIEWS

Wild Montana

Brussels-based photographer Wilhelm Westergren leads us to the heart of Yellowstone National Park and the Montana wilderness. The Treasure State's unique mix of plains, green forests, deep valleys and and spellbinding thermal features are sure to please any nature enthusiast.



West Yellowstone, Montana is a gateway to Yellowstone National Park - the world's first national park.





Yellowstone was protected due to its hydrothermal wonders. Half the world's hydrothermal features are found here.





▲ The park is home to the most extraordinary collection of hot springs, geysers, mudpots, and fumaroles on Earth.

The hydrothermal features are caused by the Yellowstone Caldera, a supervolcano that measures nearly 45 by 30 miles. ▼



▲ Hydrothermal spring.

Yellowstone has more than 10,000 hydrothermal features, of which more than 500 are geysers. ▼





Montana's state animal is the grizzly bear. It is home to a variety of other large mammals including lynx, black bears, moose, wolverines, mountain lions, and bighorn sheep.

▲ Thermophilic communities are diverse; their color, formation, and location depends on the types of microbes, the pH, and the temperature of the environment.

Thermophilic bacterial mats are likened to miniature forests. Microbes that live on the surface of the mats perform photosynthesis and decompose nutrients that fuels the ecosystem. ▼

▲ Boiling mud pot.

Yellowstone has more than 10,000 hydrothermal features, of which more than 500 are geysers. ▼



3% of Yellowstone National Park is in Montana - 96% in Wyoming and just 1% in Idaho.



▲ Also known as Big Sky Country, Montana's Indian Nations consist of 12 recognized tribes on eight reservations.

Bison have lived continuously in Yellowstone since prehistoric times. ▼

▲ Montana's public lands are the traditional and contemporary homelands of many Indigenous nations.

Public lands managed by the federal government constitute about 30% of Montana's landmass. ▼



Many of the bright colors found in the park's hydrothermal basins come from thermophiles—microorganisms that thrive in hot temperatures.

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Raising Autumn Garden Beds

WRITER: **EVA PETTERSSON**

Part III

Author of *Sustainable Gardening Made Easy*, Eva Pettersson, invites us to become stewards of more sustainable lives, sharing excerpts from her book on how permaculture is the best tool for doing so. Come along with us this autumn to prepare the grounds for next year.

Personal Note

Summer has come and gone, and with it most of the fresh vegetables, berries and fruits. Hopefully you had the possibility to preserve a lot of what you grew. To have dried, frozen or preserved food during the winter is fantastic; to enjoy the taste of the summer while knowing the quality of what you eat and the money you saved is a proper sustainable way of living.

The autumn is the perfect time to prepare your garden for next year. In this part, you can read about how to use all the "garbage" from the garden because there is no such thing as garbage in a garden. Instead, building different types of raised beds will make your gardening more manageable and healthier. At the same time, your harvest will be higher on a small amount of land. Depending on what waste you have, you can choose between hügelkultur and lasagna beds. To be honest, it is not unusual that a gardener lacks "garbage" for making healthy soil to grow in.

Book Excerpt

Raised Beds

Raised beds are the most straightforward shortcut to a better growing climate. Building raised cultivation beds is also a quick way to get better drainage. To create a planting zone, it is usually sufficient to apply more soil so that the cultivation area is 15–20 cm higher than the surrounding area. The effect is especially noticeable in the spring when the soil in the raised bed is heated faster. With a little luck, you can start your gardening several weeks earlier than what you ordinarily would – but remember that the sooner you start, the higher the risk of frost. Garden fabric is an excellent solution to the problem, and you can have it applied for the first few weeks while the plants are establishing themselves.

To avoid soil compaction in the finished beds, you must never walk on them. Later, I will take you through the construction of the higher beds.

Of course, the garden beds don't need to be tall, but it tends to make gardening easier. One significant advantage of raised beds is that they are considerably more productive because they are initially made up of lots of compostable material. By continuing to feed them with more nutritious matter, they retain their fertility.

Here I present two different types of raised beds, which both can be framed and unframed.

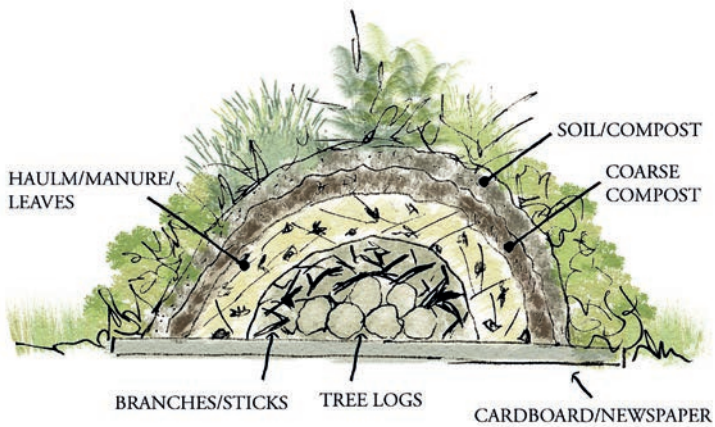
Raised Bed With Hügelkultur

Hügelkultur is a German word, meaning hill/mound culture. It is a unique form of tall beds that is becoming more common, especially in permaculture. The idea is not new; it is an old technique that has been used for centuries in both Central Europe and Germany. Interestingly, the hügelkultur technique must go through cold winters to function, which is very suitable here up in the north.

The benefits of the hügelkultur

- No digging needed
- Less work and better working posture
- Much of the kitchen and garden waste is used
- The waste is composted directly on site
- You do not have to buy expensive soil or spend a long time creating a good compost soil
- The bed maintains an even moisture level and reduces the need for irrigation
- The bed creates a nutritious and viable soil
- Combined with mulching, almost no weeding is needed

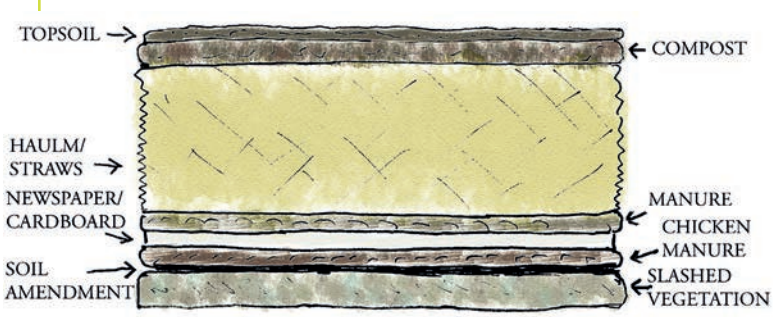




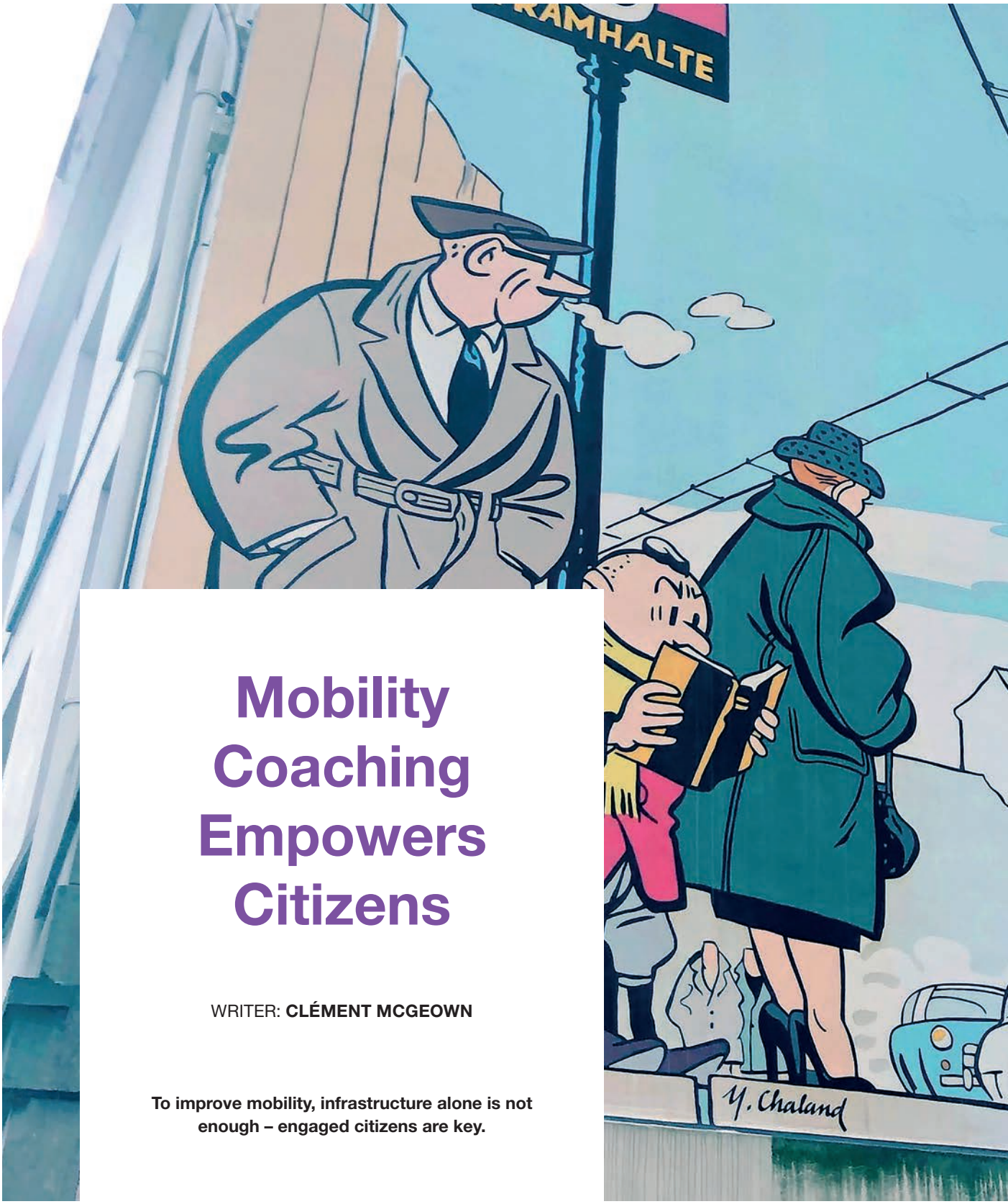
Lasagna Bed

If you do not have access to tree trunks and twigs, the so-called lasagna bed is an excellent alternative to building a raised bed.

This shape is also suitable for smaller beds, for example, when growing in pallet collars. The lasagna bed is also built up of different layers. Remember to water each layer properly before adding the next one.



- Finely divided green forage
- Soil improvements such as blood meal, stone meal, and seashells
- Fertilizer, a thin layer of, for example, chicken manure
- Newspapers or cardboard. At least two layers of newspapers, but preferably up to 2.5 cm thick
- Well-aged manure from, e.g. horse or cow. 1–2.5 cm thick (without straw)
- Hay. 20–30 cm thick. Alternatively, if you cannot get clean fertilizer, you can replace the two above layers with a layer of straw-mixed fertilizer. Remember, however, that straw takes nutrients while hay adds it
- Compost. If you are going to cultivate immediately, the compost needs to be finished. If you make the bed in the autumn to grow the coming spring, unfinished compost works well.
- If you want to get a really fine-grained top layer, you can top it off with a thin layer of planting soil.



Mobility Coaching Empowers Citizens

WRITER: **CLÉMENT MCGEOWN**

To improve mobility, infrastructure alone is not enough – engaged citizens are key.



1

Brussels has a complicated relationship with sustainable mobility. On one hand it has been taking significant steps to improve urban mobility, yet it still struggles in key areas.

A 2021 air quality study conducted by CurieuzenAir across 3000 locations showed Brussels' air quality to be largely sub-par, revealing 98.6% of the population lives or works at a location exceeding the World Health Organization's (WHO) threshold value at which health symptoms begin for nitrogen dioxide (NO2).

The research also demonstrates a "clear link" between the socio-economic status of Brussels residents and the air quality at their homes. Areas with a higher population density experience higher NO2 levels while people with a higher income tend to have better air quality at their residences despite having more cars. In 2017, Saint-Josse-ten-Noode had an average income of €9,297 – or half the national average – and also the worst air quality in Brussels. Meanwhile, the commune with the best air quality, Watermael-Boitsfort, had a median income of €23,112.

Many people want to move more sustainably; we just need to provide them with the tools and the set of skills that will allow them to do so.

So many communes, so many rules

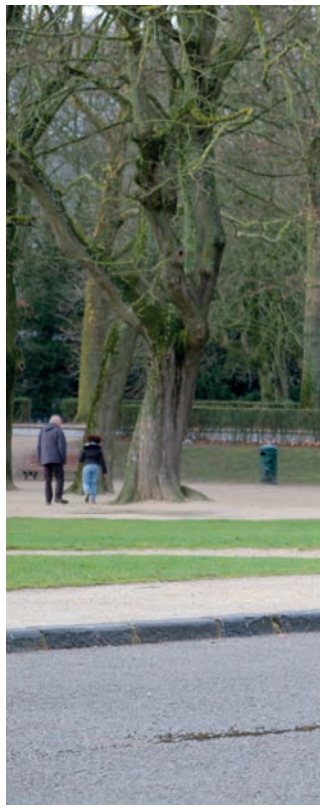
Since 2020, a contentious argument has been raging over whether the Bois de la Cambre – a forest just south of Brussels – should allow car traffic. Commuters use the park as an entry point to the city, but some residents argue that they should rely on other key arteries and modes of transport to get in and out of the city. The involvement of various legal and governmental entities, representing a host of different views on the matter, means that the issue is far from settled. Drivers can still access the city through the park, for now.

The lack of uniformity across different areas of Brussels, which is divided into 19 communes, means different governmental bodies, residents, and political stances. As a result, driving or cycling through Anderlecht can be a very different experience from doing so in, Watermael-Boitsfort, although the two are only a few kilometers away from each other.

Measures on the agenda

Conversely, by many other measures the city is making undeniable strides in the direction of a more sustainable model of mobility.

The new mobility plan for the city launched in August 2022 as part of a larger, region-wide program for 2020-2030 aiming to make the city-center more accessible, livable, and safer. This will be done primarily by cutting down the amount of through-traffic in the area through a combination of new parking regulations, modifications to some one-way roads and the creation of limited-access areas in town for non-local vehicles.



In 2021, the city finished the establishment of a 9-kilometer cycling beltway, known as the 'little belt' which encircles the city's center. This 'little belt' goes a long way towards making cycling safer and more accessible in many key areas of the city, which is reflected by the large numbers of citizens using it.

More citizen engagement needed

These large-scale infrastructure changes are commendable and have undeniably contributed to a reduction of car usage in the city; so for this year, the distance travelled by car by the people of Brussels is 49.19%, down from 64.04% in 2017. Yet these changes are not sufficient to create a sustainable model for mobility. An essential, and often undervalued part of the process to create a sustainable mobility model



2



3



4

depends on a robust effort to actively engage and educate citizenry on the topics of urban mobility and sustainability.

GoodPlanet has been working to do exactly this – promoting urban mobility in Brussels and raising awareness amongst citizens in the city. It is working in partnership with Bruxelles Mobilité and another non-profit organization, Coren, in the development and implementation of the School Mobility Plan project since 2006.

Every year, 21 interested schools are selected to take part in the project. Then working groups are created within each school, which is typically composed of teachers, interested parents and the occasional student representative.

Together they set about 'diagnosing' the school which involves surveying students and staff about their mobility habits for getting to and from school. This helps to establish a good idea of where people come from, and how they are currently moving around Brussels. The schools' internal infrastructure is also reviewed, as well as the surrounding infrastructure. This facilitates the identification of what the school can aim to improve, but also what the city or the commune can do to improve the areas near the school.

Out of this rigorous process, several recommendations can be made. From there, an action plan is designed with the working group, where a clearly defined set of actions is laid out for the school to take in the coming year. This action plan is sent to Bruxelles Mobilité, who considers every point of the action plan on its merits. Once the action plans have been validated, Bruxelles Mobilité facilitates the organization of the actions wherever possible, by covering expenses for a variety of different activities, mobility workshops, material acquisition and infrastructure improvements.

GoodPlanet also helps build bridges between the school and the commune it exists within. If the school wants nearby road or pavement infrastructure to be modified or improved, they can begin a dialogue with the commune.

1. Mural of Yves Chaland cartoon in Brussels, Belgium. **Photo:** J. Torres / Unsplash
2. Villo! user in Parc du Cinquantenaire. **Photo:** Benoit Brummer / Wikimedia
3. Subway in Brussels, Belgium. **Photo:** Sébastien Le Derout / Unsplash
4. Man resting in a parc in Brussels, Belgium. **Photo:** Noralí Nayla / Unsplash
5. Workshop done in schools as part of the School Mobility Plan. **Photo:** GoodPlanet Belgium



4

After working 18 months hand-in-hand with the working group, the school is then responsible for taking the project forward independently, while still benefiting from financial and material assistance from Bruxelles Mobilité.

The value of such a project is clear: School administrators and teachers rarely have the time, resources, energy, or the experience to go about restructuring their school's mobility plan on their own. By offering in-person coaching over 18 months, as well as a framework that allows them to benefit from substantial support from Bruxelles Mobilité, it facilitates the engagement of a public that is clearly keen and interested. Yet without these working groups, they would otherwise have little other external incentives to change this aspect of their school.

Since the project's launch in 2006, 490 out of the region's 725 schools, or 67%, have started a school mobility plan, and currently 250 of those schools are continuing the process by themselves. Schools are clearly invested in changing their mobility over time, but the demand for this project shows that they also largely want to be eased into it and coached on the issue before they feel comfortable doing it on their own.

Fewer cars in the city

In 2022, in an effort to encourage a change in mobility habits, Bruxelles Environment created a new project that provides a financial incentive for people who wish to move away from car dependency. An individual can benefit from 500€ to 900€ depending on their income, for handing in their car. The bonus must then be spent on mobility-related purchases: You can buy a membership to a bike-share scheme, a membership to a car-share scheme, a public transport membership, a multimodal card, or can even use that bonus to buy your own bike. Similar, larger, incentives exist for companies and other such entities too.

To help people find the most fitting solution, Bruxelles Environment also offers free coaching for interested individuals. Anyone can book a video call with a Mobility Coach to discuss their own situation, the nature of their commute, and their mobility habits. The mobility coach can suggest tailored solutions according to each specific situation.

Free Mobility visits can also be organized for groups. People can experience active and shared mobility during a 2 hour walk with a Mobility Coach. Such an experience can be a great way to inspire a change of habit for a company, or even a whole family.

The old axiom 'build it and they will come,' while true in some cases, does not apply to vast sections of modern urban society. Simply offering more electric buses and bike lanes won't create an instant shift of mindset in citizens. The School Mobility Plan in Brussels shows that real citizen engagement in active forms of mobility can be fostered through meaningful dialogue with certain sections of the public. Many people want to move more sustainably, we just need to provide them with the tools and the set of skills that will allow them to do so.

When you incentivize change, and then put in the effort to help people transition to other kinds of mobility, that leads to undeniable positive externalities.

There is nothing appreciatively unique about these projects; these are inherently transferable to other cities. Somewhat strikingly, however, significant mobility projects aimed at schools are not commonplace across European cities, although incentive tools such as those being used by Bruxelles Environment are starting to appear across the European map, albeit slowly.

Defining mobility in Brussels in a single stroke is impossible. Brussels is simultaneously progressing at a rate of knots yet falls short in some respects. Political complexities almost guarantee a lack of uniformity across the area, yet there is a growing engagement with active travel in all corners of the region.

There is one respect where Brussels has got it right: Those in power have understood that you cannot simply rely on investing in infrastructure to improve mobility; you have to actively engage with and educate your citizens as well. ●

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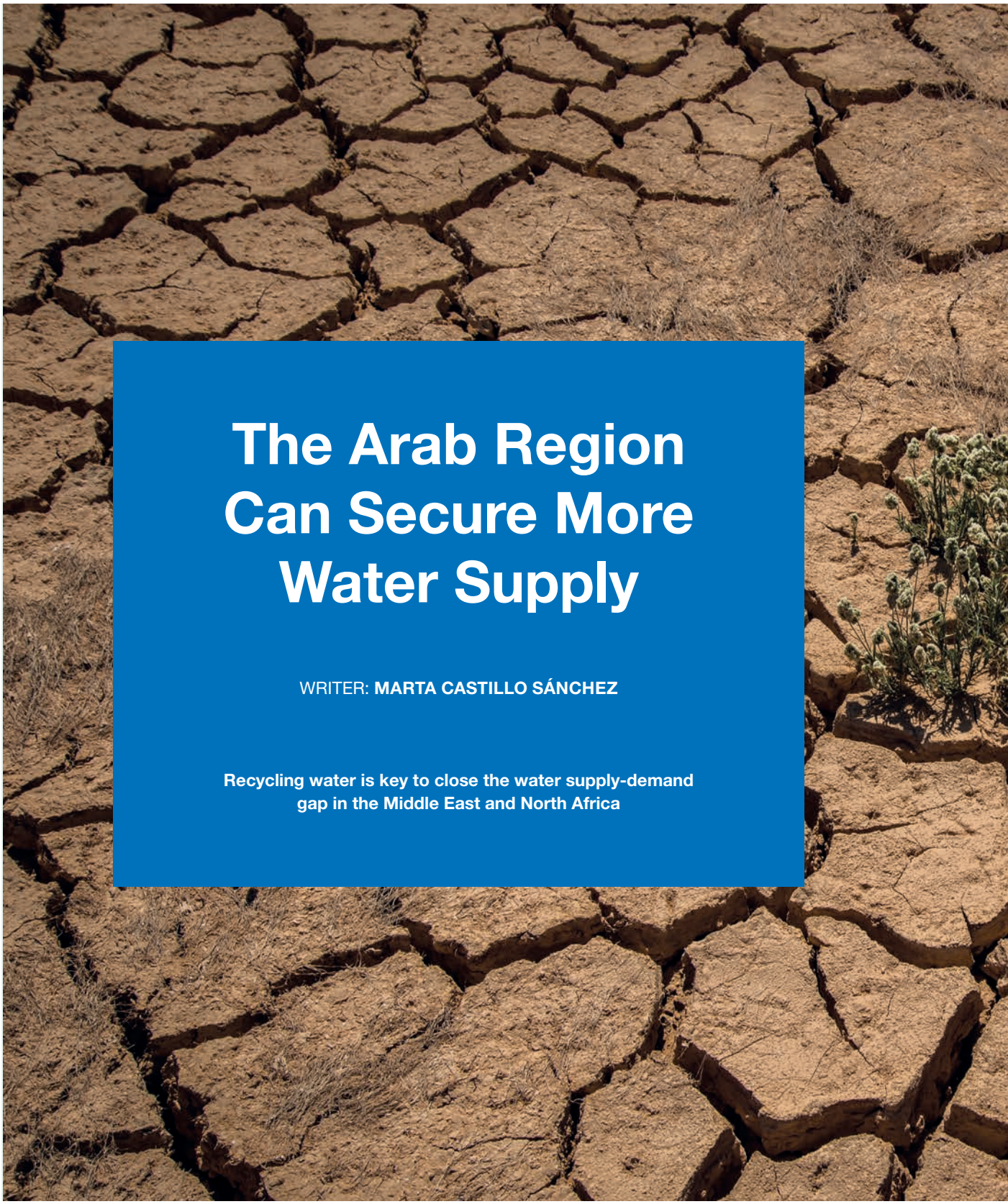
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www.esgc.org



The Arab Region Can Secure More Water Supply

WRITER: **MARTA CASTILLO SÁNCHEZ**

Recycling water is key to close the water supply-demand gap in the Middle East and North Africa



1

Water is part of every step of the food value chain: from food production to processing and consumption. Our dependency on water is challenging food security in the most water scarce region of the Middle East and North Africa (MENA)[1] – a dry and arid region struggling to meet growing water demand, especially for agriculture that uses the most water of all industries. The war in Ukraine has exacerbated the situation impacting food security with unprecedented increases in food prices.

The COVID-19 pandemic and the conflict in Eastern Europe have highlighted the fragility of global supply chains and the dependency on imports in the MENA region to meet food and energy demands. Countries like Lebanon and Egypt, for example, are dependent on around 80% of their grain imports from Russia and Ukraine. Meanwhile, population growth, rapid urbanization, and climate change continued unabated and added pressure to the most water-stressed region in the world: MENA.

MENA is home to more than 472 million inhabitants – a growing population that has increased more than one quarter in the last two decades and that is foreseen to keep growing steadily. Population growth and rapid urbanization - with 66% of the region's population living in cities - is adding further pressure on freshwater supplies; and according to the Intergovernmental Panel on Climate Change (IPCCC), climate change is leading to increasing temperatures and frequent droughts, further compounding existing water scarcity.

The 2019 data from the World Resources Institute's Aqueduct tool highlights that of the 17 countries at the highest risk of acute water scarcity, 12 are in the MENA region. Freshwater withdrawals exceed renewable water resources in almost all countries in the region, and the gap between supply and demand



is widening every year. The average per capita renewable water resources availability is ten times less than the worldwide average, according to the Food and Agriculture Organization (FAO).

What if water is not secured?

Water insecurity in the MENA region has multiple implications. Increasing water scarcity is threatening food supply. According to the FAO database AQUASTAT, 70% of global water withdrawal is used for agricultural production. The MENA region is not an exception. Agriculture is the most water-intensive sector in the region. The FAO estimates that to achieve global food security by 2050, the current food supply must increase by 50% - an estimation corroborated by research published in July 2021 increasing the share to 62% due to the effects of climate change. But that goal relies entirely on securing a sustainable water supply.

Wastewater recovery can increase water availability, energy, nutrients and freshwater access.



2

The economic losses are an essential aspect as well. Water scarcity is expected to cause economic losses of 6-14% of the MENA region's gross domestic product (GDP) by 2050 – the highest in the world. Increased water scarcity could also reduce labor demand by up to 12% and lead to significant land-use changes, including loss of beneficial hydrological services, specifically in the Middle East.

Besides its agricultural and economic impacts, water scarcity could also affect the socio-political stability in the region. The MENA region has the world's highest levels of forced displacement, with an estimated 7.2 million refugees, of whom 2.7 million are hosted in the region, and 12.4 million internally displaced people fleeing protracted armed conflicts. Water is one of the main vulnerabilities of people displaced by conflict in the region, as the Ebb and Flow book published by the World Bank in 2021 highlights. Pre-existing socio-economic grievances in combination with a drought or a water shortage can drive domestic water tensions, especially in the absence of strong institutions.

Mohamed Al Hamdi - Senior Water and Land Officer for the Near East and North Africa at the FAO – explains that "60% of the freshwater available in the MENA region originates in other territories, and travels through numerous countries - such as the river Nile that passes through Egypt, Sudan, South Sudan, Ethiopia, Uganda, Congo, Kenya, Tanzania, Rwanda, and Burundi - causing occasional tensions over rights to freshwater." But, contrary to popular belief, water risks have historically led more to cooperation than conflict. However, as the effects of climate change intensify, these historical patterns may no longer hold: in areas that lack good governance, climate change could exacerbate vulnerabilities and tensions over water resources, leading to a vicious cycle of water insecurity and fragility.

"Unless new and transformative policies for sustainable, efficient and cooperative water management are promoted, water scarcity will negatively impact the region's economic prospects and undermine its human and natural capital", concludes Taheripour and others in their report on the effects of climate change and water scarcity in the MENA region.

Ensuring sustainable water supply

As the urgency of water insecurity grows, stakeholders ranging from national and local governments, international policy-makers, NGOs, and researchers have been searching for ways to increase water supply. One of the most promising options is to upscale the time-old practice of water reuse whereby wastewater from domestic, urban, industrial and agricultural uses is treated to extract pollutants, and the clean treated water is reinserted into the water supply or is used directly for productive purposes, rather than discharging it to the sea or letting it evaporate . This allows increasing water availability whilst stopping contaminated water from flowing into nearby waterways and contaminating natural ecosystems.

Water reuse has great potential to help overcome some of the challenges posed by the increasing pressure on already stressed water resources. Dr. Al Hamdi notes that "wastewater is the only source of water that increases as population and water consumption grow". Cities and towns in the MENA region produce millions of cubic meters of wastewater every year. Preliminary research from the ReWater MENA project highlights that the 19 countries in the MENA region produce every year around 21.5 cubic kilometers (Km^3) of municipal wastewater – a combination of domestic wastewater, commercial and industrial wastewater, stormwater and other urban runoff.

The fate of this wastewater is very different depending on the local context. According to the ReWater MENA database, the region has doubled the number of projects for water reuse every decade since 1990, going from 40 projects reusing a total quantity of 421 cubic milimeters (Mm^3) to 409 projects in 2020 with 2,275 Mm^3. Nevertheless, up to 50% of produced municipal wastewater is still not put to good use - either being discharged into the sea or evaporated.

The untapped opportunities from reusing wastewater are not only limited to increasing water availability. Wastewater recovery can increase the energy, nutrients and freshwater access and enhance the region's ability to adapt to changes in climate and enhance food security. Wastewater contains valuable resources, mainly water, nutrients – nitrogen, phosphorus or potassium – and organic carbon, which can be recovered for different uses, such as agriculture and aquaculture or energy production.



The preliminary estimations shared by ReWater MENA point out that the lost wastewater, if recovered properly, could additionally irrigate and fertilize more than 1 million hectares in the region. The carbon embedded in that generated wastewater is also a key resource. If recovered in the form of methane, it would have a caloric value to provide electricity to millions of households. And that's not all. With increasing population growth, demand for fertilizer is also increasing. Nutrient recovery from wastewater, sludge and other wastes (such as food waste) can help meet regionally and locally this demand.



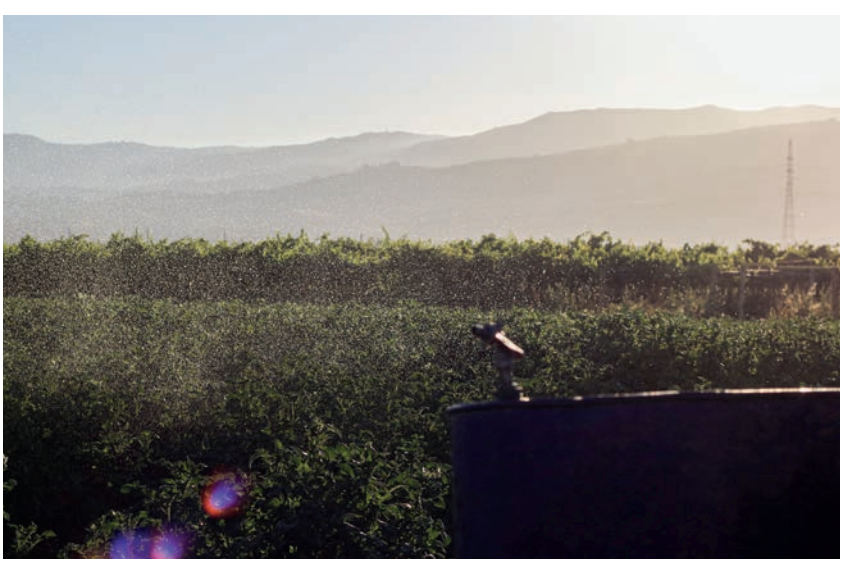
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1. A dry river bed in the Azraq Basin (Qa 'Al-Azraq), Jordan. **Photo:** Seersa Abaza / IWMI

2. Farmer harvesting cucumbers in Bekaa, Lebanon. **Photo:** Lien Arits / IWMI

3. Women packing onions into sacks in Egypt. **Photo:** Hamish John Appleby / IWMI

4. A sprinkled potato field in Bekaa, Lebanon. **Photo:** Lien Arits / IWMI



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5. Two men look at an improved small irrigation chanel (marrwa) in Egypt. **Photo:** Hamish John Appleby / IWMI

6. A drying water pond at the Azraq Basin (Qa 'Al-Azraq) in Jordan. **Photo:** Seersa Abaza / IWMI



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Boosting water reuse to close the supply gap

"Sophisticated treatment techniques are not yet feasible in many of the MENA's middle- and low-income countries. However, a boost in regulations and investment would allow these countries to treat wastewater to be safe for agricultural use if combined with good agricultural practices", confirmed Dr. Al Hamdi. However, he emphasized the importance of planning irrigation with reused water, and provide incentives for farmers to adopt safe irrigation methods.

Even in cases where water reuse has proven to be safe and financially sustainable, the practice can still trigger rejection, especially when water is reused for potable purposes or to irrigate fresh produce. The perceptions about treated wastewater have been an obstacle to the uptake of that practice. Javier Mateo-Sagasta, Senior Researcher at the International Water Management Institute (IWMI) and Project Leader of ReWater MENA, highlighted that building trust among stakeholders is key to increase long term use of water reuse technologies and practices.

Understanding the concerns around acceptance and addressing these with timely, effective communications and stakeholder engagement can significantly improve uptake of reclaimed water. This requires large efforts on behalf of multiple stakeholders to raise awareness of the issue, and encourage citizens to change their perceptions and advocate for water reuse. The ReWater MENA project developed a set of guidelines to make this task easier for planners, investors, project designers and operators.

The region needs to overcome the factors that limit the materialisation of the regional full water reuse potential, including not only cultural barriers and distrust and inadequate regulatory frameworks; but also institutional fragmentation, the lack of appropriate tariffs and the absence of economic incentives and financial models which undermine cost recovery and the sustainability of reuse projects.

There is no doubt about the central role that water reuse will play in the future of our water supply at a global scale. Water reuse is a core component of the United Nations' Sustainable Development Goal (SDG) 6: Clean water and sanitation for all. However, the rapid depletion of water resources makes the transition towards water reuse more urgent for the MENA region than any other area of the world.

According to Mateo-Sagasta, despite decades of stagnated progress, multi-stakeholder dialogues are beginning to take place, with national and local authorities, NGOs, and civil society organisations working together to formulate comprehensive policies that benefit all. Dr. Al Hamdi concludes that:

"Water reuse is a must for this region - we cannot avoid it. Urgency is growing, and countries are becoming increasingly aware of both the water and environmental pollution challenges we face, and they are starting to see wastewater treatment and reuse as a way to address both challenges. We must use every drop of water that's available." ●

1 In this article, the MENA region includes the following countries: Kuwait, Bahrain, Saudi Arabia, United Arab Emirates, Qatar, Libya, Lebanon, Egypt, Syria, Algeria, Oman, Palestine, Sudan, Iraq, Mauritania, Tunisia, Jordan, Morocco and Yemen.





India's Struggle With Climate Adaptation

WRITER: **SKAND AGARWAL**

While mitigation is important, as climate patterns continue to change, adaptation needs equal attention in India.

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Several Intergovernmental Panel on Climate Change (IPCC) Assessment Reports (AR) have proven scientifically that countries like India, Pakistan and Bangladesh are some of the most vulnerable countries to climate change in the world. India became the 3rd largest carbon emitter in the world in 2010. Yet, it aims to become a net-zero emitter only by 2070, as declared by Prime Minister Modi at COP26 in 2021. The world's largest democracy, however, is trying to get on the 'green' path: its leading International Solar Alliance and the introduction of its National Hydrogen Policy in 2022 most definitely show its commitment to fulfil its ambitious plan to produce 50% of the nation's total energy through renewable power by 2030. As the third largest energy consuming country in the world, it has installed about 159.95 GW that already caters approximately 40% (including hydro) of the country's total capacity.

A key finding of the IPCC AR6 report is that despite many international efforts to address the climate crises through mitigation since the 1990s, the period between 2010–2019 was the highest emitting decade on record. The World Meteorological Organization (WMO) reported that the Indian subcontinent is facing an increasing frequency of heatwaves in the last 30 years since 1986. The WMO predicts that the intensity, duration, and frequency of the heat waves are going to increase substantially in the upcoming years. India has faced an increase in uncertain environmental disasters such as cyclones, glacier melts, heat waves, floods, and others. The month of March





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1. Tiger fighting the heat at Bannerghatta Biological Park, India. **Photo:** Surya Katakam / Wikimedia Commons

2. Kolkata, India, 2013. **Photo:** Biswarup Ganguly / Wikimedia Commons

3. View of West of Delhi, India. **Photo:** Jean-Etienne Minh-Duy Poirrier / Flickr



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2022 was the hottest it has ever been in the last 122 years. Temperatures continued to rise and went up to 49 degrees Celsius in several states of India at the end of April. If nothing else, such climate altercations have disastrous impacts on the more disadvantaged communities in the country.

The increasing frequency of heatwaves and their early arrival have enormous economic and health impacts, especially on agriculture-based communities, daily-wage laborers, informal sectors such as rickshaw pullers, domestic helpers, daily contractors, amongst others. In previous time, it was only by mid-May that India would observe a surge in high temperatures, but summers are now arriving earlier. The premature onset of summer has resulted in sudden pressure on power demand and coal shortages that are pushing the country to face one of the worst electricity crises in decades. States such as Haryana, Uttar Pradesh, Bihar, and Punjab have been observing power cuts for up to 8 hours a day that affect the local economies and the larger industrial sectors of the country. Moreover, the coupling of rising temperatures with industrial air pollution has worsened air quality in several cities like New Delhi and Bombay.

Earlier and prolonged summers are making the monsoon season more unpredictable, forcing farmers to adapt their production cycle every season. Where India was aiming to step up and aid the strained international supply

chains caused by Russian war in Ukraine, it inevitably had to ban its wheat export due to an almost 50% major shortfall in yield from wheat crops. The north-eastern State of Assam has witnessed very heavy pre-monsoon rainfall causing floods all over the state. The overflowing of Brahmaputra River, one of the major rivers passing through India, has overrun close to 1500 villages and affected nearly 500,000 people. Although the National Disaster Management Authority of India (NDMA) has already started to rehabilitate the affected people, yet the sudden influx of mass migration to nearby cities has brought pressure on the local administration of these cities.

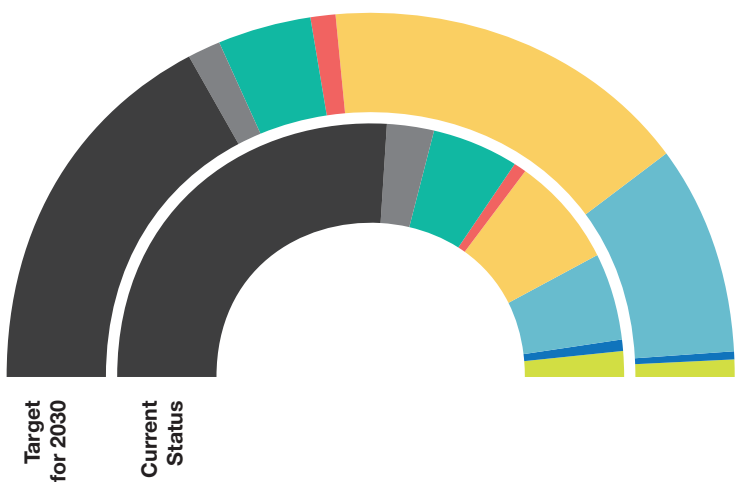
From mitigation to adaptation

While mitigation is important, as climate patterns continue to change, adaptation needs equal attention in India. Is India doing enough? In the city of Ahmedabad for example, excessive heatwaves in the year 2010 caused some 1,300 deaths, spurring the implementation of a specialized local heat health adaptation plan that helped prevent approximately 1,100 deaths each year since its launch in 2013. Experts have since called for more solutions such as the Ahmedabad Heat Health Adaptation Plan to be implement across the country.

According to the CARIAA Working Paper, there are about 30 internationally-funded adaptation projects spanning over myriad sectors such as agriculture, water and disaster risk mitigation in India. Parallel to that several more are on the way to being finalized.

However, there are several obstacles to implement existing and newly-finalized adaptation plans. Many of the indigenous plans are being funded by standalone schemes such as the 2005 Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGS) or National Rural Livelihoods Mission which results in paucity of enough funds to run try and error methods. In fact, while India launched the National Adaptation Fund for Climate Change (NAFCC) in 2015 with a budget allocation of INR 350 Crores ($4.4 billion), The Indian Express, A national daily, reported that grants released from NAFCC since 2017 have been steadily declining. In 2017-2018, the government released about 115.36 crores ($1.4 billion), whereas, in 2021–2022, it only released a meagre amount of 27.76 crores ($34 million). If not central, even the state allocation of funds to adaptation plans are being squeezed out every year.

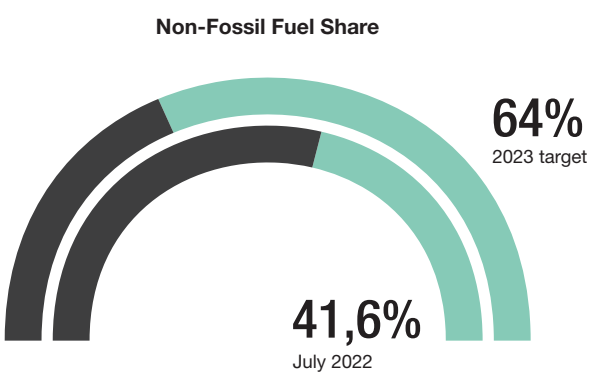
In some cases where solutions do exist, the government is not aware of the vulnerabilities of those most affected. Even though WMO, along with the national meteorological department, has set up early warning systems in the heat-wave prone areas, increasing fatalities clearly show it is not enough. These early warning systems have



	India's Current Status			India's Target for 2030	
	Coal	210,70GW	52,14%	266,91GW	32,66%
	Oil & Gas	25,37GW	6,28%	25,08GW	3,07%
	Hydro	46,85GW	11,59%	71,13GW	8,70%
	Nuclear	6,78GW	1,68%	18,98GW	2,32%
	Solar	57,97MW	14,34%	280,16GW	34,28%
	Wind	40,89MW	10,12%	140,00GW	17,13%
	Small Hydro	4,89MW	1,21%	4,68GW	0,98%
	Bio Power	10,68MW	2,64%	10GW	1,22%



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Graphics adapted from India's NDC Tracking by Vasudha Foundation.

largely failed to curb the impacts precisely because the vulnerable communities – slums and daily wage earners that work outdoors - cannot afford to disengage from day-to-day economic activities even for a day.

Then there are cases where much more planning is required on adaptation. For example, the flash floods of 2022 in the State of Assam are not new: the region has been facing floods almost 3–4 times every year, according to the Water Resources Department of the Government of Assam. Episodes of flash floods every year have displaced millions of people and caused alarming environmental degradation such as coastal erosion leading to further internal migration. Despite having a dedicated disaster management

plan, Assam has failed to pre-empt flash floods and other disasters to rehabilitate people much before they strike the mainland.

India has a varied climate around the country. Where the north is facing extreme heat waves, the north-east is experiencing flash floods. Therefore, the country needs specialized local programs to fight region-specific climate disasters, with short- and long-term solutions that protect people from health hazards while providing sustainable livelihood to vulnerable communities. This should be complemented with robust community rehabilitation programs, aggressive risk awareness programs, and locally tailored economic programs for daily-wage workers.

Climate mitigation is important, but definitely not enough in climate diverse countries like India. IPCC reports have substantiated enough that mitigation has to be complemented with adaptation to cut back the ongoing impacts of climate change to protect our future. India has already heavily invested to lead the way in climate mitigation; now it's time that to invest more in climate adaptation.

4. The heavy water current washed away a huge portion of Nagaon to Kampur road at Kathiatoli Village in Nagaon district of Assam. May 2022. **Photo:** Simanta Talukdar/Shutterstock

5. Urban flooding, India. **Photo:** Flickr@India water Portal/ Supriya Biswas



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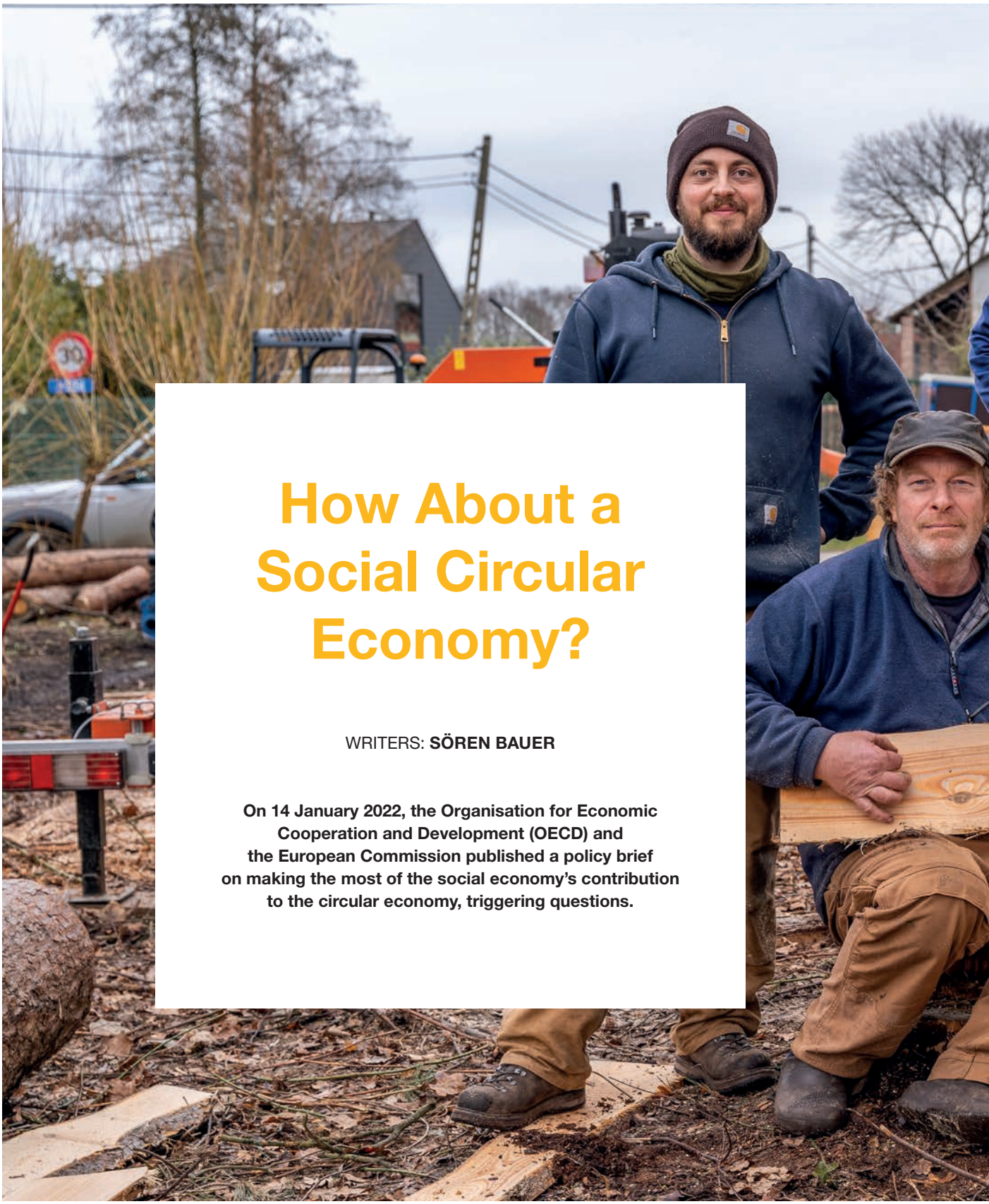
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How About a Social Circular Economy?

WRITERS: **SÖREN BAUER**

On 14 January 2022, the Organisation for Economic Cooperation and Development (OECD) and the European Commission published a policy brief on making the most of the social economy's contribution to the circular economy, triggering questions.



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We caught up with Julie Rijpens, Policy Analyst in the Social Economy and Innovation Unit at the OECD Centre for Entrepreneurship, SMEs, Regions and Cities, to find out more about the research and key findings of this paper.

What exactly is the social economy?

The social economy refers to organizations and enterprises that prioritize social impact and put social and environmental concerns, alongside economic objectives, at the heart of their business models. Social economy organizations distinguish themselves in two ways: first, their purpose – they primarily address societal needs and pursue a social purpose – and secondly, their way of operating – they implement specific business models, based on democratic and participative governance as well as collaboration, often at the local level. Typically, the social economy includes associations, co-operatives, mutual organizations, foundations and social enterprises.

It is also a significant economic and social actor, made up of different types of organizations active in almost all sectors. According to the latest available data, there are 2 million social economy entities in the EU, accounting for 6% of EU employment. A study by the International Centre of Research and Information on the Public, Social and Cooperative Economy (CIRIEC) shows that, in 2015, 9 to 10% of the workforce in countries such as Belgium, France, Italy, Luxembourg and the Netherlands were employed in the social economy. In Croatia, Lithuania, Malta, Romania, Slovenia and the Slovak Republic less than 2% of employment existed in the social economy in that same year.



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How do the social economy and the circular economy come together?

The social economy has played pioneering roles for decades in shaping and expanding the circular economy, through activities such as repairing electronics and textile recycling, reusable consumer goods, and repair and remanufacturing initiatives that extend the lifespan of products and materials. We all probably know an example of an association or social enterprise active in repairing electronics, furniture or other goods being sold in second-hand shops. The social economy also contributes to other circular activities like restoring natural ecosystems, e.g. through regenerative farming techniques, optimizing the use of resources through eco-design and supporting the collaborative economy via sustainable platforms.

1. Benjamin Moncarey, Dirk Boonen and Stephan Kampelmann members of the cooeprative in action. **Photo:** Sonian Wood Coop
2. Biodiversity Workshop at The Rediscovery Centre. The Rediscovery Centre is also home to a Cafe, event space, Eco Store, a research and policy department along with a children's Education department. **Photo:** The Rediscovery Centre
3. Dave Kavanagh Rediscover Paint. **Photo:** The Rediscovery Centre
4. Bike Workshop. **Photo:** The Rediscovery Centre

Social economy organizations engage in circular value chains and can reinforce social inclusion. They create decent work and provide training and working opportunities for vulnerable groups, as do Work Integration Social Enterprises (WISEs) active in the circular economy. As an example, through its members, mainly in Europe, RREUSE federates a network of approximately 850 social enterprises operating in the field of reuse,



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repair and recycling. These organizations collectively handle around 1 million tons of goods and materials annually, generating a turnover in excess of EUR 1.1 billion, which the organizations use to provide jobs and training to over 100 000 individuals. According to data coming from a RREUSE survey, their members operating as work integration social enterprises employ between 45% and 80% of disadvantaged individuals at risk of social exclusion. They also contribute to the uptake of circular goods and services by making them affordable.

Finally, social economy organizations often operate at the local level and thereby contribute to designing and inspiring circular business models based on proximity and collaboration. This is critical for organizing circular value chains at the territorial level through partnerships among actors and for more community engagement. This ability to collaborate locally allows social economy organizations to play a specific role in circular value chains as an "integrator" that connects local actors and facilitates their collaboration.

Many criticize the circular economy for lacking strong societal components in view of a more equal society, fair labor conditions and redistribution of wealth. Can the social economy help address these shortcomings and make the circular economy more social?

Social economy organizations are driven by a mission of serving the common good, protecting the general interest and increasing individual and community welfare. They put social and environmental concerns at the heart of their business model, prioritizing social impact over the maximization of return on capital. This enables them to favor a longer-term perspective and to re-invest some profits in the pursuit of their social or environmental purpose; that way, they can develop activities that benefit society but may appear as less profitable from a capital investor's perspective. Typically, inclusive governance structures, which often involve multiple actors (e.g. donors, users, beneficiaries or public authorities), next to investors, also encourage this.

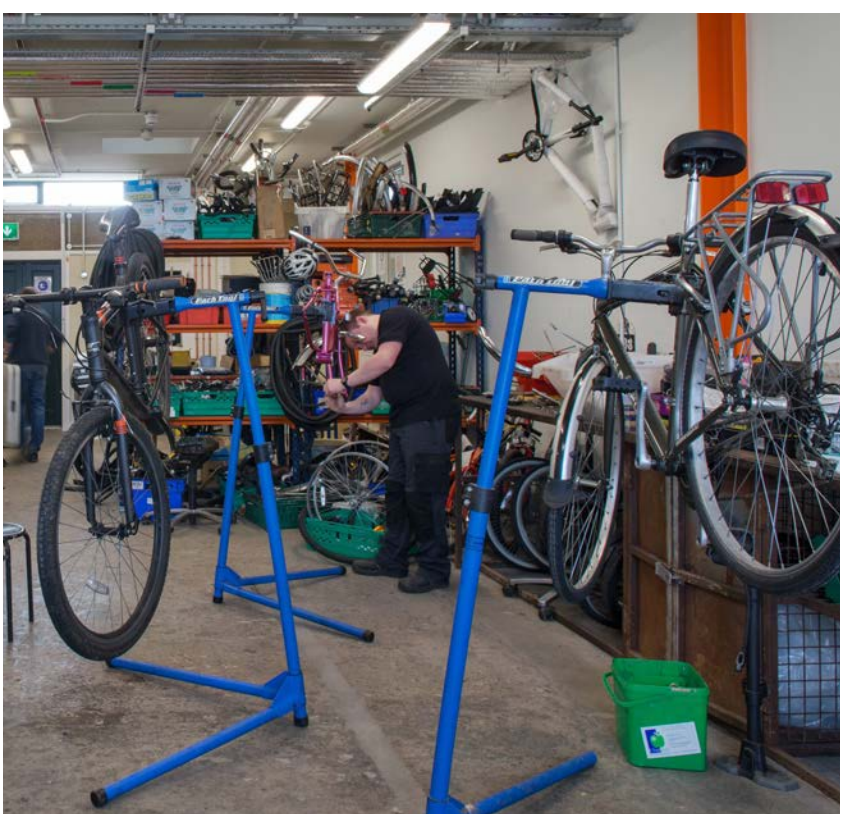
I believe that the social economy is well-positioned to inject a strong social component into the circular economy and reinforce its benefits for people and communities. Due to work integration, social enterprises provide many opportunities to vulnerable groups. Some entities also strive to improve working conditions along the value chains, and reduce informality. For example,

in Canada, Colombia and Peru, co-operatives have helped improve the working conditions of informal waste pickers, sometimes to a level where waste picking has become a formal profession.

Social economy organizations can also improve the affordability of circular goods such as in second-hand shops and offer affordable 'circular' services for all. They sometimes offer educational activities to fight the digital divide or encourage citizen participation in the circular shift. Social economy organizations can also contribute to social cohesion and a sense of community by providing people with opportunities to engage in local projects (e.g. as volunteers or members of co-operatives and associations). This favors informed decisions about consumption choices and their socio-economic impacts, which encourages circular behaviors and transforms the economy and society.

What are the biggest challenges in bringing the social economy and circular economy together for the benefits of people, job creation and society?

The circular economy is still far from reaching its full potential and needs to be better integrated into the mainstream economy. It needs to overcome challenges linked to implementing efficient circular business models and value chains, build appropriate skills, improve work conditions, increase business and consumer engagement, and create appropriate policy frameworks to advance the circular agenda.



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The good news is that the social economy provides a range of solutions to these challenges, as project initiators/creators, and innovators themselves, and as a means to engage citizens, firms and territories in circularity. However, social economy organizations also face barriers that may hinder their contribution to the circular economy. Despite important efforts these last years, a lack of awareness of what the social economy is and how its entities positively impact our economies and societies prevails. More efforts are needed to build the evidence base; we need to help citizens and policy makers better understand the social economy's economic and social/environmental value and how it can help us transition toward a more inclusive and sustainable future. Similar to the general challenges faced by circular initiatives, many social economy organizations also need to consolidate their business models, improve financial viability and address skills shortage specific to the circular economy.

Here are two examples from our policy brief: In Ireland, the Rediscovery Centre brings together the expertise of artists, scientists, designers and craftspeople sharing a common goal: sustainability. It supports four reuse social enterprises that upcycle unwanted materials, such as furniture, textile and bicycles, for new product development while creating training and employment opportunities for the long-term unemployed. The Sonian Wood Coop in Belgium is another example that shows how social economy organizations can connect local actors and integrate circular value chains, in this case to sustainably manage a common good – the Sonian Forest. The co-operative was launched in 2019 to work with forest owners, sawmills, carpenters, designers and others to keep wood sourcing and product development as local as possible.

To what extent was and is the social economy already part of the European Commission's former and current Circular Economy Packages? Is the Commission planning to consider social and societal issues more as key components of its circular transition in the future?

(Julien De Beys, Policy Officer at the European Commission's Directorate-General for Employment, Social Affairs and Inclusion (DG EMPL), and William Neale, Adviser at DG Environment, answered this question as part of the Commission's contribution to the policy brief and this interview.)

Circular economy approaches have revolutionized environment policy by focusing on the entire life-cycle of products and on wellbeing rather than GDP, not only on 'punishing polluters'. It is focused on economic incentives rather than legal limits. It therefore needs businesses to enable it. But although it is driving an economic transition, with important economic and social consequences, the social economy has not been central to either the previous or current circular economy action plans.

This is not because we do not recognize their importance or potential; it is rather because the tools and competences we have at EU level are not the ones that can promote social economy approaches to circularity directly. So, for example we are using Ecodesign and waste legislation to ensure that products are reparable, upgradeable and recyclable, and that they are separately collected as waste, and this will make many more social enterprises viable. However, those enterprises will (mostly) be created a long way from Brussels, and will depend far more on what happens at national, regional or municipal levels. That being said, the Commission is supporting all social economy actors for several years, including those active in the environmental field.

In December 2021, the Commission has adopted its Action Plan for the Social Economy. This document offers a good overview of all the actual and future policies developed in favor of social economy at EU level. Among others, one will read that the Commission intends to issue guidance on how best to support partnerships for the circular economy between social enterprises and mainstream businesses.

As more and more countries, regions and cities around the globe are developing circular economy strategies: what is the OECD's advice on incorporating social economy components and approaches into these circular strategies?

The ongoing recovery from the COVID-19 pandemic provides a unique opportunity to promote a green and inclusive transition, which makes the point for reinforcing the links between the circular and the social economy. There is definitely momentum now: a growing number of policy initiatives supports either the circular or the social economy, and increasingly the combination of both, which is promising.

Building on 25 years of social economy analysis and policy design, our policy brief identifies a range of actions policy makers can take to better capitalize on the social economy's potential to contribute to the circular shift – the four most important ones are:

1. Promote social economy integration into the circular economy by raising awareness, sharing knowledge, boosting market demand or encouraging innovation;

2. Support social economy actors already active in the circular economy, such as through public procurement and improved access to finance;

3. Encourage dialogue, strategic partnerships and novel forms of collaboration amongst public actors, social economy organizations and businesses along value chains and within territories;

4. Help build the evidence base and produce robust data on social economy organizations active in the circular economy to measure their full economic value as well as their social and environmental benefits.

I warmly invite all you to explore the many examples of policy initiatives in our policy brief and learn more about how they help unleash the potential of the social economy in the circular economy.

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