TEC BRIEF

#18

Gender-responsive technology and infrastructure for sustainable urban mobility

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United Nations Climate Change
Technology Executive Committee

Learn to ride the cycle, sister
Set in motion the wheel of life, sister
See the little boy riding high
You too can learn and ride by

Cars, ships and planes
Are now piloted by women
Those days are gone
When the drivers were only men
So learn to ride the cycle quickly
And begin a new story

– Song from the Cycling Campaign for Women,

Acknowledgements

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I. Why this TEC brief?

Home to a growing majority of the world's population and accounting for about 70% of global greenhouse gas (GHG) emissions, urban areas play a key role in achieving the goals of the Paris Agreement, the 2030 Agenda for Sustainable Development and the New Urban Agenda.

In order for urban areas to become economically, socially and environmentally sustainable, as called for in these international agreements (see Box 1), it is key that urban mobility also becomes cleaner and more sustainable. Achieving safe, affordable, accessible and sustainable transport systems that leave no one, including men and women in all their diversity, behind is therefore not merely a technological issue, but a cross-cutting one, that includes social, economic, cultural and environmental aspects.

There is a growing awareness among Parties to the UNFCCC that gender-responsive climate policy is not just more equitable, but is also more effective in yielding lasting impacts for climate and development agendas, and is thereby a necessity to meet the goals of the Paris Agreement. The technology framework under Article 10, paragraph 4, of the Paris Agreement sets out ways in which gender should be considered in work relating to climate technologies under all key themes of the technology framework.

In 2022 the TEC published a technical paper on deep decarbonization technologies for sustainable road mobility (↑ UNFCCC TEC, 2022). This TEC policy brief builds on and complements the previous work of the TEC on the topic and aims to:

1. **Shed light on and raise awareness of gender inequalities** and differences in urban mobility and, through multiple examples and lessons learned of overcoming challenges, serve as inspiration to national and local policymakers, relevant stakeholders and local communities to take action;

2. **Respond to an urgent need to address gender concerns** and experience as an integral dimension of planning, designing, implementing and using sustainable low-carbon mobility technologies, infrastructure and services;

3. **Contribute to the development of high-quality and technology-related gender-responsive urban mobility solutions** that may assist policymaking and legislative processes to develop and scale up policies, measures and systems that support decarbonizing urban mobility by responding more effectively to the needs of all members of the society.

II. Scope of the policy brief

This TEC policy brief discusses sustainable urban mobility through a gender lens (see Box 2) and touches upon related technologies, infrastructure and services, challenges, development options and good practices.

It shows trends in urban mobility and the increasing need for gender-responsive policies, measures and practices to be implemented. It illustrates several findings as to why gender issues should be systematically considered and integrated in urban mobility systems and services and are a prerequisite for sustainable mobility.

BOX 1

URBAN MOBILITY AND GENDER REFERENCES IN GLOBAL AGREEMENTS ON SUSTAINABLE DEVELOPMENT AND CLIMATE CHANGE

1. **The 2030 Agenda for Sustainable Development**
has gender equality as one of its main ambitions, with a dedicated Sustainable Development Goal (SDG) to end discrimination between women and men (SDG 5). Overall, achieving gender equality and women's empowerment is seen as being integral to each of the 17 SDGs. The most direct reference to urban mobility in the 2030 Agenda for Sustainable Development is target 11.2 of the SDGs:

   "By 2023, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons."
   To monitor the progress on this target, the information is disaggregated by sex, age and persons with disabilities.

2. **Gender-responsive urban mobility**
is referenced in paragraph 114 of the New Urban Agenda, the outcome document of the Habitat III conference in 2016:

   "We will promote access for all to safe, age- and gender-responsive, affordable, accessible and sustainable urban mobility and land and sea transport systems, enabling meaningful participation in social and economic activities in cities and human settlements, by integrating transport and mobility plans into overall urban and territorial plans and promoting a wide range of transport and mobility options."

3. **The 2015 Paris Agreement**
does not have a specific reference to transport or urban mobility and outside of the preamble, it is gender-blind. In the preamble it does, however, call on Parties to take into account gender in their actions to tackle climate change:

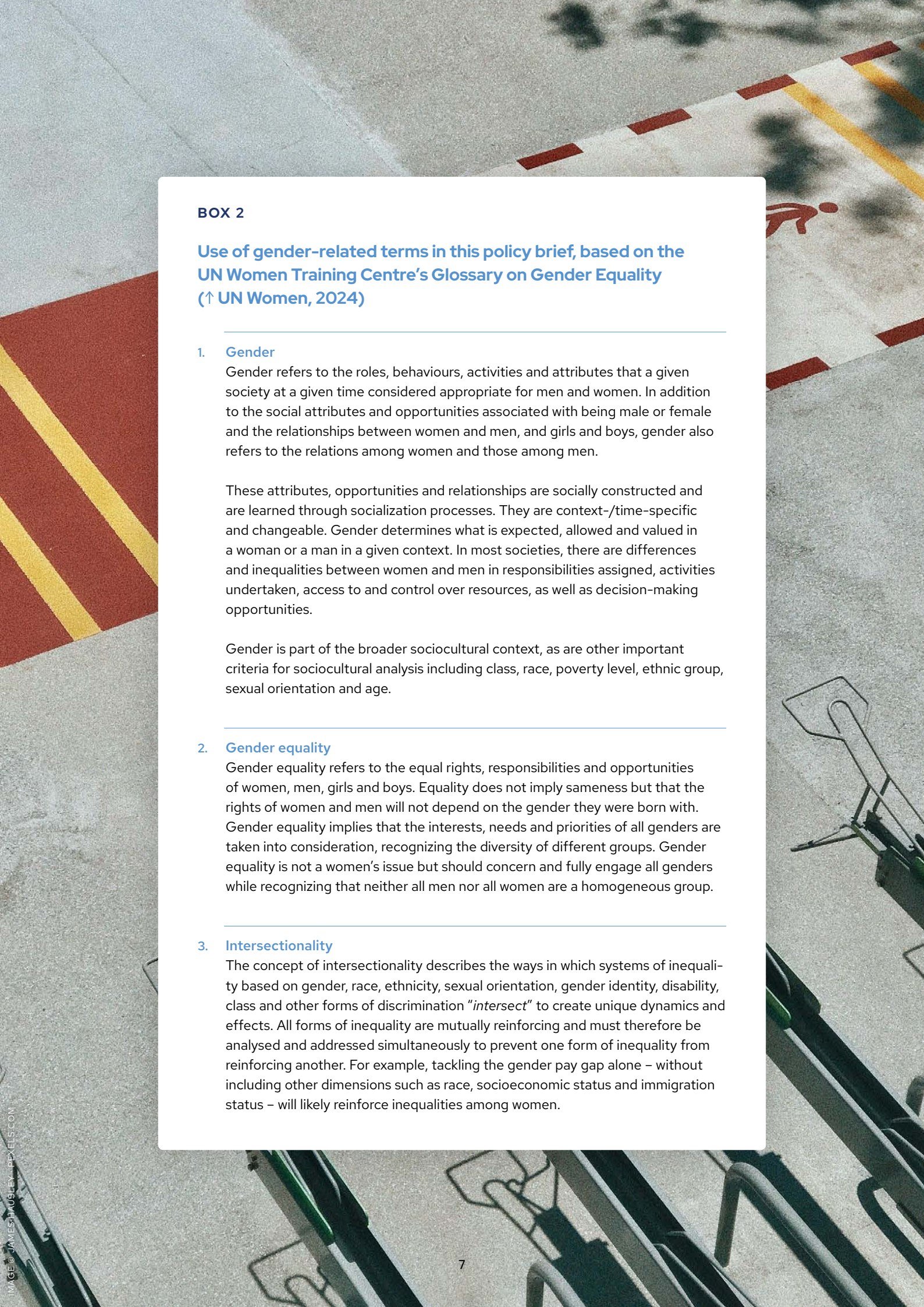
"Acknowledging that climate change is a common concern of humankind, Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity."

4. **The enhanced Lima work programme on gender (LWPG)**
and its gender action plan promote gender equality and women's empowerment in the UNFCCC process, including the work of the constituted bodies. Activity D.3 asks constituted bodies, Parties and relevant organizations to

"Promote the deployment of gender-responsive technological solutions to address climate change, including strengthening, protecting and preserving local, indigenous and traditional knowledge and practices in different sectors and for improving climate resilience, and by fostering women's and girls' full participation and leadership in science, technology, research and development".

The TEC brief further discusses gender-based differences in interacting with urban mobility systems, including travel behaviour patterns and social norms inhibiting certain travel options. Additionally, the brief spotlights gender disparities in availability, accessibility, affordability and safety (in its two core elements: safety from accidents; and safety from violence) of urban mobility systems and services.

The TEC brief also highlights a number of key challenges to achieving gender-responsive urban mobility that have to do with the broader policy landscape and systems at the national and subnational level, for example planning and budgeting frameworks, education and employment systems, as well as issues related to urban governance.



BOX 2

Use of gender-related terms in this policy brief, based on the UN Women Training Centre's Glossary on Gender Equality (↑ UN Women, 2024)

1. **Gender**

   Gender refers to the roles, behaviours, activities and attributes that a given society at a given time considered appropriate for men and women. In addition to the social attributes and opportunities associated with being male or female and the relationships between women and men, and girls and boys, gender also refers to the relations among women and those among men.

   These attributes, opportunities and relationships are socially constructed and are learned through socialization processes. They are context-/time-specific and changeable. Gender determines what is expected, allowed and valued in a woman or a man in a given context. In most societies, there are differences and inequalities between women and men in responsibilities assigned, activities undertaken, access to and control over resources, as well as decision-making opportunities.

   Gender is part of the broader sociocultural context, as are other important criteria for sociocultural analysis including class, race, poverty level, ethnic group, sexual orientation and age.

2. **Gender equality**

   Gender equality refers to the equal rights, responsibilities and opportunities of women, men, girls and boys. Equality does not imply sameness but that the rights of women and men will not depend on the gender they were born with. Gender equality implies that the interests, needs and priorities of all genders are taken into consideration, recognizing the diversity of different groups. Gender equality is not a women's issue but should concern and fully engage all genders while recognizing that neither all men nor all women are a homogeneous group.

3. **Intersectionality**

   The concept of intersectionality describes the ways in which systems of inequality based on gender, race, ethnicity, sexual orientation, gender identity, disability, class and other forms of discrimination "*intersect*" to create unique dynamics and effects. All forms of inequality are mutually reinforcing and must therefore be analysed and addressed simultaneously to prevent one form of inequality from reinforcing another. For example, tackling the gender pay gap alone – without including other dimensions such as race, socioeconomic status and immigration status – will likely reinforce inequalities among women.

The TEC brief presents the "Avoid–Shift–Improve" approach as a framework for improving sustainable urban mobility that can help to achieve the climate and developmental targets of both the Paris Agreement and the 2030 Agenda for Sustainable Development. It then explores which parts of the proposed approach can help to ensure that current gender inequalities in urban mobility can be overcome.

In its final part, the TEC brief provides guidance to policymakers and practitioners on how the proposed policy approaches can best be incorporated in policy, programme and project design.

This brief explores the following questions:

1. **What are gender differences** and disparities in urban mobility systems?

2. **How can sustainable mobility policies** address observed gender differences and disparities in urban mobility systems in a manner that supports the decarbonization of urban mobility systems?

3. **What tools and other resources** are available to policymakers in support of the development and implementation of gender-responsive technology and infrastructure for sustainable urban mobility?

This brief focuses on urban passenger transport. Urban freight is also an important contributor to climate change but requires a separate gender analysis and will also require a different set of policy recommendations.

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III. Urbanization, growth of mobility and associated CO_2 emissions

The International Transport Forum at the Organisation for Economic Co-operation and Development (↑ITF-OECD, 2023), in an analysis of urban transport CO_2 emissions (see figure 1), projects an expected growth in the urban population by 1.596 billion persons by 2050, compared to 2019. The largest growth is expected to occur in the Africa and Asia–Oceania regions. Urban passenger kilometres are expected to grow by 27,386 billion kilometres from 2019 to 2050. This is almost a doubling from 2019, showing that urban passenger transport is very much a fast-growing sector.

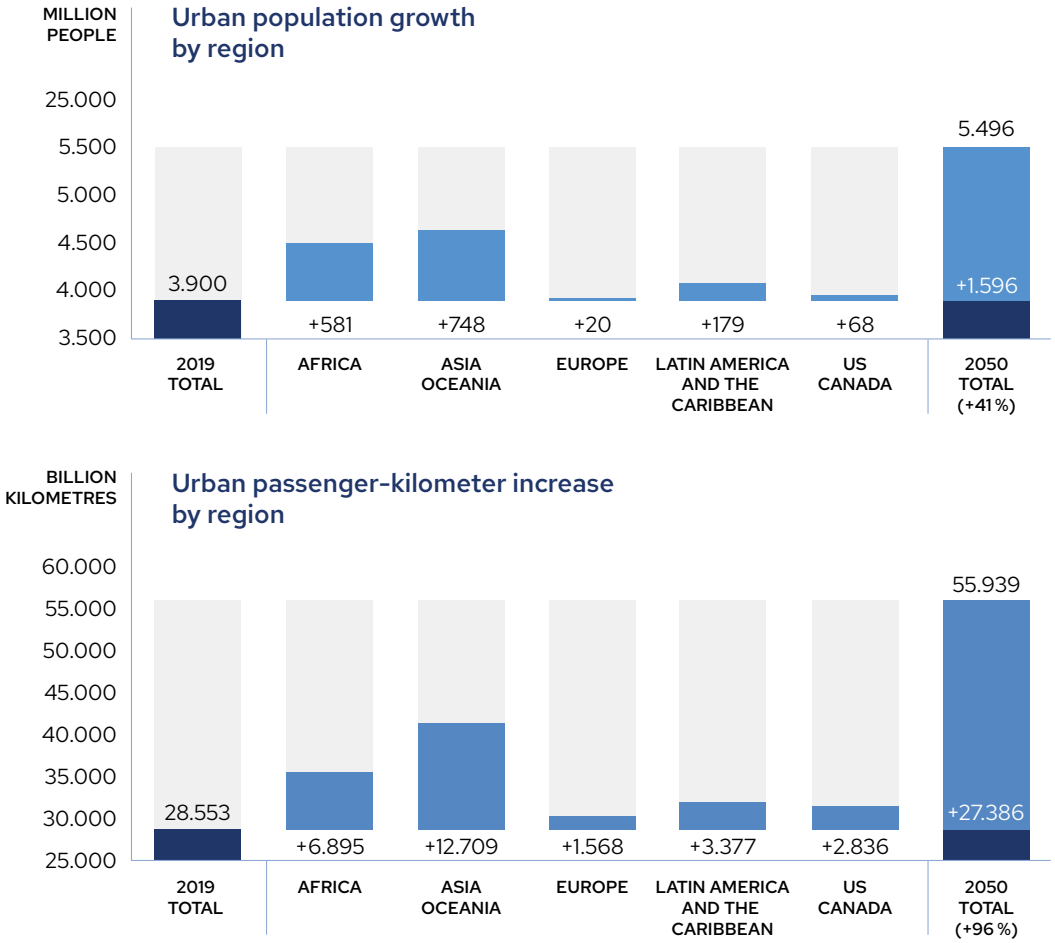

Figure 1. Urban population and passenger–kilometre growth, 2019–2050

Based on current policies, ITF-OECD expects that privately owned vehicles will continue to dominate urban passenger transport CO_2 emissions in most regions in 2050 (see figure 2). However, because of already committed policies, notwithstanding the above-mentioned increases in urban passenger travel demand, all regions, with the exception of Africa, are projected to experience a decrease in CO_2 emissions due to the combination of:

1. **Expected improvements** in vehicle efficiency and technology
2. **Policy interventions** to shift trips to low-carbon modes
3. **A higher emphasis on land-use policies** that decrease trip lengths

At a global level, this decrease is expected to be 23% by 2050. This, however, still falls short of the targets of the Paris Agreement.

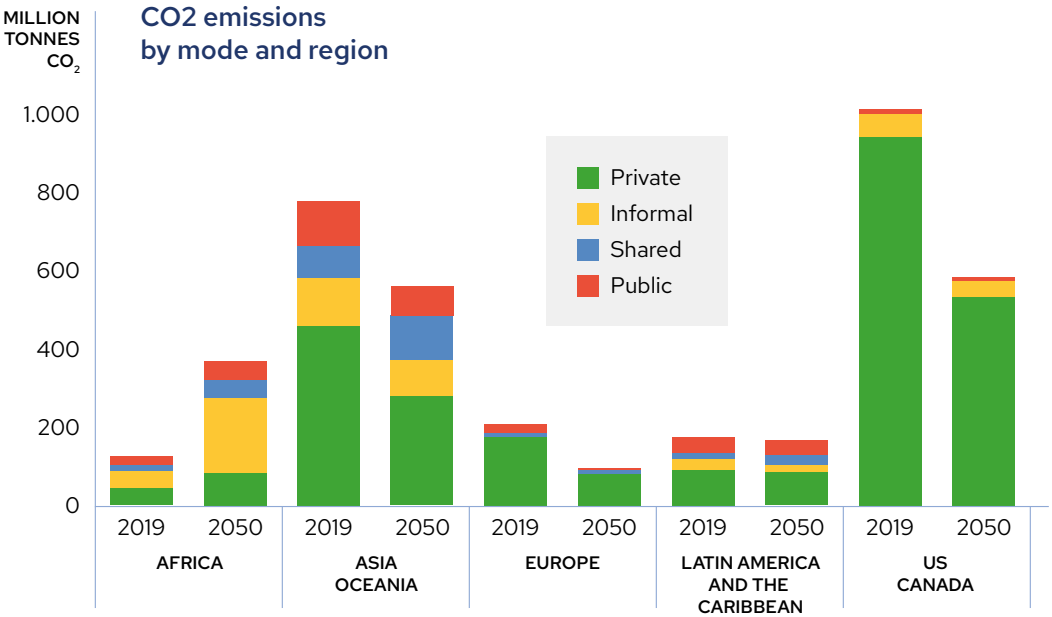

Figure 2: CO_2 emissions by mode and region, 2019–2050

Growth trends are with respect to 2019. Active and shared-active models have zero tailpipe emissions. Informal modes are not available in Europe and US–Canada.

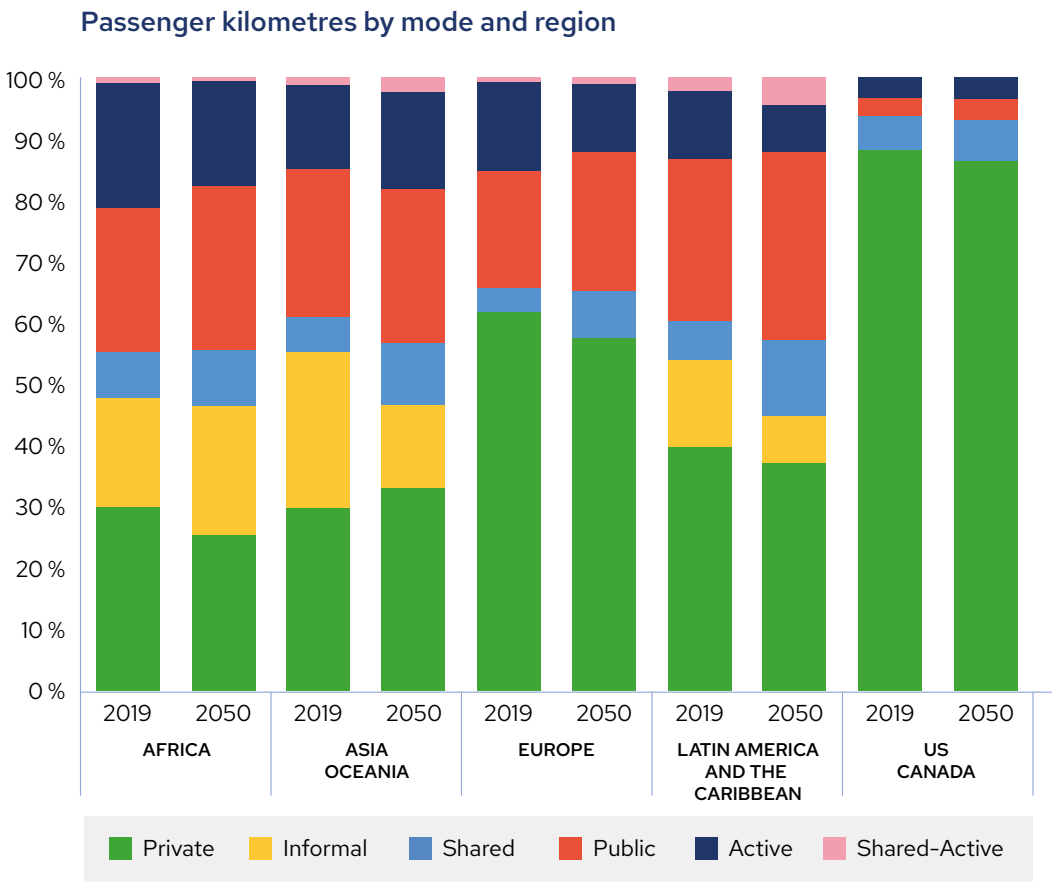

Figure 3: Passenger–kilometre by mode and region, 2019–2050

Active and shared-active models have zero tailpipe emissions. Informal modes are not available in Europe and US–Canada.

Without substantive policy action and technology shifts, ITF-OECD projects relatively few changes in the modal structure of urban transport across the different regions between 2019 and 2050 (see figure 3). Private vehicles (cars and motorcycles) continue to dominate, while the share of public transport shows a small increase. Active modes (walking and cycling) experience a downward trend in some regions and privately owned vehicles continue to dominate.

Informal transport continues to be important in the global South, with an increase in mode share projected for Africa. Shared mobility is expected to grow, especially in combination with active mobility. Unfortunately, to date there are no comprehensive gender-specific breakdowns of data on urban mobility and associated CO_2 emissions.

IV. Gender and urban mobility

Urban mobility is a service that enables different groups in urban society to meet their economic and social needs. Urban mobility patterns are gender influenced because of the different roles ascribed to men and women in society, as well as social norms. Gender-based mobility patterns will vary across and within geographies based on differences in gender roles and social norms in different parts of the world and the often considerable differences in economic status of both men and women. Urban mobility experiences vary depending on gender and differences in age, life cycle, ethnicity, income and skill, for example (↑ Jirón, 2015, as cited in CEPAL, 2019). Society-based gender differences manifest themselves in different travel patterns for men and women, different travel budgets, employment patterns and exposure to harassment and violence while travelling. There is a strong linkage between women, poverty and mobility. Poverty reduces mobility and a lack of transport options compounds poverty (↑ Allen, 2018).

The interplay of gender and transport is highly contextual, as gender-related needs and roles differ across cultures and geographies. To fully understand and appreciate the gender dimensions of urban mobility, an intersectional analysis of urban mobility is required which, in addition to its primary focus on gender, also includes other factors that contribute to inequality such as economic status, class, ability, age and sexual orientation.

If gender considerations are not systematically mainstreamed in the urban mobility sector, the following SDGs will simply not be achieved (↑ Priya Uteng, 2021): good health and well-being (SDG 3), quality education (SDG 4), gender equality (SDG 5), reduced inequalities (SDG 10), sustainable cities and communities (SDG 11), climate action (SDG 13) and partnerships for the Goals (SDG 17). Likewise, disregarding gender in the decarbonization of urban mobility would undermine the specific call in the Paris Agreement for gender equality and the empowerment of women.

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A. Trip-making

Gender differences in travel behaviour (see table 1) are well recognized in the transportation and gender research and policy circles (↑ Borker, 2022a). Women were found to have shorter commute distances (and hence shorter travel time), to trip chain (see Figure 4), to make more non-work related trips, to travel at off-peak hours (more so in the global South) and to choose more flexible modes, depending on other social characteristics, such as age, income, household size and/or number of dependents (↑ Ng and Acker, 2018).

Women share similar roles across developing and developed countries which affect their trip-making patterns, for instance, as they are disproportionally represented in unpaid care work looking after children and elderly relatives and doing housework (↑ ILO, 2018). For instance, in Bogotá, women undertake 75% of care trips (all travel resulting from home and caring responsibilities) and 42% of work trips, and women carry out more than 70% of the unpaid work in countries such as Ireland, Italy and Portugal (↑ Vaalavuo, 2016, as cited in Borker, 2022a).

TABLE 1

TRAVEL DIFFERENCES BETWEEN WOMEN AND MEN

	WOMEN	MEN
Purpose of journey	Diverse, depending on work and care-related tasks	Mainly work related
Distance	Concentrated journeys, covering short or medium distances, often near the home	Medium to long distances
Stops	Multiple stops during the journey	Limited, generally work related
Origin–destination	Fragmented, indirect trips	Direct return journeys for work
Hours	Variable	During peak hours
Accompanied trips	Frequently accompanied by children, older persons or persons with reduced mobility	Less than women
Load	Baby strollers, packages or shopping	No particular load

There are large differences among women in terms of preferred and actual modes of travel. These differences can be influenced by culture, socioeconomic status and other factors. There can also be differences in the travel behaviour of women throughout their lives and this changes more at specific life stages than for men.

A study in three Latin American countries showed that when women have children, the number of trips increases by 13 %, while the number of trips made by men tends to stay stable (↑ Allen et al., 2018). An Indian study showed that elderly women prefer the use of a private car for the majority of their trips, but since none or few of them owned a driver's licence, they were dependent on male family members to drive them. In addition, while women did know about ride-sharing technologies and owned smartphones, they lacked the technological skill to access the application on their phones and make use of these services (↑ Allen, 2018).

Observation of mobility patterns across various geographies indicates that women are more likely to make shorter, more frequent and more complex trips using a combination of public and private modes of transport linked to domestic and care-giving responsibilities. This is commonly referred to as "trip chaining" (see figure 4).

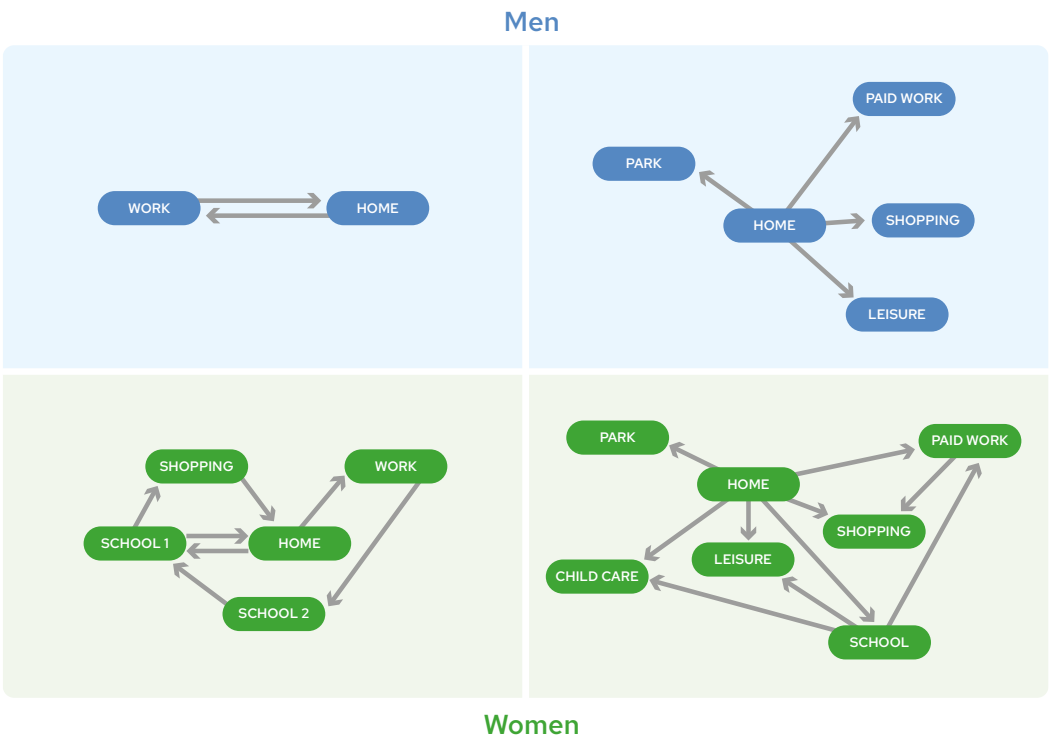

Figure 4: Summary of general travel patterns of men and women
observed in 2017 in a slum in Buenos Aires (Allen, 2018, left) and in 2021 in the European Union (Diehl and Cerny, 2021, right).

Transport infrastructure, and especially public transport, in most countries is more designed to cater to typical commute journeys, characterized by linear, uninterrupted travel, as often taken by men between home and the central business district, rather than to cater for the chained trips more often taken by women (↑ Allen et al., 2016; Gonzalez et al., 2020, as cited in Borker, 2022a).

Women are both time-poor and financially more constrained. As they rely more on public transport and often travel with children, the costs of travel may be doubled or trebled. Additionally, if integrated ticketing is not available, buying several single-fare tickets during chained trips makes public transport costlier for women (↑ Shah et al., 2017, as cited in Borker, 2022b), which can affect the distance they cover (↑ Uteng and Turner, 2019, as cited in Borker, 2022b). Because of the trip chaining, when combining multiple tasks and destinations women consider comfort to be an important factor affecting their travel (↑ Allen et al., 2016, as cited in Borker, 2022a).

B. Access (formal and informal public transport)

Women have less access to private means of motorized transport, although this is changing. The majority, however, are still dependent on public transport, shared transport (ride-hailing), paratransit (transportation service that supplements fixed-route public transit systems by providing individualized rides without fixed routes or timetables e.g. for individuals with disabilities) or informal transport such as rickshaws or tuk-tuks, or have no other choice but to walk and in some cases use a bicycle (see Box 3).

Access to urban public transport is one of the few dedicated targets (11.2) of the SDGs on urban mobility. The United Nations Human Settlements Programme (UN-Habitat) has developed the following indicator: access to public transport is considered convenient when it is accessible within a walking distance along the street network of 500 m from a reference point such as a home, school, workplace, or market to a low-capacity public transport system (e.g. bus, bus rapid transit) and/or 1 km to a high-capacity public transport system (e.g. rail, metro, ferry). In 2019, it was estimated that about 49.5 % of the world's population have access to public transport as defined by the indicator for SDG target 11.2, but this comes with wide regional variations (↑ UN-Habitat and UITP, 2021). This makes it clear that there is much to be gained for women by further efforts to develop and expand public transport systems.

The development of public transport systems is an important but not necessarily sufficient step to improve access of women to economic and social opportunities. Appropriate feeder systems and first–last mile connectivity is key for women to make use of public transport.

In around 15 countries, there are women-only bus services (↑ World Bank Group, 2020). Studies have shown that women in some countries prefer segregation, especially in rail-based urban mobility services, to avoid harassment and stigma, despite this leading to more congested and constrained transit options for them (↑ Aloul, Naffa, and Mansour, 2019). Many female-only bus services struggle to be financially sustainable as they run fewer services, ultimately resulting in a less attractive offer.

Merely expanding transport infrastructure and services does not necessarily increase their availability to all groups, especially women. Large parts of public transport systems are still designed for linear travel toward the city centre (and from the centre outward) during peak hours to optimize work commutes. Also, as observed, a large part of women's trips is non-work-related, so they tend to use public transport systems outside of rush hours, during which fewer mobility services are available. This may discourage women from using public transport, which is more sustainable, in favour of private, motorized modes of transport or continue their dependence on paratransit or walking. This contributes to a continued reduced access to social and economic opportunities for women.

There are multiple studies that indicate that women use public transport more than men. One study examined travel behaviour by gender in eight different cities across three different continents, focusing on transport mode, trip purpose, travel distance and departure time for Auckland, Dublin, Hanoi, Helsinki, Jakarta, Kuala Lumpur, Lisbon and Manila. The most common trends found in these cities were that women tend to travel shorter distances and prefer public transport and taxi services to cars more than men (↑Ng and Acker, 2018).

↑ Cubells et al. (2020) concluded that women and girls are found to walk more, travel less by car and use public transport more than men. Despite the growing percentage of wage-earning women globally, the majority of their travel remains non-work-related. As such, women are more likely to need and use micro-mobility options when travelling in cities compared with working men, who are more likely to make longer, single-purpose trips to and from work.

The design of transport infrastructure and technology plays an important role in how accessible urban mobility services are to women. Many urban rail and bus transit stations require climbing several flights of stairs for access. For women accompanying children, the elderly, or persons with disabilities, often while carrying heavy loads, pushing strollers or wheelchairs, this poses a significant challenge, particularly when there are no elevators. Other accessibility challenges, such as steep curbsides and steps, or narrow doors make boarding and alighting transport systems more difficult for women than for men.

This is particularly true for women travelling with young children during peak times when public transport systems are crowded. Modern metro systems often have narrow turnstiles that make it hard to pass through, especially with young children. Additionally, in some countries, there are social norms that prohibit the independent and unaccompanied movement of women in public spaces and suburban premises. This not only limits women's income-generation opportunities but also restricts development and social mobility by curbing their access to health, education and other services, both for themselves and for children or other relatives they care for.

A critical gender gap is observed with regard to cycling and the use of bicycle-sharing technologies, particularly in developing countries. Many women and girls may not be able to own or use bicycles and, as a result, may not have learned to ride them safely and effectively. When cycling infrastructure – such as bicycle lanes and parking facilities – are not protected from the traffic and/or primarily designed around commute routes, women are less likely than men to use bicycles for urban mobility. Likewise, if women do not feel personally safe while cycling this can have a detrimental impact on the number of women using bicycles as a mode of transport.

BOX 3

EXAMPLES OF MODES OF TRANSPORT FOR WOMEN

- In India, two thirds of female workers in urban areas commute for work, and among women who travel, a higher proportion (67%) than men (41%) walk and use buses (↑ Tiwari and Singh, 2018, as cited in Borker, 2022a).
- In India, 60% of women rely on buses as their primary transport mode, followed by informal or non-motorized modes (↑ Shah et al., 2017).
- In Lima and Buenos Aires, women use public transport more than men: 58% of women compared with 54% of men in Lima, and 50% of women compared with 37% of men in Buenos Aires (↑ Gonzalez et al., 2020, as cited in Borker, 2022a).
- In Dhaka, 93% of female garment workers walk or use informal paratransit modes such as manually pedalled cycle-rickshaws for their work commute (↑ Sikdar at al., 2014, as cited in Borker, 2022a).
- ITF-OECD, in a study of 10 cities in Europe and Asia, also found that women are more likely to use door-to-door services such as taxis (shared and individual) and ride-hail services such as Uber, Lyft or Grab than men (↑ Allen, 2018).
- Better access to public transport allows women in central zones in Chennai, India, to make 40% longer work trips than those on the outskirts of the city, opening more job avenues for them. Moreover, women consider access to buses to be an essential factor when choosing a workplace in Chennai (↑ Alberst et al., 2015; and Srinivasan, 2005, as cited in Borker, 2022a).
- A study conducted in Argentinian slums showed that women face constraints in using public transport due to hard-to-understand information and maps of the transit routes and low confidence in their own orientation abilities. Although almost all of them have access to smartphones, they almost never use them for orientation purposes, and instead avoid travelling outside of their immediate living environments (↑ Allen, 2018).

C. Affordability

Women, who make up the majority of the urban poor, tend to use less expensive means of mobility than men and face more challenges related to the affordability of urban transport technologies. Most low-income women walk or take non-motorized transport for daily travels. In India, walking is the only viable transport mode for 87% of low-income women. To cover longer distances, low-income women substitute time for money, while higher-income women prioritize comfort over cost (↑ Arroyo-Arroyo and Diallo, 2020, as cited in Borker, 2022a). While poverty creates mobility constraints, a lack of transport options results in restricted access to work opportunities, reinforcing both the 'time' and economic poverty of women. Moreover, as women often conduct trip chaining to reach multiple, often scattered destinations, the need to make multiple stops using different urban transport systems can make transport fees more expensive, disproportionately subjecting women to 'transport poverty'.

A gender-disaggregated mobility study in Bogotá, Colombia, indicated that women generally travel less than men and spend more than men on transport, even though their trips may be shorter. This results in lower transport accessibility to job locations. Also, it was found that gender differences were stronger in lower socioeconomic areas (↑ Lecompte and Juan Pablo, 2017). Women make more multi-stop trips, carry additional luggage and are often accompanied by children and the elderly; this forces them to rely on more expensive choices such as rickshaws or taxis, which provide the flexibility and space required (↑ Mejía-Dorantes and Villagrán, 2019, as cited in Borker, 2022a). Affordability constraints are likely to make safer transport modes inaccessible for women with lower financial means, which can impair their safety and well-being (↑ Kishiue et al., 2020 cited in Borker, 2022b).

Women are also more likely to turn down job opportunities when urban transport services are perceived to be too expensive and unsuitable to cater to their need for multipurpose trip chains. In studies conducted in major cities in China and in Jakarta, Indonesia, women stated that they were able to take up work only because existing transport technologies reduced their travel times.

D. Safety

Safety and gender in urban mobility has two dimensions: road safety, and harassment or violence encountered especially in public transport. Because women tend to travel less and shorter distances and travel proportionally more by public transport, they are less likely to die because of road accidents. At the global level, males are typically three times more likely to be killed in road accidents than females (↑ WHO, 2023).

Women constitute the majority of public transport users globally and are disproportionately affected by safety concerns in public transport systems, in both developed and developing countries. There is a large body of evidence documenting this problem. A study in which women in Karachi, Pakistan, were interviewed, showed that more than 70 % of the respondents had experienced sexual harassment while using public transport systems.

Of those who had experienced sexual harassment, 31% of students, 23 % of working women and 20 % of homemakers started using public transport less, opting for more expensive modes, such as privately hired taxis and rickshaws. Moreover, 40% of the respondents reported avoiding travelling

after dark, which restricted their access to further education, flexible work opportunities and other social activities (↑ ADB, 2013).

A study in Chennai, India, found that two thirds of women respondents had been sexually harassed while commuting (groping, stalking, accosting), with the worst experiences on buses and trains that had no separate section for women (↑ADB, 2013). Similarly, research on the metro system in São Paulo, Brazil, found that sexual violence is concentrated at the busiest central stations during rush hour and at stations that also attract other forms of violence and public disorder (↑Ceccato and Paz, 2017). The findings of a survey undertaken in Auckland, New Zealand (in which 448 female public transport users participated) showed the concerning level of anxiety women experience during transfer waiting times. Women with ethnic backgrounds feel less safe during the day compared to Caucasian women. They were found to be more frequent users of mobile applications to determine the duration of waiting time compared to Caucasian women (↑Chowdhury and van Wee, 2020).

Although 151 economies have laws in place prohibiting sexual harassment in the workplace, just 39 have laws prohibiting it in public spaces. Women do, therefore, face perils in using public transportation to travel to work (↑ World Bank Group, 2024).

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The perception of urban transport safety significantly impacts the decisions and travel patterns of women. On average, women are 10% more likely than men to feel unsafe on metro trains (trains that go underground) and 6% more likely than men to feel unsafe on buses (↑ Ouali et al., 2020). The gender-based differences are often compounded by other intersectional factors (such as age, race, disability and socioeconomic status) in shaping the experience of women in interacting with urban mobility systems. Consideration of intersectionality is particularly important in understanding the nuances in women's perception of safety and their consequent mobility choices.

While a young, educated, professional woman may have more urban transport options available to her than a man with a lower income, she is far more likely to face sexual harassment on public transport systems. An elderly person may be more likely to face physical barriers to accessing public transit systems, such as steep steps, or a lack of technical skill to use transit-related mobile apps.

While gender-based violence and sexual harassment against women in public transport systems are well known, the vast majority of gender-based violence and sexual harassment cases go unreported. Women face a number of challenges, such as not being believed by authorities or a lack of confidence that the perpetrator will be caught. Moreover, most women are time-constrained, making a trip to the police station to spend hours making a report unappealing, particularly because in some cases, police officers may also be a potential source of harassment.

E. Employment

Urban mobility is also a potential source of employment for women, thereby contributing towards their economic independence. Such employment can be in formal public transport systems, new shared mobility systems, or informal transport systems. This is, however, another topic for which no comprehensive quantitative data are available.

According to figures from the TransMilenio scheme in Bogotá, Colombia, in 2022 of the 23,965 drivers in the system, only 328, or 1.4%, were women. Bus operators or drivers are required to have a primary school degree, special licence, and at least one year of certified experience in either cargo vehicles of at least 1.5 tonnage or passenger transport vehicles. In 2021, the Colombian Government announced that 450 of the 1,500 new electric bus drivers in Bogotá were going to be women. Yet, six months later, only 15 women were hired by the electric bus company. This shortfall stemmed from the lack of sufficient qualifications from candidates and a lack of support needed for women workers to be able to take advantage of the opportunity (↑ SUM4ALL, 2023).

A study by the ↑ World Bank Group (2018) in Mexico City showed that there is a growing number of women drivers relying on ride-hailing mobile applications to meet their basic income needs and provide for their families. However, the study also emphasized that women tend to drive more selectively than men and are less likely to drive at night due to security concerns which, as a result, significantly reduces their driving at times of peak demand and limits their earnings or ability to earn volume-based incentives. The study also found that there are cultural barriers that limit the recruitment of women drivers, as an average of 57% of male drivers surveyed say that they would be unhappy if a woman in their family wanted to sign up as a driver for a ride-hailing mobile application. Still, the women surveyed are just as likely as their male peers to earn a robust profit from driving, despite being less likely to own their own vehicle outright.

Overall, women are often overrepresented in non-standard employment arrangements (temporary employment, part-time and on-call work, multiparty employment arrangements, dependent and disguised self-employment) with consequently lower income (↑ ILO INWORK, 2017). Women in urban transport networks hold the jobs that are most precarious and are exposed to extreme weather events. Outdoor ticket sellers, service support workers, food providers and cleaners are commonly women, often working in precarious conditions in informal employment. Environmental stressors such as extreme weather events make women even more vulnerable, especially by restricting their capacity to make meaningful choices (↑ ITF, 2022).

Where women are employed in urban transport they can be confronted with unfavourable working conditions (see Box 4). The General Transport, Petroleum and Chemical Workers' Union of Ghana found that the personal protective equipment (PPE) provided for both women and men failed to accommodate differences in body shape and size. Many women found difficulties in using PPE and sometimes ended up not using any PPE at all (↑ SUM4ALL, 2023).

In a large-scale global survey, ↑ SUM4ALL (2023) identified five main entry barriers for greater female participation in the workforce in urban mobility: (a) gender stereotyping for certain jobs, especially technical ones; (b) discriminatory work cultures; (c) lack of flexible working and childcare provision; (d) invisible glass ceilings and restricted career options; and (e) gender equity and its relationship with wider diversity, behaviour and culture change.

BOX 4

A GHANIAN BUS DRIVER SPEAKS OUT ON VIOLENCE AND HARASSMENT AS A FEMALE BUS DRIVER

IMAGE: © ITF GLOBAL · SCREENSHOT (YOUTUBE.COM)

According to the International Labour Organization (ILO), violence against transport workers is one of the most important factors limiting the attraction of transport jobs for women and affecting the retention of those who are employed in the transport sector. In this short video (ITF, 2023) women drivers in Ghana talk about everyday violence and harassment while working in a male-dominated sector in a role that is still seen as "a man's job".

Ride-hailing, using cars, three-wheelers or motorcycles, is a form of shared transport which is increasingly used in cities both in the global North as well as in the global South. The International Finance Corporation and Uber, in a comprehensive study focusing on six countries (Egypt, India, Indonesia, Mexico South Africa and the United Kingdom), aimed to better understand how women and men participate in ride-hailing, particularly in emerging markets (↑IFC and Uber, 2018). The study explored what companies that operate shared platforms can do to ensure women's equal participation and gain. Using data from the ride-hailing company Uber, as well as information from global surveys and interviews, this study showed how ride-hailing services influence and expand women's economic prospects.

V. Impediments to gender-responsive urban policymaking

To achieve sustainable urban transport means considering different needs and circumstances of city dwellers and providing them with equitable levels of mobility, while responding to the parallel challenges of climate change and sustainable development. The integration of gender considerations in all stages of analysis, decision-making, planning, design, implementation and monitoring of transport systems and their interaction with other aspects of urban life is a challenging yet crucial task for urban mobility policymakers and planners.

Policymakers and regulators at the national and urban level, urban planners and transport operators are faced with multifaceted and context-specific challenges in developing, adopting and executing policies and actions to develop gender-responsive urban mobility systems and services:

a) Strategic approach and underlying value systems

Systemic biases may put women and vulnerable groups at a disadvantage, for example approaches to mobility that: favour mobility patterns of men based on a traditional division of labour (thereby overlooking different mobility patterns of women, the evolution of household and parental models, and more recent developments in the labour market); and take a "one-size-fits-all-women" approach in developing transport solutions (thereby disregarding intersectional factors in the experience of women in urban mobility systems).

b) Mobility data and planning models

Disaggregated gender and demographic data on the mobility patterns and preferences of city dwellers are insufficient, and urban transport planning may result in gender-blind policies and actions, without knowing who is using the urban mobility system at what times and places, and with which purpose(s). This problem is especially acute in the case of informal transport, on which large groups of women depend for their mobility needs.

c) Capacity, knowledge and technical skills of the mobility policymakers, workforce and users

Notwithstanding the growing number of toolkits on gender and urban mobility, there is limited progress in integrating gender considerations in the transport sector, both in terms of training of professionals, participation of users, as well as the design and planning of systems, services and equipment.

d) Labour and employment systems

There is still a large lack of gender-diverse representation in the workforce as well as in leadership of the transport sector in both developing and developed countries. Additionally, labour laws and labour rights are far from being gender-responsive in terms of achieving equal pay, ensuring discrimination-, violence- and harassment-free work environments, and providing inclusive maternity, paternity and parental leave. The underrepresentation of women in leadership positions affects the integration of gender in transport policies.

e) Planning and budgeting frameworks

Not enough resources are being allocated to accelerate gender equality across all aspects of urban planning and implementation. Lack of guidance, data, coordination and understanding of the importance of allocating such resources remains a key challenge for achieving SDGs in the transport sector, including in cities.

f) Stakeholder engagement and governance

Many cities and municipalities lack platforms that enable the participation of non-governmental organizations (NGOs), civil society organizations, grass-roots organizations and local communities in decision-making processes, thereby excluding the voices of women and vulnerable groups in mobility planning.

g) Financing mechanisms and systems

In the absence of regulatory frameworks, fiscal measures and societal change that ensure and empower the integration of gender considerations into financing mechanisms and investments in the mobility sector, the profit-maximizing 'business as usual' approach would lead to unfavourable outcomes for both gender equality goals and climate goals, for example more investments in privatized, motorized transport increases the emissions from the sector, while it does not substantially help to improve access for women and vulnerable groups.

These challenges are often interlinked with each other; they are also intertwined with other socioeconomic factors of the urban population, which makes some groups, in particular women and vulnerable groups, more susceptible to being excluded and disadvantaged in interaction with urban mobility systems.

IMAGE © CONSTANZE-MARIE · PEXELS.COM

VI. Gender-responsive policies for low-carbon sustainable urban mobility

Existing urban mobility systems are imperfect, as they do not provide the access and connectivity required for both men and women and are too carbon intensive. Gender-responsive urban mobility policies can be a tool to ensure better access to and use of low-carbon climate-friendly options by all genders. Urban mobility policies that adopt a gender lens are more inclusive and more effective. Urban mobility policies need to balance the interests of multiple urban population groups. Women can be seen as a proxy for a larger group of vulnerable users. While women have distinct travel patterns and behaviours, as pointed out in the previous chapters, when it comes to certain aspects such as safety, comfort, affordability and ease of access to public transport they have a shared interest with several other groups such as the elderly or children.

The need remains, however, to have a dedicated gender focus in urban mobility policymaking, based on a robust analysis applying an intersectional lens, as detailed in Box 2. This would entail considering not only data disaggregated by sex, but all other factors that may contribute to inequalities in urban mobility systems. Without this, there is a risk that the economic and societal benefits from proposed policy measures bypass women, and the long-standing inequalities, for example in terms of access and connectivity and the labour market, remain intact or worsen. A better understanding of gender perspectives in a wider – intersectional – context can also improve participation in policymaking, thus allowing a more diverse set of voices to be heard and improving the quality and effectiveness of urban mobility policies.

Gender-responsive policies for low-carbon sustainable urban mobility are policies that will put in place urban mobility solutions that create or enhance opportunities for women and men in all their diversity to participate more fully in economic activities and provide full access to education, social and health services. Implementing such urban mobility solutions will, for instance, help to provide women with the access or connectivity they have been lacking until now, resulting in sustainable climate-friendly growth. There is not one single solution that stands out which will provide the desired access and connectivity. This could be achieved if more women have access to private motor vehicles, or through more and better public transport, as well as by providing the infrastructure for active transport (walking and cycling). However, to be able to realize gender-responsive policies for urban mobility that are at the same time low carbon, it is important to consider the various mobility options mentioned.

The "Avoid–Shift–Improve" concept is a very useful climate policy framework and can be applied, both at the national and urban level, to group various policy options as part of a decarbonization strategy for the transport sector. The concept differentiates between policy options aimed at avoiding (or reducing) the need for transport, those policy options that promote shifting transport to modes of transport that are associated with lower GHG emissions, and finally those policy options aimed at improving the environmental footprint of transport. Figure 5 shows that policy options between the different components of the Avoid–Shift–Improve concept may overlap (↑SLOCAT, 2024).

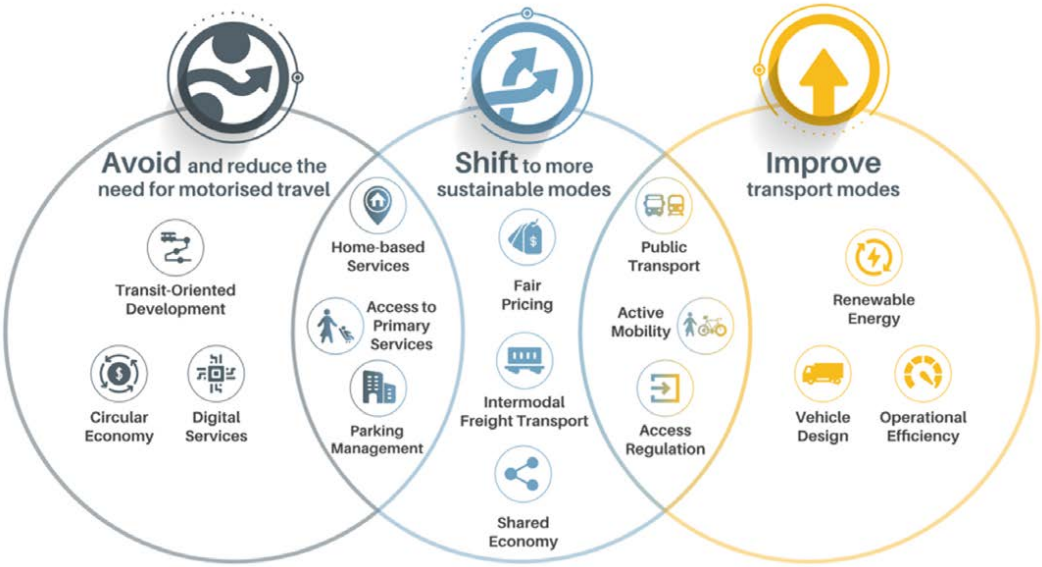

Figure 5: The Avoid–Shift–Improve approach
The A-S-I diagramme presents a non-exhaustive list of measures for illustrative purposes only.

From a gender perspective, the Shift component can offer the best opportunities for improving accessibility and connectivity for women, as it includes measures to promote public transport and increase shared options, as well as improve active (walking and cycling) transport, which are attractive to women both as users and workers. The Improve options, which focus heavily on technological dimensions of transport, by themselves do nothing to improve the accessibility and connectivity provided by urban mobility for women and other vulnerable population groups. These Improve options do, however, present opportunities for diversification of the workforce in the transition to cleaner transport. Implementing gender mainstreaming in institutions responsible for e-mobility transitions and policies that encourage women to take Science, Technology, Engineering and Mathematics (STEM) subjects have been shown to be effective.

Another helpful policy framework to group measures to develop gender-responsive urban mobility is the 4A's framework (↑Borker, 2022a), which is centred around four attributes: availability, affordability, accessibility and acceptability. The "A" of availability relates to coverage and frequency. Within the "A" of affordability, the focus is on direct monetary costs, indirect non-monetary costs and the opportunity costs to travel. The "A's" of accessibility and acceptability focus primarily on comfort and personal security.

There are strong synergies between action on urban low-carbon transport and the realization of the SDGs. Effective action on low-carbon transport is important for: ending poverty (SDG 1); ending hunger (SDG 2); promoting healthy lifestyles and well-being (SDG 3); empowering women and girls (SDG 5); ensuring sustainable and modern energy (SDG 7); building resilient infrastructure (SDG 9); making cities sustainable (SDG 11); and taking action to combat climate change and its impacts (SDG 13) (↑Hosek and Yiu, 2021).

The interlinkages between action on climate change and action in support of achieving the SDGs was also confirmed in a study by the International Climate Initiative. This showed that the transport sector has the second highest number of positive linkages after the industry sector, but also the second highest number of negative linkages after the power industry. Out of the 102 linkages between mitigation action and the SDGs, 84% were considered positive, while 16% were found to be negative (↑Tilburg et.al., 2018).

A. Increased sustainable low-carbon mobility options

In order to strengthen gender-responsive urban mobility, it is important that decision makers in urban areas reconsider their current planning approach to the development of their growing urban mobility sector. A group of experts within the German Agency for International Cooperation (GIZ) has developed and further refined a comprehensive set of planning guidelines organized around 10 principles which, when implemented in a comprehensive manner, can substantially enhance the sustainability of urban mobility (↑GIZ, 2023). These proposed measures can make a major contribution to achieving urban transport-related SDG targets, as well contribute to the decarbonization of urban mobility.

These planning guidelines (see table 2) apply in principle to all genders. However, to ensure that men and women benefit equally from their implementation, it is important to overcome societal patterns and address social norms that cause current gender-based differences in urban mobility.

IMAGE: © SHOTBYMETI - PEXELS.COM

TABLE 2

PRINCIPLES AND MEASURES FOR LOW-CARBON SUSTAINABLE URBAN MOBILITY

PRINCIPLE	MEASURES
01 Planning compact and accessible cities	• Redistribute road space to people • Develop urban subcentres • Encourage leisure activities nearby • Develop mixed-use neighbourhoods (e.g. the 15-minute city concept) • Create safe and liveable public spaces • Support affordable housing
02 Developing transit-oriented cities	• Encourage urban growth along transit corridors • Create attractive high-density housing around public transport stations • Place jobs close to transit stations • Locate shopping facilities in major transit stations • Provide bicycle parking at transit stations • Improve design of intersections for pedestrians, cyclists and public transport • Ensure land value capture to finance mobility
03 Getting the infrastructure right	• Build high-capacity public transport (bus rapid transit and rail) as a backbone • Enable comfortable transport interchange • Enforce speed limits and traffic rules • Design complete streets • Provide charging infrastructure for electric vehicles • Limit expansion, scale down or remove urban motorways
04 Encouraging walking and cycling	• Prioritize active modes in planning • Create a complete urban cycling network • Regulate micro-mobility • Provide bicycle-sharing services and facilities • Design shared spaces • Build safe street crossings (but no pedestrian bridges) • Connect suburban quarters with high-quality cycle routes • Use high-quality street design standards
05 Advancing smart mobility management	• Introduce congestion charging • Allow work-from-home policies and flexible working hours • Mandate night-time delivery windows for freight vehicles • Set 30 km/h (20 mph) as a standard speed limit • Facilitate ride-share programmes • Encourage mobility budgets for employees • Separate car ownership from car use

PRINCIPLE	MEASURES
06 Enhancing public transport and shared mobility	• Prioritize public transport and ensure reliable, accessible and clean public transport • Establish bus lanes • Electrify buses • Ensure safety and quality of (moto-)taxi services • Regulate paratransit • Design networks to be gender sensitive • Integrate public transport planning and ticketing • Provide internet access and e-payment facilities
07 Parking: prioritizing management, not supply	• Abolish parking minimums • Balance parking supply • Price on-street parking for optimal occupancy • Phase out informal fee collection • Use parking revenues for sustainable modes • Reduce on-street parking and transform into green space or bicycle lanes • Enforce parking rules
08 Electrifying all vehicles	• Build charging infrastructure • Promote the procurement of electric public vehicle fleets and buses • Establish (ultra-) low-emission zones • Tax transport fuels appropriately • Reward the use of electric vehicles and cargo bicycles • Incentivize vehicle scrapping and retrofit
09 Winning the support of stakeholders and citizens	• Encourage public participation and enable virtual participation in urban mobility planning • Initiate an open data policy, and use and access of open data • Develop integrated mobility solutions • Encourage street experiments for urban mobility improvements • Advertise cycling and public transport
10 Empowering cities to avoid, shift and improve	• Develop a Sustainable Urban Mobility Plan (SUMP) • Provide national funding to cities • Integrate transport into climate action plans • Internalize external costs of mobility • Integrate urban and transport planning authorities • Create institutions responsible for sustainable urban transport • Integrate cities and rural regions • Involve a diversity of stakeholders, including women and people with disabilities

The way in which the different measures to improve the sustainability of urban mobility impact the life of city dwellers and are experienced by them varies depending on factors such as gender, age, race, ethnicity, religion, disability and socioeconomic status. Moreover, the interplay of these factors and mobility is highly contextual and will differ across cultures and geographies. However, the lack of disaggregated data currently hampers cities both from understanding the unfulfilled mobility needs of women and from designing appropriate climate and gender policies (↑Allen, 2020).

A large majority of the measures should be part of a dedicated effort to make urban mobility policymaking more gender responsive (see Box 5). The detailed implementation of these measures is important to ensure that women are able to fully benefit from them. It is important, therefore, to conduct specific location and target group analyses and to include measures that take account of the gender-specific local circumstances. Does a current policy or plan explicitly consider the specific mobility needs of women in public transportation? Expanding cycling lanes may not necessarily benefit those specific city dweller groups, such as women and vulnerable groups, if they are not able to afford, own or use bicycles due to economic constraints and social norms. Travelling by public transport goes beyond the transit itself and includes walking and waiting. To improve women's access to public transport, stations, stops and vehicles must be barrier-free, safe and well lit. Investments are needed in even walkways, easier road crossings, and gender-balanced public signage (↑Borker, 2022a).

Emerging trends, such as shared mobility or mobility as a service, can help to improve accessibility and connectivity for specific groups but are not expected to play a meaningful role in deep decarbonization of transport. They can, however, attract more female than male users and when given better alternatives, some women may be ready to give up driving altogether. If cities want to further encourage the development of such flexible modes, policies that will address women users' preferences should be implemented for women to be the dominating users (↑Ng and Acker, 2018; IFC and Uber, 2018). Greater digital literacy is key to bolstering the use of smart mobility options (e.g. web- and application-based technologies that promote access to mobility as a service) by a wider group of city dwellers, in particular women and vulnerable groups.

Electric mobility is another new, rapidly emerging area and one for which limited information is available on how to make policies in this field gender responsive. The United Nations Environment Programme (UNEP) has initiated a dedicated project funded by the German Government on this, entitled "E-Mobility as a Driver for Change – Towards a Gender Transformative and Just Transition to Electric Mobility". The project aims to improve data availability and analysis and identify knowledge gaps on gender and e-mobility; enhance gender mainstreaming in global, national and local e-mobility initiatives; build capacity, skills and jobs for a just transition (increasing economic opportunities); and build partnerships to enable replication and ambition-raising with global outreach and advocacy. The goal of the project is to map electric mobility stakeholders, players and projects around the world and to compile resources on how to improve the gender inclusiveness of e-mobility projects.[1)]

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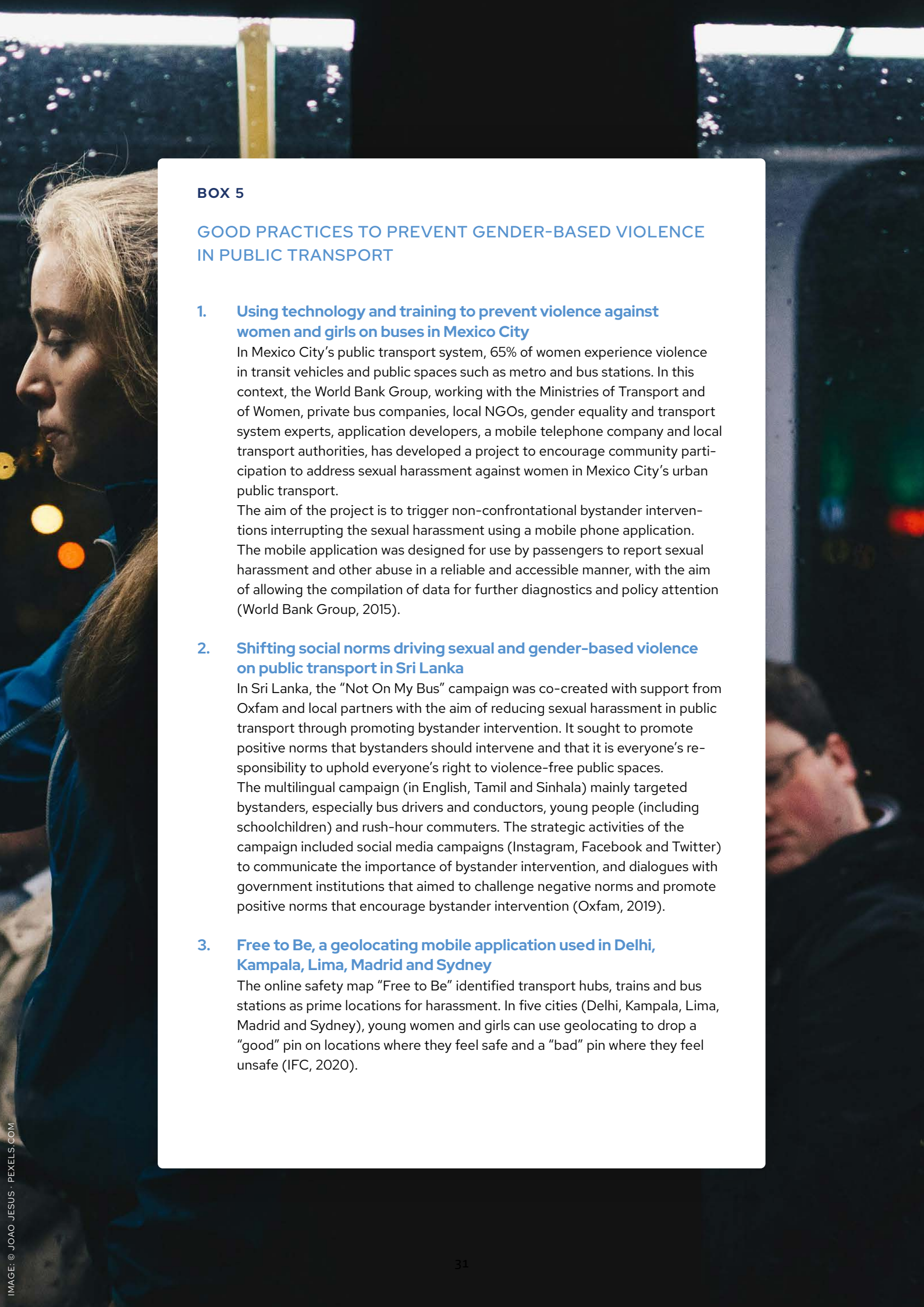
1 Heather Allen, UNEP consultant, personal communication.

While improving public transport, it is important to address gender-based violence in public transport, which can be an important discouraging factor for women to take public transport, especially at night. This requires capacity-building, the use of public awareness campaigns and a range of other measures to shift norms and behaviours.

Further policy guidance in support of better safety for women making use of shared mobility options is given by ↑ Ng and Acker (2018). They recommend careful driver profiling, sharing of vehicle information and expected time of arrival, provision of emergency alert features, hiring and training of women drivers, greater coordination with the police, and increasing commuter education and awareness as measures that can increase the safety of taxi, informal transit and ride-sharing services.

Some of these regulations can be easily and cost-efficiently implemented and enforced with the use of technology in the form of apps and global positioning system (GPS) tracking. As door-to-door transport services that will improve personal mobility continue to grow in different cities across the world, it is important that these are safe transport options for all users, regardless of gender.



BOX 5

GOOD PRACTICES TO PREVENT GENDER-BASED VIOLENCE IN PUBLIC TRANSPORT

1. Using technology and training to prevent violence against women and girls on buses in Mexico City

In Mexico City's public transport system, 65% of women experience violence in transit vehicles and public spaces such as metro and bus stations. In this context, the World Bank Group, working with the Ministries of Transport and of Women, private bus companies, local NGOs, gender equality and transport system experts, application developers, a mobile telephone company and local transport authorities, has developed a project to encourage community participation to address sexual harassment against women in Mexico City's urban public transport.

The aim of the project is to trigger non-confrontational bystander interventions interrupting the sexual harassment using a mobile phone application. The mobile application was designed for use by passengers to report sexual harassment and other abuse in a reliable and accessible manner, with the aim of allowing the compilation of data for further diagnostics and policy attention (World Bank Group, 2015).

2. Shifting social norms driving sexual and gender-based violence on public transport in Sri Lanka

In Sri Lanka, the "Not On My Bus" campaign was co-created with support from Oxfam and local partners with the aim of reducing sexual harassment in public transport through promoting bystander intervention. It sought to promote positive norms that bystanders should intervene and that it is everyone's responsibility to uphold everyone's right to violence-free public spaces.

The multilingual campaign (in English, Tamil and Sinhala) mainly targeted bystanders, especially bus drivers and conductors, young people (including schoolchildren) and rush-hour commuters. The strategic activities of the campaign included social media campaigns (Instagram, Facebook and Twitter) to communicate the importance of bystander intervention, and dialogues with government institutions that aimed to challenge negative norms and promote positive norms that encourage bystander intervention (Oxfam, 2019).

3. Free to Be, a geolocating mobile application used in Delhi, Kampala, Lima, Madrid and Sydney

The online safety map "Free to Be" identified transport hubs, trains and bus stations as prime locations for harassment. In five cities (Delhi, Kampala, Lima, Madrid and Sydney), young women and girls can use geolocating to drop a "good" pin on locations where they feel safe and a "bad" pin where they feel unsafe (IFC, 2020).

B. Employment of women in urban transport

Employment of women in urban transport needs to be an important part of gender-responsive urban mobility policies. When making policy changes for sustainable urban mobility planning, transport companies should consider implementing and adopting gender-responsive policies for their workers (e.g. ensuring that more women are hired, providing skills trainings targeting women, supporting access to crèche facilities, ensuring that workers with children have working hours that allow them to balance parental and work responsibilities).

Another key aspect is that gender-targeted policies for workers must be in place if women workers are to benefit from new job opportunities, for instance those arising from the expansion of public transportation options (see Box 6).

BOX 6

PROMOTING GREEN JOBS FOR WOMEN: THE PUNE, BANGALORE AND KOCHI METRO LINES IN INDIA

The European Investment Bank (EIB) is a member of the 2X Collaborative initiative, a global industry body that convenes various investors to promote gender- and climate-responsive investing. EIB financed two metro lines in Pune and Bangalore, in India. The lines are estimated to save 29 million hours in travel time, while reducing GHG emissions and improving air quality in both cities. Provisions to make the metro a more inclusive workplace were included in the design of the investment. Altogether, 33% of the positions as drivers and station controllers will be filled by women and specific skills trainings are provided for them to become drivers. Crèche facilities are provided for employees, and women drivers are scheduled to work at stations close to where they live. Working schedules are also designed to be respectful of women's needs. For instance, women with small children who are not able to perform night shifts have priority to take up morning or afternoon shifts (↑ ILO, 2022).

Another example of the empowerment of women through the construction of a metro system is the **Kochi metro**. The **Agence Française de Développement (AFD)** has been working with local authorities and the Indian Government to support the Kochi metro project since February 2014. One feature of this project stood out: nearly 80% of the Kochi metro team is made up of women working a wide range of positions, including cleaning staff, ticket machine operators, train drivers, station managers and more (↑ AFD, 2019).

The ↑Flone Initiative (2023) has formulated a number of policy recommendations for potential uptake by public transport companies:

1. **Promote the attraction of female professionals** into the transport sector by investing in or employing female professionals and encouraging women to take up work in the industry;
2. **Support the deliberate selection of women** into e-mobility careers by adhering to the two-thirds gender rule in each department and prioritizing applications from women applying for leadership positions;
3. **Enhance the retention of women workers** by ensuring an enabling working environment safe from sexual and gender-based violence and guaranteeing job security and equal opportunities for career advancement;
4. **Support women during career interruptions** by ensuring that they benefit from paid maternity leave and participate in career advancement opportunities;
5. **Support the re-entry of women into the transport industry** by providing nursing and baby-sitting facilities and flexible working schedules for nursing mothers;
6. **Promote the realization of opportunities** for and advancement of women in the public transport industry by granting equal pay and equal opportunities for promotions to women;
7. **Governments and donors could also support women-led start-ups** to ensure that they thrive (see Box 7).

Shared mobility options, also known as ride-hailing, are an important potential source of employment for women in urban mobility. To attract women as drivers (and as riders), the ride-hailing industry needs to continue to enhance security features and minimize perceived threats. Another area where action is required is financial and digital exclusions, which continue to form barriers to women's participation in ride-hailing and in the sharing economy more broadly (↑IFC and Uber, 2018). Recruiting more women drivers into ride-hailing could create a virtuous cycle by attracting more women riders.

BOX 7

IMPROVING ACCESS TO FINANCING

As of 2019[1], a loan insight software company, Aeloi Technologies, has helped 50 women access affordable financing through an innovative digital token loan system. As a pilot project, Aeloi software tracks impact sector funds with the goal of bridging the financing gap for 700,000 climate entrepreneurs.

It has successfully lowered per-unit costs and de-risked loans in the electric minibuses – safa tempo – industry of Kathmandu and now targets the agriculture sector. Because financial technology (fintech) is male dominated, Aeloi Technologies currently supports women entrepreneurs to increase their business assets and income, get rid of toxic interest rates, and gain decision-making power and social freedom.

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1 Obtained from the gender-just climate solutions series, convened by the UNFCCC's Women and Gender Constituency and partners

Policy choices to improve access to public transport for women can have a negative impact when it comes to employment opportunities for women. Cashless payments are understood to make it easier for women to make use of public transport. At the same time, however, the introduction of such systems can lead to the displacement of workers in the ticket vending sector, who are predominantly women workers around the world (↑ ITF, 2022).

VII. Implementing gender-responsive policies for low-carbon sustainable urban mobility

A. National and urban policies on gender-responsive urban mobility

Effective action to improve gender-responsive urban mobility requires a robust policy framework. In the previous chapter, an overview was given of the elements of such policies and the need to ensure that these policies are gender sensitive.

The responsibility for policymaking on gender-responsive urban mobility rests primarily with local city governments. Considering that in many cases funding for the improvement of urban mobility needs to come from the national government, it is also important to consider its role in policymaking in the field of urban mobility. In many cases, however, action taken on urban transport is not policy-based but undertaken through individual projects. In such cases, the gender dimension will need to be integrated into the project design. National government agencies can add a gender component to urban mobility projects, or insist on cities doing so, if funding is provided by the national government. It is encouraging that internationally donor-funded transport projects now include on a standard basis a gender assessment and increasingly also a gender component.

The integration of gender in urban mobility policies, as well in specific urban mobility projects, requires the availability of better data on gender and transport in the design, implementation and evaluation of urban mobility projects (↑ Women Mobilize Women, 2022). Gender data helps to address historically overlooked behaviours to enable more inclusive mobility (see Box 8).

The World Bank Group recently carried out a survey to find out whether countries in their policymaking and planning explicitly considered the specific mobility needs of women in public transportation (↑ World Bank Group, 2024). Globally, only 27 out of 190 economies explicitly recognize such needs. One example is Argentina, which has a gender and mobility plan that incorporates a gender perspective for infrastructure planning and actively promotes female professionals in the Ministry of Transport. Such plans are important because the mobility patterns of women, including the use of public transport, often differ from those of men.

BOX 8

GENDER-RESPONSIVE DATA COLLECTION IN THE TRANSPORT SECTOR

1. Sensitize to the importance of gender-sensitive data

- Demonstrate the importance and potential of gender-disaggregated data
- Clearly define what data disaggregation means
- Disaggregate data by gender and socioeconomic dimensions
- Highlight the risks of gender-blind interventions
- Sensitize to the need for context-specific data-collection methods

2. Collect gender-disaggregated data

- Develop systematic, standardized and harmonized data-collection and analysis methodologies
- Ensure periodic data collection with modernized and updated collection methods
- Ensure data collected are representative and inclusive of all vulnerable groups, as well as non-users
- Ensure adequate resources and funding are available for data collection and analysis
- Guarantee that the scope of data collected is supportive of objectives (qualitative and quantitative)

3. Build capacity on gender data collection, analysis and monitoring

- Build capacity in transport ministries at the national and local level
- Ensure knowledge transfer between the national, regional and city level
- Secure the provision of accessible and comprehensive capacity-building opportunities

4. Ensure women are at the table

- Improve gender balance at the national and local level in transport ministries and transport authorities
- Ensure gender-balanced citizen consultation on urban mobility policies, with meaningful participation of women in all their diversity
- Encourage and support female graduates in engineering, transport planning and related topics
- Design projects and working conditions to accommodate caregivers, for example by considering appropriate timing of and locations for meetings.

5. **Champion open access data**
   - Establish viable partnerships
   - Make data more accessible to those in the public domain
   - Make data more accessible to those in the research/ academic domain
   - Ensure data privacy is considered

6. **Mainstream data in gender-responsive design**
   - Develop and standardize gender indicators for projects and interventions
   - Ensure gender-sensitive data are collected from the beginning to the end of projects and interventions
   - Conduct gender assessments
   - Introduce inclusive monitoring and evaluation standards

The basis for policymaking on urban mobility can be a Sustainable Urban Mobility Plan (SUMP), which in recent years has gained in popularity as a planning tool. SUMPs aim to create a sustainable urban transport system (↑ ITF-OECD, 2022) which:

- **Is accessible** and meets the basic mobility needs of all users;
- **Balances and responds** to the diverse demands for mobility and transport services by citizens, businesses and industry;
- **Guides** a balanced development and better integration of the different transport modes;
- **Meets the requirements** of sustainability, balancing the need for economic viability, social equity, health and environmental quality;
- **Optimizes** efficiency and cost-effectiveness;
- **Makes better use** of urban space and of existing transport infrastructure and services;
- **Enhances** the attractiveness of the urban environment, quality of life and public health;
- **Improves** traffic safety and security;
- **Reduces** air and noise pollution, GHG emissions and energy consumption.

Drăguțescu, Land and Meskovic (2020) recommend that to ensure SUMPs are gender sensitive, a cross-cutting approach is taken in each of the steps of formulating the SUMP to:

1. understand the different target groups to involve in the planning and implementation process;
2. facilitate the participation of women and representatives of vulnerable groups in decision-making processes;
3. include gender-specific measures or measures that target increased accessibility; and
4. establish monitoring and evaluation systems that provide clear evidence on gender mainstreaming and accessibility levels.

See Box 9 for further guidance on how to link equality and decarbonizing transport actions (↑ Ng and Bassan, 2022).

BOX 9

GUIDING PRINCIPLES FOR LINKING EQUALITY AND DECARBONIZING TRANSPORT ACTIONS

1. Capacity-building, knowledge management and communication

- Strengthen awareness of the gender, transport and climate change policy nexus
- Adopt gender-based analysis when considering decarbonizing transport policies
- Highlight the role of governments in lifting the skill of the whole sector through multistakeholder engagement and integrated policymaking
- Create a platform for knowledge-sharing between ministries and stakeholder groups

2. Gender balance, participation and women's leadership

- Build diverse teams
- Enhance women's participation and leadership in the transport workforce

3. Implementation

- Ensure budget processes provide incentives for gender-based decarbonizing transport policies
- Identify synergies between policy goals to quickly and efficiently transition to a zero-carbon transport system

4. Monitoring and reporting

- Establish evaluation, monitoring and reporting systems for countries and companies
- Identify and implement appropriate gender analysis tools in decarbonizing transport policies

Apart from national policymaking, there are also numerous bilateral or multistakeholder partners that have made or promote commitments to the diversification of the sector. Examples include the joint agreement to strengthen women's employment in public transport signed in 2019 by the International Transport Workers' Federation (ITF) and the International Association of Public Transport (UITP). These two parties are working with unions and employers to implement the agreement in a selected number of pilot cities (↑ ITF and UITP, 2019).

B. NDC and VNR process

There are two global processes – nationally determined contributions (NDCs) under the Paris Agreement, and the voluntary national reviews (VNRs) under the 2030 Agenda for Sustainable Development – which countries use to report on their ambition in support of low-carbon and sustainable development.

Under the Paris Agreement, all Parties must submit national climate action pledges, known as NDCs, every five years. These cut across mitigation and adaptation, involve multiple actors and sectors of the economy, and offer unique opportunities to integrate gender equality in climate action at scale. Currently, a majority of countries have submitted their second generation of NDCs, and preparations are ongoing for the submission of the third generation of NDCs in 2025.

Through the years, the transport community has developed a fairly detailed tracking mechanism on how transport is covered in the NDCs (↑ Changing Transport, 2024; and GIZ and SLOCAT, 2021). The general picture is that a large majority of NDCs are referring to action on mitigating climate change in the transport sector. Between the first and the second generation of NDCs, the number of transport references has grown considerably, with Improve-related measures still by far the largest group, followed by Shift and Avoid (see figure 6). As indicated above, Shift-related measures (e.g. public transport, walking and cycling) offer the best opportunities for women to obtain better accessibility and connectivity.

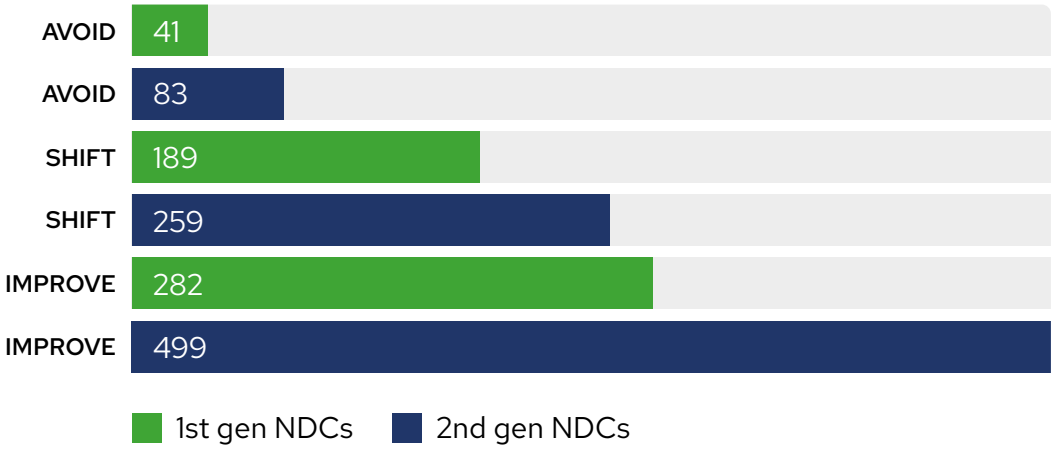

Figure 6: Comparison of Avoid–Shift–Improve measures in first and second generation NDCs

It is important to be aware that NDCs are not necessarily the best or most complete resource to determine the level of ambition in action on transport and climate change (see Box 10). The ↑ Asian Transport Outlook (2023), in a survey of 15 economies, observed an exponential growth in transport-related statements of ambition, targets and policy measure recommendations across economies in Asia. A linked survey of the same 15 economies revealed that NDC-listed transport measures constitute only about 10% of total recommended measures on transport-related climate mitigation and adaptation.

These surveys demonstrate essential limitations to NDCs as an indicator of low-carbon transport policy and, thereby, action on the decarbonization of transport. The same pattern was also revealed in a global survey conducted by the Partnership on Active Travel and Health looking at the coverage of walking and cycling policy measures in NDCs (↑PATH, 2023).

BOX 10

DISCREPANCIES BETWEEN NATIONAL POLICIES ON ACTIVE TRAVEL AND REFERENCES TO ACTIVE TRANSPORT IN NDCS

- Two thirds of Parties to the UNFCCC have some sort of active travel policy in place.
- Only a quarter of NDCs include active travel. However, 56% of countries have a walking policy and 22% a cycling policy that could, if connected, significantly help to reduce emissions quickly.
- Only 13% of NDCs highlight the need to improve walking and cycling infrastructure, compared with 35% and 20% of national walking and cycling policies.
- Just eight countries have consistently linked walking and cycling between national policies and NDCs to deliver on climate, environment and equity goals. Apart from Singapore, the others are all low- or middle-income countries and include Bangladesh, Bhutan, Colombia, Costa Rica, Ethiopia, Rwanda and Uganda.

Gender, in relationship to the transport sector, is still very much a blind spot in NDCs. The NDC tracker developed by Changing Transport only mentions two cases where a specific reference to gender is included in relationship to transport. ↑ GIZ and SLOCAT (2021) conclude that NDC transport actions fail to exploit opportunities related to gender, the SDGs, equity and other aspects that would enable a wider transformation. At a general level, however, there is much better coverage of gender in NDCs. Parties to the UNFCCC are increasingly recognizing gender integration as a means to enhance the ambition and effectiveness of their climate action. Most Parties (75%) provided information related to gender in their NDCs and some (39%) affirmed that they will take gender into account in implementing them (↑UNFCCC, 2022). As of September 2022, 102 of 120 United Nations Development Programme (UNDP) Climate Promise-supported countries and territories have submitted updated, more robust NDCs. Promisingly, 97 integrated gender equality considerations, which is quite an improvement compared with 49 in the initial round of NDCs (↑UNDP, 2022).

As can be expected, until now generic assessment reports on the inclusion of gender in NDCs have not gone into detail on what sectors are being covered. To overcome this challenge, the ↑NDC Partnership (2024) recommends engaging the national gender machinery to support the climate-related sectoral ministries to strengthen the integration of gender into their policies and implementation plans, and to build their capacity to effectively manage, monitor and report on those plans.

The Partnership on Sustainable Low Carbon Transport has been reviewing the VNRs submitted since 2016 to assess whether and how VNRs have been covering the transition to low-carbon sustainable transport. In its most recent report (↑SLOCAT, 2022) it concluded that there is still no systemic coverage of reporting on progress in the implementation of transport-related SDG targets. Instead, most of the 2022 VNRs only describe the adverse impacts of the ongoing crises (e.g. the COVID-19 pandemic and the conflict in Ukraine) instead of presenting concrete policy measures. When they do, the measures do not fully address the urgent systemic transformations necessary to enable equitable access to transport and mobility for all. There was, however, compared with previous years, a slight increase among the 2022 VNRs in references to gender-sensitive transport policies (SDG 5), possibly because SDG 5 was in focus at the High-Level Political Forum in 2022. The examples of Argentina and Eswatini were quoted, which both enforced laws to prohibit sexual and gender-based violence that is widely prevalent in transport and public spaces. SLOCAT recommends that countries need to optimize the use of transport and mobility measures in support of the implementation of the SDGs at the national and subnational level. In doing so, the level of ambition, the concreteness of and the systemic approach in transport measures need to drastically increase.

Currently, there are no ongoing dedicated efforts to report on progress in realizing gender-responsive urban mobility. Manuals which promote gender-specific reporting on the implementation of the SDGs such as those of the ↑ United Nations Economic and Social Commission for Western Africa (↑ESCWA, 2019) and the United Nations Entity for Gender Equality and the Empowerment of Women (↑UN Women, 2020) provide worthwhile general recommendations but fail to provide sector-specific guidance, including for the transport sector.

C. Women and mobility initiatives

Despite a lack of dedicated gender-friendly urban mobility policies and measures it is important to note that there is a growing number of dedicated networks on women and mobility where policymakers and practitioners working on gender-responsive transport can derive inspiration and practical guidance from dedicated networks on women and mobility. In recent years, there has been a large growth in such initiatives and groups.

↑SUM4ALL (2023) provides a comprehensive overview of 26 gender and transport initiatives and networks throughout the world. In some cases, these are general in nature covering different modes of transport; in other cases, they focus on specific modes of transport such as railways, public transport, cycling or logistics. Urban mobility is covered by a significant number of these initiatives, which can be global, regional or national in scale. Table 3 details the activities of a selected number of initiatives, including the Women Mobilize Women initiative which has been groundbreaking in raising the attention on gender and urban mobility.

In addition to these global and regional initiatives on women and mobility, there are countless national and local initiatives that aspiring policymakers can tap into for guidance.

Furthermore, in addition to these initiatives on women and mobility, there are also a number of rosters of female experts that are either exclusively focused on the transport sector, or include it. For example, the TEC, as part of a joint activity with the CTCN on gender and technology, has committed to provide guidance to their secretariats in developing and maintaining a roster of gender and climate technology experts. The GIZ internal sector network TUEWAS (Transport, Environment, Energy and Water in Asia) is another example of such a network.

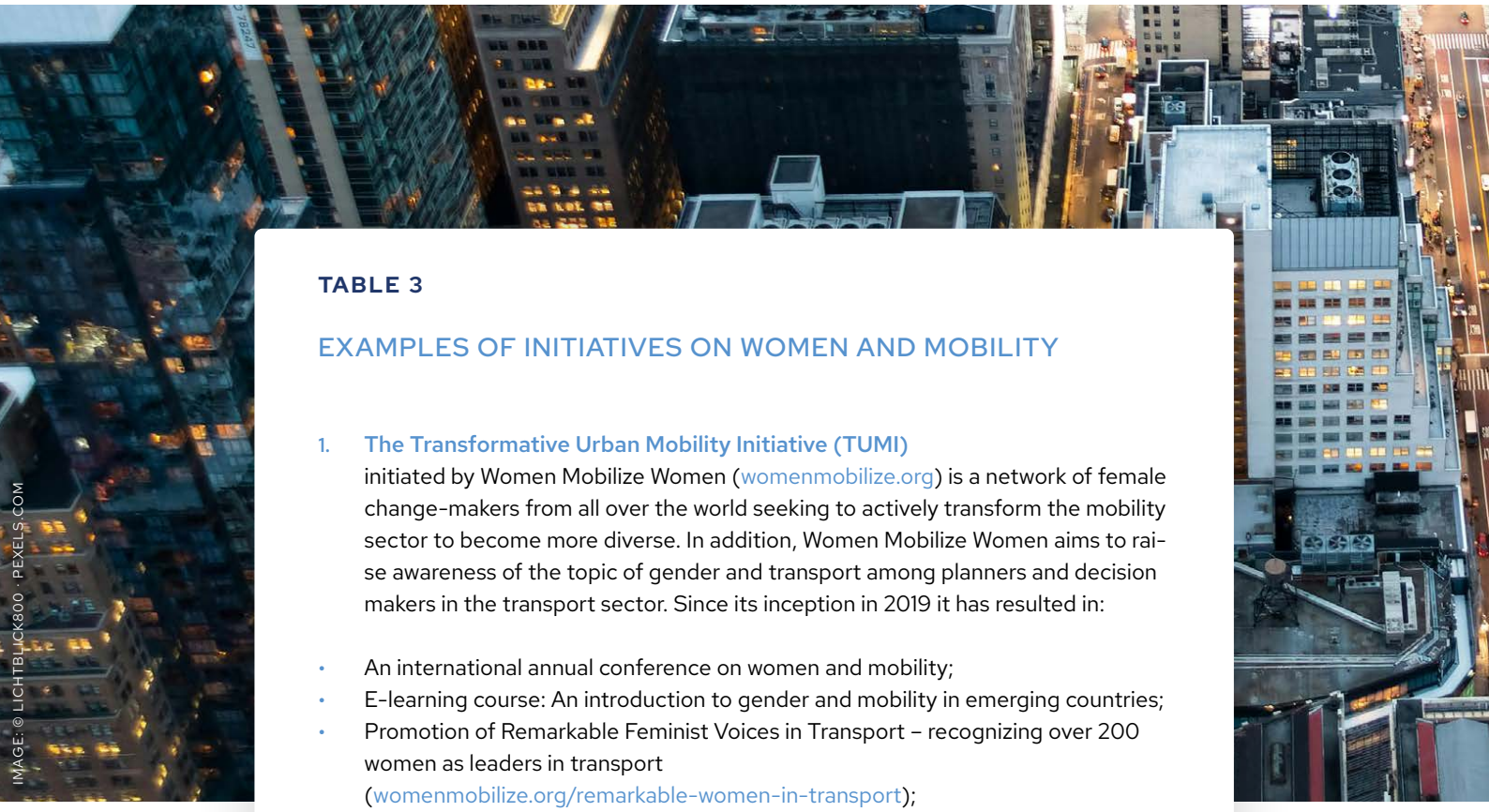

IMAGE: © LICHTBLICK800 · PEXELS.COM

TABLE 3

EXAMPLES OF INITIATIVES ON WOMEN AND MOBILITY

1. **The Transformative Urban Mobility Initiative (TUMI)**
initiated by Women Mobilize Women (womenmobilize.org) is a network of female change-makers from all over the world seeking to actively transform the mobility sector to become more diverse. In addition, Women Mobilize Women aims to raise awareness of the topic of gender and transport among planners and decision makers in the transport sector. Since its inception in 2019 it has resulted in:

- An international annual conference on women and mobility;
- E-learning course: An introduction to gender and mobility in emerging countries;
- Promotion of Remarkable Feminist Voices in Transport – recognizing over 200 women as leaders in transport (womenmobilize.org/remarkable-women-in-transport);
- An international mentoring programme for female young professionals;
- Establishment of a special initiative on bridging the gender data gap in transport (genderdata.womenmobilize.org).

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2. **Women on the Move in Asia**
is an initiative of the NDC Transport Initiative for Asia (ndctransportinitiativefo-rasia.org/news/peer-network-for-women-on-the-move-transport-asia). As part of its activities, it has launched an online year-long mentorship programme to connect women in Asia with similar goals and areas of focus (changing-transport.org/women-on-the-move-mentorship-programme).

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3. **Mujeres en Movimiento – Women in Motion (WIM)**
(mujeresenmovimiento.net/directorio) is an international initiative led by women that was created within the framework of the International Transport Forum in Leipzig on 24 May 2018. It seeks to strengthen women's leadership in sectors that lack diversity and gender equality through a network of active cooperation and governance of the civil, private and public sectors. It also seeks to promote women leaders who lead the construction of inclusive, safe and sustainable cities.

IMAGE: © LICHTBLICK800 · PEXELS.COM

4. **The Gender and Electric Mobility Working Group** (summit.itf-oecd.org/2023/summit-programme/launch-of-the-gender-and-electric-mobility-working-group). This network is part of the new global project "E-Mobility as a Driver for Change – Towards a Gender Transformative and Just Transition to Electric Mobility" implemented by UNEP. The new global Working Group will bring together a consortium of transport stakeholders who will contribute their time, knowledge and expertise to establish best practices, create frameworks, provide policy advice and tools and ensure that global efforts on the topic are better synergized.

5. **The Ambassadors for #DiversityInTransport** (transport.ec.europa.eu/transport-themes/social-issues-equality-and-attractiveness-transport-sector/equality/diversity-ambassadors-transport_en) seek to promote diversity, equality and inclusion within the European Union (EU) transport sector through raising awareness and sharing information on and developing and implementing initiatives to promote diversity in the EU transport sector, both from the perspective of transport workers and transport users.

6. **Safetipin** is a social impact organization working towards building responsive, inclusive, safe and equitable urban systems in a world where everyone can move around without fear, especially women and other excluded groups (safetipin.com). Safetipin works to make communities and cities safer by providing information and data collected through its different technology tools and mobile applications. It collects and analyses data on several parameters that impact safety and play a role in creating inclusive spaces for a diverse set of people with a focus on vulnerable groups, especially women, with activities currently in 75 cities in 16 countries.

7. **Women in Cycling** (cyclingindustries.com/wic) is an initiative aiming to help women to get more visibility, impact and leadership roles in the cycling industry and in the entire sector. Women in Cycling seeks to boost equality and diversity in the sector, bring women working in the cycling sector into the spotlight and provide networking, mentoring and training opportunities.

D. Gender and mobility toolkits

Policymakers and practitioners working on gender-responsive urban mobility can benefit from a rapidly growing collection of gender-focused toolkits. These toolkits (see table 4) cover a wide range of topics from mapping gender concerns in urban mobility to indicators that can be used to assess progress in the implementation of policies, programmes and projects to develop gender-inclusive low-carbon urban mobility systems.

TABLE 4

Selection of toolkits on women and mobility

1. **Gender Equality Toolkit In Transport**
   Details: To inform transport professionals on how the work that they do and the decisions that they make impact women's mobility and to provide a resource to encourage them to be gender responsive.
   Publisher: Future Transport Visions Group
   Date: Accessed on 02 April 2024
   URL: the-get-it.com

2. **ITF-OECD Gender Analysis Toolkit for Transport**
   Details: Hands-on, easy-to-use method for incorporating a gender-inclusive perspective into transport projects, plans and policies.
   Publisher: International Transport Forum
   Date: Accessed on 02 April 2024
   URL: itf-oecd.org/itf-gender-analysis-toolkit-transport-policies-0

3. **Improving Gender Equity through Electric Mobility**
   Details: Provides a checklist for gender-inclusive e-mobility projects
   Publisher: International Transport Forum.
   Date: Accessed on 02 April 2024
   URL: living-lab.center/_files/ugd/6a0a2f_dd9dbbe600ba4eb399b55ec4604163a5.pdf

4. **Mobilise Your City**
   Details: Contains a wide range of training materials including a dedicated module "Introduction to gender and its relevance for urban mobility planning".
   Publisher: Mobilise Your City
   Date: Updated on a regular basis
   URL: mobiliseyourcity.net/training-materials

5. **Toolkit for making road infrastructure projects gender responsive**
Details: This set of tools will help to facilitate gender responsiveness in developing and implementing road infrastructure projects .
Publisher: Department of Public Works and Highways, Philippines, and World Bank
Date: 2011
URL: dpwh.gov.ph/dpwh/gad/toolkitinmaking

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6. **Gender Tool Kit: Transport**
Details: The Gender Tool Kit provides users with a set of tools and case study examples to help design transport projects that are gender-responsive and inclusive .
Publisher: Asian Development Bank
Date: 2013
URL: adb.org/documents/gender-tool-kit-transport-maximizing-benefits-improved-mobility-all

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7. **Gender Sensitive Mini-Bus Services and Transport Infrastructure for African Cities: A Practical Toolkit**
Details: This toolkit provides minimum standard guidelines and practical tools for creating safer and more accessible public transportation systems for women in African cities.
Publisher: UN-Habitat
Date: 2019
URL: unhabitat.org/gender-sensitive-mini-bus-services-and-transport-infrastructure-for-african-cities

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8. **Topic Guide: Addressing Gender Equity and Vulnerable Groups in SUMPs**
Details: Support for mobility practitioners and local authorities in understanding and addressing gender equity and inclusivity in transport planning.
Publisher: ICLEI European Secretariat
Date: 2019
URL: mobiliseyourcity.net/sites/default/files/2021-02/sump_topic-guide_gender-equity_vulnerable-groups_final.pdf

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9. **Toolkit for Gender-Sensitive Data – Improving the Safety of Women and Girls on Public Transport**
Details: A toolkit designed to help improve public transport safety for women and girls.
Publisher: La Trobe University, RMIT University and Monash University's XYX Lab
Date: 2021
URL: latrobe.edu.au/__data/assets/pdf_file/0006/1298886/Public-Transport-Data-Collection.pdf

10. **Toolkit for Enabling Gender Responsive Urban Mobility and Public Spaces, India – Volume I: Policy Makers · Volume II: Implementing Agencies**
Details: Guidance notes for government agencies, groups and institutions that develop programmes for safer and more inclusive transport for women in cities.
Publisher: World Bank
Date: 2022
URL: openknowledge.worldbank.org/entities/publication/128bcb06-0fc4-5c1d-9a2b-fc6e-9ce47b03

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11. **Gender Imbalance in the Transport Sector: A Toolkit for Change**
Details: A Toolkit for Change, which provides practical and actionable policy guidance on how a gender-sensitive approach can be mainstreamed in the transport sector.
Publisher: Sustainable Mobility for All
Date: 2023
URL: sum4all.org/data/files/gender_imbalance_in_the_transport_sector_a_toolkit_for_change.pdf

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12. **She Rises**
Details: A gender assessment framework by which cities can be audited for their responsiveness towards the needs of women and girls in cities. The framework consists of 37 indicators across five pillars.
Publisher: Safetipin
Date: 2024
URL: smartcities.gov.in/sites/default/files/2024-03/SheRises.pdf

IMAGE: © IRWAN ZAHURI · PEXELS.COM

VIII. Key findings and recommendations

A. Key findings

This policy brief was developed to provide guidance on how action on gender and low-carbon urban mobility can become mutually reinforcing. Both are topics of concern. As the world continues to urbanize and develop economically, urban passenger transport will continue to grow. Decarbonization of urban transport is a key part of effective climate policy. While decarbonizing urban mobility systems, these systems are also expected to contribute to sustainable development as defined in the SDGs, and the transition to sustainable low-carbon urban mobility needs to be just and equitable. This cannot be achieved if it does not ensure that all genders, and especially women, participate fully and equally, and enjoy the same access and connectivity while feeling secure.

Policymakers need to be aware that under the current status quo people in all their diversity are living in an imperfect world when it comes to urban mobility in terms of access, safety, comfort and environmental performance. Substantive action at scale will be required for urban mobility to make its contribution to the targets set by the Paris Agreement and the 2030 Agenda for Sustainable Development. In addressing the sustainability of urban mobility special efforts will, however, need to be made to address current inequalities, including gender inequality. Otherwise, there is a clear danger that future urban mobility may be low carbon but that it leaves groups in vulnerable situations behind in terms of how it serves their economic and social needs. The current system is inequitable and does not serve the needs of at least half the world's population. Gender-responsive low-carbon mobility can ensure both gender-equal access, as well as access to and use of low-carbon climate-friendly options by all. This is both a rights-based and an effectiveness argument.

Owing to gender roles and social norms, women often have different travel needs and behaviours if compared with men. These differences are not just based on their gender but also on other characteristics including race, ethnicity, sexual orientation, gender identity, disability status and class which "intersect" to create unique dynamics and effects. While women are disproportionately vulnerable to the impacts of climate change and experience considerable inequalities in urban mobility systems, they are not a homogeneous group and may have different experiences depending on these intersecting factors. At the same time, women are change agents who are taking initiatives to improve their own lives, as well as those of others.

There is considerable evidence that urban mobility systems in their current shape do not provide women with the same access and connectivity as they do for men. This is in part because women's needs were often not kept in mind by the (often male) designers of these systems. Also, data on the specific needs of women, like those of other groups in situations of vulnerability, are not collected in a systemic manner. New public transport systems in many cases may not be affordable for large groups of women, and if they are able to use them inadequate provisions have been made to protect them from harassment and gender-based violence. Lastly, urban mobility does not provide equal opportunities for women when it comes to employment.

B. Recommendations

A helpful policy framework to design sustainable low-carbon mobility systems is the Avoid–Shift–Improve framework, whereby especially measures under the Shift component (e.g. improvement of public transport, walking and cycling) have a strong potential to improve access and connectivity for women. A secondary, supportive framework is the 4A's: availability, affordability, accessibility and acceptability.

The realization of gender-responsive sustainable low-carbon mobility systems will require a large number of often mutually supportive policies and measures that promote the realization of more and better urban transport infrastructure and systems, and incentivize their use while discouraging the use of unsustainable, private car-based transport. This includes the following

Principles and respective measures (see Table 2):

1. Planning compact and accessible cities
2. Developing transit-oriented cities
3. Getting the urban mobility infrastructure right
4. Encouraging walking and cycling
5. Advancing smart mobility management
6. Enhancing public transport and shared mobility
7. Parking: prioritizing management, not supply
8. Electrifying all vehicles
9. Winning the support of stakeholders and citizens
10. Empowering cities to avoid, shift and improve

An important part of promoting gender-responsive sustainable low-carbon urban mobility needs to be greater employment opportunities for women in this field. This will help to ensure that the transition required will be just and equitable for all.

This policy brief establishes that the policy choices and options have been well documented and that the emphasis now needs to shift towards integrating these actively into policy, programme and project documents at the national and especially the urban level. There is a dual challenge here that needs to be tackled simultaneously; there is a need to strengthen policymaking in general in the field of urban mobility while better integrating gender considerations into such policies. Using a gender-responsive lens yields better and stronger urban mobility policies that benefit all. Ensuring the application of gender considerations in urban mobility policies, as well as in specific urban mobility projects, requires the availability of better data on gender and transport in the design, implementation, monitoring and evaluation of urban mobility projects.

The visibility of and need for gender- and climate-responsive urban mobility policies would be raised if they were reflected in the reporting mechanisms under the Paris Agreement (e.g. NDCs) and the 2030 Agenda for Sustainable Development (e.g. VNRs). Both can serve an important function in setting national commitments on the topic of gender-responsive urban mobility policies and serve as a framework for action on both climate change and sustainable mobility actions.

In recent years, there has been a rapid growth in hands-on resources that can help policymakers and practitioners transition towards sustainable and low-carbon gender-responsive urban mobility policies. The references section of this policy brief contains valuable guidance and so do the various dedicated initiatives and toolkits on women and mobility.

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United Nations Climate Change

TEC

About the Technology Executive Committee

The Technology Executive Committee is the policy component of the Technology Mechanism, which was established by the Conference of the Parties in 2010 to facilitate the implementation of enhanced action on climate technology development and transfer. The TEC analyses climate technology issues and develops policies that can accelerate the development and transfer of low-emission and climate resilient technologies.

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