



Issues Note¹

Gender Equality and Sustainable Infrastructure

Executive Summary

Good access to quality and sustainable infrastructure is an essential determinant of people's well-being and a basic requirement for businesses to prosper. High-quality infrastructure from digital, transport, energy and water to public parks and museums underpins inclusive growth and supports sustainable development, in line with the 2030 Agenda. Infrastructure is essential to foster equal opportunities, to connect left-behind regions, ensuring easy access to public services for citizens and, in general, to improve life quality.

It is often assumed that women will automatically benefit from new infrastructure projects in the same way as men do, without acknowledging possible distinct impacts on women and men according to their needs and social roles. For example, urban design plays a major role in people's life, but the risks of uncontrolled urbanisation, urban sprawl and slums are often greater for women as they are more likely to be targets of assaults and harassment. Improved urban infrastructure with a gender perspective would demand public lighting, safe public spaces, and safe public transport to help mitigate safety-related risks that women have to face in their everyday life.

The ongoing technological revolution and the associated digital infrastructure also requires fostering equal access to digital services and ensuring opportunities to acquire technological skills. There is also a need to address risks that arise in a digital environment, such as girls' and women's exposure to cyberbullying, sexual harassment and other forms of violence against women facilitated by online services.

Women are often also more important users of and contributors to social infrastructure such as education, health, childcare centres, and other social services, as well as public spaces such as parks and recreation centres. This often arises from women's traditional role in children and elderly care and the employment patterns in these sectors. The location of these services, the design of public transport grids and the frequency of transport must therefore be thought with a gender lens in mind.

Infrastructure, its users and contributors are also among the biggest contributors to carbon emissions and environmental damage. Developing future infrastructure projects must therefore take into considerations the sustainability goals embedded in the 2030 Agenda.

The negative gender-specific effects of infrastructure are worsened in some countries by discriminatory legislations and social norms. For instance, in low income countries, the gender challenges of infrastructure are compounded by inadequate access to basic services such as water, sanitation and energy, and the concomitant role of girls and women in collecting water and biofuel. Inadequate access to sanitation facilities also affects teenage girls school attendance because of stigmas associated to menstruation.

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The 2030 Agenda frames these interrelated global social and sustainability objectives, including SDG 5 that aims to achieve gender equality and empower all women and girls; SDG 6 on water and sanitation, SDG 7 on sustainable energy, SDG 9 on industry, innovation and infrastructure ; SDG 11 on sustainable cities and communities; SDG 13 on climate action, SDG 14 on life below water and SDG 15 on life on land. Within the spectrum of policy tools, infrastructure plays a central role since it supports co-ordinated action to deliver on many other goals, including those regarding education, health, social protection, jobs, and the environment.

Such considerations call for an **integrated policy approach to quality and sustainable infrastructure development with a gender lens**, taking into account other societal goals such as economic growth, employment creation, environmental sustainability, and well-being. Such an approach must recognise the **gender-sustainable infrastructure nexus**, and thereby manage the inherent trade-offs and synergies that may arise between different goals and policies, in line with SDG target 17.14 (policy coherence for sustainable development).

The **first pillar** of an integrated approach is to consider the specific gender aspects of infrastructure strategies, policies and projects. This demands understanding women's needs and preferences, as well as trends, such as urbanisation, changes in women's participation in the labour force, the growth of part-time employment, the trend to single parent households, and migration. An integrated agenda must also focus on necessities, especially in developing countries, given infrastructure's potential to bring about massive improvements in the well-being of girls and women, while ensuring more sustainable development.

The **second pillar**, the "how", is to ensure the engagement of women in the design of infrastructure strategies and plans and in implementation, as well as due consideration of the well-being of female employees along infrastructure supply chains. This requires reviewing the presence of women in decision-making positions in both the public and private sectors, in particular ministries of planning and infrastructure, but also at different levels of government, as well as boosting women's presence in the boards and top management positions of infrastructure companies. It also requires well-developed consultation processes that engage women from different socio-economic backgrounds. The private sector plays a central role by ensuring responsible business conduct within and across borders, respecting basic human rights, promoting equal labour rights between men and women, improving working conditions for women and avoiding negative environmental externalities, both within the company and along its supply chain. For example, infrastructure companies should be aware of gender issues when operating in contexts where women face severe discrimination or where enterprise activities significantly affect the local economy, environment and access to land and livelihoods.

Few countries have advanced such an integrated agenda. To **accelerate gender mainstreaming in infrastructure and align it with the SDGs**, this note identifies a research and policy agenda for the OECD along three main axes. First, current data collection exercises could be expanded to obtain a gender perspective of access to and use of infrastructure (broadly defined) across and within countries as well as on the implications of infrastructure development for women's health and the environment. Such work could be launched as part of the OECD's Horizontal Project on Sustainable and Quality Infrastructure. Second, the OECD Framework for the Governance of Infrastructure could be extended or complemented with specific guidance (e.g. a toolkit) in order to incorporate a gender perspective. Similar adjustments could be made to sectoral guidance, for the transport, energy and water sectors, among others. A third line of work could involve active engagement with governments and the private sector to increase women's representation in infrastructure decision-making processes and the application of the gender chapter of the OECD Due Diligence Guidance for Responsible Business Conduct.

Finally, there is a need to consider a broad, global partnership to accelerate this agenda, engaging with the UN family, other international organisations, MFIs, private corporations and civil society to accelerate transformations in society and economic processes to deliver on the SDGs.

Purpose and scope

Taking into account the available evidence on the gender-sustainable infrastructure nexus, this note lays out gender-specific challenges in infrastructure policies and projects, based on examples from both advanced and developing countries. It then identifies a number of gaps in our evidence base and analytical toolbox and concludes by proposing a way forward to address them.

The note uses the term infrastructure in its comprehensive sense, covering both hard (physical) and soft infrastructure. Among hard infrastructure, the following are typically included: transport, such as roads, bridges, cycle highways, rail, airports and ports; energy; water and sanitation; natural disaster management systems; and infrastructure for the digital economy, such as fixed and mobile broadband networks. Soft infrastructure refers to institutions that are essential to the economy and quality of life such as health, education, financial, security, legal and regulatory/supervisory systems and institutions, as well as public spaces and cultural institutions such as museums or places to practice religion.

The link between infrastructure and sustainability is clearest with respect to the hard type, in particular in the transport, energy and water and sanitation sectors, because of the environmental effects of carbon and other emissions and effects of pollutants on health and biodiversity. But hard and soft infrastructure are tightly interlinked and are both driven by urban and rural design and by development policies at all levels of government. Hence, there is a need to understand the interaction between these different types of infrastructure, the relations that drive their development, and their impact on women's and men's well-being and environmental sustainability.

This paper reviews existing evidence and analysis on the linkages between gender equality and quality and sustainable infrastructure. Based on the available evidence, the note provides some tentative policy recommendations and identifies a research and policy action agenda going forward. It proposes to develop an integrated gender equality and sustainable infrastructure framework that could be applied both within and across borders.

The OECD is well placed to help countries implement this integrated agenda by building on various axes of work. First, the OECD has two recommendations that promote gender equality, the **2013 OECD Recommendation of the Council on Gender Equality in Education, Employment and Entrepreneurship**, and the **2015 Recommendation of the Council on Gender Equality in Public Life**. Second, the OECD is advancing Gender Mainstreaming via its **Toolkit for Gender Mainstreaming** and the **OECD Gender Policy Platform: Accelerating Gender Mainstreaming**, which can be tailored to the infrastructure sector. Third, the OECD is advancing policies to enhance the quality, sustainability and responsible use of infrastructure, building on the **OECD Framework for the Governance of Infrastructure**; the **OECD's Horizontal Project on Sustainable and Quality Infrastructure**; the **OECD Council Recommendation on Water** (December 2016); the **OECD Guidelines for Multinational Enterprises, including OECD Guidelines for Resonible Investment** and **OECD Due Diligence Guidance for Responsible Business Conduct**.

Why is sustainable and quality infrastructure critical for gender equality?

Women and men often use infrastructure differently, hence their different needs should be explicitly taken into account in infrastructure projects and urban and settlement design. For instance, surveys show that women rely more on public transport than men do, and since they are more often affected by violence, ensuring the safety and security of public transport is key for their well-being and labour force participation. Women and men may also use different public transport routes and travel at different times, depending on their work, family responsibilities and other social interactions.

Taking into account the needs of women or children in infrastructure planning not only determines distributional effects of infrastructure projects such as equality in accessibility, but is also a sound business case that can help avoid wrong planning decisions.

Women and the digital transformation

Enhancing women's access to communications infrastructure, from mobile to broadband networks, is crucial to ensure that they can harness the benefits of the digital transformation. However, connectivity is not yet ubiquitous or evenly distributed by gender nor geographic location. Surveys show that women still access the Internet less than men do, with a proportion of 45%, as compared to about 51% for men – which corresponds to having 250 million fewer women than men online (ITU, 2017). Women are on average 26% less likely than men to have a smartphone. In South Asia and Africa these proportions stand at 70% and 34%, respectively (OECD, 2018a). Today, worldwide, some 327 million fewer women than men have a smartphone and can access the mobile Internet.

To ensure an inclusive digital transformation, it is essential to enhance access and reduce digital divides, including by age, education, gender, income, and geography, that persist across and within countries. The 2016 OECD-IDB Latin America and the Caribbean Broadband Toolkit sets out a comprehensive agenda for policies that can help broaden access to digital technologies in the region, addressing both major supply and demand issues in a holistic and coherent manner (OECD, 2016).

Several good practices exist, based on OECD countries' experience and outcomes in terms of promoting connectivity to rural populations. Subsidising national and rural broadband networks, promoting municipal networks and designing competitive tenders for private sector network deployment and management or implementing open access arrangements, can all be effective options to improve access (OECD, 2015). Among the tools available to policy makers – in addition to fostering sound regulatory frameworks for communication infrastructure and services – universal service frameworks and state aid mechanisms can address specific needs targeted by policy makers relating to intersectional factors that affect women (such as income levels or disabilities). Well-designed, appropriately located and affordably priced broadband infrastructure can be a powerful tool in the pursuit of gender equality.

Women as users

Improving women's access to communication networks and services can contribute substantially to greater gender equality. The use of Internet, digital platforms, mobile phones and digital financial services, for example, can help women earn additional income, increase employment opportunities, and access knowledge and digital government services. In Australia, fast broadband connection at home has encouraged more people to work from home, access education, have smart devices in their homes, and to start their own business. The effects were found to be particularly strong in rural areas and for women. Upon the broadband roll-out, the number of self-employed women grew at an average 2.3% every year, compared to only 0.1% on average in non-National Broadband Network areas (NBN, 2018). The use of digital platforms has also helped reduce barriers to participation in the labour market for women, increasing flexibility and work-life balance for women. Digital services can also facilitate the delivery of medical services, especially for elderly people in remote places.

A fundamental barrier for women to access the Internet is the lack of availability of broadband services. Policies to promote competition and private investment, as well as independent and evidence-based regulation, have been tremendously effective in extending coverage. Scarcely populated areas, such as rural areas, may be more challenging in terms of profitability for market players. In these cases, the cost of deploying some types of infrastructure may be high compared to the expected return on investment (OECD, 2018b). This can affect disproportionately more women in developing countries as they seem to be more often located in rural areas, whereas working age men tend to be mainly in urban areas (UN Statistics, 2016). Affordability of communication services, in both

rural and urban areas, is a challenge for all but also affects disproportionately more women and girls, and remains one of the key hurdles in accessing ICTs.

In addition to hurdles related to access, such as availability and affordability, women also face a reality where they may face a lack of education as well as inherent biases and socio-cultural norms that curtail their ability to benefit from the opportunities offered by the digital transformation.

Safety-related issues are also among reason for families' opposition to the use of the Internet or the ownership of a mobile phone for women and girls. For example, for women in China and Mexico, harassment is among the top barriers in owning and using a mobile phone. Women and girls using the Internet can be exposed to additional risks, including cyberstalking, online harassment or even sexual trafficking, and it thus become crucial to develop measures to protect and prevent gender-based violence online. The European Institute for Gender Equality estimates that one in ten women have already experienced a form of cyber violence at the age of 15. The paucity of data that exist calls for the need to collect harmonised data, on a recurrent basis, related to cyber violence against women and girls, for effective actions to be designed and implemented and progress monitored (c.f. OECD, 2018a).

Enhanced and gender-sensitive applications on top of the infrastructure layer are critical, as are policy interventions addressing long-term structural biases. For example, applications (apps) such as the "SafetiPin" contribute to address issues related to sexual harassment, and to improve security for women in India by helping them navigate the city with less risk. In addition to enabling an SOS button, the SafetiPin app lets users rate streets and areas for safety criteria, such as lighting, visibility, people density, gender diversity, security and transportation. Local government and planners also use the aggregated data of the app, partly provided by users, to improve services and make cities safer for women (SafetiPin, 2019).

Women as contributors

Women can play an active role in decision-making related to digital infrastructure and help shape the future infrastructure landscape. However, women are currently under-represented in ICT jobs and top management, and men are four times more likely than women to be ICT specialists. At 15 years of age, on average, only 0.5% of girls wish to become ICT professionals, compared to 5% of boys. Perhaps unsurprisingly, there are also fewer female entrepreneurs in the ICT sector – and those women that do start ICT businesses face socio-cultural gender bias when raising capital.

Yet, women can be crucial contributors to expanding access and use of broadband networks in underserved areas. In India, Wireless for Communities (W4C) fostered the creation of women "barefoot network engineers" and "wireless women entrepreneurs" in communities to help transfer knowledge and develop local content. This project helped to raise women's empowerment and to create safe spaces, while also making these networks more socially viable by demystifying technology and transferring the control, management and ownership of the technologies to the community (Srivastava, 2018).

Women and transport

Access to reliable, safe and affordable transport is indispensable for people's participation in social and economic life, and is an integral part of human well-being. Men and women typically use transport differently, but in the past transport policies have not considered gender-specific patterns of transport use (Sarmiento, 1996).

Women as users

Neglecting women's preferences of transport and mobility may limit their economic participation. There is a negative correlation between commuting time and women's participation in the labour force (Black and al, 2012). An increase of 1 minute in commuting time in metropolitan areas is

associated with an approximately 0.3 percentage point decline in the women's labour force participation – reflecting women's mobility patterns: they do not simply commute but do a lot of additional travel related to household responsibilities, such as shopping and children and elderly care.

Women on average travel less often and for shorter distances than men (Moriarty and Honnery, 2005) and are more willing to reduce vehicle use than men (Polk, 2003; 2004). Such trips could be easily facilitated by public transport services if they are available and women also tend to prefer public transport modes, such as bus or train, over driving a car or riding a motorcycle more than men in general. Shorter travel distance could also make women an attractive target group for shared mobility services, which are also more sustainable transport alternatives (Ng and Acker, 2018).

A study of eight European and Asian cities by Ng and Acker (2018) show that women travel shorter trips on average than men, use public transport more and travel more during off-peak hours. Since women have more complicated travel patterns, they tend to prefer more flexible modes but, at the same time, public transport modes are also more appealing to women than to men. This implies that flexible modes, especially emerging trends such as shared mobility or mobility as a service, could attract more female than male users. When given better alternatives, women may choose to give up driving altogether. If cities want to further encourage the development of flexible and sustainable modes of transport, policies to address women users' preferences should be implemented as women will be the dominating users.

Similarly, although women prefer to use public transport modes more than men, most cities do not have transport programs or policies that are focused on improving the user experience of women transit riders considering their off-peak time of travel and non-commute trip purpose. One city that does consider gender aspects in its urban planning is Vienna. Prompted by a survey in the late 1990s on the use of public transport by men and women, data is now collected to determine how different groups of people use public transport and spaces before an infrastructure project gets underway (C. Foran, 2013).

Transport safety and security are key factors in determining women's mobility preferences and choices, notably in urban areas where more women than men use public transport and heavily depend on these systems for their mobility needs. Examples provided in the ITF's Compendium on Women's Safety and Security: A Public Transport Priority (2018) show that a large majority of women worldwide feel unsafe in public transport and have been victims of some type of physical or verbal harassment and other forms of violence in public spaces. As a result, women often prefer driving when faced with a modal choice, using taxis or other forms of for-hire ride services rather than walking, cycling or using public transport.

For instance, ITF (2018) reports a London survey that found that 28% of women who had used public transport in the past 12 months had experienced unwarranted staring, sexual comments, bodily contact, wolf-whistling and exposure. In a survey of Latin American countries, six-in-ten women say they have been physically harassed while using public transport. The statistics are alarming in many Asian countries as well. Women in Bangladesh face high levels of inequality in livelihood opportunities and access to economic assets. Women's participation in the workforce remains low, at an estimated 34%, while in rural areas women own only 8% of productive assets. According to estimates, around 94% women commuting in public transport have experienced sexual harassment in verbal, physical or other forms. In Jakarta nearly 90% of women found the safety of trains to be poor or very poor, whereas only 35% of men held a similar concern for security (Turner, 2013).

If cities want to increase their public transport use and occupancy rates, the safety of their services have to be considered in order to attract more women passengers and also to improve the experience of the substantial share of existing women users.

Women as contributors

The transport sector remains a male-dominated sector. In Europe, the transport workforce is 22% female despite women accounting for 46% of the total workforce². As for the Asia Pacific region, in the 21 APEC economies, women are typically found in fewer than 20% of transport jobs³. The ratio becomes more important when it comes to senior leadership positions: in the transport, logistics and infrastructure sector, women fill only 14% of them the United States⁴. Globally, women held only 19% of public service leadership positions in 2018 and females only make up 18% of staff in infrastructure ministries (energy, transport and communications) compared to 38% in socio-cultural ministries⁵. Women are under-represented in all transport modes and across all levels of decision-making. Out of the 59 member countries of the International Transport Forum, only nine countries had female Ministers of Transport in 2018. More actions are clearly required to attract and retain more women decision makers into the transport sector.

Women and sustainable energy

Ending energy poverty while addressing the climate change commitments that go in tandem with reduced human well-being, including health concerns stemming from pollution, calls for improving energy efficiency in industrial and urban areas and providing access to all in rural areas and developing countries. Both require a transition to renewable energy. Men and women may use energy differently, and policies need to find solutions to reach both.

Women as users

Recent research by the International Energy Agency (IEA, World Energy Outlook 2017 and 2018) finds that the most cost-effective strategy for ending energy poverty, providing universal access to electricity and clean cooking facilities in developing countries is compatible with meeting global climate goals, and would prevent millions of premature deaths each year. To provide universal electricity for all, decentralised systems, led by solar PV in off-grid and mini-grid systems, will be the least-cost solution for many regions. This shift would also benefit women the most, as it would free up billions of hours currently lost to gathering fuelwood.

Recently updated data on energy access shows the number of people without electricity access fell below 1 billion for the first time in 2017, down from 1.6 billion in 2000. While fossil fuels, mainly coal, have remained the main new source for electricity access since 2000, renewables are growing rapidly, providing more than a third of new connections in the last five years. This shift is expected to accelerate in coming years, and by 2030 renewables are set to provide new electricity access for three-quarters of the additional connections needed, according to the IEA report.

The report estimates that providing universal access to energy by 2030 would require an additional investment of USD 24 billion per year (on top of the USD 31 billion invested under current and planned policies), equivalent to less than 2% of global energy investment. The overwhelming majority of this extra investment would need to be directed to sub-Saharan Africa, and most of it to renewables. Of this, the investment required for clean cooking facilities, including liquefied petroleum gas, is modest and amounts to less than one-tenth of the total.

There are many benefits to achieving energy for all and doing so primarily via renewables. Women will save one hour per day when they do not need to collect fuelwood, freeing up the equivalent of a workforce of 80 million people. Increasing the share of renewables would reduce household air pollution, avoiding premature deaths, and limit carbon emissions.

² <https://www.gouvernementeuropa.eu/women-in-transport-eu-platform-change/85971/>

³ [2017 APEC Women In Transportation Best Practices Compendium](#)

⁴ From [Women in the Workplace 2018 comprehensive study in corporate America](#) by McKinsey & Company

⁵ <http://www.50x50movement.org/about>

Women as contributors

The IEA is working with the Clean Energy Education and Empowerment Technology Collaboration Programme (C3E TCP), which is part of the IEA's technology family to strengthen the role of women in the clean energy sector. Removing barriers toward women's active participation in sectors where they typically have been under-represented, such as the clean energy sector, requires the implementation of concrete actions in specific areas such as data collection and knowledge building, career development, awards programmes and dialogue. State-of-the-art knowledge represents a key point in the decision making process. The C3E TCP launched in May 2018 the Equal by 30 Campaign, a public commitment by public and private sector organisations to work towards equal pay, equal leadership and equal opportunities for women in the clean energy sector by 2030. The Equal by 30 Campaign is bringing together leadership from across the energy sector to galvanise action, and helps all players – from private sector companies to governments at all levels – take action together.

A gender perspective on water and sanitation

Clean water, hygienic sanitation and good water resources management are fundamental to human health and are key elements for the sustainability of the global ecosystem. Access to safely managed water and sanitation for all also lead to higher economic productivity and health-care savings. In most societies, access to water, sanitation and hygiene (or lack thereof) affect women and men differently, hence the need to look for tailored solutions to address these issues.

The Human Right to Water and Sanitation has been recognised by the United Nations General Assembly, but has yet to become a reality for a substantial share of the population. According to the WHO and UNICEF, as recently as 2015, 2.1 billion people still lacked access to safely managed drinking water services and 4.5 billion lacked access to sanitation compatible with the objectives laid out in SDG 6: the achievement by 2030 of universal and equitable access to safe and affordable drinking water for all (Target 6.1), and access to adequate and equitable sanitation and hygiene for all, paying special attention to the needs of women and girls and those in vulnerable situations (Target 6.2).

Women as users

Inadequate access to water, sanitation and hygiene facilities disproportionately affect poor women and girls, constraining their educational pursuits, economic productivity and often putting at risk their personal safety. A recent WaterAid and UNICEF report showed that around one in three girls in South Asia are missing school days every month, in part because they have no privacy and are unable to wash their hands after changing sanitary towels or pads. A recent study⁶ in two rural Indian watersheds, in Gujarat and Rajasthan, found that women travelled an average of three times per day to collect drinking water, depending on the season and that they spent around 50–77 minutes per trip. An analysis of 25 countries in sub-Saharan Africa (representing 48% of the region's population), shows that women and girls bear the primary responsibility for water collection in areas where water supplies are not readily accessible⁷.

Many workplaces in developing countries also lack adequate sanitation facilities, affecting time use, productivity, and employment decisions, especially of women.⁸ Having to walk to use distant toilets or open spaces, especially at night, puts women and girls at the risk of physical attack and sexual violence.⁹

⁶ Varua, M.E., Ward, J., Maheshwari, B., Dave, S. and Kookana, R., 2018. Groundwater management and gender inequalities: The case of two watersheds in rural India. *Groundwater for Sustainable Development*, 6, pp.93-100.

⁷ The Millennium Development Goal Report 2012.

⁸ OECD (2011), *Benefits of Investing in Water and Sanitation: An OECD Perspective*, OECD Publishing.

⁹ Sida (2015), "Women, Water Sanitation and Hygiene", Gender Tool Box Brief,

Women as contributors

Women can play an important role in household and community decisions to improve access to adequate water supply and sanitation. Further, women play a key role in the effectiveness of efforts to prevent water-related disasters (such as floods, storms and drought) and post-disaster recovery (Sida, 2015).

Where opportunities exist, women often take a proactive role to improve access to water and sanitation services for their families or business. This may include accessing microfinance to build a connection to safe water supply or sanitation near the home. These financial solutions have potential to reach significant scale. For example, through specific products and tailored support to financial institutions, Water.org has recently surpassed USD 1 billion in private finance mobilised via microloans for water and sanitation, many of which taken on by women.¹⁰

International policy discussions have recognised the importance of the gender dimension of water and sanitation¹¹, but much more must be done to understand the issues and scale up practical solutions to achieve progress on the ground.

Women and urban and settlement design

Urban and settlement design, including housing, is at the core of social and economic interactions in societies and communities. Accessibility to social and economic infrastructure (education, labour opportunities, health services, childcare facilities, green commons, cultural or religious institutions etc.) have an import impact on human physical and mental health. Different social roles and physical needs of men and women call for taking into account gender when shaping cities and other settlements. Safety is another major aspect that affects men and women differently in cities and settlements.

Women as users

Conditions in many cities hinder gender equality, even in better-off households. Typical city design, with segregated areas for residences, workplaces and shopping, reflects the one-earner household paradigm and smaller cities of the 20th century; commute time between these areas makes it particularly difficult for a single individual to take on a double or triple burden of childcare, breadwinning and elderly care. Due to societal norms, women are thus more likely to be obliged to stay at home as primary caregivers in residential areas. Women are also more often than men obliged to combine multiple jobs, and more often lead single-parent households. For instance, in the United States 6.7% of women aged 20 to 24 work multiple jobs compared to 4.6% of men in the same age group (Wilson, 2015). In addition, 82.2% of custodial parents are mothers compared to 17.8% custodial fathers (Grall, 2011). Commuting is also a major contributor to pollution and climate change, and cities account for 75% of global Carbon Dioxide emissions, with transport and buildings being among the largest contributors (UN Environment).

Women and children are also particularly affected by natural disasters, accounting for more than 75% of displaced persons. In addition to the general effects of natural disaster and lack of health care, women are vulnerable to reproductive and sexual health problems, and increased rates of sexual and domestic violence. Moreover, gender roles dictate that women become the primary caretakers for those affected by disasters – including children, the injured and sick, and the elderly – substantially increasing their emotional and material workload (WHO).

¹⁰ 3rd meeting of the Roundtable on Financing Water, summary, <http://www.oecd.org/water/roundtable-financing-water-2018-summary-and-highlights.pdf>.

¹¹ See, for example, outcomes from the 1981-90 International Drinking Water and Sanitation Decade; the 1992 International Conference on Water and the Environment in Dublin; the 2010 Resolution (64/292) of the United Nations General Assembly on access to clean water and sanitation as a human right.

Women as contributors

While women account for a large proportion of employment in the public sector in regional and local governments, they are underrepresented in decision-making responsibilities.

An added advantage of women's involvement in the governance of city infrastructure could be their sensitivity to environmental risks. For example, in the city of Kitakyushu, Japan, the active role of women's associations in the 1970s led the city on a new path of sustainable development, due to their heightened apprehension about the health risks caused by the city's industrial structure. The movement towards a more environmental friendly economy, combined with the need to rethink the industrial structure of the city due to the crises of the steel industry, brought Kitakyushu towards new industries, including assembly and automobile industry, renewable energy and recycling industry.

Sound governance to deliver gender-conscious, sustainable and quality infrastructure

Including a gender perspective from an early stage allows projects to be planned, prioritised, delivered and managed in consideration of women's and children's needs and their interlinkages with other objectives. It is equally important to ensure the participation of women throughout the entire cycle of the infrastructure project, including in the consultation and decision-making process, to achieve better outcomes for all.

Good infrastructure governance plays a major role not only for maximising available resources, but also for ensuring that it delivers the expected socio-economic benefits, in line with other policies such as tax and property rights. Mainstreaming a gender perspective throughout the governance cycle and financing, including strategic planning, consultation process, project implementation, co-ordination across levels and entities of government, adequate use of data and operational quality - is key for sustainable economic and social outcomes of these projects, such as increased labour market participation, reduced women's vulnerability, and greater social and environmental protection, leading to increased well-being for all.

Infrastructure also tends to be a male-dominated industry, in part because of the still heavy manual input involved. Gender-aware infrastructure governance can be a catalyst for having infrastructure projects that are responsive to social needs and create social added value by actually fulfilling their final objectives. In order to achieve this, infrastructure governance must not only ensure gender mainstreaming throughout the governance cycle, but also the direct involvement of women within local, national and international decision-making bodies and at all stages of policy-making.

There are five elements of the OECD Framework for Better Governance of Infrastructure that are particularly relevant to achieve this objective: (i) a strategic vision for infrastructure; (ii) integrate a consultation process; (iii) co-ordinate infrastructure policy across levels and entities of government and; (iv) generate, analyse and disclose useful data; (v) asset perform throughout its life cycle (OECD, 2017).

i A strategic vision for infrastructure.

Designing a strategic vision for infrastructure is crucial since it allows setting a long-term vision that informs the decision-making process for future infrastructure according to what social needs are going to be addressed. The strategic long-term vision needs to have a gender perspective, allowing infrastructure to be planned, prioritised, delivered and managed in consideration of women's and children's needs and their interlinkages with other objectives. Moreover, including a gender perspective in the strategic planning process might also help to outgrow the political and short-term arguments to allocate resources in a gender-biased way (such as political cycles and social dynamics). It can also be a key element to foresee coming demographic features and imbalances helping to prevent that the gender gap continues to grow and is transferred to new generations (transfer of the

intergenerational gender gap). The presence of women in leadership and decision-making positions at all levels of government is critical to achieve this goal.

ii *Integrate a consultation process*

Involving stakeholders such as users, men and women, civil society organisations, including gender-related groups, and the private sector can improve legitimacy, buy-in, project quality, and ultimately the effectiveness of infrastructure assets and services. To ensure the participation of women throughout the entire cycle of the infrastructure project, including the consultation process, would help to incorporate their perspective from the very basis of the project. Including a gender perspective in the vision of the project itself, would allow to foresee its implications for women and, accordingly, make a better assessment of the investment needs of the project and its sustainability. This two-way flow of information may allow having access to timely inputs (decreasing future transaction costs), enhance the legitimacy of the project amongst the stakeholders and bring a sense of shared ownership. As stated in the framework, public consultation also creates opportunities for communities and social groups to become advocates of their benefits and provides incentives for good performance (OECD, 2017).

iii *Co-ordinate infrastructure policy across levels and entities of government and ensure policy coherence*

Addressing the gender gap requires a shared and co-ordinated vision across all levels (vertical) and entities (horizontal) of government. A gender perspective must be fully integrated in the national and subnational infrastructure perspectives, projects and programs, in order to have a holistic and coherent policy approach that takes into account the trade-offs and complementarities (including transgenerational, gender and environmental implications). In that sense it is necessary to: 1) advance national social policy and women's well-being objectives with sustainability goals in mind; 2) tackle the gender deficit in access to resources, asset control and public and private governance, with a specific focus on the utilities, energy and transportation sector and; 3) address the gender and sustainability impact of transboundary policies (trade, investment, water management, migration, etc.), cross-border corporate activity and other spill-over effects.

iv *Generate, analyse and disclose useful data*

Putting in place systems that ensure a systematic collection of relevant data and institutional responsibility for analysis, dissemination and learning from this data is the eighth challenge identified in the OECD framework for the governance of infrastructure. In the absence of (or in combination with) formal data collection, crowd-sourced mapping could provide useful insights. The collection of data that would allow for an analysis with a gender perspective could help improve and reinforce all of the three previous points: it would contribute to a better understanding of the social needs based on gender, the results and impacts of the infrastructure projects to each gender, and improve internal governance processes with a gender perspective. In that sense, collected data should include a results and impact assessment with a gender perspective, allowing the unveiling of secondary and unseen effects.

v *Make sure that the asset performs throughout its life cycle*

There are multiple entry points to introduce a gender perspective into the life cycle of an infrastructure project. As it can be difficult to maintain performance and value for money of infrastructure service delivery, it will be equally difficult to maintain a gender responsive performance of infrastructure services. The responsibility for identifying potential problems concerning the gender challenge during the operational phase of the infrastructure project should be clearly defined and mechanisms need to be in place to monitor, communicate and address potential shortcomings.

Conclusion and next steps

While there is increasing awareness of the differential gender impact of infrastructure projects, few countries carry out effective mainstreaming in a sector that is essential for the well-being of women and families and for sustainable development. In fact, infrastructure projects still most often are made to cater for the average working person, and take little account of the different use and access needs and preferences by gender.

A first step in building the case for applying a gender lens in infrastructure projects involves putting in place systems that ensure a systematic collection of relevant gender disaggregated data (usage and provision) on access to and use of infrastructure by type (transportation, energy, water and sanitation, digital, safety and resilience, financial, health, education, culture, green spaces, etc.) to inform infrastructure project planning and design.

A second step requires developing frameworks for infrastructure design that take into account interlinkages between infrastructure and women's and men's well-being as well as societal goals regarding environmental protection. As part of this process, there is a need to undertake a gender analysis during project development and design phases, as well throughout the project life cycle. Such analysis should be linked to the strategic vision for infrastructure, which should include gender-specific priorities, needs and usage of different facilities (e.g., water, energy or health facilities) as well as environmental objectives. There is a strong potential in using government tools such as gender-smart procurement and gender budgeting to enable gender-sensitive infrastructure projects (by better taking into account the needs of different groups of population in procurement decisions, greater gender balance in evaluation panels for specific bids or infrastructure related contracts etc).

A third step involves addressing the gender sensitive governance deficit in decision-making and throughout the value chain of infrastructure projects. It is essential that women are well represented in the public positions that matter for decision-making all along the infrastructure investment cycle in order to ensure that infrastructure projects take into account the different needs and use of infrastructure by different groups of women and men, as well as environmental considerations. Infrastructure companies also have to ensure that women employees are not discriminated against and offered opportunities for training and career development.

Future work in this area could therefore aim to the research and policy agenda along these three axes. First, current data collection exercises could be expanded to obtain a gender perspective of access to and use of infrastructure (broadly defined) across and within countries as well as on the implications of infrastructure development for women's health and the environment. Such work could be launched as part of the OECD's Horizontal Project on Sustainable and Quality Infrastructure. Second, the OECD Framework for the Governance of Infrastructure could be extended or complemented with specific guidance (e.g. a toolkit) in order to incorporate a gender perspective. Similar adjustments could be made to sectoral guidance, for the transport, energy and water sectors, among others. A third line of work could involve active engagement with governments and the private sector to increase women's representation in infrastructure decision-making processes and the application of the gender chapter of the OECD Due Diligence Guidance for Responsible Business Conduct.

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