GENDER AND INFRASTRUCTURE, TRANSPORT AND ICT

This Thematic Brief provides quick guidance on the most important issues relating to gender and infrastructure, with a focus on transport and information and communications technology (ICT)

This Brief is addressed to staff from development cooperation agencies who are involved in infrastructure (including transport and ICT) programmes and projects.

Here they will find information on the most important gender issues at stake and how to address them, indicators that can be used to monitor whether a programme is integrating gender dimensions, examples of gender-sensitive development actions and references to further information and tools related to gender and infrastructure, with a particular emphasis on transport and ICT.

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Introduction

Infrastructure is a structure/space that provides services to the public as a whole, or to a particular group (NCPE Malta, 2012); amongst others, this includes railways, internet services, water and sanitation facilities, libraries, hospitals and energy lines. Investing in infrastructure can result in significant benefits for a community, with the potential to enhance human development and welfare (ILO et al., 2010).

Poor infrastructure continues to be a problem in much of the world. In developing countries, approximately 884 million people do not have access to safe drinking water, almost one billion people cannot access roads, 1.6 billion have no reliable electricity and 2.5 billion are without sanitary facilities (World Bank, 2010). Furthermore, many countries have yet to experience the full effects of the revolution in information and communications technology (ICT). For instance, in Africa, the proportion of active mobile phone users ('penetration rate') was approximately 41% in 2010 (versus 90% globally); active internet use stood at 16% in 2012 (versus a world average of 34%) (OECD, 2013). Without basic infrastructure, there are particular costs for rural communities, including long distances/travel times to reach essential natural resources, higher prices for goods and reduced opportunities for education and employment.

Even when infrastructure exists, it is not in itself 'gender-neutral'. Gender plays a role in shaping the design and use of spaces, as well as the level of access that women and men have to them. This Thematic Brief offers guidance to development agents on the gender dimensions of infrastructure programmes, with a particular focus on transport and ICT infrastructure.

For details of other types of infrastructure, it is recommended that readers refer to the Thematic Briefs on Water and Sanitation; Agriculture and Rural Development; and Urban Development, all available in the Thematic Areas section of the EU Resource Package on Gender Mainstreaming in Development Cooperation.

Gender issues in infrastructure, transport and ICT

Gender inequalities in infrastructure, transport and ICT

- **The lack of basic infrastructure in developing countries often hits women hardest, particularly in rural areas.** For instance, in many developing countries, women (and girls) are the main individuals responsible for providing care and sustenance to the household. This role includes collecting natural resources for domestic use, such as water and fuelwood (ILO et al., 2010). When essential forms of infrastructure are missing (for example, health services, water and sanitation facilities, and public transport), women may be forced to spend significant amounts of time travelling to fulfill their domestic responsibilities. In sub-Saharan Africa, women's trips account for 65% of hours spent travelling weekly (15-30 hours each week) (OECD and International Forum, 2011). In Tanzania, women's spend four times as much time as men on transport-related tasks[1]. This represents a major diversion of women's time away from other activities, including education, income generation and leisure.

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[1] IFRTD. 2007. An Unbalanced Load: women, men and transport, cited in ILO et al., 2010. www.ifrtd.org/new/issues/gender.php

- **Infrastructure programmes are often based on the assumption that the existence of facilities/services is enough to ensure equal access for everyone, failing to address the particular barriers that women may face.** For instance, restrictive gender roles and socio-cultural norms may mean that women are subject to restrictions on their mobility, reducing their access to services (see next section of this Brief). Relatedly, women often do not benefit fully from the employment opportunities that infrastructure interventions bring (construction, maintenance, etc.) (ILO, FAO and IFAD, 2010). Even when women are given roles, they tend to be concentrated in unskilled positions (Ibid.).

- **Large-scale infrastructure projects (highways, rail networks, etc.) come with many potential benefits, but also some social risks, such as large-scale community displacement and the loss of land/livelihoods. Women are often on the frontline** of these risks, due to weaker land rights than men, unequal access to productive resources in much of the world, and marginalisation within compensation/resettlement schemes (Asian Development Bank, n.d). Infrastructure interventions can also increase the risk of HIV/AIDs infection, due to the development of border towns and industrial economic zones, which become centres for high-risk behaviours. Some particular groups at risk of contracting HIV include women and girls in cross-border regions who are poor and/or from an ethnic minority, as well as migrant men employed in infrastructure projects. Information system mapping in the Greater Mekong Subregion has also revealed the heightened risk of human trafficking in border areas and market points (Ibid).

Gender issues in transport:

- **Women and men do not have the same level of access to different transport modes.** Worldwide, men tend to have greater access to private modes of transport – for instance, women's rates of car ownership fall behind those of men in developing countries (Uteng, 2011). Women in many developing countries rely on walking are their main form of transport, in both rural and urban areas. For example, this is true of 57% of women in Bamako (Mali), 73% in Dakar (Senegal) and 69% in Niamey (Niger) (OECD and International Forum, 2011). When women do have access to vehicles, these tend to be forms of nonmotorized transport (NMT) or intermediate modes of transport (IMT), such as bicycles, tricycles, rickshaws and animal-pulled carts (Asian Development Bank, n.d.). In all societies, women are the main individuals who rely upon public transport systems (Uteng, 2011). These gendered patterns of ownership and use impact upon the time that women and men spend travelling, as well as their ease of access to other services and opportunities.

- **Despite the greater dependence of women on public transport systems, these systems may be geared towards the central needs of men.** Due to their multiple roles, women in urban areas often make more regular trips than men, combining multiple tasks ('trip chaining'). They are also more likely to be travelling with other family members and during 'off-peak' hours. Conversely, men tend to make fewer trips each day, typically with a single purpose (for example, going to/from work) and during peak times (Asian Development Bank, n.d.). Urban transport programmes may prioritise the needs of male commuters, without considering how to adapt fares and schedules to suit those who make multiple trips and/or travel in a group.

- **The design of transport programmes may ignore the needs of women, failing to recognise differences in the travel patterns/modes of women and men.** For instance, in order to cater to women's main transport modes, it is important that

transport interventions give proper attention to the needs of pedestrians, such as adding traffic lights, crossing points, separate footpaths/pavements and public lighting. Roads should also include road shoulders and sealed surfaces that enable the use of NMT and IMT (Asian Development Bank, n.d.). However, such features often receive insufficient attention in urban transport planning. Likewise, rural transport planning has traditionally prioritised rural road networks and long-distance freight transfer, without considering rural women sufficiently (ibid.).

Gender issues in information and communications technology:

- **In developing countries, women and girls tend to have less ownership of, and access to, information and communications technology** (BRIDGE, 2004). This includes both digital forms of technology and non-digital forms of technology. For instance, it is estimated that 200 million fewer women are online, relative to men (ITU and UNESCO, 2013). In selected Arab countries, the gender gaps in rates of smartphone use are more than 40 percentage points (Ibid). Considering mobile phones more generally, women are 14% less likely to be owners than men worldwide, 38% less likely to be owners in South Asia, and 13% less likely in Sub-Saharan Africa (GSMA, 2015). Even household assets, such as radios, will not necessarily be shared with women (BRIDGE, 2004).

- **The growth of ICT worldwide has brought employment to many women and men, but there is still gender segregation in the opportunities available.** It is important to note the opportunities that women have gained in this area. For instance, many women have entered jobs in software services and medical transcription in developing countries, including in Brazil, India and Malaysia (BRIDGE, 2004). However, men tend to concentrate around the high-skill and/or managerial positions in ICT, whereas women are typically in the lowest skill roles. For instance, women account for less than one in five ICT specialists in OECD countries, and their presence is predicted to be lower in other regions (ITU and UNESCO, 2013).

- **The content of global communications is not 'gender-equal', nor is the interaction between users.** For instance, the Internet has become a major site of pornography, often (although not always) associated with sexual violence/exploitation of women and minors. In some cases, women and girls' use of the internet leads them to receive threats and abuse.

Several structural and cultural factors can explain gender inequalities in infrastructure, transport and communication

- **Restrictive socio-cultural norms and expectations can restrict the ability of women and girls to access a range of infrastructure.** For instance, in some countries, women need chaperones to leave home (as some parts of India). It may be unacceptable for women and girls to mix with male strangers in public and, if they do, they may face sexual harassment and other threats to their safety (Asian Development Bank, n.d.). Restrictive norms may restrict women's use of transport systems in particular (OECD and International Transport Forum, 2011). For instance, it is not always socially acceptable for women to drive (to the point of being illegal in Saudi Arabia). Additionally, women's traditional clothing may not be suited to particular modes of transport. There may also be socio-cultural norms governing women's use of ICTs and acquisition of technical skills. For in-

stance, there are cases of men dominating internet cafes in order to access pornography, fostering an exclusive atmosphere for women (BRIDGE, 2004).

- **There may be particular institutional barriers that prevent women from accessing transport and communication infrastructure.** In developing countries, women tend to face higher rates of illiteracy than men – two-thirds of the 775 million illiterate adults are women (UNESCO, 2013)[2]. Likewise, the cost of services can be prohibitive for women, given that men tend to have more access to cash reserves and may have greater influence over financial decision-making in the family. In developing countries, the high price of internet access has been assessed as one of the most important barriers to adoption, with women particularly badly hit (ITU and UNESCO, 2013). Similarly, cost has been assessed as the greatest obstacle to women's ownership and use of mobile phones in low- and middle-income countries (GSMA, 2015). It is particularly common for husbands or other men in the family to manage women's on mobile expenses (Ibid).

- **The gender roles and responsibilities affect the daily activities of women and men, typically resulting in a situation of 'time poverty' for women**, due to their multiple roles (household carers, natural resource managers, workers, etc.). Inadequate or non-existent infrastructure magnifies these burdens for women. Furthermore, as discussed, these gender roles may restrict women's ability to undertake productive activities such as education and employment.

- **Women tend to be underrepresented in the most senior levels of infrastructure, transport and ICT decision-making** (Asian Development Bank, n.d.; BRIDGE, 2004). This reduces their influence on core aspects of programme design. For instance, in transport programmes, it weakens their say over modes of transport, placement of routes, layout and features of stations (e.g. toilets, lighting).

- **Worldwide, women tend to have less access to productive resources, such as land, credit, private means of transport and financial services.** Although the situation differs, women generally do not have as many ownership rights as men (SIDA, n.d.). Women's lower levels of access and control undermine their economic independence – for example, their limited access to private forms of transport means they may be unable to accept employment opportunities located far away. Furthermore, their weaker economic position reduces their ability to protect their position in times of displacement/resettlement, brought about through infrastructure programmes.

- **Gender stereotypes may limit women's capacity to benefit fully from the opportunities that infrastructure brings.** For instance, construction and maintenance are typically seen as 'men's work', which may reduce women's employment in large-scale infrastructure programmes (ILO et al., 2010). Stereotypes may also result in women's exclusion from technical and scientific education and training (Antonio and Tuffley, 2014), undermining their acquisition of related skills and their ability to pursue careers in these fields.

How to address gender inequalities in infrastructure, transport and communication

For infrastructure programmes to reach their potential, gender disparities must be addressed and effectively reduced. Infrastructure programmes need to be **gender-sensitive**, in the ways described below.

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[2] More generally, 57% of internet content is in English (Tagg, 2015), placing non-English speakers at a disadvantage.

- Make use and create demand for **sex-disaggregated data**, for example on infrastructure usage and access. In the area of transport, this could include sex-disaggregated data on transport modes; representation in the sector (drivers, station attendants, ticket inspectors, decision-making, etc.); experiences of harassment and threats to safety; amount and proportion of money/time spent on travel; and typical transport routes (origin-destination). In the area of ICT, this could include sex-disaggregated data on usage/access; experiences of content; staff; education and training in ICT/telecommunications; and representation in the sector (including decision-making).

- **Ensure that women's needs and priorities are voiced, understood and addressed.** For instance, in China, an urban transport project in Liaoning provenance held separate working groups for women and men, in order to gauge transport patterns. The consultations led to more focus on pavements, drainage, and separate hard shoulders. It also enabled women to highlight their issues/priorities, such as limited security in urban buses/stations, long waits and few pedestrian crossings to bus stops. Their input resulted in better secondary roads and traffic management, new paths/pedestrian crossings, the introduction of public lighting and more frequent bus services (OECD and International Transport Forum, 2011).

- **Avoid reinforcing gender inequalities**, by ignoring the existing gender relations and power disparities between women and men. For instance, if large-scale transport interventions result in the resettlement of communities, ensure that compensation and land acquisition schemes are equally accessible to both women and men. One way of doing this is to enable to have equitable systems of land titling for women and men, as occurred in a resettlement project in Mumbai, India and a post-Tsunami reconstruction project in Indonesia (World Bank, 2010).

- **Plan gender-specific actions**, to address problems relating more particularly to one or the other gender, either as separate initiatives or as part of larger programmes. For example, UNDP and the national Women's Affairs Ministry hosted specific computer training courses for women in Afghanistan (BRIDGE, 2004). In some places, there are women-only transport services to overcome threats to their safety, such as women-only train compartments in Mumbai, Tokyo, Manila and women-only buses in India, Pakistan and Indonesia[3].

- **Adopt longer term "transformative" perspectives**, supporting women's participation in decision-making and changing prevalent negative attitudes on women's leadership capacities and social roles. For instance, the (UNESCO) Mobile-Based Post Literacy Programme in Pakistan aimed to overcome the gender gap in literacy rates *through* the use of mobile technology; this reflects a transformative approach, centred on enhancing access to ICTs, but also on challenging unequal social norms[4].

- **Engage men**, creating awareness on gender disparities and proving the wider benefits of gender equality for communities. For instance, it is important to show men the ways in which supporting women and girls to access education/employment will generate returns for the population as a whole. Likewise, evidence suggests that in many countries young men (motorists) are the prima-

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[3] Note that these should be used as a *means* to increase women's access to, and use of, public transport systems, as opposed to an end in themselves.

[4] http://www.unesco.org/uil/litbase/?menu=14&programme=125

ry victims and offenders in road accidents (Asian Development Bank, n.d.). Introducing traffic calming and safety features for pedestrians (more often women than men) also stands to increase drivers' security and awareness.

■ When planning small sized women- or gender-equality specific projects, **see them as part of larger scale programmes.** For instance, developing equitable infrastructure that caters to the needs of diverse groups is likely to increase its impact and long-term sustainability. A review of World Bank infrastructure projects between 1995 and 2009 found that those that integrated gender concerns "not only increase women's opportunities but also enhance project effectiveness, efficiency, and sustainability", concluding that the "payoffs for more inclusive development are likely to be very high" (World Bank, 2010).

A roadmap for gender mainstreaming in infrastructure development programmes
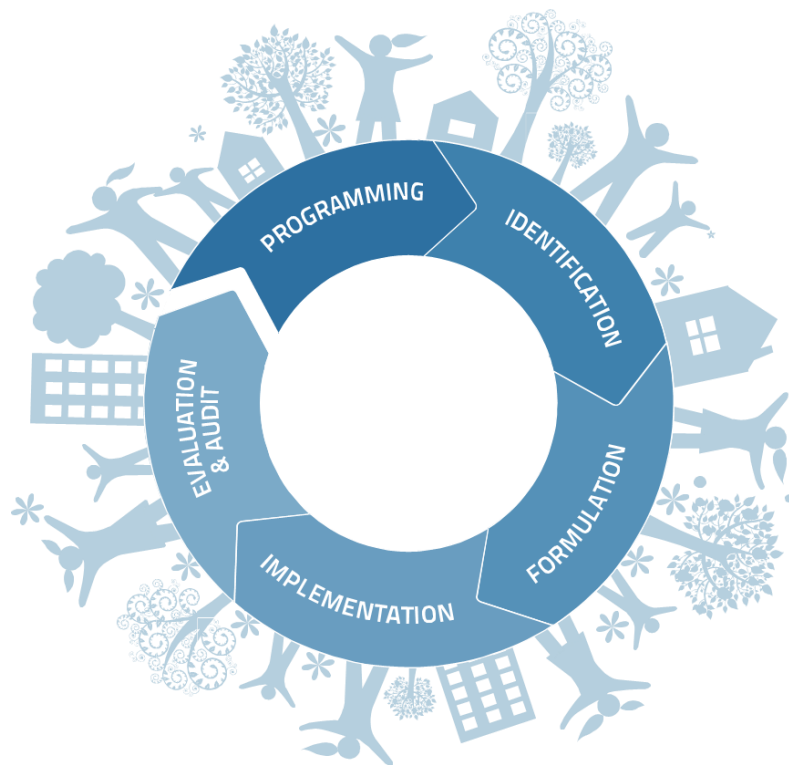
Gender equality considerations should be integrated throughout the whole cycle of development planning.

This Section proposes a roadmap for gender mainstreaming in the various phases of a programme – or project - lifecycle.

1.   Analysis, programming and identification of country strategies

Programming and identification are strategic moments to promote infrastructure programmes which serve to redress gender inequalities, promote access to essential services and support greater human development and wellbeing.. The most essential steps are:

- To keep gender equality in the policy dialogue agenda;
- To carry out gender sensitive analysis for the diagnostic stage.

Dialogue and negotiations related to infrastructure should:

- Be grounded in the shared objectives of the global agenda for inclusive development, and in the common respect of the human rights framework, including gender equality: the Beijing Platform for Action (critical areas J, K and B in particular), the Convention on the Elimination of all Forms of Discrimination Against

Women (CEDAW); the Millennium Development Goals and the (upcoming) Sustainable Development Goals[5].

■ Align with the country commitments (laws, policies, strategies) to promote gender equality in access to resources, services and opportunities.

■ Analyse the different roles and take-off positions of women and men when it comes to infrastructure use, access and relevance, and use sex-disaggregated data in diagnostic studies. Gender country profiles or other sectoral studies should be used or commissioned.

■ Systematically involve and support "gender stakeholders", from Government, donors and civil society, at all stages. This can include gender coordination groups, gender focal points in ministries (such as transport or communications ministries), gender experts and representatives of rural women's groups, transport user groups, water user associations, community organisations, unions and CSOs.

■ Build on previous and current initatives to promote gender equality in the sector or in contributing sectors, map existing needs and financing gaps, and avoid duplication of efforts.

■ Assess whether the institutions who will be responsible for programme management and service delivery have resources and capacities to promote gender equality and plan for competence development initiatives, including at service delivery level.

2.   Formulation and budgeting

The results of gender analysis should be used to tailor the formulation of programmes and projects. The formulation phase is particularly important, as it affects all subsequent phases of the programme (implementation, monitoring and evaluation). To do, one must follow the steps described below.

■ Design objectives and activities to address gender gaps identified and include them in programme documents, plans, logical frameworks, financing agreements and budgets. For example, the Rural Roads Maintenance Programme in Peru (2003-2006) set a 10% quota for women's participation in micro-businesses, which subsequently resulted in a jump in their representation from 3.5% to 24% (ILO et al., 2010).

■ Include and budget for initiatives to address specific needs and constraints faced by women or men, including long-term capacity building of women in technical/technological skills[6]; leadership and negotiation; and (if necessary) literacy and financial awareness.

■ Allocate resources for gender mainstreaming, capacity building and awareness raising at all levels and in ways that are adapted to the needs of different target groups (E.g. programme staff, women and men beneficiaries, staff from relevant

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[5] Proposed Goal 9 is "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation", with the objective to "develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all". Proposed Goal 5 is "Achieve gender equality and empower all women and girls", with many relevant objectives.
https://sustainabledevelopment.un.org/sdgsproposal

[6] Ideally, training on ICTs should go beyond basic usage skills and cover topics such as developing content, creating ICT enterprises, using the internet for advocacy, creating ties with other organisations and accessing markets.

local institutions, service delivery institutions, marginalised communities, indigenous women);

- Commit to pursue a strategy for continued gender mainstreaming in the programme (donor and country led processes). This may be formalized in an action plan which should then clearly assign responsibilities, resources and results to be achieved, as part of the broader programme's result chain.

- Establish formal mechanisms of consultation with gender stakeholders.

- Design and budget for participatory and gender-sensitive monitoring processess, particularly at service delivery level e.g. in assessments of new technologies introduced, including indicators to capture changes in power relations or in agricultural roles and productivity.

- Define performance monitoring frameworks and processes which can capture progress in gender-related objectives.

- In direct budget support initiatives, include gender indicators[7] in financing agreements between donor and recipient countries, such as baseline requirements for inclusive design, and the representation, employment and /or training of women. For example, the Urban Transport Development Investment Programme in Mongolia set core standards for gender-responsive design features on buses, such as allocated seats for pregnant women and those with children; better lighting at bus stops; and separate toilets for each sex. The programme also reserved 30% of jobs in the municipal bus company for women (Asian Development Bank, n.d.).

- Respect equal opportunity principles in management arrangements and establish accountability structures for gender mainstreaming at programme level.

3.   Implementation and monitoring

At this stage what is planned in relation to gender equality should be maintained, monitored and corrected as needed. The most important points to consider are:

- Continued coordination, dialogue and consultation on gender equality within working groups on infrastructure (including transport and ICT); with institutional stakeholders (such as the gender units of the relevant ministries) as well as with a broader range of actors from civil society.

- Effective monitoring of the progress of the various gender dimensions of the programme and sub-programmes, including at service delivery level. This includes collecting the opinions and experiences of women and men by using sex-disaggregated data from channels as:

- Focus groups and consultations (held at times and locations conducive to women's participation);

- User surveys and mechanisms for complaint/feedback;

- Audits and direct observation of infrastructure use (such as moments of peak demand and the sex breakdown of users);

- Automated information mapping systems (if possible).

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[7] Example of gender-sensitive indicators are given at the end of this document.

- Integration of gender in joint sector reviews and policy dialogues (particularly at the level of the SWAP committee);

- Monitoring if resources planned for gender equality are spent, and if not, why.

4. Evaluation

- Terms of Reference of (mid-term) evaluations should require gender expertise in the evaluation team and give accouint of the differential impacts of a pro-gramme on women and men, identify potential negative impacts on women or men and offer recommendations and lessons learned useful to further pursue gender equality in the sector.

- Evaluators and monitors should be able to use participatory evaluation tech-niques and sex-disaggregated beneficiary assessments of service delivery.

- Evaluations should also build on past gender evaluations of programmes in the sector.

GENDER TOOLS FOR THE DIFFERENT AID MODALITIES

An ample selection of analytical and planning tools useful at each phase of the development cooperation cycle, according to the different aid modalities, is available in the "Aid Modalities" Section of the EU Resource Package on Gender Mainstreaming in Development Cooperation.

The following Section offers a list of gender-analysis questions that can be used in Programmes related to infrastructure, transport and communication.

Questions for gender analysis in infrastructure, transport and communication[8]

Gender analysis helps acquire a different perspective on the complexity of a development context, and understand how to better address other forms of social inequalities. It looks at how economic and social structures at multiple levels can reinforce, or help overcome, gender inequalities and imbalances in power relations between women and men.

DIFFERENT LEVELS OF GENDER ANALYSIS

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[8] More on gender analysis is available in the EU Resource Package, Section "Building Blocks".

DIFFERENT LEVELS OF GENDER ANALYSIS

Macro analysis looks at national level law, policy and decision making, including trade and finance policies and national development plans. It helps identify how infrastructure programmes can contribute, or hamper, broader development strategies. It assesses whether infrastructure-related legislation or policies contibute to gender inequalities, or to their elimination. It is particularly useful when programming or identifying development cooperation strategies, programmes and projects.

For example:

Analysis at macro level may reveal legal obligations to gender equality in infrastructure, which can be used to encourage support for the programme. In South Africa, the Telecommunications Act makes specific commitments to enhance women's access to telecommunications licences and to company shares in the industry.

Note: *in addition to the <u>existence</u> of legal commitments, it is important to consider the level of <u>understanding, enforcement and compliance</u>.*

Meso level analysis looks at markets, institutions, services, infrastructures which serve as a link between laws/policies and people, enabling them to benefit (or be excluded) from policy effects: communication and transportation systems, health services, education, decentralized public services (revenues, rural development, land registration), credit institutions, markets and extension systems.

This is particularly useful at programme formulation, as it also assesses the extent to which gender roles relationships and cultural issues can influence the effectiveness of service delivery and other policy and programme implementation mechanisms.

For example:

Analysis at meso level could show the ways in which transport infrastructure fails to cater to the priorities/needs of women. If women and girls are responsible for collecting water for domestic use (often the case), they require a safe means of accessing water sources. If a community bridge does not provide safe steps/walkways to the river, it may mean that women are forced to take dangerous routes to reach the water, representing a threat to their safety, as well as well as an extra demand upon their time.

Micro level analysis studies people: women and men as individuals, and the **socio-economic differences** between households and communities., It considers women and men's roles, activities and power relations within the household and the community, and how these influence their resapective capacities to participate and benefit from development programmes. It is particularly useful at formulation, implementation and monitoring levels.

For example:

Analysis at micro level may reveal that communications devices in the household (such as radios or computers) are reserved almost exclusively for the use of men in the family (possibly shared with other men in the community). This, then, has the potential to undermines women's ability and/or confidence in using such devices.

The following section proposes guiding questions for gender analysis in infrastructure at macro, meso and micro levels.

Macro level

Macro level. Policies and laws

- What gender equality commitments have been made by the government, for instance in the framework of the Beijing Platform for Action, CEDAW, the SDGs? Is there a law and/or a policy on gender equality in the country?

- Do national infrastructure/transport/communications policies reflect these commitments through awareness of inequalities between men and women, and do they outline the means to address them?

- Are there gender policies and action plans relevant to infrastructure in general or in the transport/communications sectors specifically? Do other sector programmes and sub-programmes align to and support these gender plans?

- Do current policies, laws and regulations address women's and men's needs separately? Do they have discriminatory provisions? Do they have measures for equal opportunities and women's rights (e.g. joint/equitable land titling schemes for women and men)?

- Are women and men in employment subject to the same legal protections (safe working conditions, equal pay, etc.)? Does this extend to the sectors of interest in the infrastructure programme (including the construction sector)?

- Is the social and health protection system inclusive of women (e.g. right to maternity care)? Are certain groups excluded (e.g. women in the informal economy)?

Macro level. How are decisions made in national-level institutions?

- Are there decision makers (in Government, Parliament) who are ready to champion gender equality and women's empowerment in infrastructure, transport and communications?

- Are governmental institutions responsible for women's and gender issues, involved in infrastructure decision-making at national policy and planning levels?

- Are there gender thematic groups that could be involved in sector level consultations?

- Is gender capacity-building needed for staff in relevant government agencies, such as the ministries of transport, information and communications?

Example: Vietnam's Committee for the Advancement of Women held workshops for Ministry of Transport (MOT) staff, to support them to integrate gender equality issues into their programmes. As a result, gender issues were added to the curriculum of the MOT's national training institute (Asian Development Bank, n.d.).

Macro level. Data and information

- Are there policy documents or agreed gender assessments that information and statistics on the gender gaps and priorities in infrastructure, transport and/or communications?

- Are sex-disaggregated data available on core aspects of infrastructure usage and access?

- In transport, are sex-disagregated data available on use/access/ownership of different transport modes; women and men's representation in the sector (drivers, station attendants, ticket inspectors, decision-making, roles, higher-skill roles); experiences of harassment and threats to safety; amount and proportion of money/time spent on travel; and typical transport routes of users (origin-destination)?

- In the area of ICT, are sex-disaggregated data on available on usage/access/ownership of different forms of ICTs? What about enrollment in ICT educational programmes and representation in the sector (including in decision-making and in higher-skill roles)?

- Have similar programmes/projects been implemented in the country? Were gender-sensitive evaluations carried out? What are good examples of women's empowerment in the study area? Which attempts to achieve gender equality were failures (e.g. because they were taken over by men or had adverse effects on women)?

- Does available information/data suggest that there are social risks associated with the infrastructure programme, such as increased risk of HIV/AIDs? How will such risks be mitigated (for example, awareness-raising programmes aimed at prevention)?

Macro level. Monitoring frameworks

- How is the country faring on gender equality targets established at international level?

- Has the government developed indicators that allow for monitoring progress in infrastructure, transport and communications from a gender equality perspective (see Indicator examples below)?

- Which data exists to show the impacts of the programme/project for women and men (e.g. beneficiaries of the infrastructure programme)?

- Which data can be used to gauge the consequences of the infrastructure programme for women and men (for example, individuals affected by resettlement/displacement)?

- Has there been a gender analysis of government spending in this sector and in the sub-sectors? Does the government have a system to track the gender sensitivity of development programmes?

- Is it possible to have a benefit incidence analysis by sex of beneficiaries? (method of computing the distribution of public expenditure across different demographic groups, such as women and men.)

- In sector budget support modality, can payments be linked to progress made on the gender objectives and gender indicators? For example, payment could be linked to including gender-responsive design features in infrastructure, meeting a minimum level of employment/senior representation for women and/or carrying out specific consultations with community representatives (including women's organisations). Is part of the budget earmarked for specific gender equality objectives?

- In large-scale resettlements, is it necessary to carry out gender impact assessments, in order to avoid/mitigate disproportionate impacts on one sex?

Meso level

Meso level . Service provision

- Are there plans to improve the outreach capacity of local-level service delivery institutions to poor communities and in particular to women (E.g. offering free/subsidised transport services to help them travel to and from other facilities)?

- Can local contractors be used to carry out infrastructure works? If an intervention is likely to result in significant employment opportunities, how will these be advertised so as to reach both women and men? Is additional outreach necessary to encourage women to apply – for example, informing women's organisations, offering capacity-building activities, etc?

- Does the project design take into account that women, men, girls and boys may have different needs and priorities in their uses of infrastructure?

- Based on consultation, is the design of general infrastructure likely to be inclusive and gender-responsive? For example:

- Does the design of the infrastructure consider safety-related aspects, such as the provision of public lighting at facilities and en route, as well as the suitability of location for different community members? What about accessibility aspects, such as the height of handrails/steps and separate toilets for women and men?

- Based on consultation, is the design of transport infrastructure likely to be inclusive and gender-responsive? For example:

- Does the design of the transport system cater to the needs of different users (e.g. pedestrians, users of nonmotorized transport, drivers), through the provision of specific walkways/lanes/hard shoulders, traffic lights and pedestrianised crossing points, road signs? Is there specific space (waiting areas, allocated seats, etc.) for pregnant women and passengers travelling with children?

- Is cost likely to impede the access of particular groups to the infrastructure? For example, do women have the same levels of disposable income as men? Can they afford to pay user fees for public transport or community ICT facilities? If fees/fares are necessary, how can they support women's presence (for example, considering discounts/vouchers, introducing 'capped' fares for public transport users who make multiple trips in a single day)?

- Are staff in ICT facilities, transport personnel (ticket collectors, station attendants, bus drivers) and local police trained on how to recognise and challenge instances of sexual harassment and other forms of gender-based violence?

- In ICT interventions, are language requirements likely to impede women's access? What are the illiteracy levels of women in the area, and do these differ significantly from those of men?

- Is it necessary to offer specific services targeted at women? For example, in ICT interventions, would women benefit from technical training?

Example: An ICT project in Sri Lanka introduced fixed sessions for women and girls in

internet centres and hired women managers, helping to overcome young women's concerns over visiting (World Bank, 2010).

- Is it necessary to consider recruitment incentives to encourage women to enter into infrastructure-related employment? For example, could transport and construction agencies consider introducing internal policies and practices to increase women's representation?

- Are workers' organisations or NGOs able to promote the rights of women working in infrastructure, transport and/or ICTs?

- Is there a gender balance in programme and project implementation units? At which levels?

- If financial mechanisms or facilities are in place, are they accessible for women as well as for men?

- What role does infrastructure play in helping women and men to fulfil their traditional tasks/responsibilities?

Meso level. Decision making and consultation

- How will the programme gauge the infrastructure needs and priorities of both women and men?

- Are women able to access consultations and user groups on the same terms as men? For example, are consultation meetings in accessible places/at accessible times?

- In general, have consultations resulted in 'gender-responsive' interventions[9]? For example, in transport systems, have the needs of women and men been expressed and taken into account when it comes to the placement of roads, priority routes, safety features and fare systems? Is there a 'gender dimension' in station development plans?

Example: gender analysis and participatory consultations in an urban upgrading project in Bolivia resulted in new sidewalks for pedestrians, daycare services, improved street lighting and sanitation services (reducing the need for women to make as many journeys in the dark) (World Bank, 2010).

- If infrastructure programmes are likely to result in displacement/resettlement, have women and men contributed to key decisions over the choice of resettlement sites, the design of new accommodation, and other aspects? Have key decisions over compensation taken into account been 'gender-sensitive'?

- If the programme envisages support to community-based organisations and co-operatives, are women represented and at which levels? Which women?

- Are gender equality institutions and structures at local level being involved?

- If there are mechanisms to increase access to productive resources, training, local markets, or employment, are there provisions to promote equitable access (E.g. joint/equitable titling schemes for land acquisition schemes)?

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[9] For example, the rural roads and transport project in Yemen trained local women to be facilitators and to hold specific consultation meetings for women. This resulted in suggestions for new safety features, such as signs and speed bumps close to schools and reservoirs for run-off road water (to be used for farming). Such ideas did not result from the consultation of men. From Crochet, JC., 2009, Gender and Transport in Yemen. Presentation the Working Session for Transport Task Teams on Gender Mainstreaming, cited in World Bank, 2010.

Meso level. Data collection and monitoring processes

- Which data can be collected throughout the programme to monitor the impacts for women and men (for example, sex-disaggregated user surveys, feedback/complaints channels, direct observation of infrastructure use)? Who will be responsible for collecting this data, and how frequently? Will they be trained in participatory, gender-sensitive data collection techniques?

- How will consultation processes be organised at various levels? Will both women and men be involved in community level consultation processes?

- How are women's interests going to be represented in ongoing consultations? Will they be held at convenient times/in accessible locations for both sexes? Is there a need to set up new fora, such as separate consultations for women?

- Are adequate resources allocated for participatory consultation, monitoring and sex-disaggregated beneficiary assessments of services?

- Are data collected at this level disaggregated by sex? What is the capacity of the national statistical office, and of enumerators, to collect sex disaggregated data and produce gender sensitive statistics?

Micro level

Micro level. Gender division of tasks and labour

- What are women and men's traditional activities?

- How do women and men's traditional activities affect their travel patterns, needs and priorities? For example, what proportion of women's time is spent travelling to fulfil their domestic responsibilities?

- What is the impact of women's (and girls') unpaid work on their opportunity to engage in paid work (or education)?

Micro level. Gender relations: Access and control over resources

- What are the general economic and demographic conditions of the household? Of the community? What are men and women's main sources of income?

- What are the patterns of ownership of information and communications technology (ICT) in the community? How does the usage/access of women and men differ?

- What are the patterns of ownership of different transport modes (cars, bicycles, rickshaws, animal-pulled carts)? How does the usage/access of women and men differ?

- Which factors influence access to and control over resources (for example, age, sex, wealth, ethnicity, peri-urban versus rural locations, education level, networks and patronage)?

- Are there gender inequalities in access to and control over resources and benefits? For instance:

- At the household level, who takes decisions about resources and activities? Who makes the decisions about women's use of ICTs, such as the purchase of mobile phones (and credit)?

- At the community level, how are decisions made about resources and activities? For instance, what is the role of transport user groups, and are women represented in these?

- If other community-based organisations exist (e.g. cooperatives, traditional sociocultural organisations etc.), are women members? Do they participate? At which level? If not, why not?

Micro level. Perceptions about gender equality

- Is it socially acceptable for women and men to mix in public spaces, for example on the bus and/or in internet facilities? Are there other socio-cultural norms that affect women's mobility? For example, is it socially acceptable for women to use the same transport modes as men (bicycles, cars, etc.)?

- Are women aware of their rights? Are they able to voice them in the community or with service providers?

- Is it acceptable for women to work in infrastructure-related jobs, such as construction workers, train drivers or as IT technicians?

- What are women and men's perceptions on gender-based violence, such as sexual harassment at work/on transport and domestic violence?

- Are men openly resistant to gender equality? Are there groups of men who are more supportive/resistant than others? Who can influence them?

Gender sensitive indicators in infrastructure, transport and ICT

Gender sensitive indicators aim at 'creating awareness of the different impacts of a development intervention on men and women, taking into consideration their socio-economic and cultural differences.' (FAO, n.d. – Gender sensitive indicators for Natural Resources Management). Gender sensitive indicators reveal valuable information to identify the specific problems faced by women and men; to assess the extent of gender inequalities in access to and use of resources and services in infrastructure, transport and communication, and provide the basis for evidence-based policy-making processes (FAO, n.d.).

The table below provides some examples of gender sensitive indicators.

Area/Sub-sector	Indicator
Access and control over transport/ICT resources	Percentage of women and men who own motorized, intermediate, and nonmotorized transport (bicycles, rickshaws, etc.)
	Percentage of women and men who use public transport frequently
	Percentage of women and men who own different forms of ICTs (mobiles, smartphones, computers, etc.), by sex
	Active users of different forms of ICTs (mobiles, smartphones, computers, etc.), by sex ('penetration rate')
	Number of women and men receiving training in ICTs
	Percentage of women and men reporting cost as a barrier to the use of infrastructure
	Change in the proportion of income spent on particular services by women and men (public transport, telecentres, etc.)
Rural infrastructure	Access to services and facilities (irrigation, electrification, water supply, and sanitation), disaggregated by sex and ethnicity
	Satisfaction levels with water allocation among various users (such as irrigation and domestic water supply), disaggregated by sex
	Satisfaction levels among community with quality and usefulness of infrastructure constructed, disaggregated by sex and age
	Time spent or distance walked by household members to collect potable water, disaggregated by sex and age
	Percentage of time spent daily in household on paid and nonpaid activities, disaggregated by sex and age
	Age of school leaving, disaggregated by sex
	Access to public and private sanitation, before and after project activities, disaggregated by sex
	Uptake of new technologies such as low-fuel stoves, pumps, new forms of transport, and use of ICT, disaggregated by sex and education level
	Number of women and men participating in training on higher-value crop production or small enterprise development
	Changes over x-year period of project activities in household nutrition, health, education, vulnerability to violence, and happiness, disaggregated by sex

Area/Sub-sector	Indicator
	Changes in travel patterns and mode of transport by females and males due to transport infrastructure, including changes in travel to education and health services (e.g., for maternal and child health care)
	Number of additional school enrollments by girls and boys due to improved facilities and services
	Changes in the utilization of health services by women and men
Employment and income-generation opportunities from infrastructure	Number and percentage of women and men employed on construction, operation, and maintenance, by type of job and pay rates
	Proportion of women employed in unskilled, technical, management, and supervisory roles
	Number and percentage of women contractors who are awarded labor-based contracts
	Number of hours (or days) of paid work by women and men during construction, operation, and maintenance
	Percentage change in women's employment in professional, technical, supervisory, and management positions
	Evidence of the type of incentives designed to recruit women, increase their capacity, and provide career development
	Participation in training in specific construction skills, disaggregated by sex and age
	Number and percentage of women and men employed as ticket booth supervisors, ticket collectors, operators, etc.
	Differences in wage and employment conditions, if any, between women and other disadvantaged groups, and men for positions of comparable content and responsibility
	Number of market spaces constructed or reserved for women
	E-commerce users as a percentage of all internet users, by sex (before and after programme)
Community engagement and consultation	Active participation by women and men in infrastructure planning and siting, and decision-making at local level
	Number and percentage of women and men who attend planning and consultation meetings
	Number and percentage of women and men in stakeholder and user committees and groups
	Number and percentage of women in leadership positions in community-based user committees or organizations
	Number and percentage of male and female facilitators tasked to work with communities and user groups on design, planning, and consultation processes
	Changes in the location or type of infrastructure (or other modifications to design, construction, management, or maintenance) due to consultation with women

Area/Sub-sector	Indicator
	Number of women and men trained and participating in user groups and operations and management committees (including bank account signatory roles)
	Number and percentage of women and men who are satisfied with new infrastructure and services and their reasons, by socioeconomic group
	Changes in women's household or community decision making due to their involvement in project activities
Leadership and decision-making	Number and proportion of women/men employed in transport decision-making (e.g. as ministers, at the head of transport executive agencies, lead planning officers, etc.)
	Number and proportion of women/men employed in ICT decision-making (e.g. technical directors, information officers, lead network engineers, lead software engineers, etc.)
	Male-to-female ratio in top editorial positions of electronic and print media
	Existing media-literacy education for women and the general public
Gender capacity of agency staff	Evidence that equal employment opportunity policy and practices are implemented for staff and contractors (core labor standards, equal pay for work of equal value, occupational health and safety, and separate sanitation facilities)
	Sex-disaggregated data routinely collected, analyzed, and applied to the planning, implementation, monitoring, and evaluation of infrastructure initiatives
	Number of women and women's organizations involved in policy dialogue and monitoring and evaluation of sector plans, projects, and services
	Level of satisfaction by poor women and men with the performance of service agencies in providing appropriate, safe, and affordable services
	Number of training sessions held with executing and implementing agencies, contractors, and other stakeholders on the social and gender impacts of infrastructure, and on gender-responsive design
Minimising social risks of infrastructure	Spread of HIV and AIDS, prostitution, alcoholism, and other problems from in-migrant workers involved in infrastructure construction or using roads, compared with baseline, disaggregated by sex
	Number and percentage receiving prevention, awareness, outreach, and training activities on transport safety, HIV/AIDS, STIs, and human trafficking, by sex and target group (e.g., construction, transport, migrant and sex workers, contractors, unemployed and vulnerable youth, security sector personnel, local government officials, civil society organizations)
	Percentage of condom use reported by women and men during the last incident of high-risk sex
	Restoration or replacement of livelihoods of affected people (including women and ethnic minorities) following resettlement, including measurement of number of households or persons affected; extent of loss, and replacement of homesteads and agricultural lands
	Changes to livelihood sources (on-farm and nonfarm employment) among resettled men, women (especially woman-headed households), and other disadvantaged groups

Area/Sub-sector	Indicator
Gender-responsive design features (including safety and security for women and girls)	*General:* Number and type of completed gender-responsive design features that facilitate access for female users, people with disabilities, and the elderly (separate toilets, suitable sanitary facilities for women, priority seats/areas for travellers with children, etc.) Number and type of completed gender-responsive design features that address security risks for women and girls (public lighting, safe location of services, etc.) Number of physical and sexual assaults reported by women and girls whilst using infrastructure (public transport, IT centres, etc.) Number and percentage of female and male security staff *Transport* Number and type of completed gender-responsive design features that facilitate access, including features that provide for intermediate and nonmotorized modes of transport and pedestrian access (sealed roads, separate walkways/lanes, crossing points, etc.) Evidence of the sale and use of flexible and multiple-trip tickets by males and females, including subsidized tickets for low-income groups Perceptions of safety when using modes of public transport, by sex and age Number and percentage of transport staff (e.g., station attendants, ticket sellers and collectors, drivers, bus and rail inspectors) trained in preventing sexual harassment and appropriate responses
Gender-sensitive media content	Legislation against pornography, violence, commercial exploitation of women in media Codes of conduct and guidelines on balanced portrayal of women Number of editorial boards of media that include issues of gender equality in editorial policy/advertising standards

Source: Asian Development Bank (2013); Danida (2006); FAO et al. (2008)

Examples of gender-sensitive projects

Several development and cooperation programmes have successfully addressed the issue of gender inequalities in infrastructure, transport and ICT. Some examples are provided in the table below, and additional documents gathering good practices are listed in the following page.

Programme/project	Challenges	Gender Strategy	Source
Gender-responsive design of urban transport, China (World Bank)	Differences in the mobility patterns of women and men in urban areas (frequency, type and purpose); Need to improve urban transport in an inclusive way	Conducted gender-sensitive needs assessment, focusing on different types of transport users (drivers, pedestrians, cyclists, people with disabilities, people from low-income backgrounds) The assessment revealed that women particularly prioritised safety and were particular critical of the current system (e.g. poor-quality pavements and lighting, no lanes for bicycles). The assessment led to more focus being placed on secondary road improvements, such as traffic management, better sidewalks, street lights and public transport services.	Asian Development Bank, n.d. www.adb.org/sites/default/files/institutional-document/33901/files/gender-tool-kit-transport.pdf
Road infrastructure project, Peru	Need to improve road infrastructure in an inclusive way	Adopted monitoring indicators on involvement of women in planning, tendering and economic opportunities (for example, minimum 10% of microenterprise employees to be women; minimum 30% of beneficiaries to be women); Adjusted recruitment criteria to support women's entry into microenterprises (experience of household management was accepted as an entry qualification). Results: - Lower transport times for women and men; - Cheaper fees; - Better access to other infrastructure (e.g. health services, schools); - Generation of significant number of jobs through microenterprises.	OECD and International Transport Forum (2011) ■ www.internationaltransportfo-fo-rum.org/jtrc/discussionpa-pers/dp201111.pdf

Programme/project	Challenges	Gender Strategy	Source
Increasing women's access to mobile technology, Iraq	Signs of limited access of Iraqi women to mobile technology: in 2011, Iraqi operator Asiacell noted that women accounted for only one in five mobile subscribers	Conducted research with consumers, leading to the launch of the 'Almas' range of products for women. These include: - 'Step charging': discounts after third minute; - Flexibility for women to select their 'off-peak hours' - Blocking service ('bye-bye') for perpetrators of harassment Subsequently, women came to represent around 40% of Asiacell's customers	ITU and UNESCO (2013) ■ www.broadbandcommission.org/documents/working-groups/bb-doubling-digital-2013.pdf
Harass Map, Egypt	■ Sexual harassment on public transport in Egypt; ■ Under-reporting of incidents (controversial topic, limited reporting channels)	Use of mobile phone technology to enable women to report cases of harassment anonymously; Directs victims to free services; Has resulted in identification of public transport stations as a particularly 'high-risk' location	Harass Map http://harassmap.org/en/

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