KING'S College LONDON

(dis)Connected Infrastructures and Violence Against Women (VAW)

GEOGRAPHY
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PHOTO: ROHIT MADAN

Dedicated to the victims of the Kerala floods in 2018

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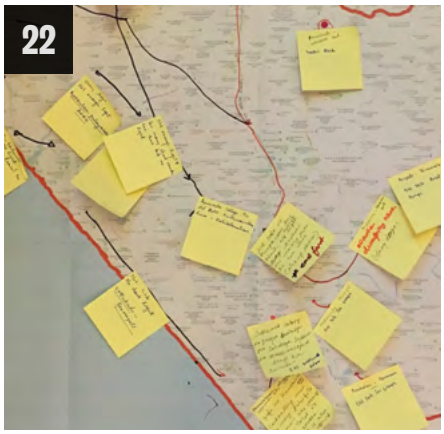

Glossary

BSUP	Basic Services for the Urban Poor
GEWE	'Gender Equality and Women's Empowerment' Policy
JNNURM	Jawaharlal Nehru Urban Renewal Mission
KSRTC	Kerala State Road Transport Corporation
KSUDP	Kerala Sustainable Urban Development Programme
RAY	Rajiv Awaz Yojana ('Slum Free India')
PMAY	Pradhan Mantra Awaz Yojana 'Housing for All'
SCM	Smart City Mission
SDG	Sustainable Development Goals (under United Nations framework)
TMC	Thiruvananthapuram Municipal Corporation
VAW	Violence Against Women

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1. Introduction

Violence Against Women (VAW) has been continuous and widespread in urban India[1]. The most recent data from the National Crime Records Bureau (NCRB) show an 83% increase in reported crimes against women in India between 2012 and 2017[2]. The rate of all crimes against women (including VAW) in metropolitan cities is 77.2 per lakh,[3] compared with the national average of 55.2[4]. In response, scholars and activists alike have urged the importance of exploring links between VAW and urban contexts[5].

While policy attention on this issue has surged in recent years **the link between urban infrastructure and the types of VAW that take place across public and private spheres of the city** remains little understood[6]. Infrastructure in cities can mean more than just pipes, cables, bridges and roads – urban infrastructure is a complex assemblage of physical, digital and people. In order to make cities more inclusive, equitable and sustainable, it is important to broaden our understanding of what can be considered infrastructure and how this is connected to Violence Against Women.

The basic physical assets and structures that are necessary for the organisation and management of a city is what we often think of as physical infrastructures. This includes roads, bridges, buses, pipes, cables, and other material elements that transport and provide essential services such as water, electricity, sanitation to urban citizens. Planning and design of a city which as a discipline and practice has developed around the distribution of resources, goods and physical infrastructures to its urban citizens[7]. It is widely accepted that poor planning contribute most directly to VAW[8] since inadequate public transport, lighting, sanitation or water puts women at greater risk of being exposed to various forms of violence in the city such as – harassment and groping in public spaces, exposure to risks of physical and sexual violence in the absence of accessible public toilets or bus stops.

There is little understanding of digital infrastructure in shaping gendered experiences of fear and violence in the city. Digital infrastructure includes three elements: networks, devices and storage which are the physical assets required to operate technologies such as digital communication, computing or data flows. Limited access to mobile phones, lack of network connectivity and low digital capacity is prevalent across women in low-income communities, which disconnects them from critical knowledge and information related to opportunities of participation in the public sphere of the city more broadly and ensuring safe access to public spaces more specifically[9]. Despite new investments addressing safety through increasing CCTV cameras, safety apps and police presence, it is widely understood that VAW cannot be addressed through surveillance alone[10]..

This follows on from Simone's conceptualisation of 'people as infrastructure'[11], which emphasizes social and economic collaborations across people who are marginalised and excluded from urban public life because of their locations within gender power relationships. People as infrastructure refers to the social support structures and solidarities that marginalised communities construct across actors, institutions and scales. This is an important consideration in our focus on safety since much of the understanding of safety emerges from a fear of violence that is shaped by gender usage of public places as well as the institutional infrastructures that women have in dealing with VAW.

'There is an increase of incidents every 5 minutes, an incident every one hour. It's not decreasing. No matter what laws you bring or how many CCTV's you install, this is not decreasing.'

PARTICIPANT IN THIRUVANANTHAPURAM, 2018

1.1. (dis)Connected Infrastructures and Violence Against Women (VAW)

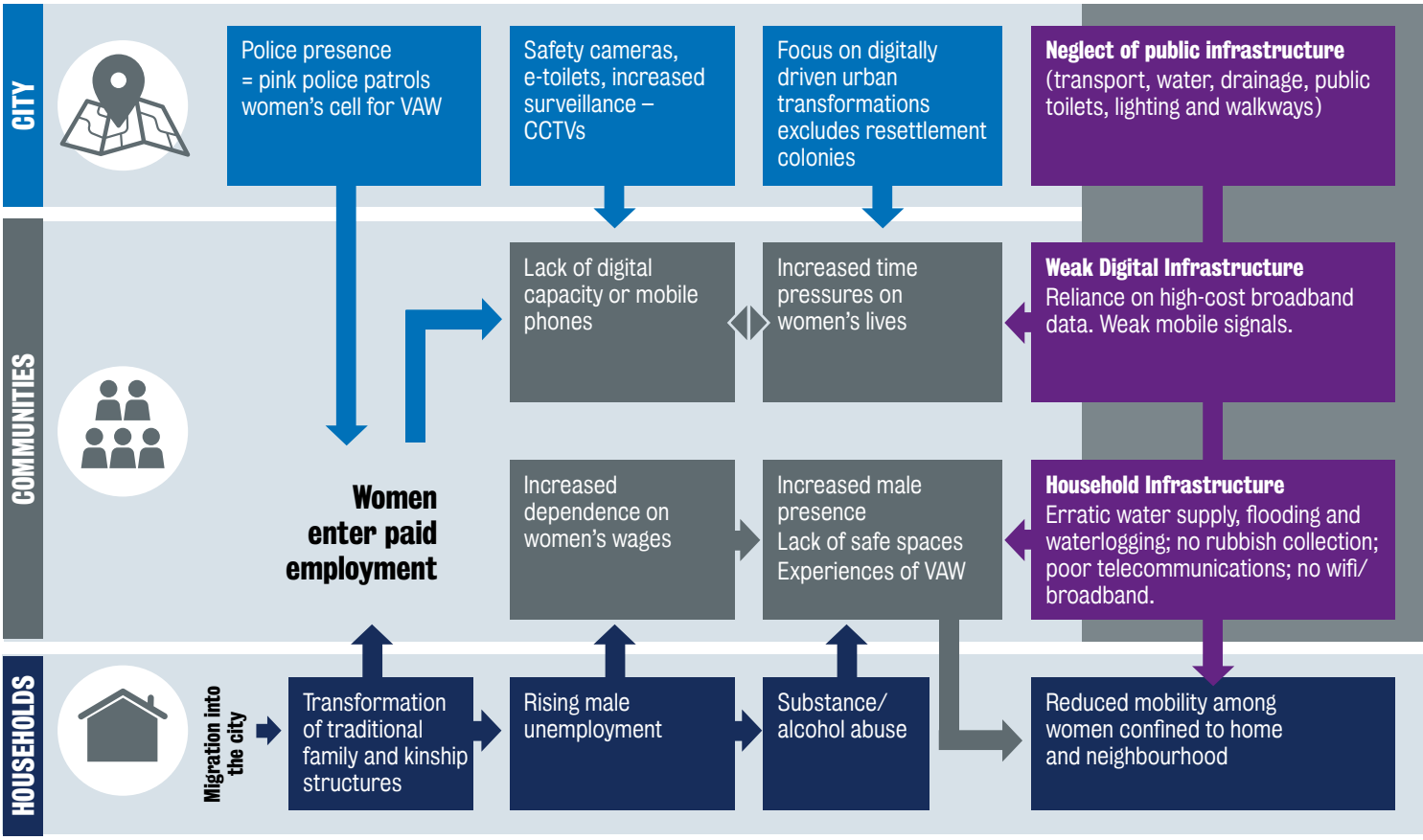
Infrastructures are gendered and relational[12]. Urban infrastructures – physical, digital and people – are produced, accessed, used and transformed through gendered power relationships. It is important to have all three connected for women to be able to enact their agency and to fulfil their economic and socially reproductive roles from the home to the city. Access to resources at both city and household levels can be restricted due to disconnected, inadequate or a complete absence of infrastructures, such as waste collection and drainage systems affecting households and neighbourhoods, transport connectivity, street lighting and footpaths, and public toilets affecting mobility and safety throughout the city.

Disconnected physical, digital and social infrastructures can have huge gendered impacts in everyday life and deny women full citizenship. These impacts can be felt as a form of **'infrastructural violence'** in everyday life – which refers to "processes of marginalisation, discrimination and exclusion that operate through and are sustained by infrastructure"[13]. Infrastructural violence is produced across different scales and spaces and is connected to structural, procedural, gendered and social exclusions from infrastructure from the home to the city.

Image 1.1: Participant wading through flood waters in Mannar Colony, Kochi

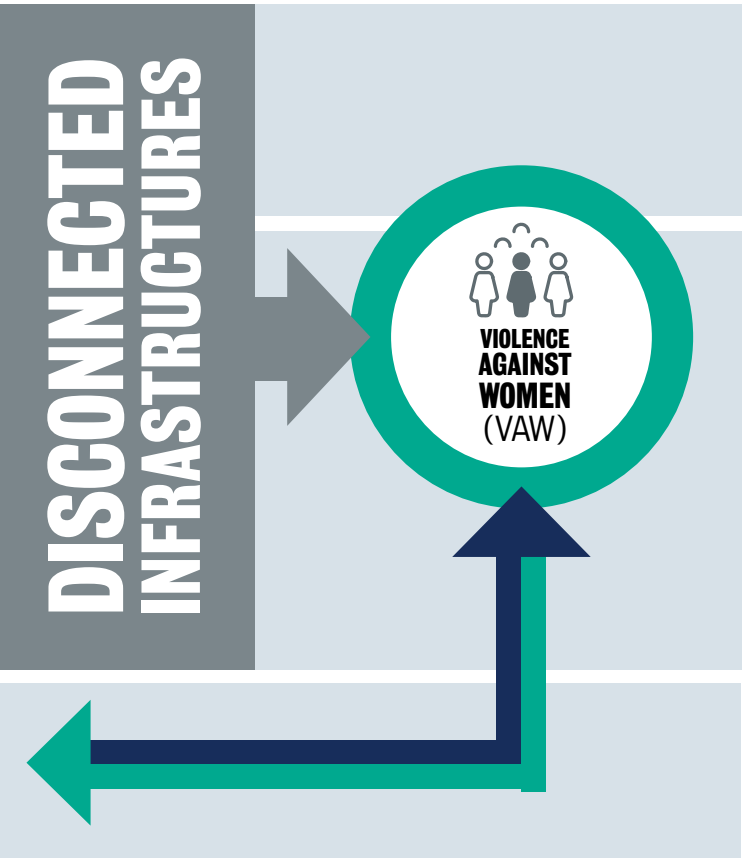
Infrastructural violence was evident during the Kerala floods when women and their families were left stranded within their homes for days and weeks, as rainwater filled their homes and destroyed their assets. Women recounted stories on sitting on their beds for days waiting for relief. Later as the floods receded, women undertook the unpaid work of cleaning the blocked drains in the neighbourhoods, replacing damaged goods and repairing their homes.

Figure 1.1: Disconnected infrastructures and VAW concept map. By Ayona Datta and Visual Voice



1.2. Aims and Objectives

Image 1.2: Participatory mapping of safety in Kochi, 2018



Our project had the following objectives:

- Analyse 'big data' on safe cities specifically to connect knowledge of urban infrastructures to VAW.
- Explore how big data is generated, represented and represents the 'safe city'.
- Generate 'deep data' on links between VAW and access to infrastructure at neighbourhood-level.
- Develop the skills and capacity of women in low-income neighbourhoods in using digital technologies for knowledgeable engagement with urban infrastructure that would lead to freedom from violence.

From 2018-2019 we undertook a multi-scalar study to answer these questions, speaking with women in two low-income communities[14] NTL Colony in Thiruvananthapuram and Mannar Colony in Kochi – and with key policy and advocacy stakeholders: collecting city-wide visual data through the mobile application software Safetipin[15].

In this report we present our findings on the links between disconnected infrastructures and violence against women – from the intimate to city-wide scales, identify limitations and provide recommendations around existing global and national policies including the UN Sustainable Development Goals #5: Gender equality and #11: Sustainable cities.

2. Kerala Paradox

The state of Kerala in southern India represents a paradox between its gender development indicators and actual incidents of VAW. The 'Kerala paradox[16]' is a term used to describe the mismatch between the state's high performing indicators in terms of being the only regional state with a higher proportion of women in their population[17], but it is also marked by increasing violence against women. Kerala has been heralded for its high female literacy, female life expectancy, maternal health, and even high presence of women in public spaces, yet women continue to be restricted in economic, social and political areas. In particular, urban Kerala has seen sharp increases in VAW and domestic violence cases in recent years. In a study of two cities in Kerala by our partner Sakhi in 2010, they found that in Thiruvananthapuram, over 80 percent faced sexual harassment while either waiting for or riding public transport[18]. Women also face challenges in accessing potential benefits of digital infrastructure, because of their low digital literacy and capacity as well as unaffordability in accessing smartphones. This restricts their economic and social opportunities keeping them further disempowered in the wider public realm.

Crimes against women have been rising in the state for the past decade, as shown in Figure 2.2 below.

The Kerala Paradox highlights several challenges for India in terms of delivering UN Sustainable Development Goals (SDGs)[19] to all, especially the following:

Figure 2.1: Kerala Paradox.

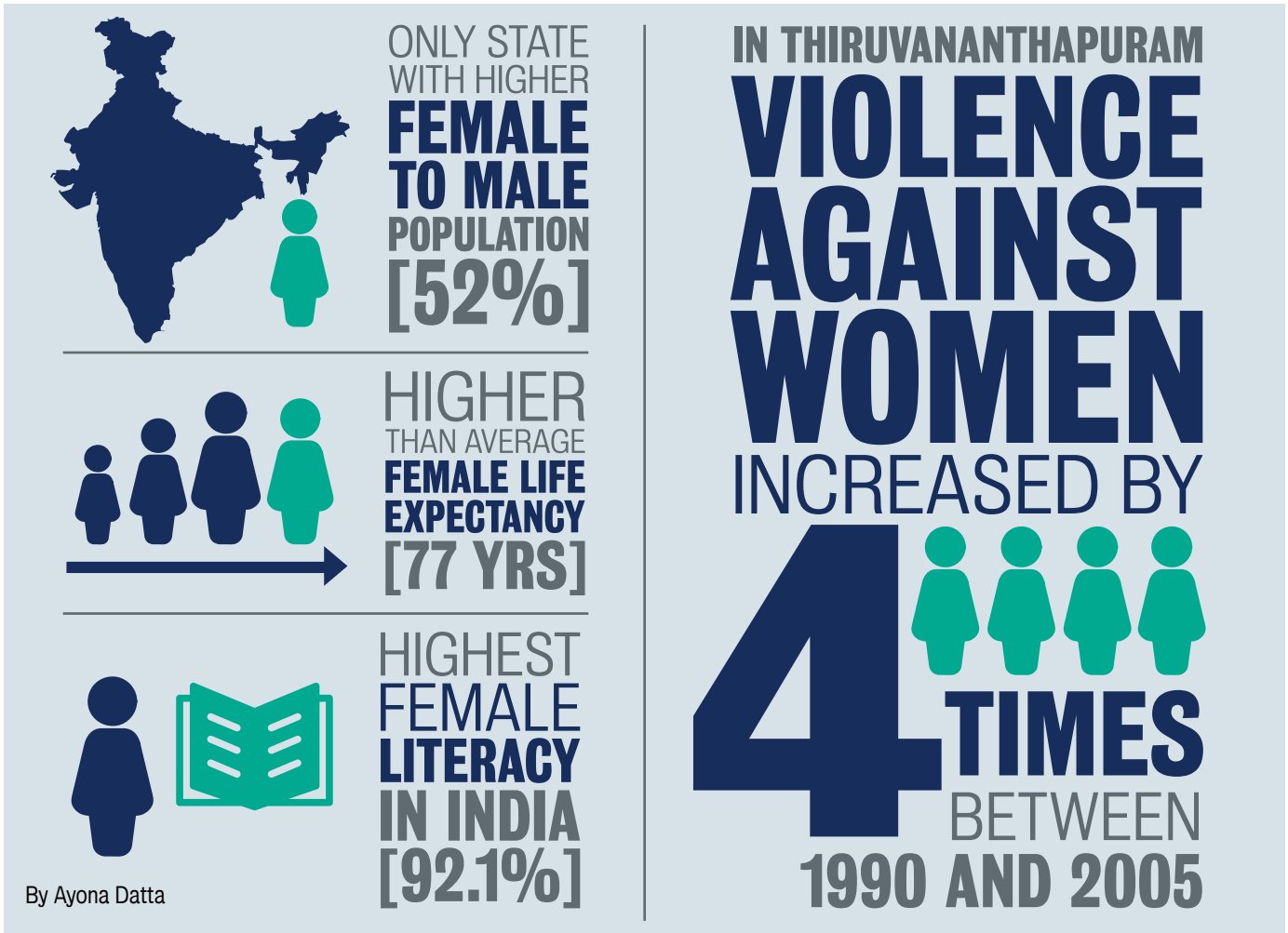
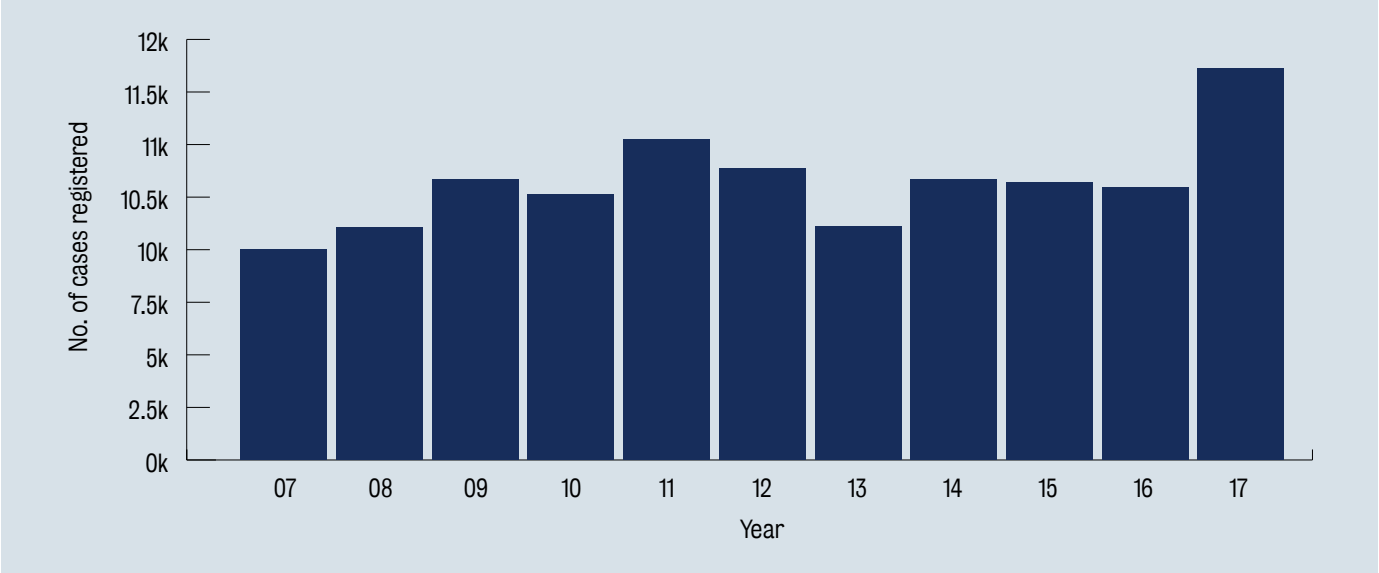


Figure 2.2: Crimes against women in Kerala 2007 – 2017



Source: Kerala Police 2017

The Kerala paradox is recognised by the Planning Commission in 2008 in its state report for Kerala: noting that despite high health and education indicators of women, they *'have been harnessed within a familial ideological structure that has served to reinforce gender divisions rather than expand freedoms for women and men.*[20]'

While Kerala has passed inclusive and gender-sensitive legislation and policies in recent years[21], several challenges remain. Overall, institutional capacity to implement gender equality strategies is weak, due to limited general awareness of the issues and a gap in terms of skills and capacity to respond to and to develop concrete strategies. In particular, there are distinct policy mismatches across several scales of global, national, regional and urban interventions in addressing VAW. These mismatches arise mainly in the ways that urban development policies have been created and implemented without reference to gender development policies and implementation from the home to the city.

Infrastructure and Urban Development Schemes:

Kerala is a low-lying coastal state with a large network of internal canals and water bodies, posing risks of frequent flooding and water contamination particularly in low-income neighbourhoods. Various programmes are in place to improve gendered access to urban infrastructures, operating under the (now closed) *Kerala Sustainable Urban Development Programme* (KSUDP) and include: Urban Infrastructure Services Improvement and Local Government Infrastructure Development which seek to improve roads for pedestrians, including lighting, and transportation[22].

Kerala ranks among the lowest in India in terms of proportion of urban slum households (compared with urban households) at 1.5%[23]. However, despite state-wide initiatives such as the Open Defecation Free Zone, and centralised waste management systems, a multitude of social and infrastructural challenges are prevalent – ranging from poor sanitation and waste management infrastructures, alcoholism, drug addiction, organised crime and high unemployment[24]. Women in low-income neighbourhoods are primary users of these infrastructures and responsible for household management and thus are on the front line of these challenges[25].

The government of Kerala was the first Indian state to declare *Right to Internet* as a basic human right in 2017, yet many groups such as women living in low-income communities remain marginalised from digital connectivity and access[26]. In 2015, 20% of the state's households were covered by broadband internet and another 15% through mobile phones[27]. The Government of India's recent plan to make panic buttons and GPS tracking mandatory in all new mobile phones from 2017 will not address the digital divide faced by women in poorer neighbourhoods since they tend to use older phones and basic feature phones.

Gender Empowerment Schemes:

One of the causes for VAW across Kerala state has been argued to be rising levels of substance and alcohol abuse amongst male youth[28]. There is a significant gender gap in alcohol consumption, where 37 percent of Kerala's male population regularly consume alcohol versus 1.6 percent of women[29]. As the National Family Health Survey indicates, this proportion has decreased since 2006, but remains slightly above the national average for male alcohol consumption (29.2%). The Social Justice Department highlights the neglect of boys and men in gender awareness, education and sensitisation programmes and interventions and attributes this as a factor in continuing VAW in the state (2015)[30].

The Kerala state Women's Cell deals specifically with matters related to family, including VAW and focuses on mediation and long-term resolutions to social problems such as family counselling, psycho-social support and rehabilitation for drug and alcohol addictions[31]. The *women's safety helpline Mithra 181* has been promoted via a Kerala State Women's Development Corporation (KSWDC) campaign via stickers and posters on KSRTC public transport across the state.

In 2013, the Kerala State launched 'She-Taxi': an all-female taxi service similar to Uber. The car features switches that allow both drivers and passengers to send distress signals. The drivers themselves are recruited through self-help groups[32]. The Kerala state also launched The Pink Police Patrol – set up to patrol the safety of women pedestrians and commuters. This includes city-wide coverage of women police officers and vehicles equipped with continuous tracking devices patrolling the roads between 8am to 8pm.

Urban housing interventions in Kerala has been shaped by a series of key national policies mainly through the nodal agency of Kudambasree – set up to take a woman-centred approach under Kerala state's poverty eradication mission in 1998. As of March 2017, Kudumbashree has enrolled over 4.3 million women across the State into 277,000 neighbourhood groups[33] that undertake savings, credit and microenterprise activity, and provide a conduit for anti-poverty programmes to reach households directly[34].

GENDER EQUALITY AND WOMEN'S EMPOWERMENT POLICY

(GEWE) 2015

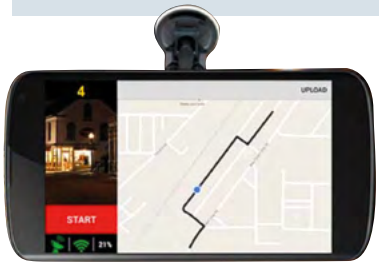
1. Ensure security and freedom from violence particularly GBV
2. Ensure women's access, ownership and control over resources and capabilities to obtain her right to livelihoods, decent work, social protection and gender-responsive infrastructure.
3. Create and strengthen voice and agency of women, in both formal and informal institutions and ensure women are involved in decision-making across social, political and economic issues.

Table 1.1: Policy at different scales

Policy focus	International	National	Regional (Kerala)
Infrastructure and Urban Development	UN SDG #6: Clean Water and Sanitation (201 UN SDG #11: Sustainable Cities & Communities (2015) UN Habitat III – New Urban Agenda (2016)	Jawaharlal Nehru National Urban Renewal Mission JNNURM (2005) Rajiv Awaz Yojana (RAY) (2009) Smart Cities Mission (2015) Swachh Bharat and Digital India (2015) Pradhan Mantri Awaz Yojana (PMAY) (2015) Atal Mission for Rejuvenation and Urban Transformation (AMRUT) (2015)	Tourism Vision 2025 (2002) Kerala State Urban Development Project (2005) Private Parks Scheme (2015) Kerala Town & Country Planning Act (2016) Right to internet (2017) Comprehensive Capacity Building Programme (2018) Light Metro Rail Project
Gender Empowerment	UN Convention on the Elimination of all forms of Discrimination against Women (CEDAW) (1979) UN Beijing Declaration and Platform of Action for Women's Rights (1995) UN Sustainable Development Goals #5: Gender Equality (2015)	Criminal Law Amendment Act (also known as 'Nirbhaya Act') (2013)	Kudumbashree (1998) GEWE (2015) She-taxi (2013) Mithra 181 (2017) Nirbhaya Shelters (2016) Pink Police (2017)

3. Methodology

Figure 3.1: Scales of Influence



The methodology takes an interdisciplinary approach combining social sciences methods with innovative digital tools. We conducted research in Thiruvananthapuram and Kochi in 2018 using three different methods: an ethnographic neighbourhood study located in selected low-income settlement in the two cities and semi-structured interviews with key stakeholders in the municipality; visual data collection using Safetipin Night software (see above left), capturing images of streets and public spaces after dark across the city; and crowd-sourced manual safety audits of the city's infrastructure using Safetipin software which scores the safety of areas.

Safetipin (www.safetipin.com) is an organisation that has developed software tools to conduct safety audits by gathering crowdsourced data that measures and assesses safety in given areas during evening hours in cities according to nine parameters: *Feeling, Lighting, Density of people/crowdedness, Public transport, Security, Walkpaths, Gender diversity, Openness in the area, Visibility in the area* ('eyes on the street')

The Safetipin apps to collect the visual and safety audit data were:

1. *Safetipin Nite:* a mobile phone app that takes pictures of the city during a fixed time in the evening (after dark). The street-level pictures are taken on a phone that is affixed to the inside of a motor vehicle windshield so that they can be taken at fixed intervals continually throughout a particular route in the city. These photos are then coded according to the safety parameter.

2. *My Safetipin:* this is used to score safety by individuals in real-time in a given area in the city on each of the 9 parameters. The women in the low-income neighbourhood who participated in our study received training in this app and were guided as they conducted safety apps of their neighbourhood and in some cases, surrounding environs.

■ **At the city scale,** the 'Safetipin Night' app was used to collect visual 'big data' on VAW through real time images of city streets. These images are coded on several safety parameters by auditors based in Safetipin offices. The 'Safetipin' app itself was also investigated, by examining how safety, urban space and infrastructural variables are coded in its algorithms. We analysed how digital apps facilitate knowledge, represent and communicate the interconnected relationship between a right to infrastructure and a right to the safe city, and how they can help generate an 'infrastructure' of safe, inclusive cities and sustainable communities. In addition, we conducted interviews with key stakeholders in Kochi Municipality, Smart Cities Council and infrastructure providers. The aim was to understand the top-down visions of public infrastructure and safe cities that shape Kochi's gendered experiences.

■ **At the neighbourhood scale,** we used participatory walkabouts to generate 'deep' data on women's knowledge of infrastructural spaces, as well as their perceptions of safety, tactics and strategies to remain safe in these spaces. In a second follow-up interview, women were trained to use the Safetipin app to test how digital technology impacts on pathways and perceptions of safety and produces specific challenges with the technology itself. This approach enabled ongoing and iterative feedback between both 'deep' data and 'big' data between the two scales.

■ **At an individual scale,** we conducted semi-structured interviews with women in the neighbourhood aimed to understand what it means to live, travel and work in the city at different scales – starting from their households and neighbourhoods, through to the city at large when they travel for work, accessing amenities such as healthcare and welfare entitlements, running errands, education or social reasons.

■ **Stakeholder and Community Workshops:** We ran a series of stakeholder and community participatory workshops in Thiruvananthapuram and Kochi to present our findings and garner feedback, conduct digital capacity training with communities, map gendered experiences in the neighbourhood and establish key priorities within the community.

4. Thiruvananthapuram

'Our primary objective is to make this a woman friendly city'

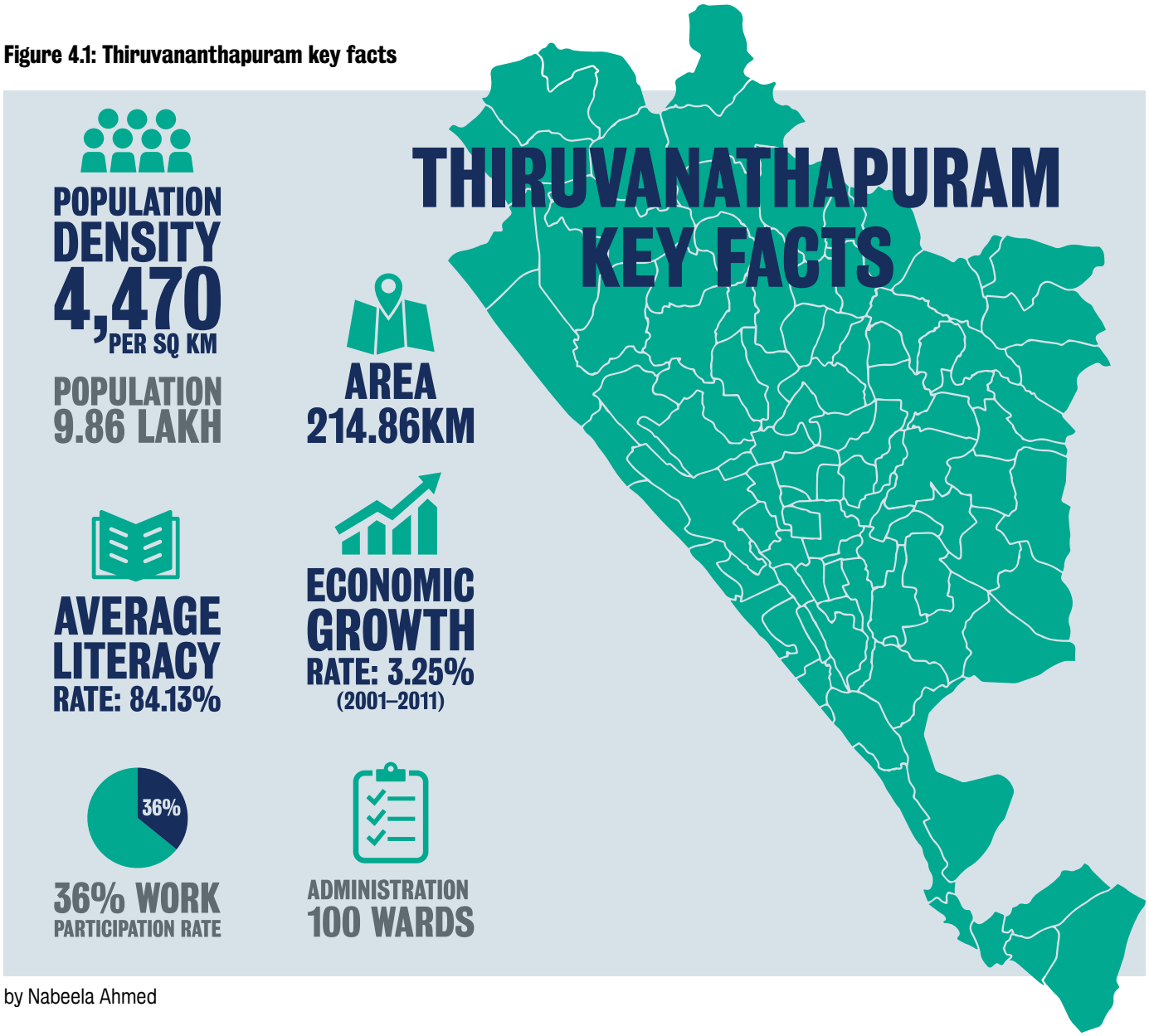
MAYOR OF THIRUVANANTHAPURAM, APRIL 2018

Thiruvananthapuram is a key city for understanding how infrastructures shape intimate relations of power across places, spaces, and scales. Thiruvananthapuram (earlier Trivandrum) is the administrative capital of the state of Kerala, located along the south-western coastline of the state. The city is undergoing rapid transformation, spurred on by smart city investments, but faces challenges in meeting infrastructural challenges – including those outlined under UN SDGS #9 and #11. Thiruvananthapuram is the second city in Kerala to win Smart City status under the National 100 Smart Cities programme. This has spurred a number of public infrastructure investments in the city in recent years and a commitment to ensuring gender safety by the urban government.

While access to infrastructure does not necessarily preclude violence, the lack of access to infrastructure can reinforce existing forms of structural, material or symbolic violence for already disadvantaged groups.

- 533 crimes were reported within city limits. These numbers have more than doubled since 2016 and show part of an increasing trend in the past five years.
- In a study by Sakhi in 2010, over 80% faced sexual harassment while either waiting for or riding public transport in Trivandrum[35].

Figure 4.1: Thiruvananthapuram key facts



by Nabeela Ahmed

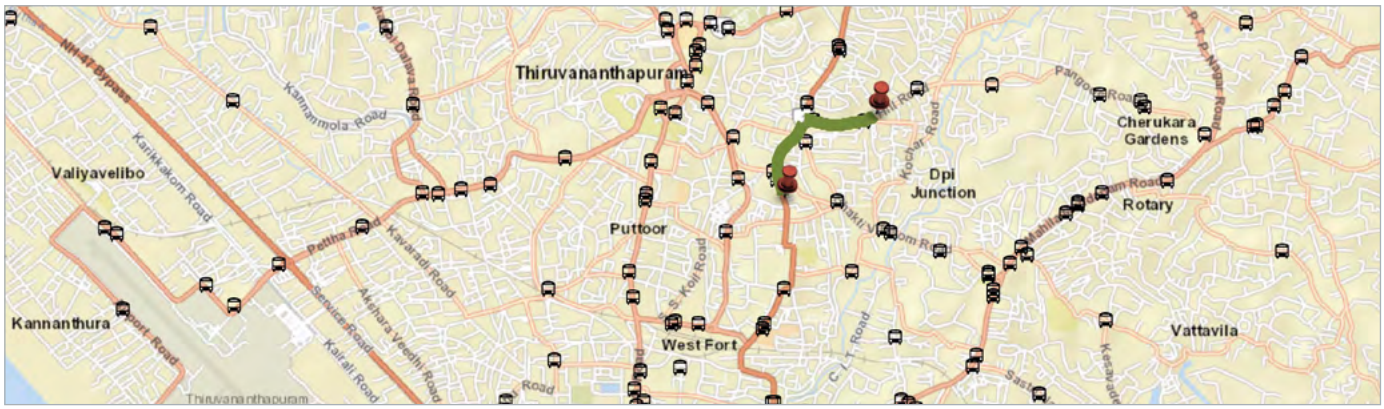
4.1. Mapping infrastructures at city scale

A key example of an initiative that considers gender safety in the city is the pilot for the women-friendly walkpath (also known as the 'She Walk') being developed in the city centre of TVM In 2017, a two kilometre stretch of road between the Government College for Women and Cotton Hill Government School in the Vazhuthacaud ward (a commercial and residential area) was selected as a **pilot site for the project** (Figure 4.2) . The road is located in a busy hub of the city and within the Smart City Mission's target plan. The proposed initiative included CCTV cameras for security and surveillance of crimes, installation of public toilets accessible for women, breastfeeding centres, safe and accessible footpaths[36]. The space is also to feature local art – murals of inspirational women leaders lining the walls along the walkway. The project was tendered and to be implemented by the Thiruvananthapuram Municipal Corporation in conjunction with the Police Department and their Pink Police patrol.

The She-walk assumes that safety is a law-and-order issue and therefore it can be 'fixed' through the increased monitoring, control and surveillance of city spaces. The limited area of influence of the She-Walk is evident in the map, as well as the fact that it does not reach any of neighbourhoods and spaces where poor women live and work.

This section will present and analyse the city level data collected by Safetipin, which is further supplemented by interview data to highlight the blind spots in infrastructure planning.

Figure 4.2: Safety infrastructure – Thiruvananthapuram 'She Walk' – women's walkway pilot. (Green line on map)

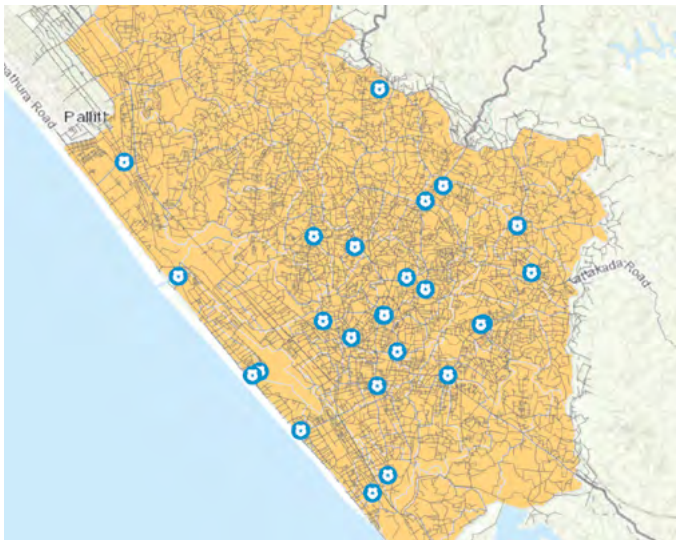


Source: Fieldwork interviews with key stakeholders in TMC (April 2018)

PHOTO: SUSAN SUKANYA, 2018

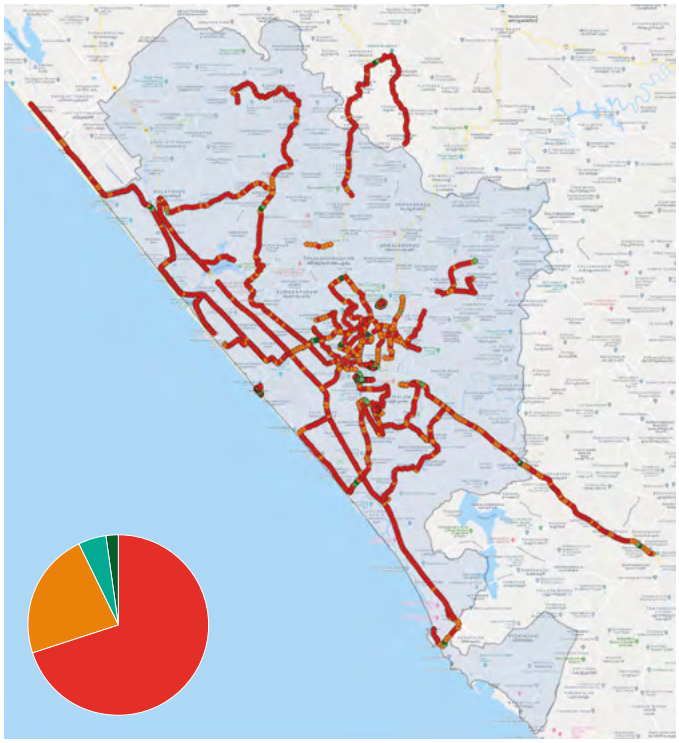
Image 4.1: Thiruvananthapuram 'She Walk'

Figure 4.3: Police stations in Thiruvananthapuram



Source: MapMyIndia and Thiruvananthapuram Municipal Corporation (TMC)

Figure 4.4: Security rating through safety audit



Thiruvananthapuram Parameter: Security Safety audits
None: 70% Minimal: 23% Moderate: 5% High: 2%
Thiruvananthapuram Source: Safetipin Base map: Google

4.1.1. Police stations

The map represented in Figure 4.3 show both police stations and chowks[37].

- Most of the city's police stations are clustered in a concentrated area in the city centre, rather than distributed evenly across the city.
- Those living outside the city's centre and in more peripheral areas where low-income neighbourhoods are also concentrated lack access to police stations

Police patrolling hours are further limited in terms of geographical coverage. Though there is a Pink Police programme– interviews with stakeholders suggest that this is limited in terms of capacity and only runs for 12 hours from 8am to 8pm[38].

Combined with the uneven distribution of police stations, Safetipin scores for security in Figure 4.4 are based on presence of formal police or private security guards in and around the audit point. It also takes into account presence of police stations, police chowkis, booths or check points and police patrolling vehicles. 70 percent of the audit points (red pins) generated by Safetipin show no presence of formal police or private guards in most parts of the city. 23 percent (orange pins) show private guards visible in very few locations of the city and the rest 7 percent (light and deep green pins) show presence of formal police and reliable security within hailing distance. The mapping also illustrates that this 7 percent is mostly concentrated at the core of the city.

4.1.1. Public transport

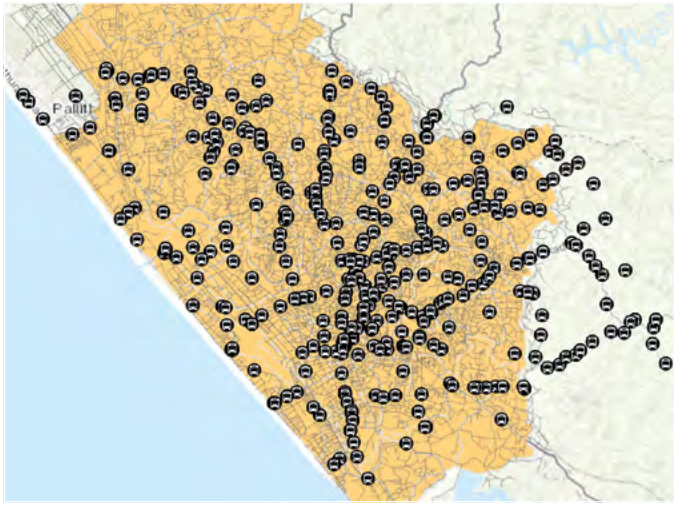
This map compiled from MapmyIndia and TMC data (Figure 4.5) represents 421 bus stands and terminals across the city. Thiruvananthapuram has the highest concentration of state owned (KSRTC) buses in the state and a higher proportion compared with other large cities such as Kochi.[39].

However, the conditions in bus terminals operated by KSRTC are poor and pose specific risks in terms of safety and for women travellers, according to our project findings. For example, the terminals lack safe and clean spaces for women to wait, accessible public toilets and adequate lighting at night[40] According to KSRTC staff interviewed in our research, the toilets are misused and serve as a waste disposal area for local fisherwomen and traders – representing the linkages of disconnected infrastructures in transport hubs, public toilet availability and adequate solid waste management systems and the overall effect this has on women's safety and access, as well as in public health and the environment in general. Only two public toilets in KSRTC bus terminals were identified as "properly maintained" by KSRTC staff in Thiruvananthapuram.

PHOTO: SUSAN SUKANYA

Image 4.2: Private transport with autorickshaws

Figure 4.5: Bus stops



Source: MapMyIndia and TMC

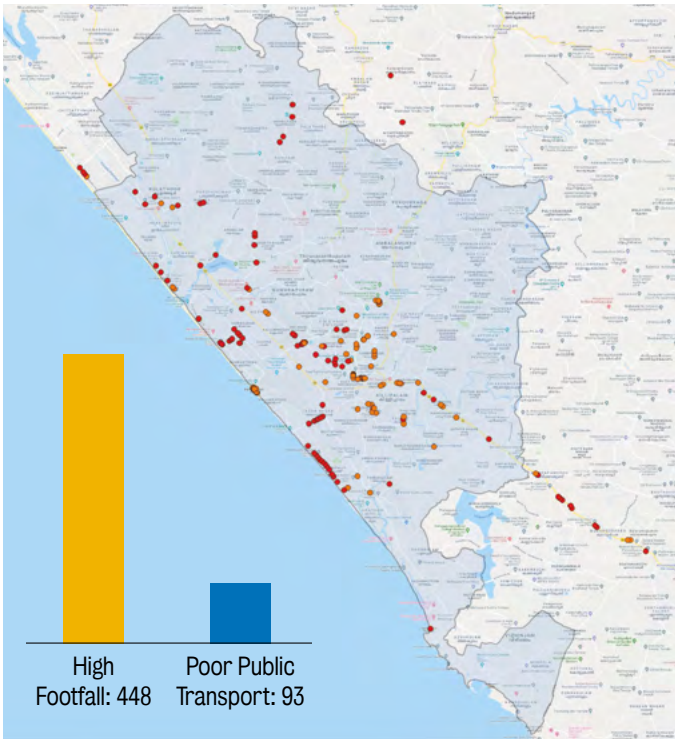
Another safety deficit in bus terminals is that of police and security. While each bus terminal usually includes a police post, these are lacking in actual staff presence. At the time of our project fieldwork, KSRTC shared its plans to implement better lighting and waiting room facilities for women, and improve public toilets in terms of access, hygiene and usability in addition to increasing security measures such as installing CCTV cameras. A 'pink bus' service – staffed by women drivers and conductors exclusively for women passengers was launched in Kerala in 2017 though at the time of our research, coverage and number of such bus services were minimal.

'At the bus stand, there are many perverts, who behave with us as if we are those kind of women... they go from one woman to the other trying to see if anyone will go with them. They will come close to us and stare, and then if we don't respond, they move on to the next woman.'
Woman living in low-income neighbourhood in TVM

'If I go to work by foot, someone will pass some comments, make dirty remarks, many things will happen. These things happen a 100 percent of the time.'
Woman living in low-income neighbourhood in TVM

In Figure 4.6, the correlation map shows locations in the city where more than 10 people are mapped to be present and public transport stands such as bus stops, auto/rickshaw stands, etc. are either not available or not within 10 mins of walking distance.

Figure 4.6: Correlation map[41] for People + Transport



Thiruvananthapuram Correlation: Crowd + Transport
Public transport
■ Unavailable ■ Distant ■ Thiruvananthapuram
Source: Safetipin Base map: Google

Although private buses are easily accessible and stop outside low-income neighbourhoods, such buses lack accountability mechanisms i.e. complaint and grievance redress helplines as they are not state-operated (though VAW is experienced in both private and public buses).

Experiences and risks of VAW are encountered throughout the city, at bus terminals and at busy junctions and in many cases deter women from easy access to transport within the city and thus face barriers to pursue education, livelihoods, social events and fulfil civic duties.

A high proportion of calls received by the Mithra 181 women's helpline from 2017-2018 are from women *whilst travelling* in trains or buses to report some form of sexual harassment. Our interviews with women also highlight the need for safety not only while waiting for buses but inside buses themselves.

'...when it is crowded, we have to squeeze our way in. When we enter the bus, the men, including young men the age of our sons come and stand near us. Initially I keep quiet because there is not much space and I do not want to make an issue. But they keep inching closer, and then they feel us up from behind, that's when I get angry...because they behave in this dirty way. Then we push them and give them a stare. When I stare at them, they behave as if they do not know anything and move away a bit. After that, they move close again and repeat the same behaviour. That is when I protest. But when I protest, the other women and people in the bus give us condescending looks. So, one feels hesitant to react or protest because of the reactions of these women.'
Woman, living in low-income neighbourhood in TVM

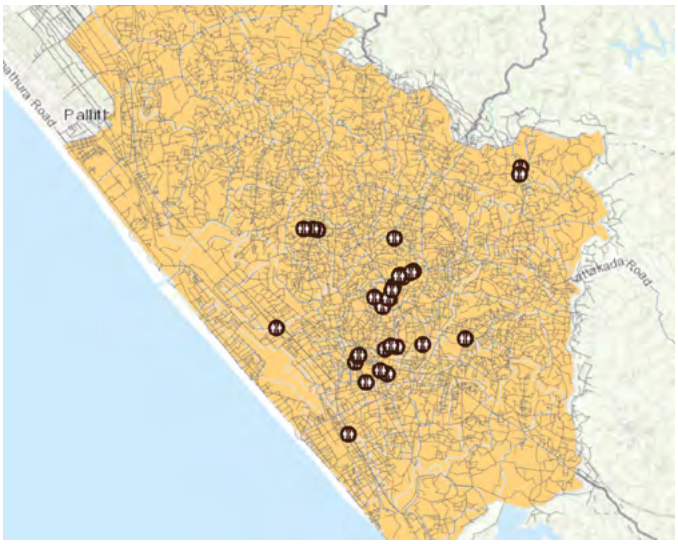
4.1.2. Public toilets

'Improving public toilet facilities with basic amenities and proper cleaning and waiting arrangement is important... as the passengers increase, the usage of toilets also increase and this results in the poor quality of maintenance of toilets.'
KSRTC staff, April 2018

In a 2016 study by Recycle Bin, an urban planning and activist organisation in the city of Thiruvananthapuram. A sample of 50 toilets were surveyed and documented to assess their conditions, design, usage and accessibility. The study found that out of 50 toilets surveyed, only 37 are usable by women while men can use all 50 of them. Their map in Figure 4.7 shows the **limited number and unequal distribution of public toilets**, the study also highlights the **poor design (no privacy safeguards) and maintenance of toilets** that restricts accessibility for women. **Poor locations** (e.g. in sparsely populated, poorly lit areas) have all been attributed to public toilets falling into disuse and become 'unsafe' areas for women.

According to the Recycle Bin study, the reasons for non-usage of public toilet among women include

Figure 4.7: Public toilets



Source: Recycle Bin and TMC

'lack of privacy' (6%), lack of hygiene or facilities (38%) and the location or design of the toilet itself (56%). Out of all the toilets surveyed, 26% lack any provisions for women to use, 42% have provisions for women and are in use and 32% of toilets have provisions for women but are not in use.

This is borne out in our interviews with women in the neighbourhood.

'Women's toilets are in such isolated corners in the town that on the way to it, one can get harassed. In other places, the toilets are right in front of the bus stops and so on. Women have this problem of hesitating to go inside the toilet when there are men. That is unnecessary. Women have to change that attitude and if the toilets are kept at the front, we should just go. If that happens, it'll be more secure. When there is no light on the way to the toilet, they will hesitate to go, that will lead to health problems – there is no need for all this. It is something that can be in the front. It is the most natural thing for a human – everyone knows that a woman needs to pass urine in so many hours- why hide it in some corner then? Why should anyone be doing this is in hiding.'
Woman living in low-income neighbourhood in TVM.

4.1.3. Feelings of Safety

As for security, ladies are hesitant to travel after 7 o'clock. There is always a security problem. Gents will disturb them. If a lady is going alone after 7 or 8pm these guys will follow. And they will try to disturb! There is always that security problem. [...] Lighting is not a problem...streetlights and everything is there but it is the behaviour of these gents.
TVM Chief Town Planning Office staff member, April 2018

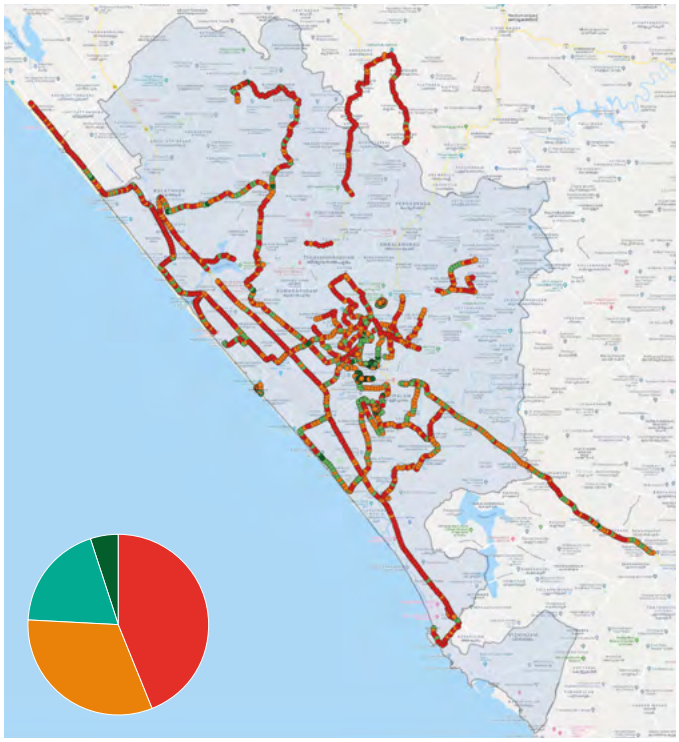
PHOTO: ROHIT MADAN

Image 4.3: Women's presence is evident in the markets

The most direct way in which people serve as infrastructure is in terms of their presence as 'crowds' in the city (Figure 4.8). As shown in Figure 4.8, the city is predominately scored as 'deserted' or 'low crowds' during evening hours. 58 percent of the city shows deserted public spaces after dark.

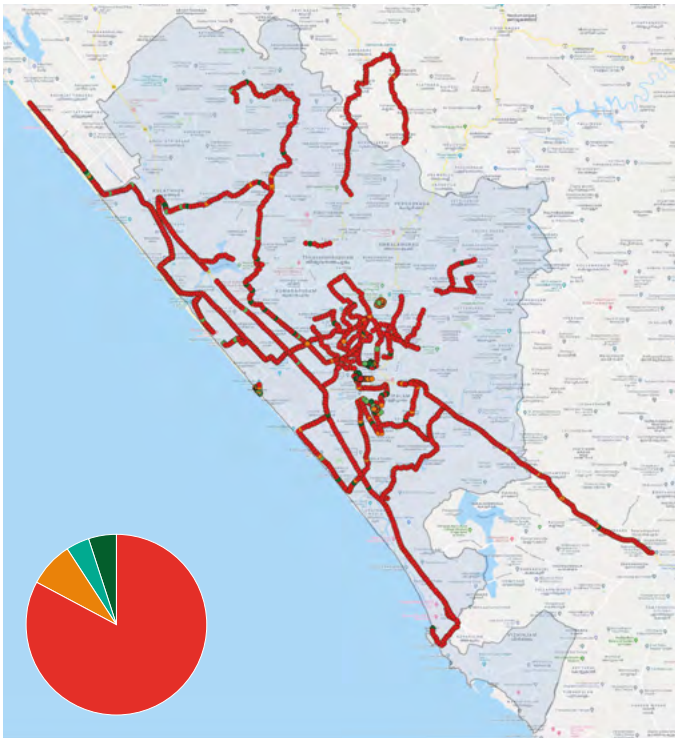
However, **crowded areas are not necessarily considered safe**. Safetipin's 'gender usage' map in Figure 4.9 suggests that 83 percent of the city mapped do not have gender diversity (both men and women, across generations) in its public domain and crowded areas can be considered

Figure 4.8: Scores for crowdedness



Thiruvananthapuram Parameter: People
Safety audits
■ Deserted: 44% ■ Few people: 32% ■ Some crowd: 19%
■ Crowded: 5% ■ Thiruvananthapuram
Source: Safetipin Base map: Google

Figure 4.9: Gender usage score



Thiruvananthapuram Parameter: Gender usage
Safety audits
■ Not diverse: 83% ■ Somewhat diverse: 8%
■ Fairly diverse: 4% ■ Diverse: 5% ■ Thiruvananthapuram
Source: Safetipin Base map: Google

dangerous if only men are present. This is also evident from our interviews which indicates that women tend to return home before dark. But often city authorities prioritise urban infrastructure in areas which are busy and heavily used, without a gender lens, thus often excluding women's experience.

'They comment on women's bodies, their body weight, size... then, they loudly make sexual innuendos on the women passing by. It seems as if they get some satisfaction from uttering such words but for us women, it burns our hearts.'

Perception of Safety has been recorded in Figure 4.10 as 'Feeling' or 'how safe does one feel' in the city. The data shows that 10 percent of the users feel 'frightening' i.e., they will not venture alone at these locations (red pins) without any escort, while 67 percent feel 'uncomfortable' i.e., they will avoid these locations (orange pins) whenever possible. The remaining 23 percent of the users feel safe about being alone in public spaces, but such locations (light and deep green pins) are concentrated mostly at the core.

4.1.4. Lighting

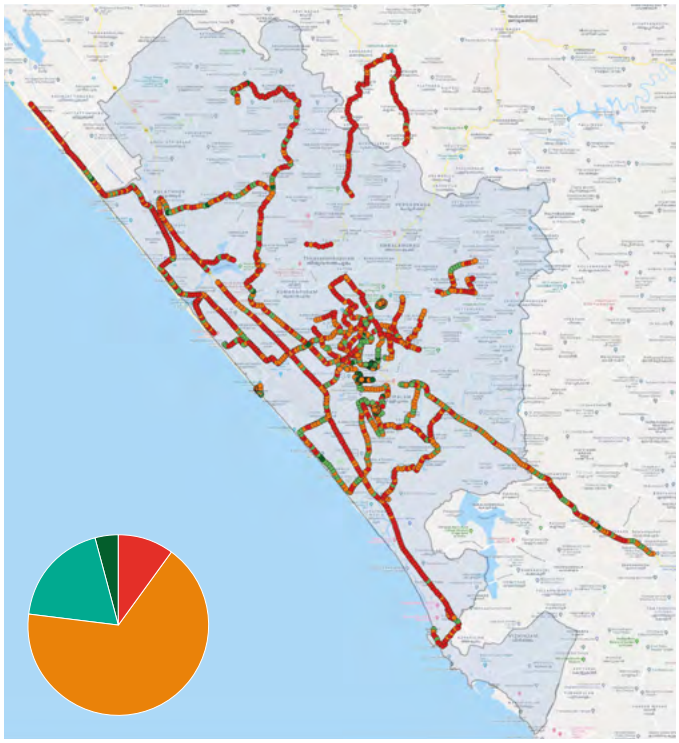
While lighting is an important safety infrastructure, we could not access geographical distribution of lighting in the city from either state or private sources, highlighting a gap in urban infrastructural data. The Safetipin scores of lighting in the city as audited by women using 'My Safetipin' application and by image mapping the city using 'Safetipin Nite' – together evaluated the city's safety status.

Safetipin's Lighting parameter shown in Figure 4.11 has been overall rated better than its 'Feeling' or 'perceptions of safety' parameter in the city. However areas that are well lit according to Safetipin data does not correspond with scores on 'feelings of safety' and conversely areas with bus stops do not necessarily correlate with lighting, highlighting infrastructural blind spots. These gaps in correlation with bus stops, crowded areas and feelings of safety suggest that **lighting does not necessarily reassure women about safety.**

Those areas in Figure 4.11 that have been scored with 'some light' are scattered throughout the city inconsistently. 22 percent of the audit points show that there is only 'some light' or low visibility at these locations (orange pins) in the city and these are seen to be scattered throughout the city.

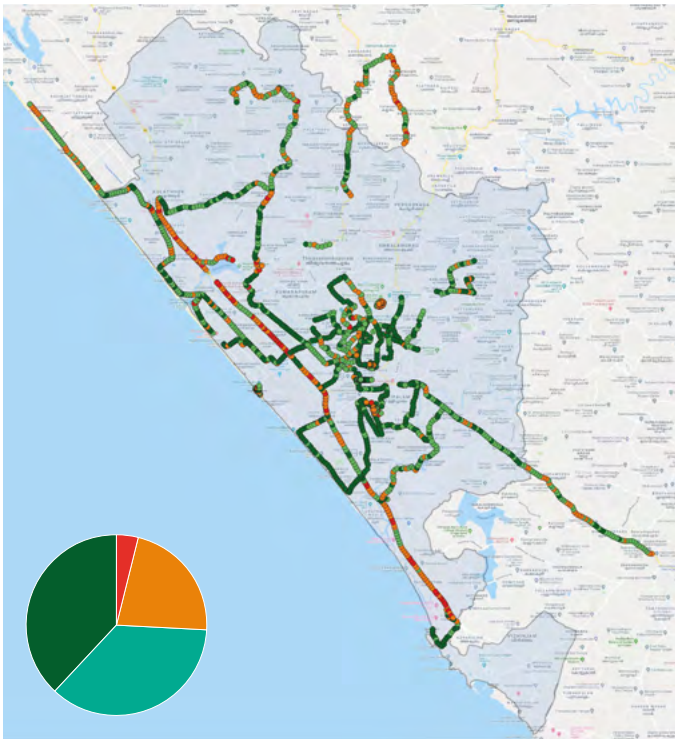
The poorest scores for lighting are predominately along the beach areas along the coast – areas that are also frequently referred to as 'unsafe' in our interview data.

Figure 4.10: Perception of safety by users of public space



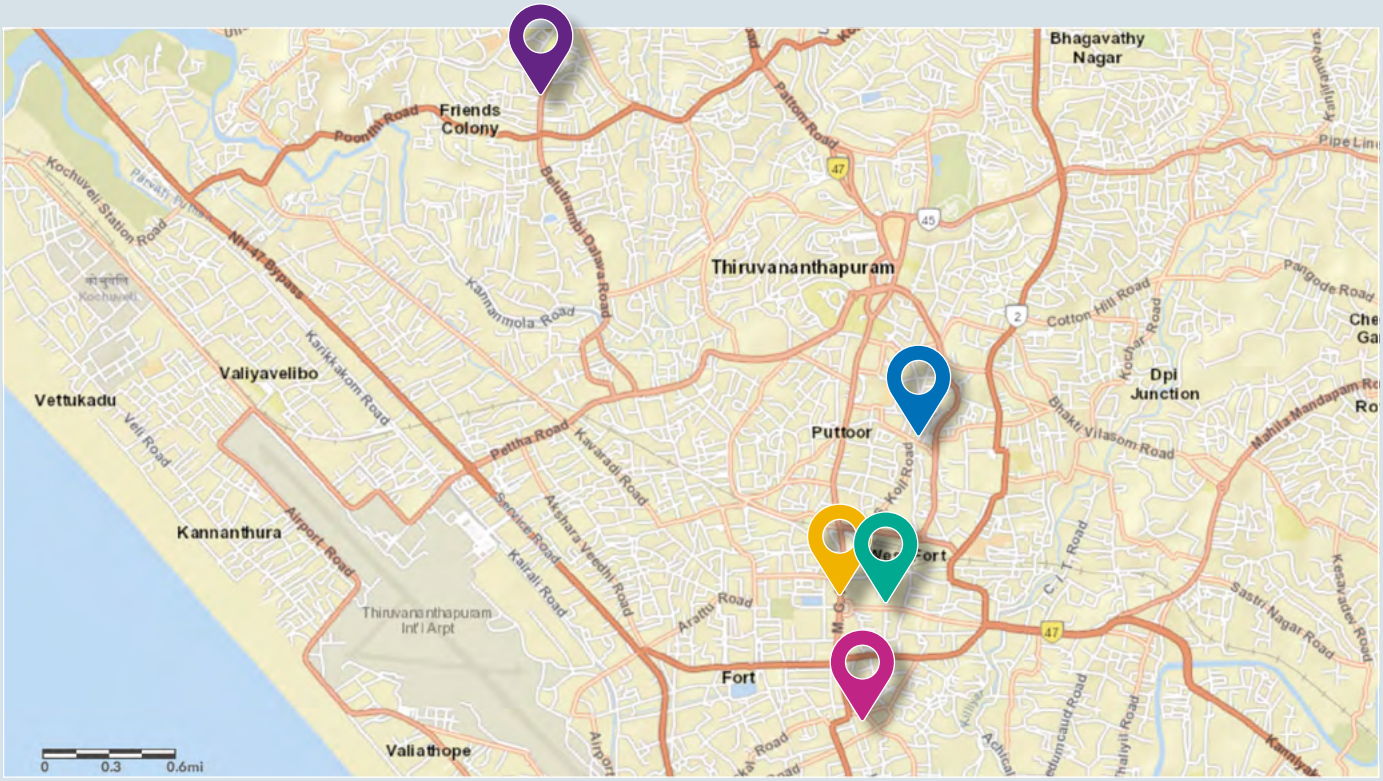
Thiruvananthapuram Parameter: Feeling
Safety audits
Frightening: 10% Uncomfortable: 67% Acceptable: 19%
Comfortable: 4% Thiruvananthapuram
Source: Safetipin Base map: Google

Figure 4.11: Status of lighting



Thiruvananthapuram Parameter: Lighting
Safety audits
Poor light: 4% Some light: 22% Enough light: 36%
Bright light: 38% Thiruvananthapuram
Source: Safetipin Base map: Google

Figure 4:12: Map of sexual harassment faced by Women in the City



Sources: Base map from Esri Streetmaps (2018) and data from fieldwork interviews (February – April 2018)

Government Medical College
'It was impossible to stand in the bus stop, in front of the medical college, the bus stand has been changed now right, from right in front of the medical college, when one would stand, one by one men would come and stare at you or said abusive things, or go to the other side and again stare, I have felt so sad and so angry.'

Amman Kovil Junction:
'The wall of the temple, near Amman Kovil, that is where the arch is, there a lot of boys drink and stand there, and say things, whatever they do, they have in them all the bad things.'

East Fort Bus Terminal:
'The entire area is unsafe. That is what people say. After 8pm, we are scared to go there, even though it is supposed to be the heart of the city.'

Challai Market:
'It is impossible for women to go there without being molested. It has reduced a bit now, otherwise if women were to enter the Challai market, they have to suffer utterly lewd and obscene comments, and even have all their body parts groped. It is common knowledge and happens openly. We have seen it happen to many women. If women retaliate, they have to hear the choicest abuses and forced to leave the market in shame.'

Chengalchoola colony:
'That is a big problem area. It is not that I am scared when I go there, but that is an area where a lot of such crimes happen. Once a woman was taken away to a building terrace and gang raped by 7-8 men. [...] The entire area is extremely unsafe. [...] Goondas and then even women consume alcohol there...there are many problems.'

CREDIT: RWITEE MANDAL

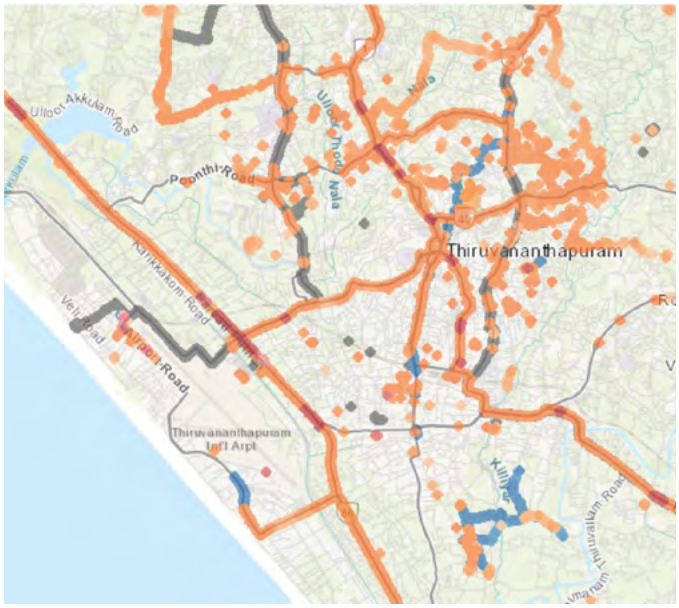
Image 4.4: Artistic sketch of city bus stand

4.1.5. Digital connectivity

While there is a good level of coverage across Thiruvananthapuram for the top networks, women in low-income communities do not necessarily access such networks and connectivity. Google Analytics of Safetipin App carried out over a period of time show how safety apps, are typically used on smartphones at the higher-end of the market. **Cheaper and secondhand phones used by many women from lower socio-economic backgrounds do not have the necessary data and download speed to use data heavy apps such as Safetipin. This highlights the need to include digital connectivity and data networks for low-cost, low-tech phones.**

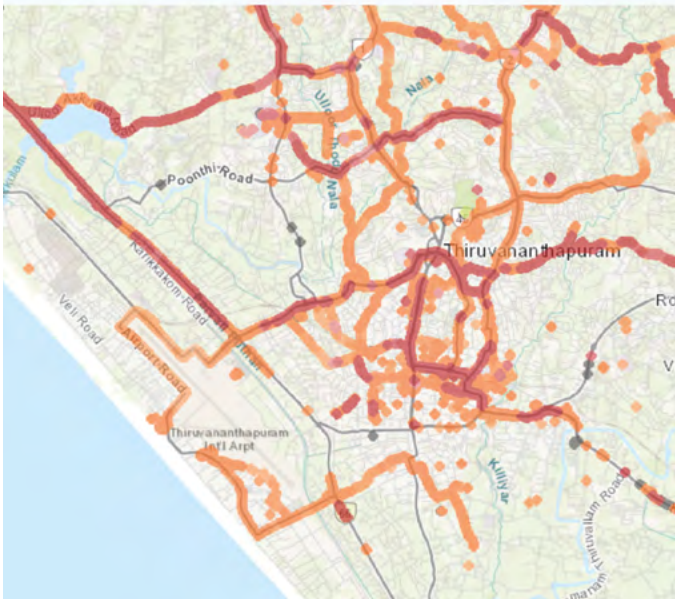
The maps of mobile network coverage in Thiruvananthapuram of the most popular mobile networks in Kerala – Jio in Figure 4.13 and Airtel in Figure 4.14. While 4G coverage is prevalent throughout the city it is more densely so for Jio than Airtel. Coverage is most concentrated in the centre of the city, thinning out along the coastal line and in the northern and southern reaches of the city area. Although Jio is the cheapest and most used network by lower income groups, **the relative monopoly of one mobile phone network carrier – Jio – in the city indicates that data infrastructures and digital connectivity in the city is unequal and often exclusionary for those unable to pay for data packages in these networks.**

Figure 4.13: Jio network data coverage in Thiruvananthapuram



Source: nperf.com

Figure 4.14: Airtel network data coverage in Thiruvananthapuram



Source: nperf.com

ANIMATOR: SABARI VENU

Image 4.5: Screenshot of animation 'Right to Urban Technology' produced as part of project. Source: https://youtu.be/v8z215RTGLQ

4.2. Gendered experiences of intimate violence

Neighbourhood profile:

- Population – 325 households
- Quality of Housing – Mixed (permanent/semi-permanent)
- Quality of Sanitation – IHL (Individual Household Latrine)
- Status of Water Supply – Piped, Hands Pumps and Open wells
- Location of nearest Primary Health Centre – Within 1 km

Source: interviews with local community representatives and based on field observations

PHOTO: AYONA DATTA

Image 4.6: NTL Colony

The neighbourhood where we conducted fieldwork was NTL Colony (pseudonym) – a resettlement colony within a ward located south of the city centre of Thiruvananthapuram, the capital of the regional state of Kerala. An assortment of political symbols of major national and Keralan parties on flags, graffiti and signboards mark the neighbourhood streets, community centres, households and basic infrastructures such as electricity pole, representing both the sociality embedded within material infrastructures and the conflicting lines of accountability and patronage observed for infrastructural deficits in the neighbourhood.

NTL Colony was predominantly owned/occupied by Hindu households and a small minority of Christian households. While there is little in the way of available official documentation regarding its origins, according to local stakeholders (including town planning bureaucrats) and resident interviews, we established that the neighbourhood originated in the 1970s as a resettlement colony for Dalits (so called 'untouchable' castes) developed by the municipal government. However, over time, new households belonging to different, historically more privileged caste groups, have encroached the settlement.

The original colony resonated with a familiar story of resettlement in India's urban history. They were provided unserviced plots at subsidised rates with no connections to urban basic services such as water, sewage, sanitation or energy. After three decades, the neighbourhood still has varying access to private piped water supply, public water taps or drainage. It is located by a public pond, established in the pre-colonial era according to local residents, which is now the site of male loitering and therefore considered unsafe for women. The local municipality has also established a library, an anganwadi (childcare centre) and two community centres; however, according to the residents they have become sites of antisocial behaviour or lie unused. On the outskirts of the neighbourhood lies an unused bio-gas plant which was supposed to make the community self-sustainable in terms of energy, but as other infrastructures, this is also not maintained.

We spoke with women living in the neighbourhood, spanning different age groups – predominately in their 30s, 40s and 50s – and both those employed in formal and/or informal labour, as well as those engaged only in domestic unpaid labour. The women range in their levels of mobility throughout the city, access to infrastructure (including digital technology) and even in the way they imagine the city, for example whether is a safe or unsafe place for women. Our findings also highlight a generational divide in terms of perceptions of safety, mobility and access, as well as attitudes and understandings of digital technology.

PHOTO: AYONA DATTA

Image 4.7: Street inside NTL Colony

Image 4.8: Movie poster on boundary wall

ALL PHOTOS PAGE 22: AYONA DATTA 2018

Image 4.9: Community Hall in NTL Colony

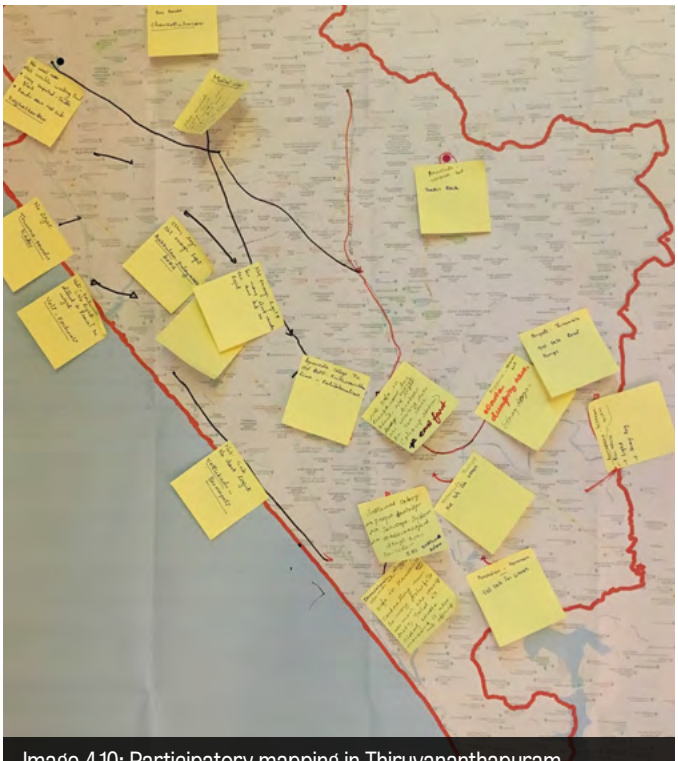


Image 4.10: Participatory mapping in Thiruvananthapuram

PHOTO: AYONA DATTA 2018

Image 4.11: Thiruvananthapuram participatory workshop

Figure 4.15: Typical gender roles and qualities of men (left) and women (right) according to participants

PHOTO CREDIT: SUSAN SUKANYA

Image 4.12: Broken infrastructures in the neighbourhood

To provide an initial insight into the gendered lives and experiences of women in the neighbourhood, Figure 4.15 represents the most popular words used to describe 'typical' gender roles for women and men (both perceived and aspirational) among the women who participated in our workshop (Image 4.11).

> **'If the husband comes home drunk and the wife gets angry, then fights break out and, the wife gets angry and call the pink police. Then they come and say, 'you are husband and wife, it happens.'**
> Shyamala in early 50s

This 'ice-breaker' exercise with women highlighted the ways that gender power relationships between men and women are perceived, accepted and even normalised by gender-friendly institutions such as Pink Police. Women tend to see their roles within family and society in binary ways, and then reinforcing this binary through gender norms and cultural practices. As a result of our workshop activity, women participants began to question this contrast between men and women's roles and suggest ways to break this status quo in the family and outside.

4.2.1. Drainage infrastructures

> **'We are the ones facing these [drainage] problems in the home while men go outside, are away from home for work or enjoy themselves or go drinking.'**
> Shanthi, interviewed 2018

Drainage – and sanitation infrastructures overall – may not seem like an obvious example of infrastructures linked with VAW, however they highlight the various ways in which lack of drainage systems pose risks of symbolic, structural, physical and intimate gendered violence. The impacts of waste accumulation and blocked drains (Image 4.12) are a major concern faced by women in the neighbourhood on everyday basis. The failure of the state to address continuous underlying problems with the local sewage and waste collection systems in the neighbourhood represents a form of structural violence. Municipal interventions are limited and irregular thus allowing such challenges to continue for decades. Waste accumulates directly in front of households, posing risks of disease from contaminated drinking water, infection amongst children who play outside and pollution. The household burdens directly impact women who are less mobile than men, as shown in Shanthi's quotation, and add to existing household labour conducted typically by women and girls.

Though the neighbourhood has some access to infrastructure – they are disconnected and inadequate. The pervasive impacts of weaknesses in underlying physical infrastructures is illustrated in this quotation from an informal 'community leader' in the neighbourhood.

PHOTO: AYONA DATTA

Image 4.13: Community pond in NTL Colony usually seen as unsafe

'Even though there is sewage system here, many of the houses here do not have toilets with proper septic tanks. In many households, pits are dug to be used to dump the toilet wastes. Once the pit gets filled, they dig another pit somewhere else. It is fifth generation [living here] now, so each family has divided it into single rooms and stay in it. Most of the households do not have any place to dig any more pits.'

Like many resettlement and informal neighbourhoods in Thiruvananthapuram, socio-economic status, and access to household ownerships and resources can vary within the same planned neighbourhood[42]. In the next quotation from a woman in her 50s, the devastating impacts of disconnected infrastructures are represented. The lack of sanitation infrastructures leads to encompassing impacts for the household, made worse during the monsoon season.

'We live atop all this garbage. At night, snakes come, millipedes come, worms come. We haven't cleaned the drains. When we do, so many drain worms come out of it. This is the living condition, water gets stagnated in the drain, one doesn't get sleep at night, there are snakes that sneak in and stay here and there. Even if we go to the toilet, this is the situation.'

Residents noted that sanitation infrastructures and solid waste management were not functioning adequately and during monsoon season were prone to flooding, spreading disease and contamination and build-up of waste as described in the quotations above.

Figure 4.16 shows a map of NTL Colony annotated with narratives of the women who live here regarding places and infrastructures they consider safe and unsafe. NTL Colony reinforces the Kerala Paradox at a neighbourhood scale. Women in NTL Colony have lower mobility than men – they are confined to the neighbourhood or the spaces in close proximity to the colony. Even within the neighbourhood, women's access to public places such as the main road or the public pond are limited since these are dominated by presence of men engaged in substance and alcohol abuse.

Figure 4.16: Safe and unsafe spaces in NTL Colony

A local community hall that has generally fallen into disuse – it is locked an not easily accessible to the community

'And there is a community hall. It lies deserted as no activities take place there, even though it was built thinking it would be active, it remains that. There are boys who take marijuana or arrack [alcoholic drink from coconut] assembles and drink'

'On this road, the main problem is here, then the problem is in the main area and gate of [NTL Colony], near the library, people just drink and sit passing comments.'

The main light (a floodlamp) is based in this location on the main road. It is where two of the neighbourhood's main businesses are located – a grocery store and a small 'dhaba' serving snacks and evening meals. Centre of neighbourhood activity after dark but again it is mainly the men who hang out here.

There is also this bio gas construction- it doesn't have a lid, so there's some water and garbage. Everyone who smokes or drinks come from here, they come sit here. If something happens, and they fall into the pits, no one would know. Once a boy who was unconscious from drinking was found inside it.

Considered an 'unsafe' area – where men in the community gather at night and engage in anti-social behaviour

'Near the pond, that is where all the drinking and smoking happens; there is no light after 10pm there, they haven't given light to where it is required.'

'We can go anywhere inside (the neighbourhood) freely. But these boys, they usually have marijuana and drink near the pond where we don't go. They sit together and have all this. A lot of times, the police have come and chased those boys there.'

'Near the pond – that is where everyone gathers at a certain time. Sometimes my husband also goes there. Sometimes the women go to take shower\wash clothes\ but not when men are drinking. But some of the men have gone there and peeped, and the police has come and caught a lot of them.'

A place that is considered relatively safe by some participants as it is away from male gaze to some extent.

'Only when one goes to the temple, if one is wearing a saree, then I pull the pallu and keep it like his (covering full torso).

Source: Basemap from TMC and data from fieldwork interviews (February – April 2018)

4.2.2. Domestic violence as a continuum of VAW

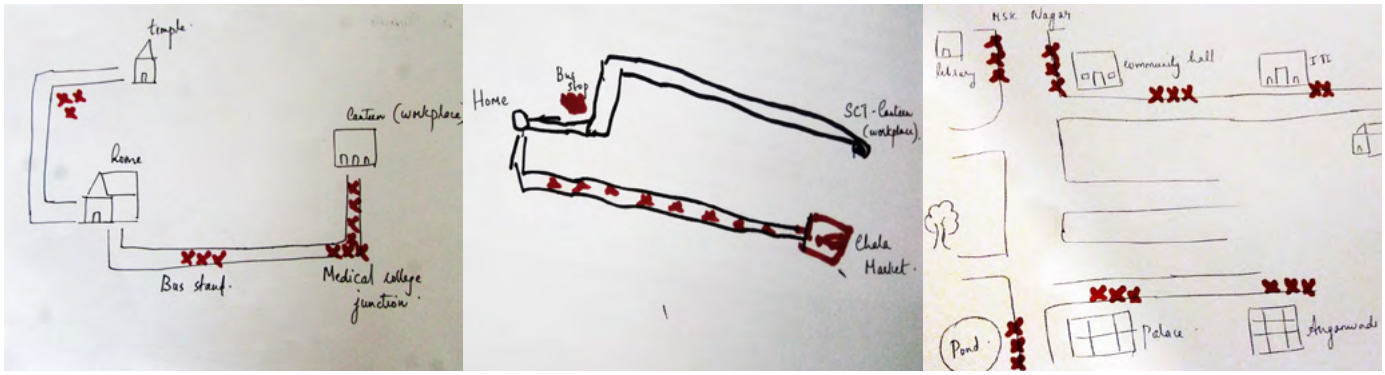
The women we spoke with resoundingly emphasised **the role of substance abuse in creating 'unsafe' public spaces at the household, neighbourhood and city levels**. Substance abuse cuts across all generations, with younger boys and men in the community engaging in drug abuse and older men typically engaging in alcohol abuse. Substance abuse also cuts across the private-public divide in terms of being a driving factor of domestic violence and in neighbourhood spaces leading to anti-social and VAW behaviours among mostly youth and young men.

'Here, all women go to work normally, men are unemployed, it is the women who give them money for food and to use drugs as well, some of them go and suicide [harm themselves and their future], but see, if people don't sacrifice their lives, no society changes for good. No one is willing to sacrifice their lives.'

'The bigger problem is that these boys do not do any work. They sit around doing nothing, with other young boys, and that spoils them as well. They tell them the wrong things, make them do drugs. I heard that there are some injections available for that nowadays [referring to intravenous drug use] and mobile phones are the main reason.'

Below in Figure 4.17 are a sample of 'mental maps' generated by women in our neighbourhood study as they depict commonly used routes in their neighbourhood. The red crosses highlight areas in the neighbourhood that are considered 'unsafe' during evening and night hours. They are usually occupied by men engaging in alcohol and/or drug consumption and tend to cluster around both the few public spaces that have lighting and are commonly used in the daytime, as well as darker areas that have generally fallen into disuse and associated with anti-social behaviours.

Figure 4.17: Mental maps of the neighbourhood



Source: Project research participants – women from low-income neighbourhood in TVM

PHOTO: RWITEE MANDAL 2018

Image 4.14: Main road in NTL Colony, Thiruvananthapuram

Image 4.15: NTL Colony main street at night

PHOTO: DON SLATER

These findings problematise the notion that 'crowded' spaces are inherently safe. Men and boys in numbers increase feelings of danger among women. The important factor here is that gender diversity ie. the increased presence of women in crowded areas increase feelings of safety. This should be considered in confluence with other factors – for example, the presence of police or security personnel, the diversity of generations and gender of people within a certain crowd, or whether the architecture enables adequate 'eyes on the street.'

The need to educate both men and women from a young age is mentioned by some women in the neighbourhood, including the woman quoted below.

'Definitely, boys and girls are both equal, we have to involve both of them and then pass laws, they both should be included, one can't just include women, both of them have equal share, so they should also be included. Boys are also growing up in environments like that, like I said before – so the law should be effective of both concerns.'

Overall, it is striking how normalised this violence has become for women in low-income societies. Violence is seen as an inevitable part of women's lives both in the public and private domain. Even for those who do not face restrictive household environments, the prevalence of VAW affects many decisions around mobility and access to life in the city whether for social activities, education, civic duties or income generation.

4.2.3. Gendered Digital Capacity

Most of the women in NTL colony possessed a basic handset or no mobile phone (Table 4.1). Some noted that they borrow their husband's or son's phone if they left home and needed to keep in touch. Smart phones with internet connectivity are usually used by the men (some cases the husbands) and by younger generation (children). Digital capacity is low amongst most of these women. None of them had heard of safety apps and knew how to download these to their phones.

Women expressed an ambivalence towards mobile phones and technology. On the one hand, they were seen as immoral influences on men and younger generation – encouraging

Table 4.1: Mobile phone ownership among women in low-income neighbourhood

Type of mobile device in the household	Number
Smart phones (3G and 4G)	37.5%
Basic handset	50%
None	12.5%

Source: Project neighbourhood study interviews

PHOTO: AYONA DATTA

Image 4.16: Digital capacity training during workshop

use of drugs and sexualised behaviour, mixing with the other sex and distraction from studies. They were particularly seen as harmful for children at the least distracting them from schoolwork and responsibilities and at its worst, being used as tool of VAW such as online and text-based harassment, accessing inappropriate content and cyber-bullying.

On the other hand, some women recognised the potential of mobile phones and data connectivity as a useful tool for safety – for contacting people and services at times of emergency and also as a means of education.

'In fact it is after the camera phone that women are subject to more [violence]' isn't it? Take photos, it is because it is seen as sexual, through social media, and things like that. After the coming of camera phone, women are not secure. Earlier women would bathe near river, now they wouldn't, they are scared it will come on whatsapp.'

'There are so many problems with mobiles, but some good things also. I have read in the paper, that it is because of chatting on mobile, [youth] fall in love and then get pregnant and so on. I read a lot about it. It's bad. It shouldn't be in excess, use as much as it is needed.... It can also be useful. If something happens to a woman, you can call from anywhere and inform the family or the police. Using it 24 hours a day is bad, otherwise it is very useful.'

5. Kochi

PHOTO: NABEELA AHMED

Image 5 1: Kochi wall mural

PHOTO: ROHIT MADAN

Image 5 2: Chinese fishing nets in Fort Kochi

Kochi is one of the largest cities in the state of Kerala both in terms of population and area coverage. With over 2.1 million residents (Census of India, 2011), Kochi, also known as Ernakulam, is the most densely populous city in the state of Kerala. The city lies along the Arabian Sea coast and consists mainly of lowland, sitting at less than two metres above sea level. The city is split across several small islands including Fort Kochi where our fieldwork was conducted and the metropolitan area on the mainland. In many ways the city's society and economy are split between mainland and water-bound areas with the centre of commercial, municipal and investment activity restricted to the mainland.

5.1. Mapping infrastructures at city scale

Kochi is a key site for understanding how infrastructures shape mobilities and relations of power across places, spaces, and scales. The municipality runs a range of infrastructure – from a harbour, railway junction, international airport, and a naval base and aims to develop multi-model transport infrastructures to improve mobility across and within the varied topographies of Kochi (across water, roads, footpaths and land used for mixed-used built-up areas).

As part of the national Smart City Mission and the state focusing on Kochi's city's fast-growing tourist industry, the city's public infrastructure has received high investment in recent years. Kochi's smart city mission was in an early stage at the time of our fieldwork and builds on the foundations of the Kochi Metro – an initiative founded before the Smart City Mission bid was made. **Despite state investment into public infrastructures such as the Kochi Metro, they remain exclusionary in terms of geographical coverage, connectivity and cost.** This disconnectedness can affect cities as a whole, communities at the local level and gender power relations within individual households.

The Smart City Mission and other policy platforms, such as the Mayor of Kochi have declared interconnectivity and multimodal transport as key priorities for the city. The flagship programme as part of this approach is the Kochi Metro which was under construction at the time of fieldwork

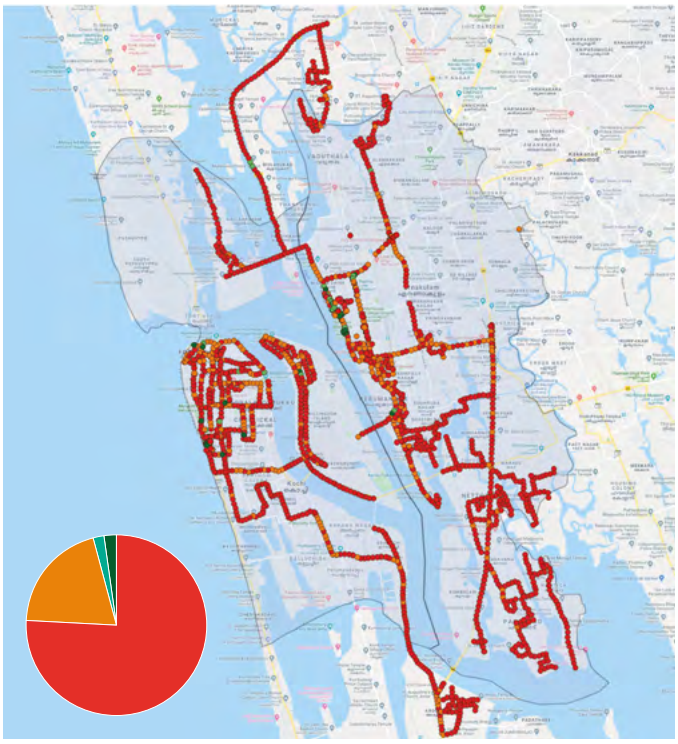
Unlike TVM, the city of Kochi has seen a slight reduction in crimes against women, though new forms of VAW such as online violence have emerged in recent years.

- 392 crimes against women reported in 2016, a reduction from previous two years, 408 per year.
- Rate of crimes against women (including all forms of VAW) 36.3% in 2016[43]
- 225 cases of cybercrime reported in Kerala, with Kochi topping the list with 51 cases reported in 2015-2016, the bulk of which related to VAW[44].

PHOTO: SUSAN SUKANYA

Image 5.3: Kochi Metro construction in progress

Figure 5.1: Ratings for security



Kochi Parameter: Security
Safety audits
None: 76% Minimal: 20% Moderate: 2% High: 2% Kochi
Source: Safetipin Base map: Google

Our findings show that infrastructures across Kochi are disconnected and disjointed due in part to lack of state initiatives – different municipal actors in Ernakulum and Mattancherry (in Fort Kochi) for example have historically worked in parallel rather than in unison – thus affecting the coverage of public infrastructures such as streetlights and transport. Further, conflicts over the importance of heritage conservation and urban development have stalled progress on connecting across land and water between different islands with the mainland.

5.1.1. Police stations

The ratings for security in Figure 5.1 show that 76 percent of the audit points (red pins) show no presence of formal police or private guards in most parts of the city. 20 percent (orange pins) show private guards visible in very few locations of the city and the rest 4 percent (light and deep green) show presence of formal police and reliable security within hailing distance. The mapping also illustrates that this 4 percent is inconsistently spread across the city. This is evident further by the poor distribution of police stations, which are mainly clustered around tourist or commercial hubs.

Safety initiatives such as a female police force are observed in certain areas of Kochi, but this is not consistent across the city. For example, the areas in Fort Kochi popular with tourists are covered by the Pink Police, but they are far less visible when poor women travel across to Ernakulam for work. As one woman described:

'Harassment has reduced because there are police in most of the areas. Even at the road crossing we can cross without fear. At the Thoppumbady bus stop there is a women's police vehicle is there and we can call them at any time. But it is not there towards Ernakulum side and I am afraid to go there after 5pm.'

5.1.2. Public transport

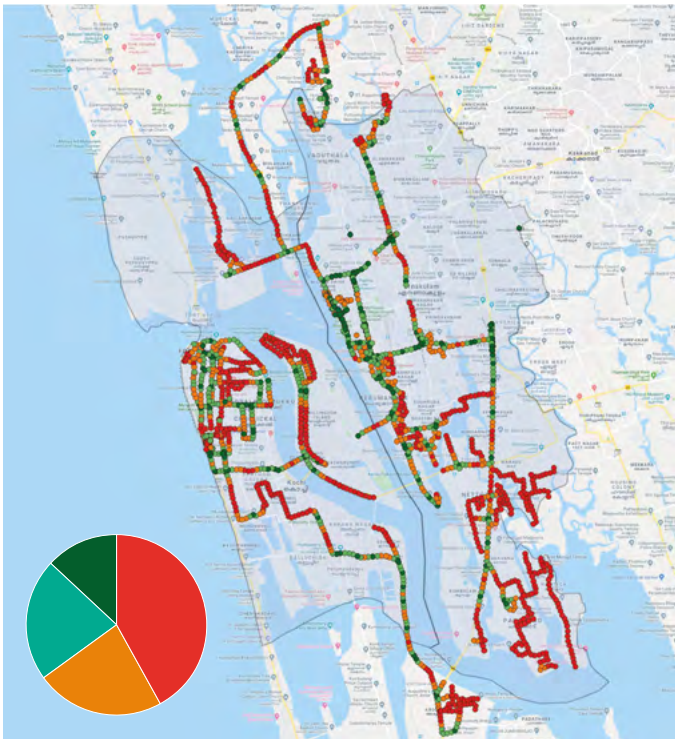
There is wide coverage of bus network across the city, however informal or semi-formal settlements are often excluded from public transport networks. Safetipin audits in Figure 5.2 show that availability of public transport was scored as distant or unavailable in both Ernakulam – the mainland part of the city, and in Fort Kochi.

Figure 5.2 also shows 42 percent (red pins) of the city to have no access to formal public transport stands, such as bus stops, auto/rickshaw stands, etc. These are either not available or not within 10 mins of walking distance. Another 23 percent (orange pins) of the audits show that public transport stands are distant i.e., within 5-10 mins of walking distance.

PHOTO: SUSAN SUKANYA 2018

Image 5.4: Kochi bus Stop

Figure 5.2: Ratings on access to public transport



Kochi Parameter: Public Transport
Safety audits
Unavailable: 42% Distant: 23% Nearby: 22%
Very Close: 13% Kochi Source: Safetipin Base map: Google

According to our findings, the Kochi Metro reinforces this unequal access. Interviews with women from both Mannar Colony and policy stakeholders suggest that though the Kochi Metro was transformative in its approach of hiring women from low-income communities, the very same women found the costs of the Metro prohibitive, so they still had to use less efficient, timely and less safe forms of transport to travel between home and work. The coverage of the Kochi metro itself is also partial and limited and those living in Fort Kochi, such as the communities of Mannar Colony remain cut off from Metro access.

However, the location of bus stops does not necessarily correlate with areas scored high for people density which indicates poor urban planning that is not attentive to social patterns of mobility and presence in the city, particularly around gender sensitivity and multiple perspectives and understandings of safety.

Similar to Thiruvananthapuram, violence against women is also linked with public transport.

'Sometimes when we go to Ernakulam side, if it is a Sunday there will be men who are drunk sitting in the backseats. And I have heard other women having such issues. It is very difficult when they come and stand near our seats and when the bus puts the brake on and we all push against each other, it is really difficult.'

PHOTO: SUSAN SUKANYA

Image 5.5: Kochi smart bus stop

There was also general lack of public toilets across the city. In public bus stands or workplaces, women described being unable to access clean and accessible sanitation facilities which impacted on their health.

'In that area we don't even have proper place to pass urine. Because of not passing urine I have urinary infection and always there is swelling on my leg, I became very weak.'

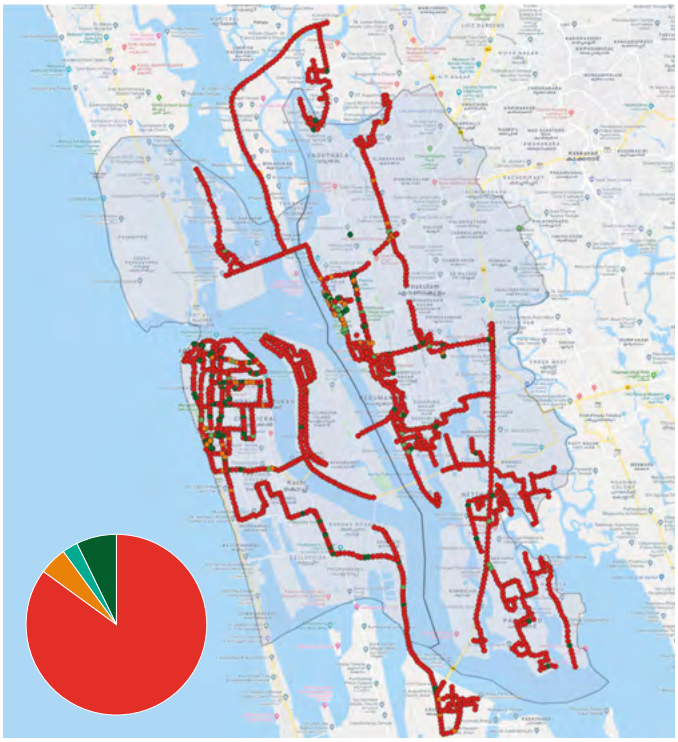
5.1.3. Feelings of Safety

Gender diversity as shown in Figure 5.3 is scored poorly throughout the city with public space heavily dominated by men and boys. Safetipin's 'gender usage' map suggests that 83 percent of the city mapped do not have gender diversity (both men and women, across generations) in its public domain and crowded areas can be considered dangerous if mainly men are present.

This is also evident from our interviews which indicates that women tend to return home by evening. Yet the presence of crowds tend to attract urban infrastructure investment into these areas often leaving women out.

Mobility was seen as a key part of freedom for both men and women. The influences of media, surveillance and presence of security play a role in the perceptions of safety among women.

Figure 5.3: Gender Diversity



Kochi Parameter: Gender Usage
Safety audits
Not diverse: 85% Somewhat diverse: 5% Fairly diverse: 3%
Diverse: 7% Kochi
Source: Safetipin Base map: Google

'Don't we have the freedom to walk around? We too need it. Not just the men. We need the freedom to travel around during the day and night too. For this to happen, things have to be done in a "correct" manner. It's also not that the Kerala police has simply been lax. We know that such instances are increasing by just looking at the TV.'

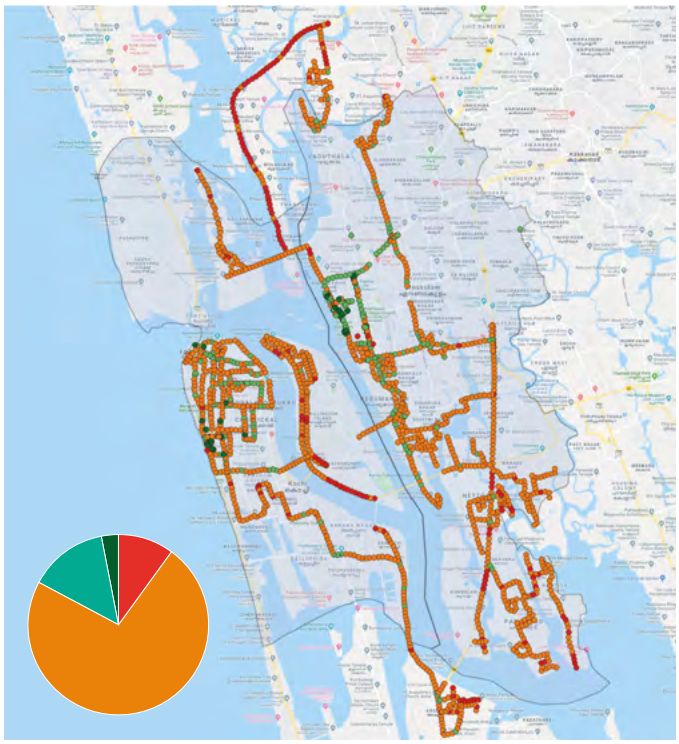
5.1.4. Lighting

As in Thiruvananthapuram, in Kochi too Lighting parameter performed far better than other parameters, such as Feeling (Figure 5.5). It was evident again that lighting does not necessarily increase feelings or perceptions of safety. Rather as our participatory map (Image 5.6) drawn by women in our community workshop in Kochi showed, temporality and gender usage were key to the production of safe cities. Using coloured dots to depict crowds of men and women in day/night in different parts of the city the women suggested that **feelings of safety are directly connected to the presence of working-class men and with particular minority communities.** Crowds of men from minority communities, manual labourers and young men are seen as particularly dangerous even if women have not directly experienced harassment from these groups.

PHOTO: AYONA DATTA

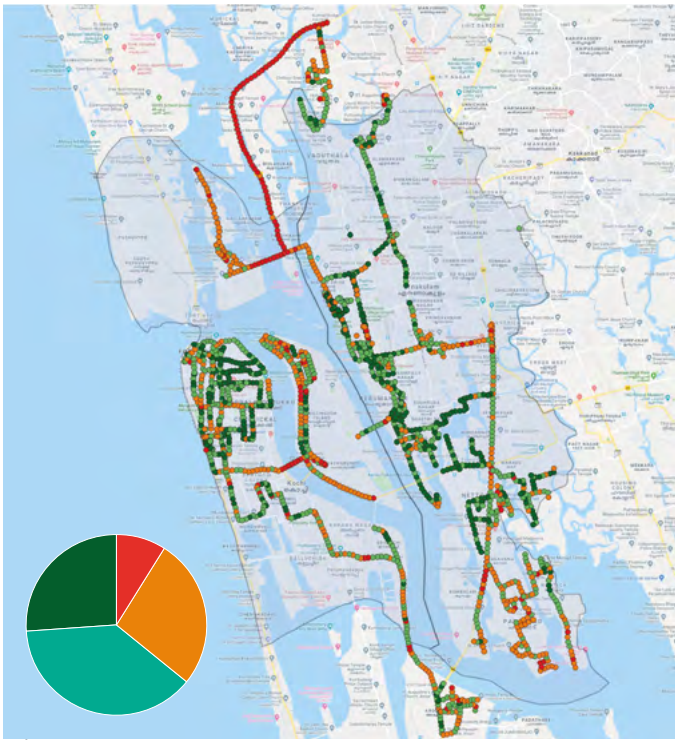
Image 5.6: Time-mapping safety with women participants in community workshop

Figure 5.4: Perception of Safety or 'Feeling' by users of public space



Kochi Parameter: Feeling
Safety audits
■ Frightening: 10% ■ Uncomfortable: 73% ■ Acceptable: 14%
■ Comfortable: 3% ■ Kochi
Source: Safetipin Base map: Google

Figure 5.5: Ratings for lighting



Kochi Parameter: Lighting
Safety audits
■ Poor light: 9% ■ Some light: 27% ■ Enough light: 38%
■ Bright light: 26% ■ Kochi
Source: Safetipin Base map: Google

5.2. Gendered experiences of immobility

Neighbourhood profile:

- Population – 90 households
- Quality of Housing – Mixed (permanent/semi-permanent)
- Quality of Sanitation – IHL (Individual Household Latrine)
- Status of Water Supply – Piped, Hands Pumps and Open wells
- History of Tamil migrants in the area coming for waste collection work.

Source: interviews with local community representatives and based on field observations

Mannar Colony [pseudonym] came about in the 1940s when a community of manual scavengers from the neighbouring state of Tamil Nadu were invited to come and live in Kochi to address the shortage of cleaners in the city. The Colony is located in the Fort Kochi area of the city – a waterbound area, known for colonial architecture and tourism at the north end of the area, and traditional fishing communities in the south.

We spoke with 15 women aged between 21 and 60 years, engaged in both waged and unwaged labour. The women are descendants of the original residents who came to Mannar and are of low-caste status. Many of them worked in and around Ernakulam city centre or in the northern part of the Fort Kochi island where tourism industries are concentrated. Several were employed as sweepers by the Kochi Municipality. Most of the women were married and some were separated / divorced or widowed. For those who worked outside or who remained at home, the lack of sanitation (sewage) infrastructures was a key problem that affected them on a daily basis. This put enormous time-burdens on their lives and hence constraints on their mobility.

Similar to Thiruvananthapuram, the problems of poor drainage, substance abuse and everyday intimate violence that cuts across both domestic and public space are widespread for women living in the city in neighbourhoods such as Mannar Colony. The topography, patterns of economic livelihoods and history of migration in the city lead to distinct patterns of physical and social immobility among women living here. This is thrown into sharp relief by urban developments such as the Kochi Metro, which does not extend to the area where Mannar Colony is located.

The flooding of summer 2018, reached unprecedented scale at least in terms of death toll, coordinated relief efforts and news coverage, but is a yearly occurrence for low-income settlements where disconnected or absent infrastructures routinely expose residents to the most immediate and intensive impacts of monsoon rainfall and flooding. These disconnected infrastructures reduce choice and opportunities of social mobility and empowerment among women in low-income neighbourhoods.

5.2.1. Infrastructure Immobilities

The Kerala flooding disaster of 2018 exacerbated existing waterlogging due to poor drainage in the neighbourhood. Public infrastructure came at a standstill, women were unable to leave their homes and neighbourhoods, and many were forced to move their possessions to the roof. Many were also unable to cook for days at a time. **Though community organisations provided short-term assistance, many of the Tamil residents from migrant communities were excluded from such assistance.**

PHOTO: SUSAN SUKANYA

Image 5.7: Flooded Ernakulam train station

Image 5.8: Main road in Mannar Colony, Kochi

PHOTO: SUSAN SUKANYA

Similar to the situation for many, if not all, of the women in NTL Colony, broken drainage systems pose the biggest infrastructural disruption in the everyday lives of the women of Mannar Colony.

'Whenever it rains there is stagnant water that remains here. No matter even if the roads have been repaired, water still stagnates here.'

In the above quote, a housewife with a young child describes the inevitability and continuity of flooding due to persistently blocked drains in the neighbourhood. Stopgaps such as old saris are used to plug gaps in the pipes through which waste overflows into the neighbourhood gullies. Whilst monsoon flooding is an annual disruption for the communities in Mannar Colony the summer of 2018 marked some of the biggest scale of flooding across the state of Kerala. As Meena describes,

'One of the major problem is when it rains all our drainages [sic] flood. Even if a simple rain falls the first our colony [...] will flood. And we have to wade through this water if we need to go somewhere. It is more difficult because it is dirty water which comes out of the drainage.'

Tanisha, a school helper, in her 30s describes how the blocked and broken drainage system immobilises her even at the intimate household scale. She describes the impacts of the flood on how she moves within her home.

'Once the water enters there is nothing we can use except this hall. We cannot use the hall too, because water will be flowing from the walls and all. It first enters our house and then to other houses. The kitchen area – we cannot go there. The bedroom since it is lying low water enters there too. It is very difficult to use the toilets. We have to swim in that too and it is dirty water.'

Despite civic actions to address the persistence of broken drainage infrastructure, for example, through support from community leaders and local politicians, or individual petitions, these are usually limited due to their inconsistent, individualised and sporadic nature. For example, Tanisha approached the municipality though to no avail.

'Once I took photos [of the blocked drains] **and directly went to** [Municipal] **Corporation to show them. Since we are in the colony, facilities are limited for us. Because of the waste we are disturbed by the rats. We are affected by diseases too.'**

5.2.2. Asset Immobility

The Kerala floods had not only devastated the physical infrastructures of the community, but it had also frozen their liquid and material assets. In order to survive the floods participants went deeper in debt, sometimes mortgaging their house and selling their meagre assets to buy food or pay their bills. Debt became a key aspect of their precarity and vulnerability with increased asset immobility.

'We are now really afraid to live in this colony. But there is no other option/choice for us if we leave the colony. To go outside, buy a land, built a house, we don't have the financial ability. For namesake we can say that we are Corporation workers. All the people who are Corporation workers are under debt, we don't have any development.'

'When we look around we see a lot of "posh areas" around. Even if we go to fisherman colony we see two storey houses. Nobody will say it is a colony. But still, everyone is trapped in debt.'

PHOTO: AYONA DATTA 2018

Image 5.9: Flooded neighbourhood streets

PHOTO: AYONA DATTA

Image 5.10: Street inside Mannar Colony

PHOTO: AYONA DATTA 2019

Image 5.11: Participatory mapping in Kochi

PHOTO: AYONA DATTA

Image 5.12: Houses in Mannar Colony

'We can't construct a house now since she [daughter] is yet to be married and we don't have the finances for the same. A house can be build only after she is married.'

Trapped in debt was the most frequent cause of long-term immobility that was expressed by many women in Mannar colony. This impacted on their long-term future plans related to family events.

5.2.3. Social immobility

Asset immobility impacted on long-term social mobility of participants. This was evident in:

- Social mobilities of Dalit migrants from Tamil Nadu were lower than the 'local' Keralans. Rigid hierarchies of caste, class, nativism and geography are observed to the extent that neighbourhood associations, meetings and community resources are often organised in exclusion of Tamil communities. Fear of crime, discrimination from other communities and other feelings of unsafety cut across gender and age in the migrants from Tamil Nadu.
- Physical mobility was enabled or disabled by disconnected infrastructures and poor drainage conditions. Older women were physically immobile due to fear of safety, combined with barriers at the household scale. When women's mobility was necessitated by livelihood options, this was under continuous monitoring by male family members.
- Economic mobility was shaped by discriminating practices in employment and availability of public transport.

6. Summary Findings

6.1. Immobile Infrastructures

'Immobile infrastructures' can be a way of seeing and understanding how infrastructures, in their absence, disconnectedness and exclusions reduce material and social mobilities of women and marginal groups.

Urban Infrastructures are critical in enabling physical and social mobility across public and private spaces through access to livelihood, finances, knowledge and information.

Mobility should be a choice, but when public transport or mobile networks are inadequate or absent, they can heighten risks of violence and restrict access to public places. This reinforces gender power relationships, thus disempowering women in low-income neighbourhoods in three ways.

6.1.1. Infrastructural immobility

- Lack of public transport plays a significant role in shaping physical (im)mobility of women in low-income neighbourhoods. While the city is served by a large public bus network, low-income settlements are often excluded from these networks.
- Last and first mile connectivity remains a challenge for low-income neighbourhoods. Transport infrastructures such as bus stops, auto or rickshaw stands are not within walking distance.
- Lack of pavements and poor quality of pavements (broken, discontinuous with blockages) have a deep impact on women's access and mobility in the city, especially those from the lower-income neighbourhoods as walking is their primary mode of transport in the city.
- Inadequate street lighting increases women's fear of public space after dark and prevents them from accessing opportunities.
- Even when women are physically mobile, they face considerable challenges in getting around the city. The bus network is dominated by private sector providers with unreliable timetables and routes, and ferry services, walking, as well as auto-rickshaws are considered unsafe or unaffordable. This increases fear of travelling out far from home or staying out after dark. Many women felt they could not travel to work safely or in a timely manner as well as fulfil household responsibilities.
- Lighting infrastructure should be sensitive to the gender diversity of public spaces and designed and implemented to connect public infrastructures such as transport terminals, public toilets and walkpaths.
- Mere presence of urban infrastructures such as lighting, public toilets or public transport are not enough if they are not properly repaired and maintained and connected to other physical, digital or social infrastructures such as local markets or mobile networks. Women were denied the choice to participate in the public life of the city if urban infrastructures are not connected.
- Women have limited physical mobility even in their neighbourhood due to time-burdens at home or absence of gender diverse spaces. Most community spaces are occupied by men, which increases fear of safety.
- The lack of drainage and sanitation infrastructures is a key problem that affected women even in domestic spaces. This put enormous time-burdens on their lives and hence huge constraints on their mobility.
- Women in low-income neighbourhoods either did not own mobile phones, and if they did, used basic phones to make phone calls and keep in touch with families when they were outside home.
- Lack of digital capacity among older and middle-aged women excludes them from crucial knowledge and information about gender and infrastructural rights.

PHOTO: ROHIT MADAN

Image 6.1: Public Comfort Stop, Thiruvananthapuram

PHOTO: AYONA DATTA, 2018

Image 6.2: House in NTL Colony, Thirubananthapuram

6.1.2. Asset immobility

- In order to survive the floods women went deeper in debt, sometimes mortgaging their house and selling their meagre belongings to buy food or pay their bills.
- Disasters such as Kerala floods not only devastated the physical infrastructures of the community, but also froze liquid and material assets.
- Financial debt is a key aspect of gender precarity and vulnerability leading to asset immobility – the inability to buy or sell their assets because they are locked in.
- Asset immobility impacted on long-term social mobility of participants particularly those who were economically and socially vulnerable.
- Asset immobility was pronounced through discriminating practices in employment towards lower castes and poorer migrant communities.

6.1.3. Social immobility

- Absent, broken or disconnected infrastructures lead to social immobility.
- Disconnected infrastructures of public institutions, state actors and family support hinder social mobility for women. When women are not supported by family members in their domestic responsibilities or by police in filing complaints related to domestic violence and VAW, or by the municipality in addressing complaints related to blocked drains or lack of sanitation, women are constrained and confined within the brutal power structures within the home and neighbourhood.
- When women's mobility was necessitated by livelihood options, this was under continuous surveillance by male family members through curfews and mobile phone communications.
- Lack of access to mobile phones or poor digital capacity led to social alienation from friends, families and other support systems.

6.2. Intimate Infrastructures

Women in urban poor neighbourhoods are faced with space and time burdens of disconnected infrastructures which are intimately experienced through physical and emotional risks to their bodies – infection, disease sexual harassment and assault. These impacts are evident as a continuum across the domestic and public spheres, reducing access to household and urban resources, infringing upon freedom and choice, which ultimately impact on their long-term mental and emotional well-being.

'Intimate infrastructures' is a way of seeing and understanding how absent, disconnected and broken infrastructures impact upon the intimate personal and social relationships. These impacts are felt in very direct, affective and emotional ways.

6.2.1. Gender-based violence as a continuum across public and private places

- Traditional gender power relationships between men and women are perceived, accepted and even normalised. Women tend to see their roles within family and society in binary ways, and then reinforcing this binary through gender norms and cultural practices.
- Violence against women is often normalised not just in the home but also by public institutions and law enforcement personnel.
- The main reason behind this violence is a combination of alcohol and substance abuse that are prevalent among unemployed young and older men. Substance abuse cuts across the private-public divide in terms of being a driving factor behind violence against women in community spaces.
- Women see the need to educate and gender sensitise both men and women from a young age in order to address violence against themselves.
- Women noted that the only way to enhance feelings of safety was the increased presence of women in public spaces, and connected infrastructures to enable them to move safely between bus stops, markets, work and education spaces, public toilets and home.
- Crowded spaces are not inherently safe. Rather gender diversity ie. the increased presence of women in crowded areas in confluence with other factors – for example, the presence of police or security personnel, the diversity

PHOTO: DON SLATER

Image 6.3: Kochi street at night

of generations and gender of people within a certain crowd, increase feelings of safety.

- Feelings of safety are directly connected to the presence of the 'other' and with particular minority communities. Crowds of men from minority communities, manual labourers and young men are seen as particularly dangerous even if women have not directly experienced harassment from these groups.

- Feelings of safety or danger are temporal and change between times of the day or night.

- Fear of crime, discrimination from other communities and other feelings of unsafety cut across gender and age of migrant communities, particularly those of lower castes.

6.2.2. Violence against women is infrastructural violence[45]

- The failure of the state to address continuous underlying problems with the local sewage and waste collection systems in the neighbourhood represents a form of infrastructural violence.

- Broken or disconnected infrastructures can be perceived as forms of intimate violence that has gendered impacts which can be seen as Violence Against Women (VAW).

- Breakdown of drainage and sanitation infrastructures pose forms of symbolic, structural, physical and intimate gendered violence.

- Struggles with access to water, drainage and sanitation infrastructures further pose huge time-burdens to women that can expose them to intimate violence in the household.

- Women prioritised infrastructure issues as a bigger challenge over violence emanating from substance abuse or intimate partner violence, since infrastructure is seen as a 'trigger' for other forms of violence.

6.2.3. Informational violence

- Mobile phone and other forms of digital technology were perceived as pathways to intimate violence – either as providing young men with easy access to pornography as well as surveillance by family and sexual harassment of women and girls.

- The perception of mobile phones is often negative, thus inhibiting the agency of older women in using digital technologies in accessing information and knowledge about their rights as citizens and being able to act upon it.

Image 6.4: Inclusive safety apps

INFOGRAPHIC: VISUAL VOICE

- In a context where the municipality is increasingly providing information via digital platforms, this meant that women's capacity in accessing welfare and services was limited. They were denied access to online grievance redressal systems or information about their rights and procedures in cases of violence and therefore left them vulnerable to continuous abuse by intimate partners and family.

- Mobile communications can increase knowledge and awareness of violence, but this knowledge does not necessarily remove the violence.

- Even in cases where a few women were using mobile phones, their experience and fear of violence were related to threats, intimidation and sexual assault in domestic, neighbourhood or public places.

- Women expressed an ambivalence towards mobile phones and technology. On the one hand, they were seen as immoral influences on men and younger generation, on the other hand, some women recognised the potential of digital technologies as a useful tool for safety – for contacting people and services at times of emergency and also as a means of education.

7. Addressing UN Sustainable Development Goals

Our study challenges the assumptions inherent in the targets and indicators of several SDG goals and targets, particularly SDG #5 and #11 below.

SDG 5: GENDER EQUALITY calls for achieving gender equality and empowering all women and girls. This includes providing women and girls with equal access to education, health care, decent work, and representation in political and economic decision-making processes to fuel sustainable economies and benefit societies and humanity at large.

SDG Target	SDG Indicator	Related Findings and Recommendations
5.1 End all forms of discrimination against all women and girls everywhere	**5.1.1** Whether or not legal frameworks are in place to promote, enforce and monitor equality and non-discrimination on the basis of sex.	Legal frameworks are not adequate in themselves. They need to be supported by effective social infrastructures. Discrimination continues to exist because women do not know how to access knowledge and information about their rights within a culture of victim blaming across public institutions. • Increase women's access to information and knowledge about legal frameworks and how to claim justice under these. • Improve municipal response times in addressing infrastructural repair and maintenance. • Provide gender sensitive training to law enforcement officials to support women under these legal frameworks.
5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation	**5.2.1** and **5.2.2** Proportion of women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner and by persons other than an intimate partner	Measuring incidences of violence as an indicator of gender development is misleading. Violence is often normalised, and the challenges women face in reporting VAW are often insurmountable. • Address the huge data gap through inclusive and participatory methods in understanding forms and temporalities of infrastructural violence and their direct and indirect impacts on women's lives. • Collect in-depth data on connections between public and intimate forms of violence perpetuated by disconnected infrastructures that go beyond measuring incidences to use varied methods and tools including participatory mapping, semi-structured interviews, focus groups and personal accounts of victims.
5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies.	**5.4.1** Proportion of time spent on unpaid domestic and care work, by sex, age and location	Infrastructural failures add to domestic burdens of women which increased unpaid and care work in unblocking drains, removing rubbish and finding alternative access to water and sanitation. • Collect more in-depth data on time burdens of women related to increased care work due to infrastructural failures and disconnected infrastructures.
5B Enhance the use of enabling technology, information and communications technology, to promote the empowerment of women	**5.B.1** Proportion of individuals who own a mobile telephone, by sex	Mere possession of mobile phone does not indicate empowerment. There are huge challenges of digital capacity, technology and infrastructure in enabling access to knowledge and information. Most digital innovations are also directed towards smartphones that are unaffordable. • Shift from measuring 'ownership' to understanding the varied forms of 'possession' of mobile phones by women. • Innovations in coverage, speed and locationality of network infrastructures should be directed towards basic feature phones used by urban poor women. • Access to enabling technology is more accurately measured by using qualitive indicators such as – kinds of mobile devices women in low-income communities can afford and own, knowledge of how to use mobile phones; access to mobile internet; digital capacity and literacy, as well as household power dynamics in owning and using mobile phones. • Initiate capacity-building among women in accessing the internet for information and knowledge and to claim gender and infrastructural justice.

SDG 11: SUSTAINABLE CITIES AND COMMUNITIES calls for cities and urban communities that are safe and inclusive for all, notably through design, planning and implementation processes that ensure safe, affordable, sustainable and universally accessible infrastructures and public spaces, particularly for traditionally marginalised groups such as women in low-income neighbourhoods.

SDG Target	SDG Indicator	Related Findings and Recommendations
11.1 Ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.	**11.1.1** Proportion of urban population living in slums, informal settlements or inadequate housing	Low-income neighbourhoods, even those that are not classified as slums are not adequately connected to urban infrastructures of water, sanitation, drainage, transport and are therefore vulnerable. • Provide basic infrastructures of water, drainage, sanitation and public transport to all low-income neighbourhoods • Policymakers and planners need to go beyond mere access to basic infrastructures to fully address the connectedness of physical, digital and social infrastructural systems including their regular repair and maintenance.
11.2 Provide access to safe, affordable, accessible and sustainable transport systems for all.	**11.2.1** Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities	Women experience violence at every juncture of their journeys from the home to the city. Safe access to transport requires adequate supporting physical, digital and social infrastructures at the household and neighbourhood levels. • Understanding safety needs to go beyond notions of access to addressing daily experiences of violence while using public transportation. • More robust data is needed on temporal dimensions of access and use of public transport. This is critical in understanding when women are excluded from public transport and why.
11.3 Enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	**11.3.2** Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically.	Kerala has a legacy of participatory and gender-sensitive approaches to policy and implementation. However, this has not achieved the desired outcomes mainly because of entrenched gender ideologies across public institutions. • Inclusive forms of gender participation need to be mainstreamed in all stages of urban development, from design and planning, to implementation, repair, maintenance and monitoring of infrastructures. • Women from community and neighbourhood level should be enabled to participate within all processes of urban development through consultation, mapping, skills training and digital capacity building.
11.7 Provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities	**11.7.1** Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities **11.7.2** Proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months.	Universal access to public spaces may increase violence against women since public spaces are limited in low-income neighbourhoods, and the few available public spaces often have high male presence. • Conduct 'Safety Audits' of public spaces to understand who is using these spaces and most importantly, when are they used, in order to provide gendered access. • Use more qualitative and participatory methods of understanding the temporal nature of violence against women that goes beyond measuring incidences of violence. • Design and dedicate safe public spaces for women that restricts male presence for significant periods of time during the day and evening.

Fort Kochi in the evening.

PHOTO: ROHIT MADAN

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