Urban Pathways

INDIA
POLICY ENVIRONMENT PAPER

BERLIN, 2018

Wuppertal Institut

UN⊕HABITAT
FOR A BETTER URBAN FUTURE

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Federal Ministry
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Urban Pathways Replication Cities

ABSTRACT

In the context of the low-carbon Urban Pathways initiative in India, this paper analyses the administrative, legislative and political environment which influences policymaking at three tiers of the government: National, State (Kerala) and the pilot city (Kochi). Based on the NDC's objective of maximising co-benefits to achieve India's climate-related targets, the paper assesses how multi-level governance could build synergies between sustainable development programmes and policies within three sectors – energy, transport and resources. The paper also identifies relevant veto-players with decision-making capacities within respective public organisations.

Urban
Pathways

COUNTRY OVERVIEW

India's urban system with 7933 cities and towns of vastly diverse sizes is the second largest globally (India Habitat III National Report, 2016). India is also the world's second most populous country with 1.29 billion inhabitants and an urban population of approximately 430 million. Further, India is projected to rapidly urbanise from presently 33% to 40% by 2030 and add another 416 million urban dwellers by 2050 (UN, 2017). This process of urbanisation also remains a crucial driver for the India's economic development, contributing to over 60% of the country's GDP. As a result, between 2004 and 2012, the share of urban poor declined significantly from 25.7% to 13.7% (Government of India, 2016).

India is the world's third largest GHG emitter after the US and China and contributes 4.4% to the global GHG share. From 1990 to 2014, India's GHG total emissions were 2279 $MtCO_2$ with per capita emission of 1.76 tCO_2. For the same duration, sector-wise contributions relevant for the Urban Pathways initiative were: Energy (Electricity) – 1082 $MtCO_2$ (47.4%), Transport – 232 $MtCO_2$ (10.2%), and Waste – 61 $MtCO_{2e}$ (2.7%) (CAIT-WRI, n.d.).

Although a comprehensive GHG inventory for the city of Kochi does not exist, a cumulative study of India's seven largest cities offers the following sector-wise split of total GHG emissions – commercial energy (15-24%), transport (30%), domestic energy (30-39%), industries (10-20%) and waste management & treatment (3-9%) Ramachandra et al., 2015.

SUMMARY OF INDIA´S NATIONALLY DETERMINED CONTRIBUTION (NDC)

India's Nationally Determined Contributions (NDC) define several key aspects regarding the country's diplomatic as well as domestic positions on climate mitigation and adaptation. Instead of establishing a limit on emissions or specifying a timeline for peak-emission, India chose to adopt a 'middle of the road' climate policy approach (Dubash & Joseph, 2016). Following this path, the NDC document presents a three-pronged policy of – (a) Creating a favorable environment for a rapid increase in renewable energy, (b) Moving towards a low-carbon sustainable development pathway, and (c) Adapting to the impacts of climate change. The conclusion of India's official pledge states that its development plans will continue to simultaneously lay a balanced emphasis on both economic development and environment (Government of India, 2015, p.34). Towards this, the NDC define several key aspects regarding the country's diplomatic as well as domestic positions on climate mitigation and adaptation.

The NDC document considers four major objectives for 2030. These are as follows –

• Reducing the emissions intensity of India's GDP by 33% to 35% compared to 2005 levels.

• Increasing the share of 'non-fossil fuels' within the cumulative installed power capacity to 40% through technology transfer and low cost international finance.

• Creating a carbon sink of 2.5 to 3 billion tonnes of CO_2 equivalent through forest and tree cover.

• Set up a National Adaptation Fund with an initial allocation of 3,500 Rupees (55.6 million USD)

• Increasing renewable power capacity from 36 GW in 2015 to 175 GW in 2020 (60 GW wind and 100 GW solar).

The last target is particularly significant since it established India's ambitious aim of aggressively promoting the renewable energy sector and attract international investments (Anand, 2017). However, despite the NDC targets, the future trajectory of India's energy consumption continues to be both projected and planned to be reliant on fossil-fuels. Coal power presently meets 60% of total energy demand of the country, particularly for the industrial sector, which accounts for over 50% of total usage. The number of coal-fired power plants in India is estimated to grow 2.5 times by 2040, which would make India the world's second largest emitter (Figure 1) (International Energy Agency, 2015). Furthermore, India's Draft Energy Policy specifies the intent of doubling coal capacity by 2040 (Government of India, 2017). Against this background, it is relevant to examine the NDC's emphasis on promoting sustainability in sectors other than power generation and assessing its impact on climate-related goals.

The NDC explicitly mentions that the country's current development paradigm reiterates the focus on sustainable growth and aims to harness the co-benefits of addressing climate change along with promoting economic growth (Government of India, 2015, p.7). With this intention of mainstreaming climate change into development, the document elaborates multiple sectors and their relevance to mitigation and adaptation. Amongst focus areas such as agriculture, water, health, forestry, protection of coastal and mountainous regions, the NDC also prominently emphasises interventions in urban development, transport and waste management – also the focus areas for Urban Pathways. The sectoral initiatives at national and sub-national scales highlighted by the NDC are discussed in subsequent sections of this paper.
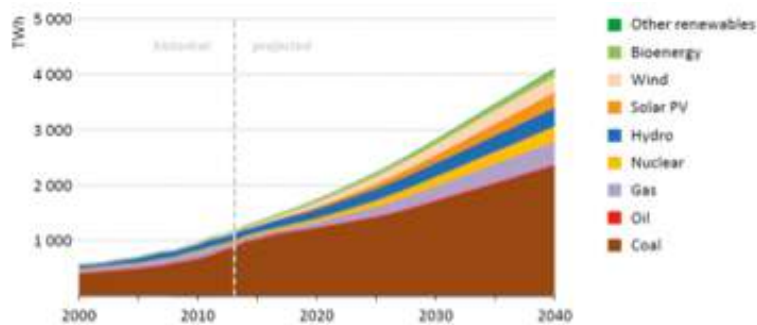

Figure 1: Power generation scenario in India shows a continued reliance on coal in the energy mix (Source: International Energy Agency, 2015)

POLICIES AND STAKEHOLDER MAPPING

Governance and Institutions

Considered as the world's largest democracy, India follows a tripartite governance model of 'cooperative federalism', whereby administrative responsibilities and environmental policies are divided between the Centre (national), State and City governments. However, the main responsibility of climate policy and multilateral negotiations rests with the Central Government. Although, it is under the purview of the individual states to implement climate policy, India is still a relatively centralised federal country and the states still rely tremendously on the Central Government, both politically and financially (Jorgensen & Wagner, 2016). Moreover, in the absence of publicly-elected mayors in cities, policymaking and funding for local governments is largely controlled by the states, often by establishing independent Special Purpose Vehicles (SPVs) (Dhanuraj & Mathew, 2017). Due to such fiscal and administrative interdependence within multiple governmental levels, it becomes pertinent to identify – (a) Key 'veto-players' or constitutionally-empowered decisionmakers within administrative structures, and (b) Measures through which relevant policies are transmitted down the hierarchy. The following sections outline these aspects for the three primary governmental stakeholders.

National government

With respect to the three Urban Pathways themes (energy, transport and waste), the following national ministries are engaged in drafting and legislating relevant policies –

1. <u>Ministry of Housing and Urban Affairs:</u> It is the nodal ministry responsible for all urban develop ment initiatives, including formulation of planning guidelines, municipal capacity building and coordinating national urban renewal programmes such as Smart Cities Mission and Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Mission. Additionally, this ministry is also in-charge of monitoring and supervising the flagship Swachh Bharat (Clean India) Mission focused on urban waste management.

2. <u>Ministry of Power:</u> It is responsible for establishing electricity tariffs, regulating State power distribution companies as well as promoting electric mobility through its National Mission on Electric Mobility. It also regulates development of charging infrastructure for electric vehicles.

3. <u>Ministry of New & Renewable Energy:</u> It is responsible for the promotion of renewable energy (solar, wind, hydropower, biomass) through subsidies and creating an enabling environment for entrepreneurial ventures via a National Solar Mission. Its flagship Solar Cities Development programme and promotes renewables in 60 cities/towns to reduce conventional power usage.

4. <u>Ministry of Environment, Forests and Climate Change</u>: It is responsible for formulating environmental policies, approval of permits for large-scale infrastructure projects, preparation of the National Action Plan for Climate Change (2008) and the NDC (2015).

5. <u>Ministry of Roads Transport & Highways:</u> It is responsible for construction and upgradation of na-

tional road infrastructure to facilitate urban and rural transport, Draft Road Safety Policy (2016) and the National Urban Transport Policy (2014).

6.   NITI (National Institute for Transforming India) Aayog: This is a federal think-tank which develops economic/development policy and coordinates UN's Sustainable Development Goals (SDGs)-related initiatives. It is chaired by the Prime Minster while the Governing Council consists of Chief Ministers from all 29 States Governments.

Governance/Administrative structure:
The typical hierarchy of an Indian national ministry is illustrated in Figure 2. It is split into two horizontal sections between which policy formulation and its monitoring is divided. Within this structure, the Additional Secretary is the most important nodal bureaucrat who coordinates both these functions.

Political landscape:
The Bharatiya Janata Party (BJP) has been in power at the National Government from 2014 and will continue to govern until next elections in 2019. As of April 2018, the party also controlled a ruling majority in 15 out of 29 State Governments (excluding Kerala). It has emerged as India's largest political party in terms of parliamentary and State Assembly representation. The nationalistic BJP headed by Prime Minister Narendra Modi projects its agenda being strongly driven by both public participation and economic development. Accordingly, while promoting industrialisation and infrastructural growth, the party's Manifesto also includes climate change mitigation, creating '100 new cities' and a transition to cleaner fuels (BJP, 2014). Moreover, the current Central Government has been a vocal proponent of low-carbon urban development as evidenced by its support to the UN's New Urban Agenda, the SDGs, ratification of the Paris Agreement and a range of new programmes launched since 2014.
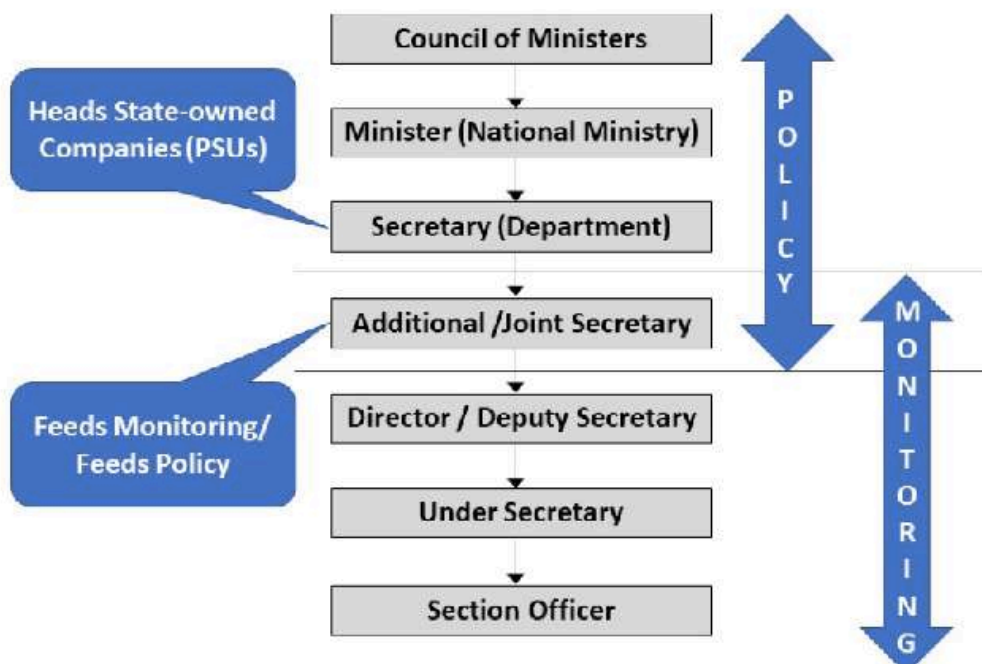

Figure 2: Administrative structure indicating veto players at the national level (Source: Agarwal O.P., 2017)

STATE GOVERNMENT

Governance/Administrative structure:

With a Chief Minister as the head, each of the Indian State Government ministries is led by a Cabinet Minister. The ministry's administrative staff comprises of a Principle Secretary, Additional Secretary, Joint secretary and a Commissioner. These ministries also further consist of line departments, regulatory committees and executive divisions. The key departments responsible for driving a planning and implementing sustainable development projects are described below –

1. Transport Department: This department regulates the Kerala State Road Transport Company (KSRTC) with operates bus-services in the city of Kochi. It is also responsible for land-acquisition for Kochi's Metrorail project and registering the city's private vehicles.

2. Public Works Department: It is responsible for tendering, construction and maintenance of the state's road transport corridors. Urban highways and major intersections in metropolitan Kochi also come under its authority.

3. Power Department: It is responsible for ensuring the electricity provision, regulation of tariff, power generation, conducting energy audits as well as setting up new energy infrastructure.

4. Three environmental agencies: This portfolio is divided between – (a) Department of Environment, (b) Directorate of Environment headed by the Chief Minister, and (c) Department for Environment and Climate change. The third department is also the nodal agency for coordinating all climate change-related initiatives at the State level. It also prepared the State Action Plan for Climate Change (Kerala SAPCC, 2014).

Inform Initiate Inspire Implement

KERALA

Political landscape

Kerala's state-level politics is dominated by two co-alition fronts – the Left Democratic Front (LDF) led by the Marxist Communist Party of India (CPIM) and the United Democratic Front (UDF) led by the Indian National Congress (INC). Neither coalitions have gained consecutive terms (each one being 5 years) in power. The present LDF State Government was elected in 2016 with P. Vijayan as the Chief Minister. Since Indian states depend on the Central Government for facilitating large-scale infrastructure funding, the political relationship between the National and State ruling parties significantly impacts projects at regional and local scales. With the nationalist BJP party governing at the Centre, their relationship with Kerala's communist State Government has been adversarial in nature. This is evidenced by conflicting claims for the ownership of successful local initiatives (for e.g., Kochi Metro) or the frequently-reported violent clashes amongst opposing party-workers (Pai, 2017).

The CPIM's Election Manifesto articulates the current State Government's stance with respect to low-carbon development. It includes 600 actionable agenda items, 17 of which focus on pertinent topics such as – urban development, urban transport, renewable energy and urban waste management (Left Democratic Front, 2016). Moreover, CPIM's' press releases regularly comment on international climate negotiations which have not only indicated CPIM's support to the Paris Agreement but also its inclination to hold the Central Government accountable for their climate policy (CPIM, 2016).

LOCAL GOVERNMENT

Governance/Administrative structure:

Like all other Indian states, Kerala follows a 'Commissionerate' system of municipal governance which determines the division of authority between the elected representatives and the bureaucracy. Accordingly, the administrative head of the Kochi Municipal Corporation (KMC) is the Municipal Commissioner (alternately termed as the 'Secretary') appointed by the State Government. This officer is responsible for implementing all metropolitan initiatives while also heading the municipality's Executive staff. In parallel, elected representatives from each of the 'wards', the small unit of urban governance, form a Municipal Council chaired by the Mayor. The Councillors also form a Standing Committee which approves annual municipal budgets and financing for development projects.

To address a low-carbon agenda for the three Urban Pathways sectors, the following Kerala Municipal Corporation (KMC) departments and parastatal agencies are relevant –

1. Engineering Department: While KMC does not have a specialised Transportation Department, this department is responsible for the construction and maintenance of roads along with other civic infrastructure such as sewage systems, storm-water drains, traffic signals, signage, treatment plants etc. It is headed by the Superintendent Engineer (SE).

2. Health Department: It is responsible for construction and maintenance of sanitation facilities and Solid Waste Management along with other public health-related duties. It is headed by the Corporation Health Officer (CHO).

3. Town Planning Department: It is responsible for enforcing the Urban planning regulations, awarding building permissions and facilitating land-acquisition for urban expansion. It is headed by the Town Planning Officer (TPO). This department also plays a major role in integrating transit infrastructure with its surrounding urban development.

4. Greater Cochin Development Authority (GCDA): It is responsible for regional planning and implementing special infrastructure projects which require State Government assistance. Jurisdictional area comprises of Kochi city, 6 surrounding municipalities and 25 'panchayats' (rural wards). It is headed by the State Minister for Local Self Governance and a Chairperson.

5. Kochi Metro Rail Limited (KMRL): This is a public company set up as a Special Project Vehicle (SPV) and jointly owned by the State and Central Governments. It is in-charge of constructing and operating Kochi's Metrorail system. It is governed by a Board of Directors comprising of senior bureaucrats and State Government Ministers.

6. Urban Metropolitan Transport Authority (UMTA): Legislated in January 2018, this agency is responsible for coordinating and disbursing Central Government's infrastructure funding across all Urban Transport line-agencies in the metropolitan region. It is also expected to formulate Comprehensive Mobility Plans (CMP) for respective cities.

Urban Pathways

State-wide civic elections are held every five years in Indian cities whereby Councillors from individual urban constituencies (wards) are publicly elected. These elections culminate in the selection of the Mayor and a Deputy Mayor from among elected Councillors of the majority party. In Kerala, the two primary political coalitions at the state level – the LDF and the UDF, also contest civic elections and have alternated being in power in Kochi. In November 2015, the Congress-led UDF coalition registered victory after winning 38 seats out of 72 Wards and Mrs. Soumini Jain was subsequently selected as Kochi's present Mayor. The socialist Congress party's publicly-declared 'achievements' lay emphasis on developing transport infrastructure, industrial corridors and coastal management (KPCC, n.d.). Notable projects initiated by the UDF include both the Kochi Smart City project (2015) and the Kochi Metro (2012), which have been important milestones for the city's urban planning strategy.

ENERGY

Electricity consumption (commercial, industrial and household) makes up the largest share of GHG emissions in India's seven largest cities at 55-83% (Ramchandra et al., 2015). The objectives of prominent national initiatives in the (urban) energy sector could be classified into three categories – (a) Monitor and increase the energy-efficiency of residential buildings, while promoting greater uptake of efficient lighting systems such as Compact Fluorescent Lamps (CFL)

(b) Reduce fossil fuel share of the urban energy mix by increasing the uptake of renewable energy through feed-in tariffs and solar photovoltaic (PV) subsidies, and (c) Increase the modal share of electric mobility by subsidising electric-vehicles (EV), expanding government-owned EV fleets and development of charging infrastructure in cities (India Habitat III National Report, 2014). Figure 3 illustrates India's

current and projected renewable capacity. After the enactment of the Energy Conservation Act of 2001, two major initiatives aimed at increasing the building sector's energy efficiency were implemented. These include – (a) A residential Green Rating for Integrated Habitat Assessment (GRIHA) system based on the Bureau of Energy Efficiency's (BEE) Star Rating Scheme, and (b) Energy Conservation Building Code (ECBC) to set energy standards for new commercial buildings. Additionally, the Ministry of New and Renewable Energy (MNRE) is also currently implementing its flagship 'Solar Cities' programme (2008) in 60 cities and towns in India. This initiative aims at a 10% reduction in fossil-fuel-based power consumption in 5 years. It consolidates a range of technological and financial incentives for subnational governments to promote renewable energy (IRENA, 2017).
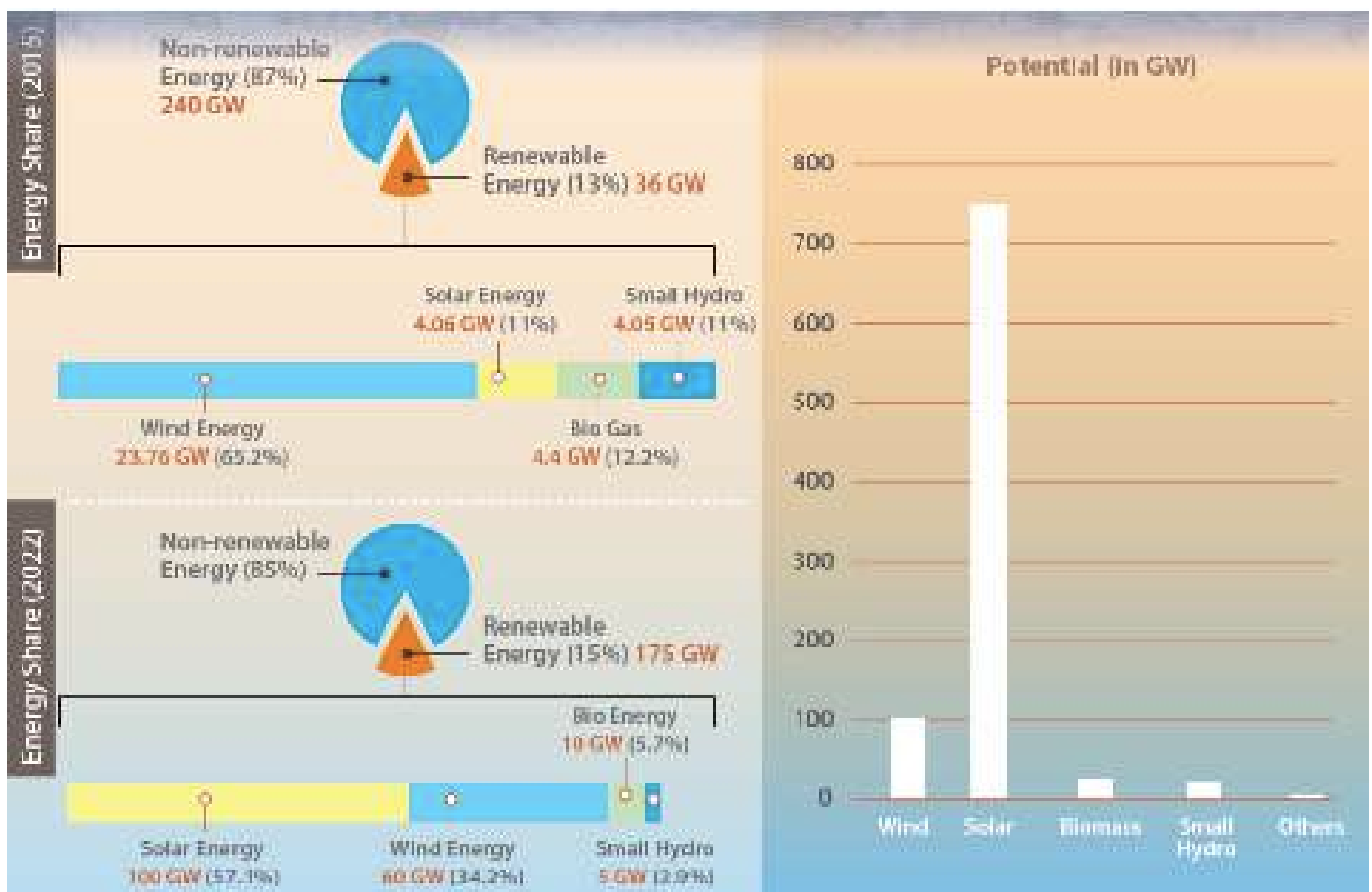

Figure 3: Current and estimated installed capacity of renewable energy in India
(Source: India Habitat III National Report)

TRANSPORT

India's rapid urbanisation between 2005 and 2012 converged with the growth of two-wheeler and car sales by 12% annually. As a result, mode-shares of private vehicles are projected to rise from 24% in 2007 to 46% by 2030. Concurrently, it is also estimated that mode-shares of public and non-motorised transport (NMT) would fall from 46% to 26% in a business-as-usual scenario (Dubash et al., 2013). Being the second most energy-intensive sector after power, transport plays a crucial role in realising India's mitigation targets. From 1994 to 2000, the sector was responsible for about 23% of India's GHG emissions (Government of India, 2014). These factors highly necessitate a transition from personal vehicle-based mobility in order to achieve low-carbon urban growth.

The National Urban Transport Policy (2014) marked a paradigm shift through its objective of 'moving people and not cars' and prescribing an 'Avoid (cars), Shift (to sustainable modes), Improve (infrastructure)' framework to guide cities in mobility planning. This has coincided with substantial investments in and launch of public transport projects. These comprise of Bus Rapid Transit (BRT) in 7 cities, Metrorail systems in 8 cities and Public Bike Sharing (PBS) in 5 cities (Bhatt, 2017). To ensure the efficiency of these newly-introduced systems, the Central Government has formulated two key policies, namely, (a) National Metro Policy (2017), and (b) National Transit-Oriented Development (TOD) Policy (2017). These are aimed at creating dense, walkable and mixed land-use districts around transit stations to induce modal shifts and better walkability.

RESOURCES

India generates 150,000 tonnes of Municipal Solid Waste (MSW) per day (Singh, 2018). This quantity is estimated to increase to 377,000 tonnes per day by 2025 (World Bank, 2012). The amount of sewage generated is equally significant at 38 billion litres per year (Ghosh, 2016). Solid waste and waste water together account for between 3-9% of GHG emissions for Indian cities (Ramchandra et al., 2015). Unlike transport and energy, waste management was one of 18 functions devolved from the National and State Government mandates following the 74th Constitutional Amendment in 1992. Accordingly, the responsibility of Solid Waste Management is solely the prerogative of municipalities and local NGOs. However, as was expected, this decentralisation has not resulted in improved service delivery. Presently, 30-40% of total urban waste remains uncollected, while less than 10% is segregated or scientifically treated (Mani & Singh, 2016).

Until 2000, there existed no national policy to address the resources sector in India. This changed when the Ministry of Environment drafted Solid Waste Management (SWM) Rules in 2000, which were then revised in 2015. Concurrently, the Ministry of Urban Development (MOUD) also formulated a Draft Municipal SWM Manual (2015) to guide municipal agencies in implementing SWM systems. The Central Government's Swachh Bharat (Clean India) Mission (2014) was an important landmark in strategically addressing SWM with a massive investment of 10.6 billion USD over 5 years. Prominent SWM objectives currently being pursued under this programme in urban areas consist of – 100% collection, segregation and recycling of MSW, end open defecation, construction of toilets, capacity building, public health awareness campaigns and encourage private investments in constructing sanitation facilities (SBM Revised Guidelines, 2017).

KOCHI

The Central Government launched its flagship Smart Cities Mission in 2015. This competitive programme offered earmarked funding to 100 Municipal Corporations (with over 1 million population) to implement their strategic urban development proposals. Kochi was selected as one of the top ten cities and was approved to receive a grant of 1,000 Crores Rupees (approx. 147 million USD) over 5 years. While the city's 'Smart City' projects focus on 'area-based development' for Fort Kochi and Mattancherry neighbourhoods through public space improvement and heritage conservation, the proposal also includes multiple interventions which overlap with Urban Pathways themes. These are elaborated as follows –

(a) Energy: Energy-efficient street-lighting and smart electricity metering,

(b) Transport: Seamless multimodal connectivity to Metro and other mobility hubs via 4 km of waterways, 110 km of non-motorised transport (NMT) friendly streets and EV services; intelligent traffic signalling; Smart-cards for transit-related payments,

(c) Resource: 100% sewerage disposal, decentralised waste water treatment systems and access to toilets for 100,000 citizens (Kochi Municipal Corporation, p.27, 2015). At the same time, several metropolitan agencies launched their efforts in alignment with the State Government's 'Waste-free Kerala' initiative (The Hindu, 2017). These consist of constructing decentralised waste-to-energy plants and setting up door-to-door collection services for biodegradable waste.

The Kochi Metro, inaugurated in June 2017, has an average daily ridership of 36,500 and currently expanding its 19 km network (Gopal, 2018). However, the project is also faced with challenges of ensuring modal shifts, last-mile connectivity and Transit Oriented Development (TOD) around stations. While the municipality and KMRL aim at addressing these issues through 'Smart City' interventions, many of the best practices could be mainstreamed during periodic reconstruction of existing road infrastructure. In Kochi, this process is being led by non-profit organisations and citizens' groups in collaboration with municipal agencies and the Traffic Police. Examples of such efforts include – (a) 'Raahgiri (Car-free Day)' events aimed at promoting NMT usage, better walkability, reducing air-pollution and enhancing road safety, and (b) TOD-focussed workshops to generate solutions to improve commuter accessibility, land-value capture and multimodal transfers (Dhindaw et al., 2017). Efforts to promote electric mobility have also been initiated in Kerala by the means of – (a) Preparation of a Draft EV Policy by the State Government (New Indian Express, 2018), and (b) Kerala State Electricity Board (KSEB)'s procurement of EVs as well as planning of charging infrastructure for three cities, including Kochi (Times of India, 2017).

Kochi is also an important case regarding the implementation for India's National Solar Mission. This programme aims at a country-wide installed solar capacity of 100GW by 2022. Towards this, the city's international airport is reported to become the world's first completely solar-powered airport with 46,000 PV panels spread across 45 acres (Lavars, 2015). The project is an exemplary public-private partnership (PPP) initiative which has generated substantial interest in clean energy transition for the region (India Habitat III National Report, 2014). The Kochi Municipal Corporation is also currently implementing its Solar City Development programme in collaboration with ICLEI. Kochi is the first city in the State of Kerala to be a part of this programme supported by the National Ministry of New and Renewable Energy (MNRE). The initiative aims at reducing 155 million units of conventional power usage in 5 years and increasing renewable energy consumption. Projects under the scheme consist installation of PV-systems and solar water-heaters (KMC & ICLEI, 2014).

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