10

ENABLING TRANSFORMATIONS TO SUSTAINABILITY

Rethinking urban water management in Gurgaon, India

Dinesh Abrol and Pravin Kushwaha

Introduction

Gurgaon, a rapidly urbanising south-western area of the National Capital Region (NCR), is one among the few cities developed by real estate developers in India. The city was originally planned for a population of 1 million. As per the latest urban planning document (Master Plan), this urban settlement, referred to as the Gurgaon-Manesar Urban Complex (GMUC), is expected to have a population of 4.25 million by the year 2031 (Dhillon, 2012, p. 4). From being a "little more than a village" having barren land "with no local government, public utilities, or transportation" in the 1970s, Gurgaon has, since the 1990s, become one of the "fastest growing urban centres in India" (Rajagopalan & Tabarrok, 2014).The immediate trigger behind such a rapid urban transformation was the increased demand for space from transnational corporations for the establishment of their back offices and call centres and the development of housing projects for the benefit of middle-class professionals.

Over the last couple of decades, the city of Gurgaon (recently renamed Gurugram) saw a vast swath of open agricultural lands being converted to hard paved surfaces, either asphalt roads or residential or commercial buildings. Gurgaon is a preferred investment destination due to its proximity to the Indira Gandhi International Airport, availability of newly built office spaces in the city, the social ecosystem built around shopping malls and the places like DLF Cyber Hub (one of the largest hubs of IT activity in the National Capital Region), the Rapid Metro Rail connecting the key locations such as the Cyber City, Udyog Vihar and DLF Phase III where most offices are located. Over the last two and a half decades the city of Gurgaon has seen an influx of working-class and middle-class migrants, growing in numbers by several times.

Increasing urbanisation and influx of migrants (both middle-class and working-class) have been squeezing the distant as well as local sources of water, turning Gurgaon into a water-scarce landscape. The Central Ground Water Board (CGWB) has already declared Gurgaon as a "dark zone" (where ground water depletion exceeds the rate of recharging) (Arora, 2019). The rate of the depletion of the ground water table is more than two metres per year (Hindustan Times, 2017). Illegal extraction of ground water is quite prevalent for construction activities despite its legal restrictions (Singh, 2012). Despite the lack of municipal city planning, the growth story of the city has earned it the name of "millennium city" of India, under the influence of 'market driven urbanization'.

Critics have been constantly raising concerns of planning failures, especially the lack of trunk infrastructures and public services – two major challenges that the rapid urban transformation of Gurgaon is unable to deal with (Goldstein, 2016). Private developers have been allowed to acquire agricultural land and convert it into real estate properties for non-agricultural use. Unique to this
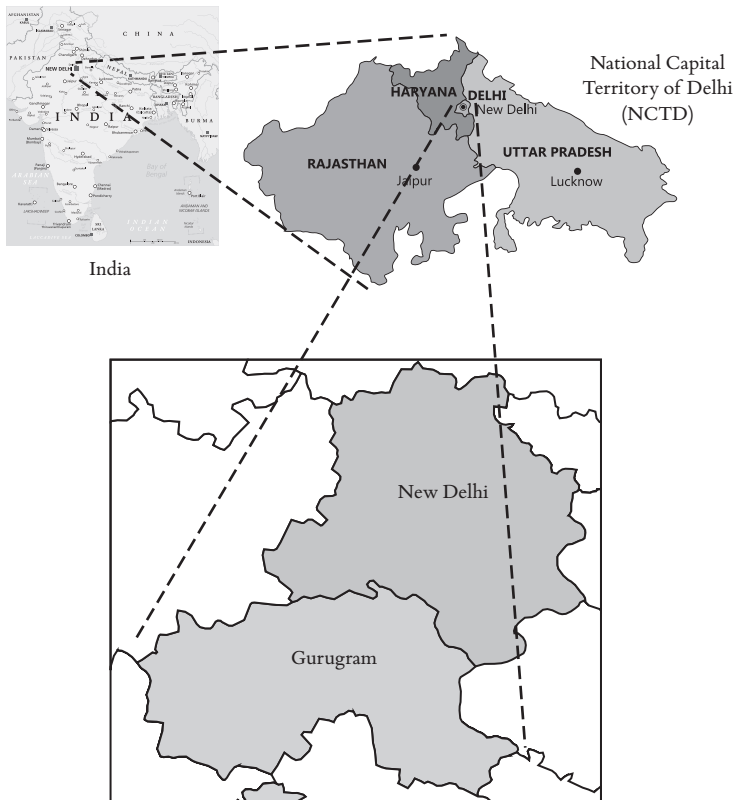

FIGURE 10.1   Map showing location of Gurugram in India and the National Capital Region.

process was the withdrawal of the state from making provisions for "essential public goods and urban planning" and the transfer of this responsibility to the private sector (Chatterji, 2013; Rajagopalan & Tabarrok, 2014). Even with three master plans in just seven years, the city of Gurgaon continued to experience challenges with basic amenities like water, power, roads, regulated traffic and adequate policing about which the residents from all classes have a lot of complaints. Residents' welfare associations (RWAs) and middle-class citizen platforms are trying to deal with some of these problems at their own local level in a piecemeal fashion. The working people have their focus on the immediate livelihood problems. Their challenge of social mobilisation for the formation of socially and ecologically just pathways to urban planning and governance has also not been receiving adequate attention from the political structures and the institutions devoted to the advancement of research and professional education located within the National Capital Region (NCR). This chapter describes and explains the structures and processes which the South Asia hub engaged to develop the transformative spaces with the aim to intervene in the prevailing situation in the domain of urban water management.

Urban water management in Gurgaon: problem space and the challenge of transformation

Planners in Gurgaon have been essentially relying upon the supply of water from sources that are located outside the city (at a considerable distance) to meet the growing demand of water for the urban settlements (Centre for Science and Environment, 2012). Techno-managerial solutions have been popular in this approach (HT Correspondent, 2019; Mishra et al., 2018). Water management, urban planning and governance have mostly addressed the concerns of the dominant classes, i.e. the middle classes and the wealthy. The concerns of the poor and marginalised and their representation in the agenda of the government have been rarely prioritised by the emergent citizens' platforms in Gurgaon. This gap has been evident in the way these platforms tend to approach citizens' urban engagement and make interventions (Roychowdhury & Puri, 2017) (Arora S., 2019). Examples are Gurgaon First, Gurgaon Citizens Council (GCC) and "iamgurgaon".

Water conservation and wastewater management have come to be secondary considerations in day-to-day water management practices of the local administration and in the policy framework of the state government. Natural recharging/replenishment of ground water by protecting the water bodies as well as by promoting rainwater-harvesting systems has a symbolic presence. An efficient system of recycling of wastewater for the entire urban area was absent except for the presence of effluent treatment plants and sewage treatment plants at selected locations. These systems covered only a limited catchment area due to the lack of sufficient collection and transportation infrastructure for the sewage in the city. Within the dominant pathway of water resource

management, water has been treated as a commodity, without sufficient consideration to sustainability of sources of supply. This has ultimately led to unsustainable habitations.

The distribution of water across the city is also a challenging task. Usually, government agencies recognise only certain areas in the city as part of the formal water distribution system. These areas are often identified as industrial areas, planned residential areas and commercial areas. The vast majority of unplanned areas where a large percentage of the urban population lives remain unrecognised by the public water distribution system. Most of these unrecognised urban spaces rely upon informal sources of water supply that are often inadequate.

Water supply, distribution and use are a conflicted terrain, with demand coming from different agricultural, industrial, commercial and residential groups. Water has emerged as a business opportunity leading to a growing mismatch between supply and demand, deepening gender, class, caste and community-based inequalities.

BOX 10.1 THE PROBLEMS AND CHALLENGES OF URBAN WATER MANAGEMENT IN GURGAON

The vulnerability of the urban water management system in Gurgaon is understood to be driven by the systemic problems of overexploitation of sources of surface and ground water, growing inequity in distribution of water, rising use of water for non-priority priority purposes and decreasing reliability of the water supply system. Planning, governance and practices under perusal for management of water do not recognise co-evolving inequities (rural-urban, marginalisation of poor people) and the growing vulnerability of water management system.

Mainstream pathways of water management are driven by unsustainable practices of consumption by the middle classes. At the same time, the inability to tackle water and wastewater together is apparent. Lack of protection of local water bodies, low priority given to reuse and recycling, recharging/replenishment, eco-friendly technology of harvesting and treatment of water and wastewater management are a systemic outcome of the institutional lock-in to mainstream pathways.

The issues of lack of representation, voice and power of the poor and marginalised people in the sphere of water management are also a systemic outcome of mainstream pathways of urban development. Therein exists the challenge of changing the policy paradigm.

There is lack of coordination and cooperation among the protagonists of change due to limited dialogue and experimentation in respect of how to tackle the challenge of sustainable water management.

At the time this project was initiated in 2015, there was broad but shallow recognition of these problems across different publics, without a shared understanding among different groups. A comprehensive and integrated perspective, with reference to a sustainable water management system was absent from the research landscape too. There was also a realisation that the National Capital Region (NCR) was still going ahead with the development of new cities without adequate planning interventions concerning urban sustainability, with alternatives mostly failing to find their place in the urban planning and water governance discourse. In most cases, governing agencies had chosen to underplay the challenges posed by these problems.

BOX 10.2 INSTITUTIONAL CONTEXT OF THE RESEARCH AND ENGAGEMENT

The new pathways for real-world experimentation are in the making. Two important institutions, namely, the Gurgaon Water Forum and the Transdisciplinary Research Cluster on Sustainability Studies (TRCSS), JNU (Jawaharlal Nehru University) have emerged as part of the T-Lab activities, and these institutions are on the way to stabilising themselves through the T-Lab process.

The Gurgaon Water Forum (GWF) is a multi-stakeholder platform of mobilised public groups collaborating on the issues of sustainable urban water management (SUWM) and city development.

The TRCSS, JNU is also gaining ground with the closer involvement of the students and faculty in the field. There is a network of S&T institutions and civil society organisations (CSOs) collaborating with the faculty and students of TRCSS, JNU. Within JNU the TRCSS is now more stable and acceptable to faculty and students.

The GWF and the TRCSS are engaged in the implementation of SUWM solutions. The real-world experimentation has started with the support of stakeholders and government agencies. The GWF is now a well-accepted entity collaborating with public administration.

Community mobilisation has been catalysed using citizen science, citizen dialogue and advocacy, workers' group enterprise and urban studios/labs.

Citizen dialogue and advocacy through community radio has facilitated community mobilisation across various low-income residential areas in the city.

Currently, the GWF is working on the ground in collaboration with activists from close to seven organisations who represent the interests of the middle and working classes. The GWF has brought together the mobilised publics to actively contribute to the formation of Social Carriers of Innovation for Transformations (SCIT), described further below.

Public participation in decision making has been absent, with existing governing mechanisms functioning in a top–down manner where the scope for integrating various kinds of stakeholders are limited. More significantly, despite formulating two official NCR Plans in the past, the last one notified on September 17, 2005 with the perspective year 2021 (National Capital Regional Planning Board, 2020), their adequate implementation is a fundamental challenge for the National Capital Region Planning Board (NCRPB) because of the lack of support and coordination among participating governments of different states.
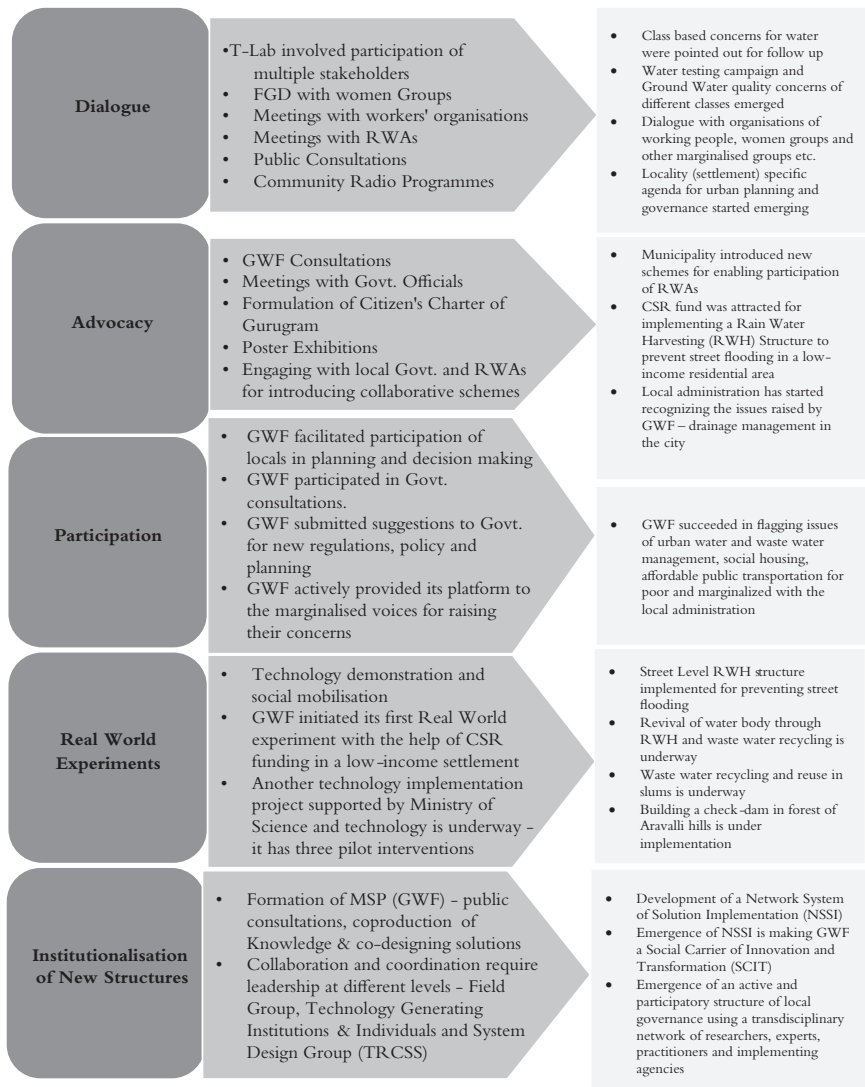
Dialogue	• T-Lab involved participation of multiple stakeholders • FGD with women Groups • Meetings with workers' organisations • Meetings with RWAs • Public Consultations • Community Radio Programmes	• Class based concerns for water were pointed out for follow up • Water testing campaign and Ground Water quality concerns of different classes emerged • Dialogue with organisations of working people, women groups and other marginalised groups etc. • Locality (settlement) specific agenda for urban planning and governance started emerging
Advocacy	• GWF Consultations • Meetings with Govt. Officials • Formulation of Citizen's Charter of Gurugram • Poster Exhibitions • Engaging with local Govt. and RWAs for introducing collaborative schemes	• Municipality introduced new schemes for enabling participation of RWAs • CSR fund was attracted for implementing a Rain Water Harvesting (RWH) Structure to prevent street flooding in a low-income residential area • Local administration has started recognizing the issues raised by GWF – drainage management in the city
Participation	• GWF facilitated participation of locals in planning and decision making • GWF participated in Govt. consultations. • GWF submitted suggestions to Govt. for new regulations, policy and planning • GWF actively provided its platform to the marginalised voices for raising their concerns	• GWF succeeded in flagging issues of urban water and waste water management, social housing, affordable public transportation for poor and marginalized with the local administration
Real World Experiments	• Technology demonstration and social mobilisation • GWF initiated its first Real World experiment with the help of CSR funding in a low-income settlement • Another technology implementation project supported by Ministry of Science and technology is underway – it has three pilot interventions	• Street Level RWH structure implemented for preventing street flooding • Revival of water body through RWH and waste water recycling is underway • Waste water recycling and reuse in slums is underway • Building a check-dam in forest of Aravalli hills is under implementation
Institutionalisation of New Structures	• Formation of MSP (GWF) - public consultations, coproduction of Knowledge & co-designing solutions • Collaboration and coordination require leadership at different levels - Field Group, Technology Generating Institutions & Individuals and System Design Group (TRCSS)	• Development of a Network System of Solution Implementation (NSSI) • Emergence of NSSI is making GWF a Social Carrier of Innovation and Transformation (SCIT) • Emergence of an active and participatory structure of local governance using a transdisciplinary network of researchers, experts, practitioners and implementing agencies

FIGURE 10.2 Designing social mobilisation through GWF: interventions, activities and outcomes.

The South Asia hub of the transformative knowledge network (TKN) decided to begin with its urban interventions in Gurgaon. While this intervention was conceptualised as an experiment designed with the aim of fostering alternate people-centric pathways of water management, it was clear to the team that the focus would ultimately have to be on the challenges of urban transformation (see Box 10.1). Various details about the hub and its work – reconfiguring the ongoing social mobilisation for peoples' participation in respect of urban planning and governance, creating a multi-stakeholder platform for co-production of knowledge and co-design of solutions and transforming the then weakly emergent spaces of public engagement over water conservation, its use and reuse in the city of Gurgaon – can be found in Box 10.2 and Figure 10.2.

Transformations: theory, research and action

The emergence of various forms of urbanisation is attributed to their context and culturally specific occurrence. Yet there exists an overarching influence of global capital on the city planning and the localised neoliberal civic interventions. The complex dynamics of such intertwined local and global processes require a new epistemic understanding; the focus needs to be shifted towards a process-oriented understanding of the concept of 'urban' as against the "fixed, unchanging entity – a universal form, settlement type or bounded spatial unit ('the' city)" (Brenner & Schmid, 2015). Henri Lefebvre calls this process the 'urban revolution' – a transformation where predominance of growth and industrialisation (models, plans, programmes)-driven society is taken over by real estate-driven urbanisation (Lefebvre, 2003, p. 5). A kind of 'post-industrial' revolution is set in motion wherein lies the double process of 'industrialization-urbanization', the latter becoming dominant over the period of time.

Consequently, the urban process is no longer under the control of the urban planners but subject to speculation and profiteering of the entrepreneurs (Merrifield, 2005, pp. 693–694).Of the two 'circuits of capitalism',[1] i.e. industry-commerce and real estate businesses, the role of real estate becomes significant with more investment in land as against industry-commerce (Gottdiener & Budd, 2005, pp. 132–133).

Following Lefebvre, David Harvey (Harvey, 1973) points out that the process of urbanisation has transformed "from an expression of the needs of industrial producers to an expression of power of finance capital over the totality of the production process" (Merrifield, 2005, p. 697). In this process, "capitalists continually shift their investment from one circuit of capital to another" which often encounters disinvestment as an inevitable process. The "built environment of the cities could be forced to become obsolete'" leading to actions like slum clearance in the name of urban renewal (Zukin, 2006, p. 107).The shift in investment pattern from 'primary circuit' (industrial production) to 'secondary circuit' (land and real estate) is an important means of accumulation of wealth and growth of cities.

In this process, reshaping of the built environment in pursuit of profit through creative destruction is responsible for the contradiction that has led to social conflicts and struggles in urban areas (Gotham, 2010, pp. 553–554). Harvey identifies urban space as an active moment – a unit of capital accumulation as well as a site of class struggle where the built environment is the source of profit and loss through property investment that often triggers major urban renewals (Hubbard, 2006, p. 40).

Urbanisation in Gurgaon expresses strong and intimate connections with the secondary circuit of capital accumulation which requires constant priming of urban expansion with the structures of social reproduction of the lives of poor and marginalised working–class migrants. The reasons which explain the sources of unsustainable urban sprawl, the main consequences of urban sprawl for the realisation of goals of economic, social and environmental sustainability and the policies that would be required to make urban water management more sustainable in Gurgaon clearly bring forth the point that urban expansion in Gurgaon originates not just from an overflow of wealth but also equally from an overflow of poverty materialising through massive processes of rural–urban migration, land takeovers, and the more or less unplanned building of urban villages and peri–urban areas that are now popular neighbourhoods where the working classes live without access to public infrastructure required for dignified urban lives.

Opening new spaces for urban expansion, developing and redeveloping the spaces for wealth generation and capital accumulation is a necessity of the capitalist classes investing in Gurgaon. This expansion is continuing only because the mainstream pathways of urbanisation align with the interests of the members of capitalist class operating from within Gurgaon. Take, for example, the DLF Foundation (a philanthropic arm of the DLF Limited – a real estate company), which pioneered the expansion of Gurgaon during the 1980s and 1990s has come up now with its 21st-century flagship initiative, called the 'Gurgaon Rejuvenation Project'– GRP by the DLF (DLF Foundation, 2008). Under the GRP, a capacity building workshop was organised in August 2017 on transforming the Najafgarh Basin (Times News Network, 2017). The Najafgarh Drain is the main drainage system in Gurgaon, carrying most of its sewage towards the Yamuna River in Delhi. The purpose of this workshop was to develop a multistakeholder approach for the rejuvenation of the Najafgarh Basin with the long-term vision of developing a roadmap for the development of inland waterways in the Najafgarh drain (DLF Foundation, 2017).

The long-term objective of converting the Najafgarh drain into an inland waterway, seeking low interest, highly profitable "green" funds from the national and international financial organisations, in fact, also revealed quite a lot about the actual interest of leading stakeholder (DLF Foundation) – the real estate speculations in the name of urban rejuvenation.

The GWF understands its interventions as a longer-term process of engagement with the structural power over city planning and development. The elements of structural power comprise finance capital, real estate and IT, land

owning castes in urban and peri–urban villages, lack of participation of women in decision making, local vs outsider divides and religious and ethnic divides. The power of neo-liberal ideology and practices over the political and bureaucratic
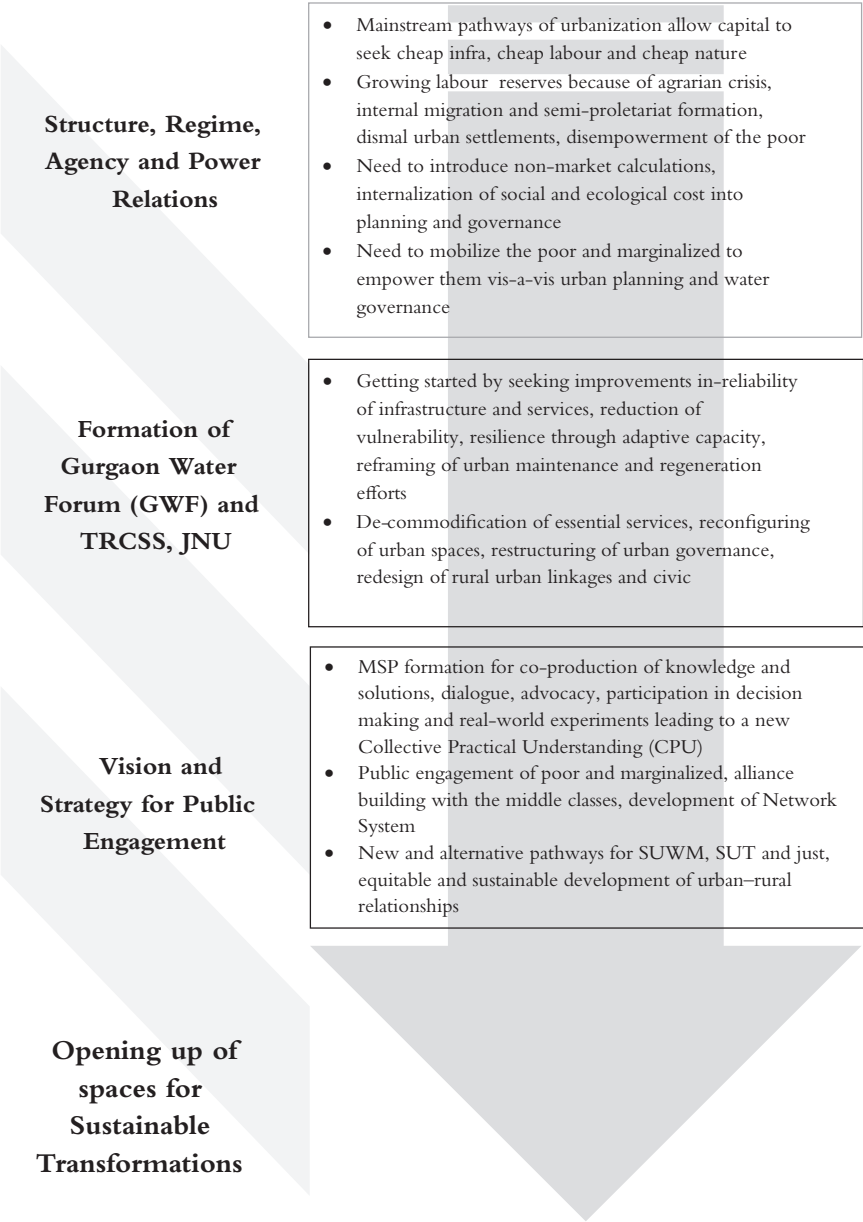
Structure, Regime, Agency and Power Relations

- Mainstream pathways of urbanization allow capital to seek cheap infra, cheap labour and cheap nature
- Growing labour reserves because of agrarian crisis, internal migration and semi-proletariat formation, dismal urban settlements, disempowerment of the poor
- Need to introduce non-market calculations, internalization of social and ecological cost into planning and governance
- Need to mobilize the poor and marginalized to empower them vis-a-vis urban planning and water governance

Formation of Gurgaon Water Forum (GWF) and TRCSS, JNU

- Getting started by seeking improvements in-reliability of infrastructure and services, reduction of vulnerability, resilience through adaptive capacity, reframing of urban maintenance and regeneration efforts
- De-commodification of essential services, reconfiguring of urban spaces, restructuring of urban governance, redesign of rural urban linkages and civic

Vision and Strategy for Public Engagement

- MSP formation for co-production of knowledge and solutions, dialogue, advocacy, participation in decision making and real-world experiments leading to a new Collective Practical Understanding (CPU)
- Public engagement of poor and marginalized, alliance building with the middle classes, development of Network System
- New and alternative pathways for SUWM, SUT and just, equitable and sustainable development of urban–rural relationships

Opening up of spaces for Sustainable Transformations

FIGURE 10.3 Theory of change: engaging with the politics of urban sustainability transitions.

apparatus is currently the reigning regime across the co-evolving domains of business regulations, urban planning and governance, settlement planning, livelihood development, health and education services, urban transportation and access to water and sanitation, resulting in the neglect of environmental and social dimensions. The challenge of empowering the weaker sections lies in changing the agency relationships of middle classes and working people. There is a need to reconfigure the balance of power through reframing the conditions of formation of alliances between the working people and the middle classes.

The GWF uses the power of radical approaches to structural transformation, system transformation and pro-poor enabling approaches to reframe the interventions in urban planning and governance and alliance building. The conceptualisation and implementation of the theories of transformation, change and practice that the South Asia Hub has chosen to adopt to co-design the activities of pro-poor social mobilisation over water in Gurgaon are explained in Box 12.3.

'Transformation' means profound, often long-term changes to the entire system that come about as a result of multiple interacting dynamics involving society, ecology and technology. In this sense, a transformation would involve enabling the poor and marginalised to enhance their access to resources and capabilities for mobilisation of power to innovate and foster a change in the neo-liberal regime. Regime change is needed for creating the conditions for the realisation of ecologically and socially just development through the internalisation of non-market externalities and the participation of working people in the co-design of solutions.

The poor and marginalised working people need to be supported in the efforts to build cross-class alliances for the revitalisation and regeneration of areas in which they reside. There are numerous examples of change in land use overlooking social and ecological considerations. Therefore, the introduction of such externalities in the process of decision making on land use and water use should ensure that capital is made to internalise the social and ecological costs into planning and governance of expansion of urban spaces on which the capital is today much dependent on accumulation.

In this context, as a theory of change, the TRCSS, JNU and its partners have chosen to prioritise the challenge of building cross-class alliances with the objective of realising the introduction of non-market calculations in areas where they live. These interventions should aim to ensure the participation of working people in the co-design activities of social mobilisation through the formation of a multi-stakeholder platform (MSP) – namely Gurgaon Water Forum (GWF) in which the trade unions are an active participant along with the groups involved with the middle classes for a wide range of issues arising out of the problems of urban governance in Gurgaon to maximise the outcomes for the formation of leadership for the activities to be initiated for the formation of structures and institutions to enable the processes of transformation of water management and urban governance (see Box 12.3 for an analytical summary of the GWF activities).

BOX 10.3 THEORY OF TRANSFORMATIONS

The structure, regime and agency relationship are the key to understanding the theory of transformations, moving from abstract to concrete and back to abstract learning through action. For the hub's theory of change, this means:

First, that the Gurgaon Water Forum (GWF) struggles against the neoliberal regime for structural change, democratic identity-based transformation of agency of working people; emphasis on direct action and alliance-building for the transformation of identities.

Second, that transformation requires empowering the marginalised to struggle against mainstream pathways embedded in structures of cheap labour and nature, against the shift from primary to secondary circuit of capital accumulation, against the erosion of urban commons, and against primitive accumulation, authoritarian structures and commodified social reproduction regimes.

Third, a change in the sub-regime of knowledge production is necessary but not enough: contestations matter, radical perspectives have to remain in reckoning. Work on economic and social transformation starts by including a focus on collective practical approaches to livelihoods of the marginalised in the water-related transformative spaces, housing and catchment habitat protection.

Fourth, sustainability transition theory needs to focus on context specific structure, regime and agency relationships; politics of engagement with sub-regimes of planning and governance is by itself not enough.

Fifth, leadership and building of relationships for path construction and spaces for transformations to sustainable urban development needs alignment of structures and institutions to enable longer term changes.

As a multi–stakeholder platform (MSP), the GWF has been proposed and organised for the moment, to serve mainly as a knowledge sharing platform capable of undertaking the co–production of knowledge and co–design of solutions. It works with the help of the individuals and groups collaborating with the GWF and the TRCSS for the benefit of sectional as well as collective interests of the working people in Gurgaon. Long-term stabilisation of the MSP is necessary. With this in mind, the GWF has envisaged the formation of a Network System of Solution Implementation (NSSI). During the project period, the NSSI activities focussed on the mobilisation of the people to erect the scaffolding for a new Social Carrier of Innovation for Transformation (SCIT) to contribute to the development of people–centric framings of the problem and solutions (Edquist & Edqvist, 1979; Smith, et al., 2016). This is illustrated in Figure 10.4. The NSSI structure is designed to accommodate all the relevant participating stakeholders and members of mobilised publics in three subgroups as per their capacities to

perform the expected roles and functions. The structure has three types of sub-groups – System Design Groups (SG), Knowledge Generation Groups (KG) and Field Development Groups (FG). The NSSI structure has been formed by drawing on experiences with similar structures tried earlier within the Delhi Science Forum. The NSSI structure was designed to realise a minimum level of political and academic rigour to ensure that the GWF does not collapse after the project is over and the process of implementation of interventions is sustainable also beyond the project period.

The theory of transformations outlined above has led the GWF and TRCSS JNU to be selective in respect of the choice of activities. The focus is currently on the strengthening of the network system of solution implementation (NSSI). The strengthening of NSSI implies gaining as much support as possible from the publicly funded S&T institutions and government agencies. At the moment
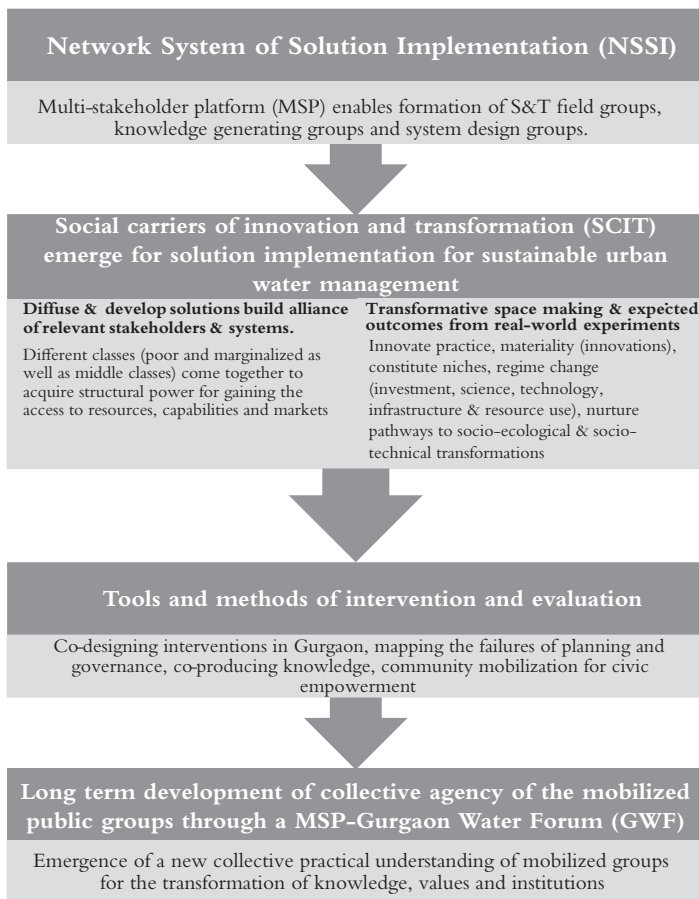
Network System of Solution Implementation (NSSI)

Multi-stakeholder platform (MSP) enables formation of S&T field groups, knowledge generating groups and system design groups.

Social carriers of innovation and transformation (SCIT) emerge for solution implementation for sustainable urban water management

Diffuse & develop solutions build alliance of relevant stakeholders & systems.

Different classes (poor and marginalized as well as middle classes) come together to acquire structural power for gaining the access to resources, capabilities and markets

Transformative space making & expected outcomes from real-world experiments

Innovate practice, materiality (innovations), constitute niches, regime change (investment, science, technology, infrastructure & resource use), nurture pathways to socio-ecological & socio-technical transformations

Tools and methods of intervention and evaluation

Co-designing interventions in Gurgaon, mapping the failures of planning and governance, co-producing knowledge, community mobilization for civic empowerment

Long term development of collective agency of the mobilized public groups through a MSP–Gurgaon Water Forum (GWF)

Emergence of a new collective practical understanding of mobilized groups for the transformation of knowledge, values and institutions

FIGURE 10.4 Network system of solution implementation, social carriers of innovation and transformation and the Gurgaon water forum.

interventions of the mobilised publics associated with the working people as well as the middle classes seek to prioritise the involvement of all of these groups in the activities of dialogue over water, participation in planning and decision making, real-world experimentation and formation of pro-poor social carriers of innovation and transformations.

Research methods

Our methodological approach has been aimed at the formation of Network System of Solution Implementation (NSSI) as a collective agency of the mobilised publics working among the middle classes and the working people of Gurgaon on the issues of urban sustainability. The agency formation has been achieved through the development of their Collective Practical Understanding (CPU) and actions by enhancing knowledge, embedding values and accelerating engagement with the institutions of urban planning and governance. The mobilised groups have been brought together to foster and strive for the formation of a knowledge-based multi-stakeholder platform (MSP) to persist with the proposed repertoire of collective action to create a leadership for public engagement on the key issues of water planning and governance of urban sprawl to be taken up in Gurgaon. In sum, MSP creation in this context is a system building approach for the production and sharing of knowledge using tools of co-production and co-design activities. It includes following stepwise interventions:

  i   Creation of a multi-stakeholder knowledge-based platform
 ii   Develop a collective understanding of the problem concerned
iii   Create Social Carriers of Innovation and Transformation (SCIT).

Coproduction of knowledge and action in collaboration with different actors is being accelerated to enhance the absorptive and adaptive capacities of the working people. Ultimately, reconfiguration of urban spaces and governance will have to focus on the formation of socially and ecologically just urban commons. A new collective practical understanding involving changes in the system of mobilisation of knowledge, values and institutions is in progress.

Multi-stakeholder platform creation and the development of networks, alliances and collective agency

In case of South Asia Hub, the T-Lab was understood not as a project but a continuous activity which is not limited to transdisciplinary outreach. The T-Lab was conceptualised as a counter-hegemonic process of intervention. Intervention focussed on the strengthening of the role and contribution of mobilised public groups towards dialogue and advocacy, participation in planning and decision making, real-world experimentation and formation of new institutions for making of pro-poor innovations and transformative spaces for the realisation of sustainable urbanism.
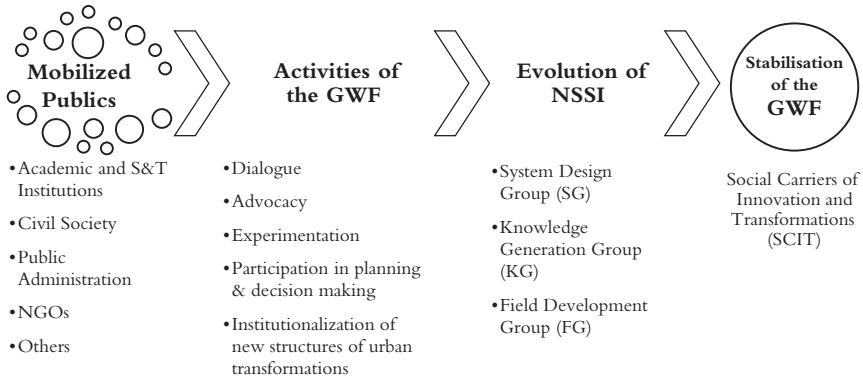
FIGURE 10.5 Evolution of the Gurgaon Water Forum.

In order to realise the contribution of the members of mobilised public groups and achieve a degree of alignment in their contributions to the formation of counter-hegemonic interventions in a sustained way, the South Asia Hub targeted development of a new set of "Social Carriers of Innovation and Transformation (SCIT)". SCIT emerges through the evolution of NSSI. The three major elements of the NSSI (SG, KG, FG) are illustrated in Figure 10.5.

Alignment was sought to encourage the members of the mobilised public groups in the implementation of an NSSI for enabling social mobilisation for sustainable urbanism. In this process, members of the mobilised public groups were encouraged to get actively involved in the development of SG, KG and FG within the larger network of the GWF to achieve a higher level of success in social mobilisation. The network of GWF initiated a number of activities involving members of the mobilised publics. These activities can be broadly categorised as dialogue, advocacy, participation in planning and decision making, experimentation (real-world experiments) and institutionalisation of new structures of social transformation (formation and stabilisation of new institutional structures).

The most significant aspect of this process is the realisation of a collective agency-based-power perspective as a result of alignment among the members of the GWF. More specifically, the power of collective agency of the GWF comes from the contribution of its members in the form of providing leadership roles at the level of SG, KG and FG on the ground through their regular involvement in these activities. The overall contribution of the members of the mobilised public groups participating in the activities of the GWF was categorised and measured in terms of the progress of their contribution in five major stages of the evolution of GWF. The specific stage of their involvement reflects the alignment of their role and contribution towards the development of leadership at the level of FG, KG and SG on a scale of 1–5, as illustrated in Table 10.1.

Out of 140 participants in T Lab 1 (the first T-Lab workshop), we selected those who followed up our initiative partially or up to a greater extent to the time of writing (2020) by contributing in the visions and strategies of the GWF. A chart was prepared mentioning contribution of each of these participants (members)

TABLE 10.1 Stages of the mobilisation of the members of the mobilised public groups

Stages	Contribution of each member in the activities of the GWF
1	Initiation of dialogue
2	Initiation of dialogue and advocacy
3	Initiation of dialogue, advocacy, public participation in planning & decision making
4	Initiation of dialogue, advocacy, public participation in planning & decision making and experimentation started
5	Initiation of dialogue, advocacy, public participation in planning & decision making, experimentation and the formation of a new institution that has started functioning
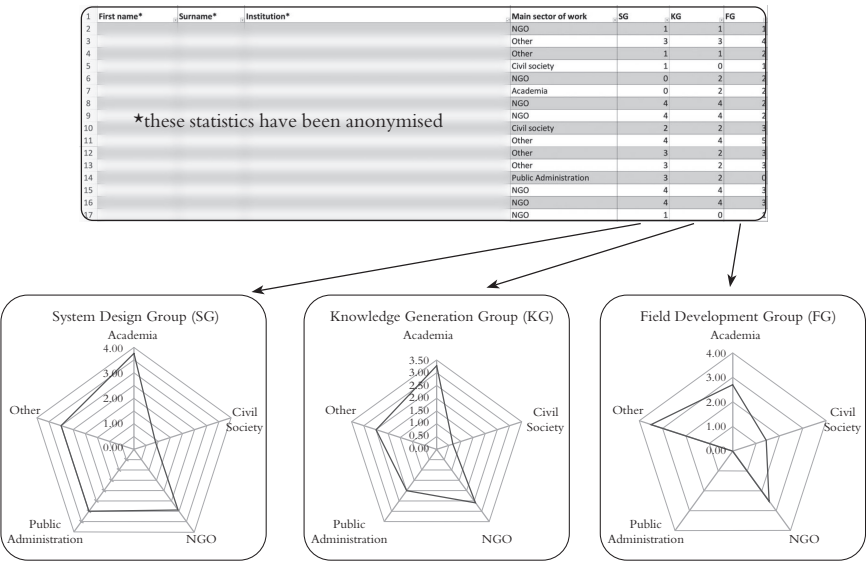
FIGURE 10.6 Measuring the power (collective agency), role and contribution of mobilised publics.

as per stages 1–5 in the realisation of the FG, KG and SG (see the anonymised spreadsheet in Figure 10.6). Later, contributions of different categories of participants were put together in spider charts (see the bottom of Figure 10.6), depicting collective contributions of different groups (shown category-wise: academia, public administration, civil society, NGOS and others) in the realisation of the SG, KG and FG. In this way, the progress towards stabilisation of the GWF (and transformative space formation – see Pereira et al. 2018) has been measured using a scale of 1–5 to indicate the contributions of each mobilised group. Interestingly, not all group members were able to contribute equally in the role of FG, KG and SG, when measured for their involvement in the different stages of activity.

Figure 10.6 shows how members of academia, public administration, NGOs and informal sector, and workers' unions played major roles in the System Design Group. Civil society was less active in the activities of this group. In the Knowledge Generation Group, academia played a major role, while NGOs and informal sector and workers' unions showed willingness to contribute. Public administration was less active as lacking capabilities and civil society was almost reluctant in the process. As far as the Field Development Group is concerned, the informal sector and workers' unions and NGOs played a leading role in the field and helped academia in reaching out to the larger public. Civil society showed limited interest in providing leadership in the field, and public administration was almost absent in the mobilisation of people on the ground.

Key moments in the India T-Lab process

T-Labs are processes where the social mobilisation plans were seeded. Interventions were deliberated upon to enrol the diverse actors with different motivations to participate in the development of interactive innovation spaces. These allowed the TRCSS, JNU to form and mobilise the relevant publics for experimentation with new social–ecological-technological system configurations and sustainability pathways (pathway creation). Innovation for transformative change in the Gurgaon case demanded T-Labs to undertake preparatory work for the context-specific challenges of urban water and waste water management including assessment of mainstream pathways, identification of opportunities for alternative path creation and experimentation. As with the other hubs in the 'Pathways' network, two T-Lab workshops were interspersed with a series of research and engagement activities.

The process of organising the 1st T-Lab workshop started with the research team conducting background research. This background research started much earlier with reviewing the studies on the migration in Gurgaon through the co-design workshop in November 2014 and the subsequent concept note developed by JNU/STEPS Centre in 2015. It was revealed that Gurgaon has seen an influx of migrant workers for employment during the last couple of decades. A study of three peri–urban villages in Gurgaon revealed the poor health and morbidity conditions in related to water and wastewater. Pollution is increasing in the sources of water due to the mixing of untreated sewage, affecting the supply of surface water and causing environmental and health hazards. Heavy concentrations of iron and fluoride are common. The old drainage and sewer system are not capable of bearing the current load of sewage, resulting in frequent water logging and clogging of drains. There exists severe encroachment of natural drainage patterns resulting in frequent urban flooding and destruction of water bodies. The background research highlighted the existence of common and separate challenges facing the people of different classes. We also conducted several field studies to understand the different perspectives and framings held by different classes, using the methods described in the 'Research methods' section of this chapter.

This background research helped us in setting up the agenda for the first T-Lab workshop on February 10–11, 2017, addressing the following broad questions:

1   What kind of public engagement helps realise better the involvement of middle classes, farmers and workers in the processes to be initiated for the promotion of sustainable water management?
2   What kind of policy paradigm needs to be in place to obtain sustainable water management system in a semi-arid region, which is rapidly urbanising and seeking industrialisation through global integration, privatisation and public–private partnerships?
3   What kind of tools and resource materials can help enable the organisation of a platform for dialogue on the problems and challenges of sustainable water management?
4   What kind of contestation enables people to reflect on the conflicts in respect of water availability and use?
5   How far can the participation of people in decision making organised via Panchayati Raj Institutions (PRIs) of local self-governance help to organise sustainable water management?
6   What kind of real-world experimentation is necessary for the promotion of institutional transformation and social carriers of innovation for sustainable water management?
7   How do we understand the role of policy paradigms in the management of transition/transformative change?
8   How should the protagonists of transformative change measure the level of success in the spread of sustainable water management practices?

T-Lab workshop 1

The workshop was open to multiple stakeholders including policy makers, planners, experts, bureaucrats, citizen groups, resident welfare organisations (RWAs), workers' organisations, NGOs, researchers, activists and others. More than 100 people participated. The workshop was aimed at mapping the knowledge, values and institutions of mobilised publics and organising them for the creation of a multi-stakeholder platform for individual and collective actions. The problems identified by the research team were growing dependence of the city on water from distant sources, neglect of protection of local water bodies, lack of systems for water recycling, destruction of natural drainage, Aravali mountain range habitat and catchment areas, replacement of existing freshwater pipelines and sewers to prevent contamination and investment in covering the drains to reduce nuisance.

Deliberations led to the establishment of a multi-stakeholder platform – the Gurgaon Water Forum – agreeing to undertake activities of knowledge creation, utilisation and dissemination. The research team argued that at present the focus

of urban planning was on the development of physical infrastructure such as road engineering – highways, flyovers without protecting natural drainage. Urban flooding, they argued, was due to destruction of natural drainage pattern, as a result of urban developmental interventions. By ignoring the carrying capacity of the city, the neo-liberal growth perspective and real estate interests continued to drive the expansion of Gurgaon through the expansion of Dwarka and Kundli Manesar Palwal (KMP) expressways.

In response to the framings of problems by the research team, the critical response at that time came from government officials, who labelled the TRCSS, JNU approach purely academic as opposed to representing possible practical solutions. The concerns raised were rejected and dialogue did not bring changes in the understanding of the dominant stakeholders. Pleas for the need for an integrated water management approach were dismissed. Traffic management was prioritised over drainage as a way to deal with the urban flooding. The mainstream thinking of middle-class RWAs was not very different from that of the administration – that water for Gurgaon would have to come from distant (rather than local) sources.

Following the first T-Lab workshop, the GWF began to focus on collective practical approaches rather than on pushing a shared understanding of the problem space and transformative changes (which proved elusive). Therefore, we prioritised collaborative action with mobilised public groups to develop practical approaches for SUWM. We started on co-production of knowledge, co-design of SUWM solutions and network development for the implementation of SUWM solutions (see Figure 10.3). Priority was given to dialogue with public administration and others in small group meetings focussing on the identification of collective practical approaches, seeking cooperation, assigning of roles, capacity building and alignment. With priority given to moderate/radical perspective on change and the emphasis on equity and ecological soundness, a distinct identity of the GWF has emerged.

In sum, we planned to explore all the possible different strategies for 1) the development of creative entrepreneurial leadership in the city for the implementation of urban planning and participation of the people as a whole in governance, 2) the development of a research network having capabilities and cultures of participation in co-production of knowledge and co-design of sustainability experiments and 3) the development of a system design group at JNU in collaboration with the educational and research institutions and engagement agents for a sustainable city.

Following the first T-Lab workshop, interventions began in the form of the shaping of the legislative framework for urban development planning in Gurgaon. Our participation in the consultation on Gurgaon Municipal Development Authority Bill 2017 was seemingly well received by both governmental agencies and non-governmental organisations. We were able to gather resources from among the different stakeholders including the local government and the
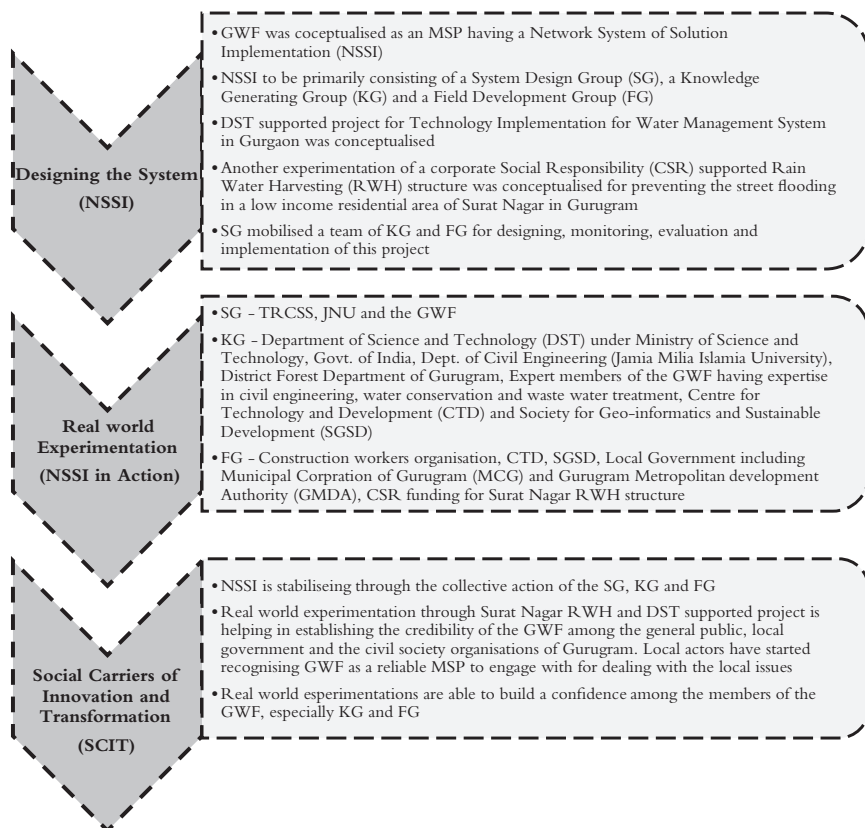
Designing the System (NSSI)

- GWF was coceptualised as an MSP having a Network System of Solution Implementation (NSSI)
- NSSI to be primarily consisting of a System Design Group (SG), a Knowledge Generating Group (KG) and a Field Development Group (FG)
- DST supported project for Technology Implementation for Water Management System in Gurgaon was conceptualised
- Another experimentation of a corporate Social Responsibility (CSR) supported Rain Water Harvesting (RWH) structure was conceptualised for preventing the street flooding in a low income residential area of Surat Nagar in Gurugram
- SG mobilised a team of KG and FG for designing, monitoring, evaluation and implementation of this project

Real world Experimentation (NSSI in Action)

- SG - TRCSS, JNU and the GWF
- KG - Department of Science and Technology (DST) under Ministry of Science and Technology, Govt. of India, Dept. of Civil Engineering (Jamia Milia Islamia University), District Forest Department of Gurugram, Expert members of the GWF having expertise in civil engineering, water conservation and waste water treatment, Centre for Technology and Development (CTD) and Society for Geo-informatics and Sustainable Development (SGSD)
- FG - Construction workers organisation, CTD, SGSD, Local Government including Municipal Corpration of Gurugram (MCG) and Gurugram Metropolitan development Authority (GMDA), CSR funding for Surat Nagar RWH structure

Social Carriers of Innovation and Transformation (SCIT)

- NSSI is stabiliseing through the collective action of the SG, KG and FG
- Real world experimentation through Surat Nagar RWH and DST supported project is helping in establishing the credibility of the GWF among the general public, local government and the civil society organisations of Gurugram. Local actors have started recognising GWF as a reliable MSP to engage with for dealing with the local issues
- Real world esperimentations are able to build a confidence among the members of the GWF, especially KG and FG

FIGURE 10.7 Pathways to sustainability: collective practical approaches, collaborative actions and real–world experimentations.

Municipal Commissioner of Gurgaon (MCG), the main public urban authority, in the form of their goodwill, attention and cooperation.

We subsequently received the consent of MCG for the submission of projects to the Ministry of Science and Technology on the augmentation of water availability, rationalisation of water use, treatment of grey water and prevention of urban flooding. A project eventually got approved by the ministry in July 2019 and – at the time of writing – is under implementation.

Alongside the two universities involved in the submission of projects (Jawaharlal Nehru University and Jamia Millia Islamia), it is possible to claim at least some success for the wider team, including non-governmental organisations, trade union bodies and women's organisations.

The T-Lab, and subsequently the GWF, involved a lot of individuals as well as formally organised groups. Using the resources of a community radio station (a twelve-episode radio programme was aired in the summer of 2017) we were able to mobilise other groups too. Our process started developing and later

implementing direct action and real-world experiments. It was our hope that the T-Lab in India would consolidate the multi-stakeholder platform through these processes. Between the two T-Lab workshops this involved strengthening of field group leadership, fostering of knowledge and technology system generating groups and an increase in real-world experimental proposals.

T-Lab Workshop 2

The second T-Lab workshop was organised by the TRCSS, JNU and the GWF a year and half later in Gurgaon on September 29–30, 2018. This consultation workshop was again open to a wide range of stakeholders and some success was certainly evident. This time, significant changes were seen in the framings and approaches of various stakeholders. The public administration had realised that drainage was a high priority area along with the revival of water bodies, water recycling and reuse. Permissions and cooperation for the start of the pilot projects were obtained for collaborative actions on the ground.

Although the RWAs still appeared to be inclined towards long distance water supply sources, they also spoke of the need to conserve water and build local check dams in order to deal with the challenge of urban flooding. Professionals such as town planners supported the idea of carrying capacity; engineers supported the focus on drainage and support for farmers. Trade unions raised the concerns for water logging, water auditing, housing, revival and protection of water bodies and maintenance and repair, capacity building of the workers. The corporate sector too showed interest and participated in the dialogue. The DLF Foundation leadership (the philanthropic arm of one of the developers) was in the audience to participate in the deliberations.

Other outcomes included the stabilisation of GWF, TRCSS, JNU and successful networking with S&T Institutions, academic, and a variety of relevant groups including NGOs, professions, Trade Unions (TUs), civil society groups, experts and practitioners, Resident Welfare Associations (RWAs) confederations, environmental groups, women groups, theatre groups and so on (see Figure 10.8).

The progress we achieved in the second T-Lab workshop was non-linear. Given the multiplicity of the interests and framings of the participating individuals and organisations, feedback loops and reflexivity have played an important role at all stages. Progress between stages has been subject to iterative and recursive processes of learning.

The second T-Lab workshop brought clarity on the challenge of retaining the legitimacy of Gurgaon Water Forum's interventions. In Gurgaon, the T-Lab process started with the ambition of building a robust Network System of Solution Implementation (NSSI) for the SUWM domain. As the project was coming to an end, we had to deal with the challenges of sustaining the ongoing activities and stabilising the structures and process of supporting financially and organisationally the NSSI nucleus created in the course of the project.
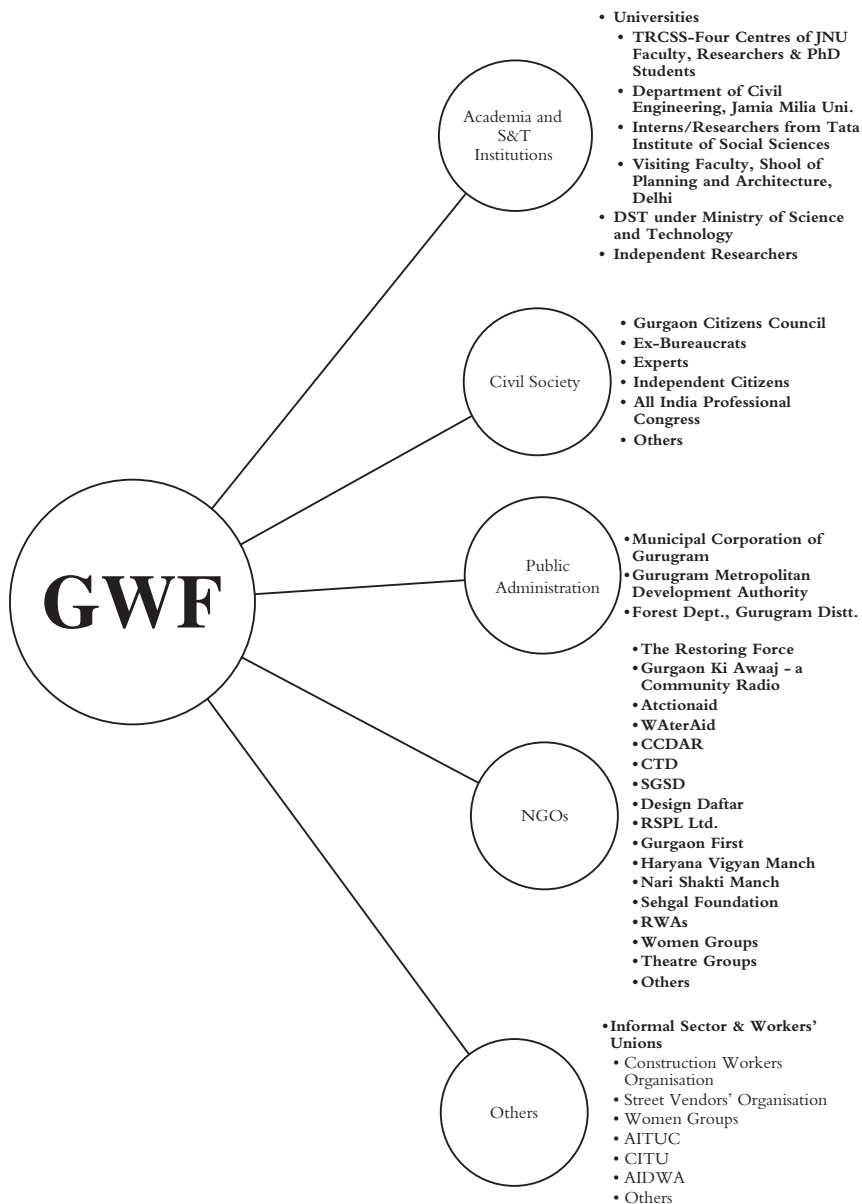
FIGURE 10.8   The Gurgaon water forum: a transdisciplinary network.

Leadership building processes are quite critical to platform formation in Gurgaon. The T–Lab has had to show that as a co-benefit the JNU faculty would be able to gain meaningfully in respect of the transformation of their research activity and that the engaged academic activity is also quite rewarding. New

methodological approaches are emerging out of this exercise. There are now many more research students willing to collaborate from within the collaborating centres.

Lessons from the T-Lab process

The first T-Lab workshop was focussed on the minimalist agenda of common activities on the front of water conservation, recycling and so on. The agenda broadened out throughout the project. The leadership has had to keep in mind that to include diverse and heterogeneous actors the processes of "broadening out" (see Chapter 5 in Leach et al. 2010) have had to be implemented without adversely affecting the overall vision and strategy of GWF. To approach this challenge in an effective way, the GWF has pursued the strategy of gaining
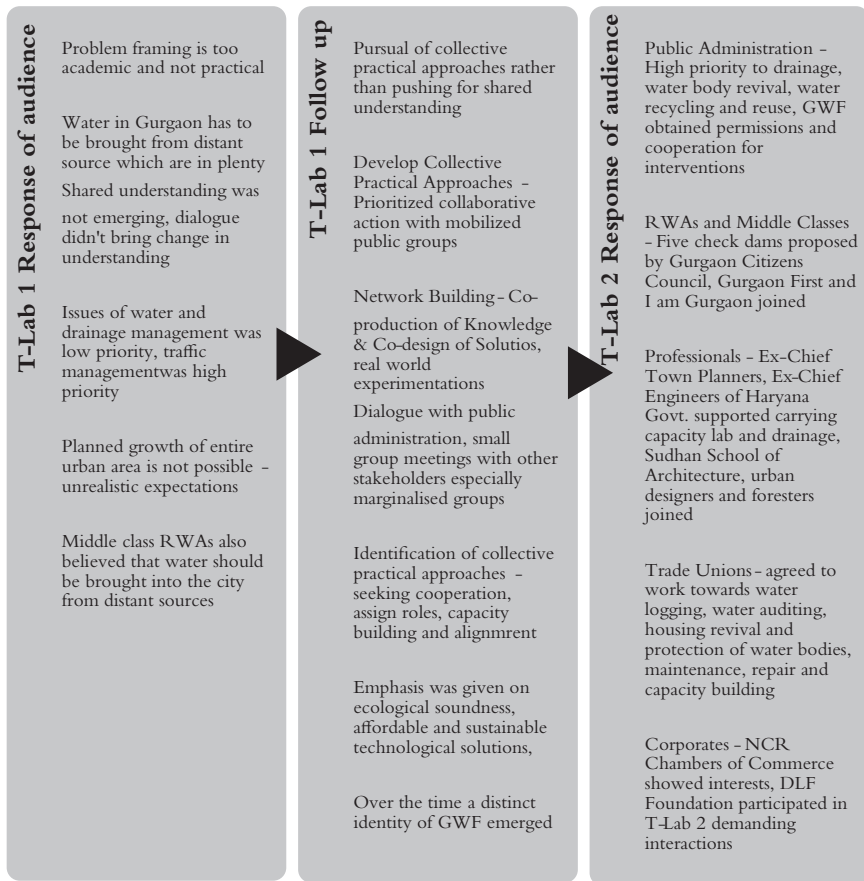
FIGURE 10.9 T-Labs: challenging dominant pathways of urban water, planning and governance.

the trust and legitimacy from the working-class people and their organisations. With this in mind, real-world experimentation in SUWM was prioritised. Still, it is difficult to claim that we have found an effective solution to the problem of building alliances across mobilised publics

It should be realised that progress remains slow in terms of inserting new demands (such as worker housing) into the agenda building in Gurgaon, however, the GWF has begun efforts to put the idea of "build to rent housing" on the agenda of public administration and policymakers. Further, collaborative action on the agenda of citizenship rights of migrants with the middle classes is yet to be taken up by the GWF. It is a major political issue and will need a carefully worked out strategy if the process of alliance building is to remain unharmed.

In terms of the diversity of alignments within our stakeholder group, while the middle classes (represented through RWAs) have often joined us in both action and deliberations, it has taken more effort and time to mobilise the RWAs. The GWF has limited capacity and insufficient resources to take up the agenda of mobilisation for direct action on the front of urban planning. Efforts are underway to build the capacity of volunteers from among all the classes, but these efforts will have to be intensified if momentum is to be built on the ground.

The experience of mobilising the people for development of collaborative action on water conservation and drainage suggests that it takes time with a non-aligned group of actors and that success is not guaranteed.

Transdisciplinary interventions and re-framing the challenges of urban sustainability

From the beginning, the TRCSS team was convinced that the challenges of reframing must be addressed by the emergent leadership in Gurgaon at the level of transforming the socio-ecological, socio-technical and socio-institutional spaces with a pro-poor approach to innovation. At the same time, the GWF has been able to maintain a sustained engagement with urban residents, administration, experts, planners, policy makers, practitioners, NGOs, civil society groups, workers unions and other stakeholders. Such an engagement with multiple stakeholders, practitioners and implementing agencies has helped the GWF in re-framing the challenges of contemporary urbanisation through the lenses of sustainable urban transformations. Since its inception, the GWF has been fostering formation of transformative spaces and re-framing the debate of urban sustainability through four pathways of social mobilisation and sustainable urban transformation, i.e. reconfiguring urban spaces, reconfiguring urban governance, civic empowerment and new pathways of urban resilience and regeneration as explained in Figure 10.9. Overall, a paradigm shift can be observed in understanding the issues of urban water management in Gurugram.

The collective practical approaches of the GWF have proven the biggest enablers in re-framing the debate of urban water management in Gurgaon. GWF

has been trying to implement certain basic elements of the collective action. These elements include the following:

  i   Addressing inequality
 ii   Promoting participation of citizens including marginalised groups
iii   Contestations matter (no shared understanding) but agreement on practical solutions is achievable
 iv   Location specific interventions should be co-designed to enable participation of locals
  v   Real-world experiments are necessary to demonstrate success of contestations
 vi   Participation of not only ordinary citizens but also experts and practitioners who want to collaborate and volunteer
vii   The above combine to form an emerging strategy of challenging the power structure.

Informality is quite diverse and highly stratified. In the Indian context, apart from class distinctions, it needs to be captured through the lenses of gender, caste, region, religion, etc. Collective actions also need to recognise the dynamics of human-nature relations. How are these relations progressing? Non-market calculations, the social and ecological cost of human interventions, etc., need to be factored in overall assessment of impacts of human interventions.

  The GWF has been able to foster the following collective practical approaches through collaborative action and real-world experiments for initiating the path of sustainable urban water management:

a   Protection of catchment areas, local water bodies, role of Aravalli forest as water sanctuary of future.
b   Replenishment through RWH, recharging wells, protecting water bodies and water footprint auditing.
c   Protecting natural drainage habitat, focussing on drainage to reduce urban flooding and everyday waterlogging.
d   Provided required quantity of potable water for daily use in poor urban settlements.
e   Provided eco-friendly technologies of treatment of brackish and waste water and improving storm water drains across the city.
f   Provisions of dual pipeline, bioremediation, decentralised waste water treatment.
g   Focus on regular clearing of drains.

  For initiating collective practical approaches, the GWF started with awareness, dialogue, advocacy and proposals for real-world experiments. These initial activities were followed by the process of co-production of knowledge, co-designing solutions and institutionalisation of NSSI by enrolling different stakeholders into the network. Later, democratising political governance, civic
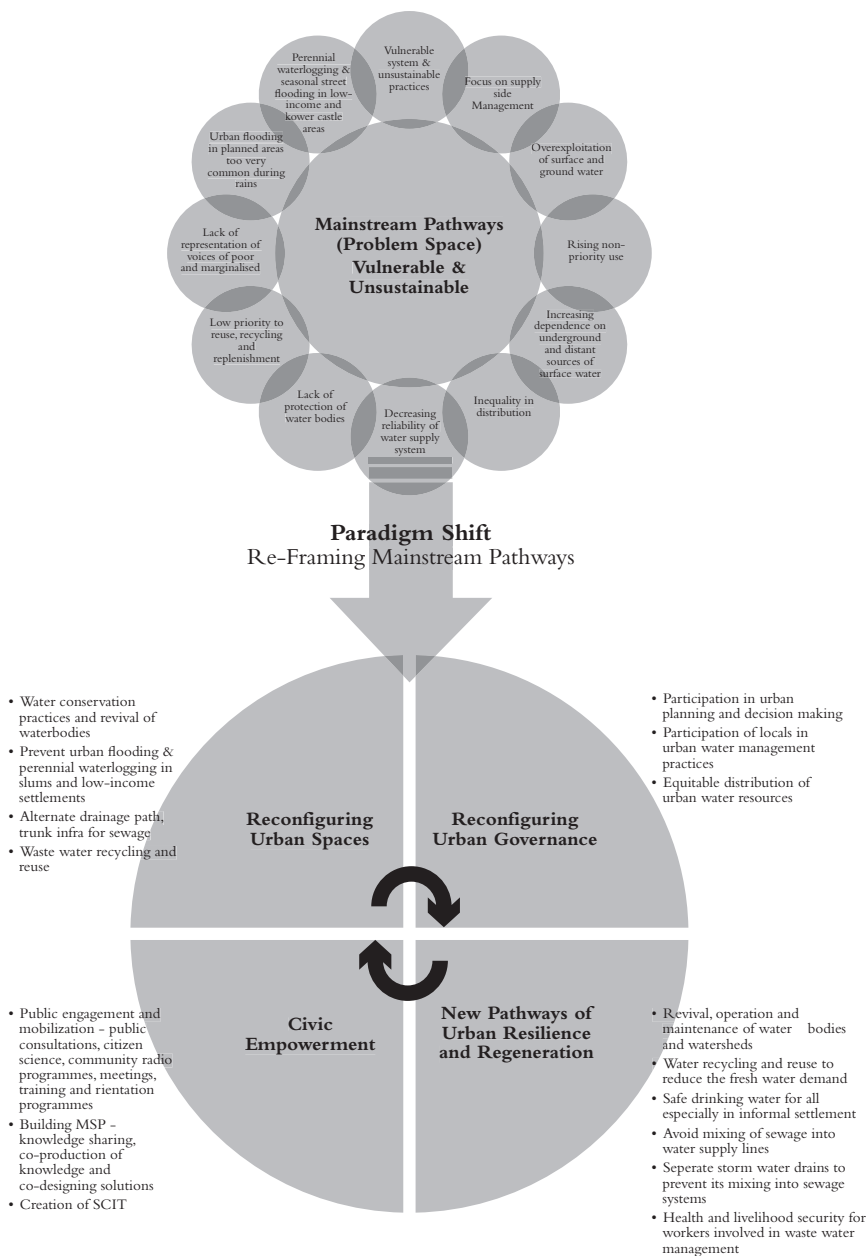
**Mainstream Pathways
(Problem Space)
Vulnerable &
Unsustainable**

Vulnerable system & unsustainable practices

Focus on supply side Management

Perennial waterlogging & seasonal street flooding in low-income and lower castle areas

Overexploitation of surface and ground water

Urban flooding in planned areas too very common during rains

Rising non-priority use

Lack of representation of voices of poor and marginalised

Increasing dependence on underground and distant sources of surface water

Low priority to reuse, recycling and replenishment

Lack of protection of water bodies

Inequality in distribution

Decreasing reliability of water supply system

Paradigm Shift
Re-Framing Mainstream Pathways

**Reconfiguring
Urban Spaces**

**Reconfiguring
Urban Governance**

• Water conservation practices and revival of waterbodies
• Prevent urban flooding & perennial waterlogging in slums and low-income settlements
• Alternate drainage path, trunk infra for sewage
• Waste water recycling and reuse

• Participation in urban planning and decision making
• Participation of locals in urban water management practices
• Equitable distribution of urban water resources

**Civic
Empowerment**

**New Pathways of
Urban Resilience
and Regeneration**

• Public engagement and mobilization - public consultations, citizen science, community radio programmes, meetings, training and rientation programmes
• Building MSP - knowledge sharing, co-production of knowledge and co-designing solutions
• Creation of SCIT

• Revival, operation and maintenance of water bodies and watersheds
• Water recycling and reuse to reduce the fresh water demand
• Safe drinking water for all especially in informal settlement
• Avoid mixing of sewage into water supply lines
• Seperate storm water drains to prevent its mixing into sewage systems
• Health and livelihood security for workers involved in waste water management

FIGURE 10.10 Transdisciplinary interventions and re-framing the challenges of urban sustainability.

empowerment and construction of new pathways emerged out of the collective engagement of citizens, experts, policy makers and planners.

In order to empower the mobilised publics to engage with the process of urban planning and governance, the GWF and the TRCSS, JNU are also extending the initiative to involve the mobilised publics working at the scale of the national capital region (NCR). The NSSI structure is enabling the GWF and the TRCSS to open up the space for everyday struggles of the working classes in not only the low-income settlement colonies where they live and socially reproduce themselves but also the space for contributing to the struggle for the conservation of habitat and the ecologically and socially just urban water governance in making using the tools of science communication in which Haryana Vigyan Manch (HVM) and the women groups have joined hands with the GWF in Gurgaon. The GWF has been spreading the awareness through community radio programmes among the low-income working classes about water-related concerns. Citizen science initiatives are focussed for the present on water related issues. The GWF is also now focussing on the issues of housing for the urban poor and affordable transportation especially "last mile" connectivity for the working classes including low-income urban residents.

Since the translation of this theory of change involves the development of longer-term strategies of patient, counter-hegemonic interventions with the view to open-up spaces for transformative change that the SASH&KN wants to see in Gurgaon, there are ongoing efforts on the part of the GWF to mobilise the people on a broader platform. For example, the GWF joined hands to influence and impact prior to the elections through the Gurgaon Citizens Charter. This process was able to mobilise to some extent the discourse on urban planning and governance in Gurgaon among civil society organisations.

Insights and contributions from the India hub disciplines, culture and context

Our first insight is that the T-Labs need to be understood as making contributions to social mobilisation for the development of counter hegemonic transformative activity. In the specific context of Gurgaon, the T-Labs focussed on mobilising actors to start resisting neo-liberal reform pathways of development or growth, state disengagement and market-based governance (combined or separately). Social mobilisation (direct action, participation and experimentation) directed at the development of counter hegemonic activity to counter the above approaches to urban development aimed at the development of spaces for transformative changes.

Transformative change requires sustained engagement with the structural causes and with the effects of the underlying dynamics of capitalist pathways, which is increasingly linked to the secondary circuit of capital accumulation

in Gurgaon. It was also envisaged that at some point in time the T-Lab would need to focus on the issue of how to interweave the economic and social transformations – related interventions with the sub-regimes of water management and urbanisation.

The mainstream pathways of unsustainable urbanisation in Gurgaon are driven by the combined power of real estate, national and transnational capital and local elites coming from the middle classes and farming communities. The T-Lab process has had to address the issues of structural transformation (s), and the India hub has chosen to find ways of contesting the forces representing transnational and national capital who wield a lot of power on the urban transition at the moment in Gurgaon. In the meanwhile, the GWF continues to focus on fostering the dimensions of sustainability, water resources management and equity (water for all). It is crystal clear that it would not be possible in Gurgaon to tackle the full challenge of sustainable urban water management without countering the real estate and rent-seeking classes.

The dynamics of closing and opening of spaces for new visions of transformation is a political, ideological and socio-cultural process. The MSP needs to add its might and contribute by adding strength to the existing democratic currents. The two challenges of equity and ecological soundness need to be tackled upfront to mobilise the democratic mass. Examining equity and ecological soundness in the domain of water management will allow the GWF to generate credibility for itself. Simultaneous preparations need to be made for the domains of water management, city development and governance of economic and social transformations in an integrated way.

The T-Lab process cannot be planned and implemented on the basis of a static notion of shared understanding (guiding the problem space and the desired transformative changes). The CPU should be the starting point of the T-Lab engagement. For example, there exists now the hegemony of framings such as a belief in growth first, the inevitability of urban change, the need for urban regions to import fresh surface water from Himalayas or the access to rivers like Yamuna and Ganga. The T-Lab methodology needs to target the hegemony of these framings – their hegemony is not permanent and can be contested.

Transformative change requires the multi-stakeholder platform to keep the more radical contestation in its reckoning. The TRCSS, JNU would need to engage with the domains of urban planning, urban design and urban governance through the promotion of legislative and institutional change to promote the participation and role of society in SUWM as well as the policy paradigm related to the planning and governance of economic, social and political transformation.

Intervention should not be limited to the participation in public consultations of local planning authorities, but we need to intervene in the domains of worker housing, legislation for participation of RWAs and local area committees in water conservation, wastewater recycling, SWM and urban planning, design and governance of the urban expansion.

The TRCSS, JNU is building a totally new space for enabling the mobilised publics to contribute in the co-production of knowledge, values and institutions. This process is a continuing activity where the processes of leadership, organisation and system building can be expected to play a critical role in the power dynamics. For success, the T-Lab process would require far more resources, organisation building and leadership. The collaborating mobilised publics will have to upgrade their capabilities and extend the networks. It is necessary to sustain the initiatives that have got going on the ground during the project period. Otherwise it can be easily predicted that the process of T-Lab will come to collapse with the completion of the ISSC project.

The Department of Science and Technology, Govt. of India has recently awarded a technology implementation project to the TRCSS, JNU to be implemented in collaboration with Centre for Technology and Development (CTD) and Society for Geo-Informatics and Sustainable Development (SGSD). GWF was also approached by the private sector to implement a Corporate Social Responsibility (CSR) funded RWH project, which has recently been completed. Other CSR groups are also approaching the GWF for implementing similar projects in Gurgaon. After the second T-Lab the GWF found that more groups are willing to collaborate, including Helping Brains, Haryana Institute of Public Administration, Street Vendors' Association and Sanitation Workers' Union. However, significantly more funds, whether through government or non-governmental sources are necessary to enable the sustenance and development of the GWF.

Finally, there are many more questions which would require answers from the T-Lab process in India. The TRCSS, JNU researchers have the challenge of finding more time to gain the trust of and legitimacy not only from the disciplines but also from the mobilised publics. The T-Lab process is a time-consuming activity.

Note

1 Lefebvre further explains the 'circuits of capitalism'. For him, investments in industrial sector (manufacturing and commerce) represent the 'Primary Circuit of Capitalism' where profit maximization takes place by minimizing the cost of manufacturing, especially the cost of labour. Factories are preferably located close to the areas having cheap housing provisions for its workers. The investment in real estate is called the 'secondary circuit of capital'. The money-flows into real estate through the development of land. It is significant to point out that this kind of investment is not easily convertible into liquid assets. Therefore, when the first circuit declines, the money flows into the secondary circuit resulting in the excessive development of land at the cost of environmental sustainability. In case of the recovery of the 'primary circuit', the reverse flow of money from 'secondary circuit' does not take place quickly. This is because the money invested in built environment can't be easily converted back to cash and the real estate value declines. Consequently, municipal and metropolitan revenue also declines.

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