What Explains Urban Poor's Access to Water? Case Study: Kabad Khana, BHOPAL

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Abstract

Access to water is one of the critical issues for urban poor in India (12th Plan) and globally. While there are attempts being made to address the issue, still 50.3% of the urban households have no access to piped water within their premises in all Indian cities (BDP, 2005).

Recognizing this continuing urban poverty challenge, this paper analyses whether urban poor can really access the formal water supply system, taking a case study of slum area on Bhopal, India. To do this, effects of different levels of governance and power relations on the ability of the poor to access water from different sources and supply systems are assessed. The paper starts with identifying the actors involved in various processes of water supply management planning and implementation in Bhopal. Three levels of analysis are captured – household, community and city, all of which together determine and shape whether a poor person in slum area has access to water. We provide rich account of how these multiscale processes, governance and facilitation by different actors affect the water access on household level at the location of urban poor. We further advance the analysis by looking at the how poor and disadvantaged groups are represented in the planning processes and to what extent the city level governance actors are accountable to the voice of the poor people as citizens. We locate serious gaps in planning and management approach of the municipality and suggest alternative approaches that involve better understanding of the poor and their livelihoods, better community engagement and accountable governance system.

1. Introduction

1.1. Urban Poverty

There is no universally accepted definition of poverty but in the context of our research we defined poverty in the view of the Asian Development Bank (ADB), as a deprivation of essential assets and opportunities to which every human is entitled (ADB, 1999). This includes the basic services and infrastructure facilities such as access to clean and quality drinking water, sewerage and sanitation facilities.

Urban poverty is quiet different and presents more unique challenges as compared to rural poverty. Thereby, it is very essential to understand and study the scale of urban poverty. The study depicts that urban inequalities are increasing in terms of basic services such as food, water and sanitation.

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In the case of Bhopal which is one of the urbanising cities of Madhya Pradesh (India) emerging as one of the busiest commercial centre with an area of 2,772 km², and a population of 1,836,784 (Census, 2001). Population in Bhopal is ever increasing due to the rapid urbanization stressing on the resources of the city which in turn has resulted in the formation of squatter settlements and slums. 35% of the population in Bhopal lives in the slums (ibid.).

Bhopal has only two main water sources which come from the Upper Lake and Kolar Dam. Old city, comprising the majority of the slums, receives water from the Upper Lake. Although this source has the capacity to supply the demand, due to the inadequate water supply network and the limited number of community stand posts, majority of the slums are lack of basic infrastructure as sufficient water supply.

Based on JNNURM (2005), many Government interventions have been implemented to improve the urban poverty especially in the slum area but they lacked of integrated approach.

1.2. Access to Water

According to Adriana Allen, the quality of water, its' affordability, sufficiency, regularity, safety, distance to source and user density are commonly used key determinants affecting the levels of access to water (Allen et. al. 2006). Allen also underlines the meaning of the socio-cultural context, inside which the process of water supply takes place. This means that the parameters affecting water access are embedded in a specific socio-cultural context. There we are focusing on governance, where access being one of the critical components of the water governance from the urban poor's perspective (Figure 1). By governance we refer to the process of decision making, involving actors on multiple scales. Thus interpreting Allen, we can draw a following graph:

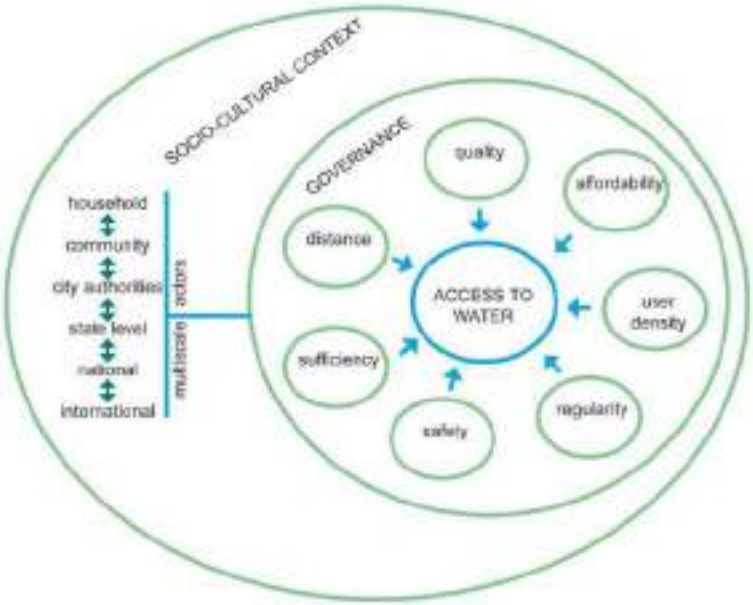

Figure 1: Access to Water

1.3. Climate Change and Water

Strong connection between climate change and urban poor is to help them adapt and resilient to possible change which is initiated, although to date attention has focused on mitigation rather than adaptation (Muller , 2007).

The effects of climate change on available water are more difficult to predict due to overlaping number of effects. To illustrate; if temperatures increase, there will be more evaporation from soil and transpiration from plants, and less water will flow into rivers or seep into the underground aquifers; but if rainfall is more intense, a larger proportion of water will flow off the ground as floods or infiltrate through the soil into the deeper groundwater (ibid.). According to IPCC, it is confirmed that South Asia's water system will be critically affected through decline in water flow and increase in flash floods (Bates et al., 2008). This will bring challenges to the South Asia countries particularly India to organize water management from local communities and government from various levels.

Water conflict is already severe, and would be more complicated with the climate change impact. In India, more than 60 case studies related to water have been done (Joy et al., 2008). Most of these case studies reflect patterns of conflict over water users and among diverse water users in India. But those studies have not really linked the dimensions of climate change into water conflict and governance.

1.4. Methods

By undergoing the existing water issues and look through the water accessibility to the urban poor, we found that access to water is critical issue for urban poor in India. Variety of documents such as the City Development Plan supported this subject. Several key points based on the issues crossed our mind and it guided us to come out with specific research questions. In overall, this paper aims to investigate the main question of what affects urban poor's access to water in the slum community level. To this end, specified under three main sections, each section addresses a specific research question that are:

1. Policy Analysis: How are the current policies including the issue of water access to urban poor?
2. Empirical Research: What are the key issues of water access from the perspective of urban poor? What are the perceptions of different actors in relation to water access to a slum community?
3. Initial Analysis and Interpretation: How do analysis of these different views help us to understand the urban poor's access to water?

To answer the above questions, a case of Bhopal is selected which represents various power relations among different actors. The case study approach was used to explore access to (or lack of) water of urban poor through various levels of actors.
Regarding the research methods, the following steps are taken:

- Actor-oriented approach

- Multiscalar Analysis
- Mixed Methods
  - Qualitative: narratives, short interviews, collected experiences
  - Quantitative: survey, literature and previous studies
- Case Study: Kabad Khana Slum Area
  - Survey of 30 households
  - Deep interviews of 5 households
  - Snowballing amongst inhabitants
- Deep interviews of 10 key actors from BMC, academics, NGO's, private sector

2. Case Study: Kabad Khana

Figure 2: Map of Bhopal city and the focus into Kabad Khana Slum Settlement

Kabad Khana is a slum squatter settlement in the old city area. The voting population of Kabad Khana is 2913 people though the actual population is assumed to be around 5000 people. Referring to Bhopal Municipal Corporation (2011), this is a private (BMC) land having an area of 96 acres (Table 1).

Type of land	Size (acres)
Commercial and Manufacturing	72
Inhabitants squatters (e.g: Patta)	14

Table 1: Existing Land Use in Khaba Khana

Due to increasing population and inadequate resource from the existing clean water, the water supply for the area cannot only depend on the Upper Lake located in the Old City catchment area. This situation leads to the use of other alternatives such as groundwater and tankers, particularly exploiting ground water for daily needs.

However, there are some arguments regarding the quality of the groundwater and particularly its safety. A reason to that is the Kabah Khana area emerging around the scrap-commercial area of old city where recycling and manufacturing activities are actively involved. The scrap activity has resulted with lots of waste dump and improper waste management in Kabad Khana. This indirectly causes contamination and polluted ground water. Yet not directly relevant but still being an important factor, the industrial disaster known as gas tragedy which took place in 1984 has long term effects on the living standards of these people and the ground water resources. This tragedy is said to have contaminated the ground water resources in and around the union carbide site. Many inhabitants of Kabad Khana are said to be gas victims and the second generations affected genetically or by drinking the toxicated ground water which they were unaware of till 2009 (Sambhavana Clinic, 2012). However, the ground water resources in the Kabad Khana area may or may not be toxicated since there has not been any precise study conducted in the area.

Water supply infrastructure covers 66% of Bhopal (Bhopal CDP) and rest is covered by water tankers and common piped connections of bore wells . In Kabad Khana specifically, water is supplied on alternate day basis maintaining a capacity of 160 lpcd (BMC) which is more than the actual parameter entitled to each household that is 135 lpcd. This is to maintain the sufficiency of water for two days. However, based on the site surveys in Kabad Khana, only 40% people have in-house connections whereas the rest have to collect water from piped connections from the bore wells outside. This is one of the reasons why water supply is insufficient in the areas where all the inhabitants of one street collects water from these piped connections.

As this area follows the same living standards of a slum, the inhabitants neither have proper in-house connections nor have any overhead tanks to store water. Since they have to go and collect water from outside, the people use buckets or water drums to carry and store water in their premises. According to the site survey, it is evident that all these households require minimum 3-4 buckets of water for daily use which they manage to divide it for the basic purposes of drinking, cooking , bathing and washing.

3. Findings on the Status of Access to Water

Since urban poverty is multidimensional and complex issue, uniformly designed programs and strategies do not give space for addressing context specific needs nor for available potentials and opportunities (Amis, 2007). With this given information, this section evaluates the determinants of access to water one by one and utilises the diagram defined by Allen et al. as an assessment tool, meanwhile raises a critical view in regards to the sufficiency of the parameters. Consequently, we first look into all the other determinants of access than the socio-cultural practices and governance, allowing the latter determinant formed under another section in order be examined more in detail.

3.1. Quality

According to the conveyed surveys at the site area, 40% of the respondents mentioned that water is not clean (Figure 3). 36% of these respondents futher expressed that there are health issues occurred due to the unhygiene conditions of water (Figure 4). Moreover, based upon the visual observations during the site visits and the interviews with the inhabitants, several cases highlighted the facts of the quality of water such as: drinking water having green color and insects being present in the water. Site surveys revealed out the fact that the unhygiene state of water is due to pipelines not being proper and that wastewater is getting mixed with drinking water through the leakages.

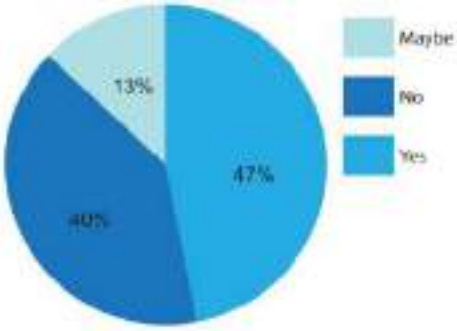

Figure 3: Cleanliness of Water

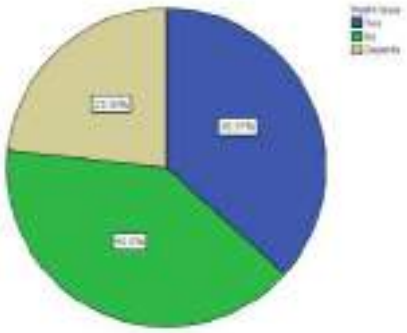

Figure 4: Presence of health issues related to water

3.2 Affordability

Monthly income of Kabad Khana residents generally range between 1000Rp and 9000Rp. According to the family members constituting the average number of seven members per household, it can be claimed that at least 23% of the households remain below poverty line (Tendulkar Committee, 2011) in the area (Figure 6). According to Urban Administration Development Department (UADD) in Bhopal, people below the poverty line (BPL) pay only the half of the water charges. However, despite the presence of the residents falling BPL, water prices seem to be fully charged (Figure 8). Yet, an opponent remains interesting. The majority of people living in the area either are not charged for water due to their illegal occupation of the land or simply do not pay their water charges (Figure 7).

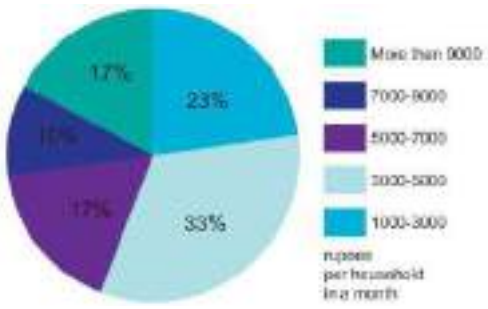

Figure 6: Percentage of Income Levels for Water

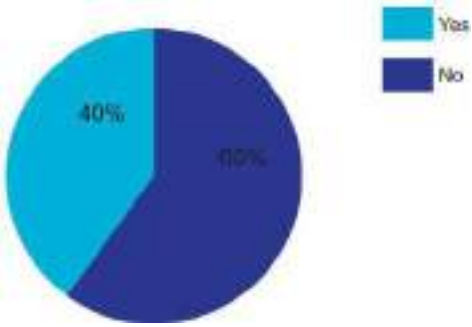

Figure 7: Percentage of People Charged

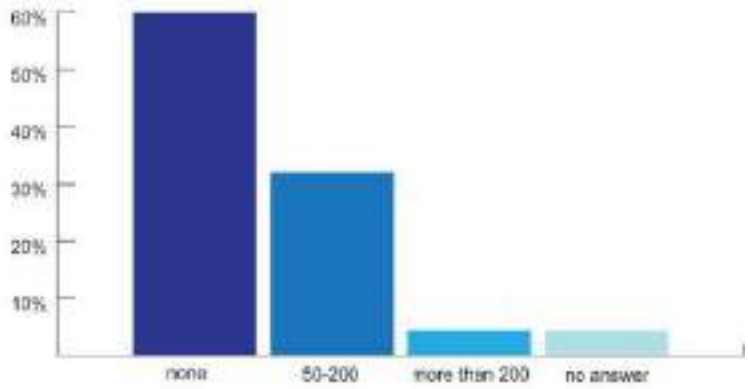

Figure 8: Percentage of Charged Water Prices

3.3 User Density

This parameter of access to water can be defined through the number of users utilising the water sources and facilities in sequence (Allen et. al. 2006). It is evident that the user density has increased as the population of Bhopal has grown with an approximate rate of 35% within the last 10 years (BDP, p.26). Even though the implications of these factors currently remain vague, in the long run they are likely to become primary factors effecting the user intensity in relation to water access.

Yet, there is another scale of user intensity found to be effective. Although it is hard to ascertain the number of people sharing one water connection, during our open questions, seven people mentioned that they queue for water. Additionally, it is known that 60% of the inhabitants of the case area do not have water connection at their homes.

3.4. Regularity

The two main identifying components of regularity are frenquency and timing of service availability (Allen et. al. 2006). Even though it is believed that the city of Bhopal has sufficient quantity of water, there is still challenge in distribution due to the problems of availability with certainty (Academic, 2012). This factor is also supported through the data maintained in the area of Kabad Khana. According to the Figure 10, it can be observed that the practice of collecting water take place usually in early morning time where only 10% of habitants can receive water any time they need. The situation tends to get harder especially during the period when septic tanks need to be emptied as the process can take months to get someone to do the job. Temporary precautions such as storing water are taken to overcome the issue of water being received each day at different hours. As a result, since certainty in receiving or collecting water is highly lack in the area, it would not be too far to state that the issue of receiving water is more likely to be irregular.

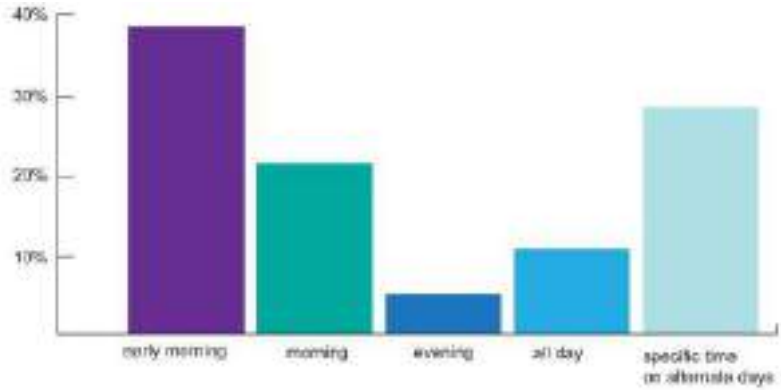

Figure 9: Percentage of Time to Receive Water

3.5. Sufficiency

This determinant is measured by water availability per capita (Allen et. al. 2006). However, since time being a major constraint, the analysis is done per household quantifying the amount of water measured on bucket basis. Almost the 60% of the residents living in the area receive more than 10 buckets, whereas the amount is limited to 6-10 buckets of water in 30% of the inhabitants (Figure 10). Nevertheless, it should be mentioned that the average number of members living in each household is seven and that water is not being collected on a regular basis.

The universal recognition of reasonable access to improved sources has been defined by WHO&UNICEF and stated as the 'availability of at least 20 litres per person per day within one kilometre of the user's dwelling' (WHO & UNICEF 2000, p.77). Based upon this state and referring the data collected, it could be said that the amount of water received is not sufficient. Further prove can be provided through the open questions where seven people out of thirty mentioned that summer time is often difficult since there is just simply not enough water.

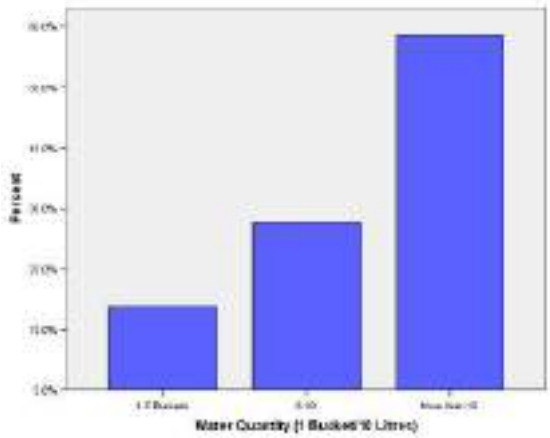
Figure 10: Received Water Quantity

3.6. Safety

This measure has been defined in terms of access to the use of facility (Allen et. al. 2006). Although there is no quantitative data specifically attributed to this parameter, open questions obtained during the site visits certainly stress out that there are evidences regarding the level of safety. An inhabitant stated that there are fights for water and other controversies especially in summer time when demands for water is higher. Another women inhabitant puts the situation into words such that due to the existance of fights regarding the collection of water, women do not let men fetch water anymore. Supposing that this is due being men and naturally having a more violent nature, she continues that men are much more aggressive than the ladies and that they start the fights more easily.

3.7. Distance

This parameter of access can defined as the physical road covered in order to reach the source or the facility. Figure 11 below presents that 40% of the inhabitants reach the water facility in 5 minutes walk whereas 35% states that they have water facilities in their homes. Although this data reflects that a quiet well percentage do not require any personal challenges to receive water, nearly 18% still walks half an hour to reach the water source. On the other hand, 8% claims that distance to water source depends on the various criteria which are mentioned as the seasonal changes, natural occurances such as flood in the open surveys.

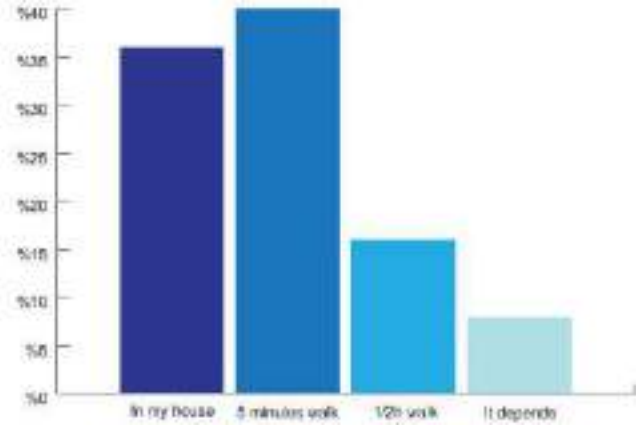

Figure 11: Distance from Water Source

4. Actors in Multiple Scales

4.1. Household Level Actors

Priorities in access to water is highly dependant on the gender factor among urban poor communities (Academic, 2012). This factor is due to the traditional practices that frames out each genders role as well as determined by employment situation and education levels in each family. In most cases, it is common to come across with situations where the one who goes to earn or learn has the priority to utilise water than the one who is neither employed nor assigned in any education institute (ibid.).

According to MPUSP, in various slum areas in Bhopal, it has been seen that women and children has been actively engaged in participatory practices in the context of health and hygiene. However, men remain less engaged and show less interest in access to water as they strongly believe that it is women's duty to collect water (Mittal 2010, p.41).

This very situation is also observed during the site visits conducted in Kabad Khana Slum area. Based upon the site surveys being held, it is seen that the task of collecting water is mostly done by women (Figure 12). Moreover, with reference to the qualitative data, it is observed in Kabad Khana that women use water for cooking whereas men getting ready for work and school.

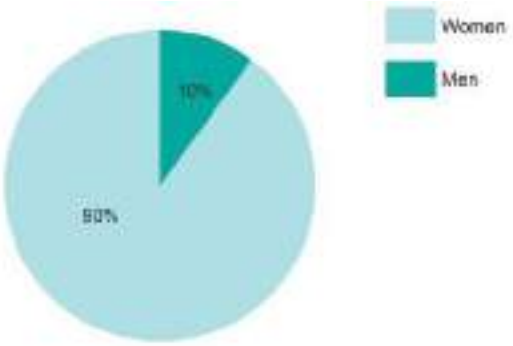

Figure 12: Water Collection by Gender

4.2. Community Level Actors

In localities of urban poor there are communities within communities and inside these a rich variation of actors with different levels of water access. In Kabad Khana neighborhood, there are strong power relations at community level that define access to water. Several conditions such as tenureship patterns and duration of habitance in the area might have implications on these power relations. During the site visits, these power relations were expressed by many inhabitants. As a vivid example, several people mentioned the conditions of exclusion and inclusion when they are forced to queueing system which has no rules, thereby one with more power stands simply first in the line to collect water. Strong community leaders could also be identified. Their power was visible in situations such as the community leader allowing us to communicate when he was present only with the inhabitants he preferred. Moreover, another inhabitant mentioned that due to these power relations strongly existing in the neighborhood, the ones who have no power can even be totally excluded from public water system.

Despite the strong power relations, there are still traces of collective action. Once more, open questions imply that community members gathered together to cover the open drainages in front of their houses, collected money in the community to bore a tube well to get their own pipeline connection.

4.3.The municipal and upper level actors

The assessment of drinking water supply and sanitation in India is the result of a collaborative exercise between the Planning Commission of India, the World Health Organization (WHO), and the United Nations Children's Fund (UNICEF) as part of a joint monitoring programme (JMP) for the sector. This country-level report in India comes in the wake of the four global assessments (JMP reports of 1991, 1993, 1996, and 2000) completed through the JMP process.

Water supply and sanitation is a State responsibility under the Constitution of India and following the 73rd and 74th constitutional Amendments, the States may give the responsibility and powers to the Panchayati Raj institutions (PRIs) and Urban Local Bodies (ULBs). At present, States generally plan, design and execute water supply schemes through their State Public Health Engineering Departments or as in the case of some States, through Panchayati Raj Engineering Departments or Rural Development Engineering Departments and Water Boards. In Bhopal there are 400 people employed to look after the water supply in co-operation both in BMC and PHE.

Of the total wastewater generated in the Bhopal, barely 30 per cent is treated before disposal. Thus, untreated water finds its way into water systems such as lakes and groundwater, causing serious water pollution. In Bhopal, the Lake Conservation Authority and BHOJ Wetland Project look after the discharge of municipal sewerage and solid waste to lake.

There is plenty of overlapping in the development of current policies. There are so many actors and projects going on. We encountered at least twenty different policy projects at national level dealing with water supply and sewerage management. When one of these schemes arrive to municipal level, it usually forms several action plans and thus the amount of projects rise further (India Assesment 2002). However, due to existing rivalries and disagreements in-between two projects acting on similar tasks, leading to outcomes where these two projects cancel each other is likely to happen.

At the municipal level we found problematic understandings on what the slums are and how urban poverty is conceptualized. We came across with situations, where it was claimed that development in one area requires underdevelopment at another part of the city. We were also informed that it would not be possible for a contemporary middle-class family to survive without employees in house to do the shopping, cooking and cleaning and that being the reason of why the poor people are needed. A municipal level planner stated that there is not enough space inside the city, so the poor people from the slums need to be moved outside the city where there are better conditions. We also encountered views such as the poor people just don't care about cleaniness or hygiene, they buy a two-wheeler or a mobile phone rather than invest on sanitation.

Climate awareness has not reached the municipal scale of actions. Currently, there are no policies on climate change. When interviewing planners and higher officers at BMC, the usual response was that there are much more important questions than climate climate change. There were also doubts on whether climate change is even an issue on the city of Bhopal.

There are highly contradictory views on water supply system. The most relevant ones concern whether the groundwater in Kabad Khana after the Union Carbide disaster is drinkable or not. According to State Research Unit, the Environmental Quality Monitoring Group, the groundwater in Kabad Khana is not contaminated. Municipal level planner shares this view. However, independent research units working together with local NGOs such as Sambhavna clinic have diverse views. A central person of the clinic stated that if a 3,5km radius circle around the Union Carbide site is drawn, all the groundwater until the depth of 100m is contaminated. Khabad Khana lies inside that circle. Contradictions rise also in several examples such as whether flooding is considered as a problem. According to municipal level interviews, flooding does not really occur in Kabad Khana. Nevertheless, during the surveys, flooding was often mentioned by the inhabitants and further stated that over a four hour rain, houses are flooded till their rooftops.

5. Analysis of Water Governance Practices

5.1. Equity

Based on our observations, we found out that there is little gender equity among the community members. Women are undertaking the role of collecting water. This can be due to the traditional practices as well as forced situation since in most cases only men work for household's income. Regarding the distributional equity, priority in access to water is for the habitants who are either working or studying. Women living in the case area stated that every night they wake up in order to make sure that there is enough water in the house for the morning. People who go out from the house to school or work need to wash themselves before leaving. If there is not enough water in stock for this, women would get out and look for it, because the water simply is needed to be there.

On the other hand, there are also strong commitments to be equal at community level. The neighbourhood in the case area has a rule of giving every household the right of having four buckets of water daily. No one takes more, because if someone exceed this limit, it would mean that someone else would get only two.

At city level, we cross the question of equity especially when talking of what is identified as a disadvantage in relation to prevalent situation and where these limits are drawn. This applies to whether an area is defined as a slum and at what state, if a person is identified to have a below-poverty-line card allowing cheaper tariffs on services or if someone is recognized as a gas tragedy victim having rights to compensations. Urban project manager at municipal level describes the situation

causing lots of frustration. According to him there is a problem with strict rules. As an illustrative example he asks to imagine that he is asked to provide slums with water. What happens if an area is not identified as a slum and still is not having adequate water services? To him the answer is clear, the area is to be left out.

In terms of physical access to water, we found no priorities given for the more vulnerable ones such as elderly and children in access to water.

5.2. Accountability

In formal decision making mechanisms in urban bodies the actors are often seen strictly accountable to upper lever or to larger scale actors, but not really to citizens. The accountability of urban bodies to slum dwellers is even weaker.

The planner from municipal level explains how this strict accountability to bigger scale actors can also become a burden. According to him, the selling and buying of land is a state level issue. Nevertheless planning remains as a municipal level task. This means that the city needs first to ask from the state to have ownership on the land, only then can city start to makes plans on the plot. Once plans are ready, they still need to get admitted at state level. Process is slow and leads to situations, where only 5-6% of the Master Plan becomes ever built.

Lack of accountability also exists inside the urban bodies themselves. Project manager at state level was critical on the practice of establishing new departments and changing responsibilities from one actor to another. According to him, new staffs are hired seldomly. If the subject of that new department was not familiar to staff before, how could they be competent? A retired higher level officer added to this that he does not see the municipal corporation or any other urban body being able to manage any controlling. According to him the Pollution Control Board has had many failings, as well as the Health Department.

People in the slums feel that they cannot count on services provided by municipal corporations. In situations such as the constant blockage of sewerage lines or water cut downs due to accidents, the inhabitants have difficulties in reaching the authorities. Even though they had made formal complaints which could take whole day meaning that losing a daily wage, there was neither physical action nor reply by the authorities. Taking almost a year to fix the water lines, there has been cases where the inhabitants were totally dependant on the water tankers.

The politicians are seen even less accountable towards the urban poor. Several inhabitants mentioned the policy of votes, that the politicians make promises only to get votes, however those promises are never met after getting the votes. According to a municipal planner, residents of the area are now aware of this issue, thus the voting rates have lately been really low.

In India the problematics of accountability towards the citizen has been identified. Although the consequences have not been observed in the case of Kabadkhana, the Right to Information Act was established in 2005. The importance of the right to information lies in its role in enforcing democratic accountability. This right is important not only for the exercise of political and civil rights but also social and economic rights. Independent information is also important for the people to make informed choices. In order to implement Right to Information to its full extent the support of social groups is needed. Social groups campaign for the enactment and use of a right to information law to be effective and accessible to all, and support people's efforts at developing the ability and motivation to use the right to information for addressing individual and social problems. They work at disseminating the RTI law and encourage and support the development of materials related to transparency and governance, the raising of awareness about the fundamental value of information, the conduct of research, and the setting up of information clearing houses (RTI, 2005).

5.3. Representation

Based on the site survey, figure 13 below clearly indicates that inhabitants are only weakly present in the decision-making processes on their water management. Respondants were asked to consider on whatever decision making, in a community or city level, into which they might have been participated.

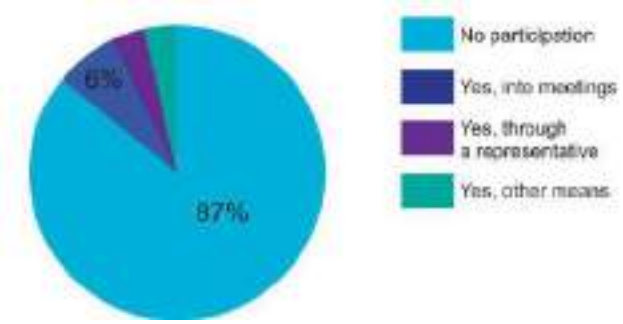

Figure 13: Decision making on water management

Although there are meetings being held among the community, they might be exclusive or they remain at community level without reaching city authorities. With representation people mostly refer to a community leader or other powerful person in their community that acts as a link towards the city authorities. Here participation through other means refers mostly to demonstrations or riots.
The community leader being a representative towards the authorities is both seen as a positive empowering possibility and a problem. According to a man in her thirties, one has to go several times to talk to our community leader. He might send people off and ask back and send off. When he feels like it, he will hear their concerns and then he will make the applications for water connection to work for them. He felt that there is no other means to reach the authorities.

In Kabad Khana a young man pointed a board of politicians and asked us a question: how come could those people represent slum-dwellers? They don't even dare to come to Kabad Khana, their prestige would be threatened if they would be seen here.

6. Conclusions

6.1. Community level governance is critical.

Community level governance is found to be more critical in determining water access than assumed by current policy analysis and scientific discussions. We found that the distribution of water happens in the end at micro-scale, even inside households. Municipality supposes that they are reaching all the rest who have no pipeline connection by covering those communities with tankers. Nevertheless the community level power relations come into play and determine who gets water first, how much, where and at what price. We found also water connections used by groups of people. We can say that there often lies a one more dealer in between the municipal water supply system and the household or individual urban poor and that this dealer is critical in determining how accessible water is.

6.2. There are problematic understandings on what urban poverty is.

At policy and implementation level there are problematic understandings on what urban poverty is. The diversity of different levels of access to water is not recognized. Neither is the variety of actors at community level. The genesis of slums is more usually seen to lie in insufficient housing stock rather than in insufficient income of people and thus in the migration of people in search for livelihood. Housing is often seen more essential than developing basic services. Poor people are regarded to as passive consumers or receivers of services, not so much as active agents to be included in development as sources of skills or labour. We can also find traces of thinking that follow dependency theory, in a way that among authorities there are beliefs that an area cannot develop without another area being underdeveloped. In these few examples it did not come into question, that several parts of the city could thrive and actually mutually gain from that thriving.

6.3. Interaction in-between different actors at different scales is lacking.

There is a lack of poor to be presented in decision making on water supply system. From the perspective of urban poor the possibility of inclusion is seen almost impossible. Trust in government or politicians is lacking. At the level of authorities, there are several urban bodies with overlapping tasks at different scales and the actions are experienced bureaucratic and slow. On the other hand, the division in-between state being responsible for land ownership issues and city of the planning and implementation is experienced challenging.

6.4. There are no precautions on climate change.

There is little or no awareness to external stresses to the water supply system, such as posed by climate change. At municipal level , there are no mitigation or adaptation programs. We found climate change related data being collected at state level only. On international scientific arenas the challenges of climate change and its extra stress on water systems has been identified. In scientific discussions it has also been identified, that climate change will pose stress especially on the water supply of urban poor. Many international cities, such as New York, have seen it important to prepare climate change adaptation programs.

7. Implications

In its newest plans on developing water supply, Bhopal municipality is proposing Private-Public Partnership as a method to implement and maintain the system. Private sector is seen as rather independent actor that would also be responsible on collecting water charges. Collection of revenue, implementation of new systems, as well as maintenance have been experienced as almost impossible tasks for the municipality. Thus by bringing in a new independent actor, it is supposed, that the efficiency and quality of service would rise.

In privatization of basic services, the affordability of water and inclusion of urban poor as customers is nevertheless endangered. If private sector invests in water infrastructure, it covers the costs by the revenue from the charges. There are less risks and more money to make in offering services to people with better income. Urban poor also live in areas to which the implementation of infra can be more difficult and costly. This all biases the water supply system towards the rich.

Instead of relying on private sector as such, here lies an opportunity to bring in an enterprise, that might actually re-establish the connections in-between authorities and urban poor communities, enable more context sensitive implementations, employ local people, share ownership of the enterprise with local communities and help in re-structuring the power relations in community level. We are talking of social enterprises, that can be defined as organisations with an explicit aim to benefit the community, initiated by a group of citizens and in which the material interest of capital investors is subject to limits. They place a high value on their independence and on economic risk-taking related to ongoing socio-economic activity.“The social impact on the community is not only a consequence or a side-effect of economic activity, but its motivation in itself.” (Nyssens, 2006)

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ABBREVIATIONS

BMC	Bhopal Municipal Corporation
BPL	Below Poverty Line
CDP	City Development Plan
JMP	Joint Monitoring Programme
MPSUP	Madhya Pradesh Urban Services for the Poor
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
PHE	Public Health Engineering
PRI	Panchayati Raj Institution
ULB	Urban Local Body
UADD	Urban Administration Development Department
WHO	World Health Organization