World Bank / Mumbai Municipality Slum Sanitation Program India - draft

Fig. 1: Project location (location will be added by GTZ ecosan team)

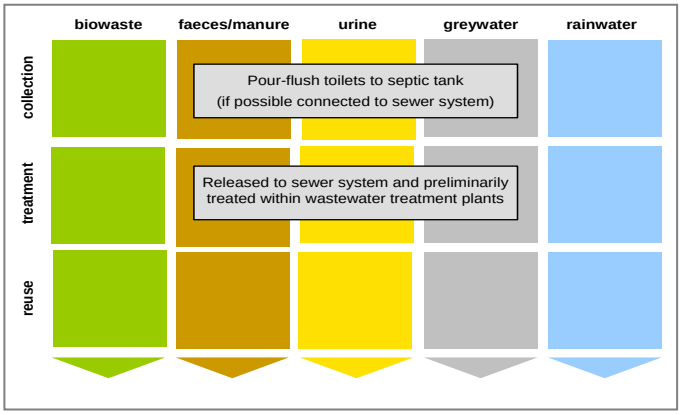

Fig. 2: Applied sanitation components in this project

1 General data

Type of project:
Upgrading slum sanitation by constructing community-based toilet blocks within Mumbai's slums

Project period:
Phase I (1997-2003): funded by the World Bank

Phase II (2003-2012): launched by the Mumbai Municipality with financial support of Maharashtra State and Central Urban Ministry (JNNURM)

Start of planning: March 1997 (Phase I)
End of construction: December 2005 (Phase I)
Subsequent Phase II: December 2003 – December 2012

Project scale:
Phase I: By December 2005, construction of 328 toilet blocks with more than 5'100 seats. These toilets serve the needs of 250'000 people at design capacity

Phase II: Community toilets with 35´000 additional toilet seats

Construction cost for one toilet block: approx. 900 Euro
Project cost for Phase I (1997-2003): 21.5 Million Euro

Address of project location:
Pre-1995 notified slums within Mumbai (on municipal, government and private land)

Planning institution:
The Municipal Corporation of Greater Mumbai (MCGM) launched the SSP (Phase I) as an integral part of the Mumbai Sewage Disposal Project (MSDP) with World Bank funding. About 90% of the funding was used to improve the centralized sewerage system whereas 10% was invested to upgrade the slum sanitation.

Executing institution:
Mumbai Corporation of Greater Mumbai (MCGM)
World Bank team (from Water and Sanitation Program)

2 Objective and motivation of the project

The overreaching objective of the Slum Sanitation Program (SSP) is to improve the inadequate sanitary conditions within Mumbai's slum areas through the provision of community toilet blocks

- The motivation of the program is to implement a demand driven community-based toilet project where slum dwellers are not only beneficiaries but also collaborators. The participatory approach of the SSP was a precondition of the World Bank funding
- The program has considered a major role of community in planning, designing, construction, operation and maintenance of the toilet blocks
- It is expected that the communities would meet their own demand the best by forming Community-Based Organizations (CBOs) supported and motivated from local NGOs and Officers on Special Duty (from SSP Department)
- By giving the slum dwellers a sense of ownership and responsibility towards the sanitary facility, it is expected to improve the operation and maintenance of the toilet blocks

Fig. 3: Densely populated slum area in Mumbai (source: Keller 2009)

3 Location and conditions

Mumbai is located at the west coast of India, borders on the Arabic Sea and is the capital of the state Maharashtra.

At the present time, Mumbai represents with 18 million inhabitants, the most populous city in India and the fourth largest metropolitan region in the world. The mega-city is the centre for development and financial activities of the country, and therefore its most influential urban agglomeration.

Ironically, in spite of Mumbai's general wealth, more than half of its citizens live in one of the 2000 densely populated slums distributed all over the city, composing only 8% of land area. Mumbai has an average density of 20´200 person per square kilometre, almost fivefold the density of London (4760 persons/km^2).

About 10% of the slums in Mumbai are non-notified slums and therefore not officially accepted by the Municipal Corporation of Greater Mumbai (MCGM). There are 0.54 million slum dwellers living in these 137non-notified slums, not provided with basis amenities such as water supply and sanitation by the city government. Accordingly, the SSP design was not taking into account these non-notified slums.

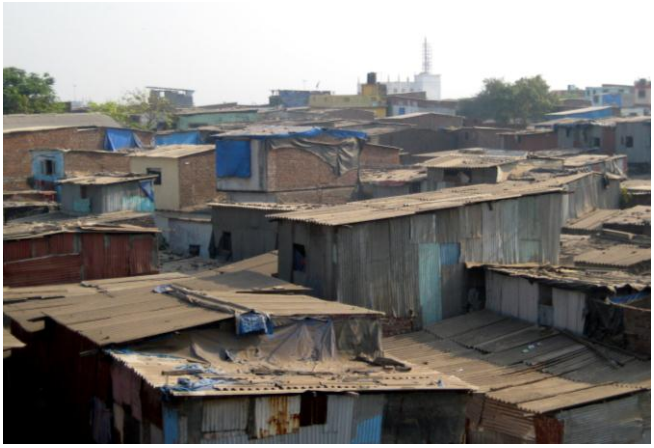

Fig. 4: Govandi slum, located in eastern Mumbai (source: Keller 2009)

During the development of the city, sanitary sewerage was given a lower priority compared to solid waste disposal, storm water drainage and water supply. Consequently, a very small area of the city was endowed with a piped sewerage system. While most of the city island is connected to the sewer system, the recently developed suburbs, as well as most of the slums, are not equipped with sewer-lines. In these areas, wastewater is collected through aqua privies and septic tanks.

Mumbai's slums are insufficiently provided with public or community toilets. In the past, these toilets were constructed by Maharashtra Housing and Area Development Authority (MHADA) and the Water Supply and Sewerage Department of the city. The provided toilets have neither water nor electricity connection and are mostly in bad conditions due to poor maintenance. The Municipal Corporation of Mumbai (MCGM) is charging employees with cleaning the public toilets but these people usually fail in maintaining the toilets properly.

As a result of the poor condition of public toilets, together with long queues especially in the morning, a big portion of the slum dwellers defecate in the open. Numerous women prefer to be in an open space instead of using a dirty toilet even if they are exposed to harassment. Furthermore, men and women's toilets are not separated. This reduces the sense of privacy and can lead to voyeurism.

The "pay-and-use" toilets provided by the city work well in large public concourses (such as railway stations and bus stops) but are not adequate solutions in slums due to the high prices charged for using the toilet (usually Rs. 2 per person).

The unsatisfactory collection and treatment of sewage within the slums fosters the expansion of various diseases as well as the degradation of the natural environment.

4 Project history

At the Indian national level, water supply and sanitation were added to the agenda during the first five-year planning period (1951-1956). The first sewerage Master Plan at city level in Mumbai was prepared by the British environmental engineering firm Metcalf and Eddy in 1979. This report was published and has provided a basis for the development of sewerage facilities since that time. In order to improve the inadequate water supply and sanitation situation in Mumbai, the Bombay Water Supply and Sewerage Disposal Project (BWSSDP) was launched and supported by the World Bank during the period 1974-1995.

Even though the BWSSD project improved the collection of raw sewage, still less than 20% of this collected sewage were treated before being released to rivers and the sea. In addition, most of the suburbs and slum areas were not provided with sewer-lines and sanitation facilities.
Therefore, the World Bank decided to support the city government of Mumbai with an additional sewage and sanitation project, named Mumbai Sewage Disposal Project. While 90% of the World Bank funding was intended to improve the centralized sewerage system (e.g. with additional treatment plants and extending sewer-lines), 10% of the funding were used to implement an integrated Slum Sanitation Program (SSP).

Planning of the SSP started in March 1997. The first stage of the SSP (1997-2003) was realized with financial support of the World Bank in cooperation with the MCGM. The project was implemented in four phases:

1. Publicity of the project and selection of slum communities
2. Demand assessment and generation of plans for operation and maintenance
3. Design and construction of toilet blocks
4. Operation and maintenance of toilets through CBOs

The start of the project was extremely difficult and did not meet the expectations of the participants. It was important to recognize that the 4 phases described above have to be interconnected and cannot be implemented separately. Some participants considered the World Bank's design as being to scientific in the beginning, lacking of practical application.

The first phase was a big hurdle to overcome and the four involved NGOs were confronted with a lack of enthusiasm towards the project design. Three quarter of the 141 selected communities were not willing to join the program. The main reason for this lacking interest was because of the involved costs or the fear not gaining anything from the program.

In the past, public toilets were mostly offered free of charge by various organizations. That was the reason why slum dwellers and other actors (NGOs, politicians, social workers) were not persuaded of this new World Bank design right from the start. Furthermore, the mobilization of slum communities and their formation to CBOs were very time-consuming and disappointing.

In 2000, the World Bank team generated its mid-term evaluation of the SSP. As a result of the identified problems within the project, necessarily modifications were introduced. A consulting agency in collaboration with an NGO was assigned to conduct a comprehensive social and technical survey about the status of sanitation in all the slums.

At the beginning of the program, the World Bank decided to construct toilet blocks only in slums located on municipal land. Based on the survey's result, they decided to implement the program in all slums which were suited for the SSP, irrespective of their status (municipal land, private land or mixed land).

In 2003, the SSP (Phase I) was completed and therefore the World Bank's engagement finished. The MCGM decided to continue improving the slum sanitation within the mega-city and launched a subsequent program (SSP Phase II). They entered a partnership with the Central Urban Ministry (JNNURM) and the Maharashtra state for their financial support in the SSP II.

The aim is to provide community toilets with 35'000 additional toilet seats until 2012 to counteract the lack of sanitary facilities. The provision of the toilet blocks should take place in the same participative manner as proposed and supported by the World Bank in the first phase.

5 Technologies applied

By December 2005, a number of 328 toilet blocks with more than 5'100 toilet seats were constructed under SSP (Phase I).

Fig. 5: New community toilet block constructed under the SSP with separate entrances for women and men in order to enhance private sphere and security for the women (source: Keller 2009)

The majority of these toilets:

- are located in community toilet blocks with two-floor reinforced cement concrete (RCC) frame structures
- are pour-flush toilets that require half a bucket of water for flushing
- have waste disposal to septic tanks and aqua privies (preferred connection to sewer-lines if possible)
- have an overhead water tank
- have 24 hours water and electricity

The first priority regarding the waste disposal is to connect the community toilets to existing sewer-lines. Due to the reason that only a few numbers of slums are provided with sewer-lines, most of the community toilets are equipped with septic tanks or aqua privies.

In those community toilets which are accessible by street, the sludge which is produced within the septic tanks is taken out by tankers. The liquids are taken out and disposed to the storm water drains whereas the sludge is taken to dumping grounds. However, most of the community toilets are not accessible by tankers due to the high density and lack of open space for constructing proper roads. In these areas, people have to take out the sludge manually.

As a result of the big capacity of the septic tanks, the CBOs are not experienced with cleaning out the tanks. Most of the tanks within the constructed toilet blocks have not required a clearance yet. Realizing the lack of disposal arrangement, the CBO members are developing an appropriate disposal management system. According to community members, the septic tank is an appropriate solution where connections to sewer-lines are not available. The application of aqua privies is not preferred due to the risk of overflows during the monsoon season.

Fig. 6: Community toilet block constructed under SSP with a number of 20 toilet seats, located in Govandi slum (source: Keller 2009)

Fig. 7: Women's department within a community toilet block provided with electricity and water (source: Keller 2009)

6 Design information

The 328 toilet blocks constructed within the SSP (Phase I):

- have an average of 10 to 20 toilet seats
- have a usage norm of 50 users per seat
- are designed for 30 years lifespan
- have a caretaker's room which can be used for community activities (Computer or English lessons, library,…)

The 5100 toilet seats serve needs of 250'000 people at design capacity whereas empirical observations show over 400'000 toilet users.

Fig. 8: Pour-flush toilet within a newly constructed community toilet (source: Keller 2009)

Fig. 9: Care takers' living space on top of the community toilet in Govandi slum (source: Keller 2009)

7 Type and level of reuse

The SSP is focused on the improvement of the hygienically poor situation in Mumbai, counteracting the lacking sanitation facilities regarding number and quality of public and community toilets.

There is no reuse of urine and faeces practiced within the program. The main reason is that there are no agricultural or garden areas within short distances from the slums where urine and faeces could be applied to and therefore benefit the community. Furthermore, Mumbai has no tradition and less experience of reusing urine and faeces. Therefore, the mindset of the people is restricting the recycling application to a certain degree. They are afraid of reusing urine and faeces because they do not trust the treatment process.

8 Further project components

The participatory approach of the SSP to integrate slum dwellers in planning, designing, constructing as well as in operation and maintenance of the toilet block, was a pre-condition by the World Bank. The World Bank's assumption was that NGOs and CBOs which are strongly involved in the program are accountable, non-corrupt and pro-people.

The World Bank´s project design aimed at creating incentives for private contractors, NGOs and CBOs to work in a joint-venture to provide community toilet blocks within the slum areas. The toilet construction should take place within a flexible framework with NGO-led partnership with construction contractors and contractor-led partnership with NGOs. The private contractors were asked to construct the toilet blocks in close collaboration with NGOs which act as mediators between the slum dwellers and the contractors. It is therefore assumed that NGOs represent the concerns of the slum dwellers. The partnership of NGOs with private contractors should guarantee that slum dwellers needs' are properly integrated in planning, design, and construction of the toilet block. This new institutional approach aimed at combining the software skills of NGOs (interacting with slum dwellers) with the hardware skills of the private contractors (constructing toilet blocks).

The World Bank's design asked NGOs and construction contractors to tender for the following stages:

- NGOs and private contractors are publicizing their proposal and organizing the communities to tender for the construction contracts
- NGOs and private contractors are designing toilets with support and approval of the slum communities
- NGOs and private contractors are building the community toilet blocks
- improvement of health and sanitation within households and communities,

For this new project design, the World Bank gave equal status for NGOs and private contractors. Therefore, the World Bank changed its constraint that NGOs are only authorized to implement projects which cost less than 10'000 US Dollar.

NGO SPARC won the tender and was authorized to build 320 toilet blocks with 6400 seats in slum areas which are located in 20 different wards. SPARC is one of the largest and most famous Indian NGOs working on housing and infrastructure issues for the urban poor.

Some communities have launched different activities on top of their community toilet or in other locations. The CBO "Triratna Prerana Mandal" can be characterized as role-model community which initiated various activities such as dance lessons, computer classes, and English courses within their community. For their engagement in Mumbai´s slum, Deutsche Bank awarded the CBO with their urban age award in 2007.

Fig. 10: The CBO "Triratna Prerana Mandal" has initiated various activities within their community such as English and Computer lesson as well as sport activities (source: Keller 2009)

In 2004, some CBO members came together to exchange their experiences of managing their community along with their toilet block. In 2007, they officially registered as a CBO Federation with the aim to share their experiences and knowledge with other participants of the project. The CBO Federation is composed of 11 CBO members who were strongly involved in designing, planning and constructing their own community toilet under the Slum Sanitation Project (SSP). They developed the incentive to become experts of this new participatory approach while supporting its implementation in other cities. At the present time, they are developing a strategy for implementing the CBO structure in a pilgrim city in the state of Maharashtra that suffers strongly from lacking sanitation facilities.

Fig. 11: Mr. Anand Jagtap (left), Officer on Special Duty and most important contact and support person of the CBO members in Mumbai slums. Mr. Sattar (right) is the chief of the CBO Federation formed in 2007 (source: Keller 2009)

In order to support a successful implementation of the SSP, the World Bank suggested to establish an own department within the MCGM. Since the establishment of the SSP Department, specific members (Community development officers and officers on special duty) are working closely together with CBOs and act as mediators between the slum dwellers and the MCGM.

9 Costs and economics

Project cost of SSP (Phase I): **21.5 Million Euros**
Capital costs per seat of SSP toilet: **800 to 1000 Euros**

Toilets provided in the past by the MHADA were built much cheaper and cost between 380 to 620 Euros. However, after three years in operation, these precedent toilets were in extremely bad condition due to the poor quality of materials and the lack of proper maintenance.

Within the SSP (phase I), slum dwellers had to bear 10% of the construction costs for the toilet block. There has to be collected an upfront contribution of Rs. 100 per adult, limited to Rs. 500 (8 Euros) per household for the construction of the toilet blocks (approx. 50 users per seat). This money is deposited in a joint account of CBO and MCGM.

There exist two forms of user charges in practice. On the one hand, the CBO collects monthly fees from members with monthly family passes. These member fees are between Rs. 20 to Rs. 40 (0.32 to 0.64 Euro) in the different slum areas. On the other hand, there exist per-use user charges of Rs. 2 for the slum dwellers that are not members but using the community toilet. The money collected through these two different user charges is required for operation and maintenance.

Fig. 12: Cashier desk within a community toilet. The cashiers are responsible for checking the member passes and collecting the user charges (average Rs.2) for non-members (source: Keller 2009)

According to World Bank calculations, financial sustainability would be close to twice the current family pass rate and therefore only possible in the long turn. Toilet blocks located near public concourses are more cost-effective due to the higher proportion of pay and use users.

10 Operation and maintenance

After constructing the community toilet under the SSP, the toilet is taken over by the CBO when having signed a memorandum of understanding (MoU) with the MCGM. By taking over the responsibility for the sanitation facility, the CBO is in charge of the operation and maintenance of the toilet block.

Each community (with its new toilet block) has a CBO president who is responsible for the slum dwellers and for the collection of the monthly fees. The collected monthly fees from community members (Rs. 30 per family on average) and per-use users (Rs. 1) help covering the expenses regarding operation and maintenance. The CBO is required to pay necessary deposits to obtain water and electricity connections and to carry out minor repairs. In contrast, the MCGM is in charge of major repairs and is providing network services (e.g. water supply and sewerage).

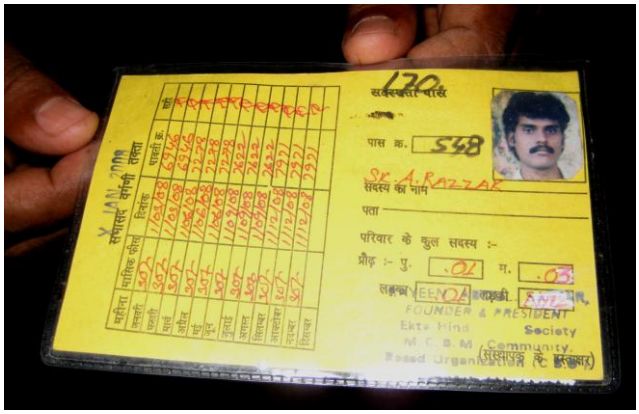

Fig. 13: Community membership pass (source: Keller 2009)

Furthermore, the CBOs have a resident caretaker who lives together with his/her family at the upper-most level of the community toilet block. On the one hand, the accommodation of the caretaker is part of the payment and therefore reduces the management and maintenance costs. On the other hand, scavenging work is still done by people from socially disadvantaged castes. Giving the caretaker a living space within the toilet block together with a minimum wage has a positive impact on their livelihood.

11 Practical experience and lessons learned

The experiences and lessons learned so far from the SSP implementation are positively as well as negatively. However, both kinds of experiences can contribute to improve further implementation steps.

The implementation of the SSP has demonstrated the following achievements:

- significant improvements in quality, maintenance and cleanliness of the community toilets compared to the past toilets provided by the MCGM
- successful impact of a participatory, demand-driven approach where community members are willing to pay membership fees and O&M costs
- community toilets can bring people together facilitating various community activities and can strengthen the relationship between slum dwellers, NGOs, politicians and municipal officers
- successful partnership between NGOs, contractors and CBOs working jointly together to provide community toilet blocks within a flexible institutional framework

The implementation of the SSP has identified the following challenges:

- the majority of the toilet blocks have no connection to sewer-lines due to the amount of time and costs this would require
- almost 30% of the new toilet blocks have no water connection mostly due to the high costs involved
- implementation of “one-size-fits-all” approach regarding the applied technologies (two-floor community toilets with septic tanks) despite of the envisaged participatory approach

- deficient resources have been invested for community mobilization with resultant weak outcomes in forming CBOs
- inadequate attention to integrate slum dwellers into the design of community toilet blocks

12 Sustainability assessment and long-term impacts

Table 1: Qualitative indication of sustainability of system.
A cross in the respective column shows assessment of the relative sustainability of project (+ means: strong point of project; o means: average strength for this aspect and – means: no emphasis on this aspect for this project).

	collection and transport			treatment			transport and reuse		
Sustainability criteria	+	o	-	+	O	-	+	o	-
health and hygiene	X			X				X	
environmental and natural resources			X			X			X
technology and operation		X			X			X	
finance and economics		X			X				X
socio-cultural and institutional	X				X			X	

Sustainability criteria for sanitation:
Health and hygiene include the risk of exposure to pathogens and hazardous substances and improvement of livelihood achieved by the application of a certain sanitation system.
Environment and natural resources involve the resources needed in the project as well as the degree of recycling and reuse practiced and the effects of these.
Technology and operation relate to the functionality and ease of constructing, operating and monitoring the entire system as well as its robustness and adaptability to existing systems.
Financial and economic issues include the capacity of households and communities to cover the costs for sanitation as well as the benefit, e.g. from fertilizer and the external impact on the economy.
Socio-cultural and institutional aspects refer to the socio-cultural acceptance and appropriateness of the system, perceptions, gender issues and compliance with legal and institutional frameworks.
For details on these criteria, please see the SuSanA Vision document "Towards more sustainable solutions" (www.susana.org).

Health and hygiene

Environment and natural resources

Technology and operation

Financial and economic issues

Socio-cultural and institutional aspects

Regarding the long term impacts of the project, the main expected impacts are:

- improved public health as a result of the enhanced sanitation facilities (relating to increased number and quality of toilet blocks)
- empowerment of slum dwellers by giving them voice in the decision of sanitation issues
- increased awareness regarding sanitation issues by slum dwellers
- increased community activities in many respects resulting from the CBO formation and its mobilization character

13 Available documents and references

Burra, S., Patel, S. and Kerr, T. (2003): Community-designed, built and managed toilet blocks in Indian cities. In: Environment and Urbanization, Vol. 15, No. 2, p: 11-32. http://eau.sagepub.com/cgi/content/abstract/15/2/11

McFarlene, C (2008): Sanitation in Mumbai´s informal settlement: state, slum and infrastructure. In: Environmental and Planning A, Vol. 40, p: 88-107. http://www.envplan.com/abstract.cgi?id=a39221

World Bank (2006): The Mumbai Slum Sanitation Program. Partnering with slum communities for sustainable sanitation in a megalopolis. A report of the World Bank and the Water and Sanitation Program-South Asia. http://esa.un.org/iys/docs/san_lib_docs/WSP-Mumbai.pdf

Sharma, R. N., Bhide, A. (2005): World Bank funded Slum Sanitation Programme in Mumbai. Participatory Approach and Lessons learnt. In: Economic and Political Weekly,

Anand Jagtap, Officer on Special Duty of Slum Sanitation Program Department: adjagtap@gmail.com

14 Institutions, organisations and contact persons

Contact details of all parties involved in the project, including description of role and responsibility within the project (including e-mail addresses and websites of organisations).
Example:
Anand Jagtap, Officer on Special Duty of SSP Department
Address
City
Country
T: phone number
M: mobile number
E: email address
I: website of the institution

Case study of SuSanA projects

Project name

SuSanA 2009

Authors: Anand Jagtap, Officer on Special Duty (Slum Sanitation Department)

Editing and reviewing (only in updated version): xxx

This document is available from:

Please name the case studies like this (no space, no big letters, no underline):
en-susana-cs-country-city-projectname-year.doc
or
en-susana-cs-country-city-projectname-year.pdf

If you have any questions on how to fill the sections, please have a look at the case studies on www.susana.org.