

Title of the paper: Strengthening The Service Delivery System, Using GIS-
Based Governance Tools

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- B.E. (Electronics and Telecommunication – Pune University)
- Masters in GeoInformatics (Symbiosis Institute Of GeoInformatics)
- Worked with Lavasa Corporation Ltd. As a GIS Analyst for 2 years.
- Past 1 year working with CHF International.
- In GIS Field since 2005.

Paper

Introduction:

How often do we find that a community is deciding as to what is most important for it? Can we establish a system that collates the different priorities of different communities and then come up with a city wide plan and budget for it?

Well, in most cases we will find that the ULB decides the programs, sets city wide targets as per the available budget and then identifies the target beneficiaries.

UTTHAN is Pune city's zest, to empower the urban poor communities by adopting a participatory approach for pro-poor program planning & delivery of services and to strengthen the service delivery system by developing a GIS-based governance tool.

Utthan Project:

CHF International's Slum Communities Achieving Liveable Environments with Urban Partners (SCALE-UP) program, in partnership with the Pune Municipal Corporation's (PMC) Urban Community Development Department (UCD) and local partner MASHAL, has conceived an information based community participatory program called 'Utthan' ('rising from the bottom,' in Hindi) wherein the aim is to enable the government to provide better services to its poorer citizens. For strengthening the service delivery system, GIS-based governance tools are being developed.

The project features are as below:

Service delivery

- Mapping the 524+ slums in Pune
- Develop and update the socioeconomic profile of over 250,000 slum households using UCD structures
- Create geographically enhanced templates using GIS for analysis and monitoring
- Build the capacity of UCD to use and mainstream the tools into its daily operations

Demand creation

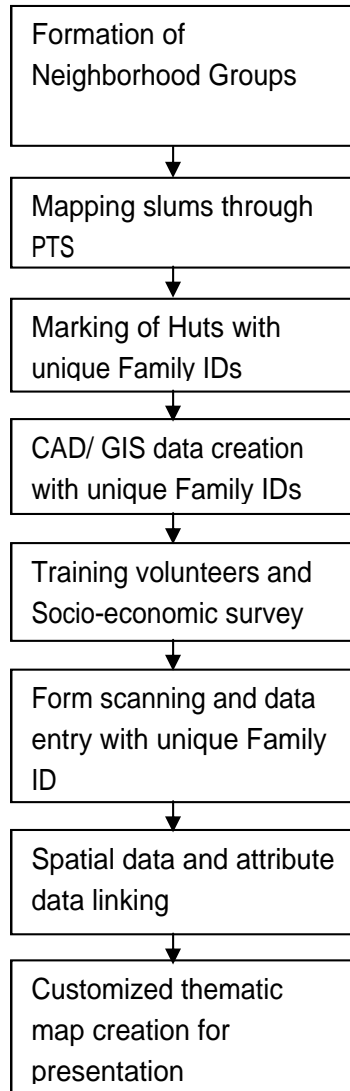
- Micro-planning at household and at slum levels
- Build governance structures to prioritize needs
- Develop a citizen enabled participatory process to translate demands into governance at the ward level
- This application is to be deployed in the Pune Municipal Corporation on its server for accessing data related to the urban poor.

Brief Methodology:

Plain table surveys (PTS) were conducted and then digitized using AutoCAD to capture the 'spatial' information of huts and other structures within the slum boundary. The socioeconomic information was collected through surveys using existing and modified UCD structures and

processes. The surveys were collated and translated into a digital database using a customized data entry tool. This database was linked to the spatial data in a GIS environment using a unique identifier developed for each structure within the slum.

Flowchart:



Data collection and processing

GIS is essentially composed of spatial data and its associated attribute or qualitative data to form a rich information system. The availability of information in a usable format in developing countries is a major constraint when developing information systems that support governance. As part of Utthan, in the absence of reliable secondary data, primary data collection exercises

were undertaken using satellite imagery, demographic and plain table surveys, etc. The slum boundaries and clusters of physical structures within were recorded through the heads-up digitizing of satellite imagery and detailed slum layout was captured using Plain Table Surveys (PTS). AutoCAD drawings were developed using PTS procured from Local Intermediary (LI), MASHAL (Maharashtra Social Housing & Action League), and other organisations.

The AutoCAD drawings were updated to reflect the changes which had occurred since the initial survey. These changes were investigated and confirmed by a team of social workers through a rigorous process of ground verification and discussions with both the slum inhabitants as well as the technical team. This base spatial information was supplemented with hut numbers and Neighbourhood Group (NHG) divisions (each consisting of a cluster of about 25 huts). The process of demarcating the NHG and the hut numbering is in itself a very big task. The team of social workers along with the UCD representatives consider the location of the RCV and demarcate the NHG boundary for that particular RCV. This NHG boundary is then brought in GIS and the process for hut numbering in that NHG is initiated. The hut numbering requires a manual and tedious process of incremental numbering from 1 to 25 families. This repetitive task was thus automated by customizing a simple tool for hut number incrementation. The huts are numbered on the map, keeping in mind that they should be easier for the survey person to refer to the map and visit the sequential hut locations on the ground.

Socio-economic database:

The collection of socioeconomic data was undertaken by UCD's Resident Community Volunteers (RCVs) and Utthan's social workers, in cooperation with the city employed social workers. RCVs are typically women of good standing chosen from within the slum community and there is one volunteer for each cluster of 25 huts. The data collection occurred between May 2008 and August 2008. The RCVs used survey forms in Marathi (the local language) to record detailed information from each hut and household in their assigned NHG. These forms were scanned for ease of data entry and for the preservation of original data. The socioeconomic data was entered using a specifically developed data entry tool called IRIS which permits the data operators to view the digital form and simultaneously translate data, from Marathi into English, into the text database. While 'hutment' is the smallest physical unit in the slum, the 'household' or 'family' forms the smallest unit of measurement in the project, since a single hut can be occupied by multiple families. A unique identifier, the '*family code*,' was created to identify these families living within a single hutment, where a family could be related or unrelated to the other. While this code is independent of the exact location of the family inside the hutment (e.g. on the ground, first or second floor, or on the same floor) it uniquely addresses all members of the resident families living within the same structure and also identifies the precise physical location of the hutment within the slum.

Creating maps and other analysed outputs from the linkage of spatial and attribute data had to pass through an extremely time consuming but very important stage of data cleaning. Cleaning

data for duplicates, spelling mistakes and other data entry related errors is a pretty routine task; however, many errors were introduced due to some interesting dynamics in the slums themselves. There were several cases of slum residents filling duplicate forms, hoping to get additional mileage in case there is some housing scheme coming up. At times, there were families who actually owned multiple huts in the same slum and hence had filled forms for each hut thus creating multiple entries for the same persons. Same person's name spelt in different manner and some common names that appeared repeatedly also posed difficulties in verifying the actual situation. In many of such case, the social workers had to physically go to the slums and verify the actual situation and these errors were resolved. Making the data as error free as possible and fit for linking was one of the most time consuming tasks in the entire process.

Results:

After linking the spatial data and the socioeconomic data using the unique family code, the project was able to generate visual representations relating to the livelihood of individual households, about the infrastructure (or lack of it) in slums, beneficiaries of various schemes, etc. Some examples of which are displayed below. These maps assist the UCD in understanding issues which pertain to the slum populations. These maps are also presented to the slum communities themselves, further engaging them in the governance process, as well as encouraging crucial feedback.

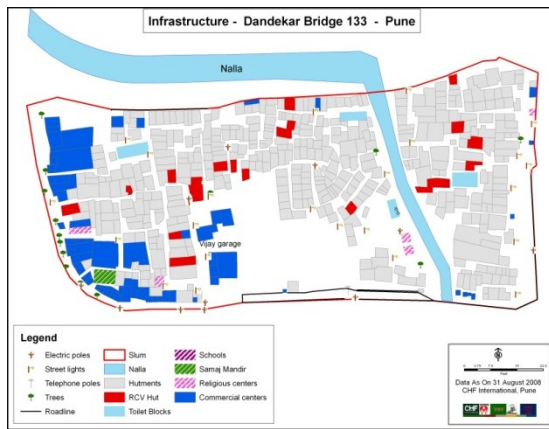


Fig 1: Map of Infrastructure in Slum

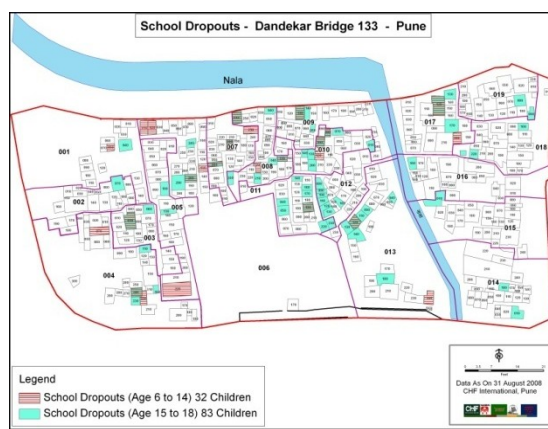


Fig 2: Map of School Dropout Children

All the maps that are presented in the slum are especially represented in local language, as shown below, for better understanding.

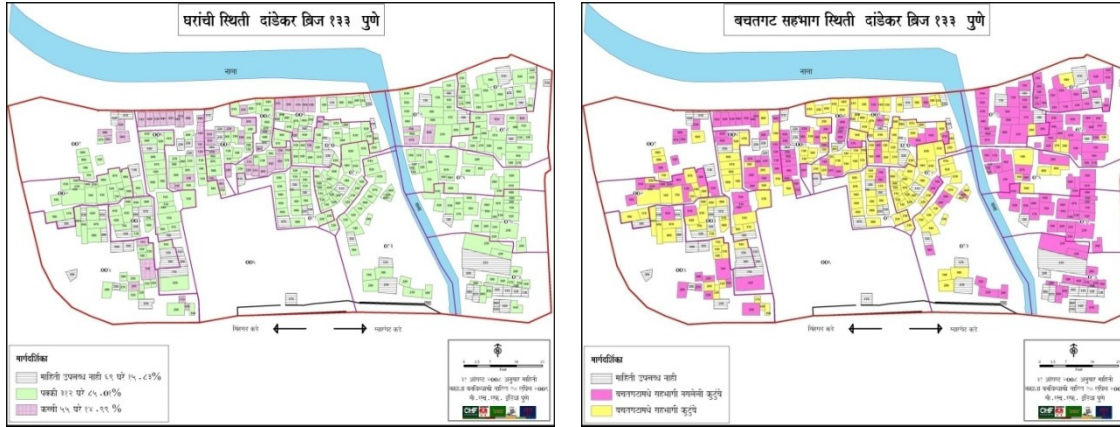


Fig 3: Map of Kuccha/Pukka Hut Status

Fig 3: Map of Self Help Group Participation Status

Utthan has created an extensive database of the socioeconomic information and this is being utilised to create maps for several other themes such as income levels of families, gender based analysis, health related information, occupation and employment status, etc. With the help of maps and presentations as effective tools, creating awareness among the slum dwellers becomes much easier. This awareness in turn helps to start the most important process of bottoms up planning approach where the community starts realising its needs and its present status as a whole and thus directs the attention of the Govt. towards issues that it feels are more important. The government also is benefited by the fact that it is able to concentrate on definite issues and has concrete compilation of the statistics and demographics of issues concerning that particular community.

In order to make the benefits of the entire system more accessible to the beneficiaries and the government and to make it at par with modern day systems, a Web GIS based system has been planned. The Utthan's GIS based application would be a web based portal that would help visualize, generate maps/reports, query as well as allow the updation of the attribute information of corresponding slum dwellers, hosted on centralized data server. The entire attribute data – Socioeconomic information of the urban poor of Pune and the Spatial data – slum maps will be housed on a central server in PMC. This information would be made available to the PMC functionaries and others through a web based portal. The Web GIS is envisioned as a bundled system of Data exchange between Slum inhabitants, Resident Community Volunteers (RCVs) and the Urban Community Development (UCD) department's community structure. This would be managed through a centralized coordination function at the UCD. The UCD GIS Administrator will play a key role in ensuring the integrity of the overall system by monitoring services and the roles assigned.

The Web GIS would thus offer a platform for transparent data sharing and act as a tool to improve the service delivery of programmes and schemes offered by UCD to the city's urban poor through community participation.

Conclusion:

The collection of detailed information under Utthan has helped program development and implementation at many levels, from the scale of individual, family and household, to city-wide, and thus facilitated wide collaboration. A GIS based governance tool is helping convert numbers to easily identifiable beneficiaries. Rather than large sheets of data, maps are easily understood by lay persons and thus information can be shared. Having clearly defined NHGs is helping demarcate the jurisdictions to the RCVs and thus is increasing their accountability. Increased community participation in the process and the vast data resources that are being created would ultimately help in utilizing the government funds in a much more efficient manner.

About CHF International

Founded in 1952, the Cooperative Housing Foundation – now known simply as CHF International – serves more than 20 million people each year, empowering them to improve their lives and livelihoods for a better future. CHF currently has programs in more than 30 countries around the world across Asia, Africa, Latin America & Caribbean, Europe & the Caucasus and the Middle East. CHF's mission is to be a catalyst for long-lasting positive change in low- and moderate-income communities around the world, helping them improve their social, economic and environmental conditions. Our reputation is built on the strong relationships we have with the communities we serve – engaging and involving them throughout the development process through a unique methodology that keeps control and ownership in their hands. CHF's approach to urban development integrates economic development with lending programs for micro- small- and medium-sized enterprises, workforce development and entrepreneurial training, and community-led cooperative initiatives all designed to stimulate jobs and economic activity. In India, after gaining substantial experience on a multiyear slum upgrading program in Gujarat, since November 2007 CHF has been implementing various urban learning projects in Pune, Bangalore and Nagpur cities in urban environment.

Acknowledgement:

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Reference:

Anuprit Minhas, Yogesh Kale, Tamara Failor – 2009, Mapping the poor and technology enabled micro planning for improved health and basic services.