Participatory GIS-based Approach for Slum Redevelopment

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ABSTRACT: The Cities are growing. The world is becoming Urban. Rapid growth of urban population in the cities have brought the imbalance in the provision of infrastructure services and facilities. The cities have failed in providing the employment to their citizens. Hence many cities are struggling to understand and try to find the solutions for poverty and slums. "Urban poverty is estimated to affect approximately one third of all urban residents, or one quarter of the total poor in the developing world. The share of the poor as a proportion of all urban residents is highest in Sub Saharan Africa and South Asia, at an astounding 70 to 75 percent" (http://go.worldbank.org/D7G2Q70170).

Accordingly one of the Millennium Development Goals has been set to, 'achieve significant improvement in the lives of at least 100 million slum dwellers by 2020'. Even though efforts are made to localize the MDG's, the scarcity of relevant data, lack of resources: human and financial, to collect and analyse the data is one of the significant constraints to operationalize the adaptation and necessary monitoring process in many developing countries. The problems of urban slums, emerges from poverty, still fails to register in the minds of people and government.

This paper is an explanation of the real time study undertaken on use of Participatory GIS in mapping and analysis the data collected for improving the slum conditions. The participatory mapping approach is the first step of monitoring the slum conditions and thereafter deriving the community driven initiative and allow public, stakeholders and decision makers for overcoming diverse problems such as sanitation, access to water, poor housing conditions, hazard risks, missing access to employment opportunities etc. The activities undertaken were: Visual Inspection; Understanding the idea of employment and development according to the slum dwellers; Reasons for their migration from their hometown to the city area; Consideration of their problems and ideas to resolve them with the help of residents themselves. This concept of participatory mapping was exercised for one of the slum of Ahmedabad city, Gujarat state, India.

1. INTRODUCTION

1.1 Participatory GIS

The participatory creation of maps is a community centered initiative to allow stakeholders in jointly pursuing set objectives and to eventually deals with conflict resulting from new realities which may emerge from the process (e.g. delineating a static, linear boundary defining access to resources in a context of overlapping / farming land uses). PGIS is the result of a spontaneous merger of Participatory Learning and Action (PLA) methods with Geographical Information and Technology. PGIS practice is based on using geo-spatial information management tools ranging from sketch maps, Participatory 3D Models aerial photographs, satellite imagery, Global Positioning Systems (GPS) and Geographic Information Systems (GIS) to compose peoples' spatial knowledge in the forms of virtual or physical, two or three dimensional maps used as interactive vehicles for discussion, information exchange, analysis and as support in advocacy and decision making.

PGIS practice is usually geared towards community empowerment through demand-driven, user-friendly and integrated applications of geo-information it builds on high levels of stakeholders´ participation in the processes of spatial learning, decision making, and action. The integrated and multifaceted process of which PGIS is a component, gives communities confidence in interacting with outsiders and adds authority to local knowledge. In fact, there is power associated with the practice as 'flashy' map outputs can be highly communicative forms of spatial representation, communicate information easily, convey a sense of authority and are rarely disputed.

1.2 Aim

The main aim of this paper is to present a systematic, cross-disciplinary, and accessible synthesis of relevant research and to offer explicit evidence-based design guidelines to help practitioners design better participation processes for problem solving and decision making. An attempt is made to use people's participation and mapping & analysis using GIS tools for improving the slum conditions. The participatory mapping approach is the first step of monitoring the slum conditions and thereafter deriving the community driven initiative to allow public, stakeholders and decision makers for overcoming diverse problems such as sanitation, access to water, poor housing conditions, hazard risks, missing access to employment opportunities etc. This concept of participatory mapping was done for one of the slum of Ahmedabad city, Gujarat state, India.

1.3 Decision Rule for Slum Redevelopment Model

The Slum Rehabilitation and Development Policy (SRDP), is aimed at creating an enabling environment at the state and city level for citywide slum upgrading and poverty reduction. It will also provide the framework within which the Rajiv Awas Yojna (RAY) shall be implemented. The composition and nature of slums are likely to vary from town to town. In general, one may expect various degrees of deficiencies with regard to housing, urban infrastructure and community facilities. Considering that in various cities efforts have already started to redress the deficiencies with regard to housing and basic urban infrastructure, it is recommended to prepare an updated status of all slums, both notified and non-notified in a given town. Those slums which are already provided with pucca housing with kitchen and toilet facility as per RAY guidelines and basic infrastructure should not be taken for DPR. In other cases, gaps may exist either in terms of basic urban infrastructure or in terms of pucca housing.

2. DEFINING PARTICIPATORY GIS

2.1 Definition and Process

There are various concepts of PGIS. Such as a term coined to express the use of GIS to empower under-represented communities (Kyem, 2004). A term adopted to represent the vision of GIS practitioners interested in the socio political contribution of GIS to communities (NCGIA 1996). A movement which aims at developing a GIS that is adaptable to inputs from ordinary citizens and other non-official sources (Obermeyer, 1988). The concept of Participatory GIS includes three main processes – Public Participation, Surveying and Mapping, GIS technology for Analysis and Decision Making Process.

The term 'PGIS' revolves around people, community, participation, mapping analysis and decision making process. Community-based GIS applications have become critical conduits in the public's quest for information on the resources and participation in official decision making processes. Hence, it should matter to the public and effective in developing a common need and solution. It should facilitate joint learning and contributes to joint/collaborative geospatial problem-solving process. It is not a fancy term to hide inherent weaknesses of technology but a convenient niche for ambitious academics. It is still a hidden technology which requires public and social awareness. it requires public and community participation together with the stakeholders and decision makers. It should be designed in such a way that it addresses a common need, is valued and effective, different cultures require different practices of P-GIS, reciprocity and mutual re-enforcement between existing institutional framework and application of GIS-technology, Institutionalization of P-GIS as unifying concept, institutions are part of social aspect of reality ("real world"), institutions are both stabilizing and dynamic, institutionalization draws P-GIS into reality, and it must be embedded within existing institutional framework.

3. PARTICIPATORY GIS FOR SLUM DEVELOPMENT

3.1 Recognition Policy

There is a need for the development of a national information system and knowledge base with focus on urban poverty for the purpose of planning, policy-making, project formulation, implementation, monitoring and review, especially in the areas of slum development, provision of basic services to the poor, and affordable housing.

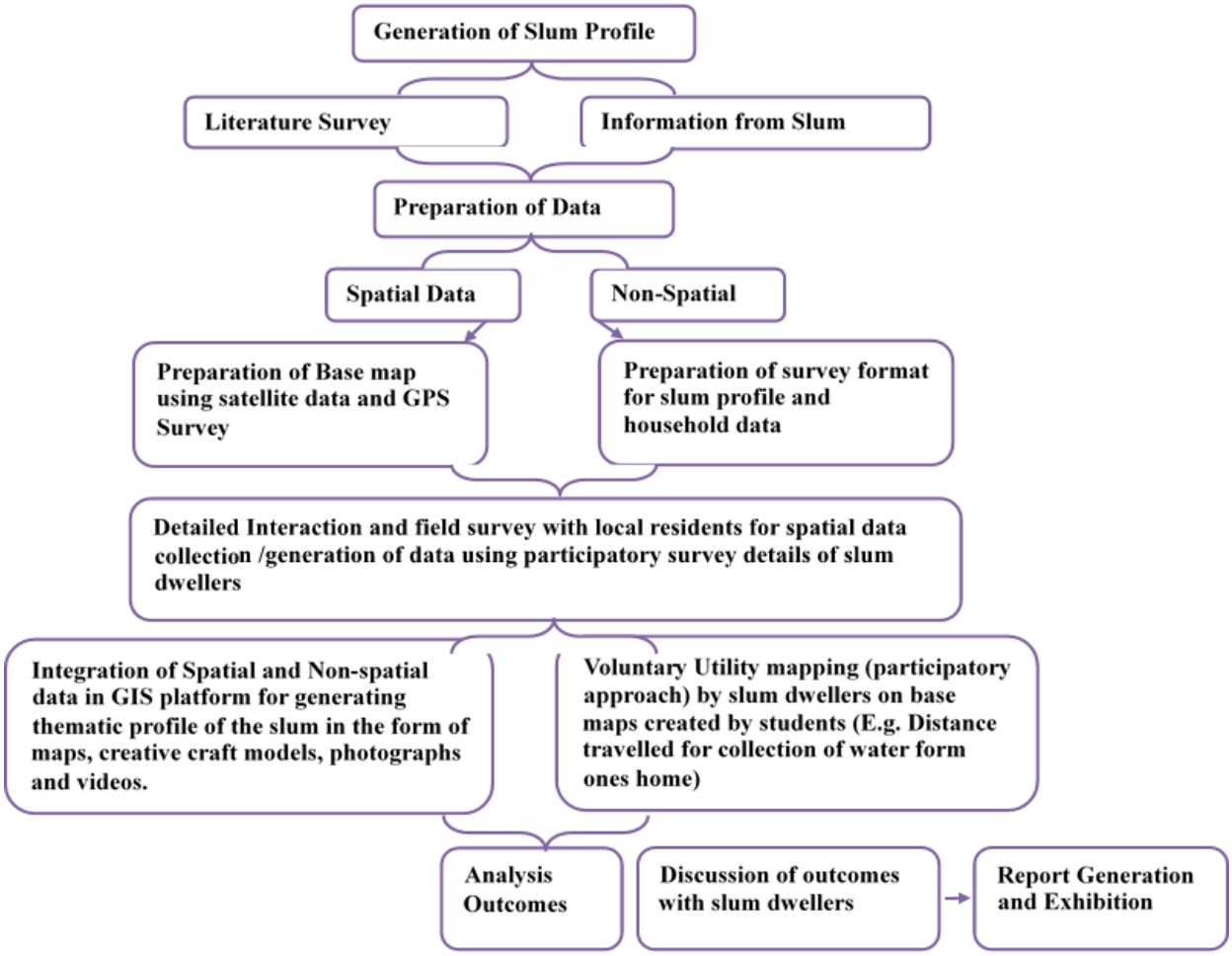
3.2 Slum Survey and Mapping

For Slum upgradation process, the location of slums and chawls are mapped. From this list of locations, slums situated on the street land, in the riverbed or lakes, or on the bank of river or lake, are separated out. This list is further reviewed to ascertain whether any of the plots where slums are situated is critically required by Municipal Corporation for the provision of infrastructure facilities in the city. All such plots are kept out from upgradation of slums. Rest of the plots are considered eligible for upgradation and referred to the town planning department and other concerned department for giving necessary clearance for upgradation.

3.3 Santoshnagar Slum Profile

Santoshnagar Slum is located in Behrampura Area of Ahmedabad, which lies in the main city pocket. The slum came into existence from 1978, due to severe flooding of the Sabarmati River. While one side of the slum faces the core city, the other side of the slum faces the banks of the Sabarmati River. It neighbors EWS Housing Project, with 32 blocks, having four floors each. The residents here now, were relocated from the river banks with the initiation of Sabarmati Riverfront Devpt. Project. The slum was observed to connectivity to all the city main roads at all its ends like khodiyarnagar, Geetamandir and Maninagar, along with existence of public transport facilities like AMTS bus stops, BRTS stops and close proximity to the city bus station. As per the initial observations made, the slum was in a much better condition, compared to what one usually perceives. This is because the entire slum locality was majorly observed to have 'pakka' cement houses, with most of them having all the basic facilities like electricity, water supply and sanitation facilities with their homes.

Santoshnagar comprises of 600 to 700 houses as told by one of the local residents. People residing there mainly belonged to Marwari and Muslim caste, with majority of them belonging to worker community by profession. Along with stray animals, most household were found to have poultry and goats. Most of the people did know Gujarati and Hindi language along with basic communication skills. However no school existed in the slum for basic education, for which children moved to Paraná locality for the same.



3.4 Workflow methodology for Generation of Slum Profile

A field survey was carried out. The visit of a slum area helped in practically observing all the happenings and undergoing activities. The observations were on understanding the idea of employment and development according to the residents of the slum, identify the reasons for their migration from their hometown to the city area, consideration of slum dwellers problems and ideas to resolve with the help of residents themselves through participatory approach. Location of the slum is shown in an image below:

Most of the shops here were observed to be automobile hardware shops, followed by provision and dairy products shop, local flourmills, pan parlors, butcher shops, etc. In case of Sanitation facilities, few community toilets were seen, with only one Pay&Use toilet which was not in working condition. Towards the backside of the slum, a large open ground was seen, touching the riverfront walls. As told by local residents, it was used for crematory purpose and open dumping. Two-three small scale chemical factories with one Bone Crushing Industry, Dustan Dyes etc. were also spotted, towards the road leading to Khodiyarnagar BRTS corridor.

Common space use as parking

EWS & Industry along the Road

Livelihood of people

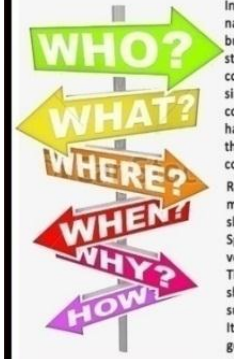
SANTOSH NAGAR SLUM -EXISTING PROFILE

ORGANISED CHAOS-A WALK THROUGH SANTOSH NAGAR

Observing the people and their living standards was the focus of the first visit to slums. The most surprising thing to us was the size and diversity of the industries and activities happening in the slum.

The people:

There is a variety of cultures and religions residing in same vicinity. People from Rajasthan , UP and other parts from Gujarat have settled permanently in these localities for around 45 years. Majority of the slum dwellers are daily wage workers involved in different industries such as printing press, cloth printing, textile, plastic export, recycling of paper etc. The variety of economic activities people are involved in was a look for aspect. The women are also involved in the activities like Kite making , Godhadi making and other activities, defines the social structure of Santoshnagar. People of the Santoshnagar slum are very enthusiastic and co-operative



Physical and Social Infrastructure:

Internal roads leading to the houses are narrow non motorised kachcha roads but many activities occur within these streets. The houses in the slum are very congested. Majority of the houses are single storeyed, semipucca houses with corrugated roofing. Few of the houses have their own latrines but majority of the people do not have access to the community toilets.

Religious spaces such as temples and mosques and few open spaces in the slum act as congregation spaces. Spaces between the houses, streets, verandahs are the interaction spaces. The lower lying areas prominently showcase the infrastructural defects such as water logging.

It was observed that literacy rate was good but children have very few education opportunities in the nearby areas. Few women are also literate but they do not earn.

LOCATION

SANTOSH NAGAR IS LOCATED IN BHERAMPUR,WHICH IS TOWARDS THE EASTERN PART OF AHEMDABAD.ITS A 40 YEAR OLD SLUM WITH PEOPLE FROM DIFFERNT PARTS LIKE RAJASTHAN, U.P, GUJRAT, M.P.IT HAS PEOPLE FROM ALL COMMUNITIES LIKE HINDUS , MUSLIMS ETC.

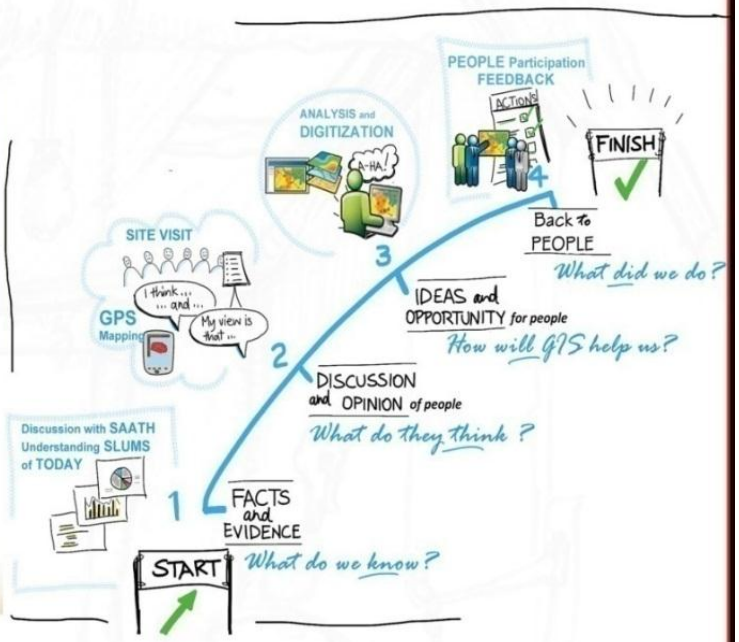
TOTAL NO OF HOUSEHOLD: 400

TOTAL POPULATION :5-6 PEOPLE/HOUSEHOLD

PROFILE OF SLUMS

SOCIAL STRUCTURE

METHODOLOGY



PARTICIPATORY APPROACH

Participatory method made the survey part more interesting and with unbiased approach towards the issues. This method being more project specific, will have positive impacts on the conclusions or the intervention we make while planning for the area

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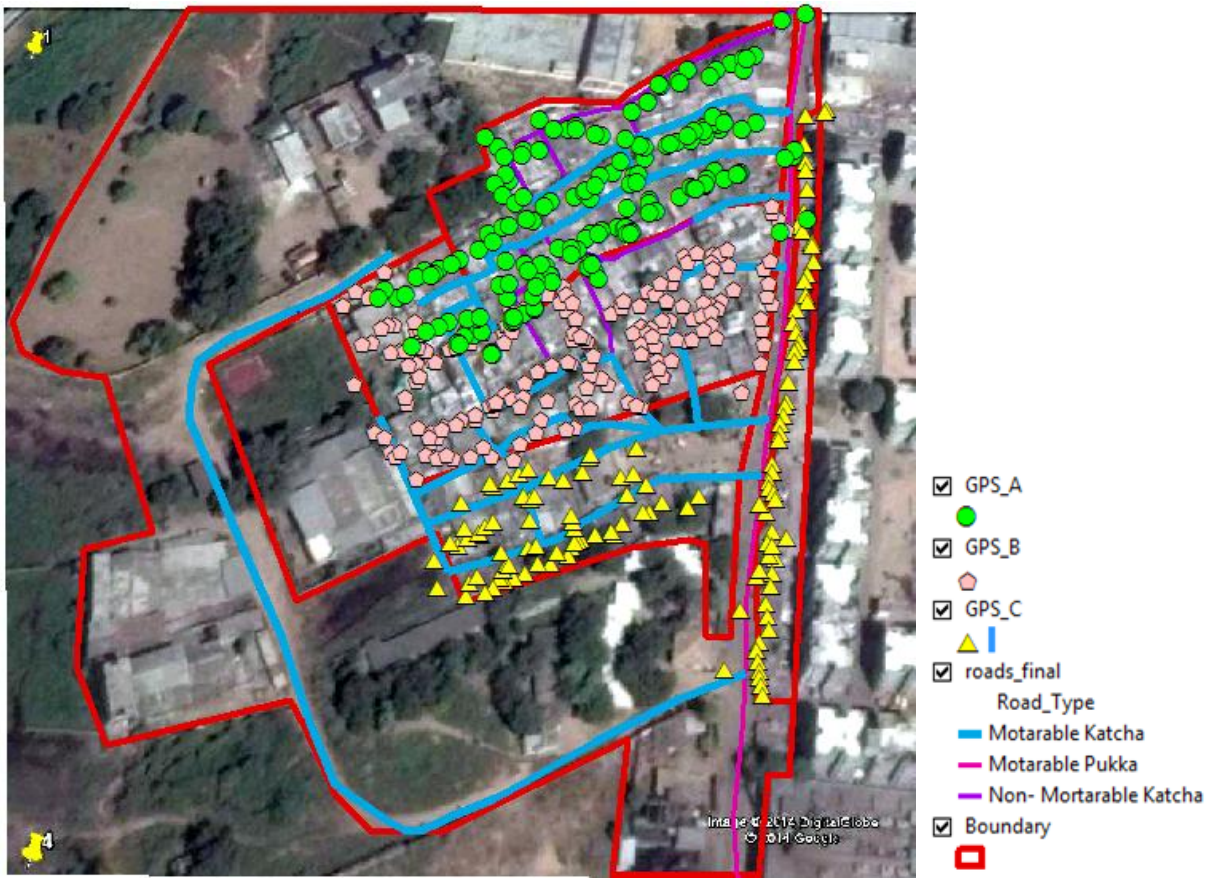
FACULTY MEMBERS- Dr.ANJANA VYAS
HARDIK PANCHAL -BINDI DAVE



4. CONCLUSION

Particpartory Approach has identified several strength of the local area and some of the limitations and lack of infrastructure. A map showing basic infrastructure like roads, public toilets, open space has been prepared. AN availability of the water is only for 1-2 hours in day which is provided by Municipal Corporation. A map prepared reveals the pattern of the migration. Also an information on type of migration, Permanent and seasonal migrants have been shown. There are 380 permanent and 4seasonal migrants .Migrants are mainly from following states 111 from Gujarat,146 from Rajasthan,26 from UP,1 from Bihar, Andhra pradesh and Jharkhand. The map prepared to show the reasons for migration. Main reasons for migration are the following unemployment which constitute 259 numbers, low wage constitute 49 and marriage 28. People have represented the variation in the type of residential building structures with respect to the religion. Majority of the Hindus have semi pucca houses and very few have katcha houses. There are two communities live Hindu and Muslim. They have community wise toilet facility; few of them have toilet facility within premises. The different hierarchy of workers age has been seen in Santoshnagar. There are 316 houses in which only adults are working while in some houses even the children are working. There are 3 houses in Santos nagar where only children in the house are earning. The variation in worker demographics with respect to community. In Muslim community as well as the Hindu community, Adults are the main working group. In 13 Muslim families children and adults are working. The 3 houses in which only children are working come under the Hindu community. It shows that women generally are home maker s irrespective of whether they are literate or illiterate. There is a balance between the literate and illiterate women population. The map show community wise Literacy of Female. It was a study on whether Income increases proportionately to the No. of people per HH working. there was no correlation between two aspects observed. Literacy of Female and Male was drawn very excitingly by the community people. The use of fuel for cooking is charcoal due to the cost consideration. Due to lack of cleanliness and awareness of the people face problem health related issues like malaria, Infrastructure related issues like water logging due to over pressure or overflow of sewerage line and existing of small scale industry air pollution occur. Water logged area, wind direction, community places, houses of the community leaders have remained important parameters for them to discuss and map.

5. SUMMERY

With the help of the people of the Santoshnagar Slums various thematic maps were prepared. The communities' responses and perceptions have been shared with government officials in the Municipal Corporation. It will help the local body to take the policy decision to upgrade the existing facilities of the slum and take certain policy decision for all slums exists in the city. One of the official has accepted the method of participatory decision making approach and has also promised to undertake similar exercise in many other slums to identify their basic needs, identify prevailing insufficient and poor quality of infrastructure. Entire process will definitely help in implementing the national level scheme of Rajiv Awas Yojana for the economically weaker section of the society who resides in slums and squatting colonies in the city.

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