

Profile

Research in Turbulent Environments: Slums in Chennai, India and the Impact of the December 2004 Tsunami on an Ecohealth Project

Martin J. Bunch,^{1,2} Beth Franklin,¹ David Morley,¹ T. Vasantha Kumaran,³ and V. Madha Suresh³

¹Faculty of Environmental Studies, York University, 4700 Keele Street, Toronto, Ontario M3J 1P3, Canada

²Network for Ecosystem Sustainability and Health, <http://www.nesh.ca>

³Department of Geography, University of Madras, Chennai, India

Abstract: On December 26, 2004, a tsunami struck coastal areas in the Bay of Bengal. Among the communities affected were Pallavan Nagar and Anju Kudasai slums in Chennai India. These communities have been collaborating, with some success, on a project to manage the urban environment for human health that employs an adaptive ecosystem approach framework, and is heavily influenced by participatory action research methodology. The tsunami resulted in loss of life, shelter, property and livelihoods in these communities. This profile presents an overview of the project, the two settlements, and the impact of the tsunami on the communities. This article also discusses the impact of the disaster on the direction and nature of the ecohealth project.

Key words: ecosystem approach, participatory action research, slum, tsunami, turbulent environment, environment and health

INTRODUCTION

December 31, 2004: Two women pick their way among a tangle of thatch and personal belongings lying on a beach in Chennai, India. Until the morning of December 26, 2004, the site of this debris was home to over 300 households, residents of a fisherman's slum. The two women stop along the way to take photographs and to talk to the remaining residents of the community. They build a picture of the events on the morning of the 26th and of the impact of the tsunami on the community. They try to assess how they can

assist these people, with whom they have developed a friendly working relationship over the past 8 months of action research activity. After about 2 hours, they climb back to the coastal road, flag down an autorickshaw, and make their way back through the noisy and chaotic traffic of Chennai to the University of Madras. There is work to be done, reports to be made to their respective supervisors, and plans to be generated about responding to the disaster.

The two women are Annamma Devi, a PhD candidate in the Department of Geography at the University of Madras, and Susan Mintz, a project intern from Canada. Both are associated with a research project, "An Adaptive Ecosystem Approach to Managing Urban Environments for Human Health," that frames the work of an interdisciplinary team of researchers from Canada and India. The project has the

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Correspondence to: Martin J. Bunch, Faculty of Environmental Studies, York University, 4700 Keele Street, Toronto, Ontario, M3J 1P3, Canada, e-mail: bunchmj@yorku.ca

objective of developing and exploring a holistic and participatory approach to managing environment, using human health both as an indicator of the state of the system and as a catalyst for social and environmental management.

Since 2001, researchers at York University, McMaster University, Environment Canada and the University of Madras, together with Indian government agencies and nongovernmental organizations (NGOs), have been conceptualizing environment and health relationships in Chennai using ecosystem approaches. This work encouraged an extension of the adaptive ecosystem approach framework (Kay et al., 1999; Bunch, 2003) through the application of a mixed-methods approach strongly informed by participatory action research (PAR) methodology (Whyte, 1991; Parkes and Panelli, 2001). A 2002 workshop in Chennai identified slum communities as having the most objectionable conditions and most vulnerable populations with regard to environment and health [Bunch et al., forthcoming]. They are, therefore, relevant sites for the application and testing of this model.

Since May of 2004 we have applied this approach to two slums in Chennai. This article presents a profile of the two slum communities, the residents of which have become co-researchers in this project. We discuss below the work undertaken with them since May of 2004, and the impact of the December 26th tsunami. We conclude with a discussion of the unique opportunities provided by the continuation of this project in these slum settlements with regard to post-tsunami community development and rebuilding towards a socially and ecologically sustainable future.

APPLICATION OF AN ADAPTIVE ECOSYSTEM APPROACH TO ENVIRONMENT AND HEALTH IN TWO CHENNAI SLUMS

In 2004, the opportunity was taken to introduce a praxis (theory/practice) style of PAR to the ecosystem approach. This led to involvement of stakeholders in the conceptualization of environment and health situations in slums, and stimulated slum dwellers to respond to it. This marked a shift to long-term community engagement as the central activity of the project. It demanded the adaptation of a number of well-known PAR methods (such as community mapping and transect walks) aimed at involving members of slum communities who had rarely, if ever, been encouraged to initiate change in their own community.

The framework of the ecosystem approach guides us to explore the coupled biophysical and human systems that underlie problematic situations such as these. In this instance we drew heavily on collaborative processes informed by a “contextural” style of PAR that deliberately interconnects multiple components in a complex system (Franklin and Morley, 1992). This activity involved stakeholders in public bodies, NGOs, and slum residents. It meant crossing the boundaries that so profoundly separate slum dwellers from all aspects of mainstream society and from addressing health implications of their interconnection with biophysical aspects of their environments.

The interconnected parts of systems brought together in this form of PAR are referred to here as “domains” (Trist, 1985). It is this term that has been applied to define key process stages of this project:

1. *Domain Definition* establishes a discourse with slum settlements, key governmental bodies, NGOs, and educational and health institutions;
2. *Domain Engagement* leads to choice of a community vision – facilitating community meetings; transect walks with women, children, and men; and participatory community mapping, all focused on defining and responding to ecohealth problems; and
3. *Domain Activation* involves on-going adaptive planning and implementation—focused on encouraging emerging leadership, creating planning committees, and generating community action plans that actively engage NGOs.

To sustain this process a Joint Action Committee was established involving NGOs, government organizations, the university project team, and members of both slum communities.

This is a post-normal approach (Funtowicz and Ravetz, 1993; Funtowicz and Ravetz, 1994) that is expressly intended to move beyond rational instrumentalist modes, and to draw upon ideas of complexity, open systems and social learning to deal with situations characterized as turbulent (Emery and Trist, 1965; Trist, 1980). Turbulent environments may demonstrate, for example, accelerating rates of change; increasing scale of perturbations; shifts in conditions; increasing unpredictability of events; continuing sense of crisis; frequent confrontation with problems at a level of complexity that makes them inaccessible to normal intervention strategies; and a tendency for increasing amounts of time to be spent on responding to unintended effects of previous actions (Morley, 1986).

The slums described below demonstrated some of these characteristics when they were selected in 2004, and even more since December 26th.

PALLAVAN NAGAR AND ANJU KUDASAI: A PROFILE

Participating slums were chosen as extreme situations to test the approach. Both are designated “objectionable” as they are located on hazardous sites that contravene planning regulations. Pallavan Nagar is on a beach close to a fishing harbor and in the path of planned new road access to the port of Chennai; Anju Kudasai borders on the heavily polluted Cooum river. Both are threatened by flooding during monsoon rains and high tides associated with storm surges.

As with all objectionable slums, these settlements suffer from insecurity of tenure, from lack of services (especially sanitation, water, drainage, and waste disposal), and they experience severe overcrowding. The housing is poor (often self-constructed thatch huts). Like most such situations, the residents of Pallavan Nagar and Anju Kudasai suffer from threats to personal safety. Violence is common, and substance abuse and prostitution are endemic. There are rapidly increasing numbers of HIV-infected people living in such slums, especially women.

There is a significant lack of experience in collaboration and organizing among the residents of these particular slums. Existence depends on the ingenuity of women, mutual support within extended families, and minimal income derived from intermittent, informal sector jobs. Political parties and religious organizations are the primary outside bodies entering and influencing such communities.

An exploratory survey of the population of these two slums took place in 2004. It was applied as part of the Domain Engagement phase and used as a means to connect with people and involve them in thinking about health and environment issues. The survey provides a tentative profile of the project participants. An initial examination of survey results indicates that before the tsunami, Pallavan Nagar had 325 huts occupied by households averaging 4.3 members (approximately 1400 people). Average monthly household income was estimated at Rs 1450 (USD\$33). Almost half of the respondents described themselves as unemployed. In this harbor location, a large proportion of respondents were involved in fishing, but many men also worked as temporary laborers and autorickshaw drivers.

Women tended to be employed in domestic service and retail jobs. Sixty percent of children under 16 were at school and 27% had jobs. Outcomes of the large number of questions on environment and health conditions will be provided in later publications, but the tendency to poor health can be measured by the fact that 17% of monthly household income was expended on health in Pallavan Nagar.

In Anju Kudasai there were 256 huts with an average of 5.0 members per household (around 1300 people). Average monthly income was estimated at Rs 1800 (USD\$41). In this slum, located closer to the center of the city with better access to employment opportunities, one-third of respondents said they were unemployed. Among those reporting employment, laboring, construction, and factory labor were mentioned among men, and domestic housekeeping and retail for women. Two-thirds of residents indicated they had less than a seventh-grade standard education (aged 12). (The proportion at Pallavan Nagar was 41%). At Anju Kudasai around 40% of children under 16 were not at school. Health expenditures absorbed 15% of household income.

When asked to define aspects of their environments they most wanted changed, members of both slums made similar lists—drainage, toilets, legalized access to electricity, garbage collection, better drinking water and housing conditions.

IMPACT OF THE TSUNAMI ON THE TWO CHENNAI SLUMS

Both communities involved in this project were seriously affected by the tsunami. With its site on the Bay of Bengal, Pallavan Nagar received a massive surge of water. Amazingly, only 12 people were killed; all had been working or playing near the water’s edge. The rest fled to up the slope to the nearby main road. About 70 huts were flattened, personal possessions were destroyed, boats were thrown up into the settlement, and nets and equipment were lost (Fig. 1). Communal spaces were also devastated including the temple, tuition center, and shops. Many of those displaced continue to live on the main road and in a nearby cemetery. There are many rumors and official statements regarding relocation, but nothing is certain. Fishing has not resumed so that many in the slum are now unemployed.

At Anju Kudasai, located further inland, the impact was less, but nonetheless serious. The tsunami caused the



Figure 1. A fishing boat sits where the tsunami deposited it atop a demolished hut in Pallavan Nagar slum, January 5, 2005. In the background, a larger fishing vessel damaged by the tsunami is under repair. Photograph by Naina Shah of the NGO “Exnora.”

Coom river to overflow its banks as water surged up its channel. Terrified residents ran through waist-high “black water” (sand, mud, and sewage), which flowed through their huts. Many lost all their possessions, huts were gutted or destroyed; floors and walls were covered with slime and sewage. People are still frightened that the tsunami will return. A serious earthquake shock that hit the city in late January elevated their fears. Many women and children are still living on a road on higher land above the slum. They have shared saris to use as blankets. The men sleep on rooftops to protect their homes. Many of the men who work in fish packing plants have lost their jobs, since these businesses have stopped operating.

ADAPTING TO THE POST-TSUNAMI ENVIRONMENT

Our project has in its title the word “adaptive” as a qualifier for the ecosystem approach. This was intended to emphasize the project’s potential to respond to new information and changing situations. Already the project has undergone multiple shifts in direction as the community co-researchers have expressed their priorities and needs. Our ability to adapt this approach is being tested again by the impact of the tsunami.

The research program is at the end of its funding term. The plan for this coming year had been to use remaining project funds to support a continued presence in Chennai

to ensure sustainability of process, to disseminate results of the research and to develop proposals for grants for a second phase. However, the tsunami has changed our plans. Previously, we had not brought funds to the community; the project had focused on building human capacities, including mobilizing resources within the communities, and linking them with external resources. Now we are impelled to demonstrate our commitment to our partners in the face of disaster.

As a short-term response, project personnel, together with the ENGO Exnora, have organized some direct relief for the two slums in the form of rice and clothing. We have also raised limited funds (through the Network for Ecosystem Sustainability and Health and the Faculty of Environmental Studies at York University) that will be used, in the spirit of the process that has already been established, as a catalyst for community self-help and rebuilding. To this end, two of the Canadian co-investigators will be joining our Indian colleagues in February, and the team undertaking work in Chennai this coming summer will be doubled.

The situation in Chennai is quite different from last year. Both slums exist in extraordinarily turbulent environments. The disaster not only stripped much of the potential resources (livelihoods, property, homes) from the communities, it also undermined emerging cohesion and leadership. In the case of Pallavan Nagar, it is likely that the slum will be cleared and the community relocated to temporary shelter that will also house residents from several other tsunami-affected slums. The Slum Clearance Board expects this relocated population will be moved once again within a year, but this is by no means certain. We intend to follow the original Pallavan Nagar project members through such moves.

Many questions arise for both slums: Will residents return to resettle the original sites? Will there be a significant change in community make-up and internal politics? Will the previous emerging leadership disappear? Will employment opportunities be regained?

Such uncertainties present the project with a great challenge. However, the approach is designed to operate in such an environment. It is expected that any intervention or external shock to the situation will change it. Continual (and not necessarily linear) iterations of domain definition, engagement and activation are the expected mode of operation. We are already revisiting domain definition and activation in our monitoring and reassessment activities. This will intensify in February and again in May. We expect

to run through an iteration of the process by the end of 2005.

We are optimistic that this project, drawing upon participatory action research and the ecosystem approach, will both study from within the impact of such a natural disaster on slum settlements, and at the same time, create for the participating residents (co-researchers) new opportunities for collectively addressing environment and health issues in ways that can improve the quality of their newly emerging situation.

Beyond the case of these two slums we hope that the approach we are exploring will be extensible to larger issues. Can such an approach foster adaptive and evolutionary capacity in the face of external shocks such as the tsunami? More importantly can it do this in the context of other slums? In other cities? On other continents? Currently 900 million people live in the turbulent environments of slums (UN-Habitat, 2003)—on marginal and dangerous land, without basic urban amenities, under constant threat of eviction, subject to violence and all kinds of health hazards—and their numbers are growing. By 2035 more than half of all poor people in the world will live in urban slums (Ravallion, 2001). We need to find ways to deal with these situations—ways that promote the capacity of people and communities to evolve in socially and ecologically sustainable ways.

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