The Rhetoric of Participation Re-examined: The State, NGOs and Water Users at Varanasi, Uttar Pradesh, India IRC International Water and Sanitation Centre Tel.: +31 70 30 689 80

SARA AHMED

Institute of Rural Management, PO Box No 60, Anand - 388001, Gujarat, India

Summary

People's participation is usually regarded as a sine qua non for the success and sustainability of development projects. Yet in practice, it raises a number of questions. Who are the 'people'? Why is their participation sought, and how or at what level, is such participation desired? This paper seeks to examine the rhetoric of participation in the implementation of the Ganga Action Plan (GAP) at Varanasi, in the north-eastern State of Uttar Pradesh, India. Launched in 1985, the GAP is the first major attempt to systematically control and monitor the pollution of a significant river in the country. In addition, it claimed to be a 'people's programme' because of the powerful and deep-seated cultural and religious meaning associated with the Ganga. Varanasi, however, is indicative of its failure to deliver this promise - the GAP is only acceptable to authority because it does not challenge the existing institutional order, and its participatory content is symbolic rather than substantive. Non-governmental organisations, traditionally viewed as intermediary actors between the micro and macro levels, work within the socio-political framework of the city. In the process, water-user groups such as the washermen who derive an economic livelihood from washing clothes in the Ganga, are literally excluded from the definition and process of 'participation'.

Introduction

The participation of intended project beneficiaries, or people's participation is often seen as a sine qua non for the success and sustainability of development projects (Garcia-Zamor, 1985; Goulet, 1989). Yet in practice, it raises a number of questions. Who are the 'people' or intended beneficiaries? Why is their participation sought, and how or at what level, is such participation desired?

Essentially, participation is a political process concerned with the redistribution of power. It usually involves the transfer of administrative (decision-making) and financial power from 'haves' to 'have nots'. According to Oakley and Marsden (1984, p.88):

"... meaningful participation is concerned with achieving power: that is, the power to influence the decisions that affect one's livelihood."

But it is difficult to gauge what is meant by the term 'meaningful' - meaningful for whom? The success of the project or the impact it has on the community and their livelihoods? Or does the very approach to participation ascribe more power to those already in power, whether they be project authorities or so-called community leaders and community-based organisations such as nongovernmental organisations (NGOs)? Communities are not homogeneous entities, neither is participation neutral or conflict-free. Questions of who participates and why are embedded in the socio-political, institutional and cultural fabric of both the project authority and the project context. That is, any understanding of what is 'meaningful' participation remains situation-specific.

Fax: +31 70 35 899 84

The extent to which people do or can participate varies tremendously - from attending meetings, contributing money or labour and adopting new technologies, to sharing in project decision-making, design, planning, implementation, monitoring and management. There is no universally accepted theory of people's

The Environmentalist, Volume 14, Number 1, 3–16 (1994)

^{*} Dr Sara Ahmed is an Assistant Professor at the Institute of Rural Management, India. She obtained her PhD, the basis of the current research, at the University of Cambridge, UK.

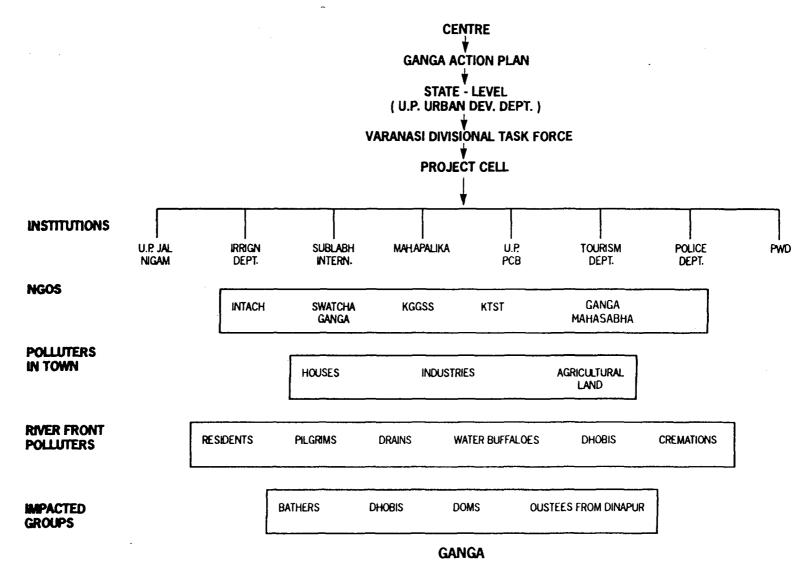


Fig. 1 Diagram of interests involved in water pollution control at Varanasi, India.U.P JAL NIGAM – Uttar Pradesh Water and Sanitation Board. IRRIGN DEPT – Irrigation Department.U.P. PCB, Uttar Pradesh Pollution Control Board. PWD – Public Works Department. INTACH – Indian National Trust for Art and Cultural Heritage. KGGSS – Kashi Ganga Ghat Sudhir Samati. KTST – Kashi Tirth Sudhir Trust. DOMS – Guardians of the Sacred Fire for funeral pyres. Note: Sulabh International is an agency involved in the design and implementation of low-cost sanitation schemes. The Mahapalika is the municipal corporation and Swatcha Ganga is the commonly used name of the Sankat Mochan Foundation. Kashi is another name for Varanasi; both the KGGSS and the KTST have been watch-dog bodies in the early renovation of the ghats and the development of sewage disposal and sanitation in the city.

<u>ኍ</u>

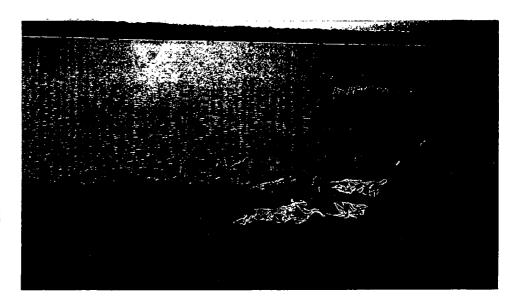


Fig.2 Dhobis washing clothes near Shivala Ghat, Ganga River, Calcutta.

participation, nor is there a uniformly acceptable measure or index to evaluate people's participation in development programmes (Singh, 1992).

This paper seeks to examine the rhetoric of participation in the implementation of the Ganga Action Plan (GAP) at Varanasi, in the north-eastern State of Uttar Pradesh, India. Launched in 1985, as a plan to control and monitor the pollution of the Ganga (the River Ganges), it sought, in addition, to be a 'people's programme' because of the powerful and deep-seated cultural and religious meanings associated with the river. Varanasi, however, is indicative of the failure to deliver this promise – the GAP is only acceptable to authority because it does not challenge the existing social and institutional order and its participatory content is symbolic rather than substantive.

Figure 1 illustrates schematically the various interests involved in pollution control of the Ganga at Varanasi. At the top of the diagram is the Centre which initiated the GAP in its role as assumed and legitimate protector of the environment, having access to resources on the scale needed to clean the Ganga. Government objectives are mediated through the bureaucracy, reflected in a range of institutions at the local level who are meant to implement the technical infrastructure, such as sewage treatment plants and pumping stations, as well as think about social desirabilities, like participation.

However, this technocratic approach to pollution control has been superimposed on a set of people, the community, who are not only affected by pollution differently, but have their own cultural understanding of what is and is not polluting. For the millions of Hindus who bathe in the Ganga every day, the so-called 'polluted waters' are pure and cleansing – the living waters of the River of Heaven – so that the Ganga, even when actually

(contingently) dirty, never (necessarily) is. As Eck (1982, p.216) remarks:

"At question here ... is nor really the purity of the Ganges, but the cultural understanding of what it means for something to be pure or impure, clean or dirty."

But to argue that people do not participate in the GAP because of different cultural perceptions of pollution can be misleading. Although at one level the perception of risk can be seen as a social process (Douglas and Wildavsky, 1983, p.6), based on a plurality of different rationalities (the scientific, bacterial understanding of purity versus culturally defined, ritual purity), it is important to acknowledge the context within which they are situated. That is, rationalities are "socially constructed and supported by different social groups with different degrees of power and conflicting economic interests" (Redclift, 1987, p.203).

Pollution beliefs are not simply a symbolic means of organising a society, they also conform with and reinforce a particular social order (e.g. the caste system in Hinduism)). The phenomenon of ritual purity and pollution in Hinduism has to be understood both in the religious context (i.e. who or what may be brought into contact with a deity) and in the socio-cultural context as a basis for the system of caste hierarchy. [See Khare (1962) and Babb (1975) for culturally defined notions of clean/dirty, pure/impure, as they relate to people, places and things which need to be washed, cleaned or purified. Inherent in the drive towards modernisation, of which pollution control is a part, is a questioning of these beliefs and an attempt, implicit or explicit, to challenge, or more fundamentally, to change them.]

Since the State and bureaucracy are unable to interact effectively with the public in terms of raising awareness, there is a third factor at the next

LIBRARY IRC PO Box 93190, 2509 AD THE HAGUE

Tel.: +31 70 30 689 80 Fax: +31 70 35 899 64

BARCODE: 14060 BAR INUTQY level of the diagram in Figure 1, the non-governmental organisation or NGO. The Sankat Mochan Foundation (SMF) launched their "Clean Ganga Campaign" (Swatcha Ganga Abhiyan) with a very simple slogan based on the respect and devotion ascribed to Ma Ganga, river, goddess and mythical mother – namely, "would you do this to your Mother?".

Although such intermediary organisations are theoretically closer to the public interest than the government, the strong emphasis on religious and cultural symbolism as agents of participation is not dissimilar from the official discourse. Neither question the nature and distribution of power in the city, who participates and who benefits, nor the political economy of pollution control. Meanwhile the water-user groups along the river-front, such as the *dhobis* or washermen who derive an economic livelihood from the Ganga, are literally excluded from any definition of or, for that matter, participation in the process of participation.

This paper is based on doctoral fieldwork in Varanasi in 1988 (January to April) and 1990 (January to March), as well as subsequent short visits to the city in 1991 and 1992. Apart from secondary data collection and participant observation, mostly as a member of the SMF, the author has interviewed (qualitative and open-ended) 250 people across the different levels in Figure 1 (Ahmed, 1991).

While questions of objectivity and subjectivity emerge at every step of the research process, there are three aspects of the author's own positionality which are significant. Although Indian by birth, the author has spent more than two-thirds of her life in the West, and brought with her the baggage of largely Western academia and interpretation. As a young, single woman, she had to overcome many of the

socio-cultural barriers which arose from doing fieldwork in a male-dominated environment, extenuated by the fact that although supposedly 'indigenous', she was different from other native women. And finally, being a Moslem, she was working on a sensitive subject and in an increasingly tense area, where she often had to conceal her identity.

Varanasi: The City in Cultural Context

One of the oldest living cities in the world, Varanasi occupies a central position on the crescent-shaped left bank of the Ganga in the alluvial fertile land of the Middle Ganga Valley. Situated 15 to 21 m (50 to 70 feet) above the river, it is a city where "energy is converted into culture" (Mumford, quoted in Eck, 1982, p.5). Nowhere is this energy more visible than along the majestic river-front, dotted with temples, shrines, Shiva lingams, old houses and princely residences from which large steps or ghats lead down to the Ganga. It is to the ghats that people come every day to bathe, to swim, to defecate, to wash clothes and utensils or buffaloes, to cremate their dead, to carry water home for drinking, cooking and ritual purposes, to offer garlands to Ganga, the goddess, or simply to walk, sit and meditate.

As a sacred place, a *tirtha*, Varanasi is one of the most acclaimed and sought after centres of pilgrimage in India, for it is said to embody all the other *tirthas*. [A *tirtha* is a ford or crossing place for pilgrimage purposes – it is a spiritual ford, an earthly place charged with power and purity (see Eck, 1982, p.34)]. At least 75 percent of the city's population depends on the pilgrimage industry (Saraswati, 1975, p.45). Death is the other business in Varanasi. The two tributaries of the Ganga, the Varuna and the Assi, from which the city derives its name, mark the



Fig.3 View of Dasahwamedh Ghat, Ganga River, Calcutta, with the sewage pumping stations in the background.



Fig.4 Bodies of dead babies near the sewage pumping station at Dasahwamedh Ghat, Calcutta, taken before the Ganga Action Plan was initiated. (Photo. courtesy: S.N. Mishra).

limits of the sacred zone within which death brings moksha or liberation for the millions of Hindus who choose to die there. Others will bring dead bodies from considerable distances for cremation at one of the two cremation ghats along the Ganga, Harischandra and Manikarnika, or they simply bring the ashes for immersion in the river (Parry, 1980).

Varanasi has a population of 1.5 million (1991 census), but this is unevenly distributed. The inner zone of the city, which lies around the edge of the river, has one of the highest population densities in the country, nearly 250–700 people per hectare. It is the oldest part of the city and its principal business area, with numerous temples, narrow lanes and few open spaces. Moving towards the middle zone of the city and beyond, there are broad roads, more open spaces and planned residential colonies. Most of the administrative offices, educational and public institutions, recreational areas and some industrial estates lie in the outer zone of the city, The suburban fringe is predominantly agricultural with over 50 percent of the land under cultivation.

Cultural identity in Varanasi is based on mohallas – administrative groups of around 100 to

2,000 people; there are approximately 50 mohallas to a ward (and 40 wards in the city). Each mohalla strives to remain culturally united, and is dominated by two or three linguistic, ethnic or occupational groups, such as Bengalis, weavers, etc. (Kumar, 1988). Most public cultural and religious activity tends to be mohalla based – festivals and other performances are organised around, based in, named after and identified with a particular mohalla (Freitag, 1989).

Varanasi is a predominantly Hindu city, and its dominant religious tone is set by the Brahmins (upper caste Hindus) who constitute 15 to 20 percent of the Hindu population. Moslems account for about 25 percent of the city's population, and have played an important part in shaping its social history. Although the seventeenth century Moghul rulers destroyed many Hindu temples and shrines, they developed silk weaving and small household industries producing the brass and copper utensils which have made Varanasi famous. They also built the city's first underground drainage systems - the large Shahi nallahs or Nawabi drains which were meant to carry storm-water overflow, but which have gradually become converted to open sewers, and are one of the main sources of pollution of the Ganga.

Today, although the silk industry is one of the spheres of economic inter-dependency between the two communities, it is largely controlled by rich Hindu silk merchants, with Moslems forming the majority of the poor weavers living in wretched conditions. The current Mayor, a Moslem, has been able to build an independent and flourishing silk business, but has done little to help others in his community. To a large extent, relationships between Moslems and Hindus have been affected by the Ayodhya temple/mosque issue, and the harmony of seemingly normal life can be punctuated by sporadic clashes leading to violence, riots, curfew and death. Despite the local religious and political configurations the GAP is seen as the centre's programme and therefore the responsibility of the Union Government which can then conveniently be blamed for all the mismanagement arising from its interference with the sacred purity of the Ganga.

The GAP: Top-down Technocentrism

Rising in the snow-bound heights of the Himalaya, nearly 4,000 m above sea-level, from a dark icy cavern shaped like the mouth of a cow, called Gomukh, the Ganga travels a distance of 2,525 km across the Indo-Gangetic plain to its meeting point with the sea at Ganga Sagar in the Bay of Bengal. The catchment basin of 900,000 km² covers eight States, drains 26 percent of the land area of India, carries a quarter of its water resources, and accounts



Fig.5 Bloated buffalo carcass floating down the Ganga River, Calcutta, taken in February 1990. Note the low water level.

for 43 percent of its irrigated area.

Little wonder, then, that the government has been alarmed about the increasing wastes (untreated industrial effluents, surface run-off and raw sewage) flowing into this sacred river, affecting its quality at critical 'hot spots' where people who use its waters directly for bathing and other purposes are at risk. The Ganga is not polluted along its entire length, partly because of its high rate of recovery or self-purifying capacity, which is attributed to high water temperatures, a high re-aeration rate and high dilution and mixing factors (Thames Water Authority, 1987, p.66).

Under the Seventh Five Year Plan (1985–1990), the Central Government sanctioned Rs 2,600 million for the first five-year phase of the GAP. This phase was directed towards the reduction of pollution levels in the 27 Class 1 cities along the banks of the Ganga (the 'hot spots') which contribute to two-thirds of the urban pollution load (Ministry of Environment and Forests, 1985. "The outlay for the first phase of the GAP was subsequently revised to Rs 3,850 million of which Rs 3,000 million have already been spent to complete 191 (out of an initial total of 262) schemes", (Shankar 1992, p.26).

The main thrust of the Rs 430.5 million allocated to Varanasi, which is responsible for a quarter of Uttar Pradesh's contribution of pollutants to the Ganga, has been towards the renovation of the five sewage pumping stations along the *ghats*, and the installation of sewage treatment plants to treat about 70 percent of the 140 million litres of wastewater discharged daily. Under the GAP, three sewage treatment plants have been built at Varanasi, to treat the wastewater at the following places: Banaras Hindu University, 8 million L day⁻¹; Diesel Locomotive Works, 12 million L day⁻¹; Dinapur

(main city plant), 80 million L day⁻¹. In addition, an electric crematorium at Harischandra ghat provides a cheaper alternative (when it works that is) than the traditional expensive and energy-intensive wood pyres. On a short visit to Varanasi (September 1992), the author learnt that the crematorium had been closed for most of the previous three months and that there was no money or political will to maintain the one (of two) electric ovens working. Although the crematorium is suffering a loss of Rs 1 million each year, it has managed to save wood at an approximate cost of Rs 4.5 million to the economy between 1989-1991. During this period the percentage of bodies cremated in the crematorium increased from 7.9 percent to 26.2 percent of the total bodies cremated at Varanasi, an increase of 18.3 percent. Low-cost community toilets have also been built along the ghats for public use, but residents complain that they are unclean and are reluctant to pay the minimal cost for their use (Ahmed, 1991, p.224).

But pollution control infrastructure is not in itself a sufficient solution to the problem. Although there has certainly been some improvement in the quality of the river water, it is difficult to gauge to what extent because of the lack of baseline data and the tendency by the government to 'fudge' data.

There is much disagreement about the efficiency of the sewage pumping stations in diverting raw waste-water, the main source of pollution, away from the *ghats* where people are bathing in and drinking the water daily. Moreover, the maintenance, management and monitoring of such systems, and their inability to cope with relatively minor sources of pollution which contribute to the faecal coliform count, continues to be a source of concern for project authorities.

Thus, the buzzword 'participation' has become

a veritable panacea for bureaucrats unable to meet hard targets – physical infrastructure, like a sewage treatment plant takes at least three years to build, assuming it is not caught up in political red-tape or last-minute design changes. Blaming the shortcomings in the GAP on the people, that is, on their assumed non-participation, is a far more convenient alternative to examining the critical questions of accountability and responsibility. Beginning with the top level of interest in Fig.1, the structural reasons for non-participation in State-directed efforts can next be examined.

The State and Participation: Institutional Constraints

According to Midgley (1986a, pp.38–44), there are four forms of State responses to participation:

- the anti-participatory mode

- the manipulative participatory mode

- the incremental mode of participation

- the participatory state

These categories are not necessarily definitive, and it may be possible that a State falls between one or more classifications, combining elements of both. Using Midgley's framework, the response of the Indian State to participation in the context of the GAP has probably been both manipulative and incremental. The State supports participation when it chooses to do so, and in this sense is manipulative, largely in its own interests, to gain votes and political support. Not only was the official announcement of the GAP timed to coincide with the late Rajiv Gandhi's inaugural speech as Prime Minister in 1985, but at the GAP launching ceremony at Varanasi a year later, the Ganga was described as the greatest symbol of national unity, and its pollution compared to the emergence of divisive forces in the country. Thus, "scientific credibility was decisively shoved into the back seat to make room for political expediency" (Muralidharan, 1986, p.80).

Moreover, some of the State-directed forms of participation at Varanasi simply involve using people as cheap (free) labour without ascribing them any power in decision-making processes. For example, after the monsoons, National Social Service (NSS) camps are organised, where students from all parts of the country come to clean the silt from the *ghats*, plant trees and interact with the public on the problem of pollution through songs, slogans and discourses. While these are important awareness-raising measures, the point to be stressed is that they are undertaken by volunteers who are in Varanasi for short periods of time and possibly do not see such work as a chore or task that they are obliged to fulfil. In addition, there are other cultural

activities and the camps are duly acknowledged by local bureaucrats for their social significance. This is an important factor to bear in mind, for all too often the work and effort put in by NGOs and individuals is hardly recognised by the government, which gives them little incentive to continue.

Other forms of token participation encouraged by the State include similar ghat-cleaning exercises involving pilgrims, and the staging of elaborate concerts (Ganga Mahatsavs) at the main bathing ghat, where brochures are distributed proclaiming 'Ganga Sewa, Bharat Sewa" (i.e. to do service for the Ganga is to do service for the Country). Faded billboards along the ghats remind the public not to defecate along the banks of the river, use soap, throw garbage, dead bodies or animal carcasses into the Ganga and, ironically, to divert wastewater in their vicinity away from the water-front. Meanwhile, there are no rubbish bins along the ghats for people to throw garbage in, nor incinerators where they can dispose of their dead cattle. How they are physically supposed to divert sewage is beyond imagination!

The State's support for participation is incremental in so far as it has a laisser faire or ambivalent approach to implementation which fails to encourage local efforts (by NGOs and individuals) or to ensure the effective functioning of theoretically participatory institutions, such as local government. Remarking on voluntary efforts, one of the ex-Divisional Commissioners of the city complained that NGOs have not come forward with concrete proposals:

"Voluntary efforts are wanting. The basic problem is that NGOs are geared to working on a drive basis, for example, at the *Kumbh Mela* (large religious gathering occurring once every 12 years) in Allahabad (1989) there were 4,000 volunteers helping for a few days. But when it comes to maintaining *ghats* for a year they feel that they can't do it. We have tried to get NGOs to adopt one *ghat* each, but enthusiasm remains for a fortnight only and then starts to waver. Sustaining NGO action is difficult." (Interview with Divisional Commissioner, Varanasi, 1990).

There has, however, been little attempt to support financially the activities of NGOs in the city or to provide them with clear information about the GAP, its methodology or its impact on water quality. The project cell is at a considerable distance from the city centre, and therefore is inaccessible to the public at large, while project reports are usually made available after they have been approved, so there is no scope for alterations based on public debate or any means of questioning accountability. The bureaucracy is more concerned with achieving targets rather than building effective linkages or

Table 1 Faecal coliform count, River Ganga above and below Varanasi, India. (After Shanker, 1992)*.

| Varanasi | MPN per 100 mL | |
|------------|----------------|---------|
| | 1986 | 1990 |
| Upstream | 387 | 4,017 |
| Downstream | 793 | 988,667 |

^{*} The author's source is not stated in the article, though it is probably the Central Pollution Control Board.

even communicating with the local people.

The faith of the bureaucracy in their own rational, technocentric knowledge (O'Riordan, 1989, p.6), which fails to include other systems of knowledge, is well illustrated in the approach adopted by the Uttar Pradesh Jal Nigam (Water and Sanitation Board), the main implementing agency of the GAP. Responsible for the renovation of the sewage pumping stations and the construction of the sewage treatment plants, the Jal Nigam did not consult local experts, such as the Institute of Technology of the Banaras Hindu University (BHU). Although the BHU academics offered to design the treatment facility for their campus, taking into account cheaper alternatives, like waste stabilisation ponds, they received no encouragement from higher authorities - a case of 'foiled' participation, or as Robertson asserts, the public are simply "not expected to offer significant technical emendations" (Robertson, 1984, p.137).

According to the general manager of the Jal Nigam:

"People have little to contribute to the technical aspects of the GAP – they will only confuse the issue. If you open the plans for discussion, it will take longer to achieve results as they (referring to the NGO representatives who sit on the GAP Task Force in Varanasi) will discuss it for years and not do anything" (Interview, 1990).

As Ingram (1976, p.70) maintains, participation increases the 'cost' of receiving and assimilating information as not only does it lengthen decision-making processes, it also questions agency goals and values.

On the other hand, the General Manager of the Jal Nigam is critical of the obsession that bureaucrats and engineers have with meeting targets (project deadlines) rather than basic objectives – keeping the Ganga clean: "Targets cannot become objectives, they are simply a means of achieving a particular objective." In this respect, that is, the 'objective' side of the programme, he feels that there

is a role for the public to play:

"The public must be associated with the monitoring of the pumping stations (to check that there is no wastewater leakage). I have brought this up at several Task Force meetings, but I am a single person and I cannot guarantee this happening" (Interview, 1990).

Such a statement reflects the 'prisoner of bureaucracy' dilemma within which the General Manager finds himself literally trapped, that is, institutional identity (Douglas, 1987, p.59) and loyalty to the bureaucratic agency or mission orientation overrides flexibility and innovativeness (Schaffer, 1969, p.190).

His concept of participation (and that of most bureaucrats in the city of Varanasi) is limited to 'soft' options, like educating the masses so that they do not pollute the Ganga, which assumes that people are the problem rather than institutions and structures. Moreover, the mechanics of how people can be involved is more often than not overlooked in any discussion on participation. Instead, the introduction of a river police force and homeguards along the ghats has further served to alienate local people from their resource base.

Installed in 1988, the river police force is supposed to check drug trafficking, public nuisance (cheating of pilgrims and tourists at the *ghats*) and prevent people from throwing rubbish or unburnt dead bodies and animal carcasses into the Ganga, wash clothes or defecate along its banks. Furthermore, according to the city plan document, the police are meant to "... educate, train and mobilise public opinion against various forms of pollution" (Ministry of Environment and Forests, 1987, p.21).

Most people interviewed in Varanasi clearly did not like the police force as it had failed to build any rapport with them and seemed only concerned with harassing them. Having a police force has not changed anything, least of all the quality of the Ganga – it simply provides more channels of corruption for the public – to those who can afford it, that is,

A pandit (Hindu priest) explained that sometimes when the police find a dead body floating down the river in their vicinity, they just push it along to the next outpost where it becomes someone else's responsibility. Furthermore, they take money from the municipal corporations to cremate unidentified corpses at the crematorium, but then throw the unburnt bodies into the river. According to one BJP politician:

"When the protectors have become the eaters, then what is the point of protection? At least 90 percent of the unburnt bodies thrown into the Ganga are done so by the police, or with their prior consent" (Interview, Varanasi, 1990).

The Superintendent of Police, though he denies knowledge of this practice, admits that there is possibly some corruption in the force as there is with any government service because of the poor conditions of pay. It is true that the river police have little incentive to work well – salaries have been irregular and they have no proper 'home', living in a large make-shift tent on the steps of the main bathing ghat or in similar tents at other outposts.

The question is not whether there should or should not be a pollution control and monitoring mechanism, but whether it should be State imposed and, more specifically, whether it should be seen as the task of the police to undertake this responsibility. In the past, according to social historians and geographers, the *mohallas* used to be walled and voluntary guards were appointed by the community within to keep the streets clean (Sigh, 1955).

The pandas (ritual priests) at the ghats claim that they were responsible for maintaining their bit of the river-front, and used to have the power to tell people not to spit in the Ganga, or use soap and oil when bathing. Although nothing in effect stops them from continuing to do so now, they feel this so-called moral duty has been taken over by the State and that there are too many bad elements at the ghats which they are afraid to interfere with, partly because they lack the authority associated with a badge. However, there are many who dispute the pandas' claim, maintaining that there was (and is) a lot of infighting between powerful families for control of the ghats, and the resulting income.

There are many who feel that the impetus to clean the Ganga should come from the people, for the river police have little, if any, community education training. They do not know how to communicate with the local people in a language that they can understand, nor do they respect their customs or their knowledge of their environment.

Failure to regulate means that the very reason for regulation becomes discredited. True enough, but it also necessitates a search for alternative, and hopefully more effective, means of resource management (regulation in a broader sense) which includes resource users. About 0.133 percent of the total GAP expenditure between 1985 and 1990 was given to the voluntary sector (Kaushal, 1990) in the hope that voluntary or non-governmental organisations would act as intermediaries between the micro and macro levels (Fernandez, 1987; Holloway, 1989; Farrington and Biggs, 1990; Clark, 1992). However, as the following example of the Sankat Mochan Foundation illustrates, NGOs are not necessarily representative of the people they seek to mobilise.

The Sankat Mochan Foundation – People or Power Centred

Established in 1982, the Sankat Mochan Foundation (SMF) derives its name from the Sanskrit sankat mochan, which means the removal of all sufferings. It is the name of the second most popular and largest temple in Varanasi, whose mahant (hereditary head), Veer Bhadra Mishra, is also Professor of Hydraulic Engineering at BHU. He is a particularly appropriate leader, for he embodies the confrontation of religion and science surrounding efforts to clean the Ganga.

In late 1982, Mahantji, as he is affectionately known, launched the Swatcha Ganga Abhiyan (Clean Ganga Campaign), a public education programme to make people aware of the plight of the Ganga and to formulate a people's approach to the issues and problems at hand. Today, the Campaign organises an annual children's painting competition on the theme of river pollution, a three-day Kavi Sammelan (poetry festival) and a three-day Log Sangeet Sammelan (folk music festival) where poems, songs and hymns in praise of Mother Ganga are united with a more important environmental message.

In addition, there is an environmental education programme in some of the larger and better-endowed schools which receives limited support from teachers and schools in Sweden and, more recently, from Australia and the USA. However, because of the sporadic nature of such efforts and the fact that awareness and knowledge building are but the first steps in any education programme, it is too early to judge how far such action has, or can be, translated into the development of attitudes, values and skills towards participation in environmental decision making, or in work at the community level outside the formal education system.

The Foundation also collects and analyses water samples from the main bathing *ghats* at a small, recently relocated (January, 1992) and equipped laboratory. It feels that the data generated by governmental agencies is unreliable, when it is available, and that there is a need for an independent 'watch-dog body' to check the results by undertaking independent assessments. On the afternoon of 4th June, 1992, the Foundation undertook a joint monitoring exercise with the *Jal Nigam* and the Uttar Pradesh Pollution Control Board (UPPCB) for the three main water quality indicators: bio-chemical oxygen demand (BOD, mg L⁻¹), dissolved oxygen (DO, mg L⁻¹) and the most probable number of coliform (MPN, per 100 mL).

The results of the Foundation, together with the *Jal Nigam*, show that the BOD levels are as high as 7

mg L-1 near the water supply intake, and between 11-13 mg L⁻¹ upstream of Assi and just before the main bathing area, while the GAP authorities have been claiming that they have achieved the desired water-quality criteria for bathing purposes of 3 $mg L^{-1}$ (max). The faecal coliform count is worse: between 10,000-24,000 per 100 mL upstream of Assi (SMF and UPPCB) when, according to the Central Pollution Board, it should be 500 MPN per 100 mL for bathing purposes. The MPN near the water supply intake is 5,400 per 100 mL (UPPCB) when the desired criteria is 50 MPN per 100 mL for drinking water without treatment (Sankat Mochan Foundation, 1992). According to a recent article (Shankar, 1992, p.28), the faecal coliform count has if anything worsened since the inception of the GAP (Table 1).

At another level, the momentum generated at public events organised by the SMF is not channelled into constructive energy. There is no structure for people to get involved in the activities of the Foundation for the office-cum-information centre maintained by them is only open in the late evenings, if at all. This means that women and children, crucial to Swatcha Ganga's objectives, are unlikely to visit, unless accompanied by a male or older family member. Moreover, as all the executive and working members hold full-time jobs elsewhere, any action taken by them is difficult to sustain. [Note added in proof: On a recent visit to Varanasi (January 1994) the author found that the Foundation have now employed an administrative/ information officer, so that the office is open from about 12-5 pm.]

Thus, much of the public relations work rests on the charisma of one person – Mahantji. Effective leadership demands patience, flexibility and the ability to communicate in a language which the community can understand. There is definitely a certain aura about Mahantji which has helped to attract not only a few local people to the campaign, but also numerous national and international visitors wanting to make films, videos and to write articles. Mahantji speaks gently, yet his graceful demeanour can be both angry and passionate when deliberating on the injustice being perpetuated to the Ganga by the human race:

"I say to them, 'Isn't the pollution a disrespect to your mother? Is it not (like) spitting over your mother?' That disturbs people and they are ready to do anything if you put the problem in this way." (Mahantji, quoted in Berwick, 1990, p.29).

The SMF's concern for the Ganga is not far from the ecocentrism preached by the early American transcedentalists like Thoreau and Emerson (O'Riordan, 1981, p.3) – it is borne out of a sense of responsibility for the Earth and a plea for a basic ecological understanding of the intimate

Man-Nature relationship (see Dwivedi, 1988). Such an approach allows the Foundation to consider the local community as a homogeneous, culturally monolithic unity rather than to assess how different groups of people (class and caste-based) are impacted by both pollution and the GAP. Thus, participation is simply equated with the numbers of people who are present at the various cultural events and meetings, who listen passively to the songs, poems and speeches, but have little opportunity to respond (Eldridge, 1984, p.422). In that respect, it is not dissimilar from the official (State) discourse on participation which, in turn, allows the various NGO leaders to attend, for example, the Varanasi Divisional Task Force meetings, but is reluctant to share information or decision-making power with them. The Varanasi Divisional Task Force is the main co-ordinating body at the divisional level, and is headed by the Divisional Commissioner. It includes the city's Administrator (also the Project Manager), the Mayor (ex-officio position), heads of the various implementing agencies and four non-official members. Occasionally, important political and public figures from the city are invited, but there is no representation from the elected city councillors. The Task Force meets every three months, or thereabouts, to review schemes prepared by local agencies, to monitor ongoing projects and to sort out inter-agency conflicts.

But things are changing. In January 1992, the SMF organised a seminar to examine critically, alternative systems of transporting and treating wastewater, particularly the feasibility of a deepwater sewage discharge or bypass system which would work through gravity flow. The event provided a useful forum for the exchange of ideas between wastewater experts from India and abroad, as well as GAP bureaucrats and technocrats. It also put the SMF on centre-stage again by opening channels of communication with the powers-that-be in Delhi. And for Mahantji, it culminated in the UNEP Global 500 award at Rio (1992), a belated recognition of his twenty years of campaigning for the environment. The deep water sewage network is being proposed as a complimentary network to the existing ghat pumping stations which have proved inefficient in terms of effectively transporting waste-water away from significant bathing areas. A similar network was designed for Boston harbour by the Massachusetts Water Resources Authority, who played a key role at the SMF seminar. But at Varanasi, the highly uneven river-bed and fluctuating water levels, particularly during the dry season, coupled with the difficulty and costs of maintaining an underground system, have led many sceptics to question its feasibility.

International recognition aside, although the

seminar paid lip service to the need for greater public participation, there were no representatives from other NGOs or water-user groups in the city. Apart from the *dhobis*, however, water-user groups in Varanasi remain unorganised, partly because of the nature of their transient relationship with both the Ganga and the city (e.g. pilgrims, tourists) and partly because of their diverse socio-economic backgrounds, political interests, religious affinities and so on. There are other economic groups who have been impacted by the GAP, for example, the *Doms*, guardians of the sacred fire at the cremation ghats, who feel that their income - relatives often have to pay a high fee for the fire which is needed to light the funeral pyres – has been affected by the commissioning of an electric crematorium. Another group are those villagers who were displaced from their land for the construction of the sewage treatment plant at Dinapur. Not only have they had to look for alternative employment, but they are also contesting the compensation they got. Neither of these groups are as organised as the *dhobis* (Ahmed, 1991). The next section looks at how and why the dhobis, despite their organisation, have been ignored by the so-called process of participation.

The Dhobis of Varanasi – Whose Clothes are we Washing?

There are about 15,000 *dhobi* households in Varanasi who use the river-front for washing clothes. Theirs is a hereditary occupation and the *dhobis* are one of the lowest scheduled castes in the country, with little access to education or alternative sources of income (partly because of the ritually polluting nature of their work).

The colonial powers attempted to restrict the washing of clothes along certain stretches of the Ganga for it was feared that the dirt from these garments would contaminate the water for people bathing downstream, and the use of soap and detergents were also considered unsound. Likewise, under the GAP, periodic attempts have been made to prohibit the washing of clothes in the Ganga, for not only do the authorities believe that it contaminates the river (despite the absence of any scientific data to support this contention) but perhaps, more significantly, for them it spoils the panoramic view of the *ghats*.

In 1986, the *dhobis* formed a union when it became clear that their occupational livelihood was being threatened by the GAP. Their leader, Laxman Prasad Kanujia, is literate and has some organising experience as he has been in politics for the past ten years, originally with the Socialist Party and now with the Bharatiya-Janata Party. He is helped by an executive committee and ward representatives who

inform the *dhobis* about meetings by word of mouth.

On March 28, 1988, eleven *dhobis* were arrested by the river police force for allegedly violating the pollution control measures under the GAP. Their arrest immediately sparked off a demonstration outside the main city centre police station, and the *dhobis* were released later that day on personal bonds. However, the next morning none of the *dhobis* went to work. Instead they walked with their donkeys and banners to the Administrator's house where they sat in protest against the so-called ban on washing clothes in the Ganga. They complained about the way they were being constantly harassed by the police when the local administration had failed to provide them with alternative washing arrangements:

"What pollution will they (the government) stop when they are so corrupt themselves? The government is trying to move the poor, but though they are powerless they will not move; they will only get poorer if they do so." (Interview with Kanujia, 1988).

By spring 1990, the government had built two large *dhobis ghats* downstream from the main sewage pumping station at Konia. Not only are these facilities too far away for them to walk to on a daily basis, when their only means of transport are their old and slow donkeys, but they were not designed in consultation with the *dhobis* so that the structure is totally inappropriate for their needs.

Between 1988 and 1990 the *dhobi* leaders held extensive discussions with the city administration. Moreover, they showed them various tanks and ponds within the city which could be developed as alternative washing places, accessible to the majority of *dhobis* (i.e. one water tank could could serve *dhobis* from ten neighbouring wards). The fact that this local knowledge was never incorporated into the formal plans, let alone considered till after money was sanctioned, is a clear indication of the faith the GAP authorities have in their own professional expertise even if it proved to be ineffective or useless (Redclift, 1987, p.151).

Popular support for the *dhobis*' cause only exists at a verbal level – there is little media coverage of their actions. Kanujia does not want to involve local politicians whom he feels have a habit of appearing at public meetings where they dominate the podium, usually in an effort to gain votes, doing very little active work the rest of the time. As for the NGO leaders like Mahantji, he feels that they do not think about the poor but are happy to make grandiose speeches about the need to clean the Ganga.

Related to this is, for Kanujia, the unfair fact that other economic groups, such as the milkmen whose water buffaloes contribute to the pollution of the Ganga when they bathing, are not being asked to move. The Yadav (milkmen caste) are economically and politically strong in the State and local government and therefore, he maintains, no one can (physically) touch them.

It is clear that the administration, in their efforts to achieve the goals of the GAP (or at least seen to be doing so) have decided literally to pick on a weak and poor community. There are definitely other more critical sources of pollution (sewage and industrial wastewater) at Varanasi, but because it takes time to build a treatment plant the local authorities have decided that there must be something they can do which will meet the approval of the central and State level GAP monitoring bodies who have been fairly critical of their progress to date. According to the Mayor, the orders to stop using soap in the Ganga emanate from Delhi, which feels the pinch from major funding agencies who constantly want to see quick results. He blames the bureaucrats for their lack of foresight in the implementation of the GAP - projects are designed in Delhi with little knowledge of grass-root realities.

The Divisional Commissioner, on the other hand (a top-ranking Indian Administrative Service bureaucrat), was quite unsympathetic: "No one wants to shift, but sometimes you have to impose your force of will on people in the national interest". (Interview, Varanasi, 1991).

But as Kanujia explains:

"Washing clothes is my business, what else can I do – steal? All the Hindus think the Ganga is their Mother – I have no disagreement with the efforts to clean the river, though they are just eating the money. But what are you doing for my family? If we don't wash clothes, we don't get food and we are not so literate that we can find other jobs. And if we do, then who will wash the clothes? ... I am fighting for my future and that of my children's – this is not just a problem for me ... but a question of survival for the community ... I have to continue the struggle." (Interview, 1990).

Today the majority of the *dhobis* continue to wash clothes in the Ganga, while those closer to the alternative washing places have conceded to use them, despite the lack of adequate space to dry clothes. And Kanujia, although still the *dhobi* leader, is busy with BJP Hinduvata politics and is quick to acknowledge that his party is not interested in maintaining the health of the Ganges or that of the people of Varanasi.

Participation and Power – Re-addressing the Discourse

"The more the economics and politics of development are kept out of the reach of the masses, the more they (the masses) are asked to 'participate' in them. For they are told that it is for them that 'development' takes place." (Kothari, 1984, p.542, in Escobar, 1984, p.399).

Participation, unlike salt, is not a missing ingredient which can simply be sprinkled on to enhance flavour or obtain a specific result. The GAP was not designed as a participatory environmental project, despite politically sanguine claims about it being a 'people's programme'. On the contrary, not only was there limited public involvement in the planning and designing of the project (even from those who could offer constructive alternatives), the GAP is acceptable to authority, precisely because it does not challenge the existing social and institutional order.

The technocentric approach of the Uttar Pradesh Jal Nigam and other implementing agencies creates uncoordinated, fragmented and eventually expensive 'knowledge' (systems of expertise) which renders invisible the knowledge and lives of the people whose daily means of subsistence is intricately interwoven with the resource base at which such professionalism is directed. Further, bureaucratic politics, what Schaffer calls 'bureaucratics' (1980, p.189), maintains a cult of insideness or incorporation, built on institutionalised patterns of procedure, privileges, favoured conditions and a language of authority. Such institutional legitimacy is upheld, despite visible inefficiency and ineffectiveness.

In addition, the NGOs in Varanasi at least, work within the socio-economic and politico-administrative framework of the city and do not posit a significant threat to either the hegemony of the State or dominant social groups. They are run by individuals "...whose views are liberal and paternalistic, rather than radically egalitarian" (Midgley, 1986b, p.155). The charismatic leadership of Mahantji, although important for organisational building, is rigid and hierarchical and does not provide for a second echelon of leadership. Moreover, it has made the SMF something of an international showpiece, "...a place of pilgrimage for international development tourists" (Midgley, 1986b, p.157).

Their 'participatory' efforts (and that of the State), are based on the religious and cultural symbolism associated with the Ganga which, although it "...represents an environment of trust for the believer" (Giddens, 1990, p.103), does not question the nature and distribution of power in society, or take into account the respect with which other religious communities view the river. For example, the relationship between Moslems and the Ganga, which the author is just beginning to investigate. Moslems consider the Ganga sacred, but not pure and Moslem women observe a number of

14

interesting customs related to their belief in the sanctity of the river. (Interview with Mohammed Toha, 1992).

No attempt is made to understand why the local administration insists on shifting the *dhobis* from the ghats while leaving the Yadavs and their buffaloes alone; or why poor people prefer to defecate outdoors rather than pay to use the community toilets along the ghats; or what incentive there is in giving a few rupees to a river policeman for the disposal of a dead body or animal carcass in the Ganga; or in considering women's role in the management of community water systems, given that they are the main collectors and users of household water and caretakers of household health, subsistence and reproduction. Instead, in their definition of the 'problem' and the 'people', they (and the State) assume that the community is a monolithic, socially homogeneous unity, an approach which ignores the role of class, caste or gender differences in the process of participation.

And what of the Ganga itself? Despite the 'achievements' claimed by the project directorate, mere physical targets like sewage treatment plants and pumping stations do not necessarily mean an improvement in water quality. On the contrary, major doubts are being expressed, both by those involved in the GAP and its critics, about the financial and technical maintenance of such schemes. In addition, the accountability of people operating the facilities has also been questioned – there have been instances of deliberate damage to pumping stations, so that money can be made on repairs (Shankar, 1992, p.29). Thus, the GAP has been dubbed as a 'pumps and pipes scheme' where the only beneficiaries are the suppliers and officials who award the contracts (Shankar, 1992, p.31).

It is difficult to evaluate the impact of the GAP on health, but doctors at the Mehta hospital along the banks of the Ganga in Varanasi, claim that the incidence of critical waterborne diseases such as chronic amoebiosis has actually increased since the inception of the GAP. Although drains carrying wastewater to the Ganga were diverted or intercepted in the name of pollution control, there was no careful planning as to where else they were going to flow to:

"The storm overflow system is already choked, so much of the wastewater which was not diverted through the intercepting sewers to Konia simply flows back on the streets ... The problem is particularly acute during the monsoons; right now there is a typhoid epidemic in the city and malaria is rampant. Sometimes sewage water comes out of the municipal taps ..." (Interview with doctors from Mehta hospital, 1992).

Another important issue in Varanasi is the rapid

and unplanned urbanisation along the upstream banks of the Ganga, just before the main bathing area. The sewage treatment facilities are already being affected by frequent power tripping, and it is unlikely that they will be able to cope with wastewater generated by the new residential colonies. In addition, the decreasing level of the Ganga, especially during the dry months because of the withdrawal of water for irrigation purposes further upstream, means that the concentration of pollutants during this period is greater.

Such issues need to be addressed, particularly since the government is considering a Rs 100 billion National River Action Plan (NRAP) modelled along the lines of the GAP. Under the proposed NRAP the government has identified 13 rivers in 19 stretches throughout the country requiring immediate attention. If participation is going to be the buzzword of the NRAP as well, then it requires an institutionalised mode of social planning and decision-making (Douglass, 1992, p.25) which is based on access to information and knowledge as well as the recognition and respect of people's rights to the use of common water resources, whether it be for social, economic or cultural purposes.

An effective and accountable State-society partnership must begin from the bottom, as a process of empowerment, rather than be yet another exercise in the politics of "window dressing the status quo ... guaranteeing for those already in power an air of legitimacy" (O'Riordan 1992), while doing little for the 'have-nots' or the sustainability of rivers such as the Ganga.

Acknowledgement

I would like to thank Professor Timothy O'Riordan for his useful and constructive comments on this paper.

References

Ahmed, S. 1991. Questioning Participation: Culture and Power in Water Pollution Control – The Implementation of the Ganga Action Plan at Varanasi. PhD dissertation, University of Cambridge.

Babb, L.A. 1975. The Divine Hierarchy: Popular Hinduism in Central India. Columbia University Press, New York.

Berwick, D. 1990. Sacred and Profane. *The Sunday Times*, 1 July, pp.23-30 (Sunday Magazine). London

Clark, J. 1992. Democratising development: NGOs and the State. *Development in Practice*, **2**(3), 151–162.

Douglas, M. 1987. How Institutions Think. Routledge,

- London.
- Douglas, M. and Wildavsky, A. 1983. Risk and

 Culture An Essay on the Selection of Technical

 and Environmental Dangers. University of

 California Press, Berkeley, California.
- Douglass, M. 1992. The political economy of urban poverty and environmental management in Asia: access, empowerment and community based alternatives. *Environment and Urbanization*, 4(2), 9-32.
- Dwivedi, O.P. 1988. Man and nature: an holistic approach to a theory of ecology. *The Environmental Professional*, **10**(1), 8–15.
- Eck, D.L. 1982. Banaras City of Light. Alfred A. Knopf, New York.
- Eldridge, P. 1984. The political role of community action groups in India and Indonesia: in search of a general theory. *Alternatives*, **10**(3), 401–434.
- Escobar, A. 1984. Discourse and power in development: Michel Foucault and the relevance of his work to the Third World. *Alternatives*, **10**(3), 377–400.
- Farrington, J. and Biggs, S.D. 1990. NGOs, agricultural technology and the rural poor. *Food Policy*, **15**(6), 479–491.
- Fernandez, A.P. 1987. NGOs in South Asia: people's participation and partnership. *World Development*, **15** (supplement), 39–49.
- Freitag, S.B. (ed.). 1989. Culture and Power in Banaras Community, Performance and Environment, 1800–1980. University of California Press, Berkeley, California.
- Garcia-Zamor, J.C. (ed.). 1985. Public Participation in Development Planning and Management. Westview, Boulder, Colorado.
- Giddens, A. 1990. *The Consequences of Modernity*. Polity Press, Cambridge.
- Goulet, D. 1989. Participation in development: new avenues. World Development, 17(2), 165-178.
- Holloway, R. (ed.). 1989. Doing Development:

 Government, NGOs and the Rural Poor in South
 Asia. Earthscan. London.
- Ingram, H. 1976. The politics of information: constraints on new sources. In: Pierce, J.C. and Doerksen, H.R. (eds), Water Politics and Public Involvement, pp.63–73. Ann-Arbor Science, Ann-Arbor, Michigan.
- Kaushal, A. 1990. A Review on People's participation in the Ganga Action Plan. National Academy of Administration, Mussoorie.
- Khare, R.S. 1962. Ritual purity and pollution in relation to domestic sanitation. *The Eastern Anthropologist*, 15, 125–149.
- Kumar, N. 1988. The Artisans of Banaras: Popular Culture and Identity. Princeton University Press, Princeton, New Jersey.
- Midgley, J. 1986a. Community participation: history, concepts and controversies. In: Midgley, J., Hall, A., Hardiman, M. and Narine, D. (eds),

- Community Participation, Social Development and the State, pp.13-44. Methuen, London.
- Midgley, J. 1986b. Community participation, the State and social policy. In: Midgley, J., Hall, A., Hardiman, M. and Narine, D. (eds), Community Participation, Social Development and the State, pp.145-160. Methuen, London.
- Ministry of Environment and Forests. 1985. An Action Plan for Prevention of Pollution of the Ganga. Ministry of Environment and Forests, New Delhi.
- Ministry of Environment and Forests. 1987. Ganga Action Plan Varanasi Chapter: An Introduction. Ministry of Environment and Forests, New Delhi.
- Muralidharan, S. 1985. The Ganga clean-up: consequences of politics. *Business India*, 8–21 September, 80–83.
- Oakley, P. and Marsden, D. 1984. Approaches to Participation in Rural Development. International Labour Office, Geneva.
- O'Riordan, T. 1981. Environmentalism. Pion Ltd, London.
- O'Riordan, T. 1989. The challenge for environmentalism. In: Peet, K. and Thrift, N. (eds), *New Models in Geography*, Vol.1, pp.77-102. Unwin Hyman, London.
- O'Riordan, T. 1992. Personal communication.
- Parry, J.P. 1980. Ghosts, greed and sin: the occupational identity of the Benares funeral priests. *Man*, **15**, 88–111.
- Redclift, M. 1987. Sustainable Development:

 Exploring the Contradictions. Methuen, London.
- Robertson, A.F. 1984. People and the State An Anthropology of Planned Development.

 Cambridge University Press, Cambridge.
- Sankat Mochan Foundation, 1992. Report of Joint Monitoring Exercise, Varanasi (unpublished).
- Saraswati, B. 1975. Kashi: Myth and Reality of a Classical Cultural Tradition. Indian Institute of Advanced Study, Simla.
- Schaffer, B. 1969. The deadlock in development administration. In: Leys, C. (ed.), *Politics and Change in Developing Countries*, pp.177-211. Cambridge University Press, Cambridge.
- Schaffer, B. 1980. Insiders and outsiders: insideness, incorporation and bureaucratic politics.

 Development and Change, 2, 187-210.
- Shankar, U. 1992. Purifying the Ganga. Down to Earth, 1(9), 25-32.
- Singh, K. 1992. People's Participation in Natural Resources Management. Workshop Report No.8. Institute of Rural Management, Anand, India.
- Singh, R.L. 1955. Banaras A Study in Urban Geography. Nand Kishore and Brothers, Varanasi, India.
- Thames Water Authority. 1987. River Quality Surveys to Establish the Location of Automatic Monitoring Stations at Varanasi, Allahabad and Kanpur. Report no.2. Reading, UK.