THE POTENTIAL APPLICATION OF GIS TO THE SARDAR SAROVAR DAM PROJECT

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ABSTRACT The Narmada Valley Development Project consists of 30 major dams, 135 minor dams and 3000 or more irrigation projects and dams. The Sardar Sarovar Dam project (SSP) is one of the 30 major dams to be built on the Narmada River. The SSP will provide water and electricity to areas that face serious deficits. It is, however, expected to cause serious environmental damage and negatively impact 240,000 people. This paper argues, that the costs of the SSP far outweigh the benefits. This paper proposes to use GIS as a tool in advocacy against large dam projects like the SSP.

INTRODUCTION

The Narmada River is located in western India. It is the largest river flowing westward across three states - Madhya Pradesh, Maharashtra and Gujarat. The river flows out into the Arabian sea forming an estuary. Like most rivers in India, the Narmada is sacred to the people of the country. There are many traditions and legends attached to its origin. One of the important rituals is the 'Parikrima' involving a pilgrimage from the origin of the Narmada in Amarkantak to its final exit in the Arabian sea. The pilgrimage originally took three years, three months and three days to complete. During this journey the pilgrim was sensitized to the power and beauty of nature.

HISTORICAL BACKGROUND

The proposal to dam the Narmada was conceived of several times between 1946 and 1960. It was only in 1960, at the end of 14 years of debates between the three states involved, that the planning commission gave partial clearance to the Government of Gujarat to commence work on the SSP.

The following is a time line that traces the development of the SSP.

1946-1960 - numerous proposals to dam the Narmada put forth.
1960 - Planning commission of India gives partial clearance to the Government of Gujarat.
1969 - Narmada Water Disputes Tribunal (NWDT) set up.
1979 - The World Bank visits the site with possibility of extending credit.
1985 - World bank approves total credit worth 450$m for the Sardar Sarovar Dam.
1986 - Six prominent environmentalists call for suspension of work on the SSP dam until all studies on resettlement and rehabilitation and environment are complete.

(The World Bank took no account of the fact that the Ministry of Environmental Affairs had not given clearance to the project in 1983 due to lack of sufficient information. Under the credit and loan agreements of 1985, the Bank required an environmental workplan to be completed by the end of 1985. It was later extended to 1989. The workplan is still not available.)

1987 - The Ministry of Environmental Affairs gives partial clearance to the project and studies on the environment were to be conducted concurrently with the construction of the dam.
87-'88 - Oustees (displaced people) from all three states resolve to oppose the Sardar Sarovar Dam.
- Over 300 activists, social scientists and other prominent citizens, present a memorandum to the Prime Minister calling for a reappraisal of the SSP.
1989 - A World Bank team visits to carry out a reappraisal of the project. The team is not allowed to visit certain areas on the pretext of security.
- Oustees and other participants block a major Highway.

- 70,000 people gather in a rally against destructive development.

1990 - Friends of the Earth - Japan lobby against the Japanese government, which is a major source of funding for the project, which ultimately leads to the Japanese government withdrawing aid on grounds of inadequate social and environmental impact assessments.

Sept 1991 - An independent review team led by Bradford Morse, was asked by the World Bank to conduct an independent review on the environmental and resettlements and rehabilitation aspects of the SSP.

June 1992 - The independent review was released. An accompanying letter to the president of the World Bank, Lewis T. Preston they stated, "Important assumptions upon which the projects are based, are now questionable or are known to be unfound. Environmental and social trade offs are made and continue to be made, without a full understanding of the consequences..... As a result we think that the wisest course would be for the bank to step back from the projects and consider the afresh."

APPLICATION OF GIS

In India GIS is used in the Department of Defence and other government agencies. Its application covers a wide range from the military to network analysis. However its application as a tool in advocacy against a project is new. There are instances of this kind of application in the US.

APPLICATION OF GIS TO THE SSP

The application of GIS to the SSP is logical considering the magnitude of the project. However to explain its application to the SSP is beyond the scope of this paper. If GIS could be applied to the SSP, the government will be the first to do so, as they have the resources and access to all pertinent information. However any information generated from such an application will not be available to the general public. This paper, is thus a conceptual application of GIS in advocacy against the SSP.

Protest against 'destructive development', today still relies on the written word and the expression of solidarity towards the cause through demonstration.

Unfortunately this does not seem to suffice. In a world that is increasing becoming computerized and evironmentally aware, the circumstances call for a change in the strategy of protests. There is an increasing need to demonstrate the validity of ones point of view. This is where GIS comes in. The citizens groups and other non-governmental organizations need to apply GIS as a tool to demonstrate the validity of being against the project. In most developmental planning there is a lack of the notion of space. It is important to visualize the space for which development is proposed, this allows for the ability to see the interaction of the variables with the area. GIS has the capability to combine analytical data with its associated space and allows visual interaction with the area. Development planning can no longer afford to continue on the basis of only theories that support and validate it.

GIS also has the ability to research on alternatives to the dam. This is an important application of GIS. There is a serious water shortage in the north western Gujarat, that needs to be addressed. If one advocates against the building of the dam, it is also in the same light important to research alternatives to it.

PROBLEMS IN THE APPLICATION OF GIS

Despite the capabilities of a GIS to prove the tangible effects the dam will have on the environment and the people, there are aspects of the project that cannot be mapped displayed through numbers, based on the present technology. The anxiety of 240,000 people that will be negatively impacted by the dam, most of whom are poor farmers and tribals and the anger and anguish of those already rehabilitated with unsatisfactory compensation cannot be mapped. Tribals are a fast diminishing community in India. They have a unique cultural lifestyle. Rehabilitating them will threaten their already delicate existence. In this regard, Michael Baxter from the World Bank once said,"next to killing a man the worst thing you can do to him is rehabilitate him."

There are other inherent problems of using a GIS in India. Firstly most of the non-governmental organizations and other citizen groups do not have the resources to acquire a GIS software or the resources to train people to use it. Secondly they will face the problems in accessing information.

CONCLUSION

GIS is a contemporary analytical and research tool. Its inherent versatility allows for a variety of applications. Its use in advocacy against the SSP and also to research on alternatives to the building of similar dam projects is of significant consequence. However there are major problems in the application of GIS to the SSP, for e.g. the accessibility to information and resources and training people to use GIS. One hopes in future the conceptual application of GIS will be a feasible reality.

BIBLIOGRAPHY

Amte, Baba (1989). Cry the beloved Narmada.

---(1992) Before the deluge: Human Rights Abuses at India's Narmada Dam. Asia Watch, vol 4 issue 15.

Esteva, Gustavo and Madhu Suri Prakash (1992). Grass roots resistance to sustainable development: Lessons from the banks of the Narmada. The Ecologist Vol 22 #2.

---(1986) Dams on the Narmada. Environmental Services Group.

Morse B. and Thomas Berger (1992) Sardar Sarovar, The Report of the Independent Review.Resource Futures International.

---(1992) Towards Sustainable and Just Development. Narmada Bachao Andolan.

---(1992) The Manibeli Satyagraha. Narmada Newsletter.

Williams P.B.(1991) The Debate over Large Dams. Civil Engineering.

---(1992) Official Report Slams Narmada Dams. World Rivers Review vol 7,#3 Third Quarter.