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Taming the Waters: Dominant Discourses on Dams in India (1947-2004)

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Abstract

Perceptions of natural resources are diverse and multilayered depending on what ideology one follows. Discourses on dams are dynamic and have gone through an interesting journey and are at present on the crossroads. In the current times the earlier knowledge claims role and methods of development pursued are being questioned by social movements, civil society, and other key actors. The question of equity, rights, and sustainability are being raised at various levels along with the neglect of ecological considerations in economic planning and development. There is lack of clarity on how to proceed ahead as the power balance between the various actors is not equitable.

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List of Acronyms

CBA	: Cost Benefit Analysis
HP	: Himachal Pradesh
IRR	: Impoverishment Risk and Reconstruction Framework
NAS	: National Agricultural Strategy
NBA	: Narmada Bachao Andolan
NGO	: Non-Government Organisations
NSP	: Narmada Sagar Project
MP	: Madhya Pradesh
PIL	: Public Interest Litigation
SSP	: Sardar Sarovar Project
TNC	: Transnational Corporations
WCD	: World Commission on Dams

1. Introduction

The discourse on dams has changed over the past six decades from being 'temples of development' to 'villains and destructors of the environment'. This change in perceptions was not overnight: but gradual and influenced by various elements, contextual failures and facilitated by actors at local, national and global levels. This paper traces a change in the dominant discourses on dams over a period of six decades (1947-2004) and focuses on three major elements of change viz. the environmental debate, mode of development pursued and a humanistic perspective which gives space to principles like rights, justice, issues of inclusion of the excluded (in this case dam oustees). The study concludes by mapping the present scheme of things with an attempt to trace the role of some major actors like civil society, social movements, World Commission on Dams (WCD), etc. in the changed discourse over big dams.

Dams in India were built prior to independence, hence are not a new phenomenon[1]; a lot of work has been done on drivers behind large infrastructure projects and their consequences (social, environmental, economic or political). The given time span is interesting to analyse because the drive for big infrastructure projects intensified after shifts in legislation and administration from the colonial powers to the national elites who took over as harbingers of development and progress. The face of dams has changed over the years with the involvement of [new] actors and with it the perceptions and parameters involved have changed. Resource conflicts are multilayered and multidimensional with the interpretation of conflict depending on what perspective and paradigm of development one believes in and is complicated by the fact that the development industry is not a homogenous entity in terms of thought or action. As a result there has been more than one [parallel] debate from the forties until now. It would be interesting to bring all these debates on a common platform, to have a holistic picture and analyse what the discourse entails in the present for the Indian situation in terms of policy or otherwise and the same is the motivation for undertaking the study.

[1] The recorded history of dams dates back to as early as 1700s. Need to harness the flowing waters of a river was felt long ago; in fact can be traced back to the time when Aryans were invading the Indus valley civilisation (...), see Thukral (1992).

1.1 About the Research

The objective of this paper is to trace the change in debates surrounding dams in India, influenced by various actors. The study is grounded in two major dam projects Sardar Sarovar Project (hereafter SSP) and Hirakud dam; and outlines the horizontal and vertical interactions of national, local and global actors, which is neither smooth nor unidirectional, is interspersed with conflict within and among three levels. The guiding criterion to map change in debate are shift in power relations, ideologies and values.

Research Questions

1. How have the discourses on dams changed in India over the last six decades?
2. How three elements: the model of development, perceptions of environment and social costs of a project changed the discourse on dams?
3. Has there been any policy change because of the change in discourse on dams?

Research Methods

This paper used some elements of discourse analysis such as how meanings expand and evolve in usage of everyday language. To have an understanding of meanings attached to actions; qualitative methods are best suited as meanings arise out of social interactions and are handled and modified through an interpreting process. The study sketches change in processes, perceptions and actions in relation to discourses on dams through this discursive lens.

A focus on three elements of change in discourse was due to time and space constraints.

1.2 Changing discourses and perceptions on dams

The model of industrial growth induced development is based on two processes: unlimited use of natural resources and transformation of people [often against their will] to a working class. After Second World War economic development emerged as a panacea for reconstruction and poverty, government actions and policies have been directed on these lines. Rich (1994:25) has aptly said:

> "Massive internationally financed development schemes unleashed ecological destruction and social upheavals (and...). Huge forests were destroyed, gigantic rivers basins filled

> with dams, and vast agricultural expanses cultivated into large holdings for export production at tremendous ecological [and social] costs."

In the above processes, social systems and human development were externalised to pursue the path of economic welfare, which is now under question. From 1930s to seventies, construction of large dams became -in the eyes of many- synonymous with development and economic progress. Dams were revered in the past, viewed as symbols of modernisation and humanity's ability to harness nature; hence, dam construction accelerated dramatically. The trend peaked in 1970s when on an average two or three large dams were commissioned each day somewhere in the world (WCD 2000:xxix). Big dams and infrastructure projects were a norm and newly industrialised countries took cue from it.

1.2.1 Indian context

India, after British colonization faced a major change in the utilisation of the natural resources.

> "The ever-increasing direct and large-scale non-local demands of the Western Europe after the industrial revolution were achieved from the British colonies like India (...). Natural resource utilisation by the East India Company and later by the colonial rulers, replaced the indigenous organisations for the utilisation of natural resources like water, forest, minerals, etc, that were mainly managed as commons" (Bandyopadhyay and Shiva 1988)

In the later stages, colonial resource utilisation and control included the monopolization of water rights for instance in the Sambhar Lake or the Damodar valley in Bengal. After independence, the national leaders [elites] who took over after the shift of the power from the British adopted the legislative and administrative set up established by the colonial government to appropriate resources in favour of certain groups[2]. The structural inequalities in society remained unchanged. The idea to harness water for irrigation, power generation and drinking water with an aim of fostering economic growth was a result of the above line of thinking (Baviskar 1995:35 and Parasuraman 1999:39). The first Prime Minister of India, Jawaharlal Nehru, projected large dam projects as 'temples'

[2] The national elites pursued their development dream in consonance with the regional powerful lobbies that could influence investment decisions and stood to gain from the location of these development projects, their shape and the magnitude, as well as the redistribution that ensued from it, see Dwivedi (2001:46).

[secular] of modern civilisation, on completion of the Bhakra Nangal project in Punjab (Roy 1999).

1.2.2 Perception of resources

Perceptions of water resources and scarcity have biophysical, economic and social dimensions. Prior to discussing discourses on dams, one must ask why there is a need to manage natural resources: rivers, forests, etc. This could be analysed in two contexts viz. are undammed rivers wasted or by damming a river we waste them? The answer would depend on perceptions of nature- does it have only aesthetic value attached to it; and what is the role of the state in the context?

Scott in his critique of the state and scientific forestry says,

> "That certain forms of knowledge and control require a narrowing of vision. The great advantage of such 'tunnel vision' is that it brings into sharp focus certain limited aspects of an otherwise far more complex and unwieldy reality" (Scott 1998:11).

One could draw analogy from Scott's account of the state forestry and use it in reference to the state's role in handling water resources, the answers to the above questions would vary depending on what lens are used - utilitarian, naturalist or anthropologist.

According to Scott, Utilitarian perspective on managing a river has two positions. One confined to direct needs of the state, other to needs of the indigenous people. The utilitarian state views natural resources [in this case river] with regard to fiscal interest that can provide rather than for its aesthetic value or its meaning for indigenous people. India has six major ecological regimes and there is major flux of material, energy and informational resources among the six zones. Following independence, the mobilisation of water resources was a key to step up agricultural productivity as well as supply electrical power. Water was needed to service rapidly growing urban centres. Appropriation of water was done by the state, according to its priorities- nature was commoditified like human labour. In fact, term 'nature' in utilitarian discourse is replaced by the term 'natural resource' thereby the focus is on those aspects of nature that can be appropriated for human use (Scott 1995:4).

From a naturalist perspective, state's frame of reference is too narrow and does not take into account aquatic flora, fauna, etc. The naturalist perspective attaches aesthetic sense to nature. The anthropological perspective highlights different aspect of human-nature interaction which otherwise is missing from the state's 'tunnel vision' for instance human-river interaction: for worship, refuge, livelihood, etc (Scott 1998:11-13). This perspective highlights that all good things are constructed; it is a matter of coexistence with nature. Delineation of communities from their natural base can't be understood only in terms of loss of material livelihood; it is deeper and involves loss of cultural autonomy, knowledge and power. Hence, perceptions of resources depend on the world view one has.

1.2.3 Two milestones: Hirakud and Sardar Sarovar Project

Taming the waters of rivers has been a dream of political leaders and development planners for decades. This research is grounded in two dam projects Hirakud and SSP to map the change in discourses over dams, concerns raised and purposes behind building dams. Some of the questions that would be discussed are- what were/are the environmental debates surrounding the Hirakud/SSP? What are the popular perceptions about water resource and scarcity in this context? Are big dams the only solution? Who are the stakeholders, who decides, who has more bargaining power, what are the opportunity costs? Do all stakeholders have equal voice, who are the dominant voices and what role do they play? These are important questions to discuss in the context of the Hirakud/SSP and big dams in general.

Table 1: Overview of Hirakud and Sardar Sarovar Project

Characteristics	Hirakud Dam	Sardar Sarovar Project
Location	Over river Mahanadi in the state of Orissa in eastern India.	Over Narmada in the state of Gujarat in western India.
Purpose	Multipurpose: flood control, irrigation and power generation.	Multipurpose for irrigation, power generation, drinking water, etc.
Conceived in	1937[3]	1946

[3] Genesis of Hirakud dam goes back to 1937 when an Indian engineer, M. Visvesaraya, suggested construction of reservoirs as a flood control measure and insisted on investigating feasibility of such a measure in Mahanadi Basin. Based on results of feasibility study further investigation was taken up by Central Water and Power Commission in 1945 and as an outcome; three dams at different points on the

Project approval	1948	1960
Built in	1957	1987 (ongoing)
Delays	none	Disagreement between the three riparian states (Gujarat, Madhya Pradesh and Maharashtra) over the distribution of water.
Features	▪ First river valley project of Independent India. ▪ Inaugurated by Nehru ▪ Reservoir covering 743 km^2 at its maximum level ▪ Hydro-electric plant was built in 1970s ▪ Power generation along with supply for irrigation started progressively from 1956. ▪ Main dam is five kilometer in length, longest dam in the world.	▪ Largest water resource project ever to be undertaken in India- includes a dam, riverbed powerhouse, transmission lines, main canal, canal powerhouse, and an irrigations network ▪ Inaugurated by Nehru ▪ A network of 28 other major dams, 135 medium and 3000 minor dams with an estimated cost of Rs. 15000 crores[4] ▪ Canal network, it is 'the largest in the world.

Source: Fisher (1995:12-13), Sheth (1994:56-57), http://www.jbic.go.jp/english/oec/post/2002/pdf/108_full.pdf and http://sambalpur.nic.in/hirakud%20dam.htm, 2-09-2004 and 30-08-2004.

1.3 Scope and Limitations of the study

The research questions are important and intriguing to ask in given context, because of their relevance in the current situation for policy-making. Large projects like SSP are controversial and their relevance is questioned from various quarters owing to socio-environmental costs incurred and for their economic viability. In case of SSP, promised benefits of drinking water and power to dry and arid regions of Kutch[5] have been doubted. Many prior studies have brought to the forefront weak resettlement and rehabilitation policies of the state and implementation hazards. The objective of the research is not to reiterate the above-mentioned facts, rather an attempt to study changes in perceptions and debates on dams. Has there been a change in the bargaining power of

Mahanadi were suggested- Hirakud, Tikarpara and Naraj, however, only Hirakud was finally approved (Thukral 1992:29-30).

[4] One crore is ten million.

[5] Kutch is one of the districts in the north-western Gujarat. A detailed analysis can be found in Paranjpye (1990).

the stakeholders, what could be the policy relevance of the above. An effort would be made to analyse changing perceptions of nature in relation to the above debate. Timeline of all concurrent debates at local, national and global level would be sketched, bearing in mind the key theoretical concepts.

The reference period of the research is six decades. It was difficult to find data from the same source for a long period given the constraints of writing a M.A research paper. This might raise issues of comparability, but we had to work with the available information.

1.4 Organisation of the paper

Chapter two introduces conceptual handles to understand change in discourses on dams. We use Scott's critique against big infrastructure projects; IRR framework by Michael Cernea; definition of some of the key concepts- economic growth, development and sustainable development; perspectives on the large dam's debate, and an insight into the environmental movement in India. The concepts highlight the prevalent ideology in development ethics from the 1940s until now and have been used as a tool to analyse change in discourses.

Chapter three demonstrates that perceptions on large infrastructure projects have changed in the past six decades. Focus of the research is on mapping three elements of change: the model of development pursued, perceptions on environment and social costs. Hirakud and SSP are used as two milestones to outline change in discourses. In the current times, different actors have raised questions of equity, justice and sustainability at various levels, which was not the case earlier.

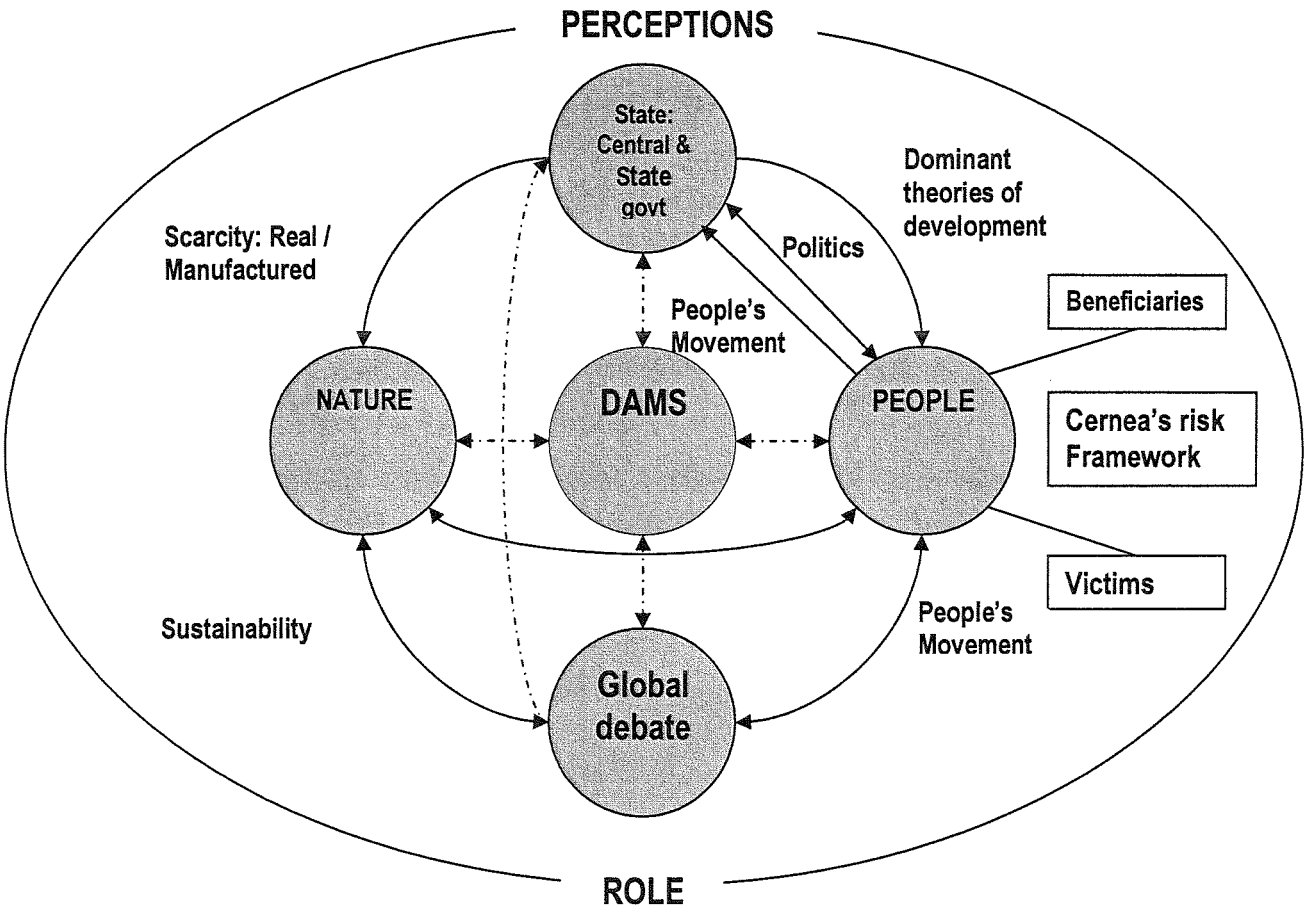
Chapter four highlights that change in discourses have been an outcome of efforts of different actors at national, local and global level. Old ethics of development have been questioned from various quarters. Civil society is increasingly playing an active role in the debate. The debate on big dams has been hostile [at times] and social movements have emerged as a major actor in voicing social and environmental concerns. The politics at local level has changed; local political lobby uses large infrastructure projects to pursue their interest and has become a vote game.

Chapter five concludes by recapping the issues, this paper highlights that change is an amalgamation of efforts and outcomes of various actors and their interactions. The discourse on dams has changed as now atleast a policy debate has started. The issue of displacement and fair compensation is talked about and considered in the state discourse, however, there has not been a [operational] policy change. Review of the two dam projects suggests that pursuance of large infrastructure schemes were at human, social and environmental costs and rights of the local population have been violated.

2. Development and Dams: an overview

Perceptions of development have a bearing on environment and society; here different theoretical positions come in handy as they help us understand how perceptions differ and lead to diverging discourses. These theoretical positions come from different schools of thought, thus provide an interesting guidepost to analyse the discourses on dams. In the current times, discourses on dam's highlights emergence of issues which were hitherto not tackled, necessitating usage of diverse conceptual handles to trace the various elements of change, in different periods. A schematic presentation of the analytical framework is done below; the various concepts are discussed thereafter.

Analytical framework



2.1 Guideposts

2.1.1 High Modernism

Scott's argument against big infrastructure projects offers a lens on debacles such as Third World development efforts and similar ones in Eastern Europe, the "Great Leap Forward" in China or collectivization in Russia. Scott deconstructs the well-intended thinking behind these schemes, which have [often] proved disastrous. Highlighting administrative ordering of nature and society by the state (Scott 1995), he qualifies the discourse on big infrastructure projects by coining the term 'High Modernism'.

> "The authoritative high modernism enunciated scientific and technical progress associated with the process of industrialisation (...). In the scheme of things of high modernism, the scientifically designed strategies for production and social life are superior to the received tradition (Scott 1995:5-6)."

A feature of high modernism is that it envisions not only a transformation in people's material environment but also in improving human nature, the intent of being the limitless ambition to transform nature to suit man's[6] purposes. The keystone of high modernism is the belief that it is man's fate to tame nature for his interest and safety, this faith attenuates the impact of so many [vast] engineering projects. What is obliterated from public memory is that the scale of these projects requires immense resources (generated through tax money, credit, etc.) and public authority to seize private property and relocate people against their will. Scott brings attention to the power of the political systems in the statist societies, bureaucratic ideology and intelligentsia, enamoured by high modernism and the repercussions of the same on the common people. Here, state assumes a self-assigned tutelary role as educator of its people (Scott 1995:3-11). However, high modernist ideology by itself tends to relegate politics.

> The ideology of high modernism is that "the past is an impediment, a history that must be transcended; the present is the platform from which the aspirations to the better future will be launched." (Scott 1995:22)

Pursuance of this authoritarian model of high modernism was a trend not only in west but also in south, applying a blueprint approach on the path to modernisation. A case in point

[6] Scott uses man to highlight the fact that women were excluded from the decision making process. See Scott (1995).

is the address of Nehru to the villagers to be displaced by the Hirakud Dam in 1948- "If you are to suffer, you should suffer in the interest of the country (Roy 1999)." This draws attention to the ubiquitousness of the five-year plans and the objectification of progress by a series of preconceived goals -largely material and quantifiable- achieved through savings, labour, and investments in the interim (Scott 1995:23).

While the scope of state intervention is endless, Scott questions the logic of high modernism pursued by a progressive nation state that conceives of an artificial, engineered society designed not by custom or historical accident, but according to the conscious, rational, scientific criteria. Here, the state social engineering is inherently authoritarian designed to shape a social life that would minimise the friction of progress (Scott 1995:10-11). However, the scheme of things did not work in its earnest; the consequences of the grand planning efforts that discount traditional skills and knowledge of people has been criticised.

Scott highlights that the vision of a great future is in acerb contrast to the disorder, misery brought forward by pursuit of high modernism. The temporal focus is exclusively on future, by discounting the present and questions the sustainability of the concept. Although, the ideological advantage of the discourse enticed many post-colonial elites to march with the flag of high modernism, the case of Nehru illustrates the point. The hubris of the idealistic elites, combining the faith that they know what is best for everyone with the power to implement it runs across the political spectrum. The logic of these beliefs and the criticism of the processes mentioned form the basis to understand the failure of development model, acknowledge and appreciate the local knowledge base. However, many of these projects replaced worse social orders and at least occasionally introduced egalitarian principles.

Scott is not an environmentalist, however, his anti-state perspective is an interesting tool to understand and analyse the rationale behind the actions of the state while enunciating a project. Scott reminds us that at times there are things in which practical experience often plays a more important role than universal rules, and this new optic elucidates the

limitations of big projects like dam building, city planning housing projects, the evils of totalitarianism, and the abuses of bureaucracy.

2.1.2 Impoverishment Risk and Reconstruction Framework (IRR)

Forced displacement is an outcome of large infrastructure projects be it multi-purpose dams, irrigation, urban development, etc. The involuntary displacements caused by large projects are imposed on certain segment of the population generally the poor and most vulnerable because of their locational [dis]advantage. Ironically, rights of the population are curtailed by state intervention, things are carried out in such a manner that the affected population ends up worse off. Cernea says that solution of the problem would be risk recognition. Everybody is vulnerable to risk but severity of risk for most vulnerable sections of the population is higher then for others, it is important that planners recognise the risk that a person may encounter while planning a development project. The IRR framework identifies risks typical in displacement, "the common and most fundamental risks of impoverishment through displacement are landlessness, joblessness, homelessness, marginalisation, food insecurity, increased morbidity and mortality, loss of common property assets, and social disarticulation" (Cernea 1995:245 and Parasuraman 1999:18).

The crux of the issue of many big projects is the impoverishment or rehabilitation of the already displaced and the still to be displaced people. The bigger question that one has to think is if the concern of displacement a bigger development question and what it means and entails. The fundamental question for policy makers from many quarters is can huge development programmes be justified on grounds of poverty reduction, when it is evident that they cause impoverishment (Parasuraman 1998:17). This raises larger questions about the present development process and its sustainability. If the 'losers' from the development model outweigh the 'beneficiaries' then one needs to give a second thought to the present state of affairs and its larger implications. The logic of equitable development necessitates the need for new legal frameworks, matching the old legislation to the new circumstances of current development processes. Achievement of social justice in a legal vacuum or under grey and confusing regulations is difficult.

IRR model conveys two basic messages: a policy message and a strategy message. The major policy message is that the risk pattern inherent in displacement could be controlled through a policy response making problem resolution mandatory and integrates different approaches. However, piecemeal palliatives cannot control this pattern of interlocked risks (Cernea 2000b).

IRR model substantiates the strategy message that specific resettlement programs are required each time, to build the bridge from the general risk model to the particular resettlement circumstances. A single measure for instance compensation can not be a substitute for the absence of strategy and a full-fledged resettlement program, need to have an overall case-based focus. In development-induced displacement, state is accountable to provide resources for reconstruction (Cernea and Dowell 2000). The logic of IRR framework is to pre-empt the pattern of impoverishment and risks from becoming a reality. Risk model provides guidelines for ensuing reconstruction and development. For instance, to prevent landlessness in the wake of displacement, land-based resettlement must be taken up before displacement even begins. To prevent homelessness, the house-reconstruction program can (and must also) be designed in advance. It is not a single method but several approaches tied together which are acceptable to resettlers; and these issues need to be discussed prior to formulating a plan (Cernea 2000b).

Over reliance on cost-benefit analysis (CBA) to justify projects that cause displacement is a fundamental source of misrepresentation of the impoverishment risks inherent in a project. Cernea says, "CBA is an insufficient macroeconomic tool that does not explore the distribution of either costs or benefits among project stakeholders" (Cernea 2000c). IRR framework suggests that responses to displacement led impoverishment must be based not just on "economics of compensation" but on an "economics of recovery" and development (Cernea 1999).

The framework highlights that problem resolution relies on [primarily] resolving land and employment issues. An option for recovery and improvement is resettling reservoir-displaced farmers on newly irrigated land downstream; however rarely used. Madhya Pradesh, Gujarat, and some other states in India have tried to relocate oustees into command areas by enacting land-ceiling laws for newly irrigated land; this is a good administrative solution, however, needs to be reinforced by gaining the cooperation of command-area farmers (Cernea 2000b), particularly in situations where neither land nor employment [alone] can recompense the labour resources of resettled families. The framework emphasises on the reconstruction of communities, networks, and social cohesion as essentials, yet seldom are they deliberately pursued in current government approaches. Planners tend to overlook these socio-cultural and psychological [not just economic] dimensions, and are rarely concerned with facilitating reintegration within host populations or compensating community-owned assets.

2.1.3 Towards a definition: Economic Growth, Development and Sustainable Development[7]

Development is a value word, implying change that is desirable; there is no consensus as to its meaning. According to Goulet, development is semantic, political and a moral minefield (quoted in Adams 2001:6). The process of economic development is essentially about adaptation to a changing environment, while being itself a source of environmental change. Mikesell says, "The field of economic development has gone through several phases since it became recognised as both an academic discipline and a prescription for government actions and policies in developing countries following the Second World War" (Mikesell 1992:1). In recent years there has been a shift in usage; 'development' is used instead of 'growth'. Development accentuates wider concerns of quality of life - educational attainment, nutritional status, access to basic freedoms and spiritual welfare.

The Brundtland commission's report in 1980s -Our Common Future- developed the concept of sustainable development integrating environment (ecology) and development (economy). The commission defined sustainable development as "development that

[7] Paper written by author titled links between economic development and environmental change, Institute of Social Studies.

meets the need of the present generation without sacrificing the ability of future generation to meet their own needs" (Dahl 1996:2). Sustainable development integrates environmental issues into developmental planning; it does not replace conventional goals but adds on additional goals for economic progress. The guiding principles for sustainable development are justice, equality and reducing poverty. There is felt need for deeper approach to development bearing in mind the initial circumstances of the people for instance ownership of resources, property rights, etc.

Sustainable development as a goal rejects policies and practices that support current living standards by depleting the productive base, including natural resources, leaves future generations with poor prospects and greater risks than our own (Pearce et al. 1990:4). Adding another dimension[8] Sen says, development is an empowering process- an enhancement of human freedoms and is integrally dependent on ecology and environmental preservation. He emphasises the move away from the limited-and limiting-idea that environment is in conflict with development (Sen 2003:1-3). We should not be concerned only with human living standards, or human needs (of the future generation), but also with human values. He talks about the active human agency whose freedoms matter (Sen 2003:1-3). Habermas looks at the notion of life world over time that leads to evolution of systems: economic, political and cultural. In the present paradigm of development (growth induced), life-world have become less active in governance of the systems (political, economic, etc.). The economic systems are taking over the life-world within the system and we need to think about the consequences of the above development from the perspective of sustainable development and the overbearing role of market forces. The institutional trends inherent in the current mode of globalisation increases inequalities, crowds out care, erodes social cohesion, and tends to increase ecological unsustainability (Opschoor 2003a:88).

Definition of sustainable development used here is anthropocentric. Sustainable development is a compromise notion. Environment is a set of resources, one assigns

[8] Sen adds another dimension to definition of Bruntland report and Solow. According to Solow, sustainability is the requirement that the next generation must be left with "whatever it takes to achieve a standard of living at least as good as our own and to look after their next generation similarly.

instrumental value to the environment. There is a value attribution but does nature always has value attached to it? For instance, forest is valued for its timber and not for its aesthetic sense. Appropriation of natural resources is done by the state [generally but in the present times TNC's also may have stake: the privatisation debate]. One finds that nature has been commodified like human labour.

2.1.4 Large dam debate: a perspective

In any debate, it is difficult to be neutral and hear the other side without being prejudiced and same is the case with large dam debate. Opponents of dams would say that the problem with dams is what it does to a flowing river: curbs right of access to water and river, uproots the existing settlements, disrupts sources of livelihood of local communities, destruct environmental resources, and erodes local culture. On the other hand, proponents claim that dams are the best economic investment of public funds and resources. The proponents and opponents of large dams fail to hear the other side sedately. The two principal poles in the debate illustrate range of views on past experience with large dams. To proponents, answer to any questions on past performance are self-evident, as they maintain that dams have generally performed well as an integral part of water and energy resource development strategies in over 140 nations and, with exceptions, have provided an indispensable range of water and energy services. Opponents contend that dams have often been selected over other options that may meet water or energy goals at lower cost or that may offer development benefits that are more sustainable and more equitable (WCD:2000). Some of the issues of contention are:

Table 2: Perspectives on Large dam debate

Issues	Claim of the Proponents	Claim of the Opponents	Neutralist argument
Interference with nature	▪ Large dams are part of prevailing development process- demand based, demand multiplying, technology-driven, and 'growth'-oriented ▪ After choosing a	Large dams cause environmental damage and disturb the ecological balance of an area ▪ Species endangered ▪ Loss of agricultural and forest land ▪ Displacement of people* and	▪ Finding land for resettlement and for afforestation could be a challenge ▪ Economy in water use, preventing water logging, ensuring equity in the distribution of water can be done;

	certain mode of development, it will be inconsistent to single out one element for condemnation	livestock ▪ Displacement of wildlife ▪ Loss of vegetation cover ▪ Water logging and salinity in the command area of the project after some years of irrigation, leading to valuable agricultural land going out of use	though it might be daunting ▪ Treatment of upper catchment to prevent loss of top soil is another possibility ▪ Not all social projects have inherent social evils. It is case specific ▪ Given the present scheme of things, nature can not be preserved
Need for large hydro projects	Small hydro projects can not substitute for large hydro projects	Small hydro projects can substitute for large hydro projects, they achieve more equitable goals	▪ Not all large dam projects are bad. ▪ It is case specific. ▪ If social costs are taken care of then there would be lesser opposition
Social cost	▪ Greater common good- if at cost of the few the nation can develop then one may think about big projects. ▪ It is for our future generations	▪ The social cost borne by various stakeholders is not equitable. Poor more than the rich ▪ Settling project affected in the command area is mired with difficulty ▪ Value of land rises with the prospect of irrigation thereby increasing the inequality	▪ If social costs are internalised, project affected adequately rehabilitated then big dams could be an option ▪ One must think of the repercussions of providing irrigation water in dry and arid area- may change the established way of living of the locals
Alternative to large dam	▪ Difficult to find suitable sites for a large no of minor projects ▪ Demand for water can not be fulfilled from small projects	▪ Small irrigation projects could be a possibility ▪ Better, cheaper, benign options for meeting water and energy needs exist and have been	▪ Underground aquifers can be harnessed ▪ Desalination of the sea water**

	▪ Big projects more efficient	frequently ignored, from small-scale decentralised water supply and electricity options to large-scale end-use efficiency and demand-side management options	

Source: Dhawan (1990:61-100), Dwivedi (2001:319-320).

* Some suggest that displacement is also a part of environmental impact.
** Cost here is relative cost against the alternative costs rather than against the benefits.

2.1.5 Ideologies of Environmentalism

Environment movements are organised social activity consciously directed towards promoting sustainable use of natural resources, halting environmental degradation or bringing about environmental restoration. There are four dominant strands in the Indian Environmental movement; first emphasises the moral imperative of checking overuse and doing justice to the poor and, largely Gandhians. Second, emphasises the need to dismantle the unjust social order through struggle, and primarily attracts Marxists. The third and fourth strands emphasise reconstruction, employing technologies appropriate to the context and times (Gadgil and Guha 1995:98-99)[9].

In the past few decades, the perspective towards environment has changed with the changing development paradigm. The environment action groups are increasingly playing a dominant role in the process of struggle, spreading of consciousness and have developed an incisive critique of the development process itself. The question of equity, rights, and sustainability are being raised at various levels. In addition, questions have been raised about the economic planning in India and neglect of ecological considerations.

[9] For detailed discussion see Gadgil and Guha (1995).

3. Dams- Now and Then: Elements of change

Conflict over resources is not a new phenomenon. Historically, wars have been fought and empires have fallen over natural resources. In this chapter, perceptions on dams are discussed by drawing on elements from key theoretical concepts. The conceptual handles are an aid to deconstruct the positions and lend an objective optic to trace the discourses. A parallel can be drawn from the critique of the planned development propounded by Scott and compared with thinking of Nehru, Mahalanobis and other planners of that time. The concept of sustainable development, economic growth and development discussed in second chapter helps to trace the evolution of dominant thinking on development at national and international level, which in turn has implications at the local level. The positions of the proponents, opponents, and neutralists on large dams are useful to understand different perceptions and knowledge claims (to borrow the term from Dwivedi 2001). Cernea's risk model is pertinent to understand the social costs arsing from a large dam. The ideology behind the environmental movement helps one to understand the role of the social movements in dam's discourse. These theoretical positions have been used later in this paper to understand and analyse changed perceptions and knowledge claims in reference to the two dam projects.

3.1 The Model of development

Obstructing flow of a river for irrigation or other purposes is not a recent phenomenon. Large dams were built in USA, former Soviet Union, China, India, Europe and other parts of the world in twentieth century many of these were multipurpose projects and have provided benefits to population in different parts of the world. Water is a precious resource, provides a sense of security and is essential for the ecosystem. Beneficiaries from large dams revere these projects for security water provides against severe water shortage, an insurance against drought; averts famines by adaptation of modern farming practices, etc. Four decades back one of the reasons for building dams was flood control out of social concern for betterment of present and future generations; the same was reflected by rising spending on flood control measures besides providing irrigation,

hydropower and other benefits to the society (Char 2001; and McCully 2002[10]). In India, barrages across river Krishna and Godavari in south and Ganga in north were built during the nineteenth century to provide irrigation in deltas of southern rivers and plains of north. Krishnarajasagar and Mettur Dams in south India have sustained agricultural production for more than half a century and are revered by farmers of the area. Large projects like Bhakra Nangal, Nagarjunasagar, Tungabhadra, Hirakud, Beas, Ramganga, Sharavathi and hundreds of other medium irrigation projects provided immediate requirements of water and power in early decades of country's independence (Char 2001).

3.1.1 Changing perceptions of natural resources

Perceptions of natural resources especially water has changed drastically over past century. Water scarcity as a concept was not popular earlier but in current time's perceptions of water, scarcity -manufactured or real- has assumed an important role in policy circles. Perceptions on water have diverse connotations attached to it: relative aspect of how water is valued (includes cultural meaning[11] as well as economic values), relative levels of access and pattern of use, and relative degrees of control over water resource management and distribution (Johnston 2003:73). Nehru's speech while addressing the annual meeting of Central Board of Irrigation enforces the fact:

> "I know of no other place in the world, which has tremendous power locked up in it as the Himalayas, and the water that comes to the rivers from them. How are we to utilize it? There are many ways. Essentially, it is the job of the engineers to tap this tremendous reserve of power for the benefits of the people (...). The profession and work of an engineer in India is of highest importance and significance" (Nehru 1948:84).

The dominant paradigm of development after independence connoted nature's endowments with power it entails- had to be tamed, managed and controlled[12]. Nehru said that development of big river valley schemes, dams, hydroelectric and thermal power would simply drive the country forward (Nehru 1947:100). Nehru's remark signifies power attached to natural resources. Forests and rivers were treated in a linear rather than

[10] India spent nearly a billion dollars on embankments and river channelization between 1953-80 and many more billions on dams, yet both the area of cropland affected and cost of damage from flooding rose dramatically over this period; http://www.irn.org/basics/ard/srfloodcontrol.pdf, 1-09-2004.

[11] Narmada is one of the holiest rivers in India.

[12] An advertisement for cement in India read 'the river is furious, but the dam will hold' (quoted in Parajauli 1991:179).

cyclical fashion (Parajauli 1991:179). In the present neo-liberal world, market systems have reached out in a big way; have changed the face and perceptions on water.

3.1.2 Contextual details

To delve into the question whether discourses on dams has changed or remained static over the years we need to first engage with the situation and thinking on dams in forties in detail. After independence, government of India was exploring different models of development to best suit interests of the country[13]. The choice was between western capitalist economy and Soviet Union's socialist economy. However, in a race to cope with pace of development, Indian government in 1950s under leadership of Nehru propagated western models of development[14]. India opted for a mixed economy wherein essential services were controlled by public sector and consumer industry was controlled by private sector, Gandhian ideas lost sheen in the glitter of modern technology (Dhawan 1990:43). After adoption of policies for planned development, a major priority for policy makers was harnessing country's water resources for irrigation and power. The dominant discourse of state was to increase production base, national wealth and national dividend, which would lead to a rise in standard of living of the people (Nehru 1947:95). Consequently, agriculture, the backbone of Indian economy gained emphasis in all plans with thrust of investments on large-scale irrigation infrastructure projects. The country spent billions of rupees in constructing large dams across major Indian rivers which contributed a great deal in increasing food production; thereby, making India the second largest rice producing country in the world. State's role and ideology negated social values and cultural ethos for scientific rationality overshadowing the situation of the people affected by these development projects; ironically, the 'project-affected' were called 'beneficiaries' of the projects. What was not thought was that dams are not immortal; the benefits accrue only until the reservoir is filled with silt.

[13] In this context, Indian government called E.F Schumacher as a consultant to help plan the development of the country. However, Schumacher's ideas were more on the Gandhian ideology, and were not taken well by the planners. He advocated the idea of 'small is beautiful' in his book by the same title (1973).

[14] These models focussed on heavy industrialisation, mass production, open market, centralised structures and huge investments in infrastructure.

These mega projects have fallen short on indicators based on which investments on the projects were earlier justified for instance actual output of irrigation and power from these projects. Hirakud dam is a case in point, which operates effectively at forty-eight percent of its original envisaged capacity (Thukral 1992:31). Of the very many neglected costs of big dams, the most serious are social and human consequences of displacement. SSP is still under construction though experts have raised concerns about its operational capacity. The purpose of building a dam on Mahanadi was primarily cited as flood control while the dams on the Narmada were to serve multiple objective of providing drinking water, for irrigation purpose, generation of power, etc.

3.1.3 Role of the state

Role of the state in the present scheme of things is quite different from what it was earlier. After independence, with stalwarts like Nehru and Gandhi people looked upon the state to pursue a path that would be in everybody's interest. The state apparatus wanted to enhance its control over the resource base, the mobilisation of water resources was seen as key to stepping up agricultural productivity as well as supply of the electric power. As a result, construction of large dam projects was promoted. However, at the same time, the state apparatus overlooked the collapse of traditional systems of smaller village tanks and distributaries. In addition, river valley projects opened up access to remote areas thereby triggering deforestation in many parts of India (Gadgil and Guha 1995:20-21). There are numerous instances of dam projects where the waters have been transferred to nearby towns and cities to fulfil the needs of omnivores[15] at cost of depriving the locals of their livelihoods and lifeworld; SSP is a case in point.

Two cornerstones for a country to progress were capacity of the industry and scientific research; there was a need to build the industrial base, tackle problem of unemployment and raise the standard of living (Nehru 1947:92-96). There have been conflicting values about the natural resources, development thinking within the national elites, planners and the environmentalist. One of the dichotomies is that the planners think that the flowing

[15] Gadgil and Guha (1995) have defined omnivores as: city dwellers, organized services-the industrial sector, better-off cultivators using fertilizers and pesticides, etc.

river is a waste if left untapped, for environmentalists the *Dharma*[16] of the river is to flow (dwivedi 2001:304). There is a need to merge the two value systems in development planning. At present, the 'validity claims' (to borrow the term from Habermas, Layder 1994) like market, money have taken over the lifeworld of the system, the role of the state is being redefined. There is a shift towards privatisation of resources water and power in the recent times for instance, Maheshwar dam, one of the big dams being built in the Naramda valley is the first privatised dam in India.

In a democratic set up if the people are not satisfied by the state they could go to the Judiciary for voicing their grievances. However, the supreme court of India handling of some of the recent Public Interest Litigations on the Naramda dispute and other cases leaves much to be desired. The Judiciary has washed its hand off from the work of the legislative and executive. For instance, the majority judgement by Justice B.N. Kripal upheld the decisions of the executive and stating that the court could not undertake government duties or functions. Furthermore, the court does not have the capacities to transgress into policy decisions unless the fundamental rights of the people are violated but even then, the challenge to a policy decision should be undertaken before the project is executed (Majority Judgement 2000:86-87). One wonders where and how the people of the largest democracy can seek justice. Starting of government project sees a lot of promises but in due time the reality unfolds and by then the poor people have nowhere to go, no door to knock on to demand justice.

3.2 Changing environmental perceptions

Water resources are vulnerable to conditions of uncertainty that arise from unstable geophysical process, prospective societal goals and unpredictable distant economic events. A retrospective examination shows that several large dams have been built with little thought given to the possibility that actual conditions might turn out to be substantially different from those assumed in plans for ecological variables, availability of water, etc. In econometric analysis, investments are based on assumption that investment expenditures are reversible i.e. if investment climate deteriorates then the

[16] Religion in Hindi.

project can be wound up. However, most of the large irrigation projects are irreversible as capital and equipment are location and region specific. They have an element of inflexibility; the economic environment can change, the costs of energy might rise or fall, the ecological variables might change but the multipurpose projects involving heavy costs cannot be modified or the state does not want to modify it. In recent years it has been felt that there is a need to avoid this uncertainty at level of designing development plans because if an irreversible decision is made and option of disinvesting is lost then this lost option value must be included as part of the cost of investment. One should also take into account energy required to build and operate a dam (Singh 1997:73-74). A proper cost benefit analysis keeping in mind social-environmental costs would be worth undertaking prior to planning a project. In case of Hirakud and Sardar Sarovar dam, we find that social-environmental costs were not borne in mind. Sardar Sarovar Project is an ongoing project but the project planners have turned a blind eye to all the negative externalities.

River valley projects planned in fifties, sixties and early seventies followed narrow engineering and agricultural approaches and could not integrate some of the dimensions of sustainable land, water and resource management. Seventy five percent of the world dams were built in the last forty years (Alagh and Buch 1995:292, and WCD 2000:8-9). Sustainability questions in large water resources projects on major river systems are necessarily complex and varied, were not raised during earlier times.

One of the major criticisms for large dams is progressive loss of storage capacity to sedimentation thereby reducing the ability of dams to capture flood waters. However, there is a paradox here as large dams that have the capacity to affect a flood on a major river are usually multipurpose projects, financial and political pressure means frequently keeping the reservoir high to maximize electricity generation; water supply takes precedence over keeping it low to make room for floodwaters, Hirakud dam is a case in point. There have been numerous cases of record floods that were worsened because dam operators held back the waters while the reservoir was filling. Moreover, with torrential rains the situation worsened, the spillways had to be opened to the maximum capacity to

prevent the dam from being overtopped. Dam failure/dam-burst flood is a huge potential risk for people living downstream as it could bring catastrophe for a river valley. In fact, many deadly floods in the past, in India, have been blamed on emergency releases from dams (McCully 2002).

Until 1983, all dams in India were built without any sort of Environmental Impact Assessment[17]. A distressing commonality for most of the river valley projects of the early 1940-80s is that both environment and social costs are not taken into account while costing the project or have been worked out at ridiculously low prices for instance submergence cost of forests, successful relocation of wildlife, rehabilitation of locals; all this points out the faulty development process adopted in the country. For instance, SSP is a plan for land and water management in a very complex environmental regime. Dams over the Narmada are being constructed in a hilly region, which would lead to submergence of natural forests, killing of wildlife, etc. In fact, Narmada Project has been proclaimed as the world's worst man-made ecological disaster by civil society; the project has been adjudged as unviable (Alvares and Billorey 1988). There have been huge protest against building of dams on Narmada - *Narmada Bacchao Andolan* (NBA[18]) - the movement started with protests around better rehabilitation for villagers affected by SSP; however, within three years it had became clear that the NBA was facing a much greater problem.

The Executive and the Judiciary looks at environment in a different way. Justice Kripal says that environmental concerns and its impact should be seen with a holistic optic taking into account the area that is going to be submerged and its surrounding area i.e. in relation to the project as a whole (Majority Judgment 2000:88). This outlook is flawed because of two reasons; first, even if we look at overall multifold improvement in the environment, the water logging and salinity problem in the command area shadows other proclaimed benefits. Besides, the ecological loss of diverse species of flora and fauna can

[17] http://users.ox.ac.uk/~lina0618/narmadabriefing.htm, 16-09-2004.

[18] NBA is an initiative against building the dams on river Narmada and against the present model of development. They believe that struggle against the construction of mega-dams on the river Narmada in India is symbolic of a global struggle for social and environmental justice.

not be written off by planting trees in some other area for instance, the state has promised to make up for the submergence of the forest in the Narmada valley by planting trees in Kutch, which is totally different ecological regime.

3.2.1 Political Economy of Water

By the end of the third plan, planning was perceived to be in crisis. The western industrial model of development had led to neglect of agrarian development with serious agrarian problems emerging and the worst drought of independent India in 1966-67. The national agricultural strategy (NAS) had ignored the long raised demand of land reforms and problems of peasantry and small cultivators. Instead, green revolution was chosen as a method of enhancing agricultural production, which suited the needs of industrial bourgeoisie (Singh 1997:77).[19] From the period of 1965-79, 1121 large dams were constructed. There have been indications from various quarters suggesting that large dams in India got a major boost after twin adoptions of national agricultural strategy. The construction of large dams had little to do with adverse climatic and geographical characteristics that made agriculture difficult, but were determined more by political equations. The presence of a powerful sugarcane lobby in state of Maharashtra culminated in the state constructing and planning 631 large dams from 1952-79. Hence, it does not come as a surprise that forty percent of large dams in India are found in the state of Maharashtra (Singh 1997).

Initially the technology of large dams was primarily geared towards irrigation but after its association with hydropower generation and enormous demands on electricity, has reduced irrigation to a 'by-product'; 'letting power generation take precedence'. The discourse around dams started changing in late seventies early eighties. The scale of large dam projects and its utility for society started to be questioned. However, not all large dams are meant for hydropower. After the sixties, spurt in dam building is clearly found to be linked to the hydropower generation (Singh 1997:95-97). During the 1956-64 two

[19] The objective of the NAS was to obtain self sufficiency in foodgrain production. This led to formulation of a growth programme assisted by green revolution technology in better endowed and high-productive areas as a response to the Malthusian warning of rise in population. The emphasis on NAS required an assured supply of water; hence, a renewed emphasis on irrigation particularly in form of large dams and tubewells, see Singh (1997:78).

powerhouses were built on the Hirakud dam -Burla and Chiplima. A hydroelectric plant was also built on Hirakud in the 1970s to harness the already available water for electricity thereby serving the multipurpose objective (Baboo 1991:2373).

3.3 Humanistic perspective

The biggest social costs of development projects like large dams, roads, railways, mines and logging is displaced people, and the same is now acknowledged from all quarters. Displacement of humans raises important ethical questions: What is owed to people who are displaced? What kind of ethical analysis can provide justification for displacement-induced development?

Delving into planning aspect and modalities involved prior to undertaking a project, the state did not ask the people prior to planning a development project. According to Nehru (1949:142):

> "The key industries should be under the state control, partly because it is dangerous for those key and basic industries to be controlled by the private interests (...). When a state plans its industrial or other development, planning itself involves a certain measure of control and direction from the state. The idea is to utilize our resource to the best advantage and going ahead with the people concerned."

Here, the state appears as a guardian of social interest. In case of Hirakud Dam, the construction of the dam was a foregone conclusion as the Khosla Report[20], containing the original schemes and estimates were out only in 1947 but work was already in progress by then (Baboo 1991:2373). This raises doubts about the motives and thinking of the state, questions the significance attached to the report. One wonders if the work on the dam would have been abandoned even if technical report had suggested the same.[21]

To answer the question, whether the state asked the people prior to planning a project the answer is negative. The government informed people that their lands would be

[20] Several flood enquiry committees had been appointed by the government of Orissa between 1928-42 to suggest measures to tackle the floods and droughts in the region, the interim report suggested storage reservoirs. The matter was subsequently passed to the government of India in 1945 and the government appointed A N Khosla to undertake the study; detailed discussion can be found at Sovani and Rath (1960), and Baboo (1991:2373).

[21] There have been instances when the work on a project has been stalled after laying the foundation stone, for instance silent valley in Kerala.

submerged, they would have to evacuate and they would be paid compensation. There was no effort whatsoever to make the villagers understand crucial issues involved in the assessment of land (Thukral 1992:38). The same was the case with SSP, the project-affected were not asked prior to formulation of development plan on Narmada.

Population affected or threatened by dams have fiercely resisted dam building throughout last century and there are numerous instances of popular unrest in India[22] and elsewhere on ground of negative repercussions for poor like loss of livelihood, land degradation, landlessness, homelessness, marginalisation, etc. There have been times when resistance against dams have turned gruesome. In 1978, police killed four people when they fired at an anti-resettlement rally at Chandil dam in the state of Bihar in India (WCD 2000:18). The debate on large dams has changed, the planning process is being questioned more then earlier; voices at different level have come together to protest against the unjust done. In fact, there has been a huge protest against dams on the Narmada especially the terminal dam- Sardar Sarovar.

The condition of oustees of Hirakud dam after forty years leaves ample space for questions for what was done to people of Sambalpur district for ushering India on a path of modernisation, gives a glimpse into state of affairs and similar situation elsewhere from big dam projects. India's rehabilitation policy offers compensation for displacement [when given at all] in cash or land; both of these are mostly outside the control of women. The existing framework does not recognise the rights of women to such resources (Sainath1996:75). In case of Hirakud dam oustees, villagers were not given adequate compensation for their land; there were several cases where villagers were rendered landless and destitute as they had no legal documents[23], large proportion of the villagers displaced belong to the Gond tribe[24] (Thukral 1992:38-40).

[22] Some of the popular ecological movements in India where people have mobilized their voice against dams are Koel Karo, silent valley project, Maheshwar, Hirakud, Bargi, Sardar Sarovar, Chandil or Mulshi.
[23] In village societies, cultivating possession of land is transferred from one generation to another according to their hereditary rights, there is no legal possession. However, the government did not recognise the right of the locals and large number of cultivators were rendered landless and destitute, see Thukral (1991:38-39).
[24] One of the Scheduled Tribes of India, mostly illiterate and living in one of the most backward areas of the country.

> "A monograph on the Hirakud dam in India found that displaced households whose 'economic status had been completely shattered as a result of displacement' did not become 'properly integrated' in host villages for many years after relocation (Cernea 2000a).

Penz discusses three perspectives that can be used to test the justification of development-induced displacement and whose respective central values are public interest, self-determination and equality (Penz 2002). The 'public interest perspective' is given concrete expression by doing a cost-benefit analysis (CBA). CBA measures the net benefits to population as a whole; negative side effects, including displacement are treated as costs and question is whether benefits of the project or policy exceed such costs. The oustees of Hirakud dam have become worse off (Baboo 1991:2373), and yet the project generated positive net benefits. Penz says that 'net benefits' from a project could be a line of reasoning behind the statement of Nehru[25] that people displaced by dams had to make such sacrifices for the good of the country. The outcome of cost benefit analysis measures net benefit for a larger group, hence, cost looks marginal in comparison. Here, compensation and distribution are treated as separate political matters (Penz 2002). Things did not change much thirty-six years later as Prime Minister Indira Gandhi echoed the same sentiments in a letter to one of India's most respected social workers, Baba Amte (Gandhi quoted in Mander 2003):

> "I am most unhappy that development projects displace tribal people from their habitat, especially as project authorities do not always take care to properly rehabilitate the affected population. But sometimes there is no alternative and we have to go ahead in the larger interest."

The second approach self-determination is more an issue of freedom and control (Penz 2002). From a humanistic perspective, forced migration is a violation of the freedom; however, it does not take into account the broader public-interest consideration such as improved living conditions resulting from the electricity and irrigation provided by dams. Government could convert opposition to consent by offering a sufficient compensation to the project affected to move voluntarily, so that they are ultimately not displaced (Penz 2002).

[25] Jawaharlal Nehru while addressing the villagers who were to be displaced by the Hirakud Dam in 1948 said, "If you are to suffer, you should suffer in the interest of the country" (Roy 1999).

Development projects and policies could be justified on the ground of reducing poverty and inequality, which is the concern of the third perspective- egalitarianism. Development-induced displacement might reduce inequalities if it primarily benefits the poor and puts the burdens on those who are better off, but then that is rarely the case. If benefits of development accrue to some disadvantaged groups while the others are harmed by displacement then it violates the horizontal equity among the poor mostly vulnerable sections: equal sharing requires that those displaced share in the benefits of development, not simply receive compensation (Penz 2002).

In context of oustees of Hirakud dam, those displaced have not in anyway been the beneficiaries from the construction of dam. They were not paid fair and full compensation for land acquired by the government, and objections raised were treated as individual cases and not dealt as a community problem[26]. In fact, government did not [even] handle the issue of evacuating people from their own land with grace and respect despite the fact that people were to be thrown out of their land, home- their life-world was snatched in a cruel way. They have been victims of development. The assessment of the situation according to eight risks propounded by Impoverishment Risk and Reconstruction model reveals that situation of project-affected has worsened with time. They have not been able to get back to their old grandeur, their land holdings have reduced, and their status has changed from owner-cultivators to agricultural labourers and are facing immense psychological and cultural hardship; it is a struggle for survival (Thukral 1992:46-47).

In case of Sardar Sarovar dam, there has been a huge uproar against the project since the early 1970s- more organised, concerted and coordinated from 1987 onwards by the NBA. The a*ndolan*[27] started by questioning the dam and policy behind it. The *raison d'etre* for opposing the project initially was the impossibility of a proper rehabilitation of those displaced as the state could not assess the extent and impact of displacement. Secondly,

[26] Thukral (1992:43-44) has done a detailed account of how the compensation issue was dealt with.
[27] Movement in Hindi.

environmental costs from Sardar Sarovar dam had not been accounted for in the cost benefit analysis (Dwivedi 1997:10). The movement questioned the given state of affairs and brought into forefront the debate on concept of development and rights and access to resources for the project-affected in the policy circles and among common people. The ethos of distributive justice and public interest are being questioned. Proponents of the dam include the likes of state and central governments, bureaucracy, political powers, [their] police, World Bank and the hegemony of myth of 'development'[28]. The protests and struggle against the project and the state are still on. The struggle of oustees tell a sordid tale of fifty years of planned development for citizens of the biggest democracy, without countervailing presence of policies to assist them to rebuild their lives.

Hence, it is not surprising that in current discourse, the dominant development paradigm is being questioned; dams and reservoirs are attacked for totality of kind of demand based, demand multiplying, technology driven, growth oriented development that is relentlessly marching forward (Dhawan 1990:91). The question of distributive justice is a very relevant consideration in any development project; it raises questions like benefit at whose cost? Beneficiaries of big dams are mainly influential and well-to-do farmers, affected ones are mainly the tribals, and other economically weaker sections of the population. A premium ought to be attached to income distribution effect of a development project that benefits from weaker sections of the society (Dhawan 1990:37), and in this context alternative to dam projects need to be examined

Participation

Problems with big dams involve many technical issues- seismic, ecological, hydrological, economic, engineering, organizational, etc. discussion of which requires considerable expertise but then that does not imply that the people: the most important actors in the process are ignored as they do not have the required expertise. This has been recognised more in the current times then in the earlier period, given the mounting criticism that project-affected were not included in planning or discussion of issues that arise out of building of big dams (Dhawan 1990:20). Brundtland commission's report says that

[28] http://users.ox.ac.uk/~lina0618/narmadabriefing.htm, 16-09-2004.

"tribal people, [...] must be given decisive voice in the formulation of resource policy in their areas, same must be achieved for the non-tribals as well." India being the signatory to agreement must comply with the norms (Morse and Berger 1992:xxv), which till now has not been the case. In case of Hirakud dam, the people were not included in planning or rehabilitation phase and same is the case with SSP. In fact, *Andolan* against SSP dam started with a demand for fair rehabilitation package for dam oustees but three years down the line, the struggle matured into full fledged protest against SSP and big dams in general- an against an unfair development process that subsidises the rich at the cost of poor.[29] The movement gained momentum, with widespread support from different actors at different levels, have forced the project planners to debate such projects in public sphere, and have increased accountability of the development process in the Narmada valley. The project planners have pushed for greater participatory and democratic procedures involving NGO and civil society participation, both in monitoring and resettlement components of the SSP. For instance, new way of involving affected people in land allotment have been tried through organisation and land purchasing committee, etc (Dwivedi 2001:300-302).

World Bank is one of the major agents of displacement by funding big dam projects on Narmada, Krishna, Kallada and Suveranrekha rivers (Shiva 2002:67); but oddly, is one of the keenest students as well. Dr. Michael Cernea, Senior Advisor to the bank has listed some crucial processes like landlessness, homelessness, etc. that cause deep impoverishment to those displaced and hence, needs to be taken care of. World Bank had to face huge criticism for funding SSP, and for the first time in history of the bank an independent review was commissioned (the report of the independent review, 1992) and the bank finally withdrew from the project in 1993. This was a huge success for the people of the Narmada valley and the NBA. The commission's report highlighted the critical importance of consultation with people of the valley and along route of the canal, reinforcing the fact that project-affected ought to be included in planning of their resources (Morse and Berger 1992:xxv).

[29] See Dwivedi (1997) for a very neat account of the making of the NBA and the various phases it has passed through.

To recap, in this chapter the debates that have led to a change in discourses on large dams are discussed. The state discourse after independence emphasised increase in the production, the national wealth and dividends. Perception of natural resources was utilitarian -to use Scott's term- highlighting use of the resources to increase overall production. Nehru said that for India to be self-reliant the only way to progress was through socialization of industry (Nehru 1947). With time new optics like sustainability and humanistic perspective entered the dialogue on dams. However, things did not happen in a linear fashion i.e. because of the change in discourse on dams the perception of the three elements changed or vice versa; it is a cyclic process, and a two-way relationship- both the discourses thrive and influence each other.

4. Actors: Catalysts for Change

In this chapter, role of some of the major actors in influencing the debate on dams is discussed. The role and power dynamics between different actors have not been straight arising from different knowledge claims, more so, because the actors are not on a level playing field. It is a multi-layer, multi-class interaction for actors: horizontal and vertical. The actors considered for purpose of the study are the central and state government, social movements, World Commission on Dams, World Bank and other donors, and NGO's.

4.1 Social Movements

Technological options can not be made in separation from visions of the future society that one desires (Dhawan 1990:21), this has been the foundation for most of the emerging social contradictions in India and elsewhere in relation to conflicts over natural resources. Scientific knowledge and technological expertise are used by contemporary societies to enlarge man's access and utilisation of natural resources [at extremely high rate] to suit its interest. The change in resource endowments and entitlements changed the age-old rights and practices of the people related to natural resource utilisation (Bandyopadhyay and Shiva 1988:1223). The [new] social movements in India challenge the relationship between economic development and usage of natural resources. Transition from a passive to a more active role of a doer and knower has not been smooth for Indian ecological movements, and few may question the role of social movements in struggle for an [alternative] development.

There is a growing separation between the state and people, clearly manifested in framing of development schemes by urban-centred technocrats that have little relevance to realties of rural India and like Bahuguna says, "[M]an is the butcher of the nature" (Guha 1989:180). Development policies are biased towards cities and big industries and against local economic and ecological self-reliance. The new social movements emanate from structural failure of the modernisation project largely practised and controlled by a developmentalist state that has so far exercised domination over knowledge and power (Dwivedi 1997:3).

Conflict is central to the way in which society through its collectivity acts upon and changes itself and the main mechanism of society's self-production, in this conflict social movements play a leading role (Dwivedi 2001:303). Indian environmentalism is environmentalism of subsistence and survival; the immediate threat is to life-worlds, lifestyle and livelihoods of the local population.[30] With advent of modernisation practices, conflict over resources intensified questioning the given paradigm of development and allocation of resources and benefits.

> "Ecological degradation and economic development generated by the resource insensitivity and intensity of the classical model of development have resulted in environmental conflicts, whose understanding is necessary for the reorientation of our current development priorities and concepts" Bandyopadhyay and Shiva (1988:1224).

Environmental movements in India have been defensive movements, localised with a focus on individual actors and have not been able to give sufficient thought to larger processes that contribute to ecological deterioration and social strife (Gadgil and Guha 1995:2). The construction of Hirakud dam came as a part of post war reorganisation programme and as an anti-flood measure for the coastal districts of Orissa. After announcement of the project in 1947, there were significant agitations and people were not entirely yielding. One hundred and eight full and 141 part revenue villages were to submerge; most fertile rice tracts of the Sambalpur district were to inundate leading to loss of cultivable land and mineral resources (Baboo 1991:2374, and Gadgil and Guha 1995:71). The peasants of the Sambalpur district who were to be ousted launched anti-Hirakud dam campaign. However, the movement fizzled out because of co-option of its leader by congress party and local administration, casual participation of the people especially of submergible area and projection of dam not only as an anti-flood measure but as a major developmental project in Orissa (Baboo 1991:2374).

Big river valley projects of 1950s met with little opposition viz. Bhakra Nangal dam in Punjab, Tungabhadra Project on Andhra Pradesh Karnataka border and Rihand dam in Uttar Pradesh, though each displaced tens and thousands of people as these projects were

[30] India has a history of peasant movement and struggles.

for 'nation-building' (Gadgil and Guha 1995:71). With time opposition to big dams/river valley project has intensified given the precarious situation of displaced communities. The notion of 'nation-building' has been smirched by apathy and sufferings of the displaced. The meta-narrative emerged as a consequence questions the legitimacy of these big river valley projects and thence, concept of 'nation-building'.

The present environmental movement makes visible externalities based on a particular dominant ideology, highlighting the inherent injustice and non-sustainability of the current development practices. Environmental movements have evolved from having specific [local] focus to a global agenda, questioning universal social-ecological impacts of narrowly conceived development that is based on shot-term commercial criteria. The Narmada movement has emerged as a knowledge struggle of how development is perceived and planned. The movement operates in a multi-level, multi-class network that is heterogeneous in character, though [still] there is confluence on a vision of development, values and bears a non-negotiable tone. It links up with national and transnational networks to form a broader coalition against the ideology and value system behind Sardar Sarovar dam and similar projects that distribute the cost and benefits of development unjustly among the population. The NBA has transformed from a local peasant resistance to a broader citizen coalition against present paradigm of development (Dwivedi 2001). This is a huge success for the NBA and for opponents of large dams as it has brought into forerun the debate on resettlement in political and policy circles, which was not the case till now, despite the fact that so many development projects have been planned in India. SSP has made a policy landscape change as the Narmada movement has initiated [atleast] a policy debate (Dwivedi 2001:300).[31] In case of Hirakud dam, movement did not sustain for long as one of the main leader was co-opted by the local political party and the movement lost its momentum after that. The reason for failure of the movement was not only loss of leadership but also the fact that the protest did not spread vehemently outside the Sambalpur district- it was localised.

[31] A proposal to revise the Land Acquisition Act has been considered by the Union Ministry of Rural Areas and Employment (Dwivedi 2001).

Displacement from infrastructure projects is about ten million every year in the world and of that large dams account for displacement of four million people (Dwivedi 2002:2). The 1980s have been characterised as the "decade of displacement" by Cernea and Guggenheim (1993); they examine displacement due to development of large infrastructure projects. Increased interest in resettlement in the current period is result of general concern over adverse environmental and social impacts created by large infrastructure projects (Cernea and Guggenheim 1993:1). If 1980s was a 'decade of displacement' then 1990s can be termed as the 'decade of popular resistance to displacement'. Mounting antagonism to development-induced displacement resulted in new forms of political activism... (Dwivedi 2002:2).

Displacement from large infrastructure projects was a concern in early nineteen fifties but the issue was not given much importance. It was thought as one of the negative but inevitable externalities of a development project. This thinking has changed with time and now, there is a divided opinion about displacement from development projects especially large dams. One school of thought, Cernea et al. believe in indisputable necessity of development as one ascends to higher level of industrialisation and urbanisation; and if displacement is inevitable, then be it. However, it is argued that care be taken that those displaced are rehabilitated/resettled well in an alternative environment (Parasuraman 1999:24). The other school of thought questions the prevailing development paradigm and its meaning if it is at the cost of marginalised and vulnerable sections of the population- social movements fall in this category. Shift in perspective and thus discourse on dams occurred due to combined efforts of environmental movements, civil society, etc.

4.1.1 Institutionalisation of the process- Is there a national movement?

The debate on dams in the recent past has been influenced a great deal by local actors. The hallmarks of any discourse on localism are its populist explanatory categories that privilege heterogeneity and consonance with regard to local political economy, culture, interests and values. The self-sufficient peasantry, the local community, the rural people, are few such categories strongly enabling the suppression of contradictions within the

local while sharpening contradictions with their *Other* - industry, urban community or national/global elite (Dwivedi 1997:32-33). History of environmental movement in India indicates a shift after the 1970s. Environmental movements have gained strength and solidarity, have spread from being a local movement to more widespread support from various quarters for instance the *Chipko Andolan*[32] in the Himalayas, silent valley project in Kerala, or the struggle to stop the construction of dams on Narmada in 1980's. The shift has been possible because of support from various quarters which has been possible more in the present global world.

Social movements like NBA have come a long way, having explored every possible avenue in the democratic set up, and proving the validity of the basic issues it has been raising. The NBA has formalised network activities and some broader alliance with organisations and social movements on the issue of alternative development, etc, which is called the National Alliance for Peoples' Movement (NAPM)[33]. Social movements like the NBA, *Chipko Andolan*, the silent valley protest, etc. have made the non-violent struggle more intensive, comprehensive and effective by demanding right to information, and empowering people with confidence in a democratic struggle. It questions the established forces and various aspects of a project, explored alternatives thereby expanding the horizons of the struggle beyond a dam and towards an area of alternative development model, social-political justice and equality[34]. In the last elections NBA leaders formed a political party -People's Political Front- as they feel that it is no longer possible to [just] influence politics, one has to intervene. However, people have had mixed reactions about an activist organisation venturing into politics, some feel that they will lose their credibility but others have a more optimistic viewpoint. From the environmental movement point of view NBA's move could suggest two things: a desperate attempt by the movement to gain control and credibility in the valley or this could be an indicator of the path that future environmental movements may take in India.

[32] Chipko movement is a non-violent resistance against destruction of forests in India. The movement started in 1970-80's in the Himalayan region to stop the felling of trees. http://www.iisd.org/50comm/commdb/desc/d07.htm, 1-11-2004.

[33] NAPM opposes the dominant paradigm of development in its recent neo-liberal form, the resultant liberalisation and privatisation policies of the state [of the essential infrastructure/services], and the development projects that are unsustainable and unviable (Dwivedi 1997:24).

[34] http://users.ox.ac.uk/~lina0618/narmadabriefing.htm, 15-09-2004

The fear then would be that by joining the politics, any movement will loose credibility and get co-opted by the corrupt political machinery. However, it is too early to suggest anything and one would have to wait and watch to see how the environmental movement progresses from here.

4.2Central and State Government

Central government was one of the main actors in planning the course of development after India attained Independence. To pursue the goal of development central government undertook a drive in 1950-60's to have vast enterprises all over the country, which would govern industry. The river valley systems were governed by the state with an objective to control the economy and industry of the country completely (Nehru 1948:128), planners and engineers commanded complete authority over resources (Dhawan 1990:46). In the initial decades after independence the model of planned development propounded by Mahalanobis charted the path of development for India which emphasised conscious accumulation of state planning machinery to replace the capitalists and to have a strong foothold in developing capital goods sector within industry (Saith 1990). The given paradigm of development was based on paternal and protective morality of the soviet centralised states. There is a glimpse of nationalistic ideals in pursuance of large river valley schemes like Damodar Valley Corporation, Bhakra Nangal dam, Hirakud dam, SSP, etc. and the same has continued even after six decades of independence. However, state is losing its shine in present era of globalisation. The principles of globalisation and free flow of market is taking over control from state machinery, however, state [still] commands considerable authority.

4.2.1 Politics of Water

Since its conception, the Narmada project has had interesting politics behind usage of its waters. The project was approved by central government in 1987, by the then Prime Minister Rajeev Gandhi, as an attempt to blanket devastating result of previous assembly elections, thereby giving in to clamour of politicians in Madhya Pradesh and Gujarat (Alvares and Billorey 1988:5). Since then waters of the Narmada has been instrumental

in gathering votes for both Bhartiya Janta Party[35] and Congress party. Interestingly, decision to dam Narmada was made four decades ago, independent of justifications offered in recent years, and at that time water scarcity in Gujarat was not as acute as at present (Shah 1995:321). Therefore, it seems that state government has built a dominant meta-narrative that water of Narmada is the lifeline of Gujarat. In fact, many researchers have described the dam (Sardar Sarovar) as being "at the core of the political economy of the State of Gujarat." The focus on SSP entails serious consequences for water resources development in Kutch and the rest of Gujarat as there has been a lopsided prioritisation in budgetary financial terms in Gujarat. Almost a third of finances of Gujarat in the eighth Five-Year plan (1992-97) have been invested in SSP. Because of lopsided interest of the state government, several minor and medium-sized schemes have been in jeopardy (Mehta 2001:2036)[36], Gujarat has given priority in development policy matters to industrial sector. Hence, it does not come as a surprise that SSP and its accessory projects have attracted many business houses, as corporate industrialists would benefit from dam's water. Drinking water to the villagers in Kutch is a benefit, but as of now, it does not appear to be cost-effective, as pipelines to carry water will put a heavy weight on annual state budget. Ironically, drought and drinking water has been used as an instrument to conceal the vested interest groups; water has become a money-spinner in Gujarat politics (Bavadam 2003). The politics over water has changed in the past six decades, earlier the state was undertaking big projects for national progress and it was more centralised decision making but now, the state governments are increasingly playing a dominant role in the pushing forward the process for their personal interest (to stay in power). This might have some positive benefits for the project-affected as they can voice out their rights at different levels but the instance of SSP suggests that the marginalised are still left out in the whole process.

[35] BJP is one of the right wing political parties of India and while in power in Gujarat has claimed that the water of Narmada would be the lifeline for Kutch, a province in the north-western part of Gujarat, which is primarily a salt desert. Interestingly, Congress has also played the same card to gain popular votes. http://www.hinduonnet.com/thehindu/thscrip/print.pl?file=20040521004110200.htm&date=fl2110/&prd=fline& , 1-09-2004.

[36] Lyla Mehta (2001) provides a good perspective on perceptions of water scarcity: real or manufactured and the political economy behind Sardar Sarovar Project.

4.3 World Commission on Dam's (WCD) - its role

WCD after its conception in April 1997 provided a platform to discuss highly controversial issues associated with large dams.[37] The members of WCD reflect regional diversity, expertise and stakeholder perspectives (WCD 2000). Five core values for WCD are equity, efficiency, participatory decision-making, sustainability and accountability. WCD proposes development of an approach based on recognising rights and assessing risks, emphasises that all risk-bearers should have a place at the negotiating table (Baur and Rudolph 2001).

The creation of the commission is an expression of the unresolved social, environmental and economic problems of large dams, and of the strong resistance of social movements and NGO networks against the construction of such dams. NGOs and movements such as the International Rivers Network, the NBA and the Berne Declaration participated in the WCD process from the very beginning; though, consultants who had made a career working for the dam industry had more influence on the process. A significant part of the WCD's input papers was written by them, thereby judging the performance of their own profession- in fact were even paid to evaluate their own projects. Therefore, it does not come as a surprise that WCD report is not [always] as candid as it ought to be and has faced criticism that the Commission did not examine more projects that were ongoing. Thereby prevented from looking at controversial ongoing projects by the governments of China, India and Turkey- ironically, the same governments have criticised the WCD report (Bosshard 2002).

The report of WCD is an asset to the present knowledge on dams as it offers a comprehensive compilation of information that was earlier limited to individual case studies or a narrow specialist context, on the social, economic, technological and ecological problems and impacts of large dams. In that sense, it is a landmark success. However, given the mandate of WCD, one might take a [rather] pessimistic view that for two years, the proponents and opponents mobilised their respective patrons to reiterate their familiar positions without achieving much in terms of conflict resolution.

[37] WCD was established with support of World Bank and IUCN- World Conservation Union.

Alternatively, one could rejoice that there has been a step forward and both parties are on the negotiation table. Mediation process may not work entirely in providing for social impacts especially when both sides are not on a level platform. There is no generally recognised method to determine the value of 'goods' in a subsistence economy. Without objective criteria, the moral demands on both sides are extremely high and this has wider implications. The report acknowledges that conflicts over dams stem from failure of dam proponents and financing agencies to fulfil commitments made to observe statutory regulations and abide by internal guidelines. The recommendations of the WCD provide scope for policy actions and research outcome indicates the maladies of development-induced displacement. In some cases, opportunity for corruption provided by dams as large-scale infrastructure projects further distorted decision-making, planning and implementation.[38] However, unfortunately the report does not have a legal binding and just offers recommendations, which stalls the progress on the negotiating table.

Not everybody reacted well to findings of the commission, for instance, the Ministry of water resources development of India, claimed that report was biased and had reservations on the outcome because of presence of dam activists like Medha Patkar as one of the twelve commissioners. Interestingly, when the work for the report was under progress, commission decided to host the South Asian hearing of the dams in India in Gujarat. The Gujarat government did not take this news very well; the state's Chief Minister, Keshubhai Patel, accused the Commission of being one of the "well-thought out plots against the Narmada dam and Gujarat's progress" and even threatened to arrest members of the WCD if they came to Gujarat.[39] The Gujarat government doubted credibility of the commission and accused it to be biased for the 'vested interests' viz. the opponents of the dams.[40] Although, the central government was optimistic about the hearing [initially] but it also backed off after strong pressure from the state government.

[38] http://www.mindfully.org/Water/World-Commission-Dams-ExSumm.htm, 23-08-2004.
[39] http://www.fivas.org/tema/wcd/98054k_n.html, 14-11-2004.
[40] The team to visit Gujarat was to have included Ms Medha Patkar, an anti-dam activist, but also two strong dam proponents: Shen Guoyi, a senior official in China's Ministry of Water Resources and Jan Veltrop, Honorary President of the International Commission on Large Dams, the professional association of the world's dam builders.

4.4 Donor's stand

World Bank's funding legacy is filled with stories of forced displacement, debt and destruction. World Bank is the largest multilateral donor of large dams worldwide; it has to date funded more than 500 large dams in 92 countries. The loan recovery of the Bank is independent of the performance of these projects and has high stakes in ensuring that dam funding resumes its lost smoothness.[41]

World Bank and IUCN played a key role in bringing different voices together under one platform by playing an active role in formulation of the WCD. IUCN is a global network of over 850 registered members representing states, government agencies and NGOs and works closely with multilateral and bilateral aid agencies having direct connections to dam building. Some of its affiliated groups, particularly NGO networks, are actively involved in various 'no-dam' campaigns. IUCN's professed goal of conserving biodiversity appears on weak ground, given that it has little or no expertise in issues related to large dams. IUCN's role as a mediator stems from its previous experience in coalition building and partnerships between governments and non-governmental agencies, its interests remain ambiguous, as it does not represent the environmental lobby that opposes large dams. Neither the Bank nor the IUCN are impartial players. Nevertheless, their joint efforts at conflict resolution are to be commended as both the parties (proponents and the opponents) have come on a common platform.[42]

World Bank's reaction to the WCD report has been a cause of great concern in various quarters. The Bank applauded the WCD process as a model case of multi-stakeholder dialogues, or perhaps because the Bank [also] gained from the publicity. However, after the report was published, the Bank chose to side with the dam-building agencies of its borrowing countries, thus supporting one single stakeholder in the conflict over large dams. The Bank has made vague and non-committal statements in public, and has used every opportunity to discredit the report and block its implementation behind the scenes. Not surprisingly, it has annoyed many NGOs, governments and international organizations, and has lost [all] integrity as a convenor of future multi-stakeholder

[41] http://www.irn.org/basics/ard/UnhappBdayWB.doc, 1-11-2004.
[42] http://www.antenna.nl/~waterman/ranjit.html, 23-08-2004.

processes (Bosshard 2002). The bank has not acted like a non-partisan institution and its role as one of the initiators of the WCD process is under question. It does not come as a surprise that the Bank has not incorporated a single recommendation on safeguard polices by WCD.[39]

The Bank's withdrawal from Sardar Sarovar Project in 1992 has been widely publicised as success for the NBA and environmental movements in general in India as the bank had to review its environmental policy, an independent commission [Morse commission] was set up to review the project. But a recent approval (October 12, 2004) of forty-five million dollar loan by the Bank for a hydropower project in the Himalayas has clouded the earlier success. This is the first large hydropower project to be approved by the Bank since 1989 in India and raises questions about the role of the bank in sponsoring large infrastructure projects like big dams (SANDRP 2003).

4.5 NGOs viewpoint

The WCD report affirms that affected communities repeatedly go through traumatic experiences of involuntary eviction, and have [often] end in misery and marginalization. The report estimates, conservatively, that large dams have displaced 40-80 million people and have impoverished millions of other people, e.g. those living in downstream areas, who are [often] not even officially recognized as being project-affected (WCD 2000). A lot of NGO's after reading the report have expressed that their fear have been confirmed, many dams are built not because they make economic sense, but because they respond well to [and in fact, express] the unequal power relations within the society. For instance, in India the pressing electricity gap could be narrowed by increasing the efficiency of existing plants, by abolishing the power subsidies to large land owners in order to encourage an efficient use of irrigation pumps, or by building the hugely controversial Tehri dam (Bosshard 2002 and WCD 2001:168), the choice made is obvious and need not be reiterated.

It is not surprising that NGO's have been cynical about the role of WCD beyond recommending rules and principles that are not backed by effective legislations to be

enforced. This holds ground given the present status of SSP or some of the other dam projects in India and elsewhere. It is not clear which actor the commission can rely on if not the state, to implement the changes and recommendations or for policies and planning procedures. There is a need to ensure an appropriate institutional basis so that the dam-systems become human and environment friendly- if not disappear, in future. There is a long way to tread and the course is not clear.

5. Different views on the issue: Winners and Losers

In sum, the issues discussed in this paper, Political independence vested the control of natural resources to the Indian state, however, the colonial institutional framework for natural resource management remain unchanged. Concepts and categories about economic development and natural resource utilisation that have emerged in the specific context of capitalistic growth and industrialisation at the centres of colonial power were raised to the level of universal assumptions and applicability and the result was the pursuit of classical model of economic growth-led development. In this pre-established path of 'elite-oriented development', commoners were excluded from the planning process, especially vulnerable sections of the population: the tribals, women, etc. The pre-conceived model of development isolated and excluded the vulnerable sections from the benefits of development. Ironically, these marginalised groups were called 'beneficiaries' of the development process.

If one situates the issue in the social science research process, there are many questions to be answered and lessons to be learnt. Guha has accentuated the debate by stating that India has effectively become organised as a democracy of the omnivores, for the omnivores, by the omnivores. It is a system in which the interests of the huge number of people and ecological refugees are largely ignored (Gadgil and Guha 1995:45). An important question to consider is what happens to the people who are displaced through these projects? One could understand that the country can ask for sacrifices from the project-affected [people of the Narmada valley or Hirakud dam] for the greater cause of national progress, but burden of sacrifice should be distributed across the nation, and not restricted to a specific group of people. Another pertinent issue to think is- how important it is to build a dam to fulfil the above objectives. Is it not possible to do the same by other means like small-scale projects in regions facing acute water problems? Do we need to build a dam and displace half a million people to achieve the stated goal and who is cornering the benefits from these projects? These questions might sound rhetoric but are very significant in the present context as most of the benefits accrue to those in the

organised services-industries sector, the city dwellers, the better-off cultivators using fertilisers and pesticides (Gadgil and Guha 1995:22).

Table below shows some of the changes in discourses over the decades but due to vast overlaps, it is impossible to think of these categorisations (in decades) as watertight.

Table 3: Change in discourses

Time Frame / Dominant issues	1940s - 1950s	1960s – 1970s	1980s – 1990s	1990 onwards
Large projects/dams	Temples	→	Villains	
Project-affected people	Beneficiaries	→	Victims	
Reasons for building large dams	▪ Multipurpose - mainly for flood control and irrigation purpose	▪ Improving irrigation mechanisms with advent of green revolution	▪ Harnessing waters for hydropower	▪ Multipurpose ▪ Political gains
Ideology	▪ Nationalism-based on nationalistic ideals ▪ Regionalism was not encouraged	▪ Nationalism	▪ Market oriented ▪ Convergence of local and regional politics for political gains ▪ Nationalistic ideals.	
Actors	▪ Project-affected ▪ Government (central and state) ▪ Donors: WB, etc. ▪ Social movements (mostly localised).	▪ Project-affected ▪ Government (central and state) ▪ Donors: WB, etc. ▪ Social movements (mostly localised)	▪ Project-affected ▪ Government (central and state) ▪ WB and other donors ▪ International actors-INGO, etc. ▪ Civil Society ▪ Social movements	▪ WCD (in addition to those mention-ed earlier)
Development	▪ Economic growth led		▪ Economic growth led development (in the neo-liberal and global world),	

	development (classical model)	→	Sustainable Development
Social movements	▪ Scattered and local	→	▪ Linking micro and macro in a global perspective. ▪ New actors have emerged- the middle class, academicians, etc.
Concerns	▪ Increasing the production base ▪ Resettlement	▪ Green revolution. Improving irrigation mechanisms	▪ Model of Development ▪ Participation ▪ Resettlement ▪ Environment ▪ Gender ▪ Equity ▪ Justice ▪ Rights ▪ Sustainability.
Natural resources	▪ State discourse: need to harness untapped water (contrary to local discourse).	→	▪ Discourse over nature has become more pronounced.

Impressions

Mapping permanent changes is not easy; we do that by exploring if there has been any institutional change because of the change in discourse. If one deconstructs the development approach, the intentions are not inherently bad; the problem is that the benefits and costs of development are not equitably distributed. It is not that development projects are designed to have a bias against the poor and the most vulnerable. Somehow, in the largeness of the intervention the most marginalised sections seem to have been left out from the development process. The largeness of intervention is questioned in the present by social movements, civil society, etc as one realises that benefits of development have not been equally distributed. The project-affected have waited for

years to get adequate compensation for their sacrifice [in Nehru's language[43]] that their country had asked from them. The state has gotten into a monotony of talking and moving on, a lot is promised but things don't change. What is required is new legislations that give adequate support to all actors/stakeholders and not the chosen few. Furthermore, the talk on dams seems like a monologue as far as justice for the oustees is concerned as there has not been any permanent change in terms of legislation of new laws to provide adequate compensation or factoring in the effects of large dams on the environment or society. In case of SSP the state governments have come out with decent compensation package[44] [if the terms are followed] but then it is a case specific intervention. SSP started a policy debate about adequate compensation for the dam oustees and brought into the forefront social and ecological concerns.

Perceptions of natural resources – water- have changed over the years, drawing from new knowledge claims that incorporate principles of equity, right and justice. Perceptions on dams has changed since the 1980s; from 'dams as temples of development' to 'dams as villains', hence, a subject of major controversy. Earlier popular depictions on dams revered them for the power they entailed [to man] by holding the waters, but the present depiction in populist media draws an alternate image- of things gone wrong with these huge concrete structures.[45]

Social movements questioned the [dominant] power structures, fortified and reinforced in favour of the selected few. Medha Patkar, World Commission on Dams member and founder of the Struggle to Save the Narmada River (NBA) says that:

> "The problems of the dams are a symptom of the larger failure of the unjust and destructive dominant development model (...). But addressing these issues is essential in any attempt to reach an adequate analysis of the basic systemic change needed to achieve equitable and sustainable development and to give a pointer towards challenging forces

[43] In the later years of his life, Nehru was reconsidering his earlier approach on dams and big river valley projects, sadly, the planners are [still] pursuing the large interventions in the name of development (Roy 1999).

[44] "The Narmada Tribunal Award has specified that those displaced by the dams should be recompensed with land of equal extent and quality, preferably in the newly irrigated area—the command zone—before any submergence takes place," http://www.countercurrents.org/en-narmada110603.htm, 14-11-2004.

[45] Images of dams have changed from the magnificence of dams shown by Russolini in the River to chaos, and as a breeding ground for corruption and human apathy in White Gold by Cashdan.

> that lead to the marginalisation of the majority through the imposition of the unjust technologies like large dams." (WCD 2000:321)

Development is not growth and progress for selected few and such thinking is increasingly becoming a popular meta-narrative. Globalisation presents tantalizing prospects for shared global prosperity, but it could also lead to a widening of economic and social gaps between the rich and the poor. So we need to think of an alternative to the present practices and processes. This point of view is dominant in the present day with reference to large infrastructure projects and the development process in general.

The historical narrative rooted in the forces of nature rather than in human forces has gained importance over the earlier dominant paradigm of development. The present scheme of development has ushered in a new face for environment movements. The present discourse is hence an offshoot of a critique of industrialisation, urbanisation, and globalisation- the present development strategies. The current populist discourse questions why certain sections of the population are the chosen martyrs for pursuing a nation's development. What kind of development is the state pursuing if it shatters the faith, beliefs and values of a community by alienating them from their land, water and forest and giving it to urban dwellers and big farmers to reap benefits (Roy 1999 and WCD 2000:321)? One is forced to think about who cooperates and whose interests are at conflict- isn't it a question of equality and equity for all.

In policy circles and media, perceptions of water scarcity discussed at times is manufactured and manipulated to serve various agendas. There is a dichotomy in the current discourse on perceptions of water resources, between agendas and actions that value water as a public good and human right and the other that value water as an essential profitable commodity. These dichotomies [also] explain the course of development and role of resources in attaining the same. Some of the questions raised by the above dichotomies are that if water is a public good and a human right then is it at the expense of vulnerable sections (oustees in this case) of the population.

Large projects are an industry; a breeding ground for corruption, from their conception until the last brick is laid. It is hard to imagine that the dam-building industry[46] would close down their shutters given the benefits and power it entails for them. Least that can be done is to take on board the victims and the voice of the silent environment, mitigate their risks from these interventions, rehabilitate them so as dams become dreams rather then nightmares [for them].

Several things changed in the past few decades; there is a shift in perceptions and thereby the knowledge base and popular knowledge, power dynamics and role of different actors in the discourse. Social movement question the hegemony of development discourse and offers a possibility of altering the conceptualisation of development discourse, or perhaps a third path- rise in alternative discourse on development. The present scheme questions conceptualisation of the existing knowledge, validates knowledge of subaltern groups, and contests [basic] idea of what we mean by knowledge and who the 'knowers' are. The change in perceptions has not been smooth; in fact, some would question whether things have altered at all. Changing discourses on dams have not resulted in operational policies at national and state levels- the state is still planning big projects in Gujarat and elsewhere[47] in India. For instance, the Kalpsar project in the state of Gujarat has raised grave ecological and social concerns but the state government wants to go ahead with the project.[48] There has not been any drastic change in the functioning of some of the key players. World Bank recently financed a large hydropower project: Allain Duhangan Project in Himachal Pradesh, which has not been given environmental clearance and is therefore against the norms and polices of the Bank (SANDRP 2003). Perhaps, at a conceptual level, there has been a shift in 'knowledge claim' by reinterpretation of the existing knowledge base and by questioning the given and providing new anchors to ground the knowledge system. However, impact of the same at policy level is something one has to ponder about. Since the social movements are not an institutionalised entity

[46] Here dam building industry means all those who are supporters of large projects from dam builders, state, politicians to big agricultural and business lobby who benefit from these large projects.
[47] Recently the Government of India has set a task force to work on the grandest project in India's history the inter basin transfer of water – linking all the major rivers in India. The project has faced criticism from various quarters, because of environmental and human consequences the project would incur.
[48] http://indiatogether.org/2004/mar/env-kalpsar.htm 1-11-2004.

the path ahead remains unclear. The legislative and executive power of the state has reinforced all notions of power and how it would engage with the people. Need is to break away from this traditional whirlpool of power roles and have more populist decision making with support from other key actors. This is treading slippery grounds and would require institutionalisation of processes at a national level.

References:

Abercrombie, Nicholas and Stephen Hill, Bryon Turner. (1984). *Dictionary of Sociology*. London: Penguin Books.

Adams, W. M. (2001). *Green Development: Environment and Sustainability in the Third World.* 2nd ed. London: Routledge.

Alagh, Y K. and D. T. Buch. (1995). *The Sardar Sarovar Project and Sustainable Development.* in Fisher, William F. (ed.). (1995). *Towards Sustainable Development: Struggling over India's Narmada River.* London and New York: M. E. Sharpe Inc. pp 291-317.

Alvares, Claude and Ramesh Billorey. (1988). *Damming the Narmada: India's Greatest Planned Environmental Disaster.* Penang: Third World Network / APPEN.

Barnier, Edward and David Pearce, Anil Markandya. (1990). *Sustainable Development: Economics and Environment in the Third World.* Hants: Edward Elgar.

Baviskar, Amita. (1995). *In the Belly of the River: Tribal Conflicts over Development in the Narmada Valley.* Delhi: Oxford University Press.

Cernea, Michael M. (1978). *Involuntary Resettlement in Development Projects: Policy Guidelines in World Bank Financed Projects.* World Bank Technical Paper Number 80. Washington DC: The World Bank.

Dahl, Arthur Lyon. (1996). *The Eco Principle: Ecology and Economics in Symbiosis*, London: Zed books Ltd.

Dhawan, B. D (ed.). (1990). *Big Dams: Claims, Counter Claims.* New Delhi: Commonwealth Publishers.

Dryzek, John S. (1997). *The Politics of the Earth: Environmental Discourses.* New York: Oxford University Press.

Dwivedi, Ranjit. (1993). *The Anti Narmada Project Movement in India: Can the Resettlement and rehabilitation Policy Gains be translated into a National Policy.* Working Paper series Number 161. Institute of Social Studies, The Hague.

Dwivedi, Ranjit. (1997). *Why Some People Resist and Others Do Not: Local Perceptions and Actions Over Displacement Risks on the Sardar Sarovar.* Working Paper series Number 265. Institute of Social Studies, The Hague.

Dwivedi, Ranjit. (2001). *Resource Conflict and Collective Action: The Sardar Sarovar Project in India.* Institute of Social Studies, The Hague: Shaker Publishing BV

Fisher, William F. (ed.). (1995). *Towards Sustainable Development: Struggling over India's Narmada River.* London and New York: M. E. Sharpe Inc.

Gadgil, Madhav and Ramchander Guha. (1995). *Ecology and Equity: the use and abuse of nature in contemporary India.* London and New York: Routledge.

Ghai, Dharam (ed.). (1995). *Development and Environment: Sustaining People and Nature.* UNRISD: Blackwell Publishers.

Goldsmith, Edward and Nicholas Hildyard. (1984). *The Social Environmental Effects of Large Dams.* A Report to European Ecological Action Group (ECOROPA), Wales, UK.

Guha, Ramachander. (1991). *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya.* Delhi: Oxford University Press.

Layder, Derek. (1994). *Understanding Social Theory.* London: Sage publications.

McCully, Patrick. (1996). *Silenced Rivers: The Ecology and the Politics of Large Dams.* London: Zed Books.

Mikesell, Raymond F. (1992). *Economic Development and the Environment: A Comparison of Sustainable Development and Conventional Development Economics.* 2nd ed. London: Mansell.

Morse, Bradford and Thomas R. Berger. (1992). *Sardar Sarovar: Report of the Independent Review.* Ottawa: Resource Futures International (RFI) INC.

Nehru, Jawaharlal. (1983). *Production, the first essential- A speech delivered at the Industries Conference, New Delhi, December 18, 1947.* Jawaharlal Nehru's Speeches: Vol 1. September 1946 – May 1949. New Delhi: Publications Division, Ministry of Information and Broadcasting.

Nehru, Jawaharlal. (1983). *A mixed economy- Speech in the constituent assembly (legislative), New Delhi, February 17, 1948.* Jawaharlal Nehru's Speeches: Vol 1. September 1946 – May 1949. New Delhi: Publications Division, Ministry of Information and Broadcasting

Nehru, Jawaharlal. (1983). *A generation sentenced to human labour- A speech delivered at the nineteenth annual meeting of the central board of irrigation, New Delhi, December 5, 1948.* Jawaharlal Nehru's Speeches: Vol 1. September 1946 – May 1949. New Delhi: Publications Division, Ministry of Information and Broadcasting.

Nehru, Jawaharlal. (1983). *To the business community- Speech delivered at the twenty-second annual meeting of the federation of the Indian chambers of commerce and industry, new Delhi, March 4, 1949.* Jawaharlal Nehru's Speeches: Vol 1. September 1946 – May 1949. New Delhi: Publications Division, Ministry of Information and Broadcasting.

Neumayer, Eric. (1999). *Weak versus strong sustainability: exploring the limits of two opposing paradigms.* Massachusetts: Edward Elgar.

Opschoor, J. (Hans) B. (1996). *Sustainability, Economic Restructuring and Social Change*, Inaugural Address on 23 May 1996 at the Institute of Social Studies: The Hague.

Opschoor, J. (Hans) B. (2003). *Sustainability: A Robust Bridge over Intemporal Societal divides?* In: Seters, Paul van et al (eds): *Globalisation and its New Divides: Malcontents, Recipes and Reform.* Amsterdam: Dutch University Press. pg 79-99.

Paranjpye, Vijay. (1990). *High Dams on the Narmada: A holistic analysis of river projects.* New Delhi: Indian National Trust for Art and Cultural Heritage.

Parasuraman, S. (1999). *The Development Dilemma: Displacement in India.* Great Britain: Macmillan.

Rich, Bruce. (1994). *Mortgaging the Eath: The World Bank Environmental Impoverishment and the Crisis of Development.* London: Earthscan Publications Limited.

Roy, Arundhati. (1999). *Greater Common Good.* Bombay: India Book Distributors Ltd.

Sainath, Palagummi. (1996). *Everybody loves a good drought: stories from India's poorest districts.* New Delhi: Penguin Books.

Schumacher, E. (1973). *Small is Beautiful: A Study of Economics as if People Mattered.* London: Abacus.

Scott, James C. (1995). *Great Development Disasters – Social Engineering, High Modernism and Rural Development.* Research Seminars, Rural Development Studies, Term III – 1994/95. Institute of Social Studies, The Hague.

Scott, James C. (1995). *State Simplifications: Some Applications to SouthEast Asia.* The Wertheim Lecture 6. CASA – Centre for Asian Studies, Amsterdam.

Scott, James C. (1998). Ch. 1 'Nature and Space'. *Seeing like a State.* New Haven and London: Yale University Press. pp 11-52.

Sen, Amartya. (July 2003). *Poverty and Environment.* Nexus issue 3. pg 1-4.

Shah, Ashvin A. (1995). *A technical overview of the flawed Sardar Sarovar project and a proposal for a sustainable alternative.* in Fisher, William F. (ed.) *Towards Sustainable Development: Struggling over India's Narmada River.* London and New York: M. E. Sharpe Inc. pp 319-367.

Sheth, Pravin. (1994). *Narmada Project: Politics of Eco-Development.* New Delhi: Har-Anand Publications.

Shiva, Vandana. (2002). *Waters Wars: Privatization, Pollution, and Profits.* Cambridge: South End Press.

Singh, Satyajit. (1997). *Taming the Waters: The Political Economy of Large Dams in India.* Delhi: Oxford University Press.

Sovani, N. V and Nilakanth Rath. (1960). *Economics of a Multipurpose-River Dam: Report of an Enquiry into the Economic Benefits of the Hirakud Dam.* Poona: Asia Publishing House.

Thukral, Enakshi G (ed.). (1992). *Big Dams, Displaced People: Rivers of Sorrow Rivers of Change.* New Delhi: Sage Publications.

WCD. (2000). *Dams and Development: A new Framework for Decision Making. The Report of the World Commission on Dams.* London and Sterling: Earthscan Publishing Ltd.

Articles:

Baboo, Balgovind. (1991). *State Policies and People's Response: Lessons from the Hirakud Dam.* Economic and Political Weekly. October 12, 1991. pp 2373-2380.

Bandyopadhyay, Jayanta and Vandana Shiva. (1988). *Political Economy of Ecology Movements.* Economic and Political Weekly, June 11, 1988. pp 1223-1232.

Cernea, Michael M. (1995). *Understanding and Preventing Impoverishment from Displacement: Reflections on the state of Knowledge.* Journal of Refugee Studies Vol 8, No. 3, pp 245-264.

Johnston, Barbara Rose. (2003). *The Political Economy of Water: An Introduction.* CNS, 14 (3), September 2003.

Mehta, Lyla. (2001). *The Manufacture of Popular Perception of Scarcity: Dams and Related Narratives in Gujarat, India.* World Development Vol. 29, No. 12, pp. 2025-2041.

Parajuli, Pramod. (1991). *'Power and knowledge in development discourse: new social movements and the state in India'.* International Social Science Journal. No. 127.

Saith, Ashwani. (1990). *Development Strategies and the Rural Poor.* Journal of Peasant Studies. Vol , No.17, No 2 pp 171-236.

Web Resources:

Bavadam, Lyla. (2003). *Water and Votes.* Frontline, Volume 21 - Issue 10, May 8-21, 2004. Accessed on 1 September 2004. http://www.hinduonnet.com/thehindu/thscrip/print.pl?file=20040521004110200.htm&date=fl2110/&prd=fline&.

Bosshard, Peter (2002). *Large Dams and the WCD - an NGO Perspective.* Accessed on 23 August 2004. http://www.talsperrenkomitee.de/symposium/index.cgi/page/bosshard.

Cernea, Michael M. (2000a). *Major Impoverishment Risks in Displacement.* Accessed on 20 June 2004.http://www.his.com/~mesas/irr_model/irr_page_5%20major%20risks.htm.

Cernea, Michael M. (2000b). *The Basic Processes of Livelihood Reconstruction.* Accessed on 20 June 2004. http://www.his.com/~mesas/irr_model/irr_page_6%20basic%20processes.htm.

Cernea, Michael M. (2000c). *Necessary Improvements in Current Resettlement Practices.* Accessed on 20 June 2004. http://www.his.com/~mesas/irr_model/irr_page_7%20necessary%20improvements.htm.

Char, S. (2001). *Future approaches towards taking up dam projects*, Accessed on 30 August 2004. http://www.dams.org/docs/kbase/contrib/opt152.pdf.

Dwivedi, Ranjit. *A Damned Mission?: Some reflections on the World Commission on Dams.* Accessed on 23 August 2004. http://www.antenna.nl/~waterman/ranjit.html.

Hirakud Hydroelectric Project, Accessed on 2 September 2004, http://www.jbic.go.jp/english/oec/post/2002/pdf/108_full.pdf.

Jörg Baur and Jochen Rudolph (March/April 2001). *A Breakthrough in the Evolution of Large Dams? Back to the Negotiating Table.* D+C Development and Cooperation, p. 9-12. Accessed on 23 August 2004. http://www.inwent.org/E+Z/1997-2002/de201-3.htm.

Majority Judgement (2000). Accessed on 14 November 2004. http://www.narmada.org/sardar-sarovar/sc.ruling/majority.judgement.htm.

Mander, Harsh. (2003). A People Savaged and Drowned. Accessed on 31 August 2004. http://www.hinduonnet.com/thehindu/thscrip/pgemail.pl?date=fl2008/&prd=fline&.

McCully, Patrick. (2002). *Empty Promises: the elusive benefits of the large dams- Excerpted from Chapter 5 of Silenced Rivers: The Ecology and Politics of Large Dams.* Accessed on 1 September 2004. http://www.irn.org/basics/ard/srfloodcontrol.pdf

McCully, Patrick. *World Commission on Dams Forced to Quit India.* Accessed on 14 November 2004. http://www.fivas.org/tema/wcd/98054k_n.html

Palit, Chittaroopa and Achin Vanaik (11 June 2003). *Monsoon Risings.* Accessed on 14 November 2004. http://www.countercurrents.org/en-narmada110603.htm

Penz, Peter. (2002). *Development, Displacement and Ethics.* Accessed on 30 August 2004. http://www.fmreview.org/FMRpdfs/FMR12/fmr12.1.pdf.

SANDRP (December 2003) Comments on the ESIA of The Proposed Allain Duhangan HEP in Kulu district in HP. Accessed on 1 November 2004.
http://www.irn.org/programs/india/040109.duhangan_crit.pdf

Sangvai, Sanjay (ed). *An Introduction to Displacement and Environmental Destruction in Narmada.* Published by Narmada Bachao Andolan Support Group. Accessed on 15 September 2004. http://users.ox.ac.uk/~lina0618/narmadabriefing.htm

WCD. (2000). *Dams and Development- an overview: Executive Summary.* Accessed on 23 August 2004. http://www.mindfully.org/Water/World-Commission-Dams-ExSumm.htm.

Upadhyaya, Himanshu. (March 2004). *Kalpsar: a lake of wishes?.*Accessed on 1 November 2004.
http://indiatogether.org/2004/mar/env-kalpsar.htm

http://sambalpur.nic.in/hirakud%20dam.htm Accessed on 30 August 2004.

http://www.iisd.org/50comm/commdb/desc/d07.htm. Accessed on 1 November 2004.

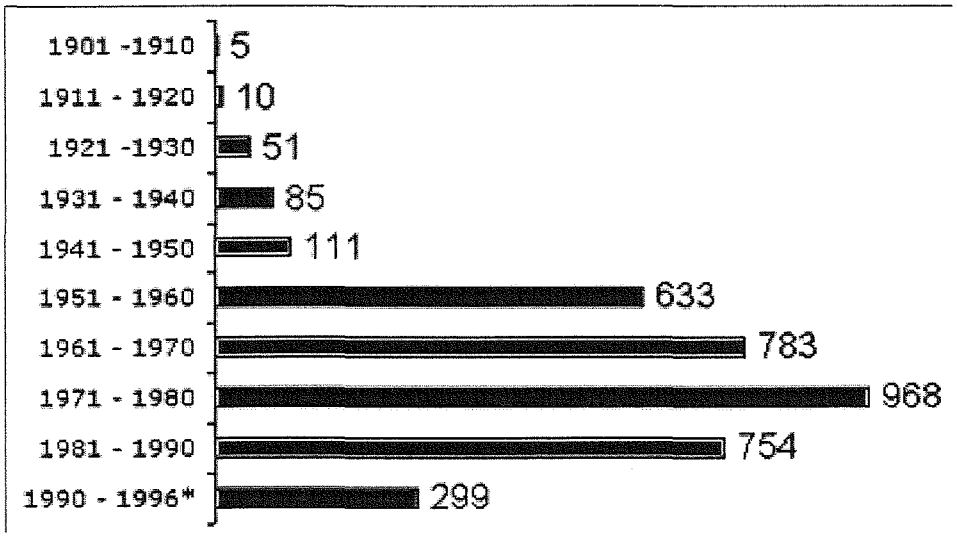
http://www.irn.org/basics/ard/UnhappBdayWB.doc Accessed on 1 November 2004.

http://www.irn.org/programs/india/index.asp?id=041012.duhangan.html Accessed on 1 November 2004.

http://www.dams.org/docs/kbase/studies/csinanx.pdf Accessed on 30 September 2004.

http://www.dams.org/kbase/consultations/esea/stats.htm#1, Accessed on 14 November 2004.

Annex-A: Number of Registered Dams Commissioned by Decade



Note: Though there are believed to be over 22 000 large dams in China, only 1 855 are registered.
* Statistics for the period 1990-1996 are believed to be incomplete due to under-reporting.

Source: http://www.dams.org/kbase/consultations/esea/stats.htm#1, 14 November 2004.

Annex-B: Size classification of dams based on storage and height

As per the ICOLD standards, dams having a height of more than 15 metres referred as Large Dams.

Sl. No.	Category	Storage in Hectare Metres	Height in Metres
1.	Minor	<25 and /6	<12 and /8
2.	Medium	/ 125 and <6250	/12 and <30
3.	Major	/ 6250	> 30

Source: http://www.dams.org/docs/kbase/studies/csinanx.pdf 30 September 2004.

Annex- C: Map of India