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**Water Resources, Dams and Development: A
Critical Sociological Review**

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Abstract

It is debated that whether development is a reality or myth through the critical social science perspectives. Even the discourse of development has been changing based on the dynamic arguments stating from classical development theories to modernity and post-modern developmentalism. The material infrastructure development under the modernization gives more priority to water resources and dam development projects. The key aims of large dam constructions are to generate hydroelectricity, provide irrigation, control of flood and enhance the livelihood and quality of people. However, building dams has both pros and cons. The main objective of this paper is to make a critical sociological analysis of existing literature related to projects of water resources and building large dams in developing countries. It was revealed that large dams are still crucial in

energy generation, irrigation and flood control especially in the political agenda of developing countries. The political ecological perspective of water resources and dam constructions play important role in identifying negative social and ecological issues of people. The constructions of dams induce displacements affects the social aspects such as livelihood, indigenous knowledge of people, integration and social networks, which are largely ignored. The World Commission on Dams which was established to analyse the positive and negative aspects of dams has identified real socio-cultural and human rights issues more than engineering and ecological challenges. The recommendation made by World Commission on Dams on resettlement and compensation in terms of large dam constructions are always under the challenge of implementation. All the water resource projects are always found to be a site of conflict and all the dam projects are confronted by the anti-dam movements against the construction of dams. Moreover, the world superpower nations such as China, who have achieved excellence and historical record in building large dams are politically and technologically influencing many developing countries.

Keywords: anti-dam movements, political ecology & post-developmentalism, water resources

12.1 Introduction

In the current global context of increasing consumption, growing populations, and declining availability of many natural resources, numerous analysts have predicted that disputes over natural resources such as water, forest, and oil will become more common. Conflicts over natural resources are likely to occur in various level, from local disputes over a shared waterhole to international disputes over clean air regulations. Theories of social sciences over the last two centuries provide insight and expose social, political, and economic factors that can be used to understand or perhaps predict the contexts in which conflict over natural resources is likely to occur.

There are two distinct sub-disciplines of the sociological study on the interaction of society and nature: environmental sociology and the sociology of natural resources. Although some environmental sociologists may think environmental sociology encompasses the sociology of natural resources, these two sub-disciplines have largely taken parallel paths in western (particularly American) academia over recent decades (Qin & Flint, 2009). Environmental sociology largely draws from social movement, environmental consciousness and behaviors, political economy, and social construction theories and it tends to be orientated in very general conceptualization of the environment and is highly theoretical or even meta-theoretical, and less grounded in real-world applications and experiences (Buttel, 2002 & Field et al., 2002).

The sociology of natural resources, by contrast, is representative of less emphasis on social theory and tends to be more applied and empirical in orientation. It is the sociology of natural resources that deal with resources such as water, forests, wetlands, oceans and the way people own and use them. The access, ownership and conflicts in term of use such natural resource as common property are studied under sociology of natural resources. The power relationship or hierarchy centred on the access, control and use of natural resources are (politicized environment) broadly discussed in political ecology and third world political ecology examines the political dynamics surrounding material and discursive struggle over the environment in the third world (Bryant & Baily, 1997).

Water is perceived by different people or by the same people in different ways in different contexts: as a commodity, as commons, as a sacred resource and as a basic right. It is important to understand all these perceptions of water, rather than being under the strong influence of one perception. The water resources are used basically for drinking, sanitary purposes, agriculture, industrial and hydroelectricity.

According to the Commission on Large Dams (2000), a large dam refers to any dam that is 15 m or more high (from the foundation). If any dams are found to be between 5-15 metres and having a reservoir with the volume of more than 3 million cubic meters, they are also known as large dams. Using this definition, there are more than 45 000 large dams around the world. The development lead dam has brought many benefits

to people and has minimized crisis situations. Dams have been built for thousands of years to manage flood waters, to harness water as hydropower, to supply water to drink or for the industry, or to irrigate fields. By 1950, governments, or in some countries the private sector, were building increasing numbers of dams as populations increased and national economies grew. At least 45 000 large dams have been built as a response to meet energy or water need. Today nearly half of the rivers in the world have at least one large dam.

Construction of such large dams has brought many ecological issues. Dam construction alters the natural flow in waterways and negatively impact on the riparian ecosystem. The retention of water or formation of reservoir causes severe ecological impact (pressure on soil, earth slips, evaporation of water and humidity in the air), water pollution by eutrophication or stagnation, siltation, prevention of flood-based soil nutrients, prevents the natural movement and migration of fish in the river and submersion of downstream lands and its impact on various flora and fauna.

In addition to the environmental and cost-benefit issues, many water-related development projects have created many human rights concerns such as transparency of water projects and how they are locally and internally related to power relationships, the participation of local or regional people in the project, the issue of involuntary resettlement or forced migration, impact on historical, cultural and religiously important archeological sites, serious negative impact on

socially marginalized groups such as aborigines, low caste, women and other peasants.

Even Sri Lanka finds no exception in terms of water and dam project for its development and experiencing mass protests against these projects. Sri Lanka has been building some larger hydro and irrigation dams since its independence starting from Mahaweli Development Project. These water-based development projects aimed to promote agricultural settlements, increase of food production, alleviating poverty and generation of hydro-electricity. Thereafter, Upper Kotmale, Moragahakanda and Uma Oya projects were introduced. Some of these development projects experienced many social and political challenges followed by some ecological, democratic and environmental issues.

12.2 Politics of Water Resource

Water resource conflict can be a dispute between groups who are competing for the control over, use of, or responsibility for water resources. Water resources throughout the world, both surface and underground sources, have been over-utilized and polluted. The key reasons for such natural resource-based conflicts are agriculture, drinking water project and electricity generation. The concept of water management is not new and it has been used and practised in many different ways under different names and titles by the world community in the human history (Iyer,2003).

“Integrated Water Resource Management (IWRM) is a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystem” (Mollinga, 2006).

The Integrated Water Resource Management’s foundations as global approach were laid at and after the 1992 conference in Dublin (International Conference on Water and Environment) and Rio de Janeiro (United Nations Conference on Environment and Development, or the Earth Summit). The Dublin principles of IWRM are:

1. Freshwater is a finite and valuable resource, essential to sustain life, development and environment.
2. Water development and management should be based on a participatory approach, involving users, planners, and policymakers at all levels.
3. Women play a central part in the provision, management and safeguarding of water.
4. Water has an economic value and should be recognized as an economic good.

According to Mollinga, (2006). This perspective states that in a comprehensive analysis of water resources management.

The social relations of power that are part of it, needs to be explicitly addressed. The use of 'resource' in the depiction of the object, water resources management, conveys the sense that the management of water and the related creation of water infrastructure may be a significant factor or force in societal development, in relation to state formation, colonisation, economic growth, or other aspects of development (cf. Wittfogel, 1955).

Since water provides the livelihood to many people, the disturbances of the ecological system and its impact on water resources has created water poverty and water-based social inequalities in developing countries. According to Robinson (2013), the politics and power related to water disputes, and in turn, how politics and power affect the negotiation of water conflicts. The politics of water and the initiatives of social movements fighting to ensure the protection of and fair access to water will be among the most important in human history. Today, many nations and local communities are engaged in serious conflicts regarding water issues all over the world. The present conflict over water is well explained in “Water Wars” by Vandana Shiva (2000). Every river in India has become a site of major, irreconcilable water conflict. Yamuna, Ganges, Narmada, Mahanadi, Krishna and Kaveri rivers have been the centre of heated court cases among the states that disagree over ownership in the distribution of water. The conflict between Karnataka and Tamil Nadu over the distribution of water of River Kaveri, for instance, has led to bloodshed and brought down governments.

According to Shiva (2000), large dam-related conflicts are not restricted to states; they also involve in wars between nations. The Tigris and the Euphrates Rivers, the major water bodies sustaining agriculture for thousands of years in Turkey, Syria and Iraq have led to several major clashes among the three countries. The war between Israel and Palestinian to some extent could be regarded as a war over water. The river under contention is the Jordan River used by Israel, Syria, Lebanon, and the West Bank. It is clear that water and the fertile lands have been major factors of contention during the war. Shiva (2000) refers to water wars of this sort as hydro-jihad or ecology terrorism.

Even if there is no river based conflict between among provinces in Sri Lanka, it was possible to experience the national level war due to water politics of Maawil Aaru incident and Rathupasswala (Weliweriya) water issue which created a huge political crisis and reached to the level of Geneva Human Right Commission.

Although the dams are expected to be playing a leading part in development, according to John Wood (2007), there are many possible conflicts in association with water resource and dam construction, they are:

- (1) Water conflict occurs between or among water users who are dependent on the sources of supply when usage increase or/and resources diminish.
- (2) A water conflict may arise when planning for a new development project on a yet untapped water

source open up two questions: what shares of water or other benefits will be allocated between who bear the cost of the project and who enjoy benefits of the project.

- (3) Where the water source is already tapped; water conflict occurs when there is an actual or anticipated change in the existing hierarchy among water users, even if supply remains constant.
- (4) The conflict associated with river water development project involving large dams emerge over cost which is more difficult to calculate.
- (5) The conflict occurs among the government institutes or officials in terms of the decision-making process and planning instrumental mitigation and compensation for project victims.
- (6) Socially constructed water conflicts: the water conflict lead by politicians, media and NGOs for their political-economic purposes.

Postel (1996) points out that the world total irrigated land area increased dramatically between 1960 and 1980 but has declined since 1980 to pre-1960 levels. Another indication of the depletion of water resources is the over-pumping of underground aquifers. Many large aquifers that supply water to produce crops supporting much of the world's food needs are being pumped faster than the natural rate of replenishment. One very visible sign of water over-utilization

is the growing number of major rivers that do not reach their delta at all or at least during some part of the year.

This has been a problem with the Colorado River, the Ganges River, the Yellow River, and the Amu and Syr Dar'ya Rivers, among others. Postel (1996) reported that 19 countries, mostly in Africa, the Middle East and the dry parts of central Asia, receive more than 20 per cent of their water from outside their own borders. Seven of these countries receive more than 90 per cent of their water from sources outside their own borders (Turkmenistan – 98%, Egypt – 97%, Hungary – 95%, Mauritania – 95%, Botswana – 94%, Bulgaria – 91%, Uzbekistan – 91%). It is clear that most the water-related crisis' arise not directly due to ecological reason but due to socially constructed political crisis. Homer-Dixon (1999) state that natural resource scarcity such as water can cause conflicts due to its social effects and the subjective and indirect negative social consequences are crucial in understanding water conflicts.

12.3 Impacts of Large Dams

The construction of large dams has sped up the development and uplift the lives of people by providing irrigation for agriculture, generating electricity and controlling flood. In the present political context, dams have become the symbols of development. Pundit Nehru, the first prime minister of India, defined the dams as “the modern temples of India” (Scott, 2104). But after 1975, when the

sensitivity toward the harmful effects of great dams to environment raised, the construction numbers are decreased. Despite this fact, during the 20th century, on the entire world approximately 48,000 dams were built, and today there are great dams on nearly half of the rivers of the world. Six per cent of the energy consumed in the world is produced from hydraulic power. Additionally, hydraulic power is in the second rank within the renewable energy sources and every year it increases 4 per cent in the world. One-third of the countries in the world rely on hydropower for more than half their electricity supply, and large dams generate 19% of electricity overall. Half of the world's large dams were built exclusively or primarily for irrigation, and some 30-40% of the 271 million hectares irrigated worldwide rely on dams (WCD, 2000). Regional development, job creation, and fostering an industry base with export capability are most often cited as additional considerations for building large dams. According to Parlak (2005), the construction reasons of dams may vary within countries or even within regions of a country, according to the climate and scarcity of resources.

In some counties, to prevent floods, in some because of the possible danger of drought, in some to increase the efficiency of agriculture by manual watering of plants, and some others to provide electricity or to meet all these needs the dams are built. China is in the first place on this ordering, with its 70.2% (22000 dams) and India is second with 13.7% (4291 dams), and Japan is third with 8.5% (2675 dams). Turkey, which is accepted as an Asian country is on the 5th place, after South Korea; with 1.2% (625 dams).

By 2025 there will be a total of 3.5 billion people living in water-stressed countries. Empirical evidence suggests that limited water supplies, combined with current agricultural practices and population growth, are a barrier to meeting the goal of food self-sufficiency in more and more countries, increasing the attention paid to food security and the security of other environmental resources.

In terms of the social impacts of dams, the World Dam Commission found that the negative effects were frequently neither adequately assessed nor accounted for. The range of these impact is substantial, including on the lives, livelihoods and health of the affected communities dependent on the riverine environment. According to CWC (2000), the following issues have been reported to be emerging due to large dam construction;

1. Some 40-80 million people have been physically displaced by dams worldwide
2. Millions of people living downstream from dams - particularly those reliant on natural floodplain function and fisheries - have also suffered serious harm to their livelihoods and the future productivity of their resources have been put at risk
3. Many of the displaced were not recognized (or enumerated) as such, and therefore were not resettled or compensated

4. Where compensation was provided it was often inadequate, and where the physically displaced were enumerated, many were not included in resettlement programmes
5. Those who were resettled, rarely had their livelihoods restored, as resettlement programmes have focused on physical relocation rather than the economic and social development of the displaced
6. The larger the magnitude of displacement, the less likely it is that even the livelihoods of affected communities can be restored and
7. Even in the 1990s, impacts on downstream livelihoods were, in many cases, not adequately assessed or addressed in the planning and design of large dams.

Throughout the world, there are plenty of concurrent examples of dam-induced displacement and resettlement that continue to be mismanaged. In 2008, Germany, Austria and Switzerland withdrew their export credit guarantees from the Ilisu dam in Turkey due to the failure to properly resettle the 55,000 people forcibly displaced by the project. In a 2009 Expert Panel Report involving 42 researchers from Brazil and elsewhere, resettlement planning for the Belo Monte dam was criticized for attempting to bribe the indigenous people with mitigation programmes and compensation instead of giving them an equal voice and respecting their

rights, with "extremely grave environmental and social consequences" (Magalhães and Hernandez, 2009). Similarly, there has been an absence of meaningful consultation with the indigenous people who will be affected by the proposed Tipaimukh high dam in India (Singh, 2009). Within dam resettlement, the sociological aspects of resettlement, such as integration and building social networks, are largely ignored in the design and practices of dam-induced most development projects that cause displacement and related social issues.

The New Wall of China, the Three Gorges Dam (3GD) over the Yangzi River is designed to control the danger of floods and save the life and livelihood of millions of people in the Yangzi valley. This dam is supposed to be one of the few large constructions on the earth and its ecological and social impact are massive and immeasurable. The large dam construction in developing countries with the grant or loan from developed countries or international monetary agencies and banks are making strong financial and political influence on those dependent nations. Today China has become an expert in building mega-dams and it becomes more and more politically and economically powerful by these dam projects. China's involvement as "Asia Drivers" and as a rising power in the building of large dams in developing countries is making a new global political environment. China has become a 'benevolent dictator' in large dam construction and it will bring many future consequences.

12.4 Anti-dam Movements

The anti-dam protests have become leading social and political movements challenging states and changing the agendas of international financial agencies. These anti-dam movements are also considered to be guardians of sustainable development and ecological democracy of people. According to (Mahees, 2010), most of the development activities have disturbed or destroyed the life-supporting ecological system as well as ecologically significant cultural identities. These conditions always lead to collective grassroots environmental actions or livelihood environmentalism. The anti-dam mass activism is such environmental movements or environmentalism emerging against large dam constructions depending on the strength of state and power relationship of the civil society. Large numbers of people in the global South rely on the natural environment for their livelihoods. Constructing large dams almost invariably involves appropriating natural spaces from "communities whose livelihoods they have supported for centuries" (Shiva, 1991).

According to Sanjeev Ghagam (2004), the conflict over large dams has thrived and increased throughout the world (India, Brazil, South Africa, Indonesia, and even China) after the 1970s. The mounting opposition to large dam projects correlates with increasing grassroots mobilization and growing a number of non-governmental advocacy organization in domestic civil societies. These protest movements were very crucial factors in determining the

dynamics of development politics. These actions are found to be significant in the process of making the decision locally and internationally in terms of large dam constructions.

Gaghran (2004) elaborates that there are two factors determining the level of political dynamics in large dam constructions. They are a degree of democracy and degree of mobilization. He further expresses that it is the Chinese people having a lower level of democracy and mobilization against dam construction whereas India and Brazil enjoy a higher level of democracy and mobilization in this regard. On the other hand, Indonesia has more mobilization capacity under less democratic conditions but South Africa experiences more democracy with less mobilization capacity in the politics of anti-dam movements. However, the success or failure of these anti-dam movements depends on the degree of democracy and the level of mobilization and how they are connected with domestic and transnational power relationships.

The first struggle against dam-induced displacement took place in India in 1927 against the Mulshi Dam (hydroelectric project) located in western India (about 20 km south-west of Poona). The struggle was a great landmark in the history of involuntary displacement in India. A total of 11,000 people were displaced and alienated from their traditional paddy fields from this project. The indigenous people, Malva men, women and children staged a Satyagraha to stop the work on the dam site, but failed to do so. The Silent Valley movement in Kerala in the 1980s was the first significant victory for the

anti-dam movement in developing countries. Unlike other dams, a large number of people would have been displaced from their ancestral land and from the source of their livelihood. The local people with international organizations (WWF & IUCN) exerted heavy pressure on the Indian government to stop the construction of the Silent Valley project. As a result, the government of India ordered the project to stop in 1983 (Arunkumar, 2010).

The most celebrated anti-dam protest in India is the mega Sardar Sarovar Project on the river Narmada. A number of protests were organised under the charismatic leadership of activist Medha Patkar in 1988. The movement is known as Narmada Bachao Andolan (Save the Narmada River) supported by the local people. The strategy of resistance was borrowed from the Gandhian Satyagraha including noncooperation and civil disobedience, refusal to cooperate with project authorities, blocking all project-related works and refusal to leave their villages. Further, the movement was strengthened by extensive studies on social and environmental impacts of big dams. Activists and intellectuals from India and other parts of the world expressed solidarity with the struggle. By ensuring these voices, these movements have succeeded in compelling governments, both at the central and state levels, and powerful funding agencies like the World Bank to rethink their policies on displacement and rehabilitation (Baviskar, 2004). Today Narmada has become the most common icon for environmental movements in developing countries and discourse for third world political ecology. Some anti-dam

movements in Vietnam and Cambodia have challenged the modern science and technology by the indigenous local knowledge of people and they are contributing new insights to deep ecological thoughts.

The loss of faith in large dam projects followed increasing empirical evidence of the all-too-often environmentally destructive and socially inequitable impact of large dams. Strong political opposition in countries that had witnessed the negative consequences of large dams, which made future projects unviable. This was the case for example, in Thailand Pak Mun dam and the Bakun Dam in Malaysia. Following the release of the World Commission on Dams' report observed that "the rate of new dam construction is dropping fast in every region of the world." This trend noted, was accompanied by a fast-declining public appetite for dams in many parts of the world, with a shaking of "the old belief in dams as shining icons of prosperity and modernity" (McCully, 2001).

12.5 Sri Lankan Experiences

Sri Lanka is endowed with rich water resources emanating from the central highlands that receive rain during the monsoons. The mean annual rainfall ranges between 900 mm to 6000 mm, with an island-wide average of about 1,900 mm, which is about two and half times more than the world annual mean of 750 mm. The country can be divided into wet and dry zones with a mean annual rainfall of 2424 mm and

1450 mm respectively. The total volume of fresh water received annually is 13,230 million m³. The average annual river flow, which is 31% of the rainfall, is 40,680 million m³. Sri Lanka has abundant water resources in aggregated terms, but this overall picture is misleading owing to the high degree of variation in the availability of water, both seasonally and regionally (Anon, 1998).

The ancient and current reservoir systems of Sri Lanka are a culturally integral part of the country and its agriculture-based economy, and the diversity of the reservoirs is unparalleled elsewhere in the world (Mendis 2002). In addition to being the heart of the supply of irrigation water, the network of small and large reservoirs is an important fishery resource and income for the local communities in Sri Lanka. Sri Lanka has more than 18,000 reservoirs. Basic information about some of these reservoirs, listed according to their capacity (Manchanayaka 1999 & Amarasiri 2008).

Some of the reservoirs are more than 2,000 years old, reflecting Sri Lanka's long history of agricultural irrigation. Man-made water conservation structures (known as tanks or reservoirs) traditionally made of earthen dams are a key resource used in agriculture, especially in the dry zonal areas in Sri Lanka. Both small and large tanks are important not only for agriculture but also for many other human needs in these regions.

Mahaweli is the largest river basin found in Sri Lanka estimated as draining 16 per cent of Sri Lanka's land (10327

sq.km). The Mahaweli water, after the accelerated Mahaweli project, permanently links together a large part of the country through its extensive network of upstream reservoirs and downstream conveyance and distributary canals (Werellagama, 2000). This Mahaweli irrigation system cuts across the boundaries of a number of regions in both dry zone and the wet zone where major reservoirs are constructed. The Mahaweli project makes a considerable contribution to national food production and it still serves as the leading hydro-electricity generator to the nation.

The Mahaweli River diversion project included the construction of a cascade of large dams along river Mahaweli. The Mahaweli Development Program is the most extensive physical and human resource development program ever implemented in Sri Lanka. The master plan for the development of the Mahaweli Ganga river basin, which had the largest potential for both hydropower generation and irrigated agriculture in the dry zone of Sri Lanka (Mahaweli Development of Authority).

When the Accelerated Mahaweli Development Programme was launched, seven reservoirs (Kothmale, Victoria, Randenigala, Rnatambe, Ulhitiya, Rathkinda and Maduru Oya) were developed simultaneously, with assistance from a number of foreign countries, to provide irrigation and generate hydroelectric power. The programme covered around 25,500 sq. km. of land in the administrative districts of Nuwara Eliya, Kandy, Matale, Badulla, Polonnaruwa, Anuradhapura, and Vavuniya. Under this major programme,

a series of reservoirs and hydroelectricity plants were developed. This facilitated the establishment of several new settlements. This project was to provide irrigation to 128,000 hectares of land and to generate 470 MW of hydropower (Manchanayaka 1999).

The number displaced due to the Upper Mahaweli reservoirs are around 8,000 families from Victoria and around 3,200 of families from Kotmale area. These people were offered compensation, and a small plot of land in closer vicinity, or 1.2 hectares of land in newly irrigated areas. At the beginning, farmer families faced many challenges such as the spread of Malaria fever, having not enough facilities even drinking water, houses, roads and hospitals and attack of wild animals (elephant, wild boars, bears and various snakes). According to Muller and Hettige (1995), there have been enormous problems and complexities in the accelerated Mahaweli project.

The problem of complexity with regard to the size of the system, the multi-functionality of system, the speed of construction, the conflict between electricity generation and irrigation for farming, social and family problems of settlers and issues in terms of Mahaweli bureaucratic and managerial arrangements and environmental problems such as soil erosion and deforestations have been recognized as the major challenge to Mahaweli System.

According to Mahees et al (2009) and Gunawardana et al (2010), due to the present Mahaweli project, community

encountered many new ecological, social and political challenges. The conflict between utilizing Mahaweli water for hydro-electricity and irrigation caused changing of cropping pattern, poor water management by farmers, water pollution due to soil erosion and waste disposal, land fragmentation and leaving behind the agriculture by young farmers.

When analyzing public protest against the water project or water contamination in Sri Lanka, these environmental movements were identified not to be well organized like in other countries. However, it is possible to understand several political ecological and human right issues with regard to these grassroots collective mass activisms. Among these protests, the mass upheaval against Upper Kothmale Hydro-electricity project, Rathupaswala mass protest against water contamination by a factory and continuous mass movements against Uma Oya Dam project are crucial and made a significant impact on national level politics in Sri Lanka. However, mass activism against Uma Oya project became more popular and crucial in politics and media compared all other collective environmental actions in Sri Lanka.

Conclusion

As the result of all the development activities which are based on the natural resources and escalating demand for food and energy, the natural resources are increasingly exploited and misused all over the world. Water has become

the most threatened natural resource due to various water lead development projects and endless water pollution. Since water functions as a life-supporting resource system an integral part of cultural life, people fight for water and engage in various conflicts. The water sites will be sites of battle everywhere in the world in the future. Providing irrigation, power generation and flood control had promoted large dam construction under the modernization development agenda of all the countries. Large dam constructions brought many negative consequences such as severe impact on the ecological systems, displacement of millions of people, violation of social-cultural rights of vulnerable communities and many new political ecological problems. Large dam projects always indirectly invited different level of anti-dam movements and collective grass-root level environmental actions. Based on these broader and critical contexts of dam projects, post-modernist and ecofeminist started criticizing these material developments by promoting a new discourse of post-developmentalism. The International Commission on Large Dam also made its critical review about large dam projects followed by various qualitative studies and anti-dam movements. Moreover, large dam construction in developing countries by politically and financially powerful nations has made many changes in the global political economy and making new dynamics in political ecology. Thus, large dam construction under the purview of development could be a good servant but a bad master in the long sustainable path to development.

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