



Re-thinking River Diversion Projects- A Political Ecology Perspective

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Abstract

The usage of pipelines to make water available to people has been widely discussed phenomenon throughout the world. Less argued are the projects which divert tributaries from larger rivers via small diversion channels for the sake of short-term goals that work around natural waterscape. River Khan is one such smaller stream which accumulates the entire waste of Indore city and has been diverted from its larger stream River Kshipra in the wake of KumbhMela 2016, to keep the larger stream clean. In this context, the paper investigates the discrepancies of this project and identifies the political and economic forces involved in the formation of such projects during events like KumbhMela. Using the theory of political ecology, the paper attempts to understand the complexities surrounding environment and development. Through government policies and influence of material conditions on culture, the paper also explores the unfair relations amid societies that influence the natural environment.

Keywords: Khan Diversion Project; KumbhMela; River Khan; River Kshipra; Political Ecology; Indore city; Ujjain city.

1. Introduction

THE rivers in India are indeed the life-line of masses and the wild-life. The river system assists in irrigation, potable water, cheap transportation, electricity, and it is also considered to be the source of livelihood for the ever-increasing population. The important cities of India find their location on the banks of the holy rivers Ganga, Yamuna, Kaveri, Narmada, and Brahmaputra. Their proper management is the need of the hour. Even today 75% of the Indian economy is dependent on agriculture which largely depends on monsoon and which is becoming increasingly erratic. On the one hand, this leads to increasing demand of irrigation in one region and problems of water logging or floods in others. In the twenty-first century over consumption and depletion of water resources is one of the most critical resource issues of today. In this regard, the objective of the paper is to examine the challenges and issues in diverting or linking the rivers and their environmental impacts [1]. Martin [2] reminded through his study that linking rivers using pipelines without considering the ecological impacts is harmful to environment. Studies like Martin [2], Iyer [6], Wolfensohn [4], Shiva [5] were hesitant that river diversion brings changes that are significant in the chemical and physical compositions of the river morphology, sediment load and the shape of delta formation in the river basin. These changes can cause water-related diseases, such as Filariasis and Malaria, and can escalate through slow-moving and stagnant water in the irrigation command area. In large irrigation projects, many ecologically un-informed activities take place like water-logging and desertification of the catchment area which affect the development and economic activities. Roy [3] explains through his study that, in India, fifty million people are estimated to have been displaced in the last five decades

by the construction of dams, power plants, highways and such other infrastructure development projects. Subsequently no more than one-fourth of them could be assisted to regain their livelihoods. Wolfensohn [4] pointed out that social injustice of this kind could destroy political and economic advances. Reconstructing a link or breaking of a link can disrupt the ecological balance of freshwater and seawater, land and oceans Shiva [5]. Inter-linking of non-toxic and toxic rivers have a devastating impact on the ecosystem.

Rivers, instead of seeing them as a source of life, are seen as a source of cash. In the words of Worster's, the river becomes an assembly line, rolling increasingly towards the goal of unlimited production. Increase in irrigation dries the region dry. 'Iyer [6] is acerbic in his comments on Inter River Linking Projects where he asks whether rivers are bundles of pipelines turned around, to be cut, re-joined or welded. To understand technological tampering with rivers, this paper discusses the case of diversion project of river Khan flowing in the city of Indore, Madhya Pradesh which is the sub-tributary of river Kshipra.

The Indore city is drained by Khan and Saraswati. Khan is considered to be the main water body of the city of Indore. It is a tributary of Kshipra which appears near Umariya village eleven kilometers south of Indore and passes through the middle of the city, traveling a distance of around fifty kilometers, it confluences into Kshipra river at Ujjain. The total sewage generated in Indore city is 200 MLD by present population. For now, Indore Municipal Corporation (IMC) is treating only 90 MLD of sewage; the rest is disposed of without treatment into River Khan which in return is also polluting river Kshipra. The city of Ujjain organized KumbhMela in April and May 2016, on the banks of River Kshipra. To keep Kshipra clean from river Khan during Simhastha 2016, the government planned to divert river Khan for around 18

km to the lower stream of Kshipra at Kaliyadeh, so that the entire region where Kumbh Mela would take place could be sludge free.

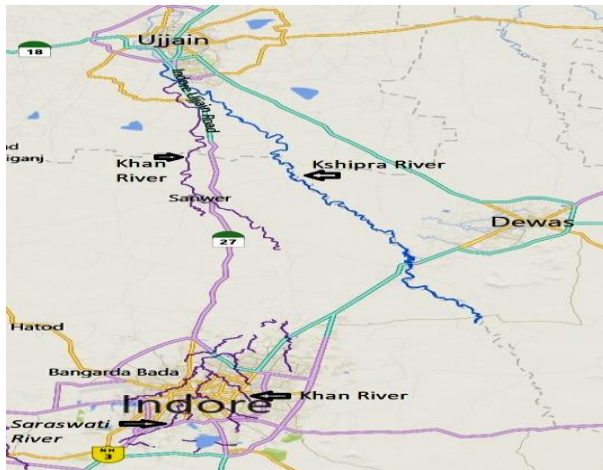


Fig. 1.1: The picture shows location of Khan River in the city of Indore, Madhya Pradesh, India (Source: Google maps)

This paper aims at understanding the concept of ecologism by considering two things, one is conscious life activity, and the other is produce activity. Animals also have their activities, they also produce. But whatever they produce they produce it for themselves while when humans produce, it affects the whole society. Animal produces only for the fulfillment of his immediate physical, while human produces even when they are freed from physical needs. So, for humans, their conscious activity helps them to think, act and judge properly.

Human's objectivity is external to them. Objectification includes human's operation on nature and its effects that take place on them. In the philosophy of Marx, human and nature are intrinsically related (Marx 1844). Through his elaboration on human and nature, he reveals that capitalism has changed their way of looking at nature. Humans are very busy producing, which has made them forget in what kind of technological hubris they have brought the world today.

This paper discusses the diversion project of River Khan which was constructed parallel to the flow of river Kshipra showing an example of objectification of rivers by the humans. It also explores how unequal relations in and amongst societies affect the natural environment, especially in the context of government policy. Following that, the paper is further divided into different sections: 2) explains the condition of River Khan and why there was a requirement of its diversion; 3) elaborates on the theory of political ecology in order to understand the changing relationships between economic, political, and social factors and environmental issues; 4) operationalizes the theory in the study area to a normative understanding that there are better, less coercive, less exploitative, and more sustainable ways of doing things; 5) expresses the attempt to explain the complexities surrounding development and environment, leading to better environmental governance.

2. Background of the Study

Rivers are fascinating places, exhibiting both natural charm and usefulness for a vast array of human activities. Throughout history, rivers have been sacred, worthy of admiration and wonder. The arrival of water at our homes through taps and water bottles have made us forget that before the water gets through the pipes to reach our homes and before it is filled in the plastics, it's the nature's benefaction. The sacredness of the rivers has been inspired by the power it carries in building a life force. One can understand the significance of the rivers through T. S. Elliot's quote in his writings where he says about Mississippi River, 'I do not know much about gods, but I think the river is a strong brown god'. Throughout the world the spiritual importance of water can

be seen as in the case of France, a shrine for the goddess Sequana is placed at very source of river Seine, and the Martrona, Divine Mother gives its name to Marne River; the Thames river in England in ancient times was known as Tamesa or Tamises, which is symbolic of the dirty river. In the book Sacred Waters, Janet and Coten Bord list two hundred ancient holy wells in England, Wales, Scotland and Ireland that have survived into modern times. Meanwhile, in India, every river is sacred and is an extension and manifestations of divine gods. Annual floods and droughts of such rivers have been of paramount concern to India over the millennia. Such concerns increase with a growing population and changing climate. Linking of rivers have been in debate as the positive that such a project highlights is solving the problems of floods and drought in India but most plans of linking the rivers were historically deemed unfeasible. In the colonial times, Sir Arthur Cotton's plan to link the southern rivers in 1839 was not given much attention as railways took priority. The National Water Grid project by Dr K.L. Rao and 'garland canal' by retired Captain Dastur were suggested to solve water problems in India but because they were very costly projects and lower cost alternatives were unavailable and hence the projects were dropped. The same thing happened to many other projects which were thought of for the past 150 years but because of technical and financial constraints they could not be built.

The result of one such project though not officially announced or brought to light was Narmada Kshipra Simhastha Link Project. The project involved lifting water from Narmada River to a height of 350 meters using electricity-driven pumps, after which it was diverted to the origin of the Kshipra River which finds its starting point in the Ujjain hills and runs dry today. This project has managed to infuse new life into the Kshipra river [8] draining the water from Narmada River.

This project was called India's first multi-crore electricity driven river linking project which pumps Narmada river water into the Kshipra River and was announced to be successful. Ample amount of water was generated due to which pilgrims could have surplus of water to take a holy dip during Kumbh Mela in Ujjain [8]. In order to keep the Kshipra clean from its tributary Khan, a diversion project was also constructed. This diversion project was announced as river Khan, through the ages, has become sludge carrier of the city of Indore and while it's meeting with Kshipra at Triveni Sangam, Ujjain, it delivers its content to the later. Seers (religious leaders) who came to visit the river Kshipra before Kumbh Mela went through several spots where sewage gets mixed in the holy river Kshipra. They asked the government to build a filtration plant to keep the Kshipra clean from these spots which were mostly coming from River Khan.

The Government of Madhya Pradesh responded to this demand by coming up with Khan Diversion Project. This paper elaborates on the same. According to the interviews during the study of this project, it was a 100-crore project which includes the stretch of 18 kms starting from Pipliyaragha to Kalideh which was the main area of conduction of Kumbh Mela, 2016. Through the survey made by the Indore District Administration to lay down the pipeline thirteen villages of Ujjain and Ghatia Tehsil were dug up.

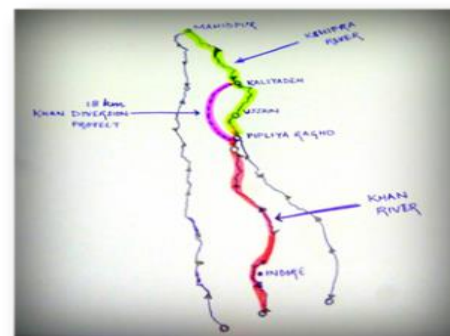


Fig. 1.2: shows the diversion project and its area covered
Source: self-made

According to company KK Spun, Water Resources Department Ujjain (Government of Madhya Pradesh) asked for tenders for the project, and they bid the least, and it stood at seventy-five crores. This project was responsible for creating a pipeline passage to divert river Khan for 18 km by the said company. The project was released on 18th November 2014. The diversion was to start from the zero-point Pipliyaragha and end at Kaliyadeh at the lower course of Kshipra river. The pipelines were laid parallel to the river Kshipra, as per the records of the company; it chose a smaller stretch as it can so that most of the farming areas are not occupied. With the laying of pipelines, the company has also provided irrigation wells at every two kilometers of the stretch. The project has an estimate of 13 irrigation wells. Each pipe laid has the following dimensions: inner diameter of the pipe is 2600mm, outer diameter is 3100mm, and the length of the pipe is 2.5 meters long. The pipe weighs 16 tonnes and needs a crane to lift it up which is of almost 90 to 100 tonnes. The company says that in order to divert the river it had to cover twenty villages. The company divided its work into three different teams which were supervisory: performed by the company itself, machinery: taken over by JBL and pipe laying team: this team has three different needs connecting the belt of the crane to the pipe, attaching rubber to the pipes and laying the pipes which are completed by the crane. The project is divided into ten sections at ten different places and has ten different contractors for pipe laying. Pipe laying team gets its labor from the nearby villages of the diversion project.

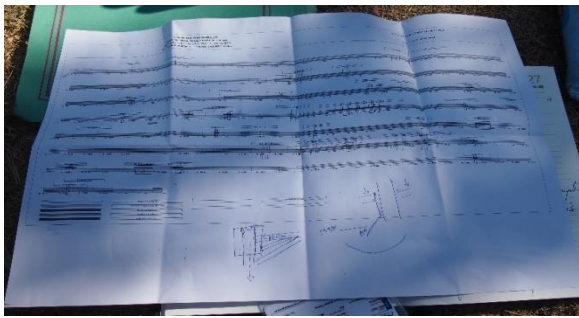


Fig. 1.3: (part 1): shows the schematic diagram of the Khan River diversion project (This picture cannot be used without authors permission)

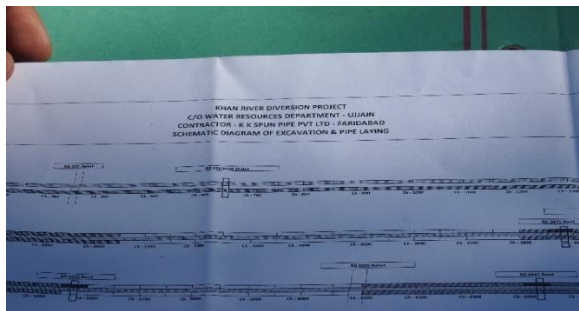


Fig. 1.3: (part 2) (This picture cannot be used without authors permission)

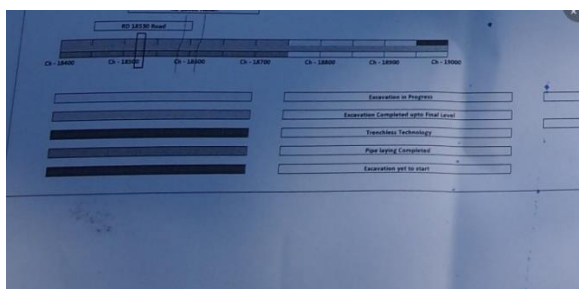


Fig. 1.3: (part 4) (This picture cannot be used without authors permission)

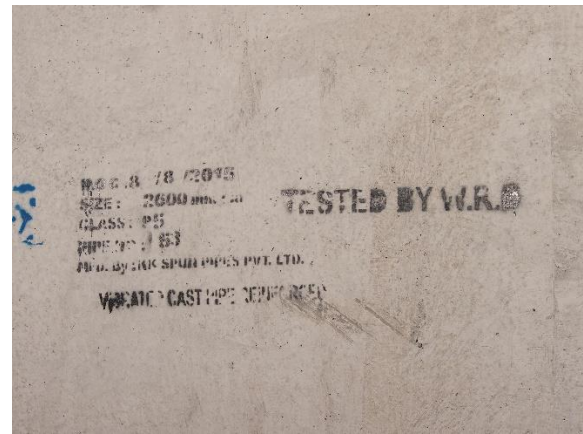


Fig. 1.4: shows the details mentioned on the pipes while laying them down. It mentions tested by Water Resource Department (WRD) (This picture cannot be used without authors permission)

Figure 1.3 portrays the laying of pipelines in twenty villages. The advantages of the project according to the company are; in terms of environment: it filters the dirty water of River Khan and lets it flow directly to the lower stream of Kshipra, it decreases sewage-related diseases, it provides water for irrigation purposes through wells, Kshipra receiving the backwater of Narmada remains clean. Regarding livelihoods: this project has provided opportunities to the people of Madhya Pradesh in the form of guards, office boy and labors.

The disadvantages which the company puts forward is that the farmers could not grow crops for the time the pipelines were laid, for that duration they have been provided compensation. The provided compensations created many disputes amongst the former and the latter; the former has sometimes surpassed the limit of the stretch to lay pipelines which have also been the reason for the dispute. The company holds operation and maintenance for the next two years that are (2017 and 2018). After this, the tender would pass on to some other company which will take care of the diversion project. The company claims that the pipes are of M-30 Grade which would last for almost fifty years.

On the contrary, the discussion with farmers discloses a different story. Some say that since December 2014, they were in discussion with the concerned authorities to give their piece of land to the company for the diversion project. Once the construction was over their lands were to be handed over to them the way it was. To construct this project, the District Administration which was responsible for KumbhMela activities told the farmers that this would keep Kshipra clean. They also said that letting river Khan pass through their lands would be one of their religious contributions in making holy dip possible in River Kshipra during Simhastha, 2016. The troubles they were going through because of the construction of this project were cracked roads, breakage in water pipes, and usage of extra land. The farmers say that the company has claimed to the Panchayat that it will pay for the damage caused but through the regular follow-ups of the place reveals that even through Simhastha is over; the lands dug have not yet recovered. News of casualties of labors dying while helping the company build the project were heard from various sources during interview sessions. There were some farmers who think that the project was helpful for their lands. It will help keep clean both the rivers Khan and Kshipra.

Through this project, the paper using political ecology approach highlights how the propagation of equality of distribution of resources in cities is changing into inequality and affecting the rural areas too. To discuss this inequality the paper questions the concept of market value given to the resources, thinking them to be a solution to the ecological crisis. Following that the paper also expresses the effect of Industrial Revolution in India, which made all value synonymous to commercial value leading to erosion of the ecological, spiritual, social and cultural significance of resources.

3. Theoretical Framework

This section explains the concept of political ecology. Through this approach, the section examines social forms and human organizations that interact with the environment. It queries the relationship between economics, politics, and nature. This approach helps the study in advocating fundamental changes in the management of nature and the rights of people, more than is customary.

A. Defining Ecology

Ecology is the science which interprets the fragments of evidences that expressed something is wrong with the world- oil in the sea, dead birds, population explosion, and the poisoned crops. What it meant was- everything links up. Here was a new morality, and a strategy for human survival rolled into one [10]. This was written in 1972 while the ecologists claim that the sense of something wrong has resonated over the centuries. A sense that something is wrong with the world is not the dependable component for constructing specific and revolutionary policies. To understand what is wrong with the world as it is mostly the question related to intuitions which need investigation. There have been many explanations for the location and growth of ecologism, but at the end, they become irrelevant to their claims. Their claims are human's vision of his place in the world and his relations to it. Human's vision is related to fundamentals of Western intellectual life, with its awareness of transience, the tensions between past and future, being and becoming, ego and other. It affects the larger questions: the source of historical change, the nature of humans, the why and how of the history of humans. It is intimately bound up with the problem of causality, affecting especially the question of the source of innovation and creativity. The validity of objective science, and the possibility of social science, these all hinge on the stance taken towards human's place in nature [9].

Over the centuries, nature has been swinging between being a hero and a villain. The study of the changing attitudes to nature and environment and the vision of a balance between them is known as ecology. It creates a central line between man and nature which provides a set of political categorizations which are fruitful, useful and relevant to today's political scene. But creating a central line is not simple. Put baldly, nature-based ideas are seen as legitimizing social Darwinist, red-in-tooth-and-claw beliefs. The essential characteristic of ecology, while it does not fit happily into any one ideological category, is that it draws many of its conclusions from scientific ways of thinking and is not conservative [9].

In order to create this central line, political ecology came into existence. It began towards the late nineteenth century, started as a progressive, science-based, anti-democratic movement. Kropotkinite anarchists as well as Spencerian individualists, all based their politics on recent theories of biology and physics. Between the wars, some positions were associated with ecological ideas, dominated this time by fear of erosion and famine, and including, in England, the High Tory movement of H.J. Massingham and Lord Lymington. Technophiles and technophobes have always warred within ecologism. The most successful green movements today are of the radical left, and there are Greens today who feel unease at some of their ideological forebears [9].

The complexity is this; it is possible to assert that if humans are part of the natural world, subject to the same laws as the animals, then they are, like them, entitled to compete to survive. Because they cannot hope to escape from their animal nature, they are justified in aggression. This is the social Darwinist argument associated by many with a politics based on nature. It assumes that human's survival cannot be taken for granted; they are never secure. The counter-image is that humans are so special, so malleable and adaptable in the nature that laws of the natural world no longer concern them. Human's intellect and self-awareness, in this mode, meant a qualitative change in their status

and removed them from the biological law of selection and evolution. If their behavior is not controlled by instinct, then humans are adaptable enough to be made over in any image. The model of improvement through social and environmental change is a progressive and left-wing model [9].

However, one can also argue that humans partake of the earthly burden should precisely help protect the earth, rather than vandalize it. Their 'natural' role is that of a shepherd. Nature embodies stasis and harmony. Humans should, therefore, accept, their limitations, and fit into the given pattern of energy flows. This is, on the whole, the ecological viewpoints, that they are the shepherd of the earth. And an ecological conclusion has been drawn from the premise that humans do not have inbuilt limitations. This conservative variant points out that it is precisely human's lack of a fixed genetic inheritance that makes stable institutions essential as a substitute. Because their culture has to be learned afresh with each generation, those traditions, such as the family, which embody memory and habit, must be preserved. The belief that humans are born without a genetic template for, say, the Church of England, makes continuity in social institutions more important and not less; makes progressive aims more dangerous, precisely because man can be stripped of his non-genetic endowments, his cultural heritage, by the well-meaning destruction of existing structures. So, human's capacities for improvement and change are finite, and he should be cautious of attempts to strain the boundaries of what is natural to him [9].

Thus, it is an over-simplification of ecological politics to think that nature-based thinkers have to be social Darwinist, while believers in man's malleability must reject nature from their analysis. The political stance of ecologists has been more complex, just as other political categories shift and change over time.

B. The beginning of Political Theory of Ecologism

The First World War brought apocalypse to a generation already intellectually alienated. It showed that real disaster, real loss was possible. In the 1920s ecologists began to define themselves as such. It had taken about that long for the scientific roots of ecologism to merge into a political discipline, to become an ideology. The existence of this ideology has been obscured because it took on varied political forms. Most controversially, in the 1920s and 1930s, an alternative, an anti-capitalist stance meant that the apparently alternative, anti-capitalist 'Third Way' National Socialist and Fascist parties attracted ecologists. After the Second World War, the idea lay dormant for a period. It then revived still in an alternative anti-capitalist form, with similar ideas, programs, and beliefs, but with a self-defined leftwards tinge. The political shift was partly because the 'soft center' moved from right to left during this time. It was also because American anarchists and Marxists in the late 1960s took up ecological ideas as part of 'alienation'.

Ecologists themselves are divided between those who believe that ecologism sprung up fully formed in the late 1960s and those who see an underground, green tradition that always existed in Western history. Some place its origins in early Greek times; some in the Bronze Age Heidegger believed that society went wrong in the transition from Greek to Latin so that Greek concepts were translated into Latin but misunderstood. The argument amongst ecologists gives an account of beliefs that rationality has always battled with intuition as a source of the civilization. Similarly, the hunt for a scapegoat who made society go wrong is a symptom of ecologism. Much of the literature consists of accusation and counter-accusation hurled to and from the scapegoats of the other ecologists' Manichaean analyses [9].

Ecologists believe in the essential harmony of nature. But it is a harmony to which man may have to be sacrificed. Ecologists are not man-centered or anthropocentric in their loyalties. Therefore, they do not have to see nature's harmony as especially protective towards or favoring humankind. Ecologists believe in an absolute responsibility for one's actions, and for the world in general.

There is no God the Shepherd; so human becomes the shepherd. There is a conflict between the desire to accept nature's harmonious order, and need to avert catastrophe because ecologists are apocalyptic, but know that human has caused the impending apocalypse by his actions.

As part of their sense of responsibility, ecologists know that there is no free lunch. Everything has a cost; everything a place. The saved are better able to plan human, space and the environment than existing institutions. Bureaucracies are wasteful and slothful, as Kropotkin pointed out; but human's unplanned actions are destructive and can be aesthetically unappealing. For, although non-anthropocentric, ecologists are not passive in their stance towards the world. They care intensely about how things look, feel and are, and feel a responsibility to indicate the way to the truth. Aesthetic values, then, are vital to ecologism. For, ecologists not only the sensuous pleasures of nature, but the importance vary from decade to decade and from country to country. There is hostility to the elaborate, the formal, despite the belief in benevolent planning. The civilization of the latifundia is resented as much as the civilization of megalopolis. The aesthetic values of the ecologists include the spiritual value of the one-to-one contact between man and object; between the history and meaning of a thing and the thing's maker, and the user or purchaser or owner of the thing [9].

Ecologists prefer a direct link between human and object; both the object and the contact with it are then seen as more real. This opposition to 'reification,' as the Marxist calls it, involves in Marxist terminology the alienation between humans and what he makes, is an attack on the factory system, as well as alienability of land and property. Here, Marx was tapping a pre-capitalist vein of social criticism. But the criticism is deeper, and a more spiritual one than Marx makes and is not confined to the factory system or capitalist society. The poet Rilke in one of his letters refers to his beliefs that the thingness of things was dying away, through mass consumerism. If there is to be no interposing mechanism between humans and humans, humans and things and humans and nature, neither must there be any wasteful, artificial state mechanisms, no bureaucracy, no unproductive 'Thing,' in Cobbett's words [9].

Since the ideal moral and aesthetic relationship between human and the world is what is local and intimate, trade is the part of the market memory, or indeed, any economy, that is most alien. Production can be in the form of small-scale craftsmanship, but trade cannot be anything other than distancing between humans and the products they produce. Most ecologists are opposed to trade as such, for moral reasons. Given that belief, programs are erected to show that trade damages, buyer, and seller. But the belief is not dependent upon the rationale [9].

Some of the apparent contradictions of ecologism can be reconciled by perceiving its underlying moral stance. Ecologists are optimistic, in the sense that there is no original sin and nature is harmonious. However, they are also pessimistic, fearing waste, irreversible decline and the ruin of the environment, because nature is harsh, not human-centered and is unforgiving, as reality is unforgiving. And there is no God of the kind needed to step in and put things right.

Therefore, this paper uses political ecology to understand the politicized distribution of a resource as the first step in an emancipatory project is to ensure that all can live in an environment free from the daily injustices of stagnant and polluted resources. As Robbins' definition of political ecology puts it, political ecologists are in opposition of apolitical ecologies. He says that it's difficult for political ecologists to accept the Malthusian readings of resource wars that naturalize the scarcity of resources, they argue that scarcity is naturalized for power relations using which resources are both produced and distributed. Moreover, a political ecology approach contains, as Robbins would have it, both a hatchet and seed. It employs critical insights to chop its way through the acquiescent acceptance that the world is unchangeable; it then employs this to develop normative claims about how the world should be. Firmly opposed to environmental injustice, a political ecology approach commits in helping to bring

about a better world through contesting the reproduction of socio-natural inequalities [11].

The field of political ecology provides an important framework in human geography to study human-environment relations, that has become diversified in the past two decades in at least three dimensions: topically, regionally, and theoretically. The Marxian formulations of political ecology in the mid-1980s [12], [13] was complemented by poststructuralist approaches [14],[15].The focus on "land-based resources" [12] has been expanded to include several other topics ranging from protected areas, value chains of particular commodities to ecosystem services [16],[17],water management,air pollution [18],[19] and climate change[20].So,the studies have expanded there attention to rural and urban processes globally.

4. Methodology

This section elaborates on re-thinking River Khan diversion project using the theory of political ecology. For this, the paper uses ethnography as a process to understand what's wrong with the idea of capitalist society, where inspite of working on the root cause of a problem they displace the problem till it becomes a natural calamity. Semi-structured interviews, observations through photography and the transactional walk in the stretch where theriverwas divertedare used as methods in order to build this paper.

The rule of capitalist started expanding from the year 1847 to different partsglobally, and the new sciences and technologies were at its very intial stagetofulfill human purposes using nature.The utilization and growth of science and technology in the form of agriculture and industryadvanced beyond anyone's wildest dreams. But, the system remained the same,i.e.the concentrated energy of individuals and small groups singularly pursuing their interests, checked only by their mutual completion, and in the short run, controlled by the market and if market fails,in the longer run,by devastating crises. It implies that in the very concept of this system the interlocked and enormously powerful drives are created for both destruction and creation of the society. On the plus side, the creative drive relates to what humankind can get out of the capacity of nature to respond to the demands placed on it [21].

Sooner or later,(creation and destruction) the two drives become contradictory and incompatible. According to theargument made in the previous paragraph [21], there have to be adjustments from the demands enforced on nature rather than the capacity of natureto respond to these demands.Capitalism has developed recent centuries in such a way that humans believe that it can curb its destructive drive and simultaneously transform its creative drive into a benign environmental force.

The purpose of capitalist enterprise has been to maximize profit than to serve social ends. Adam Smith while discussingmainstream economic theory has insisted that by directly maximizing profit the capitalists indirectly serving the community. He also says all the capitalists together, maximizing their profits, manufacture what the community needs while keeping each other in check by creating mutual competition. This can be true to some extent, but it cannot bethe whole story. Capitalists do notlimit their activities to producing clothes, food,shelter, and amenities that society needs for itsreproduction and existence. In their single-minded pursuit of profit, one does not have the option to refuse to join and later taste the pain of elimination, capitalists are driven to accumulate ever more capital, and this becomes both their subjective goal and the motor force of the entire economic system [21].

Societies are too weak to protect themselves from the capitalist idea of production.The system iscaught up in this process of restless innovation and expansion,rides roughshod over even its beneficiaries if they get in its way or fall by the roadside. As far as the natural environment is concerned, capitalism considersit not as something to care for but as a means to paramount ends of profit-making and still more capital accumulation [21].

Following the effects of capitalism on the environment, the paper uses political ecology as an approach to understand the setup of Khan Diversion project in the twenty villages at the outskirts of Indore and Ujjain city. Political ecology was understood from its practitioner to be above all concerned with the politics of environmental degradation and environmental rehabilitation that it was a presumptively non-urban field. Later it got introduced to the urban field by Blaike and Brookfield [12]. The city, as the very antithesis of 'environment' in the popular and scholarly imaginations, might feature political struggles over land use and resources, but it is a site where nature was understood to be subjugated to society where no rehabilitation was possible because there was no 'environment' left to be rehabilitated.

Using this approach, the paper investigates the disequilibrium between nature and society which has been created by capitalism, causing, urbanization, industrialization, and development occupying most of the place in the cities of Indore and Ujjain.

Through political ecology approach, the paper develops a conceptual framework of how if an urban area balances the disequilibrium between nature and society can keep the rural areas clean and less affected by the destructive effects of capitalism. For this, the paper takes the case of river Khan (nature) which has been the center of accumulation of waste from the city of Indore and then covering the peri-urban areas it joins river Kshipra at Triveni Sangam. The river and people's perception of it have suffered since there has been a shift of the direct influence of the river on the people's lives. It was seen as not necessary, not useful, and so it has degraded.

The study reveals that human and non-human interactions produce socio-ecological conditions that are inimical to the continuation of human and other life forms, and the urban environmental catastrophe is not one to come, it is already here. Henri Lefebvre's loud call for a politics articulated around "the right to the city" has now become an urgent call for "the right to urban environments" and to the urban "commonwealth". The point here the study makes is not to fall into the urge to save nature which does not exist anyway as a stable market or reference [22] or to retrofit socio-ecological conditions to an assembly more benign earlier historical condition (which is, of course, an inherently reactionary demand) to call for an egalitarian and democratic production of socio-ecological commons. Political Ecology as an approach is about changing the frame through which things and conditions are perceived, transforming the conditions of impossibility, not simply to possible but to necessary ones. Imagining, again, urban environmental utopias that go beyond a neoliberal framework is imperative.

C. Analysis of Data

The study suggests that pollution of river Khan has reached an alarming proportion. Khan having a catchment of two lakh acres including Saver Tehsil is highly polluted due to the discharge of domestic and industrial waste. According to a study, about 110 MLD of sewage from Indore city and 70 MLD of industrial waste is added to the river per day which has deteriorated the quality of water of river Khan [23].

During the late nineteenth century after industries invasion in Indore, the growth of most of the industrial centers were relocated on rivers namely Khan and Saraswati which were a sub-tributary of river Kshipra. As industries grew cities changed, increase in population and geographic mobility caused the deterioration of both the rivers. A holy dip in Kshipra river was once considered to be an act of Moksha, while today the act of taking a dip would give people disease. River Khan, the sub-tributary of Kshipra, is the main cause of latter's deterioration. The government has taken very few attempts to protect both the rivers over the years. The actions like diversion of river Khan through a pipeline and bringing water from the Narmada to Kshipra for people to take holy dip shows how the spiritual, cultural, ecological and social significance of rivers is eroding.

It also portrays how proletariat's (farmers) are exploited by the bourgeoisie (government) in terms of acquiring their land for construction purposes. If the government had taken actions before, by constructing a sewage treatment plant which would have treated the water of river Khan before entering Kshipra, the situations would have been different. This would have caused no harm to the farmers in any sense. The government would have also utilized the waste generated in the process through giving it to farmers to use it as fertilizers which would have increased the soil's quality.

The government's temporary actions during such festivals show that even religion as an idea is being commercialized. The seers who would have never taken bath in Narmada's water were somehow convinced to take bath in its water flowing in river Kshipra during Simhastha 2016. The diversion project ruined most of the pieces of land of the farmers which were fed with compensation for a year, but a land which gets dug once becomes barren for five years so ultimately, they are in loss. The survey through this study suggests that indeed the project provided livelihood to the nearby villagers, but it took some lives and most importantly the lands and crops of the farmers. This was due to the economic crisis the families of the farmers were facing. The above observations suggest that religious festivals have just become a means to collect more and more funds from international agencies. It also reveals that the government remains quiet in terms of its actions till the festival is closer. Once the festival is over, all one can see are rivers again becoming the sites of sludge carriers.

The study also suggests that the authorities responsible to work on the root cause of the problem which is to revive the river has been overlooked. There are certain plans presented to the people every now and then through newspapers but ultimately the condition of the river remains the same.

5. Conclusion

Political ecology as a unifying idea is the desire to politicize environment as a way of changing them. Through this approach the paper tries to bridge the gap between human and environment. Using the case of River Khan, the paper explains the essentiality of reconstructing natural and social ties out of which the environment is made. In this respect such projects are just to fulfill immediate requirement of people or fulfilling political agendas. With the help of this approach the paper develops a critical understanding of water and development in order to sustain its resources in the near future. The paper suggests that the stakeholders will have to look for a solution from the situated understanding produced within everyday life. Resources like rivers have been the essential source for a city to grow, ignorance towards them, or attempt to partially remove them from picture will not only increase the water requirements of the region but also decrease the agricultural produce of the region [11].

In order to produce a sustainable environment a political and administrative system is required that involves all relevant social actors at all geographical scales. Adding on to that, it requires a policy framework that does not single out the circulation of water from other sustainably related processes [24]. In fact, it requires a more integrated and comprehensive approach in which supply of water is integrated with ecological considerations, health and sanitation policy, urban planning and governance systems and socio-economic processes [24]. The increasing fragmentations of policy domains because of privatization and commodification, makes this objective more remote than ever [24].

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References

- [1] Mehta, D., Mehta N. "Interlinking of Rivers in India: Issues and challenges". *Geo-Eco-Marina* 19/2013.
- [2] Martin, C. "Dams, Rivers, and People". 1(2-3) March-April; also in *Hindustan Times (New Delhi)* 10 February 2003. Available at (http://www.narmada.org/sandarp/apr2003_1.doc).
- [3] Roy, A. "The Greater Common Good", Bombay: India Book, 1999.
- [4] Wolfensohn J. D. "Address at the Annual Meeting of the World Bank and IMF". World Bank, Washington, 1995.
- [5] Shiva V. "River Linking: False Assumptions, Flawed Recipes". New Delhi, Navdanya, 2003. http://www.navdanya.org/articles/false_assumptions.html.
- [6] Iyer, R. "Water: Perspectives, Issues and Concern". Sage Publications, New Delhi, 2003.
- [7] Karl, M. "Economic & Philosophic Manuscripts", op.cit., 1844, p. 69.
- [8] PTI. "River Linking Project Revives Kshipra River with Narmada Water." *Economic Times (Politics and Nation)* 2015. Accessed September 20, 2016. http://articles.economicstimes.indiatimes.com/2015-01-15/news/58108698_1_kshipra-river-narmada-ujjain.
- [9] Bramwell, A. "Ecology in twentieth Century A History". Yale University Press. New Haven and London. 1989.
- [10] Chisholm, A. (1972). *Philosophers of the Earth, Conservation with Ecologists*. London.
- [11] Loftus, A. (2009). *Rethinking Political Ecologies of Water*. Routledge Taylor and Francis. Third Quarterly, Vol. 30, No. 5, pp 953-968.
- [12] Blaikie, P.M., and Brookfield, H. *Land degradation and society*. London: Methuen, 1987.
- [13] Blaikie, P.M. "The political economy of soil erosion in developing countries". London: Longman, 1985.
- [14] Peet, R., and Watts, M. (Eds). "Liberation ecologies: Environment, development, social movements". London & New York: Routledge, 1996.
- [15] Walker, P. A. "Politics of nature: An overview of political ecology". *Capitalism Nature Socialism*. 9(1), 1998, pp 131.
- [16] Ernest, H. The social production of ecosystem services: A framework for studying environmental justice and ecological complexity in urbanized landscape. *Landscape and Urban Planning*, 109(1), 2013, pp 7-17.
- [17] Kull, C.A., de Satre, X.A., & Castro-Larranaga, M. (2015). The political ecology of ecosystems services. *Geoforum*, 61, pp 122-134.
- [18] Buzzelli, M. (2008). A political ecology of scale in urban air pollution monitoring. *Transactions of the Institute of British Geographers*, 33(4), pp 502-517.
- [19] Veron, R. (2006). Remaking urban environments: The political ecology of air pollution in Delhi. *Environment & Planning A*. 38 . pp 2093-2109.
- [20] Adger, W. N., Benjaminsen, T. A., and Svarstad, H. (2001). Advancing a political ecology of global environmental discourses. *Development and Change*. 32(4), pp 681-715.
- [21] Sweezy, M. P. (2004). *Capitalism and the Environment*. *Monthly Review*. Volume 56, Issue 05(October). Available from: <https://monthlyreview.org/2004/10/01/capitalism-and-the-environment/>
- [22] Swyngedouw, E. (1997). Power, nature, and the city. The conquest of water and the political ecology of urbanization in Guayaquil Ecuador. *Environment & Planning A*, 29(2), pp 311-332.
- [23] Sharma, D. and Dubey, A. (2011). Assessment and treatment of municipal wastewater of Indore City of India, in *Archives of Applied Science Research*, [Online] 3(1): 450-461 [cited 23 July 2015]. Available from <http://scholarsresearchlibrary.com/aasr-vol3-iss1/AASR-2011-3-1-450-461.pdf>
- [24] Swyngedouw, E. (2006). Circulations and metabolisms: (Hybrid) natures and (cyborg) cities. *Science as Culture*. 15 (2). pp 105-12