© INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR
ISSN: 2278-6848 | Volume: 11 Issue: 04 | October - December 2020
Paper is available at http://www.jrps.in | Email : info@jrps.in

IDENTIFICATION OF OCCURRENCE OF DISPLACEMENT DUE TO HYDROELECTRIC PROJECTS

Dr. Ankur Pare*

***International Associate Member of ASA, Washington D.C., America**

ABSTRACT

Adoption of green economy principles, in particular, reducing greenhouse gas emissions and instituting renewable sources of energy to mitigate climate change are strong policy drivers around the world. Though hydroelectric projects need a large initial investment and also have extensive development times, they are regarded less harmful than the more usual fossil fuel-based types of energy generating. Growing the share of hydroelectricity in a country's energy supply is similar to the concept of a "green economy," since it aids in pollution control as well as the utilisation of renewable energy. Hydroelectricity projects, on the other hand, can have a variety of positive and negative effects on communities surrounding project locations. Employment, safety, as well as economic development are examples of positive socioeconomic benefits. Hydroelectricity projects have been met with intense criticism from environmental groups due to negative effects like loss of agricultural land, which has a negative impact on people's livelihoods, modified river flows, as well as loss of wildlife habitat. The current study focuses on the effects of hydroelectric project displacement.

Key words: Hydroelectric power, small hydro power, large hydro power, Dam, Renewable energy, Environmental effect

INTRODUCTION

Displacement has become a major problem all across the world. Since independence, many development projects have forcibly relocated lakhs of people from their homes. It was discovered that no accurate data on displacement, relocation, or rehabilitation exists. Government sources, according to some studies, are underestimating the number of people displaced by the dam project. Annually, more than one crore people are displaced by various types of projects for example coal mining, dam constructions, roads, defence, and irrigations, with the majority of those displaced belonging to the marginalized part of society. Millions of citizens were displaced in India as a result of various initiatives, and only a small percentage was rehabilitated. Resettlement and rehabilitation has become one of the most pressing concerns for both displaced people and government officials. (Borphukon, 2015) More than two crores people were forcibly relocated by dam developments in India between 1960 and 1990. The majority of them were from native communities, and only 24.9 percent have been rehabilitated, with 75.1 percent still waiting. Since independence, up to 60 million people have been displaced, the vast majority of whom have yet to be effectively rehabilitated. People have been known to be displaced several times throughout their lives. (Yadav, 2015) Since the previous 30 years, development projects such as the Rihand Dams project have relocated people 4 times in Madhya Pradesh. Researcher further claimed that the Soliga tribals in Karnataka have been displaced twice by Kabini dam construction and the Rajiv Gandhi National Park.

© INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR
ISSN: 2278-6848 | Volume: 11 Issue: 04 | October - December 2020
Paper is available at http://www.jrps.in | Email : info@jrps.in

Hydropower is an essential source of long-term power supply around the world, and its importance is expected to grow, particularly in developing countries. Hydropower plants (HPPs) are unlike any other form of energy generation, such as thermal. HPPs have always been site-specific, custom-designed projects. HPPs need a significant upfront investment, although they have very low operating expenses and have lengthy operating lifespans of 40–50 years, which may often be prolonged to 100 years with minor rehabilitation. As a result, electricity generation costs are incredibly competitive. (Mekonnen & Hoekstra, 2011) Establishing a hydro project, on the other hand, is probably the most challenging task. Hydrology (which affects power generation and profits) and geology both have significant uncertainty (which may substantially increase construction costs). Numerous parties are engaged, with often opposing rights and obligations, making site licenses and permits hard to obtain. It is hard to schedule and predict the costs of construction in rural parts. Environmental and/or social hazards can be difficult to comprehend and control and they can put the developer's and funders' reputations at risk. Furthermore, revenue (which is influenced by both the amount of energy produced and the price the power market can pay) is unknown.(Kumar & Freitas, 2012)

Figure 1: Isometric Dam River Stock Illustration

Risk management

While every development involves some kind of risks, forced displacement and resettlement stands out as an instance of risk management at its most exacting and difficult complexity. More than the technical engineering of a big dam – surely a huge, but well charted technical feat – forced displacement of a large mass of people and its relocation elsewhere is a formidably intricate economic and socio-cultural change process. This process starts by causing deep social disruption, expropriations and asset condemnation and losses. It is a process of many unknowns and unpredictable events; and it is prone to elicit strong opposition, born out of human suffering.(Algburi, 2017)

© INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR
ISSN: 2278-6848 | Volume: 11 Issue: 04 | October - December 2020
Paper is available at http://www.jrps.in | Email : info@jrps.in

Because such major economic and social risks are embedded into the very fabric of the displacement mechanism, carrying out a displacement-cum-resettlement process is not simply a logistic task of transferring people from one site to another: the task is to constantly balance inherent risks with powerful counter-risk measures. It means trying always to be three steps ahead of the risks that threaten to convert from potentialities into hard realities.(Chandy et al., 2012)

Figure 2: Risk in small hydropower projects

Furthermore, handling the social risks in displacement and relocation processes is not an activity confined to one or another point in time. It is a concern that must run constantly along the entire project timeline process, must underpin it, and must to be taken up at all levels of management.(Faria et al., 2017)

Advantages and disadvantages of hydropower

Compared with other technologies, the most important advantages of hydropower are the following:(Vancleef, 2016)

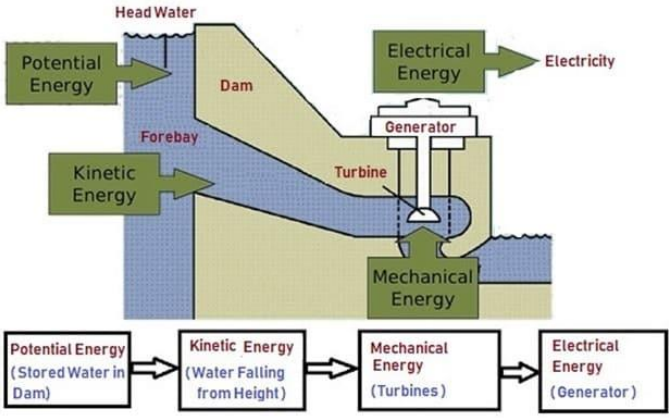

Figure 3: Hydroelectric power plant

- Hydropower generation relies on a tried-and-true technology that has been around for over a century, therefore hydropower stations may be easily repaired or enhanced using modern hydro technologies.
- Hydroelectricity is renewable since it does not deplete water resources and does not need the use of fossil fuels.
- Hydropower makes use of domestic water resources, resulting in price stability and the avoidance of market swings.
- Storing hydropower facilities (dams, pumped storage) provide operational flexibility by being readily scaled up or down, allowing for immediate reaction to fluctuations in electricity demand. As a result, storage hydro's are useful for meeting peak demand or compensating for other plants in the grid (particularly solar and wind), which can encounter power output changes.
- Reservoirs enable for the storage of water for drinking or agriculture, minimising human vulnerability to drought. Reservoirs can guard against flooding and increase the capacity of waterways. Furthermore, HPPs with reservoirs can use the stored water to produce energy during dry periods as well as moderate oscillations in the energy supply network.
- Environmental impacts triggered by implementing hydropower schemes are well known and manageable.

Disadvantages of hydropower include the following:(Cernea, 2004)

- High up-front investment costs compared to other technologies, such as thermal power (but low operational costs since no fuel is required).
- Reservoirs may have a negative impact on the inundated area, damage river flora and fauna, or disrupt river uses such as navigation. However, most negative impacts can be mitigated through project design. The IFC and other multilateral financial institutions have strict mandatory requirements for assessment and mitigation of social and environmental impacts.

LITERATURE REVIEW

(Yadav, 2019) The researchers have discussed the impact of displacements on people leaving in rural areas, highlighting in particular the loss of land property. Such displacement leading them away from their natural habitats has many socio-economic impacts. This research paper focuses mainly on farmers and indigenous communities in India. The paper further discusses the modernization process, especially since the adoption of neoliberal economic reforms. For any group or society, displacement is harrowing, both in terms of livelihood and culture.

(Nguyen et al., 2017) The research looked at the natural and social capital of Bo Hon villagers in central Vietnam before and after they were relocated to Binh Thanh commune as a result of the construction of the Binh Dien Hydroelectric Dam on the Huu Trach River. The goal was to come up with answers to the negative effects of resettlement on natural and social capital, as well as measures for prompt intervention and new livelihoods after households were relocated. A livelihood survey of all 46 households was done in 2010, and villagers were questioned about

2004 before the resettlement and 2009, when the residents of Bo Hon village were relocated 15 kilometers away. Household surveys, focus group discussions, as well as qualitative interviews were used in this mixed-methods study. The effects of displacement and resettlement on agriculture based means of livelihood, material assets, customary practices, but also social relationships were investigated in the following areas: (i) land resource; (ii) link to common-pool natural resources; (iii) income structure; (iv) agriculture based livelihoods; (v) material assets; (vi) customary practices; and (vii) social relationships. Rice as well as other crop-growing land, in instance, was significantly devastated, with land area drastically decreased or flooded. In addition, exploitation of common pool forest resources (NTFPs) like honey and rattan was reduced, and only 25% of the people continued to fish in the river. Although techniques were put in place to decrease the amount of disruption to the villagers' livelihoods, some aspects of the benefits package (e.g., land) were short-lived or unequally distributed, while infrastructure improvements such as enclosed roads have made the village much more accessible to Hue City, which is 25 kilometers away.

(Algburi, 2017) Electricity can be created in a variety of methods, including hydroelectric power generation. Coal, natural gas, and oil were the three most widely used sources of energy generation in 2009. These sources not only emit hazardous emissions to the environment, but they are also rapidly depleting resources. As a result, several power generation methods will need to be investigated. The inherent energy of moving water is harvested by guiding the water through a turbine, which converts the energy of the moving water into mechanical power. In the generators, the mechanical energy is turned to electricity. The flow rate and pressure head of the water supply must be determined in order to select the optimal generator for a certain application. On a modest scale, hydropower is among the most cost-effective energy options for rural electrification in developing countries. It is also the most promising future hydro development scenario in Europe, where large-scale prospects have either already been utilized or are now regarded environmentally undesirable. Small hydro technology is one of the most durable and environmentally friendly energy systems accessible.

(Faria et al., 2017) Regardless of the fact that there is a substantial body of literature on the socioeconomic effects of hydropower development on surrounding populations, (1) there are very few quantitative studies that look at long-term effects, and (2) there are very few studies which include multiple projects in the context of developing countries. Researchers employ econometric approaches to examine the association between socioeconomic factors at the national level as well as hydropower development for 56 Brazilian hydropower facilities constructed between 1991 and 2010. Hydropower plants had higher GDP as well as tax revenues in the first few years of development than a control group of counties with hydropower projects planned but not yet constructed. Those positive economic effects, on the other hand, were only temporary. The findings show that reasons for hydropower projects related to the long social and economic development in the local area should be challenged in Brazil, and then that more appropriate procedures for converting local short-term economic gain into long-term development are required.

(Group, 2016) The study discovered that the main implications of hydropower growth in Bhutan are cumulative, indicating that they are not of immediate concern but should be given priority consideration when hydropower development increases. In the long term, the potential negative impacts on aquatic biodiversity probably pose the biggest risk for hydropower development in the country. The geographical analysis conducted in this study indicates more rapid impacts on river connectivity after the 10,000 MW program has been completed, but a lack of data prevents a full understanding of how the cumulative impacts will increase, and how efficient the mitigation measures will be once hydropower development goes beyond the short-term horizon. In addition, as with all large infrastructure projects, this study has shown that there will be significant temporary impacts during construction, which, considering the very rapid and large expansion of hydropower with many projects planned to be undertaken in parallel, must be addressed in a countrywide and coordinated manner.

(Aneesh & Patil, 2015) analyzed large dams built for hydropower, irrigation, water storage and/or flood control have led to the involuntary displacement of millions of people over the last century. Governments and foreign donors have established policies and ways to ensure that human rights are respected, that adequate compensation is provided, and that livelihoods are restored. Throughout the last 50 years, social scientists and anthropological scientists have published numerous articles that have examined local outcomes in both snapshot as well as long-term studies. It does not look at the grey literature produced by multilateral, multinational, or national organisations that may have released non-peer-reviewed material in this topic.

(Terminski, 2013) discussed that following independence, India concentrated on different development projects as well as dam construction. These were seen as symbols of modern India, despite the fact that they all contributed significantly to India's development. However, millions of people were displaced from their ancestral lands as a result of these infrastructure projects. The poor formulation and management of numerous relocation and rehabilitation policies made life even more difficult for displaced individuals. No one from the relevant government enquired about their well-being after they were rehabilitated. They were completely cut off from God's kindness. This research is based on secondary sources and attempts to investigate a variety of concerns among displaced families as well as their challenges. In this study, it is shown that displaced persons have experienced a variety of issues as a result of the state government's failure to address their concerns. The majority of those who belong to the weaker sector of society are harmed in the name of development.

CONCLUSION

While there is a global energy crisis and nations are attempting to create energy in an environmentally sustainable way, the rights of indigenous populations cannot be ignored in involuntary displacement. Large-scale hydropower development projects have caused numerous human rights violations globally, and current solutions to this ever increasing problem are ineffective and under inclusive. Hydropower generates around 16% of the world's electricity. Despite the fact that dams have significant environmental and social consequences, proponents of hydropower see it as a relatively clean, reduced cost, and renewable source of electricity. Jobs

provided by the hydroelectricity companies to villagers have temporarily solved some unemployment problems but do not provide long-term economic security. There is a need for policy and investment mechanisms that build capacity among villagers to engage in diverse livelihood activities, both farm and nonfarm.

All external expenses, including water use, must be accounted for and internalized if hydropower is to be developed sustainably. Internalization refers to charging the operator of a hydropower plant for the cost and environmental impact of the water consumed and includes such costs in the hydroelectricity price. As a result, water consumption prices fluctuate throughout the year and throughout river basins, because the degree of water scarcity as well as competition for water is dependent on the time of year and local circumstances.

REFERENCES

Algburi, S. (2017). Hydroelectric Power. March 2016.

Cernea, M. M. (2004). Social Impacts and Social Risks in Hydropower Programs : Preemptive Planning and Counter-risk Measures Social Impacts and Social Risks in Hydropower Programs :

Chandy, T., Keenan, R. J., Petheram, R. J., Shepherd, P., Chandy, T., Keenan, R. J., Petheram, R. J., & Shepherd, P. (2012). Impacts of Hydropower Development on Rural Livelihood Sustainability in Sikkim , India : Community Perceptions. 32(2), 117–125.

Faria, F. A. M. De, Davis, A., Severnini, E., & Jaramillo, P. (2017). The local socio-economic impacts of large hydropower plant development in a developing country. Energy Economics, 67, 533–544. https://doi.org/10.1016/j.eneco.2017.08.025

Group, W. B. (2016). Managing Environmental and Social Impacts of Hydropower in Bhutan.

Kumar, A., & Freitas, M. (2012). Hydropower. January.

Mekonnen, M. M., & Hoekstra, A. Y. (2011). The water footprint of electricity from hydropower. 51.

Nguyen, H. T., Pham, T. H., & Bruyn, L. L. De. (2017). Impact of Hydroelectric Dam Development and Resettlement on the Natural and Social Capital of Rural Livelihoods in Bo Hon Village in Central Vietnam. 1–15. https://doi.org/10.3390/su9081422

Vancleef, A. (2016). Indiana Journal of Global Legal Studies Hydropower Development and Involuntary Displacement : Toward a Global Solution Hydropower Development and Involuntary Displacement : Toward a Global Solution. 23(1).

Yadav, A. (2019). Displacement crisis of rural community in india. 6(6), 168–179.