RURALITIES

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THE RURAL POST PUBLICATION

Withering Water Crisis with Artificial Glaciers
Ayee Village, Ladakh, Jammu and Kashmir

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Abstract

Ladakh has always been a strategic vicinity for India. It stocks borders with Pakistan and China. Moreover, it is a distinguished place for tourism and Bollywood films (Jina, 1994). However, a great deal of challenges is given to the advancements of India's army base in Ladakh, very little attention is induced to different development potentialities, particularly recognizing rural development (Bray, 1988). It becomes increasingly essential to understand the functioning of a village and related demanding situations in the everyday rural life of Ladakh (Dame & Nusser, 2008). The case attempts to spotlight the story of Ayee village situated in Nubra Valley, Ladakh. It canvasses an initiative taken by the villagers to remedy the water crisis bearing on the shortage of irrigation facilities in the village. The response of the villagers to build artificial glaciers as a water conservation technique and the challenges related to the same has been highlighted in the case.

Keywords: **Water Crisis, Traditional Water Conservation, Mountain Communities, Ladakh, Artificial Glacier, Ice Stupa.**

To cite the case study

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About the Author

Avi Jain is a participant of PGDRM programme at Institute of Rural Management Anand (IRMA). He has two years of extensive work experience in development sector, where he has worked as a Microsoft Create2Inspire Fellow, Gurukul Programme Dalai Lama Fellow and Stanford VentureStudio Fellow. He has a wide research interest ranging from rural society and development to urban planning and development. The case study is a result of the village fieldwork done by Avi Jain in Ayee village, Ladakh, Jammu and Kashmir.

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The Village Profile

Ayee village is one of the Buddhist villages of Nubra Valley. It is situated 70 km from Diskit, the headquarter and 5 Kms from Kobed, the village panchayat. Woven with a populace of 181 Ayee residents, the village holds 37 households with a demographic age of 37.22 years. The formation of the village holds primitive foundations with a blurred history. The village marked its life with 4 households who came to a small land on the lookout for meals and refuge. The village dynamics highlight all of the families related to those 4 households (Jain, 2020).

The rural dynamics revolve around subsistence agriculture as a number one career. The village has witnessed zero net migration in the past ten decades with seasonal financial migration as a trend. Ayee-ites engage in organic agricultural practices from April to July whilst peaks MGNREGA paintings within the first quarter of every year. The land sees rest in winters from August to February. A cascading effect is determined when troubles are addressed inside the village. Dwindling literacy and high college dropout charge additionally predicts the economic instability of the village. The village involves a sharing financial system with non-monetary supply and takes phenomenon (Jain, 2020).

Untapped as a visitor vacation spot, Ayee withholds an ancient meditation cave and famous Juniper tree and related testimonies. Moreover, the use of traditional agricultural practices and organic farming makes Ayee stands as one of the oldest villages of Nubra Valley. As a village in a far off place of Nubra Valley, it has suffered from opportunity disaster.

Being a far off the Leh city, Ayee has kept up with a variety of rural occupations. Almost 42% of the working population take part in horticulture regularly even as 13% of them are utilized in Government administrations. 24% of the population is understudies demonstrating a solid view of metropolis closer to schooling. Any employment movement has to assure a strong utilization of any own family unit. It ensures the accessibility of sustenance for usage. Furthermore, no own family families had been discovered with the instance of child labour (Jain, 2020).

Agriculture and Livestock

Agriculture and livestock is an essential part of the lives of Ayee villagers. People right here do now not mainly view agriculture as a financial activity, alternatively, they view it as a part of their lives. Subsistence farming is quite principal at Ayee. People right here very own very small pieces of land. The common landholdings are just a fraction of an acre. Ayee has a net cultivated vicinity of 0.2064 acres. It becomes extremely important for the village to protect their agricultural activity, as it is a critical link to their survival.

Climate Change and Coping Mechanisms

Climate change as a congenital issue has been addressed with the aid of the villages pertaining to the rainfall, the snowfall, and the dwindling water table. Nearly every household has provided its challenge to climate change by highlighting the decrease in snowfall year after year. Moreover, there may be a subject for unseasonal rainfall that the villagers celebrate for the duration of the rural season from April to June. The village has proved its immunity to shocks over the century. No case of drought, flood, and shortage of any useful resource has been found in the village. Talking further approximately the covariate shocks, the village has been gifted with a geographical location that ensures availability of all of the feasible assets needed for survival and protection from any herbal calamity that can in all likelihood bring about a disaster for the village. Interestingly, the village has not gone via any idiosyncratic shocks. Moreover, any shocks or surprise, if observed is visible at the village level instead of on the household. No crop disasters had been discovered as the geographical benefit of working towards agriculture at an altitude of ten thousand feet. Guarantees safety from pesticides and heavy rainfall. Hence, it is miles appreciative to notice that Ayee is one of the Ladakhi villages that is immune to viable disasters and financial system failure in the future. However, the water crisis in the village during the summers (farming season) remains a problem (Jain, 2020).

Water Crisis at the Village

The region of Ladakh in India is has been suffering from the water crisis for a long time. Multiples reasons account for the same. An unprecedented influx of tourism in this remote and ecologically fragile region of the arid higher Himalayas and by the glacial retreat due to climate change. The geopolitical situation of the region surrounded by disputed international borders further complicates the governance and management of water resources in the region (Kumar, 2019). The government has made efforts in the past to solve the crisis with watershed development projects but everything in vain (Clouse, 2016). The dynamic geographical landscape and the harsh weather makes it difficult to execute such projects.

Out of all the related problem, improper irrigation remains on the priority list of every village. The reason being the subsistence agriculture practiced in nearly every village of Ladakh (Demenge, 2007). Hence, the water becomes not only an important aspect of domestic life but also stays as the foundation of survival concerning agriculture. Ayee village faces an acute water crisis in Kharif and Zaid season. Being one of the remotest villages in Nubra Valley of Ladakh, the government finds it difficult to provide any possible solution for the water scarcity. The idea of building a watershed near Siachin river has been proposed but was never taken up as a solution as the structure will be fragile and unsustainable. Moreover, the village solely depends on a natural stream 'Chamsen' for it is a domestic and agricultural need. The farmers in the village have adopted a rotational system to irrigate the farms, which makes their overall produce insufficient.

The Emergence of Artificial Glacier to Combat Water Crisis

The emerging problems of water crisis become a concern for every citizen of Ladakh. Sonam Wangchuk, the famous scientist from Ladakh, suggested Ice Stupa as a local solution to the problem. The cone-shaped structure enables the storage of water during the winters. The water is deposited as ice forming the shape of a Stupa. The Ice Stupa starts melting as soon as the summer arrives and helps villagers with their domestic and irrigation needs (Clouse, 2017; Kumar, 2019). People from Ayee village has also participated in Ice Stupa competition but found that building such structure requires a great deal of competencies. Hence, the villagers held meetings with NGOs like Ladakh Ecological Development Group and decided to build an artificial glacier for solving the water crisis. Artificial Glacier is a structure that is built by freezing the water during sub-zero temperature. It differs from Ice Stupa as it doesn't assume a particular shape. It is constructed randomly on either the ground or a mountain cliff. The micro level plan for building the artificial glacier entailed the following:

- Deciding on the amount of time and competency required to build the structure
- The challenges that they will face will building and maintaining the structure
- The problem associated with climate change. What will be done if we don't receive temperature to hold the ice structure
- Setting up the instruments like pipes etc. near the Chamsen river
- Charting overall maintenance plan along with duties assigned to each household

The interesting aspect of selecting artificial glacier does not revolve around the ease of building the same. It was the collective thought process of the villagers to identify the role of snowfall and overall maintenance cost of choosing the structure over Ice Stupa. Another interesting aspect to note about the collective action observed in the village was the excitement of the villagers to self-govern a solution that required no external interventions. The villagers were finally able to build its first artificial glacier in 2017 and the second one in 2018. The farmers although satisfied with the structure, still finds the solution impotent as it fails to address the problem in the end phase of Kharif season. However, the same is met with rare rainfall. The villagers are still actively looking for new solutions to combat water crisis in future since artificial glacier cannot be a long-term solution. Every villager of Ayee feels proud of their togetherness to pursue the idea of the artificial glacier as a means to address the collective need of the village. They are confident that they will discover better solutions to not only solve water scarcity but also problems in different dimensions as they now work as a team of 37 member groups rather than a fragmented village of 37 households.

Learnings

The collective decision of the villagers to build artificial glacier against the trend of building Ice Stupa to solve the water crisis depicts that the villagers possess acumen in the following:

- ❖ Comprehending the underlying competency of the village dwellers in building the artificial glacier
- ❖ Assessing the externalities associated with the solution
- ❖ Anticipating the associated opportunities with the artificial glacier concerning tourism
- ❖ Anticipating with the consumption of resources in terms of time, money and manpower for building artificial glacier

This experience of spending time in the village helped me understand three very important facts about Ladakhi Villages:

1. The idea of collective action always follows the path of identifying a collective need. The focus of any development intervention should not be of providing a solution to the people, but to encourage them to find a reason for implementing the solution first. The people themselves will come with a solution collectively.

2. Every village has some traditional techniques for solving the problem in the village. These techniques sometimes wither away with the changing times or deemed irrelevant as nobody is practicing them. Hence, exploring the traditional knowledge capped in the village can yield better alternatives to existing problems.

3. Collective confidence built on the trust through repeated actions is the foundation stone to every successful and sustainable policy or scheme in the rural development space.

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