

LIVING ROOT BRIDGES – A CASE STUDY OF AMDOHKHA, AMTREN AND AMKHLEW IN NONGTALANG, MEGHALAYA

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Abstract :

It seems that Meghalaya is the only state in the country as well as in the world that living root bridges are found. Living root bridges are the outcomes of hardships and endurance of the ancestors, who engineered and designed these bridges out of thin air. And after a long wait of 15 to 20 years, they could reap the rewards of their hard work. However, the main point to ponder here is that the present generation never had a soul to think about the ancestors' treasures that they should not destroy because they are the monuments of their hard work. The paper at present gives the descriptions of a few selected bridges and the ideas of how conservation and preservation can be done, either traditionally or scientifically. Involvements of the stakeholders, private individuals, and everyone in the society or community are preferable and encouraging because they are the primary dependents of nature and also the first to face the risks arising from environmental crisis.

IndexTerms - Living root bridge, Conservation, Rejuvenation, Sustainable development, Environmental crisis.

I. INTRODUCTION

Meghalaya is rich in natural resources because of the favourable climatic condition and also of its geographical location. Almost all types of resources are available in the state of Meghalaya. These resources are sometimes considered as a blessing for the state's economy and its development. Huge amount of revenues is generated from these resources by exporting to other countries, such as Bangladesh, etc. and also within the country to cater to the needs and requirements of various types of industries [1].

One of the importance resources that is attracted the attention of the author is the living root bridge. Living root bridges are abundant in Meghalaya both tapped and untapped. The most famous and beautiful root bridge is the Double Decker Living Root Bridge, Nongriat in Sohra/Cherrapunji. Therefore, in this paper, the main focus of the study is on this resource, where in no other countries that can be found or available. However, due to the rampant destruction of the environment and the impact of the global warming, these living root bridges are at risks and decaying day by day.

Living root bridges are mainly formed by the roots of banyan/rubber trees. From the very beginning, roots of banyan trees are guided by the people from one side of the river to cross over to the other side. People made these bridges to use as a ladder to cross the river from one place to another. People are also using these bridges as a way of communication and transportation of goods and their produce from their field to villages or to the nearest markets. It compels the people to make this alternative road and wait for a long period of time (may be 15 to 20 years) until it is strong enough and possible for use. These living root bridges come up not as their luxuries but out of their basic necessities. At present, due to the development of science and technology where roads and other mode of transportations are available, these living root bridges has become less importance to the people. However, these living root bridges has turned out to be a blessing in disguised, where millions and millions of people from around the world flocked to Meghalaya to get a chance or glimpse of these natural wonders, which are the best treat for the eyes.

Nearly 100 living root bridges found in over 72 villages in Meghalaya has been included in the tentative list of World Heritage sites of the United Nations Educational, Scientific and Cultural Organization (UNESCO) this year [2]. It has become a pride not only to the people of Meghalaya but to all the citizens of the country as well. That's the beauty of nature.

II. OBJECTIVES OF THE STUDY

Few objectives have been incorporated under this paper to know and understand the importance and its linkages between humans with the environment. These objectives are –

1. To find out the importance of these natural treasures – the living root bridges – to the people and economy.
2. To know about the importance of preserving the environment and its sustainability.
3. To investigate the ideas of making, maintaining, preserving, caring, etc. of these living root bridges.

III. AREA OF THE STUDY

The area of study that is selected in this paper is Nongtalang Village where few living root bridges are located. These bridges are untapped and still remained hidden from the interference of the outside world. Three bridges have been selected to understand the characteristics, features and its importance. These bridges are known as Amdohkha, Amtren and Amkhlew. The estimated age of these bridges is approximately more than 100 years old.

IV. RESEARCH METHODOLOGY

In this paper, both primary and secondary data are used. Primary data are collected from the sites as well as through personal discussions and interviews with the people, who are experts and have the experiences to make and maintain the living root bridges in the village. Personal informations and experiences also are applied and used by the author in this paper. Secondary data are derived mainly from the internet because the materials and the literatures in the form of books, etc are very limited in this field.

V. RESULTS AND DISCUSSION

In depth study of the living root bridges are carried out by the author in this paper, in collaboration with the IQAC Cell of the college and the Department of Environmental Studies of Nongtalang College along with the students. Resource persons from the village who are experts in making and designing the living root bridges are also involved. Detailed explanations and discussions along with the samples and techniques of making and designing the bridge are given by the resource persons. However, the method and technique are unscientific but traditional ones, which is used by the citizens of Nongtalang for centuries or so. The method is found to be useful and suitable for the living root bridges as informed by the resource persons.

Three bridges have been considered under this study to understand the importance of these living root bridges. The names of these bridges are Amdohkha, Amtren and Amkhlew. The location of these bridges is on the East side of Nongtalang village and the distance is approximately 3 km from the village.

1. **Amdohkha Living Root Bridge** – The bridge is located in the river Amdohkha [fig. I] and hence the name of the bridge is derived. The condition of the river, land and its landscape are beautiful because it is surrounded by trees and green and thick forests. The location of the bridge is situated on the flat and shallow area and the river is small during winter season but in summer, the level of water is high and its current of water is very strong. That is why the people of Nongtalang made this bridge for their daily use. This bridge is formed by the combinations of three/four main trees. Apart from that, the roots of these trees are intertwined and twisted together to form and make the strong foundation of the bridge. This bridge is still young as compared to the other two bridges. However, the real age could not be determined without the help of technology and scientific method. Just to imagine from the appearance, structure, characteristics and its features of the bridge, it seems that the age is approximately 90 to 100 years old. This can be seen through the appearance of the roots, the height of the trees, the length and breadth, etc. they are still young and fresh. There is little signs of tear and wear or the decay of the roots and branches. On the other hand, the bridge still needs to grow, expand and extend to all its directions, that is, either the length, breadth or height. The rough measurement of the bridge is approximately 94 feet long, 3.2 feet in width and 6.6 feet in depth. Heap of rocks are placed on the bridge as footpath. These stones are as big as 10 feet in length, 1.6 feet in width and 1 foot in thickness.



Fig. I: Amdohkha Living Root Bridge

2. **Amtren Living Root Bridge** – Amtren [fig.II] is another beautiful bridge located in the same area. This bridge is situated in the deep slope of the hillsides where the river flows directly to Bangladesh. The bridge is big, strong and mature. The length of the bridge is 33 feet and 11 feet in depth. The width of the bridge at the entrance is 5 feet, 2 feet in the middle and 5 feet at the exit. The approximate age may be around 100 to 150 years.



Fig. II: Amtren Living Root Bridge

The bridge is in good condition and no big signs of decaying are seen. But the main worried is about the stones that are placed and put on the bridge to make as footsteps. Even these trees lived and grew on rocks and stones but these stones might eat and destroy the roots of the bridge through corrosions and frictions in the long run. Therefore, necessary precautions should be taken up to be able to maintain and preserve these resources.

3. **Amkhlew Living Root Brigade** – It is interesting to get involved with the environment because definitely, it will give you a soothing mood and pleasant sound to enjoy. This bridge is located on the edge of the cliff of the hills called *Rbang* in local dialect. The Rbang has a very deep gorge inside and as a precaution, you should not venture out near the cliff otherwise, definitely, you will fly to the sky like a bird. No kidding! Luckily, the bridge is there and it is saved and also has served the people of the areas for many years now. Waterfalls are formed by the river and the water flows down directly to other country – Bangladesh.



Fig. III: Amkhlew Living Root Bridge

The condition of the bridge is seen in the figure III above. It looks old, weary and deserted. The roots of the bridge become old, decayed and dried up. The rough estimate of the length of the bridge is 45 feet. The width is 4 feet and the depth is 7.5 feet. The average age of the bridge may be 150 to 200 years old. The bridge is over burden by the affects and impacts of the natural calamities as well as human destructions. Extractions of latex are common and indiscriminate cutting and chopping of roots by the people are frequently happened. No proper care and preservation have been done by the people for a long period now. In other words, the bridge lacks its proper foods and nutrients because soils are scarcity and limited in the areas because of the presence of stones and rocks. Therefore, conservation and preservation are required for the bridge at the stage otherwise it could no longer sustain the impacts of human and environmental destruction and degradation.

5.1: PRESERVATION AND CONSERVATION OF LIVING ROOT BRIDGES

Due to the increasing popularity of living root bridges at present in the state, country and the world, few citizens of the village felt the need to do something about these bridges before it is too late. It has compelled them to find out ways and means how to preserve and prevent them from further destruction. Even it is very difficult to do and carry out this task without the help and cooperation of all the citizens of the village and also without the help and assistance from the government in terms of providing financial supports. But with the initiative of Shri. F. Myrchiang, Assistant Professor of Environmental Studies, Nongtalang college, has taken up the matters to revive and uplift the degrading and depleting environment, especially these living root bridges. As already mentioned above, these bridges need to be preserved and conserved for the benefits of the citizens in the state and country as a whole. This idea will not only preserve these mother's earth treasures but it will boost the tourism industry and economy of the state as well.

As we have seen and also mentioned earlier, the conditions of these bridges have become very vulnerable and fragile. They need a proper maintenance and care because roots of the trees are dying and decaying may be due to over used and also may be due to the impact of heat and global warming. Or perhaps the reason of decaying, wearing and tearing may be due to the ages of the bridges that they could no longer withstand the impacts of environmental disruption. Therefore, to preserve these resources, new ideas and methods have been adopted by the people of the village, who are experts in making and maintaining the bridges. The method is purely traditional in nature but it has been found to be feasible and suitable for the speedy recovery and growth of the roots. This method is adopted, used and applied by the experts in this field. They are not the scientists, they are the ordinary people from the village and they obtained this technique through their own experience.

5.2: PROCESS AND MATERIALS USED IN REJUVENATING THE ROOT BRIDGES

The materials that are used and applied for the rejuvenation of root bridges were very simple. The required items are the stem of dead betel nuts/areca nuts, manures, which includes natural manures – compost of soils and leaves; logs and woods, jute sacks, ropes, etc.

The process is used by putting the roots of trees inside the stem of dead betel nuts. The dead betel nut stem is similar to bamboo because it has a hole and hollow inside and can be used as a support and ladder for the roots. Manures, etc. are put and applied together inside the stem along with the roots. Then, covered and tied with the ropes. Roots then stayed and remained safe inside the betel nut stems and started growing to the direction as wanted by the designers as quickly as possible. It is expected that after six months or one year, roots will grow more than seven and ten feet, depending on the favourable monsoons and climates. Woods and logs also are used as supports and stands. The use of these support processes makes the roots to grow easier to the direction as desired and designed. The bridge also will look better and beautiful. Thanks to the new ideas. There is a new hope for the mother's earth treasures to be able to preserve, conserve, maintain and spread to other areas and places also.

Programmes have been conducted in relation with the rejuvenation of living root bridge under RUSA Equity Initiative Scheme 2019-20 on the theme, *Learning about Traditional Innovative Ideas and Conservation of Living Root Bridge*, in the study area. Active participations (video links) [3 - 5] of the students and teachers of Nongtalang college along with the resource persons to rejuvenate the living root bridges was a very encouraging and interesting. The programme is immensely useful and fruitful not only to the students in particular but to the general public as well. Below was the Amdohkha living root bridge that was conserved and rejuvenated under the programme. The rejuvenation is done in this bridge by extending to both sides of the bridge, using the new ideas of preserving and maintaining. It is expected that after few years the bridge will come into reality. This will attract the tourist from around the world to come and see, enjoy, value and also give credits to the bridge.



Amdohkha Living Root Bridge Rejuvenating Process

Conservation and rejuvenation of Amkhlew bridge is a daunting task because of the massive destruction and degradation of the bridge. Special operation has been conducted on this bridge that is by applying a special type of treatment. The treatment is to bind and tie around the roots with a bandage of sack jute along with the manures. The moistures absorbed by the manures and sack jutes enable the dried roots to revive, grow and regenerate quickly. However, this process is not 100% guaranteed because everything it has to depend on the favourable monsoons and rainfalls.

Amkhlew Root Bridge Rejuvenating Process



If the monsoons or rainfalls is good or sufficient, roots are alive and growing faster as planned. But if the climate is changing, good results may not be expected much. However, if this technique and process is continued, it will definitely helpful in terms of preserving, conserving, etc especially the living root bridges.

5.3: SOME ISSUES NEED TO BE TAKEN UP

5.3.1: Community Management – In Nongtalang village, community engagement is preferable because all most all the physical resources are owned by the community or communities/clans. Land holdings is one of the examples that Nongtalang village is practicing since olden days. The community lands or resources are supervised by the head(s) of the community known as Zamindar(s). Therefore, involvement of community in any developmental purpose is encouraging.

Community engagement is desirable because it can involve greater engagement of local citizens in the planning, design and delivery of local services and helping the community to share knowledge, skills and ideas. In other words, the government or village management would empower to local community or voluntary groups for better use of physical resources. This will help and enable the community to maintain, preserve and protect the resources [6].

5.3.2: Environmental Management – For sustainable economic growth and development, environmental management and protection is encouraging. As already seen from the above environmental crisis, environmental consciousness should be the core of decision making especially of the village and its communities. Village participation and management help to control and limit the damage caused to the environment and also help to identify the factors that may lead to environmental degradation. Thus, environmental management is the tool with which we can promote environmental protection and take care of the different resources in the environment [7].

5.3.3: Waste Management – Waste management is the most important thing that every village either in rural or urban areas should take into account seriously. Without proper management of wastes and waste materials, it will cause many serious effects and health issues in the society. Air pollution, water pollution, soil pollution and degradation of forests and vegetation, contamination of water in the rivers and streams and many more. It further leads to the problem of water scarcity, lacking of potable water and water quality. Health and Sanitation is the most important thing in our life. Health is wealth and cleanliness is next to godliness, goes the saying [8].

VI. FINDINGS AND SUGGESTIONS

It be will useful for the readers, villages, NGOs, environmentalists, tourists, tourism, industrialists, governments, policymakers, privates and individuals, etc. who are interested in this field to have some of these suggestions and informations. Thus, the findings from the study and its suggestions are as follows:

1. It has been found that these bridges need an urgent care because of the ruins, damages and decay caused by the footfalls of the people over these years. It is suggested that proper maintenance should be taken by the village community as whole and not by few individuals only.
2. It has been found that the land is owned mainly by the communities/clans and it very difficult to rejuvenate or conserve these resources without their permission. Special permission has to be granted by the Zamindars/landlords to carry out any programme or developmental purposes. Therefore, it needs the cooperation of the landowners to enable and facilitate the areas for any developmental purpose.
3. It has been found that the conditions of these bridges become weak because of the stones and rocks placed over these bridges as footsteps. It suggested that the stones should be removed and replaced by logs and woods, soil and manures, etc so that the roots will regenerate and grow and make the bridge stronger.

4. It has been found that around 90% of the inhabitants of the village are ignorant about the importance of these living root bridges. Therefore, education and proper guidance through trainings, workshops, seminars, etc should be provided not only to the young people of the village and its adjoining areas but to inhabitants in and around the village about the importance of these natural resources, which are the treasures of the mother's earth.
5. It has been found that these bridges lacked the proper maintenance and conservation. It is required to suggest the landowners/village authority to set up the organizations/NGOs and entrust them the duty to look after and proper management of not only these bridges but for the all-round development of the areas.
6. As we have been experienced from other tourist spots and tourist destinations present in the state, huge revenues and profits have been generated not only for the owners but for the government also. Thus, it is important to suggest to the village authority to declare these places as a tourist spot. This is the best information to woo, encourage and attract the tourists to these areas and, in return, will definitely generate a huge revenue.
7. The government also should take the responsibility to protect and preserve these natural treasures by providing financial support and assistance to the village/association, who would look after these places. As it is aware that no supports have been given or provided so far by any authority.
8. It has been found that apart from the above three bridges, there are other bridges also in the areas that need to be taken care. It is required to suggest that *new living root bridges* should be made by planting new saplings in and around the rivers in the areas for the benefits of not only the inhabitants of the village but of the future generations as well.
9. It has been found that no one is getting job or employment opportunities related to tourism because of absence of tourist spots. Therefore, it is important to suggest to the village authority to make these places as tourist spots so that job and employment opportunities will be created for the youths in the village, who are unemployed and would be absorbed in this sector. For example, shops, home stays, restaurants, transport and communication, etc would come up, which is a great opportunity for the people of the areas.
10. It has been found that only few citizens are aware and have a thought about the environmental disruption and the importance of its sustainability. Therefore, it suggested that it is high time for the inhabitants of the village to understand the importance of sustainable development, management, protection, etc. of the environment so that it will not affect and hamper the well-being of both humans and other living and non-living species.

VII. CONCLUSION

Even the state is abundant in physical natural resources but if the people or the citizens are careless and ignorant about the importance of these resources, it is meaningless. Rapid destruction of the resources has a direct and indirect impact on the human beings. The environment and ecosystem are disrupted and all living and non-living things are at risks. Therefore, it needs to send the signal and spread the message to the masses right for the grass root levels and up to the higher levels either the private individuals or the governments not to destroy the resources. It has frequently happened in the state that even the government used to destroy the resources in exchange or trade off with development. It can never be found that sustainability is adhered according to environmental management and protection. Nature is remained vulnerable and fragile at the mercy of human beings and their greedy needs and requirements. It seems that no one can slow down and stop these increasing problems and encroachments of human beings into the nature and its resources. The reason may be due to over human population compared to the available of limited resources that the earth can produce. The only solution to solve all these problems is to protect, conserve, regulate, control, etc. to make the environment and the earth a good and a better place to live in. This is the only alternative solution that the present generation should think, and the future generations would give us a better credit and also live happily.

VIII. ACKNOWLEDGEMENT

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