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atree: Social Entrepreneurship in Vembanad

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In July 2018, T.D. Joji, a coordinator at Ashoka Trust for Research in Ecology and Environment (ATREE), was rereading the draft of his article for a local magazine, which outlined ATREE’s recent success in helping to restore the biodiversity of Vembanad Lake, in Kerala, with the cooperation of the local fishing community:

In November 2017, Vembanad Lake’s plea for help has finally been answered. Led by the team of ATREE (Ashoka Trust for Research in Ecology and Environment), a leading social enterprise in India, Vembanad, and its inhabitants are on their path to revival of their biodiversity. Their fish count and other programmes have mobilized local as well as public attention, getting Vembanad the much needed intervention. Investments have poured in from global organizations like National Geographic and Norwegian University along with Antrix, ISRO’s commercial arm. The Matsyathavalam concept has been brought back, and the fish count has revealed a 50 per cent increase in aquatic species of the lake. Moreover, it also displays the strength and cooperation of the fishing folk of Vembanad.

Joji’s phone rang as he was editing the article; it was yet another call from one of ATREE’s sponsors. The sponsor was concerned with the recent changes in the dynamics among the fishing folk of Vembanad, who had been working with Joji and his organization to restore the health and biodiversity of the lake, but had begun to consider taking jobs with a new fisheries-based food company that wanted to begin processing and exporting fish caught in Vembanad. This might leave no one to take over their responsibilities for restoration efforts. Joji reassured the sponsor, “We didn’t anticipate this reaction from the fishers. They are just thinking about their future. But you don’t have to worry, sir. I will come up with a solution.”

Big achievements were made of trust and co-operation—things that Joji had found in abundance among the fishing folk of Vembanad. Every conservation programme that ATREE had put forward had been welcomed by the community wholeheartedly. However, as soon as better options for survival came along, the fishers’ trust in the cause for Vembanad Lake was forgotten. This option came not in the form of a corporate giant aiming to exploit the people and the lake, but in the disguise of an organization with goals of saving the fishing folk from poverty with steady employment at their factories. The prospect of jobs in the new processing centres led to changes in the fishers’ participation in the restoration effort: in just over a month, the Kayal Samrakhana Samiti (KSS)[[1]](#footnote-1) patrols on recently constructed fish sanctuaries had become non-existent, meetings were being neglected, and the fishers’ commitment to ATREE had begun to slip away. Joji wondered how he could convince them that there was a trap ahead.

Vembanad—A Wetland in Crisis

Joji’s maiden visit to Kumarakom village on Vembanad Lake in the summer of 2004 was to enjoy Kerala’s emerald green backwaters. Kerala was recognized as one of the paradises of the world by *National Geographic Traveller*,[[2]](#footnote-2) and it owed much of its beauty to its calm backwaters. Closely resembling a labyrinth, these brackish waters had created a network of interconnected lakes, canals and rivers enclosing a number of towns and cities. A ride though the idyllic waters of Vembanad, the largest lake, on a houseboat to take in the panorama of palm trees and waterfowl and the famed boat races was a must on every tourist’s wish list.

However, Joji’s adventure in the backwaters was marred by the heaps of filth he saw underwater during his regretful swimming experience. Upon enquiring, Joji was shocked to learn the ugly truth hidden behind the famous paradise. A native of the area informed Joji, “We scarcely catch a good hoard of fish anymore, because there’s hardly any fish in the lake now.” It seemed that most of the fishers were on the verge of financial collapse and the area was at risk of ecological extinction.

Joji returned to his home in Bangalore, but he was bothered by the dismal condition of Vembanad and the status of the fishers. Joji worked as a research associate in ATREE, a research institute focused on biodiversity, conservation, and sustainable development in India. He ascribed to ATREE’s goals of advancing environmental sustainability and thought he might find hope for the problem at Vembanad with his superiors. Understanding the gravity and the requirement to take immediate action regarding the situation, Joji prepared a proposal report on the Vembanad issue and took his concern to Dr. Kamaljit S. Bawa, a distinguished ecologist and the founder of ATREE, one among the world’s top 20 think tanks. Bawa explained the situation to Joji.

Vembanad Lake was one of the most beautiful gems of Indian tourism, once called the backwater paradise of Kerala. It was also the longest lake and largest wetland in India. But now, the luscious blue waters were merely a veil covering up pollution, species extinction, and environmental degradation.

The degradation of Vembanad began in 1976 with the construction of Thanneermukkom Barrage (see Exhibit 1) as part of the Kuttanad Development Scheme.[[3]](#footnote-3) The largest mud regulator in India acted as a barrier, dividing the lake into two and preventing tidal action and intrusion of salt water into Kuttanad lowlands. This barrage disrupted the upstream migration of fishes and prawns and the natural flushing of pollutants from the lake. In addition, stress on the land had increased as a result of tourism, agricultural land reclamation, industrial pollution, and overfishing. Government policies—even the application of the Ramsar Convention[[4]](#footnote-4)—were not providing enough protection. Bawa agreed that there was a need to take action immediately. “Every second we waste could be inching another fish species to its extinction,” he said.

Bawa took a moment to go through Joji’s proposal and concluded:

We have enormous laws to look after crimes on humans, but the crimes we commit on our land and water, which essentially sustain life, are neglected. ATREE was not founded merely to conduct research but also to take real action for the preservation of nature’s biodiversity. Over the years, we have taken on several victims, and if Vembanad requires our immediate attention, this ambiguous data in the report is not enough proof for intervention. We need to have a clear picture of the situation and then come up with ideas to help Vembanad.

In 2005, Joji’s proposal was taken up by the water, land, and society department of ATREE’s Centre for Environment and Development (see Exhibit 2). A group of research students and doctors were sent with Joji, who was the coordinator of the group, to participate in the Vembanad Wetland Conservation Program. The program was initiated by ATREE to conserve the Vembanad Lake wetlands. Joji and his group were to collect data on water quality and the extent of pollution.

Vembanad—A Community in Crisis

Vembanad was the longest lake in India, and its wetland system was the largest in India, covering more area than the city of Delhi.[[5]](#footnote-5) The banks of Vembanad were home to about 1.6 million people. Their livelihood was derived from the lake by means of fishing, clam harvesting (“clamming”), agriculture, and other allied activities, along with tourism. Close proximity to the lake prompted an average of two persons from each family to take up fishing or clamming. Fishers were laden with debts, living on the brink of poverty with an average annual income of ₹25,000.[[6]](#footnote-6) With over 60 per cent of the fishing community in utter poverty, sustaining the population of fish in Vembanad was crucial. Fishers’ problems were the lake’s problems; the voices the fishers raised spoke for Vembanad as well as themselves.

This realization led Joji to meet with those dependent on fishing and clamming. He wanted to know what they identified as the problem, so he asked:

Vembanad has been your home for centuries and, over time, the world around it has changed. This change is like a ticking time bomb, about to go off, and nobody’s life is at stake as much as yours. You told us your problems; now tell us what went wrong.

Among murmuring in the crowd, an elder man stood up and spoke:

I was born and raised on the banks of Vembanad, a Vembanad that didn’t have boathouses like stars in the sky and resorts dotting every inch of the land—a Vembanad so beautiful, with long dark roots of *kandal*[[7]](#footnote-7) like the thick black hair of a maiden. I remember [tasting] the clean blue waters on a summer day, without worrying about cholera.

His emotional answer struck a chord with the crowd, and other angry comments were heard. “Tourists, houseboats, resorts! Their greedy owners! Get rid of this pollution from our Vembanad!” someone said. “We breathe, eat, drink, and sleep in filth!” said another. Someone else summarized the group’s main concern: “We used to catch 400 tonnes of giant prawns, but now we are lucky if we get 20 tonnes. Get rid of that barrage!”

The protesters at first blamed everything from the government to houseboats, but once they settled into a conversation, they were able to describe the problems more clearly. For example, there was a problem with the rock wall fencing the government had installed under land protection schemes. Imprecise fishing methods like trawling also had adverse effects. In addition, land reclamation for agricultural purposes had shrunk Vembanad to 37 per cent of its former total area.

Previous failed efforts for change also led the protesters to question Joji: “What makes you any different from the others who came and asked the same questions only to leave us with empty promises?” Joji resolved to give the local residents a concrete promise with a real solution. If he did not convince his superiors of the urgent need for a solution in Vembanad, Joji was bound to become another name on the residents’ list of culprits who offered empty promises. It could also be his last welcome visit to these beautiful waters.

ATREE and THE VEMBANAD WETLAND CONSERVATION PROGRAM

The ATREE research institute was committed to sustaining biodiversity, conserving natural resources, and promoting socially just, sustainable development across India. The organization met its purpose through interdisciplinary research that involved academia, policy makers, activists, and students. Since its inception in 1996, ATREE had strived to bring local communities and government together in an integrated approach to conserving nature.

Joji had been working at ATREE for 10 years and, in his experience, where the organization found nature to be a victim, it did its diligent best to protect resources. Vembanad Lake was no exception. Joji and his team spent a year researching Vembanad and its ecology, and they had some ideas for involving Vembanad’s stakeholders and local institutions. At the end of 2006, Joji summarized his study in a presentation:

Over the course of 50 years, Vembanad has lost its rich diversity in fish population, dropping from 150 to a mere 50 species. This has vastly affected the ecosystem and biodiversity of the area. The bird count has decreased by 40 per cent due to the disappearance of several fish in the food cycle. A million people directly dependent on the lake are drowning in their own poverty. As per the Ramsar Convention, the central government is the expected guardian of Vembanad Lake, but they are also indifferent to the dismal condition. Our research has shown that the solution lies in a participatory conservation program of the main stakeholders and local authorities.

Bawa explained that he consented to the project proposal:

Our motto is “research into action,” and this is one of the worst exploited ecosystems of India. The need to conserve and protect have to be planted in the minds of even the youngest child of Kuttanad. Programs should be crafted in such a way that it would prove beneficial to the lake as well as the fishing folk dependent on it. We need to make them understand that every drop is precious.

Community Environmental Resource Centre

The group’s first step, in 2007, was to set up the Community Environmental Resource Centre (CERC) at Alappuzha to coordinate the project and provide a virtual platform for involving the stakeholders. The team also developed an educational program for school children. Joji addressed the students of St. Michael’s School of Mannanchery Panchayat[[8]](#footnote-8) during an introductory session:

We at ATREE believe that the complete revival of Vembanad lies in the hands of the children of this land. Conserving these precious waters necessitates knowledge about its biodiversity and its ecological significance as a wetland. Considering the integral part it plays in each of your lives, we’ve devised *Jalapaadom* (“Lessons on Water”) to help you learn about your unique home and how to conserve it. This unconventional course is not going to be confined to the four walls of a classroom but will expand to the green walls of nature. In short, it is learning about the environment, through the environment and for the environment.

Within a year, the Jalapaadom program had been introduced in 44 schools and six colleges in the Vembanad region, reaching over 5,000 students. On a ratio of 100 students to one teacher, the students were trained to understand their environment. Through a variety of programmes like screenings of short films about the environment and field trips on the lake, they learned ways to conserve their fragile home. This served as a stepping stone to build trust and confidence in community participation for ATREE’s next initiatives.[[9]](#footnote-9)

With the success of the first initiative and the fate of the lake in mind, Joji and his team were encouraged to introduce an advantageous program for the fishers. *Jaladarpanam* (“Vembanad Water Watch Partnership Program”), launched in 2009, engaged the local community in a voluntary, scientific approach to checking the water’s pollution level. Stakeholders such as fishers, farmers, and activists were trained in water quality issues and monitoring processes. Then, basin stations were set up in specific locations, and water quality was determined on a regular basis. The program was meant to create a consistent and accessible database on the quality of the water in Vembanad Lake. Moreover, it gave the community the power of technical knowledge, enabling the people to understand their environment better and advocate for it.

Joji was well aware that his organization alone could not revive the fish species of the lake; for that, they required more public participation. Joji and his team thought they could secure public participation if they could provide solid evidence about the fish population. Thus, the team developed an annual fish count, to be carried out voluntarily by students and fishers with the support of the Kerala University of Fisheries and Ocean Studies (KUFOS) and the Kerala State Development Board. At the first count, the director of the Department of Environment and Climatic Change described the project: “The count aims to institute a deliberative, democratic governance system for the backwaters by enhancing cooperation of government departments, NGOs,[[10]](#footnote-10) and academic institutions.”

Matsyathavalam

Within two years, the CERC had gained a positive reputation among the residents at Vembanad, but Joji was still bothered by the long-term needs of the fishers. He and the team dug deeper to find a long-term solution for the survival of the fish and, thus, the fishers. Pointing to the graphs depicting the fish count at Vembanad, Joji explained to his colleagues at ATREE that the first fish count at Vembanad had shown that more than half of the fish population was in danger of extinction. Almost 40 per cent of the fish species had already disappeared, and 30 per cent were in danger of extinction.

After much deliberation, the team had developed a formidable solution for ensuring sustenance of the fish population. The inspiration for this solution had been the fishing folk of Vembanad. When asked how to increase breeding, some of the veterans recalled using bundles of foliage submerged in water, called *matsyathavalam,* or fish sanctuaries, to create an ideal habitat for the fishes to breed (see Exhibit 5).

Scientific research had proven that mango and cashew branches, when submerged in brackish water, created planktons that would become fish food over time and, thus, create areas conducive for breeding.[[11]](#footnote-11) However, the Kerala Fisheries Department had banned a similar scheme, called the *paddal* system. About a decade ago, *paddal* (“bush-bark fishing”) was used by the fishing community to aggregate fish: the fishers would use the plankton to attract the fish in a collective body, then cast their nets to catch the fish. Because this was a breeding ground, regulatory bodies identified the practice as harmful and banned the system.

Joji’s team had created a more secure model of the traditional paddal system. Protection beds would be created in the lake with a fence of bamboo sticks firmly placed in the lake bed. Another layer of bamboo fencing would be placed inside each protection bed to create a smaller zone. Large bundles of cashew and mango tree branches would be submerged in the smaller zones to create breeding sanctuaries that would attract the fish.

Joji’s colleagues agreed with and liked the plan, strengthening Joji’s resolve, but the real challenges would be getting approval from the authorities and, more importantly, gaining the co-operation of the fishers.

After persistent persuasion, an official at the fisheries department agreed to review Joji’s proposal. The official then raised a concern: “I see that you have designed more protection for the paddal, but even then, there are several loopholes in the plan that can harm the fish.”

Joji acknowledged the problem: “We are aware of these problems, but as you can see, our model is meant to be participatory and democratic. We already have the support of more than half of the fishing folk; thus, our plan should lead to the community creating a self-sustaining system for regulating themselves.”

The official was skeptical of the team’s plan and unwilling to grant a permit based on expectations of moral behaviour among the fishers. Joji admitted that he couldn’t guarantee anyone’s morals, but added that his team had done everything possible to make the plan effective: “Kayal Samrakhana Samiti [KSS],[[12]](#footnote-12) formed by the fishers, will declare the protected area a no-harvesting zone, and the fishers have volunteered to do patrols on a daily basis. We will also erect signs around the area. Over the long term, the plan can revive the fish species and the fishing community of Vembanad.” In fact, the community’s involvement in returning the lake to health had become a model for other communities.[[13]](#footnote-13)

After many trips to different government agencies, Joji and his team at CERC finally had the needed approvals in 2015 to proceed with their proposal. Kerala’s Department of Environment and Climate Change approved a fund of ₹200,000 to create five sanctuaries across 16 kilometres in the Mannanchery panchayat of Alappuzha. Another 10 sanctuaries were planned for installation over the next two years, using a public–private partnership model. Thus, with determination and co-operation, ATREE launched an exclusive model for conservation and primary environmental care.

An independent research study of the first sanctuary, conducted in 2015, two months after the sanctuary was created, showed positive results. Joji and his team reported an increase in the number of larvae around the sanctuary—“three times more than the rest of the lake bed”—and that the pollution level in this region was also significantly lower, creating a more hospitable environment.

Early Successes

The Jaladarpanam program had taught the fishers how to check the salinity of the water. This enabled them to notify the authorities when the salinity in the water was too low for commercial fish, such as prawns and clams, to migrate. The authorities would then open the barrage to the sea, increasing both the depth of water and the salinity and aiding the natural flushing of the lake, which improved the catch for the fishers.

The annual fish count in 2018 indicated that the work over the previous decade had made a difference. The count revealed a remarkable increase in the fish population, with 117 species present; over 24 of those species were exotic. The birds had also returned to the waters, indicating that the fish population had increased in the food cycle.

The state education department and information technology giant Wipro Ltd. also provided support to form wetland study centres, which implemented the unique habitat learning concept of Jalapaadom in about 50 schools and several colleges in Vembanad. Over the decade, Jalapaadom had produced over 40,000 environment-conscious students.

Impressed by ATREE’s public agenda and firm stand on conservation, organizations such as CGH Earth, the National Geographic Society (National Geographic), the Norwegian University of Science and Technology, and Kerala’s Kuttanad Package joined ATREE in supporting and replicating the CERC model. Later, in 2018, the Indian Space Research Organisation (ISRO), through its commercial arm, Antrix Corporation Ltd. (Antrix), entered into a memorandum of understanding with ATREE’s CERC Alappuzha for a period of three years.

Joji described ISRO’s involvement in a press interview, explaining that the program aimed to develop innovative models for enabling communities to adapt to the impact of imminent climate change and that Antrix would support the project financially through its corporate social responsibility (CSR) activities. “National Remote Sensing Agency (NRSA) of the ISRO will impart technical support through its geo portal, Bhuvan.”[[14]](#footnote-14)

However, things were not going as well as it seemed at Vembanad. A fisheries-based food company was interested in the resources in Vembanad Lake, and that was stirring disagreement among the fishing community.

A Proposal

Rajan, a local leader among the fishers, was one of the first to be convinced that local entrepreneurs in the vicinity had started offering a better opportunity for the fishers. He spoke to the others about the possibility of taking jobs with these local businesses:

We’ve seen a lot happen in these waters. Resorts, tourists, and NGOs have exploited us and this land recklessly. But what have we gained? We are not qualified to get employment anywhere. We can’t fill the bellies in our homes with our empty nets anymore. So while they plough our homes for harvest, we remain helpless.

What if we could have 200 guaranteed days of employment? What if we could have the privileges of a government employee with paid leaves and pension? What if we could earn thrice what we make now? All they need is the same support and participation that we’ve given to Joji sir and his programs.

Rajan’s speech led several men to consider the opportunity, and this resulted in a rift within the group of fishers. Day by day, the KSS groups were losing their strength, one fisher at a time. The patrols became less consistent and more careless; weekly meetings became non-existent; and ATREE was losing its support.

THE DILEMMA

After a week-long investigation, Joji asked the fishers to come for an urgent KSS meeting. Joji began the meeting by telling the group what he learned from his colleagues:

These local entrepreneurs are not our friends or saviours; if anything, they are making you dig your own graves. Their offers are shiny now, but in the future, they will be murky. While you are busy at your new jobs, they will be filling the lake with iron cage sanctuaries and breeding grounds so that nobody other than they will be able to fish in Vembanad.

Some of the fishers listening to Joji’s words were shocked, but the general expression seemed to be conflict and concern. The fishers had much to say. One agreed that “what you are saying may be true, but what other choice do we have? We live and die in debts; we’re too old to study another skill; and they are offering us what no one else has yet.” Another pointed out that “the fish count and Jalapaadom have made significant differences, but our pockets are only getting leaner.” Finally, they asked Joji, “Can you provide us with a better means?”

Desperation can cloud our conscience, Joji realized. These people may have supported the local entrepreneurs, turning a blind eye to their motives—but who could blame them when their only other choice was hunger and lost hopes? Joji thought that if he could leverage ATREE’s partnerships with National Geographic and other global organizations, he might get the right attention and raise more sponsors. There was also the investment coming from Antrix. Should he use that to better the lives of the people or the lake?

Exhibit 1: Map of Vembanad and Thanneermukkom barrage



Source: Company files.

**EXHIBIT 2: ATREE’s Organizational Structure**

Note: ATREE CERC Alappuzha = ATREE’s Community Environmental Resource Centre (CERC) at Alappuzha.

Source: Created by the case author.

Exhibit 5: A view of the artificial fish sanctuary, Vembanad Lake



Source: Photograph by the case author.

1. Kayal Samrakhana Samiti (KSS) = lake protection forums. [↑](#footnote-ref-1)
2. Keith Bellows, “Editor’s Letter: 50 Places of a Lifetime,” *National Geographic Traveller*, September 17, 2009, accessed June 7, 2019, www.nationalgeographic.com/travel/intelligent-travel/2009/09/17/50\_places\_of\_a\_lifetime\_1/. [↑](#footnote-ref-2)
3. The Kuttanad Development Scheme, launched in the 1950s for the overall development of the region and the residents, was conceived as a solution to the degradation of the aquatic environment and the health hazards faced by the people. The project included proposals for ecological restoration, flood control, development of agriculture and fisheries, sanitation and drinking water supply. “Revival for Kuttanad Package,” *The Hindu*, November 16, 2017, accessed November 22, 2018, www.thehindu.com/news/national/kerala/kuttanad-wetlands-to-get-new-lease-of-life/article20492040.ece. [↑](#footnote-ref-3)
4. The Convention on Wetlands, known as the Rasmar Convention, was an international, intergovernmental framework for the conservation and wise use of wetlands, which were ideal waterfowl habitats, and their resources. Vembanad Kol Wetlands was the largest Ramsar site in India. “About Ramsar,” Ramsar, accessed January 29, 2019, www.ramsar.org. [↑](#footnote-ref-4)
5. “Three Indian Cities Among World’s 25 Biggest Urban Areas,” Rediff Business, July 26, 2013, accessed January 29, 2019, www.rediff.com/money/slide-show/slide-show-1-three-indian-cities-among-worlds-biggest/20130726.htm; and R. Gopakumar and Kaoru Takara, “Analysis of the Bathymetry and Spatial Changes of Vembanad Lake and Terrain Characteristics of Vembanad Wetlands Using GIS,” in *Hydroinformatics in Hydrology, Hydrogeology and Water Resources: A Vital Resource Under Stress—How Science Can Help* (proceedings of the Joint International Convention of 8th IAHS Scientific Assembly and 37th IAH Congress, Hyderabad, India, September 6–12, 2009). [↑](#footnote-ref-5)
6. ₹ = INR = Indian rupees; ₹1 = US$0.02 on March 31, 2018; The average annual income of ₹25,000 amounted to approximately US$4,000. This would be equivalent to a one-way airfare ticket from India to Europe. [↑](#footnote-ref-6)
7. *Kandal* was the native name of the mangrove forests at Vembanad. [↑](#footnote-ref-7)
8. Mannacherry was a village in the Alapphuzha district of Kerala, India. The village *panchayat* was the local self-government. [↑](#footnote-ref-8)
9. “Students’ Army for Protection of Vembanad Lake,” *The Hindu,* September 30, 2007, accessed November 22, 2018, www.thehindu.com/todays-paper/tp-national/tp-kerala/Studentsrsquo-army-for-protection-of-Vembanad-Lake/article14844729.ece. [↑](#footnote-ref-9)
10. NGO = non-governmental organization. [↑](#footnote-ref-10)
11. “Academia,” accessed June 17, 2019, www.academia.edu/10948633/Vembanad\_Conservation\_Program. [↑](#footnote-ref-11)
12. Kayal Samrakhana Samiti (KSS) = lake protection forums. [↑](#footnote-ref-12)
13. R. Ayappan, “Kerala’s Responsible Tourism to Save Dying Lake,” *Deccan Chronicle,* April 12, 2017, accessed November 22, 2018, www.deccanchronicle.com/nation/in-other-news/120417/keralas-responsible-tourism-to-save-dying-lake.html. [↑](#footnote-ref-13)
14. “ISRO Joins Vembanad Lake,” *Deccan Chronicle*, May 4, 2018, accessed March 21, 2019, www.deccanchronicle.com/nation/current-affairs/040318/isro-joins-vembanad-lake-conservation.html. [↑](#footnote-ref-14)